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THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

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GENERAL INFORMATION concerning TRADEMARKS.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Dec. 3, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,851,609, Re. S.N. 401,534, Filed July 26, 1982, Cl. 114/105, TWO GROOVE HEADSTAY, Leathem Smith Stearn, Owner of Record: *Inventor,* Attorney or Agent: Charles B. Gordon, et al., Ex. Gp.: 315

3,963,705, Re. S.N. 483,683, Filed Apr. 11, 1983, Cl. 260/239.3P, PROCESS FOR THE PREPARATION OF 3-IMINOMETHYL DERIVATIVES OF RIFAMYCIN SV, Leonardo Marsili, et al., Owner of Record: *Archifar-Laboratori Chimico-Farmacologici S.p.A., Roveto, Italy,* Attorney or Agent: Norman F. Oblon, et al., Ex. Gp.: 121

4,138,194, Re. S.N. 479,472, Filed Mar. 28, 1983, Cl. 350/096.300, LOW ATTENUATION OPTICAL FIBER OF DEUTERATED POLYMER, John K. Beasley, et al., Owner of Record: *Mitsubishi Rayon Co., Ltd., Tokyo, Japan,* Attorney or Agent: Granville M. Brumbaugh, et al., Ex. Gp.: 257

4,147,176, Re. S.N. 433,277, Filed Oct. 7, 1982, Cl. 137/102, DIAPHRAGM ASSEMBLY FOR THE DEMAND REGULATOR OF A BREATHING APPARATUS, Raymond A. Christianson, Owner of Record: *Inventor,* Attorney or Agent: Howard A. Silber, Ex. Gp.: 341

4,237,896, Re. S.N. 447,981, Filed Dec. 8, 1982, Cl. 128/419R, IMMOBILIZING ANIMALS, Lancelot H. Lines, et al., Owner of Record: *Inventors,* Attorney or Agent: Floyd A. Gibson, Ex. Gp.: 335

4,258,570, Re. S.N. 479,024, Filed Mar. 25, 1983, Cl. 73/350.00, HIGH VOLTAGE POWER TRANSFORMER WINDING TEMPERATURE CONTROL SYSTEM, Fritz Weiler, Owner of Record: *Inventors,* Attorney or Agent: Robert B. Murray, et al., Ex. Gp.: 244

4,260,052, Re. S.N. 482,666, Filed Apr. 6, 1983, Cl. 198/763, VIBRATORY FEEDER LEAF SPRING ARRANGEMENT, William R. Brown, Owner of Record: *FMC Corp., San Jose, Calif.,* Attorney or Agent: Douglas W. Rudy, Ex. Gp.: 313

4,260,939, Re. S.N. 482,630, Filed Apr. 6, 1983, Cl. 318/558, LOW COST ELECTROMECHANICAL ELECTRONIC SIMULATION CIRCUITS, Robert J. Knauff, Owner of Record: *Inventor,* Attorney or Agent: William H. Maxwell, Ex. Gp.: 217

4,312,336, Re. S.N. 482,586, Filed Apr. 6, 1983, Cl. 128/192, EXTERNAL AXIAL FIXATION UNIT, Giuseppina Danieletto, et al., Owner of Record: *Inventors,* Attorney or Agent: Roy C. Hopgood, et al., Ex. Gp.: 335

4,343,459, Re. S.N. 482,387, Filed Apr. 6, 1983, Cl. 266/243, BASIC OXYGEN FURNACE CONSTRUCTION, Loren L. Kimmel, Owner of Record: *Dresser Industries, Inc., Dallas, Tex.,* Attorney or Agent: Edward G. Fiorito, et al., Ex. Gp.: 111

4,348,425, Re. S.N. 479,485, Filed Mar. 28, 1983, Cl. 427/008., VARIABLE LOW-PRESSURE FLUID COLOR CHANGE CYCLE, James A. Scharfenberger, Owner of Record: *Ransburg, Corp., Indianapolis, Ind.,* Attorney or Agent: Thomas P. Jenkins, et al., Ex. Gp.: 162

4,349,073, Re. S.N. 479,036, Filed Mar. 25, 1983, Cl. 166/312, HYDRAULIC JET WELL CLEANING, Casper W. Zublin, Owner of Record: *Inventor,* Attorney or Agent: Louis J. Knobbe, et al., Ex. Gp.: 356

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,121,159, Reexam. No. 90/000,365, Requested: May 2, 1983, Cl. 364/900, CENTRAL OFFICE MASSIVE MEMORY RECORDING SYSTEM, Edward Rogal, Owner of Record: *Valutron N.V., Southport, Conn.,* Attorney or Agent: Pennie & Edmonds, Ex. Gp.: 230, Requester: Owner

3,563,399, Reexam. No. 90/000,363, Requested: Apr. 27, 1983, Cl. 414/786, METHOD FOR CIRCULATING GRAIN STORED IN A CIRCULAR BIN, Charles C. Shivvers, Owner of Record: *Inventor,* Attorney or Agent: Rudolph L. Lowell, Ex. Gp.: 310, Requester: Charles C. Shivvers, Corydon, Iowa

3,765,547, Reexam. No. 90/000,367, Requested: Apr. 27, 1983, Cl. 366/131, APPARATUS FOR CIRCULATING GRAIN STORED IN A CIRCULAR BIN, Charles C. Shivvers, Owner of Record: *Charles C. Shivvers, Corydon, Iowa,* Attorney or Agent: Rudolph Lowell, Ex. Gp.: 240, Requester: Owner

3,982,383, Reexam. No. 90/000,369, Requested: May 2, 1983, Cl. 56/11.6, HARVESTING PLATFORM WITH A FLOATING CUTTER BAR, Roger E. Mott, Owner of Record: *Deere & Co., Moline, Ill.,* Attorney or Agent: H. Vincent Harsha, Ex. Gp.: 330, Requester: Striker, Striker & Stenby, New York, N.Y.

4,197,942, Reexam. No. 90/000,371, Requested: May 5, 1983, Cl. 206/219, CONTAINERIZED FLUID SUPPLY FOR FLUID MIXING AND DISPENSING SYSTEM, Leonard W. Gacki, et al., Owner of Record: *Picker International, Inc., Cleveland, Ohio,* Attorney or Agent: Thomas E. Fisher, Ex. Gp.: 310, Requester: Owner

4,256,761, Reexam. No. 90/000,359, Requested: Apr. 14, 1983, Cl. 424/282, ANTIHYPERTENSIVE AMIDES, John T. Suh, et al., Owner of Record: *USV Pharmaceutical Corp., Tuckahoe, N.Y.,* Attorney or Agent: Scully, Scott, et al., Ex. Gp.: 120, Requester: Owner

4,358,573, Reexam. No. 90/000,361, Requested: Apr. 21, 1983, Cl. 526/272, WAXY MALEIC ANHYDRIDE ALPHA OLEFIN TERPOLYMERS, Calvin J. Verbrugge, Owner of Record: *S. C. Johnson & Son, Racine, Wis.,* Attorney or Agent: Peter Saxon, Ex. Gp.: 140, Requester: Owner

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Department of the Treasury
United States Customs Service
19 CFR Part 133
Application for Recordation of Trade Name: "UNDERGROUND CAMERA, INC."

Agency: U.S. Customs Service, Department of the Treasury

Action: Notice of Application for Recordation of Trade Name

Summary: Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "UNDERGROUND CAMERA, INC.," used by Underground Camera, Inc., a corporation organized under the laws of the State of Massachusetts, located at 369 Central St., Foxboro, Mass. 02035.

The application states that the trade name is used in connection with photographic equipment, namely, cameras and lenses; photographic supplies, namely, photographic film and chemicals; and photographic accessories, namely, camera supports and illuminators. The trade name is applied to the goods in the United States. Appropriate accompanying papers were submitted with the application.

Before final action is taken on the application, consideration will be given to any revelant data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Notice of the action taken on the application for recordation of this trade name will be published in the Federal Register.

Date: Comments must be received on or before July 5, 1983.

Address: Written comments should be addressed to the Commissioner of Customs, Attention: Entry, Licensing and Restricted Merchandise Branch, 1301 Constitution Ave. NW., Rm. 2417, Washington, D.C. 20229.

For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Ave. NW., Washington, D.C. 20229 (202-566-5765).

May 3, 1983. A. PIAZZA,
Acting Director, Entry Procedures and Penalties Division.

PATENT NOTICES

Certificates of Correction for the Week of June 7, 1983

D. 268,370	4,330,884	4,361,517	4,372,003
3,917,911	4,332,692	4,361,641	4,373,203
3,975,674	4,333,156	4,362,888	4,373,295
4,045,963	4,338,086	4,363,630	4,373,389
4,106,302	4,339,026	4,363,860	4,374,245
4,176,577	4,339,903	4,364,865	4,374,311
4,192,975	4,340,923	4,365,111	4,374,555
4,200,916	4,344,701	4,365,157	4,374,585
4,252,242	4,344,869	4,365,184	4,375,498
4,254,480	4,344,870	4,366,100	4,375,813
4,267,334	4,345,027	4,366,833	4,375,817
4,275,755	4,346,432	4,367,376	4,375,867
4,279,502	4,346,449	4,367,594	4,375,883
4,284,076	4,347,565	4,367,791	4,376,348
4,288,542	4,353,278	4,368,179	4,377,393
4,288,773	4,353,626	4,368,532	4,377,417
4,289,759	4,354,418	4,368,557	4,377,792
4,291,177	4,354,878	4,369,073	4,377,901
4,305,657	4,358,741	4,369,096	4,377,925
4,310,930	4,358,953	4,369,489	4,378,365
4,311,662	4,359,226	4,369,548	4,378,467
4,312,405	4,359,476	4,369,701	4,378,852
4,312,772	4,359,598	4,370,295	4,379,003
4,316,809	4,359,774	4,370,296	4,379,937
4,319,646	4,359,896	4,370,763	4,380,596
4,324,138	4,359,984	4,370,929	4,383,456
4,325,382	4,360,526	4,371,677	
4,326,198	4,360,535	4,371,817	
4,326,429	4,360,946	4,371,860	

Disclaimers

Des. 255,565.—*Gerald R. Aamoth,* Santa Clara and *Kevin P. McKinsey,* Scotts Valley, Calif. VIDEO GAME CONTROL UNIT. Patent dated June 24, 1980. Disclaimer filed Oct. 4, 1982, by the assignee, *Atari, Inc.*

The term of this patent subsequent to Mar. 25, 1994 has been disclaimed.

Des. 264,235.—*Jose L.B. Chirapozu,* Vitoria, Spain. BICYCLE EXERCISER. Patent dated May 4, 1982. Disclaimer filed Mar. 28, 1983, by the inventor.

Hereby enters this disclaimer to the sole claim of said patent.

3,802,776.—*Gabriel Tchang,* Stockholm, Sweden. PHOTOMETER FOR DETERMINING THE OXYGEN CONTENT OF BLOOD. Patent dated Apr. 9, 1974. Disclaimer filed Mar. 21, 1983, by the assignee, *Siemens Aktiengesellschaft.*

Hereby enters this disclaimer to the sole claim of said patent.

3,984,947.—*Francis Joseph Patry,* Lewiston, Me. ROOF STRUCTURE INCLUDING A ONE-WAY VAPOR VENT. Patent dated Oct. 12, 1976. Disclaimer filed Apr. 20, 1983, by the assignee, *Johns-Manville Corp.*

Hereby enters this disclaimer to claims 1–4 of said patent.

4,127,899.—*William R. Dachtera,* Poughkeepsie, N.Y. SELF-QUENCHING MEMORY CELL. Patent dated Nov. 28, 1978. Disclaimer filed Apr. 4, 1983, by the assignee, *International Business Machines Corp.*

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

4,131,815.—*Paul A. Boatright,* College Station, Tex. SOLID PIEZOELECTRIC SAND DETECTION PROBES. Patent dated Dec. 26, 1978. Disclaimer filed Mar. 28, 1983, by the assignee, *Oceanography International Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,179,154.—*Charles E. Ingram,* Warren, Mich. AIR VELOCITY RESPONSIVE DEFLECTOR. Patent dated Dec. 18, 1979. Disclaimer filed Mar. 16, 1983, by the assignee, *Four Star Corp.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,269,885.—*John E. Mahn,* Cincinnati, Ohio. LAMINATED MATERIAL AND METHOD OF FORMING. Patent dated May 26, 1981. Disclaimer filed Apr. 8, 1983, by the inventor.

Hereby enters this disclaimer to all claims of said patent.

4,356,181.—*David W. Payling* and *John L. Suschitzky,* Loughborough, United Kingdom. ANTI-ALLERGIC MONO SALT OF 6-METHYLAMINO-4-OXO-10-PROPYL-4H-PYRANO [3,2-g]- QUINOLINE-2,8-DICARBOXYLIC ACID. Patent dated Oct. 26, 1982. Disclaimer filed Apr. 22, 1983, by the assignee, *Fisons Ltd.*

Hereby enters this disclaimer to claims 1-12 of said patent.

4,369,231.—*George C. West,* Concord, N.C. and *William F. Polfus,* Mercedes, Tex. METHOD OF APPLICATION AND PRODUCT THEREOF. Patent dated Jan. 18, 1983. Disclaimer filed Apr. 14, 1983, by the assignee, *Reeves Brothers, Inc.*

Hereby enters this disclaimer to claims 1–7 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
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California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
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Delaware	Newark: University of Delaware	(302) 738-2238
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Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

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*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,243,822 to 3,248,737, inclusive
Plant Patents ..... Numbers 2,616 to 2,627 inclusive

REEXAMINATIONS

JUNE 7, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,021,990 (91st)
VENEER ANCHOR AND DRY WALL CONSTRUCTION SYSTEM AND METHOD
Bernard J. Schwalberg, Brooklyn, N.Y., assignor to Hohmann Enterprises, Inc., Birmingham, Ala.
Reexamination Request No. 90/000,173, Mar. 11, 1982.
Reexamination Certificate for Patent No. 4,021,990, issued May 10, 1977, Ser. No. 652,867, Jan. 27, 1976.
U.S. Cl. 52/479 **Int. Cl.[3] E04B** *1/38*



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **8–18** and **27–34** is confirmed.

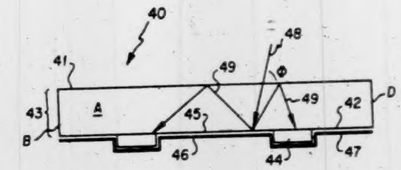
Claims **1** and **23–26** are determined to be patentable as amended.

Claims **2–7** and **19–22**, dependent on amended claims are determined to be patentable.

1. An improved veneer anchor [apparatus] *assembly* comprising

a veneer anchor apparatus, and
a wall-tie member,
said veneer anchor apparatus comprising
a substantially planar plate member having a longitudinal and a laterial dimension,
a longitudinally extending bar member having first and second spaced apart ends,
means for fixedly securing each of the ends of said bar member to said plate member in a manner whereby said bar member is disposed forwardly of said plate member in substantially parallel relationship therewith, [and]
said plate member and said bar member [form] *forming* a slot therebetween [.],
said wall-tie member having one end portion thereof positionally disposed in the slot between said substantially parallel plate and projecting bar members of said veneer anchor apparatus, and
said end portion of said wall-tie member being capable of longitudinal movement within said slot to enable adjustable positioning of said wall-tie member along the longitudinal extension of said slot.

B1 4,116,718 (92nd)
PHOTOVOLTAIC ARRAY INCLUDING LIGHT DIFFUSER
John W. Yerkes, Granda Hills; James E. Avery, Burbank, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.
Reexamination Request No. 90/000,152, Feb. 1, 1982.
Reexamination Certificate for Patent No. 4,116,718, issued Sep. 26, 1978, Ser. No. 884,861, Mar. 9, 1978.
U.S. Cl. 136/246 **Int. Cl.[3] H01L** *31/04*



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5, 11–13, 20–22** and **24** is confirmed.

Claims **6–8, 14, 18, 19** and **23** are determined to be patentable as amended.

Claims **9, 10,** and **15–17**, dependent on amended claims, are determined to be patentable.

1. A photovoltaic array comprising a light transmitting member having at least one pair of opposed essentially parallel sides, each of said sides being joined by an edge face, a plurality of photovoltaic cells adapted to receive radiation transmitted through said member carried on at least one of said sides, said cells having interstices therebetween, and a light diffusive member on said at least one side covering at least part of said interstices whereby at least a part of the light internally reflected by said diffusive member is caused to impinge on said photovoltaic cells, thereby increasing photovoltaic conversion efficiency.

B1 3,956,667 (93rd)
LUMINOUS DISCHARGE DISPLAY DEVICE
Werner Veith, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany.
Reexamination Request No. 90/000,237, Aug. 4, 1982.
Reexamination Certificate for Patent No. 3,956,667, issued May 11, 1976, Ser. No. 558,495, Mar. 14, 1975.
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1974, 2412869
U.S. Cl. 340/703 **Int. Cl.[3] H05B** *41/00*

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

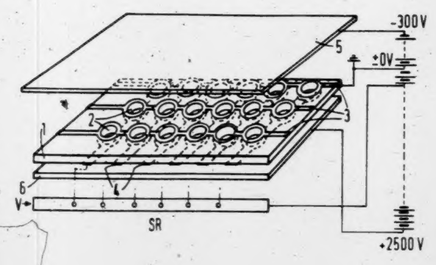
The patentability of claim **18** is confirmed.

Claims **11–15** having been finally determined to be unpatentable are cancelled.

Claims **1** and **19** are determined to be patentable as amended.

Claims **2–10, 16** and **17,** dependent on amended claims, are determined to be patentable.

1. A luminous discharge device comprising: a gas-filled gas tight envelope; a cathode positioned at one side of the envelope; a luminescent screen electrode positioned at an opposite side of the envelope; an insulating plate being regularly perforated and being spaced intermediate of said cathode and said screen electrode **[**,**]**; *said cathode comprising a plate-like surface facing the insulating plate;* a series of rows of anodes being disposed on said plate in alignment with said perforations **[**,**]**; a series of columns of control electrodes being disposed on the other side of said plate in alignment with said perforations and being at a substantial angle to said rows of anodes; the anodes each being spaced a distance from said cathode sufficient to induce a normal gas discharge therebetween, and the control electrodes each having a distance from said screen electrode too short to allow a normal gas discharge there between**[**,**]**; means for applying a relatively low voltage between said cathode and said anodes on the insulating plate to develop a gas discharge therebetween**[**,**]**; means for developing on the other side of the insulating plate**[**,**]** a relatively high voltage between said control-electrodes and said luminescent screen electrode, said relatively high voltage being lower than the value required to produce a gas discharge between said control electrode of the insulating plate and said screen electrode**[**,**]**; means for selectively *igniting* **[**triggering**]** a gas discharge **[**adjacent**]** *between said cathode and one of* said rows of anodes *and for skipping*



*said gas discharge from said cathode row-to-row***[**,**]**; and means for selectively applying a positive potential to said control electrode columns for forming an image on said luminescent screen by extraction of electrons through said perforations in said insulating plate.

REISSUES

JUNE 7, 1983

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,264
PLASTIC COIN HOLDER

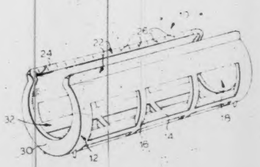
Gordon W. Holmes, Mississauga, Canada, assignor to Professional Packaging Limited, Mississauga, Canada

Original No. 4,095,608, dated Jun. 20, 1978, Ser. No. 733,916, Oct. 19, 1976. Application for reissue Jun. 19, 1980, Ser. No. 161,122

Claims priority, application United Kingdom, Oct. 22, 1975, 43455/75

Int. Cl.[3] **G07D** *9/00*

U.S. Cl. 133—1 A **9 Claims**



7. **[**The holder of claim 1 wherein**]** *An integrally-formed holder for disc-like objects constructed of flexible polymeric material and comprising:*

an elongate body having a C-shaped cross-section and a radius of curvature substantially equal to to the radius of said disc-like objects, and

a continuous end wall integral with said body at each end thereof, said end walls **[**are**]** *being* generally crescent-shaped and **[**have**]** *having two arms of equal curvilinear length and connected through an integral join, each said end wall arm having* a lateral dimension which *continuously* decreases from a maximum value at **[**a location remote from said curvilinear extremities of said body**]** *said integral join* to a minimum value at **[**said**]** *the* curvilinear extremities *of said body,*

said end walls thereby defining a C-shaped opening in each end of said body of smaller radius of curvature than the radius of curvature of said body, said C-shaped end openings encompassing the axis of said body within their periphery.

Re. 31,265
METHOD AND APPARATUS FOR MAKING SUBSEA PIPE CONNECTIONS

Albert R. Sinclair; Arthur C. Daughtry, both of Houston, Tex.; Thomas W. Childers, Mandeville, and Joseph A. Burkhardt, New Orleans, both of La., assignors to Exxon Production Research Co., Houston, Tex.

Original No. 4,019,334, dated Apr. 26, 1977, Ser. No. 667,758, Mar. 17, 1976. Application for reissue Apr. 26, 1979, Ser. No. 33,650

Int. Cl.[3] **F16L** *1/04*

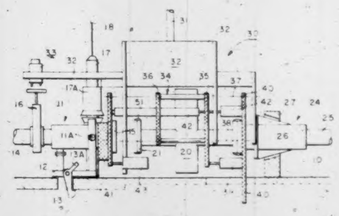
U.S. Cl. 405—169 **14 Claims**

11. A method for use in connecting and disconnecting a spool piece to and from, respectively, spaced-apart first and second subsea pipes comprising:

lowering a remotely operable pipe connecting-disconnecting tool from the water's surface to said underwater pipes, said tool being capable of latching to and unlatching from two spaced-apart clamp assemblies, one at each end of said spool piece; one of said clamp assemblies being capable of clamping one end of said spool piece to said first subsea pipe and the other of said clamp assemblies being capable of clamping the other end of said spool piece to said second subsea pipe;

guiding said tool onto said first and second subsea pipes, said first subsea pipe being clamped to said one end of said spool piece by means of said one of said clamp assemblies;

moving said other end of said spool piece into engagement with said second subsea pipe by means of said tool; and



operating said other clamp assembly by means of said tool to clamp said other end of said engaged spool piece and said second subsea pipe together.

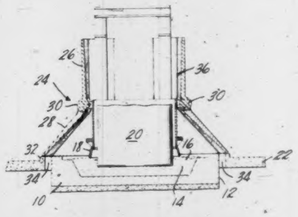
Re. 31,266
APPARATUS FOR GAS COLLECTION IN ALUMINUM SMELTING FURNACES

Arne Engesland, Mosjoen, Norway, assignor to Lista Og Mosjoen Aluminiumverk, Elkem Aluminum A/S & Co., Oslo, Norway

Original No. 4,033,846, dated Jul. 5, 1977, Ser. No. 613,900, Sep. 16, 1975. Application for reissue Jun. 28, 1979, Ser. No. 53,530

Int. Cl.[3] **C25C** *3/08, 3/22*

U.S. Cl. 204—247 **4 Claims**



1. In an electric smelting furnace for the melt electrolytic production of aluminum including a furnace **[**post**]** *pot* having an **[**annular**]** outer side wall and **[**generally cylindrical**]** anode section disposed above the furnace pot and being of lesser **[**diameter**]** *dimensions* than the **[**diameter**]** *dimensions* of the furnace pot the improvement comprising **[**an annular**]** *a* gas collecting hood, said gas collecting hood comprising upper and lower portions each of which comprises a plurality of sections and each plurality of sections in combination forming **[**an annular**]** *a closed* shape and each said section of each plurality of sections being movable with respect to any other section independently of the other to permit access to said furnace pot, each of said sections in the lower portion having a slope upwardly towards the anode section and the lower end of the lower portion being of greater **[**diameter**]** *dimensions* than the **[**diameter**]** *dimensions* of the outer wall of the furnace pot and being spaced **[**radially**]** outward from the outer wall of the furnace pot to permit entry of air, the upper portion being disposed at least in part **[**radially**]** outward from the

anode section and being spaced along its length from the anode section to permit upward egress of gases evolved from the smelting process.

Re. 31,267

METHOD FOR THE CONTAINMENT OF OILS AND OIL SLUDGES

Allen C. Edgar, Lowell, and George N. Smith, Ocala, both of Fla., assignors to Mid-Florida Mining Company, Lowell, Fla.

Original No. 4,144,162, dated Mar. 13, 1979, Ser. No. 829,913, Sep. 1, 1977. Application for reissue Mar. 12, 1981, Ser. No. 243,067

Int. Cl.[3] **C10G** *17/00*

U.S. Cl. 208—13 **7 Claims**

1. A method for the solidification and containment of oil waste to permit environmentally safe storage disposal comprising the steps of:

homogenously mixing the oil waste with particulate fuller's earth having a particle size in the −6 to 0 mesh range and a free moisture content of 2 to 6% in a weight ratio of at least 40:60 fuller's earth to oil waste to form an intimate mixture of oil waste and fuller's earth, *and*

allowing the intimate mixture to harden to a paste-like consistency. [and conveying the mixture to a storage disposal sight.]

7. A method according to claim 1, 2, 3, 4, 5 or 6 further comprising the step of conveying the mixture to a storage disposal site.

Re. 31,268

METHOD OF RECOVERING IMMUNOGLOBULIN USING A POLYOL AND AN ALKANOIC ACID

Jorgen F. Hansen, Rodovre, Denmark, assignor to Nordisk Insulinlaboratorium, Gentofte, Denmark

Original No. 4,164,495, dated Aug. 14, 1979, Ser. No. 914,456, Jun. 12, 1978. Continuation of Ser. No. 782,255, Mar. 28, 1977, abandoned. Application for reissue Aug. 13, 1981, Ser. No. 292,386

Claims priority, application Denmark, Apr. 6, 1976, 1628/76

Int. Cl.[3] **A61K** *37/04, 37/06;* **C07G** *7/00*

U.S. Cl. 260—112 B **5 Claims**

1. A method of recovering purified immunoglobulin suitable for intravenous administration wherein blood plasma, serum or a fraction thereof is subjected to a fractionated precipitation using a combination of polycondensed polyol and a mono or polyalkanoic acid having from [4 to 12] *6 to 9* carbon atoms as a precipitant, the fractionating process being performed at approximately room temperature.

Re. 31,269

HEAT-SEALABLE ANTISTATIC POLYPROPYLENE FILMS

William J. Andrews, Taunton; David J. C. Espley, and William J. M. Philpott, both of Bridgewater, all of England, assignors to British Cellophane Limited, Somerset, England

Original No. 4,294,882, dated Oct. 13, 1981, Ser. No. 69,089, Aug. 23, 1979. Application for reissue May 11, 1982, Ser. No. 377,190

Claims priority, application United Kingdom, Sep. 19, 1978, 37295/78

Int. Cl.[3] **B32B** *27/08;* **B29C** *19/00*

U.S. Cl. 428—516 **13 Claims**

1. A method for the manufacture of an oriented heat-sealable antistatic polypropylene film comprising applying to one or both sides of a base polypropylene film *which contains from 0.05 to 5.0% weight of a slip agent* a layer of a heat-sealable olefinic polymer capable of forming a heat-seal below 140° C., the olefinic polymer layer containing between 0.2 and 10% by weight of an [antistatic agent comprising an]anionic hydrocarbyl sulphonate, and stretching the combination in one or more directions under stretch orientatable conditions.

Re. 31,270

RANDOM ELASTOMERIC COPOLYESTERS

William C. T. Tung, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Original No. 4,254,001, dated Mar. 3, 1981, Ser. No. 116,703, Jan. 30, 1980. Continuation-in-part of Ser. No. 40,016, May 17, 1979, abandoned. Application for reissue Nov. 17, 1981, Ser. No. 322,154

Int. Cl.[3] **C08G** *63/48, 63/18, 63/54*

U.S. Cl. 528—295.3 **10 Claims**

1. As compositions of matter, elastomeric, random, linear copolyesters having intrinsic viscosities ranging from about 0.6 to about 1.0 as determined in a 60/40 by volume mixed solvent system of phenol and tetrachloroethane at 30° C., and melting points ranging from about 180° C. to about 220° C., said copolyester comprising [the polymeric reaction product of] a mixture of [reactants] *units in the polymer chain* consisting of *the polymeric reaction product from*

(a) terephthalic acid or a lower C_1-C_4 dialkyl ester thereof,

(b) dimer acid,

(c) a poly(tetramethylene oxide)glycol having a molecular weight ranging from about 1000 to about 2000 and

(d) 1,4-butane diol

in which mixture the amount of terephthalic acid or lower C_1-C_4 dialkyl ester thereof ranges from about 99.9 to about 85.0 mole percent and the amount of dimer acid ranges from about 0.1 to about 15.0 mole percent, said percentages being based on the total number of moles of said acid constituents or reactive equivalents thereof in said mixture and in which mixture the amount of poly(tetramethylene oxide)glycol ranges from about 2.0 to 12.0 mole percent and the amount of 1,4-butane diol ranges from about 98.0 to about 88.0 mole percent, plus a molar excess of said 1,4-butane diol ranging from about 5.0 to about 120 percent, said mole percentages being based on the total number of moles of said glycols, less the molar excess of the 1,4-butane diol, in said mixture.

Re. 31,271

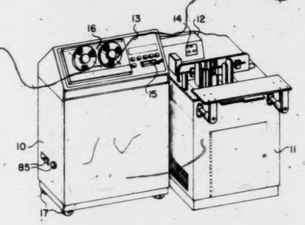
INK JET PRINTING APPARATUS

Dennis E. Bok; Patrick E. Bridge, both of Dayton; Robert W. Coulter, Xenia; George W. Denlinger, Springboro; Clifford S. Fernalld, Jr., Xenia; Charlie H. Hill, Jr., Dayton; David A. Huliba, Kellering; James R. Meckstroth, and Robert J. Scranton, both of Centerville, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Original No. 4,283,731, dated Aug. 11, 1981, Ser. No. 142,787, Apr. 22, 1980. Application for reissue Jan. 13, 1982, Ser. No. 339,255

Int. Cl.[3] **G01D** *15/18, 9/00*

U.S. Cl. 346—75 **22 Claims**



1. Ink jet printing apparatus for printing documents being transported along an independently operated conveyor comprising:

a control console;

a printing arm movably mounted on said control console for movement between a storage position which is clear of said conveyor and a printing position above said conveyor;

tachometer means supported by said printing arm for sensing the speed of movement of said documents and generating a corresponding tachometer signal;

printing control means mounted within said control console for receiving said tachometer signals and generating printing control signals in synchronism therewith;

a print head carriage movably supported by said printing arm;

print head positioning means for adjusting the vertical position of said carriage relative to said printing arm; and

an ink jet printing head mounted on said carriage; said ink jet printing head comprising means for generating a plurality of printing jets arranged in at least one line extending in a sideward direction generally transverse to the direction of document travel along said conveyor, and means for controlling the printing operation of said printing jets in response to said printing control signals.

PLANT PATENTS

GRANTED JUNE 7, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing

5,058

MINIATURE ROSE PLANT — POULFI VARIETY

Mogens Olesen, and Pernille Olesen, both of Kvistgaard, Denmark, assignors to The Conard-Pyle Company, West Grove, Pa.

Filed Nov. 12, 1981, Ser. No. 320,672
Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the Miniature Class, substantially as herein shown and described, characterized particularly by (a) a micromini growth habit which forms a low and compact plant, (b) the exhibition of more plant vigor than an average rose plant of the Miniature Class, (c) the formation of buds which are relatively long in configuration, and (d) the abundant formation of clusters of semi-double bright fluorescent pink flowers.

5,059

DISTINCT VARIETY OF GERANIUM NAMED GLACIER CARMEN

Wilhelm Elsner, Dresden, German Democratic Rep., assignor to Oglevee Associates, Inc., Connellsville, Pa.

Filed Nov. 10, 1981, Ser. No. 320,001
Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of geranium plant substantially as herein shown and described.

PATENTS

GRANTED JUN. 7, 1983

ERRATA

For CLASS	See PATENT NO.
604–220	4,386,606
604–037	4,386,607
604–298	4,386,608
494–081	4,386,730
445–003	4,386,938
419–008	4,386,959
419–009	4,386,960
436–541	4,387,086
524–494	4,387,188
525–437	4,387,213
564–488	4,387,249
377–078	4,387,294
332–007	4,387,343
382–056	4,387,363

PATENTS

GRANTED JUNE 7, 1983

GENERAL AND MECHANICAL

4,386,437

HEADWEAR HAVING INTERIOR POCKET

Donald H. Fosher, 7266 Creveling Dr., University City, Mo. 63130

Filed Sep. 17, 1981, Ser. No. 302,969
Int. Cl.³ A42B 1/02; A61F 9/00
U.S. Cl. 2—199 **12 Claims**



1. Headwear comprising a crown shaped to provide a space within the crown between the head of a wearer and the inside surface of the front of the crown, and a web on the inside of the crown at the front of the crown extending upward within said space, the web being attached to the inside of the crown to form an internal pocket, the pocket having an opening at its upper end providing access from within the crown to the interior of the pocket, said web being of flexible material for enabling inward expansion of the pocket to accommodate articles carried within the pocket.

4,386,438

GARMENTS HAVING DETACHABLE LINERS THEREFOR

Richard A. Evin, 27 Haltham Rd., Hampstead, Que., Canada

Filed Jul. 2, 1981, Ser. No. 279,652
Int. Cl.³ A47D 27/22
U.S. Cl. 2—272 **10 Claims**



1. A garment including an outer shell having two opposed edges along which said garment is openable and closable;

first separable fastening means having complementary portions thereof secured adjacent each said edge for opening and closing said garment;

a gusset strip including fastening portions for mating with said complementary portions for detachably securing said gusset strip between said opposed edges for expanding the girth of said outer shells, and

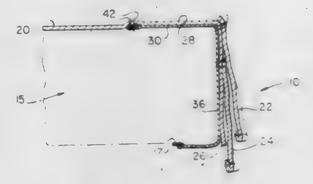
a liner for said outer shell, said liner having a first portion secured to said gusset strip and second separable fastening means having complementary portions thereof secured adjacent a second portion of said liner and said shell.

4,386,439

BEDSPREAD

Yolanda C. Roccograndi, and Daniel M. Roccograndi, both of 29 Fordham Rd., Laflin, Pa. 18702

Filed Aug. 18, 1981, Ser. No. 294,373
Int. Cl.³ A47G 9/02
U.S. Cl. 5—498 **8 Claims**



1. A bedspread assembly for quickly fitting over a mattress and adapted to be held by a single elastic means comprising:

a rectangular fitted lining having elastic strip material sewn to its lower edge which constitutes the single elastic means adapting the encasing of the mattress;

a bedspread sewn along a rectangular seam to said fitted lining within a spaced marginal portion inward from the mattress;

the seam spacing being substantially the same at the bottom of said mattress and at the two sides of said mattress whereby the assembly of fitted lining and bedspread is adapted to cover one or more pillows at the top of the bedspread and to provide the appearance of a completely made bed in which fresh sheets and blanket are present;

a double side panel including a longer panel and a short panel sewn to the top of said bedspread which extends around the bottom of the bed and extends around the two sides of said bed;

the material of said bedspread and said double side panel being heavier than the material of said lining;

an added side panel of lighter material having the same weight as said liner attached beneath said double side panel and

said rectangular fitted lining being cut out within said rectangular seam and being sewn along a folded cut out line to fit the lining and bedspread closer to said mattress.

4,386,440

PIPE CUTTER FOR USE ON A PIPE THREAD CUTTING MACHINE

Taketomo Ohyama, Mie, Japan, assignor to MCC Corporation, Mie, Japan

Filed Oct. 2, 1980, Ser. No. 193,105
Claims priority, application Japan, Oct. 20, 1979, 54-135705; Oct. 20, 1979, 54-145575[U]; Oct. 20, 1979, 54-145576[U]
Int. Cl.³ B23G 1/22
U.S. Cl. 10—87 **9 Claims**

1. A pipe cutter apparatus for use on a pipe thread cutting machine, said apparatus comprising:

a frame member having first and second end portions and a guide rail extending along an inner edge of said frame member between said first and second end portions in a direction along an axis of said frame member;

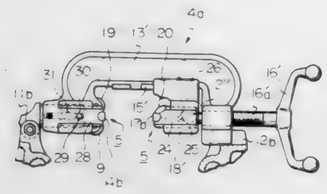
a threaded shaft extending through said first end portion of said frame member in threaded engagement therewith in a direction parallel to said axis, said shaft having first and second ends, and an operation handle fixed to said first end;

a movable member connected to said second end of said threaded shaft and engaging said guide rail for movement

therealong, said movable member having an inner end portion facing said second end portion of said frame member;

a cutter mechanism provided between said inner end portion of said movable member and said second end portion of said frame member, said cutter mechanism including a rotary cutter blade for cutting a pipe;

a chuck mechanism including at least a chuck pawl having a tip and mounted on said movable member for movement



relative thereto to adjust the position of said tip with respect to the position of a cutting edge of said rotary cutting blade; and

connector means connected to said second end portion of said frame member from mounting said frame member for pivotal movement on a pipe thread cutting machine and for adjusting the position of said frame member with respect to the pipe thread cutting machine in the direction of said axis.

4,386,441

FOLDING PONTOON ARRANGEMENT

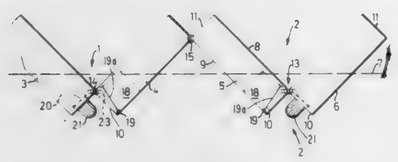
Frans G. Lundholm, Storgatan 96, S-90244 Umea, Sweden

Filed Feb. 11, 1981, Ser. No. 233,468

Claims priority, application Sweden, Feb. 19, 1980, 8001308

Int. Cl.³ E01D *15/14*

U.S. Cl. 14—27 **9 Claims**



1. A folding pontoon arrangement comprising at least one pair of interconnecting pontoons, each pontoon having an upper side forming a carrying surface, an underside intended to be submerged in the water, end walls, one end of each pontoon of which mutually opposes the other and side walls and hinge line pivot means adjacent the upper sides and mutually opposed end walls pivotally interconnecting said pontoons for swinging about said means, one of said pontoons defining a chamber having a side which includes one of said mutually opposed end walls, said chamber having a closable opening therein adjacent said underside to permit and prevent entry and exiting of water to and from said chamber.

4,386,442

SPEED FLOOR BUFFER BEARING CONSTRUCTION

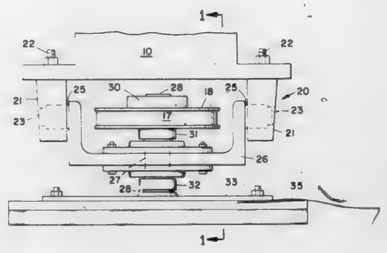
Burke Fallen, 1030 Rockridge Ct., Pittsburg, Calif. 94565

Filed Jan. 26, 1982, Ser. No. 342,843

Int. Cl.³ A47L *11/14*

U.S. Cl. 15—98 **1 Claim**

1. A floor buffing machine comprising a chassis; a pair of floor-engaging wheels mounted on the chassis on a common axis of rotation for movement over the floor to be buffed; a motor drive carried by said chassis; a buffing pad support member having a pair of spaced apart, oppositely extending first shafts journaled on said chassis along a common, normally substantially horizontal axis parallel to said wheel axis and offset therefrom for movement toward and away from the floor upon pivoting said chassis around said wheel axis; a drive plate having a normal horizontal planar position in use and adapted for support of a disc-shaped buffing pad at the underside thereof; a third shaft secured centrally to said plate and extending substantially perpendicular thereto from the upper



side thereof, said third shaft being journaled by a first bearing above said member and a second bearing beneath said member along an axis extending between said first shafts and intersecting and perpendicular to said common axis thereof; a belt sheave mounted on said third shaft above said first bearing in the plane of said common axis and adapted for belt drive connection to said motor drive, said belt sheave being spaced horizontally at least the thickness of a belt from said member and vertically at least the thickness of a belt from said chassis.

4,386,443

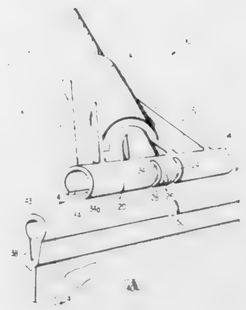
FLOOR SQUEEGEE STRUCTURE

Matthew D. Kubick, Poland, N.Y., assignor to Perfex Corporation, Herkimer, N.Y.

Filed Feb. 17, 1981, Ser. No. 234,605

Int. Cl.³ A47L *1/08*

U.S. Cl. 15—245 **8 Claims**



1. In a squeegee of the type having connector means for holding a blade, wherein the blade is held in an elongate cavity in the connector means, the improvement comprising:

first locking means resiliently attached to said connector means for cooperation with second locking means on said blade for preventing said blade from moving along said cavity in one position of said first locking means, and for allowing said blade to move along said cavity in another position of said first locking means.

4,386,444

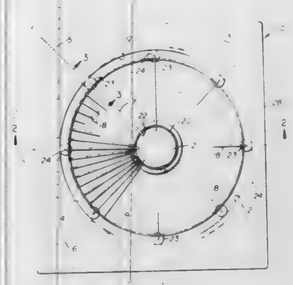
BUFFING MACHINE PAD CLEANING DEVICE

Richard E. Whittaker, 302 S. Croton Ave., New Castle, Pa. 16103

Filed Nov. 19, 1981, Ser. No. 322,958

Int. Cl.³ A46B *17/00*

U.S. Cl. 15—257 R **6 Claims**



1. A buffing machine pad cleaning device comprising a body member having a large circular flat bottom receptacle area formed therein, a central portion of the flat bottom receptacle area being raised, the area of the raised central portion being of a diameter approximately one-fifth of the diameter of the circular flat bottom receptacle area, a plurality of circumferentially spaced raised supports on said circular flat bottom receptacle area adjacent the peripheral edge thereof and a wire grille comprised of outer and inner circular wire frames and a plurality of circumferentially spaced radially positioned wire bars affixed thereto, the ends of some of said bars being downturned and engaged in openings in said central portion and raised supports respectively so as to position said wire grille substantially above said flat bottomed receptacle area, an upwardly extending wall positioned about three-quarters of said circular flat bottom receptacle area, said wall having a substantially flat outturned flange extending into a downturned peripheral edge flange.

4,386,445

DYNAMIC VACUUM CLEANING DEVICE

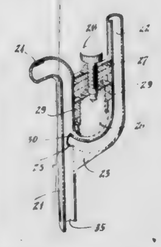
Alain Rudolf, 12 rue Vivienne, 75002 Paris, France

Filed May 27, 1981, Ser. No. 267,694

Claims priority, application France, May 27, 1980, 80 11668

Int. Cl.³ A47L *5/18, 5/20*

U.S. Cl. 15—409 **8 Claims**



1. A vacuum cleaning device comprising:

a first tube having an input and an output end;

means for supplying a flow of gas to the input end of said first tube;

a second tube having a suction end and an exhaust end, said second tube being jointed at an intermediate portion thereof to the output end of said first tube;

means for providing a venturi effect at the junction of said first and second tubes, said means positioned to direct a flow of gas exiting from said first tube toward the exhaust end of said second tube,

said venturi effect producing a vacuum at the suction end of said second tube when gas is flowing through said first tube and exiting from said exhaust end, and

means for adjusting the orientation of gas exiting from said first tube to change the magnitude of the vacuum produced at said suction end.

4,386,446
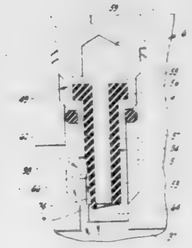
DOOR CLOSER

Richard L. Zunkel, Princeton, and George S. Nimee, Spring Valley, both of Ill., assignors to Schlage Lock Company, San Francisco, Calif.

Filed Mar. 3, 1981, Ser. No. 240,076

Int. Cl.³ E05F *3/00*

U.S. Cl. 16—58 **2 Claims**



1. A door closer for use with a door frame and a door panel movable through a defined path relative to said frame comprising a cylinder body having a chamber and a cylinder, a head closing one end of said cylinder, a piston reciprocable in said cylinder, means interconnecting said piston and said panel for moving said piston in said cylinder toward and away from said head in accordance with the movement of said panel relative to said door frame, a spring for urging said piston toward said head, a duct for allowing fluid to bypass said piston and flow from said cylinder into said chamber, a check valve in said duct, means in said body defining a passage shunting said piston in all positions thereof and extending between said cylinder and said chamber, a throttle valve in said passage near said head, a bore in said body extending between and open to said passage and open to a portion of said cylinder swept by said piston, means in said body defining a bypass channel open to said passage and to said cylinder, a tube in said bypass channel and open at one end to said cylinder, means closing the other end of said tube, a stem disposed concentrically within said tube, means defining an aperture in a wall of said tube affording access between said bypass channel and the interior of said tube, and a sleeve in said tube and surrounding said stem and adapted when unstressed to overlie said aperture and adapted under pressure in said aperture to move radially and axially of said stem to afford communication between said aperture and said cylinder.

4,386,447

SUSPENSION DEVICE FOR A SLIDING WALL PANEL OF A SLIDING PARTITION

Heinz G. Baus, Wartbodenstrasse 35, CH-3626 Huenibach-Thun, Switzerland

Continuation-in-part of Ser. No. 132,329, Mar. 20, 1980, abandoned. This application Sep. 3, 1980, Ser. No. 183,737

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1979, 2911875

Int. Cl.³ E05D *13/02*

U.S. Cl. 16—105 **22 Claims**

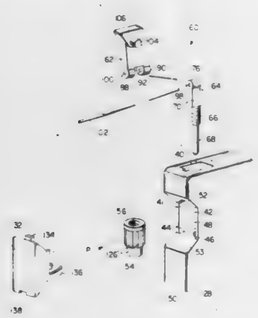
1. A suspension device for a sliding wall panel of a sliding

partition, in particular for humid rooms, the wall panel having a frame with an upper edge, comprising:

at least one roller, capable of rolling on a guide rail;

at least one chamber in the upper edge of the frame, the chamber being open upwardly through a first chamber opening and having a second chamber opening at the bottom thereof which is formed as a downwardly extending blind hole, said chamber further having a lateral window in one side thereof which opens outwardly in a direction perpendicular to the directions of said first and second openings;

a rotatable adjusting cylinder housed in said chamber, said adjusting cylinder having a vertically oriented central bore with internal threads at least at an upper end portion of the bore and being accessible from outside said panel through said lateral window; and



a supporting element on which said roller is rotatably mounted, the supporting element having a downwardly extending pin-like projection, wherein the projection has external threads engaging the internal threads of the adjusting cylinder bore and wherein the projection extends through said first opening, through the adjusting cylinder in said chamber, and through said second opening into the blind hole,

at least a portion of said supporting element and at least one of said first and second guide openings having respective guide regions of polygonal cross-section which slidably engage one another to prevent rotation of said supporting element when said adjusting cylinder is rotated;

whereby the supporting element and roller mounted thereon are vertically adjustable with respect to the wall panel by rotating the adjusting cylinder.

4,386,448

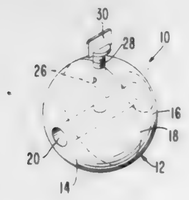
EATING AND ORAL HYGIENE AID

Irving Kohn, P.O. Box 1112, Vallejo, Calif. 94590

Continuation-in-part of Ser. No. 102,272, Dec. 10, 1979, abandoned. This application Mar. 30, 1981, Ser. No. 249,049

Int. Cl.³ A47J *45/00*; B25G *1/00*

U.S. Cl. 16—121 **8 Claims**



1. An eating and oral hygiene device for holding an instrument having a handle comprising: a ball-shaped body formed from a pair of members and having a first passage extending therethrough, said first passage having a pair of open ends adapted to receive the handle of said instrument, said body having a second passage extending thereinto at the junction of said members from the outer periphery thereof, the second passage extending transversely of the first passage, the body having a threaded surface in the second passage; and a screw threadably mounted in the second passage for movement into the first passage against the handle of the instrument therein, whereby the screw will releasably secure the handle of the instrument to the body.

4,386,449

ADJUSTABLE FURNITURE HINGE

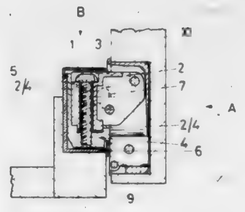
Klaus Brüstle, Fellentorstr. 23, Lauterach, Austria (A-6923), and Erich Röck, Küferstr. 7, Höchst, Austria (A-6973)

Filed Jun. 23, 1981, Ser. No. 276,633

Claims priority, application Austria, Jul. 4, 1980, 3491/80

Int. Cl.³ D05B *15/16*

U.S. Cl. 16—238 **4 Claims**



1. A hinge for adjustably connecting a door with a member of a door frame, said hinge comprising:

a hinge casing adapted to be connected to a door;

a mounting housing adapted to be fixedly inserted into a recess in a door frame member, said mounting housing having therein grooves;

an intermediate member having lateral flanges, said intermediate member being insertable into said mounting housing in the direction of the breadth of the door joint with said lateral flanges extending into said grooves;

clamping screw means, provided in said mounting housing in the area of one of said grooves, for pressing against one of said lateral flanges, thereby clamping said intermediate member in a fixed position in said mounting housing;

a hinge arm connected to said hinge casing by means of hinge links;

fastening screw means, threaded into said intermediate member, for connecting said hinge arm to said intermediate member; and

means for enabling adjustment of the position of said hinge arm with respect to said intermediate member in the direction of the height of the door.

4,386,450

POSITIONING HINGE HAVING NARROW TERMINAL AREAS IN MATCHING CURVILINEAR SLOTS

Leonard Krauss, 4204 Melisa Ct., Carmichael, Calif. 95608

Filed Aug. 3, 1981, Ser. No. 289,248

Int. Cl.³ E05D *15/06*

U.S. Cl. 16—361 **1 Claim**

1. A hinge arrangement comprising: a stationary bracket adapted to be horizontally mounted by attachment means to a fixed object or surface, said bracket having two opposed end pieces, said end pieces having matching curvilinear slots, a movable bracket attached to the stationary bracket by means of extensions, said extensions having only flat surfaces, the flat extensions are contained within the matching curvilinear slots, said slots comprising opposite support surfaces, said extensions contacting the support surfaces at points of bearing, during the movement of the movable bracket along the slots the points of bearing migrate along the support surfaces, each of the matching curvilinear slots having an opening sufficiently wide to accommodate movement of the flat extensions of the movable bracket along the curve of the slots, said opening being less than the width of the flat extensions, thus pivotal movement of the movable bracket is limited as the movable bracket migrates



along the curve of the slots, said slots containing at least two substantially horizontal terminal areas, wherein at the terminal areas portions of the slots are narrowed to a width slightly greater than the thickness of the flat extensions, the weight of the movable bracket when the movable bracket is located at the terminal areas causes the flat extensions to pivot slightly and become wedged in the terminal areas to maintain the movable bracket in at least two predetermined oppositely facing substantially horizontal positions relative to the stationary bracket.

4,386,451

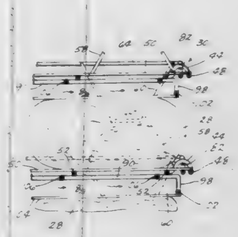
METHOD AND MEANS OF COMPRESSING MEAT PRODUCTS

Marvin R. Phillips, Knoxville, Tenn., and Erwin L. Johnston, Des Moines, Iowa, assignors to Boldt Industries, Inc., Des Moines, Iowa

Filed Aug. 28, 1980, Ser. No. 182,102

Int. Cl.³ A22C *7/00, 15/00*

U.S. Cl. 17—1 R **5 Claims**



1. In combination,

a wheeled cart means,

a plurality of baskets removably positioned on said cart means one upon the other in a semi-nesting position wherein the lower ends of the baskets are at least partially received by the upper ends of baskets positioned therebelow,

each of said baskets having an open upper end and substantially an open bottom and sides,

each of said baskets adapted to receive meat products therein which have heights greater than the height of the basket,

each of said baskets including support means on said sides of said basket adapted to receive and support the upper adjacent basket for limiting the downward movement of the basket thereabove so that the meat product will not be compressed beyond a predetermined thickness,

and means on said cart means for mechanically compressing the material in at least the uppermost of said baskets to said predetermined thickness.

4,386,452

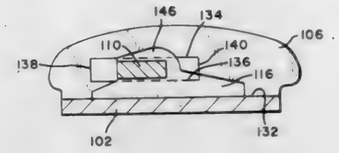
ADJUSTABLE SELF-LOCKING TONGUE PLATE FOR SEAT BELTS

Robert L. Stephenson, Utica, Mich., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 7, 1980, Ser. No. 166,503

Int. Cl.³ A44B *11/10*

U.S. Cl. 24—196 **10 Claims**



1. An adjustable self-locking tongue plate useful in a seat belt buckle assembly, said tongue plate comprising:

a base portion having an opening therein adapted to receive seat belt webbing therethrough;

laterally spaced side flanges extending upwardly from said base portion and surrounding said opening;

a slotted opening provided in each of said side flanges, said slotted openings being defined by a pair of relatively long upper and lower walls and a pair of shorter side walls;

a lock bar slidably mounted in said slotted openings and extending across said opening in said base, said lock bar adapted to receive seat belt webbing thereabout; and

spacing means operatively connected to said lock bar and normally effective to space said lock bar from said lower walls of said slotted openings and permitting said lock bar to freely slide within said slotted openings without resting on said lower walls.

4,386,453

METHOD FOR MANUFACTURING VARIABLE CAPACITANCE PRESSURE TRANSDUCERS

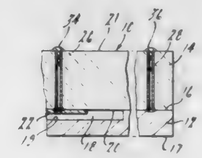
Joseph M. Giachino, Farmington Hills; Russell J. Haeberle, Canton, and Joseph W. Crow, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 160,403, Jun. 17, 1980, which is a division of Ser. No. 72,506, Sep. 4, 1979, Pat. No. 4,261,086. This application Oct. 20, 1981, Ser. No. 313,107

The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.

Int. Cl.³ H01G *5/16*

U.S. Cl. 29—25.41 **8 Claims**



1. A method for manufacturing a variable capacitance pressure transducer, comprising the steps of:

(a) from at least one area on a surface of a wafer of semicon-

ductor material, removing a portion of the semiconductor material in the area to form at least one recess in the surface of the semiconductor material;

(b) doping the semiconductor material, at least in the region of the recess, to enhance its electrical conductivity in such region;

(c) forming a path of electrically conductive material connecting two spaced surfaces of a dielectric member through a hole extending between said two spaced surfaces; and

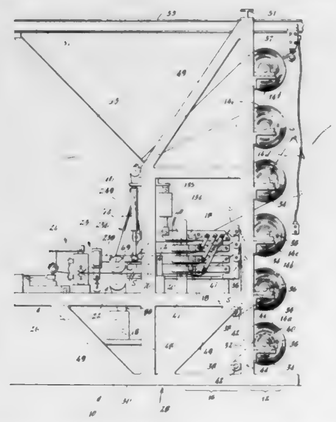
(d) anodically bonding the surface of said wafer containing said recess to one surface of said dielectric member to form a bonding area which provides an hermetic seal around the recess, said bonding area being such that the hole in the dielectric member is spaced from said recess in the semiconductor material and the path of electrically conductive material provides an electrical connection through said hole to the semiconductor material in said banding area.

4,386,454

APPARATUS FOR ASSEMBLING A SHADE DEVICE

Thomas P. Hopper, Blue Hills Rd., Durham, Conn. 06422

Filed Jul. 21, 1980, Ser. No. 170,789
Int. Cl.³ B65H *37/00, 37/04*
U.S. Cl. 29—33 K **52 Claims**



1. Apparatus for assembling a shade device for insulating a building area such as a window or wall against heat transmission and that includes a roller, a plurality of shade sheets attached to said roller to be retracted thereon and detracted therefrom, and a plurality of spacer devices mounted with one sheet of each pair of adjacent sheets to space them apart when detracted from said roller; said apparatus comprising:

means for placing said sheets generally in mutually parallel spaced relation;

means for feeding spacer devices into close proximity to each of said sheets on which spacer devices are to be mounted;

means for smoothing and laterally stretching each of said sheets on which spacer devices are to be mounted;

means for attaching each said spacer device to its respective closely proximate sheet after said closely proximate sheet has been smoothed and laterally stretched by said smoothing and stretching means;

means for simultaneously advancing said sheets assembled with said spacer devices to said roller;

means for securing a leading lateral edge of each of said sheets to said roller; and

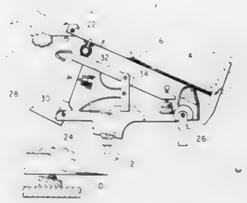
means for rotating said roller to retract said sheets and said spacer devices thereon.

4,386,455

BEARINGS FOR PIANO ACTION MECHANISM EMPLOYING BUSHING CLOTH AND METHOD OF FABRICATING SAME

Walter G. Drasche, Long Island City, N.Y., assignor to CBS, New York, N.Y.

Filed Jun. 15, 1981, Ser. No. 274,015
Int. Cl.³ B21D *53/10*
U.S. Cl. 29—149.5 S **6 Claims**



1. A method of forming a bushing for a piano action assembly which comprises a bifurcated piano action member having parallel fork arms provided with mutually facing bushing holes and defining a hollow space therebetween, and a rotatable member having a tongue portion placed in said hollow space and provided with a shaft pin passing through said bushing holes of said fork arms, said method comprising the steps of:

(1) providing a strip of bearing material of a width somewhat less than the circumference of the bushing holes in said fork arms;

(2) pulling said strip of bearing material into said bushing holes and causing the strip to become circumferential in the bushing holes;

(3) adhesively securing the circumferentially positioned strip to the wall surface of the bushing holes;

(4) severing said bearing material adjacent the surfaces of said fork arms so as to retain only cylinders of bearing material in the bushing holes;

(5) inserting a pin of approximately the same diameter as said shaft pin into the bushing holes containing the cylinders of bearing material;

(6) with the pin inserted, dipping the fork arms in water to a depth sufficient to wet the bearing material, and thereafter drying the bearing material;

(7) with the pin still in place, dipping the fork arms in a solution of resin bonded fluorocarbon solids to a depth sufficient to wet the bearing material and for a time sufficient to permit penetration of the fluorocarbon solids into the bearing material, and thereafter drying the bearing material; and

(8) thereafter removing said pin.

4,386,456

METHOD OF ASSEMBLING A UNITARY HEAT EXCHANGER TUBE BUNDLE ASSEMBLY

Herbert A. Volz, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 891,981, Mar. 31, 1978. This application Oct. 7, 1980, Ser. No. 194,721
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.3 R **5 Claims**

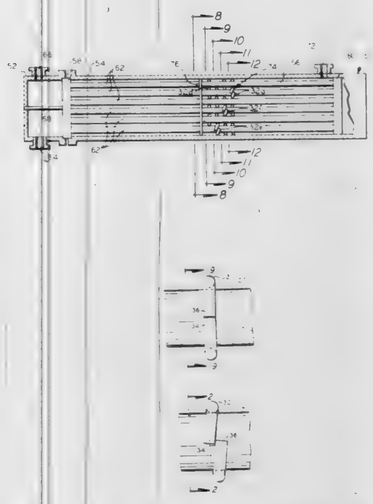
1. A method of assembly of a unitary heat exchanger tube bundle assembly comprising a plurality of tubes, said method comprising the steps of:

arranging the tubes in a plurality of tube rows and a plurality of tube columns with each tube row spaced a distance from an adjacent tube row and each tube column spaced a distance from an adjacent tube column with the tubes of each row being positioned in a common plane and the tubes of each column being positioned in a common plane, the common plane of each column of tubes intersecting the planes of the rows of tubes at a predetermined angle;

positioning a plurality of resilient annular spring clips around selected individual tubes, each said annular spring clip defining a spiral extending through no more than two turns about an axis and having two end faces whereby each of said spring clips contacts the outer surface of each next adjacent tube, said positioning step including:

stressing each resilient spring clip against its internal spring bias to increase its inside diameter to a dimension greater than the outside diameter of a tube by engaging the end faces of said spring clip with one another;

positioning each stressed spring clip over a selected individual tube at the desired location on the tube; and



permitting each stressed spring clip to partially relax from its stressed condition to frictionally engage the outer surface of the corresponding individual tube in response to its internal spring bias at the desired location on the tube by disengaging the spring clip end faces from one another;

urging the tubes and resilient annular spring clips into firm contact one with another; and

encircling the tubes with a rigid structure contacting the outermost tubes to maintain the tubes and annular spring clips into firm contact one with another and to form a unitary tube bundle assembly.

4,386,457

SURGICAL BLADE REMOVER-RECEPTACLE

Donald W. Coombs, 8191 E. Helen St., Tucson, Ariz. 85715, assignor to Donald W. Coombs; Frances M. Brimmer, both of Tucson and Daniel J. Anderson, Glendale, all of, Ariz., a part interest

Filed May 22, 1981, Ser. No. 266,520
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—235 **9 Claims**

1. A device for removing surgical blades from a handle, said handle including a narrow-blade-engaging boss, the boss having a groove portion for engaging a narrowed forward portion of a boss-engaging aperture of said blade, said boss-engaging aperture also having a widened rear portion, said blade having a shank with two opposed edges, said device comprising in combination:

(a) a housing, said housing having therein an aperture for receiving said blade and a portion of said boss when said blade is attached to said boss;

(b) a boss receiving notch for receiving a portion of the boss, and first and second shoulders adjacent to said boss receiving notch for engaging said shank of said blade to cause separation of a rear portion of said shank for said boss as a portion of said boss is forced into said boss-receiving notch; and

(c) blade gripping means attached to said housing adjacent to said boss receiving notch for gripping said opposed side edges of said shank to retain said blade in place while said handle is disengaged from said blade by pulling said handle away from said blade while said separation of said rear portion of said shank from said boss is maintained, said blade gripping means being manually actuable to grip said



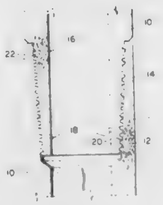
opposed side edges of said blade and manually releasable to disengage said opposed side edges of said blade to thereby release said blade after said handle has been removed from said blade, said blade gripping means being located so that the released blade falls into the interior of said housing, said blade gripping means including first and second post elements which can be manually urged together to engage said opposed side edges of said shank to thereby grip said shank, said first and second post elements being connected to means for elastically biasing said first and second post elements apart.

4,386,458

FATIGUE RESISTANCE FOR COUPLING AND CONNECTION JOINT MECHANISMS

Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Filed Mar. 31, 1981, Ser. No. 249,721
Int. Cl.³ B22D *11/126;* **B23K** *9/00;* **H05B** *5/00, 9/00*
U.S. Cl. 29—527.7 **12 Claims**



1. A method of inducing a residual favorable compressive stress in a zone of stress concentration in at least one of a box or pin of integral metallic material in a drilling tool comprising:

applying a force to tensily stress the integral material of the box or pin in the zone and in an area adjacent the zone within the limit of elasticity of the material,

heating the material of the zone into one of a plastic or liquid state while maintaining applied tensile stress in the area adjacent the zone and while confining the plastic or liquid state substantially only to the zone,

releasing the applied force after the material of the zone has returned to a nonplastic and nonliquid state, and

attaining sufficient residual tensile force from the area adjacent the zone upon release of the applied force to achieve in the zone a counterbalancing residual compressive force

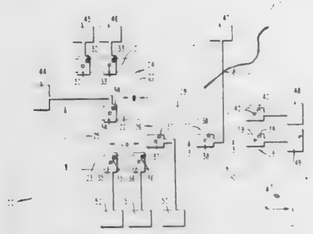
at sufficient predetermined magnitude to increase resistance of the box or pin to fatigue failure from service-induced tension forces induced at the zone.

4,386,459

ELECTRICAL MEASUREMENT OF LEVEL-TO-LEVEL MISALIGNMENT IN INTEGRATED CIRCUITS

David M. Boulin, Franklin Township, Warren County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 11, 1980, Ser. No. 167,408
Int. Cl.³ H01L *21/66*
U.S. Cl. 29—574 **4 Claims**



1. A method of making an integrated circuit comprising the steps of:

fabricating at least one integrated circuit at one or more respective chip sites of a semiconductor wafer in accordance with a specified process sequence, said sequence involving forming an insulating layer between patterned upper and lower conductive layers, at least one other site on said wafer being dedicated for alignment test purposes, and forming an insulating layer between upper and lower conductive layers at each test site in the same respective steps in which said layers are formed at each chip site, wherein the improvement comprises

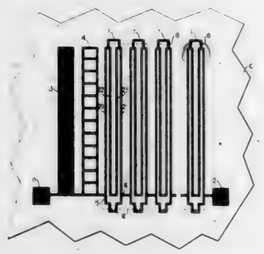
forming at each test site at the level of one of said conductive layers two S-shaped conductive test members disposed at 90 degrees with respect to each other.

4,386,460

METHOD OF MAKING MULTI-MEGOHM THIN FILM RESISTORS

Dennis H. Klockow, Andover, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 14, 1981, Ser. No. 263,786
Int. Cl.³ H01C *10/00*
U.S. Cl. 29—593 **12 Claims**



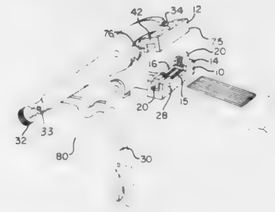
1. A method of fabricating on an insulating layer (**10**) a thin film resistor including a series of closed loops (**15**) electrically coupled by horizontal connectors (**16**) between an input and output portion (**11** and **12**) where each loop comprises an upper portion above the connector and a lower portion below the connector characterized in the steps of providing, in addition to said closed loops, an individual short circuit path (**17**) for each of said loops, successively cutting each of said short circuit paths, measuring the resulting change in resistance between the input and output portions after each individual short circuit path is cut and comparing said change to a threshold value to determine the presence or absence of an open circuit in that loop, and successively cutting only the loops for which no open circuit is indicated until a desired resistance is achieved.

4,386,461

RIBBON CABLE CONNECTOR TOOL

Robert E. Plummer, Independence, Kans., assignor to ARCO Pipe Line Company, Independence, Kans.

Filed Oct. 29, 1981, Ser. No. 316,249
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—749 **13 Claims**



13. An apparatus for joining a ribbon cable having a plurality of separately insulated electrically conductive wires joined together in side-by-side arrangement substantially in the shape of a ribbon and a mass termination connector, having a cover and a body, said body having a plurality of electrically conductive elements that pierce the insulation in said ribbon cable and being in electrical communication with said wires therein when said ribbon cable is joined to said mass termination connector, said cover and said body being secured together in such a manner as to hold said ribbon cable therebetween, said apparatus comprising in combination:

a loading die for receiving and holding in spaced relation said cover, said body, and said cable, said loading die being a U-shaped channel having a front wall, a rear wall, and a floor therebetween, said front wall having a notch therein for receiving said ribbon cable, said loading die having oppositely spaced, pivotally mounted jaws mounted within and transverse to a longitudinal axis of said loading die, each of said jaws being spring biased toward the center of said loading die, each of said jaws including a stop on the side surface thereof closest the center of said loading die;

a compression die associated with said loading die which moves relative to said loading die and comes into pressure engagement with said body and said cover, said compression die being a U-shaped channel having a front wall, a rear wall, and a floor therebetween; and

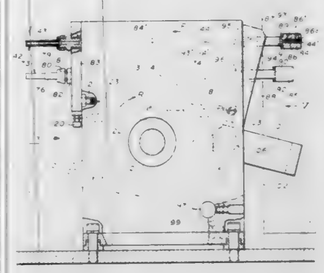
locking pliers having opposing pincers, said loading and said compression die being removably secured to said pincers transverse to a longitudinal axis of said locking pliers.

4,386,462

ASSEMBLY APPARATUS HAVING OPERATING UNITS AND A POWER UNIT INTERCONNECTED BY BOWDEN CABLES

Noriaki Nakanishi, Hirakata; Tadayoshi Nishizono, Neyagawa; Masaaki Nakanishi, Hirakata; Toshiaki Nakanishi, and Yoshio Kawahara, both of Neyagawa, all of Japan, assignors to Nakanishi Kikai Kabushiki Kaisha, Kadoma, Japan

Filed Jun. 22, 1981, Ser. No. 276,082
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—792 **1 Claim**



1. An assembly apparatus comprising:

a rotatable turntable;

means for rotating said turntable;

a fixed table positioned above said turntable and having an outer periphery;

a plurality of operating units mounted on said fixed table and extending outwardly and horizontally from said outer periphery, each operating unit having a member moveable in two directions;

a plurality of Bowden cables each having an outer tube and a wire therein, each cable being associated with one of the operating units with one end of certain of the wires being connected to the moveable member; and

a pulling mechanism to which the other end of each wire is connected;

each operating unit comprising a frame having one end fixed to said fixed table;

a pair of horizontal, parallel guide rods mounted on said frame;

said moveable member being a mounting member slideably mounted on said guide rods for horizontal movement thereon toward and away from said fixed table;

a vertical cylinder fixed to said mounting member and having an upper end;

a vertical shaft slideably supported in said vertical cylinder for movement upwardly and downwardly;

a first return spring mounted between said frame and said mounting member urging said mounting member away from said fixed table;

a second return spring mounted between said vertical shaft and said vertical cylinder urging said vertical shaft downwardly;

first adjustable stop means for limiting travel of said mounting member along said guide rods in each direction; and

second adjustable stop means for limiting travel of said vertical shaft in said vertical cylinder in each direction one end of one outer tube being connected to the fixed end of said frame, the associated wire being connected to said mounting member for pulling said mounting member towards said fixed table against the urging of said first return spring; and

one end of another outer tube being connected to said upper end of said vertical cylinder, the associated wire being connected to said vertical shaft for pulling said vertical shaft upwardly against the urging of said second return spring;

said pulling mechanism comprising:

at least two side frames;

a vertical plate attached to said at least two side frames;

a rotatable shaft mounted on said at least two side frames, said rotatable shaft being driven by said means for rotating said turntable;

a plurality of cams fixed to said rotatable shaft;

a plurality of pairs of arms pivotly mounted between said at least two side frames adjacent said cams;

a plurality of cam followers each attached to one pair of arms and interacting with one of said cam;

a plurality of horizontal rods each extending between one pair of arms and each having a plurality of holes therethrough; and

a plurality of means for holding a wire mounted on each horizontal rod; each other end of said outer tubes being connected with said vertical plate with the associated wire being held in one of said plurality of means for holding a wire whereby upon rotation of said rotatable shaft, all of said wires held on any one horizontal rod moving in a substantially synchronized relation;

each means for holding comprising a cylindrical holder slideably mounted in one of said holes in one of said horizontal rod and having a stepped portion on a side of said rod opposite to said vertical plate, means for fixing the wire to the cylindrical holder, and

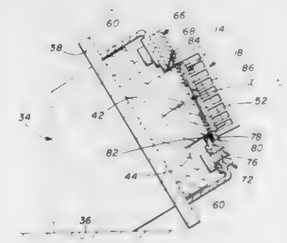
a compressible spring mounted between the rod and the stepped portion urging said cylindrical portion urging said cylindrical holder away from said vertical plate; each compressible spring and return spring associated with a particular cable enabling individual adjustment of timing of operation of component movements of working units having said substantially synchronized relation.

4,386,463

LEAD FRAME EMBEDDING FIXTURE

Richard S. McLaughlin, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Oct. 5, 1981, Ser. No. 308,492
Int. Cl.³ H01R *43/00*; B23P *19/00*
U.S. Cl. 29—827 **13 Claims**



1. An apparatus for use in assembling an integrated circuit including first and second components comprising:

a frame structure;

at least one stop pin secured on said frame structure, said stop pin having first and second abutting surfaces;

a stop bar secured to said frame structure having an inclined face spaced from each stop pin for positioning a first component between each of said stop pins and the inclined face spaced therefrom, the spacing between the inclined faces on said stop bar and stop pins providing inclination to the first components to urge the first components into a predetermined position relative to said frame structure abutting the first abutting surfaces; and

the second components being positioned on the first components for slidable motion with respect thereto to abut the second abutting surface of said stop pin, the second compo-

nents being thereby positioned in a predetermined relationship to the first components and frame structure.

12. A method for assembling an integrated circuit including a lead frame and base comprising the steps of:

positioning a lead frame in an inverted position on a guide surface of a guide assembly, the lead frame sliding down the guide surface until one end thereof engages a first abutting surface defined in a notch formed in a stop pin on a support structure, the opposite end of the lead frame abutting an inclined face on a stop bar on said support structure, outwardly diverging faces extending from said guide assembly on opposite sides of said guide surface centering the lead frame as it slides;

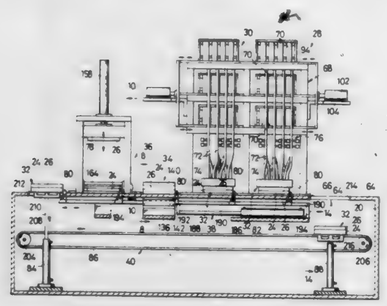
positioning a base on the lead frame, the base sliding down the lead frame so that one end thereof engages a second abutting surface defined on the stop pin, the lead frame and base thereby being positioned in a predetermined relative position for bonding.

4,386,464

METHOD AND APPARATUS FOR MOUNTING ELECTRONIC COMPONENTS IN POSITION ON CIRCUIT BOARDS

Seiji Yanai, Harunamachi, and Hideo Shirouchi, Takasaki, both of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1980, Ser. No. 215,518
Claims priority, application Japan, Dec. 28, 1979, 54-172517
Int. Cl.³ H05K *3/30*; B23P *19/00*
U.S. Cl. 29—834 **12 Claims**



1. A method of simultaneously mounting a plurality of leadless electronic components in preassigned positions on a circuit board, which comprises:

(a) providing a template having formed therein a plurality of depressions arranged in mirror-image relationship to the arrangement of the preassigned mounting positions of the electronic components on the circuit board, each depression having a depth such that the electronic component, when received therein in a correct attitude, partly protrudes therefrom;

(b) providing a guide plate having formed therethrough a plurality of passages corresponding to the depressions in the template;

(c) placing the guide plate on the template, with the passages in the guide plate in register with the depressions in the template, the registered passages and depressions having a total depth sufficient to thoroughly receive the electronic components regardless of their attitudes;

(d) supplying the electronic components into the respective registered passages and depressions in the superposed guide plate and template;

(e) correcting at least the attitudes of the electronic components in the registered passages and depressions by imparting mechanical vibrations to the superposed guide plate and template;

(f) removing the guide plate from over the template whereby the electronic components partly protrude from the depressions in the template;

(g) applying an adhesive to prescribed surface portions of the circuit board;

(h) placing the circuit board on the electronic components partly protruding from the depressions in the template whereby the electronic components adhere to the circuit board; and

(i) separating the circuit board, together with the electronic components adhering thereto, away from the template.

4. Apparatus for simultaneously mounting a plurality of leadless electronic components in preassigned positions on a circuit board, the apparatus comprising:

(a) a template having formed therein a plurality of depressions arranged in mirror-image relationship to the arrangement of the preassigned mounting positions of the electronic components on the circuit board, each depression having a depth such that the electronic component received therein, when in a correct attitude, partly protrudes therefrom;

(b) a guide plate having formed therethrough a plurality of passages corresponding to the depressions in the template, the guide plate being adapted to be removably placed on the template, with the passages in the guide plate in register with the depressions in the template, the registered passages and depressions having a total depth sufficient to thoroughly receive the electronic components regardless of their attitudes;

(c) a plurality of chutes for supplying the electronic components into the respective registered passages and depressions in the superposed guide plate and template;

(d) means for controlling the supply of the electronic components through the chutes so as to permit only one electronic component to be delivered into each registered pair of passages and depressions;

(e) means for imparting mechanical vibrations to the superposed guide plate and template in order to correct at least the attitudes of the electronic components in the registered passages and depressions in the template;

(f) means for removing the guide plate from over the template; and

(g) means for placing the circuit board on the electronic components partly protruding from the depressions in the template upon removal of the guide plate from thereover and then for separating the circuit board and the template from each other, the circuit board having an adhesive applied to prescribed surface portions thereof for causing adhesion thereto of the electronic components in the template depressions, whereby upon separation of the circuit board and the template from each other, the electronic components are mounted in the preassigned positions on the circuit board.

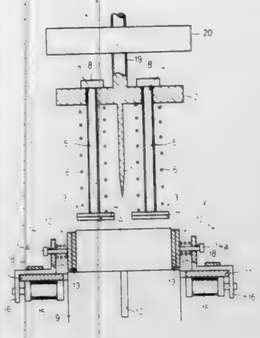
4,386,465

CUTTING APPARATUS FOR FROZEN FOOD

Norio Ezaki, 7-33 Kohama Nishi 2-chrome, Suminoe-ku, Osaka, Japan

Filed Mar. 31, 1981, Ser. No. 249,415
Int. Cl.³ B26D *3/24*
U.S. Cl. 30—114 **5 Claims**

1. A cutting apparatus for frozen food comprising grasping members **12** encircling and resiliently holding therein a piece of frozen food A placed on a frozen food placing table **9**, a cutting blade **1** movable downwardly from above said table **9** and having at least a width substantially corresponding to the size of said piece of frozen food A, and intermittent drive means **20** for intermittently turning said cutting blade **1** above said piece of frozen food A held in said grasping members **12** at the end of each up-and-down reciprocation of said blade **1**, the arrangement being such that said cutting blade **1** is adapted to be moved downwardly and upwardly relative to said piece of frozen food A as the latter is held in said grasping members **12** and to be intermittently turned at end of each such up and down reciprocation so that said piece of frozen food A can be cut into equal sectoral parts.

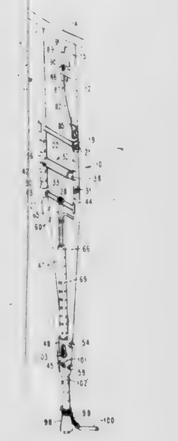


4,386,466

CRUTCH GAUGE MEASURING DEVICE

LeRoy J. Lee, Fayetteville, N.C., assignor to Dale L. Avers, Versailles, Ky., a part interest

Filed Aug. 17, 1981, Ser. No. 293,104
Int. Cl.³ A61H *3/02*
U.S. Cl. 33—174 D **20 Claims**



1. A crutch gauge for determining the length of a crutch for a person including:

a pair of side members;

a plurality of securing means to secure said side members to each other at spaced longitudinal portions;

one of said securing means securing said side members to each other adjacent their lower ends, said one securing means being disposed between said side members adjacent their lower ends;

said one securing means having longitudinal passage means extending therethrough;

an adjustable extension leg extending through said longitudinal passage means in said one securing means to engage a floor or the like to support said side members;

longitudinal guide means for said adjustable extension leg;

said longitudinal guide means being supported by said side members and extending into the upper end of said adjustable extension leg to allow said adjustable extension leg to have only longitudinal relative movement with respect to said longitudinal guide means;

releasable locking means to releasably lock said adjustable extension leg to said one securing means;

said releasable locking means including:

a pair of movable means carried by said longitudinal guide means and spaced longitudinally from each other;

longitudinally spaced receiving means in said one securing means to receive each of said pair of movable means;

and a plurality of longitudinally and equally spaced enabling means in said adjustable extension leg to enable each of said pair of movable means to pass through one of said enabling means into one of said receiving means to lock said adjustable extension leg to said one securing means;

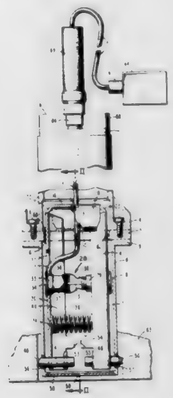
and means to render said releasable locking means ineffective while each of said securing means remains effective to enable relative movement between said side members and said adjustable extension leg so that the overall length of a crutch may be determined.

4,386,467

GAUGE FOR CHECKING LINEAR DIMENSIONS OF MECHANICAL PIECES

Mario Possati; Guido Golinelli, both of Bologna, and Narciso Selleri, Monteveglio, all of Italy, assignors to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Filed May 13, 1981, Ser. No. 263,262
Claims priority, application Italy, Jun. 2, 1980, 3439 A/80
Int. Cl.³ G01B *7/12*
U.S. Cl. 33—178 E **11 Claims**



11. Gauge for checking linear dimensions of mechanical pieces, comprising:

a first member and a second member, these members being mutually movable and having external surfaces defining two annular seats, the annular seats having relevant annular bottom surfaces;

an element fixed to the first member;

electric circuits housed by the second member, for provising a measurement signal representative of said linear dimensions depending on the mutual positions of said members; and

a substantially tubular resilient seal defining a geometrical axis and having two annular end portions;

wherein the annular portions and the annular seats have cross-sections with substantially trapezoidal shapes, the annular portions defining two internal surfaces spaced along said geometrical axis—, each internal surface having a diameter substantially equal to the diameter of a corresponding annular bottom surface, each of the annular portions having a thickness—along said geometrical axis—larger than a corresponding

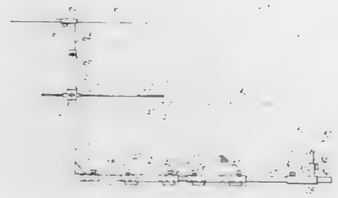
width of the cross-section of a relevant annular seat, and wherein the annular portions are respectively coupled to the annular seats by compressive interference-fit couplings generating substantially resilient compressive stresses in the annular portions.

4,386,468

AUTOMOBILE FRAME ALIGNING DEVICE

Walter D. Whitney, 1420 Industrial Rd., San Carlos, Calif. 94070

Filed Oct. 20, 1980, Ser. No. 198,783
Int. Cl.³ G01B *5/255*
U.S. Cl. 33—180 AT **2 Claims**



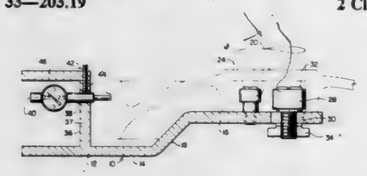
1. A frame aligning device for damaged automobile bodies and frames comprising:
- a pair of axially aligned horizontally disposed tubular sleeves,
- elongated elements telescopically received within the opposite ends of said sleeves,
- a vertically extending elongated support connected at its lower end to one of said elements that is received in one of said sleeves,
- a pair of vertically spaced apart elongated horizontally extending indicators on said support,
- a third indicator carried by another of said elements that is received in the distal end of the other of said sleeves, and
- adjusting means on said sleeves for adjusting the effective distance between said third indicator and said support and,
- ramp means on each of said sleeves to receive a vehicle wheel thereon.

4,386,469

RAILROAD CAR WHEEL GAUGE

Irving Lapsker, Monroe, N.Y., assignor to Abex Corporation, New York, N.Y.

Filed Jun. 5, 1981, Ser. No. 270,943
Int. Cl.³ G01B *5/02*
U.S. Cl. 33—203.19 **2 Claims**



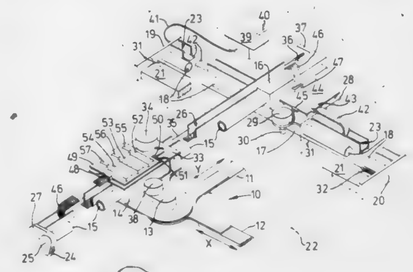
1. A device for measuring the variation in the distance between the axle bore and tread of a railroad car wheel as the wheel is rotated; characterized by a frame having a first leg, a second leg and a central member which connects the first and second legs such that the plane of the first leg is offset from the plane of the second leg and the plane of the second leg is below the plane of the first leg when the measuring device is mounted on a car wheel such that the car wheel tread does not hit the second leg; a pair of rollers rigidly mounted on the first leg; a third roller adjustably mounted on the first leg; wherein the three rollers project laterally above the first leg are in the same plane and engage the wall defining a car wheel axle bore to thereby mount the measuring device on the car wheel; an indicator support member affixed to the second leg radially outboard of a railroad car wheel tread; wherein the indicator support member projects laterally of the second leg and above the plane of the first leg; and an indicator mounted in the support member such that when the device is mounted on a car wheel the indicator engages the tread of the car wheel to provide a direct readout of the variation in distance between the wall defining the axle bore and the wheel tread as the wheel is rotated and the indicator lies in substantially the same place as that of the three rollers.

4,386,470

DRAFTING APPARATUS

David L. E. Perry, "Riversdale" Gisburn Rd., Long Preston, Near Skipton, North Yorkshire, England (BD23 4RA)

Filed Jul. 18, 1980, Ser. No. 170,966
Claims priority, application United Kingdom, Jul. 20, 1979, 7925286
Int. Cl.³ B43L *13/02*
U.S. Cl. 33—438 **21 Claims**



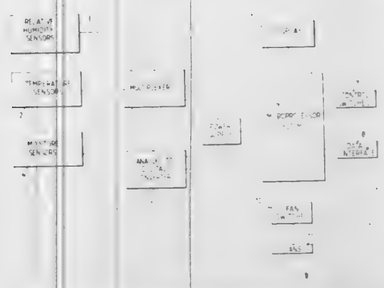
1. Drafting apparatus including a carriage supported for movement in both the X direction and the Y direction relative to a drawing surface, a beam supported for movement in one of said directions and defining an upwardly-facing channel, the carriage being supported by the beam and being movable along the beam in the other of said directions, a drafting head supported from the carriage and defining X and Y scribing edges, a first encoder driven by said movement of the beam to produce a first digital signal which is directly proportional to the position of the beam in said one direction, a second encoder driven by said movement of the carriage to produce a second digital signal which is directly proportional to the position of the drafting head relative to the beam in the said other direction, a first numerical display device operated by said first digital signal to indicate the instantaneous X displacement of the Y scribing edge from a predetermined X datum, a second numerical display device operated by said second digital signal to indicate the instantaneous Y displacement of the X scribing edge from a predetermined Y datum, said first and second numerical display devices are mounted on said carriage, a ribbon cable operatively connects the second encoder to the second numerical display device, and the ribbon cable is positioned in said upwardly-facing channel and is doubled over itself to permit corresponding full displacement of the drafting head relative to the beam.

4,386,471

IN-STORE DRYING CONTROL METHOD AND SYTEM

Ronald G. Bowrey, Yowie Bay; Andrew K. Fullford, and Michael S. Kearney, both of Randwick, Australia, assignors to Unisearch Limited, Kensington, Australia

Filed Apr. 8, 1981, Ser. No. 252,135
Claims priority, application Australia, Apr. 8, 1980, PE3052
Int. Cl.³ F26B *21/08, 21/10*
U.S. Cl. 34—26 **8 Claims**



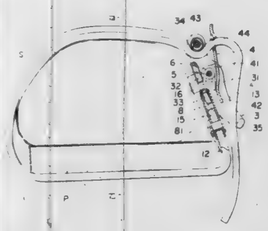
1. A method of controlling the drying or wetting of a stored agricultural product in a storage means, comprising determining the moisture content and temperature of the stored agricultural product at various locations, determining the temperature and relative humidity of air in the storage means in the regions near where air enters and leaves the stored product, determining the temperature and relative humidity of an ambient air external to the storage means, calculating the effect that feeding the ambient air through the stored product would have on the temperature and moisture content of the product at various positions and on the amount of moisture removed from or added to the total store, then force feeding said ambient air to effect a change in the moisture content of the stored product if such a change is required to thereby maintain predetermined moisture content in the stored agricultural product.

4,386,472

FIXING BAND FOR SHOES

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Sep. 11, 1981, Ser. No. 301,419
Claims priority, application Japan, Sep. 19, 1980, 55-134342[U]; Sep. 19, 1980, 55-134343[U]
Int. Cl.³ A43B *5/00*
U.S. Cl. 36—131 **5 Claims**



1. A fixing band for fixing a cyclist's shoe to a pedal of a bicycle, said band comprising:
- a band body of a strip-shape, and
- a buckle having a retaining means for receiving therein and retaining therewith said band body,

said band body having a base on which said buckle is mounted, an insertion portion inserted into said buckle and retained by said retaining means, and a shoe binding portion positioned at an intermediate portion between said base and said insertion for contacting with the outer surface of an instep of said shoe to restrain said shoe with respect to said pedal, said binding portion, when said band is in a longitudinally extended state, being displaced in a circular arc widthwise outwardly of said body with respect to the straight line connecting said base and insertion portion.

4,386,473

RECOVERY OF SEDIMENTS FROM THE BOTTOM OF THE SEA

Hans Amann; Jürgen Burkhardt, both of Hanover; Klaus Lück, Wennigsen, and Fritz O. Poeppel, Wunstorf OT Luthe, all of Fed. Rep. of Germany, assignors to Preussag Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 197,793
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 2942304
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—57 **16 Claims**



1. A method for the recovery of sediments from the bottom of the sea by means of a freely suspended suction pipe having an upper end and a lower end with a suction head having a suction mouth, comprising the steps of:
- slowly lowering the suction head into the sediment to be recovered, and drawing sediment into the mouth by means of suction, thereby forming a depression in the sediment, said depression having an upper edge,
- vertically raising the suction head above the upper edge of the depression to a height at which the suction head is freely laterally movable,
- laterally moving the suction head by progressively moving sideways the upper end of said suction pipe on the surface of the sea at a speed corresponding to the mean lateral speed of said suction head over a predetermined distance to a new location away from the formed depression to avoid sliding of the suction head into the depression previously formed in the sediment, and
- lowering the suction head into the sediment at the new location and successively repeating the cycle.

4,386,474

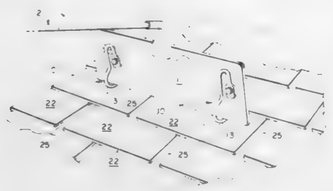
SNOW HOE SHOE

Sylvester Mechavich, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007, and George Spector, c/o Sylvester Mechavich, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Nov. 17, 1981, Ser. No. 322,400
Int. Cl.³ E01H *5/02*
U.S. Cl. 37—285 **2 Claims**

1. A snow hoe shoe assembly, comprising in combination a snow hoe and a pair of spaced apart shoes mounted on said snow hoe, said hoe comprising a flat blade on one end of a

handle, a straight scraping edge on said blade, and a hole near each opposite end of said blade extending therethrough for support of said shoe, each said shoe comprising a bent up steel



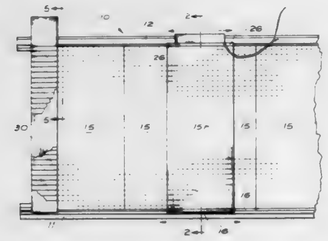
wire, a circular loop along a center of said wire and a straight leg at each end of said wire each said leg being laterally spaced from said loop, a bolt through said blade hole and through said shoe legs, said central loop passing under said scraping edge.

4,386,475

SCHEDULING BOARD OVERRIDER SYSTEM

Wallace A. Krapf, 25 Berkeley St., Rochester, N.Y. 14607

Filed Jan. 27, 1982, Ser. No. 343,226
Int. Cl.³ B42F *17/06*
U.S. Cl. 40—373 **6 Claims**



1. In a modular scheduling board system having upper and lower wall tracks vertically spaced to support movable module boards that rest on the lower track and are removably retained in a vertical position by the upper track, a movable overrider system for moving a reference element over the front faces of said track supported module boards, said overrider system comprising:

a. a generally vertically oriented trolley bracket;

b. a pair of wheels mounted on and spaced from said trolley bracket;

c. a smooth path for receiving said wheels, said path being formed along an upper forward surface of said upper wall track;

d. a retainer lip extending upward along the front edge of said upper track;

e. said retainer lip being arranged to extend into the space between said wheels and said trolley bracket when said wheels are on said path so that said wheels engage said retainer lip and rest on said path to support said trolley bracket for rolling along said upper track while extending downward over the front face of said upper track;

f. a holder formed on the lower edge of said trolley bracket to engage the back of one of said module boards selected to serve as said reference element and to hold said reference element board to hang downward from said trolley bracket;

g. said holder and bracket being dimensioned to suspend said reference board at the same vertical level as said track supported boards; and

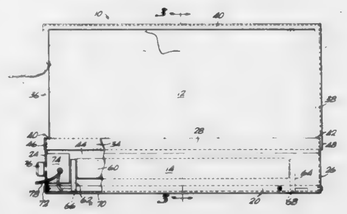
h. said lower wall track having a lip extending forward along its upper forward edge to engage the back of said trolley supported reference board and space said reference board clear of the fronts of said track supported boards so that said reference board can be moved along the length of said tracks to override said track supported boards while staying in horizontal alignment with said track supported boards.

4,386,476

EDGE LIGHTED DISPLAY SIGN

Manfred Schulman, 111 Caribbean, 25 Old Fort Rd., Durban, South Africa

Filed Nov. 3, 1981, Ser. No. 317,838
Int. Cl.³ G09F *13/18*
U.S. Cl. 40—546 **7 Claims**



1. An edge lighted sign comprising:

a transparent panel having a clear front side and a generally opaque back side;

a base assembly including a plurality of opposed longitudinal side walls, a plurality of opposed end walls, a top wall and a removable bottom wall panel defining an interior chamber and a longitudinal slot along the length of the top wall thereof, opening into said chamber, for sliding reception of a bottom edge portion of the panel to a predetermined depth within said chamber;

a light source mounted within the chamber, adjacent to and beneath a bottom edge of the bottom edge portion;

a frame, secured about a pair of opposed side edges and a top edge of the panel;

means to define the predetermined depth that includes a plurality of like, top opening vertical slots formed respectively in the end walls for engagement by opposed bottom end side portions of the panel; and

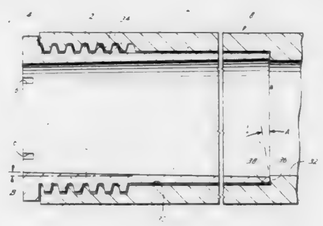
means to prevent longitudinal displacement of the panel in the slot.

4,386,477

SHOTGUN CHOKE MODIFIER AND METHOD

Jess Briley, 1085 Gessner C, Houston, Tex. 77055

Filed Jun. 19, 1981, Ser. No. 275,300
Int. Cl.³ F41C *21/00*
U.S. Cl. 42—79 **8 Claims**



1. A choke tube insert for modifying the choke of a shotgun barrel, the bore of which includes a counter bore that has been threaded along at least a portion of its length, the inner end of the counter bore including a ledge formed at an acute angle relative to the bore, the choke tube comprising:

(a) an elongated, hollow, metal tube adapted to be inserted in the counter bore;

(b) threads on the external surface of the tube which are compatible with the threads in the counter bore;

(c) the inner end of the tube including an angle complementary with the angle of the counter bore ledge so that when the threads on the tube engage the threads in the counter bore and the tube is fully inserted in the counter bore the complementary angled surfaces engage each other and form a gas tight seal for preventing powder residue from accumulating between the threads;

(d) the width of the wall forming the inner end of the tube being narrower than the width of the counter bore so that the inner end of the tube does not project into the bore of the barrel and interfere with pellets traveling through the bore;

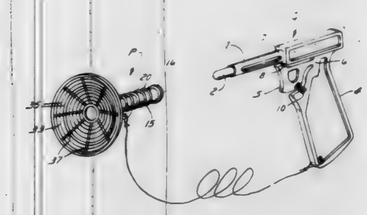
(e) at least a portion of the internal surface of the tube tapering inwardly in the direction of its outer end for forming a choke constriction in the shotgun barrel.

4,386,478

CONE-SHAPED RETRIEVABLE AND SELF-CONTAINED POWER PROJECTILE FOR AN INSECT KILLING GUN

Martin P. Belokin, Hayward, Wis., assignor to Martin-Paul, Inc., Hayward, Wis.

Filed Jun. 1, 1981, Ser. No. 269,321
Int. Cl.³ A01M *3/02*
U.S. Cl. 43—135 **9 Claims**



1. A retrievable and self-contained power projectile for a gun and comprising an elongated plastic tubular member having a front end, a flexible and shallow cone-shaped disc formed of deformable plastic and extending laterally beyond and around said tubular member and fastened to said front end of said tubular member, said disc being deformable against a surface which it hits so as to provide good contact of said disc against said surface, said disc comprising a series of concentric radially spaced apart rings, generally radially extending spokes integrally formed therewith between said rings, said rings being progressively larger in diameter as they are located outwardly from the center of said disc, whereby any number of rings can be removed from said disc to vary the diametric size thereof, a releasable connection between said disc and said front end of said tubular member, and an elongated spring located in said tubular member, said spring having a front end secured at said front end of said tubular member and compressible therein to provide a self-contained power means in and for said projectile.

4,386,479

WALKING DOLL

Rouben T. Terzian, Chicago, and Walter J. Wozniak, Addison, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Nov. 4, 1980, Ser. No. 203,987
Int. Cl.³ A63H *11/00*
U.S. Cl. 46—102 **13 Claims**



1. A walking doll comprising;

a torso with arms and a neck at the upper end, said arms each including a hand adapted to releasably encircle a respective one of a pair of handles and being rotatable with respect to said torso around an axis transverse to the length of said doll and including means for releasably locking said arms in a position with said hands secured to the handles;

a pivot pin connected to said neck;

a head pivotally mounted on said pivot pin, for side to side pivotal action in response to the side to side movement of said torso;

a pair of side by side legs connected to the lower end of said torso for independent rotation around a first axis and including means for rotating each leg automatically when lifted from a supporting surface while in a rearwardly rotated position;

a vehicle including means for generating side to side periodic motion of a structure having a pair of handles connected to said vehicle in response to movement of said vehicle over a supporting surface; wherein

said handles provide means for connecting said structure moved by said periodic motion generating means to said doll to cause said doll to walk forwardly in a realistic manner, swaying from side to side, said head pivoting from side to side in response to the swaying movement of said doll.

4,386,480

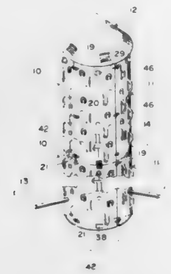
SIMULATED TREE TRUNK FOR SUPPORTING VINES OR VINE-LIKE PLANTS

Alvin E. Horowitz, 2301 SW. 23rd Ter., Miami, Fla. 33145

Filed Feb. 12, 1982, Ser. No. 348,534
Int. Cl.³ A41G *1/00*; **A01G** *9/12*
U.S. Cl. 47—45 **6 Claims**

1. A simulated tree trunk for supporting vines or vine-like plants comprising, in combination, a plurality of imitation bark board members, each bark board member comprising an integrally-formed, elongated, substantially rectangular, body portion of arcuate transverse cross-sectional shape, one side of said body portion simulating the texture of natural wood bark, means for interconnecting a plurality of the bark board members along abutting longitudinal edge portions of the body portions thereof to form a hollow substantially circular simulated tree trunk section of pre-determined diameter, said bark board members each having a plurality of arcuate through openings defining upwardly-extending projections about which tie strings can be applied for tying a growing vine in place, means for interconnecting a plurality of said tree trunk sections end-to-end for increasing the length of the simulated tree trunk, a quantity of sphagnum moss within the interior of

said interconnected hollow tree trunk sections, a conical cap member, means for inter-connecting the upper end of a tree trunk section to the peripheral edge of said conical cap member, said conical cap interconnecting means comprising a plurality of openings in said conical cap to permit vertical entry of water for moistening said sphagnum moss, means within at least one of said simulated tree trunk sections to retain the interconnected plurality of bark board members thereof in



relatively symmetrically disposed disposition to effect a substantially circular shape thereof, and a plurality of brace rods frictionally received in side-wall openings of the bark board members of a simulated tree trunk section and adapted to be positionally adjusted in a substantially radial direction outwardly of the tree trunk section to abuttingly engage, at the outer ends of said brace rods, inner wall portions of a supporting pot in which said tree trunk section is placed for vertical support.

4,386,481

TILTING WINDOW

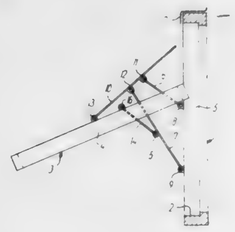
Stig E. Jeppesen, Roskilde, Denmark, assignor to V. Kann Rasmussen Holding A/S, Soborg, Denmark

Filed Nov. 30, 1981, Ser. No. 326,064

Claims priority, application Denmark, Dec. 10, 1980, 5270/80

Int. Cl.³ E05D *15/28*

U.S. Cl. 49—248 **3 Claims**



1. A window comprising

a main frame including a side member,

a sash including a corresponding side member extending parallel to the main frame side member in the closed position of the sash, and

a hinge device connecting said sash side member with said main frame side member and including

first and second arms of different lengths and pivotally connected at one end to said main frame side member at points having a greater distance from one another than the difference of length of said arms, the pivot point of the shorter one of the arms being at a level above that of the pivot point of the longer arm,

a third arm which in the closed position of the sash is substantially parallel to said side member and said first and second arms and extends from the top of the window to the region adajcent the horizontal axis through the centre of gravity of said sash, said third arm being pivotally connected to the other ends of said first and second arms at points having a distance from one another which is approximately equal to the distance between said pivot points of the first ends of said first and second arms reduced by the difference of their lengths, and said third arm at its lower end being pivotally connected to said sash side member, and

a fourth arm connecting the longer one of said first and second arms with said sash side member, said fourth arm at one end being pivotally connected to said longer arm substantially midway between the ends thereof, and at its other end being pivotally connected to said sash side member at a point spaced upwardly from its pivotal connection with said third arm.

4,386,482

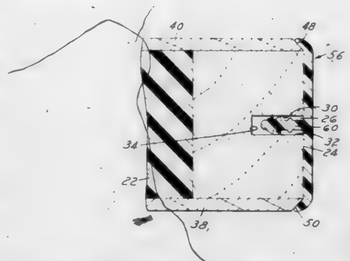
WOOD DOOR WITH MOLDING STRIPS FORMING ANNULAR SEAL AROUND THE PERIPHERY OF THE DOOR TO PREVENT DELAMINATION

Edward G. Quinif, Phoenix, Ariz., assignor to Walled Lake Door Co., Phoenix, Ariz.

Filed Oct. 9, 1980, Ser. No. 195,567

Int. Cl.³ E06B *7/16*

U.S. Cl. 49—488 **1 Claim**



1. A wood door primarily adapted for use as an exterior door in a building, dwelling or the like, having a rectangular shaped wood frame having a pair of vertical stiles joined together at their upper ends by a horizontal top rail and lower ends by a horizontal bottom rail, said stiles and said rails each having an outer surface and a groove extending the full length of said outer surfaces, a core of fill material located in said frame in the space between said stiles and said rails and occupying said space, the opposite vertical faces of said frame being covered by exterior wood panels which are adhesively secured to said faces of said frame, and each of the upper, lower and side edges of each of said panels being provided with a bevel surface having a predetermined angle and each bevel surface having generally the same angle, comprising:

a closure molding for each of said outer surfaces of said rails and said stiles, each closure molding comprising a generally elongated rigid strip formed of resilient material;

said closure molding strip in an unstressed or free state is provided with a crown or a slight curve which is removed when the molding strip is applied to said frame;

said strip having a generally flat elongated web and a laterally extending elongated ledge on the inner surface of the web which is perpendicular thereto;

with the inner surface on each of the outer edges of each web being inclined at an angle which is equal to the angle of the corresponding bevel surface provided on the adjacent panel;

said ledges fitting tightly into said grooves, with said inclined surfaces of said outer edges of said webs abutting said bevel surfaces of said panels to provide at each side of said frame an inwardly directed positive force around the entire periphery thereof which opposes delamination of said panels from said frame;

said molding strips provided on said top rail on both of said stiles are of identical cross-section;

said molding strip secured to said bottom rail is provided with a pair of inwardly turned generally L-shaped retaining flanges;

said L-shaped retaining flanges forming a pair of longitudinally extending grooves which receive the edges of a removable plate;

said removable plate having a pair of compressible tubular elements adapted for sealing engagement with a cooperating door sill, and said removable plate is formed from a generally rigid plastic material.

4,386,483

METHOD AND APPARATUS FOR GRINDING CONVERGENT CONICAL SURFACES

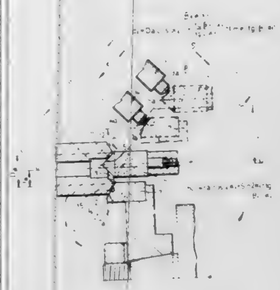
Alfred Schlaefli, Neuchatel, Switzerland, assignor to Voumard Machines Co. S.A., Neuchatel, Switzerland

Filed Feb. 18, 1981, Ser. No. 235,503

Claims priority, application Switzerland, Feb. 27, 1980, 1580/80

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—5 D **12 Claims**



1. A method of simultaneously grinding two conical surfaces, one internal and the other external, converging at one end of a workpiece where they form a circular joining edge, comprising the steps of:

mounting the workpiece on a rotary drive device;

disposing in front of the end to be ground of the workpiece a first table displaceable in a direction defined by the angle formed by the first table with the axis of the workpiece;

disposing on the first table a second table displaceable obliquely relative to the first table in a primary angular direction corresponding to the angle of taper desired for one of the conical surfaces of the workpiece;

fixing a first grinding-wheel spindle, bearing a first conical or frustoconical grinding wheel immovably to the second table so that the first grinding-wheel spindle is displaced together with the second table in the primary angular direction;

mounting a second grinding-wheel spindle, bearing a second conical or frustoconical grinding wheel, on the second table in such a way that it is immovable relative to the second table in at least one direction;

providing the second grinding-wheel spindle with means causing it to respond to a displacement of the second table in the primary angular direction by effecting an oblique movement in a secondary angular direction corresponding to the angle of taper desired for the other of the conical surfaces of the workpiece;

positioning a first grinding-wheel truing tool associated with the first grinding wheel and a second grinding-wheel truing tool associated with the second grinding wheel relative to the axis of the workpiece in a manner suitably determined for obtaining the desired diameter of the circular joining edge of the workpiece, this diameter depending, for given angular values, solely upon the positions of the first and second grinding wheel truing tools;

setting the workpiece and the first and second guiding wheels in rotary motion; truing the first and second grinding wheels with the aid of the first and second grinding-wheel truing tools at a first position, respectively;

thereafter causing the second table to move obliquely in the primary angular direction to a second position to bring the first and second grinding wheels into simultaneous contact with said workpiece during grinding; and

advancing the first table toward the workpiece and thereby causing the first and second grinding wheels to act simultaneously upon the end to be ground of the workpiece, the orientation of the advancing movement of the first table being such as to satisfy the equation

$$(\alpha-\beta)\cdot\gamma=0,$$

wherein α is the angle of taper corresponding to the primary angular direction, β is the angle of taper corresponding to the second angular direction, and γ is the angle formed by the direction of displacement of the first table with the axis of the workpiece.

4,386,484

PROCESS AND DEVICE FOR COLLECTING RAINWATER

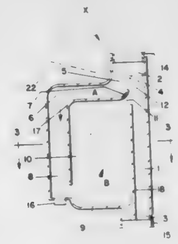
Joost van Berne, Dongen, and Franciskus H. van Schaick, Vlaardingen, both of Netherlands, assignors to Curver, B.V., Rijen, Netherlands

Filed Dec. 18, 1980, Ser. No. 217,682

Claims priority, application Netherlands, Dec. 19, 1979, 7909176

Int. Cl.³ E04D *13/08*

U.S. Cl. 52—16 **17 Claims**



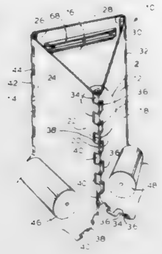
1. A device for use between upper and lower portions of a downspout for collecting, storing and discharging rainwater flowing therethrough comprised of vessel means for collecting and storing a predetermined quantity of rainwater, said vessel means having drain means for draining water therefrom, said device including means for defining entrance and exit passages with respect to said device for respectively connecting the device to said upper and lower downspout portions, said entrance passage means directing incoming rainwater toward the bottom of said vessel means, said exit passage means allowing excess rain water to be discharged from a predetermined point within the upper portion of said vessel means, said device further including means defining a through-pipe lying substantially in line with and operatively connected between said upper and lower downspout portions for receiving excess water discharged from said vessel means and for providing a passage through said device bypassing said vessel means.

4,386,485

MULTICOMPONENT EXTENDIBLE STRUCTURE

Richard E. Kramer, Damascus, Md., assignor to Fairchild Industries, Inc., Germantown, Md.

Filed Mar. 4, 1981, Ser. No. 240,420
Int. Cl.³ E04H *12/34*
U.S. Cl. 52—108 **10 Claims**



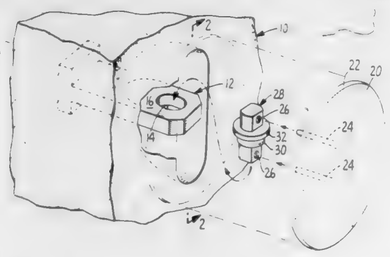
1. A multicomponent extendible structure comprising a plurality of elongated sheets of material each having two long edge portions and means for interlocking the long edge portions of said elongated sheets located along at least one of each of the long edge portions of said elongated sheets for connecting adjacently located long edge portions together when the adjacently located edge portions are in a substantially non-bent condition and for permitting the edge portions to be separated when the edge portions are in a bent condition, said interlocking means comprising a series of alternating projections and slots located on the edge portions of said elongated sheets, said projections and slots being sized and shaped to permit the projections located on the edge portion of one of said sheets to be receiving by the slots located on the edge portion of another sheet, each of said projections have an aperture and engaging means projecting from said projection insertable into the aperture of a corresponding projection located on the edge portion of an adjacently located elongated sheet when at least a portion of the edge portion of said adjacently located elongated sheet is bent.

4,386,486

COVER FOR CONCRETE VOIDS OF LIFTING INSERTS

Neil L. Holt, Foster City, and William G. Olsen, Santa Ana, both of Calif., assignors to The Burke Company, San Mateo, Calif.

Filed Apr. 13, 1981, Ser. No. 253,592
Int. Cl.³ F04G *21/00, 21/12;* **B66C** *1/66*
U.S. Cl. 52—125.5 **8 Claims**



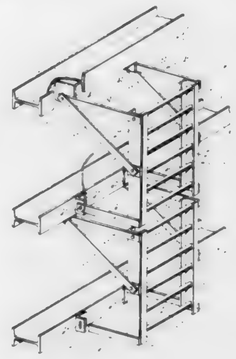
1. Closure plate means for the anchor insert recesses of tilt-up concrete wall slabs comprising a plate having front and back faces, pin means projecting rearwardly from the back face of said plate, a connector plug having: a body portion; a stop member portion; and passageway means; said body portion being adapted to fit within the eye of an anchor insert, said stop member portion being adapted to engage the anchor insert and retain the plug within said insert eye, said passageway means being adapted to receive and frictionally engage said pin means and thereby interconnect said plate and said plug.

4,386,487

LOW TORSION MOUNTING CONSTRUCTION

Peder W. Scott, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 8, 1981, Ser. No. 271,331
Int. Cl.³ E04F *11/00;* **E06C** *9/00, 9/08*
U.S. Cl. 52—184 **8 Claims**



1. A low torsion mounting construction for mounting a plurality of segments of a segmented apparatus to a structure, said construction being characterized by:
(a) a plurality of spaced support members;
(b) first mounting means disposed on said support members proximally to the shear centers thereof, a first end of each of said segments being connected to said first mounting means for both horizontal and vertical retention of first said segment end by a corresponding one of said support members, vertical loading of said corresponding support member due to the weight of said segment being applied to said corresponding support member through the shear center thereof; and
(c) second mounting means each disposed on one of said support members adjacent a second end of said segments, said second mounting means being in horizontal alignment with the shear center of said adjacent support member and connected to said second segment end for horizontal retention only of said second segment end by said adjacent support member, horizontal loading of said adjacent support member due to the weight of said segment being applied to said adjacent support member through the shear center thereof.

4,386,488

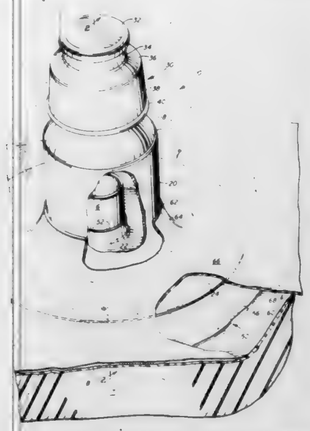
VENT APPARATUS FOR INSULATED ROOF STRUCTURES

Michael J. Gibbs, 3445 E. Cholla, Phoenix, Ariz. 85028

Filed Dec. 9, 1980, Ser. No. 214,478
Int. Cl.³ E04B *7/00;* **E04D** *1/36, 3/38*
U.S. Cl. 52—199 **7 Claims**

1. Vent apparatus for an insulated roof structure having a vent pipe extending through the roof structure comprising, in combination:
cylinder means disposed over the vent pipe;
cap means covering the cylinder means;
aperture means for venting the cylinder means and the vent pipe;
gasket means secured to the cylinder means and to the roof structure, and including

a first portion disposed about the cylinder means,
a second portion extending outwardly away from the cylinder means and secured to the roof structure, and



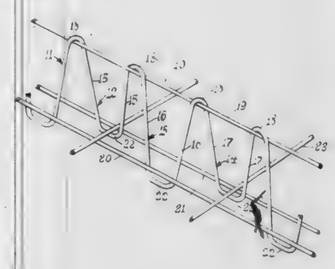
a third portion disposed about the vent pipe and secured to the second portion.

4,386,489

METAL TRUSS FOR USE IN REINFORCED CONCRETE SLABS

James J. Sheahan, 6400 S. East Ave., Hodgkins, Ill. 60525

Filed Jan. 12, 1981, Ser. No. 224,396
Int. Cl.³ E04C *3/02*
U.S. Cl. 52—694 **1 Claim**



1. A truss used in the construction of reinforced concrete slabs comprising:
(a) an elongated single strand of wire bent throughout its length to provide a series of web portions,
(b) each of said web portions having a pair of riser members with each riser extending in opposite downwardly and outwardly direction with respect to each other,
(c) a curved apex connecting the upper ends of said oppositely directed risers together to form an elongated inverted V-shaped truss,
(d) a substantial flat base connecting oppositely directed risers of juxtapositioned web portions together in a coplanar relation to form a continuous sinuous truss with said flat bases providing elevated chairs for reinforcing rod members extending at right angles to said truss and adapted to connect a series of trusses in spaced parallel relation,
(e) a top chord extending longitudinally through said apexes so that each riser of each pair of risers are disposed and extend to opposite sides thereof, and
(f) a pair of bottom chords extending longitudinally of said series of web portions in an elevated plane with respect to said base connections between certain of said risers and outbound of said risers connecting each series of risers to either side of said top chord together into an integral truss.

4,386,490

APPARATUS FOR COLLATING, CUTTING AND PACKING FOOD PRODUCTS

Robert L. Griffith; John G. Carlson; Daniel E. Gritzner, all of Cedar Falls, and William H. Mullan, Fort Madison, all of Iowa, assignors to Armour-Dial, Inc., Phoenix, Ariz.

Filed Apr. 13, 1981, Ser. No. 253,647
Int. Cl.³ B65B *5/06*
U.S. Cl. 53—148 **15 Claims**



1. Apparatus for packing a plurality of elongated, cylindrical articles into containers comprising in combination:
means for accumulating said articles for transfer to a moving cup assembly mounted on an endless conveyor said means including a chute-like area having upper and lower portions, conveyor means for bringing a plurality of said articles in parallel, axially aligned relationship to the upper portion of said chute-like area, metering means positioned between said upper and lower portions to cause a separation between adjacent articles as they move from the upper to the lower portion of said chute-like area;
an endless conveyor positioned adjacent to the lower portion of said chute-like area with a cup assembly secured to said conveyor, said assembly being adapted to hold a plurality of said articles and being at least partially open when immediately adjacent to the lower portion of said chute-like area to receive said articles;
sweep means positioned between said accumulating means and said endless conveyor for transferring said articles into said cup assembly, said sweep means being rotatable at a variable velocity with the end portion thereof extending into the lower portion of said chute-like area whereby rotation of said sweep means periodically engages an article to effect the transfer of a plurality of said articles into said cup assembly, the velocity of said sweep means being increased when said cup assembly is immediately adjacent the lower portion of said chute area; and
means for transferring articles from said cup assembly to a container.

4,386,491

APPARATUS FOR SELECTIVELY PACKING LAYERS OF OBJECTS IN BOXES OF DIFFERENT DEPTHS

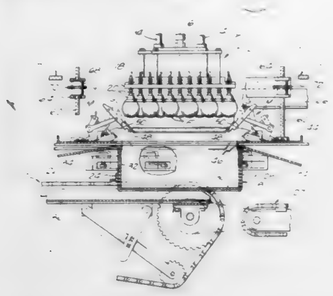
Jerry W. Cramer, Upland, and Everett G. LuVars, Pomona, both of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed Nov. 17, 1980, Ser. No. 207,141
Int. Cl.³ B65B *39/02, 39/12, 35/38*
U.S. Cl. 53—247 **7 Claims**

1. In an apparatus for automatically packing layers of objects into boxes successively delivered to a packing station, wherein a pickup head successively picks up layers of the objects and descends briefly into a box to deposit each layer therein, a guide chute, a fixed platform for supporting the guide chute in operative relation with a box of a predetermined height only from which it extends upwardly and defines a zone of approach to the box, said chute being shaped and dimensioned to surround each layer of objects on said pickup head as the layer

descends to the box and to confine the layer of objects to the inside dimensions of the box,

the improvement comprising:



an adjustable support for said platform including means for selectively raising and lowering said platform to accommodate packing runs for boxes of different depths, whereby to provide relatively greater and lesser packs of the objects in a single apparatus.

4,386,492

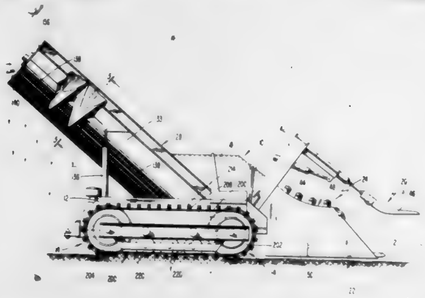
SUGARCANE HARVESTING METHODS AND APPARATUS

Sydney E. Tilby, Victoria, Canada, assignor to Intercane Systems, Inc., Windsor, Canada

Filed Dec. 29, 1980, Ser. No. 220,833

Int. Cl.³ A01D *55/26*

U.S. Cl. 56—13.9 **15 Claims**



1. Apparatus for harvesting stalks, comprising:

mobile frame means,

deflecting means mounted on said frame and extending transversely of the direction of travel of said frame for engaging and bending upper portions of the stalks forwardly,

cutting means for cutting the bent stalks at their base,

a first pair of generally upright rotary stalk feeding members disposed behind said deflecting means and mounted for rotation about generally upright axes, said rotary feeding members forming a generally upright nip therebetween, said nip disposed rearwardly of the location where said cutter means cuts the stalks for gripping the lower stalk ends and feeding the stalks rearwardly,

drive means for rotating said feeding members to feed the lower ends of stalks rearwardly while upper ends thereof are acted upon by said deflecting means to cause the stalks to travel upwardly within the nip as the stalks travel rearwardly, thereby causing the stalks to approach a horizontal condition, and

an additional pair of stalk-feeding rotary members disposed behind said first feeding members, said additional feeding members being mounted for rotation about axes inclined relative to vertical such that upper ends of the additional feeding members are disposed forwardly of lower ends thereof.

4,386,493

METHOD AND APPARATUS FOR MAKING LARGE ROUND CROP BALES

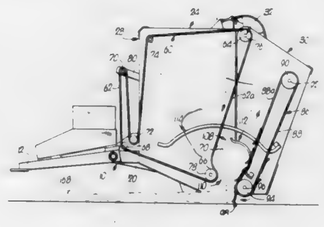
Adin F. Holdeman; Melvin V. Gaeddert; Howard J. Ratzlaff; Martin E. Pruitt, and Howard R. Lohrentz, all of Hesston, Kans., assignors to Hesston Corporation, Hesston, Kans.

Continuation of Ser. No. 584,870, Jun. 9, 1975, Pat. No. 4,321,787. This application Mar. 26, 1982, Ser. No. 362,473

The portion of the term of this patent subsequent to Mar. 30, 1982, has been disclaimed.

Int. Cl.³ A01D *39/00*

U.S. Cl. 56—341 **2 Claims**



1. In a mobile baler of the type having a housing provided with an off-the-ground baling chamber and means associated therewith for making a round bale within the chamber from crop materials presented thereto, the improvement comprising:

a crop entrance to the chamber located adjacent a lower portion thereof;

a crop pickup having a crop engaging portion thereof located generally below said chamber and behind the front of the housing with respect to the normal direction of travel of the baler for lifting crop materials from the ground and feeding the same up toward said chamber; and

an open, non-compressive crop receiving and inflow region extending from said crop-engaging portion of the pickup to the forward extremity of said entrance whereby to substantially prevent compaction of picked up crop materials prior to the same reaching said baling chamber.

4,386,494

PRODUCTION OF BINDINGS OF FIBER BUNDLES

Ernst Felix, Bahnstrasse 35, CH-8610 Uster, Switzerland, assignor to Ernst Felix and Zellweger Uster Ltd., both of, Switzerland

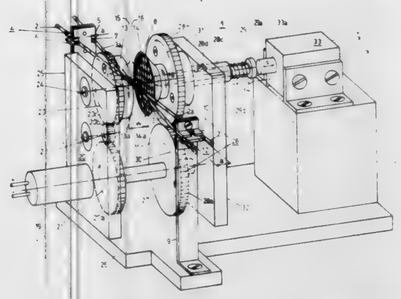
Filed Jun. 8, 1981, Ser. No. 271,260

Claims priority, application Switzerland, Jul. 23, 1980, 5613/80

Int. Cl.³ B65H *69/06*, **D01H** *15/00*

U.S. Cl. 57—22 **15 Claims**

1. A method for the production of a binding of fiber bundles comprising the steps of positioning the fiber bundles to be bound together adjacent to each other; applying shearing forces and tractive and/or compressive forces to at least one part of the circumference of each of the fiber bundles to be bound and on all of the fiber bundles by means of physical contact of the bundles using moving deformation members, in order to change the original cross sections and/or the original structure of the fiber bundles to be bound and to detach individual fibers from at least one of the bundles to be bound, at least partly from the bundle thereof and to displace them such that they finally wind around the fiber bundles to be bound in a force-locking manner at least in one part of the operational region of the deformation members; and then relocating the bundles which are bound by the winding out of the operational region of the deformation members; wherein said positioning includes conveying the clamped bundles to be bound while having a crossed orientation to the interspace between two deformation members provided with opposed flat profiled surfaces and which move in opposite directions to each other; said applying of forces being effected by reducing the spacing



between the profiled surfaces in order to clamp the fiber bundles between said moving deformation members to bring them into close contact with both profiled surfaces thereof, the profiled surfaces not contacting each other, as a result of which, the fiber bundles are bound together approximately over a length corresponding to the expansion of the profiled surfaces in the longitudinal direction of the bundles.

4,386,495

DOUBLE TWISTING SPINDLE WITH A PNEUMATICALLY OPERATED THREADING DEVICE

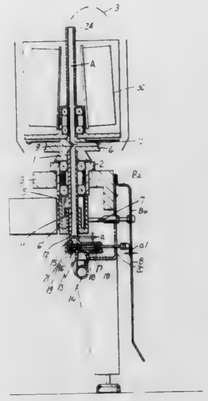
Waldemar Rothmeier; Rolf-Dieter Weber, both of Kempten, Fed. Rep. of Germany, and Zdenek Hemala, deceased, late of Durach, Fed. Rep. of Germany (by Jirina Hemala, Michal Hemala, Martin Hemala, legal representatives), assignors to Saurer-Allma GmbH, Kempton, Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,707

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1980, 8008865

Int. Cl.³ D01H *15/00, 7/86*

U.S. Cl. 57—279 **7 Claims**



1. A double twisting spindle having a pneumatically operated threading device, comprising a frame means, a spindle rotor rotatably mounted on said frame means about an axis of rotation and having an injector nozzle means and an outlet means therefrom, a thread outlet channel communicating with said outlet means of said injector nozzle means, an elongated and hollow spindle shaft centrally connected to said spindle rotor on one side thereof, the interior of said hollow spindle shaft communicating with said injector nozzle means, an elongated and hollow connecting channel centrally connected to said spindle rotor on a side thereof remote from said spindle shaft, the interior of said connecting channel communicating with said injector nozzle means, the end of said connecting channel remote from said injector nozzle means being flaired outwardly to define a funnel-shaped portion, the longitudinal axes of said spindle shaft and said connecting channel coinciding with the axis of rotation of said spindle rotor, and compressed air supply means having a blow nozzle axially aligned with said connecting channel and spaced axially therefrom to define a gap between said blow nozzle and said funnel-shaped portion, said compressed air supply means being stationarily affixed to said frame means, the diameter of the outlet opening of said blow nozzle being smaller than the inlet diameter of the funnel-shaped portion, whereby air supplied to said funnel-shaped end of said connecting channel from said outlet opening of said compressed air supply means will cause a thread to be drawn into the interior of said spindle shaft and delivered to said thread outlet channel.

4,386,496

DEVICE FOR SZ STRANDING OF ELEMENTS INTO UNITS AND BUNDLES OF UNITS

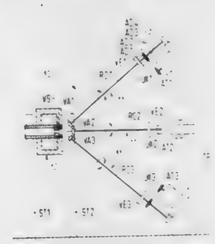
Ulrich Oestreich, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 28, 1981, Ser. No. 229,170

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1980, 3006054

Int. Cl.³ H01B *13/02*

U.S. Cl. 57—293 **11 Claims**



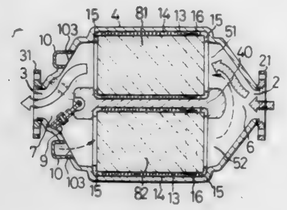
1. In a device for SZ stranding of a plurality of elements, particularly light waveguides and symmetrical elements such as quads, into separate units and then stranding the units into a bundle of stranded units, said device having a plurality of store devices in which the elements are brought into stranded units and a common stranding nipple having an aperture with an inlet for receiving the units and stranding the units into a bundle, the improvement comprising each of the plurality of store devices being a pipe-like store having means for rotating the pipe-like store in both directions about its axis, each of said pipe-like stores being provided with a stranding disc having an axially extending aperture for each of the elements being handled by the pipe-like store, said stranding disc being mechanically connected at one end of the pipe-like store to rotate therewith so that the elements moving along the store are arranged in a desired pattern and provided with a desired back twist, said plurality of pipe-like stores being positioned in a star-like pattern converging towards one another with their respective one end terminating as close as possible to the inlet of the common stranding nipple so that the point for stranding the elements into a unit for each store substantially coincides with the point for stranding the units in a bundle of stranded units in said stranding nipple.

4,386,497

EXHAUST GAS CLEANING DEVICE FOR INTERNAL COMBUSTION ENGINE

Shigeru Takagi, Anjo; Yukihisa Takeuchi, Aichi; Shigeru Kamiya, Chiryu; Masahiro Tomita, Anjo; Kiyohiko Oishi, Susono, and Kiyoshi Kobashi, Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jun. 19, 1981, Ser. No. 275,511
Claims priority, application Japan, Jun. 30, 1980, 55-88640
Int. Cl.³ F01N *3/02*
U.S. Cl. 60—296 **12 Claims**



1. An exhaust gas cleaning device for collecting and burning particulates contained within exhaust gases discharged from an internal combustion engine, comprising:
- a casing provided with at least one inlet port and an outlet port for said exhaust gases;
- a pair of particulates collecting members for collecting said particulates, which are made of heat resistant material having air permeability;
- each of said collecting members being disposed within said casing to form an independent exhaust gas passage between said inlet port and said outlet port;
- a valve means for alternately passing said exhaust gases flowed into said casing from said inlet port, through each of said collecting members;
- said valve means being provided in an exhaust gas outlet chamber which is formed between each end of said collecting members on the downstream side and said outlet port for intercepting the passage between one of said collecting members and said outlet port while opening the passage between the other collecting member and said outlet port; and
- a heated air supplying means for burning said particulates collected by said collecting members, which opens into said exhaust gas outlet chamber formed within said casing;
- said heated air supplying means supplying heated air into one collecting member through which said exhaust gases are prevented from passing into said outlet port so that said particulates previously collected by said one collecting member are burnt off and combustion products are flowed into said exhaust gases entering into the other collecting member.

4,386,498

METHOD AND APPARATUS FOR PREVENTING THE DEPOSITION OF CORROSIVE SALTS ON ROTOR BLADES OF STEAM TURBINES

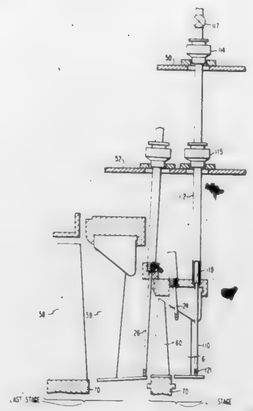
Pang-Kai Lee, Murrysville; William M. Hickam, Churchill, both of Pa., and William G. Steltz, Cherry Hill, N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 15, 1980, Ser. No. 197,378
Int. Cl.³ F01K *13/02*
U.S. Cl. 60—646 **15 Claims**

1. A method of reducing the effects of corrosive salt solutions, on rotating blades of a low pressure turbine of a turbine system including a steam generator, a reheater in the steam flow path prior to said low pressure turbine, said solutions occurring in a relatively narrow salt solution zone, comprising the steps of:

(A) placing a measurement device directly in the steam flow path within said low pressure turbine at a location so as to provide an indication of said corrosive salt solutions;

(B) obtaining an indication of operating load;



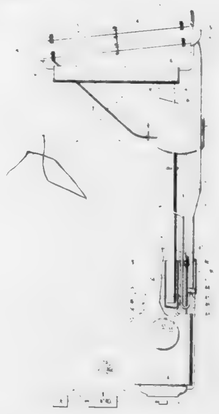
(C) shifting an operating parameter of said turbine system based upon said indications so as to shift said salt solution zone.

4,386,499

AUTOMATIC START-UP SYSTEM FOR A CLOSED RANKINE CYCLE POWER PLANT

Avi Raviv, Rehovot, and Abraham Dahan, Holon, both of Israel, assignors to Ormat Turbines, Ltd., Yavne, Israel

Filed Nov. 24, 1980, Ser. No. 209,533
Int. Cl.³ F01D *25/22*
U.S. Cl. 60—657 **21 Claims**



1. In a closed, Rankine cycle power plant of the type having a boiler responsive to the application of heat for vaporizing a liquid working fluid that has a cold level when the power plant is not operating and an operating level below the cold level when the power plant is in steady-state operation, a prime mover responsive to working fluid vaporized by the boiler for producing work, a condenser for condensing vaporized working fluid exhausted by the prime mover and condenser conduit connection means for returning part of the condensate to the boiler through the bearings of the prime mover and the balance of the condensate directly to the boiler, the improvement comprising:

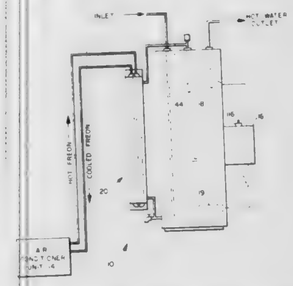
means for supplying vaporized working fluid only to the condenser when the power plant is cold-started and supplying vaporized working fluid only to the prime mover when the power plant is in steady-state operation.

4,386,500

WATER HEATER HEAT EXCHANGE APPARATUS, KIT, AND METHOD OF INSTALLATION

Boyd Sigafoose, Rte. 2, Box 350, Century, Fla. 32535

Filed Apr. 1, 1981, Ser. No. 249,825
Int. Cl.³ F25B *7/00*
U.S. Cl. 62—79 **5 Claims**



1. A method of saving energy which is otherwise usually wasted comprising;
- providing a heat exchanger structure having at least one set of inlet/outlet lines for the flow of hot refrigeration gases therethrough and another set of inlet/outlet lines for the flow of liquid to be heated therethrough;
- connecting said first set of inlet/outlet lines in series with a heating/cooling compressor-condensor system;
- connecting said second set of inlet/outlet lines to an existing hot water tank and system without any pump therewith for the purpose aforesaid;
- said second connecting step further including connecting the inlet line of said second set of inlet/outlet lines to the hot water heater at the conventional drain plug opening thereof;

and
- said inlet line connection of said second set of inlet/outlet lines being made by plumbing elements having rigid structural strength for the purpose of supporting the heat exchanger structure physically from the drain plug opening of the hot water heater, and
- said outlet line connection of said second set of inlet/outlet lines being made by plumbing elements having flexibility for making this connection with the maximum of ease and flexibility.

4,386,501

HEAT PUMP USING LIQUID AMMONIATED AMMONIUM CHLORIDE, AND THERMAL STORAGE SYSTEM

Frederick A. Jaeger, Denver, Colo., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Jul. 29, 1981, Ser. No. 287,992
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—112 **9 Claims**

1. In an absorption-desorption process for providing refrigeration in a cooling mode, and optionally heat in a heating mode, wherein ammonia is alternatively absorbed and desorbed from an absorbent in an absorber and generator respectively, and liquid ammonia is expanded through an expansion valve into an evaporator, the improvement comprising,
- (a) absorbing said ammonia in a pumpable low ammoniate complex of ammonia and ammonium chloride in about equimolar amounts,
- (b) enriching said low ammoniate with ammonia until said low ammoniate is converted to a high ammoniate complex of ammonium chloride and ammonia in the molar ratio of about 3 NH_3:1 NH_4Cl,



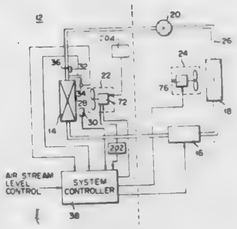
- (c) desorbing said high ammoniate so as to evaporate about 2 moles of ammonia per mole of NH_4Cl, and,
- (d) returning low ammoniate to said absorber.

4,386,502

HUMIDITY-MEASURING DEVICE FOR USE WITH AN AIR CONDITIONER

Kenji Umezu; Kazuhiro Takazawa, both of Shizuoka; Toshiaki Hitosugi, Numazu, and Eiji Kuwahara, Fuji, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 6, 1981, Ser. No. 280,353
Claims priority, application Japan, Jul. 8, 1980, 55-93135
Int. Cl.³ G01K *13/00*; **F25D** *17/04*
U.S. Cl. 62—129 **6 Claims**



1. A humidity-measuring device used with an air conditioner provided with an interior heat exchanger and refrigerant pipe which comprises:
- first sensor means disposed at an inlet of the interior heat exchanger to produce a first output signal denoting a temperature T_e of an air stream to be drawn into the interior heat exchanger;
- heat-conducting means which is positioned at one end of that portion of the pipe through which a refrigerant flows with a low pressure, and extends to the entrance of the interior heat exchanger;
- second sensor means fitted to that end portion of the heat conductor which faces the inlet of the interior heat exchanger to send forth a second output signal showing a temperature T_f of said end portion of the heat conductor; and
- air humidity-measuring means which is provided with a memory for storing data on the humidity of the sucked air corresponding to the temperatures T_e, T_f, and determines said air humidity from the data stored in the memory in accordance with output signals from the first and second sensor means.

4,386,503

METHOD AND APPARATUS FOR CONTROLLING AND OPTIONALLY REGULATING THE LEVEL OF LIQUID P_2S_5 IN A COOLING DEVICE

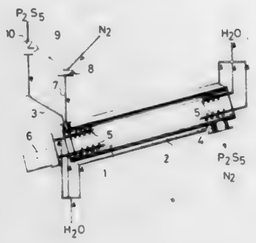
Günter Reichert, Bornheim-Merten; Franz Mainzer, Hürth; Kurt Lehmann, and Hermann Niermann, both of Erfstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 235,050

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006625

Int. Cl.³ F25C *1/14*

U.S. Cl. 62—188 **2 Claims**



1. An apparatus for controlling and optionally regulating the level of liquid P_2S_5 in a cooling apparatus comprised of a cooling trough (**1**) in inclined position provided, at its lower end portion, with a cooling jacket (**2**), a liquid P_2S_5 inlet (**3**) and, at its upper end portion, with a solid P_2S_5 outlet (**4**) and with at least one cooled screw conveyor (**5**) driven by means of a drive (**6**), wherein an inert gas inlet (**7**) which is connected to a pressure-measuring and level-indicating device (**8**) is disposed so as to open into the cooling trough (**1**), the inert gas inlet (**7**) being positioned in the immediate neighborhood of the liquid P_2S_5 inlet (**3**) so as to terminate above the wall of the cooling trough (**1**) at a level which lies between the axis and lower edge of the screw conveyor (**5**).

4,386,504

APPARATUS FOR THE LONG-TERM STORAGE OF BIOLOGICAL MATERIAL

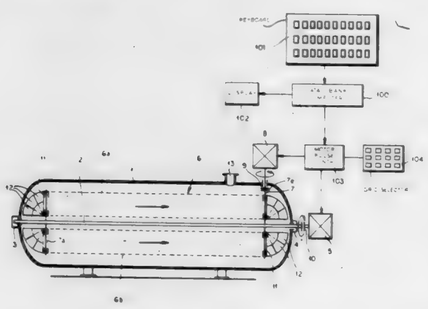
Max Bräutigam, Seeon, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Aug. 24, 1981, Ser. No. 295,483

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1980, 3032088

Int. Cl.³ F25D *25/04*

U.S. Cl. 62—380 **4 Claims**



1. An apparatus for the long-term storage of biological substances, comprising:

a vessel;

means forming a gate affording access to the interior of said vessel whereby a biotainer in the form of a flat circular sector containing a deep-frozen biological substance can be inserted into said vessel;

cooling means in said vessel for maintaining the temperature of biotainers therein below about 200° K.; and

a chain conveyor in said vessel for at least intermittently displacing said biotainers along a closed path, said gate having a shape corresponding to the cross section of said biotainers and said conveyor being formed with holders for receiving said biotainers, said holders conforming to the shape of said biotainers, said holders sequentially halting in registry with said gate.

4,386,505

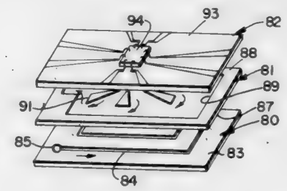
REFRIGERATORS

William A. Little, Palo Alto, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation-in-part of Ser. No. 259,687, May 1, 1981, abandoned, which is a continuation-in-part of Ser. No. 23,245, Mar. 23, 1979, abandoned. This application Mar. 4, 1982, Ser. No. 354,616

Int. Cl.³ F25B *19/00*

U.S. Cl. 62—514 R **22 Claims**



1. A multilayer low temperature refrigerator comprising a pressure tight bonded laminate of at least three plates of glass or similarly low thermally conductive material, means forming high pressure gas inlet and low pressure gas return passage means in said laminate, said inlet and return passage means being spaced apart by at least one of said plates and extending in counterflow heat exchange relation, said inlet passage means including a capillary section and terminating in a cooling chamber, and means defining a fluid flow passage leading from the cooling chamber to the low pressure return passage means.

4,386,506

EARRING AND METHOD OF MAKING SAME

John L. Stump, E. State St., Delmar, Del. 19940

Filed Mar. 23, 1981, Ser. No. 246,852

Int. Cl.³ A44C *27/00, 7/00*

U.S. Cl. 63—13 **2 Claims**

1. The method of making earrings and jewelry from discarded acupuncture needles wherein a major portion thereof constitutes a needle shaft and the other portion is the handle portion of the needle, the method consisting of the steps of clipping the major portion of the needle shaft of the acupuncture needle from the handle portion of the acupuncture needle to form two separate components thereof, forming a small loop in the distal end portion of the handle portion which has been clipped from the needle shaft, and forming the needle shaft into a substantially U-shaped earlobe hoop including forming a fastener means for extending across the open end of the U-shaped hoop, forming an offset loop in the juncture between one leg of the U-shaped hoop and the fastener means, inserting the free end of the other leg of the hoop through the distal loop on the handle portion so that it is received in the offset loop in the U-shaped hoop, inserting the free end of the other leg of the hoop through a pierced earlobe and securing the fastener means across the space between the legs of the hoop to secure the hoop to the earlobe and retain the handle portion of the acupuncture needle in dangling position with respect to the earlobe, said step of forming the fastening means includes forming the free end of one leg of the U-shaped hoop as a fastener member with a hook-shaped free end for detachable engagement with the free end of the other leg of the U-shaped hoop with the fastener member extending under the earlobe from front to rear with the hook-shaped end thereof disposed rearwardly of the earlobe and the offset loop in the hoop being disposed forwardly of the earlobe thereby disposing the dangling portion of the earring forwardly of the earlobe.



4,386,507

WING CAM GUIDE FOR KNITTING MACHINE LOCKS

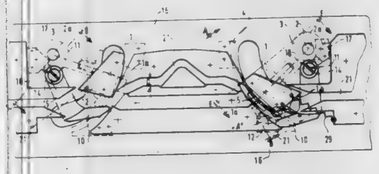
Hans Maisel, Timesstrasse 5, D-8581 Mistelbach, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 167,562

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928257

Int. Cl.³ D04B *7/00, 9/00*

U.S. Cl. 66—78 **7 Claims**



1. A wing cam guide for knitting machines with arcuate needles, needle beds, needle guides and cam assemblies, comprising:

a wing cam pivotably mounted on a universal joint supported on a cam plate for effecting movement thereof in two planes.

4,386,508

APPARATUS FOR SELECTIVE POSITIVE FEEDING OF A PLURALITY OF YARNS TO A STRIPING KNITTING MACHINE

Kurt A. G. Jacobsson, Ulricehamn, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

PCT No. PCT/EP80/00124, § 371 Date May 18, 1981, § 102(e) Date May 18, 1981, PCT Pub. No. WO81/01301, PCT Pub. Date May 14, 1981

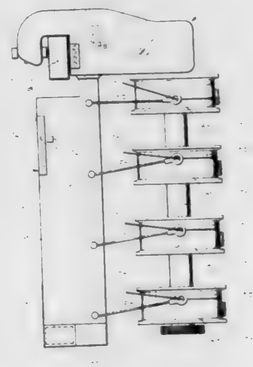
PCT Filed Oct. 31, 1980, Ser. No. 269,061

Claims priority, application Sweden, Oct. 31, 1979, 7909039

Int. Cl.³ D04B *15/48*

U.S. Cl. 66—132 T **5 Claims**

1. Apparatus for selective positive feeding of a plurality of yarns (Fa; Fb; Fc; Fd) to a horizontal striping knitting machine, said knitting machine comprising a number of knitting stations, each having a striper box mechanism including a set of movable yarn guides (e.g. **30**) controllable for selectively taking yarn after yarn into resp. out of the knitting position relative to the knitting needles (e.g. **31**), a number of positive yarn feeding units corresponding to the number of knitting stations being provided, each having a set of positive yarn feeding devices corresponding to the number of yarn guides in each set, with which the yarns are selectively engageable in a first position to be fed positively to the corresponding yarn guide or disengageable in a second position by means of yarn control elements (**7'***a*, **7''***a*, **8***a*; **7'***b*, **7''***b*, **8***b*; **7'***c*, **8***c*; **7'***d*, **8***d*), and electromagnetically controlled yarn control means being associated with said yarn feeding control elements to move said yarns



from their first to their second positions prior to their being taken out of the knitting position by the yarn guides, characterized in that a single electromagnet (**9**) is associated with each set of yarn feeding devices (**6***a*, **7***a*; **6***b*, **7***b*; **6***c*, **7***c*; **6***d*, **7***d*), which, when energized, moves any of said yarn control elements being in its first position to its second position via a uni-directional coupling means (**10***a*, **7''***a*; **10***b*, **7''***b*, etc.) not permitting of moving of each yarn control element to its first position by the de-energization of the electromagnet (**9**), and that each yarn (Fa; Fb; Fc; Fd) together with its associated yarn control element is movable, in a manner known per se, from its second position to its first position by an increase in its tension due to its being brought into knitting position by its associated yarn guide.

4,386,509

DEVICE FOR EXTRACTING WATER FROM LAUNDRY

Rudolf Küttelwesch, Niedernhausen, Fed. Rep. of Germany, assignor to MEWA Mechanische Weberei Altstadt GmbH, Wiesbaden, Fed. Rep. of Germany

Division of Ser. No. 188,993, Sep. 22, 1980, Pat. No. 4,332,047. This application Feb. 3, 1982, Ser. No. 345,376

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940217

Int. Cl.³ D06F *31/00, 39/08*

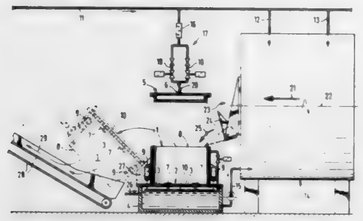
U.S. Cl. 68—20 **6 Claims**

1. Apparatus for extracting rinse water from laundry in a laundry plant in which laundry is washed and rinsed with water which has been heated by blowing steam into the water, said apparatus comprising:

a pressure vessel having an open top and a bottom wall provided with perforations for the passage of water;

means for holding water which will subsequently be used for washing and rinsing laundry at a location outside of said vessel and arranged to receive water passing via the perforations in said vessel bottom wall;

removable cover means for closing the top of said vessel in a sealed manner; and



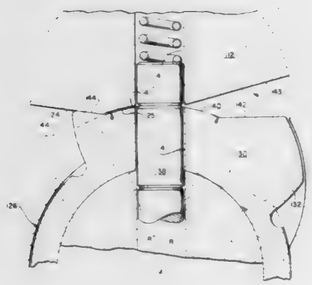
conduit means connected for introducing steam into said vessel to enable the steam to pass through said bottom wall perforations and into said water holding means.

4,386,510

KEY-CHANGEABLE LOCK CORE

Walter E. Best, and William R. Foshee, both of Indianapolis, Ind., assignors to Best Lock Corporation, Indianapolis, Ind.

Filed Mar. 2, 1981, Ser. No. 239,436
Int. Cl.³ E05B *27/04*
U.S. Cl. 70—369 **12 Claims**



1. A key-removable lock core adapted to be retained in a core receptacle by a retainer lug retractable to within the profile of the core by key operation, having

a core body forming a key-plug housing and a pin tumbler housing,

a key plug supported for rotation in said key-plug housing,

a control element having a retainer lug thereon and mounted in said key plug housing for limited rotation therein between a core-locking position in which the lug projects laterally from the core body outside its profile and a retracted position in which the control element and lug are within such profile,

said control element having an inner cylindrical face defining an operating shear line between itself and the key plug and having an outer face defining a control shear line between itself and a face on said pin tumbler housing,

a series of pin tumbler barrels extending from said pin tumbler housing through said control element and into said key plug, and

said core having the improvement comprising

a shear line-defining arcuate face portion on said outer face of the control element in the vicinity of said pin tumbler barrels, substantially on a radius of curvature about the axis of rotation of the control element, and a planar portion adjacent thereto and extending outward toward said retaining lug and diverging at a small angle from such curvature so that said control element and lug extend radially beyond such radius of curvature to increase the cross section of the lug,

said face on said pin tumbler housing having a shear line-defining portion in the vicinity of said pin tumbler barrels and a lateral stop face against which said planar face of the control element moves as a stop when the control element is moved to core-retracted position,

and stop means for stopping the control element when the control element is moved to core-locking position,

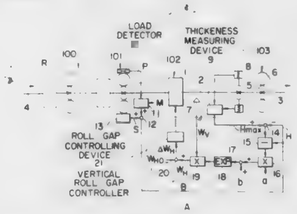
said stop means comprising a stop face portion on the control element at the opposite side of said arcuate face portion from said planar portion, and a stop face on the core body against which such stop face portion moves when the control element is moved to core-locking position, said stop faces on the pin tumbler housing being at an angle to each other.

4,386,511

METHOD AND SYSTEM FOR CONTROLLING A PLATE WIDTH

Shinichi Morita, Fussa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed May 14, 1981, Ser. No. 263,597
Claims priority, application Japan, May 29, 1980, 55-71732
Int. Cl.³ B21B *37/02*
U.S. Cl. 72—121 **13 Claims**



1. A method for controlling a plate width in a hot rolling mill having a front stage including a horizontal roll stand; and a rear stage following said front stage and including a vertical roll stand and a horizontal roll stand, said method comprising the steps of: determining the thickness of a thickened portion of the plate thickened as a result of rolling by the vertical roll stand of the rear stage and the plate thickness at the entrance of the vertical roll stand of the rear stage; calculating the ratio of the thickness of the thickened portion to the plate thickness at the entrance of the rear stage; determining the plate width at the exit of the vertical roll stand; calculating, the plate width at the exit of the horizontal roll stand of the rear stage, based at least in part on said calculated ratio of the thicknesses of the plate and said determined plate width; and controlling the roll gap of the vertical roll stand of the rear stage to bring the plate width at the exit of the horizontal roll stand of the rear stage closer to a target value.

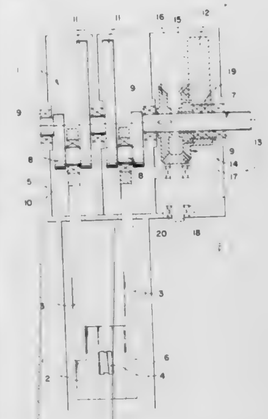
11. A plate width control system for a hot rolling mill having a front stage including a horizontal roll stand and a rear stage following the front stage and including a vertical roll stand and a horizontal roll stand, comprising thickened portion thickness determining means for determining the thickness of a thickened portion of a plate thickened as a result of rolling by the vertical roll stand of the rear stage; thickness determining means for determining the plate thickness at the entrance of the vertical roll stand of the rear stage; ratio determining means for determining the ratio of the thickness of the thickened portion to the plate thickness at the entrance of the vertical roll stand based on the output from said thickened portion thickness determining means and the output from said thickness determining means; first width determining means for determining the plate width at the exit of the vertical roll stand of the rear stage; second width determining means for determining the plate width at the exit of the horizontal roll stand of the rear stage based on the output from said ratio determining means and the output from said first width determining means; roll gap controlling means for calculating the deviation of the plate width at the exit of the horizontal roll stand of the rear stage based on the output from said second width determining means and a target value; and controlling the roll gap of the vertical roll stand of the rear stage to make the deviation smaller.

4,386,512

PILGER TUBE ROLLING MILL

Klaus Rehag, Monchen-Gladbach, and Horst Stinnertz, Willich, both of Fed. Rep. of Germany, assignors to Wean United, Inc., Pa.

Filed Mar. 16, 1981, Ser. No. 244,367
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1980, 3010526
Int. Cl.³ B21B *35/14*
U.S. Cl. 72—214 **6 Claims**



1. A pilger step by step seamless tube rolling mill for the production of a tube, comprising:

a frame for supporting a pair of rotatable rolls,

a crank assembly for reciprocating said frame and having a crankshaft,

positive drive means for continuously rotating said crank assembly throughout said production,

a first compensating mass means fixedly connected to and an integral part of said crankshaft for rotation therewith in the same direction,

a second compensating mass means rotatably mounted on said crankshaft, and,

gear means associated with said crankshaft and said second compensating mass means and constructed and arranged in a manner to rotate said second compensating mass means in a direction opposite to said crankshaft and said first compensating mass means for the compensation of the inertial forces produced by the moving masses of said frame and said first compensating mass means,

said gear means comprising a bevel gear drive set comprising:

a first bevel gear secured to said crankshaft for rotation in the same direction thereof,

a second bevel gear mounted on said crankshaft for rotation relative thereto and secured to said second compensating mass means,

a third bevel gear meshing with said first and said second bevel gears to cause said opposite rotation of said second compensating mass means, and

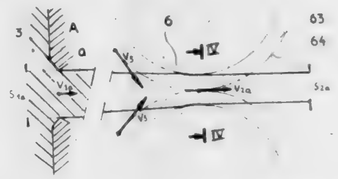
said first and said second compensating mass means having an axis of rotation which is coaxial relative to each other and to said crankshaft.

4,386,513

METHOD OF PRODUCTION OF METAL WIRES

Michel Doudet, Epone, France, assignor to SECIM, Courbevoie, France

Filed Feb. 5, 1981, Ser. No. 231,830
Claims priority, application France, Feb. 12, 1980, 80 03089
Int. Cl.³ B21C *1/20, 35/02*
U.S. Cl. 72—256 **2 Claims**



1. A method of producing metal wire, comprising the steps of

(a) extruding said wire from a die having a cross-section S_1 at a mean extrusion velocity V_1m, followed by

(b) reducing the cross-section of said extruded wire as a combined effect of drawing and rolling by passing said wire between two rollers having a passage of cross-section $S_2 < S_1$, to which corresponds a mean exit velocity on the part of the wire of

$$V_2m = \frac{S_1}{S_2} V_1m,$$

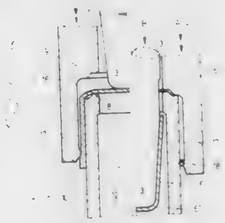
said rollers being driven at a peripheral speed V_3 greater than $1.15V_2m$ and maximally $2V_2m$.

4,386,514

METHOD FORMING A DRAWN CONTAINER AND A CONTAINER PRODUCED BY THIS METHOD

Rolf Herten, Meerbusch, Fed. Rep. of Germany, assignor to Blechwarenfabrik Gustav Gruss & Co., Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,005
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1979, 2927755
Int. Cl.³ B21D *22/06*
U.S. Cl. 72—347 **8 Claims**



1. A method for drawing a substantially wrinkle-free thin-walled conical cup from a steel blank using a draw ring, a holddown for holding said steel blank against the draw ring, said holddown and said draw ring forming between themselves a drawing slot and a draw punch for pushing the blank through a cavity of said draw ring, comprising the steps of:

(a) holding a steel blank between said holddown and said draw ring by using a predetermined clamping force; and

(b) pushing said steel blank through said cavity of said draw ring using a force of said draw punch less than said predetermined force while clamping said blank, whereby said blank is stretch formed by the tension between said draw ring and

an end of said draw punch as said blank is being drawn into said cavity through said drawing slot.

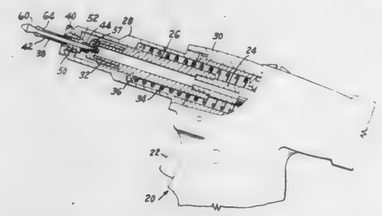


4,386,515

SETTING TOOL FOR BLIND FASTENERS

David E. Starke, Reading, Pa., assignor to USM Corporation, Farmington, Conn.

Filed Dec. 30, 1981, Ser. No. 335,866
Int. Cl.³ B21J *15/34*
U.S. Cl. 72—391 **10 Claims**



1. A pneumatic tool for setting blind fastener inserts said tool comprising:

a pneumatic system within said pneumatic tool, said pneumatic system being actuated by an operator of the tool;

means, responsive to the actuation of said pneumatic system, for drawing back on a moveable element within said pneumatic tool; and

means, attached to said moveable element, for engaging the threadable blind fastener inserts, said engaging means comprising,

a mandrel threadably attached to said moveable element and extending through a nose of said tool,

a collet mounted on said mandrel and extending through the nose of said tool and

a spring mounted on said mandrel between said collet and said moveable element said spring being normally compressed when said pneumatic system has not been actuated.

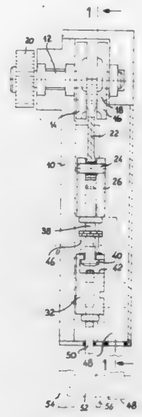
4,386,516

AUTOMATIC BENDING MACHINE

Adolf Wünsch, König-Ludwig-Weg 10, 8962 Pfronten-Obermeilingen, and Martin Köpf, Buching, 8959 Lachen 3, both of Fed. Rep. of Germany

Filed Jan. 8, 1981, Ser. No. 223,517
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1980, 3000532
Int. Cl.³ B21J *9/10*
U.S. Cl. 72—434 **9 Claims**

1. In an automatic bending machine for the production of multi-form small parts from a metal band or wire, a driving device for reciprocating a slide unit carrying a bending tool comprising a housing, a drive shaft mounted for rotation in said housing and protruding therefrom, a pinion fastened at the protruding end of said driving shaft, the housing being hermetically sealed and containing an oil filling, the shaft being provided with an eccentrical crank pin, a slide guide-track arranged in the housing in parallel relationship to the moving direction of said slide unit, a slide means displaceable in the slide guide track, a connecting rod connecting the crank pin with the slide means, the slide means comprising a rod passing



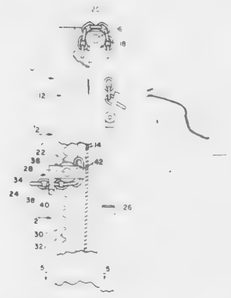
through a packing in a bore of one of the walls of the housing and connected with the slide unit.

4,386,517

PULLING TOWER STRUCTURE

Samuel R. Harmon, Clinton, Iowa, assignor to Bee Line Company, Bettendorf, Iowa

Filed Jul. 13, 1981, Ser. No. 282,675
Int. Cl.³ B21D *1/12*
U.S. Cl. 72—455 **4 Claims**



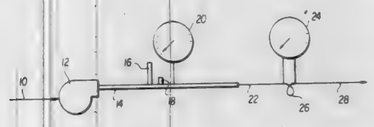
1. Pulling tower structure comprising: a vertically elongated, upright support having a pair of parallel side walls spaced apart transversely of the height of the support and rigidly cross-connected in such manner as to leave the support open at its front, a top sheave vertically alined with the interior of the support and journaled on the support adjacent to its upper end on an axis normal to the planes of the side walls, a pair of vertically elongated upright members disposed within the support and secured respectively to the side walls in transversely spaced apart relation, said members respectively having rear edge portions and each edge portion having a plurality of vertically spaced apart notches opening to the rear of the support and the notches in each member being respectively transversely alined with those in the other member, a cross shaft disposed within the support and having opposite end portions selectively receivable by any selected pair of transversely alined notches, a second sheave carried by the cross shaft between the members and below the top sheave, a flexible tensionable element trained over the top sheave and extending downwardly to and under the second sheave and thence forwardly through the open front of the support for connection to a load, a second pair of vertically elongated upright members secured respectively to the interiors of the side walls and spaced rearwardly from the respective notched members by a distance at least equal to the diameter of the shaft end portions, said second members and notched members combining to provide a pair of vertical tracks for guiding the shaft end portions during vertical movement of the shaft and second sheave to new positions, and positioning means connected to the cross shaft for manually moving the cross shaft rearwardly out of such selected pair of notches for vertical re-positioning thereof in another pair of alined notches after the forces of the element are removed.

4,386,518

APPARATUS AND METHOD FOR MEASURING LOW CONCENTRATIONS OF HIGH MOLECULAR WEIGHT POLYMERS IN SOLUTION

Jalna R. Zatko, North Wales, Pa., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 4, 1981, Ser. No. 240,060
Int. Cl.³ G01N *11/04*
U.S. Cl. 73—55 **4 Claims**



1. Apparatus for measuring low concentrations of high molecular weight polymers in solution comprising:

sample inlet means for receiving a polymeric solution of unknown concentration;

an adjustable flow rate metering pump connected to said sample inlet means for controlling the flow rate of the sample;

main flow line means for receiving the discharge of said pump;

reduced flow line means having smaller diameter than that of said main flow line means and having an input end connected to the output end of said main flow line means;

said reduced flow line means being straight at each end and having a single loop in the center region thereof, whereby turbulence of flow of the sample is increased;

differential pressure gauge means having two measuring points, each point being connected across said loop to a differential straight portion of the reduced flow line for producing an indication of the difference in pressure of the reduced flow line means at the two measuring points;

whereby the indication of the differential pressure gauge means is indicative of the percentage drag reduction of the solution and the concentration of the polymer in solution.
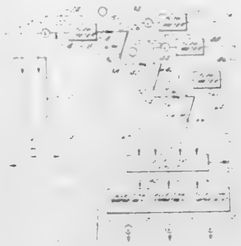
4,386,519

SPECIFIC SURFACE FRACTIONATOR

John D. Sinkey, 686 White Oak Dr., Springfield, Ohio 45504

Filed Jan. 22, 1980, Ser. No. 114,211
Int. Cl.³ G01N *1/18, 33/34*
U.S. Cl. 73—61.4 **5 Claims**

1. A specific surface fractionator comprising; a plurality of hydrocyclones arranged in series, each of said cyclones having conical section with a base, a base outlet, an apex outlet and a tangential inlet adjacent said base; means connecting the inlet of each cyclone to the apex outlet of the preceding cyclone, valve means regulating the flow through the base outlets of at least some of said cyclones to maintain a back pressure on their respective base outlet to ensure that the pressure at the apex outlet of their respective hydrocyclone is sufficiently high to overcome the pressure drop in the succeeding cyclones in said series and to obtain the desired flows to the succeeding cyclones in said series, means for pumping a slurry to said inlet of the first cyclone in said series at a pressure sufficient high to
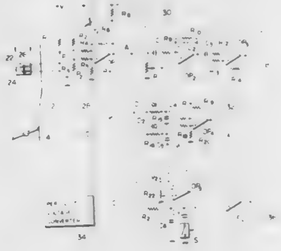


overcome the pressure drop in each of the hydrocyclones in the series, and means for collecting samples ejected from at least some of said outlets of said cyclones.

4,386,520

FLOW RATE MEASURING APPARATUS

Hatsuo Nagaishi, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 7, 1981, Ser. No. 223,146
Claims priority, application Japan, Jan. 10, 1980, 55-1644
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—118 **4 Claims**



2. An apparatus for measuring the flow rate of intake air through an intake passage into an internal combustion engine, comprising:

(a) means disposed in the intake passage of said internal combustion engine for generating Karman vortices whose frequency is substantially proportional to the flow of the intake air;

(b) means for sensing the Karman vortices to generate a voltage signal indicative of changes in the pressure of the intake air due to the occurrence of the Karman vortices;

(c) means for sensing the difference between the minimum value and the maximum value of the voltage signal;

(d) means for comparing the sensed difference with a reference value to produce a comparison signal having a first value when the sensed difference is greater than the reference value and a second value when the sensed difference is less than the reference value; and

(e) means responsive to the comparison signal for providing a first output signal in response to said second value and for providing a second output signal in response to said first value.

4,386,521

INDICATOR FOR LOCK-UP STATE OF LOCK-UP TYPE AUTOMATIC TRANSMISSION

Hideo Hamada; Yoshiro Morimoto, both of Yokosuka; Masaaki Suga, Yokohama; Masaaki Futagi, and Tadashi Suzuki, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 10, 1981, Ser. No. 291,840
Claims priority, application Japan, Aug. 11, 1980, 55-109140
Int. Cl.³ G01M *13/02*
U.S. Cl. 73—118 **3 Claims**



1. An indicator system for a lock-up type automatic transmission for an automotive vehicle, the lock-up type automatic transmission including means for generating a lock-up permission signal, means for generating a gear shifting signal representing that a gear shift is made within the automatic transmission, and means for causing the lock-up type automatic transmission to operate in a lock-up state when the lock-up permission signal is generated unless the gear shifting signal is generated and for temporarily suspending the lock-up state to cause the lock-up type automatic transmission to operate in a converter state in response to the gear shifting signal even if the lock-up permission signal is generated,

the indicator system comprising:

an indicator; and

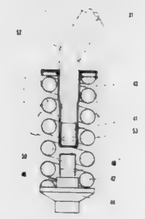
means for energizing said indicator in response to said lock-up permission signal.

4,386,522

POSITION SENSOR FOR FUEL INJECTION APPARATUS

George D. Wolff, Post Office Drawer 9407, Winter Haven, Fla. 33880

Filed Jul. 20, 1981, Ser. No. 285,286
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—119 A **25 Claims**



1. A sensor for detecting the position of fuel injection means such as a needle injector, poppet valve or the like in fuel injection apparatus of an internal combustion engine, said sensor comprising:

(a) a header of an electrically insulating material having opposing first and second surfaces;

(b) plural conductive leads, each separately coupled to said first surface of said header;

(c) sensing means mounted upon said second surface for detecting a magnetic field and changes therein responsive to movement of the fuel injection means, such as a needle injector or poppet valve in an internal combustion engine;

(d) metallization means between said first and second surfaces for interconnecting said leads with said sensing means;

(e) encapsulating means about said header, leads and sensing means; and wherein

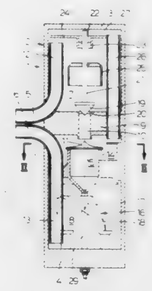
(f) said encapsulated sensor is dimensioned for insertion into and out of said fuel injection apparatus including said fuel injection means.

4,386,523

APPARATUS FOR MEASURING AND/OR SAMPLING THE MILK-YIELD OF A COW DURING MILKING

Wim Vonk, Maassluis; Ryzard M. Bielawiec, Rijswijk, and Hendrik J. van der Horn, Mantgum, all of Netherlands, assignors to N.V. Verengide Instrumentenfabrieken Enraf-Nonius, Netherlands

Filed Aug. 25, 1981, Ser. No. 296,219
Claims priority, application Netherlands, Sep. 9, 1980, 8005082
Int. Cl.³ G01F *15/08, 5/00;* G01N *1/20*
U.S. Cl. 73—200 **26 Claims**



1. Apparatus for measuring and/or sampling the milk-yield of a cow during milking, comprising a housing with a milk inlet and a milk outlet, a rotation-symmetric distributing means mounted in a drain chamber within the housing, said drain chamber being connected with the milk outlet, wherein a milk flow is supplied in an axial direction to the distributing means to provide a radial flowing milk film, a portion of which is conducted to a measuring means through a receiving chamber, wherein a buffer chamber is formed in the housing above the drain chamber, the incoming milk stream being received in said buffer chamber, which buffer chamber is connected to the drain chamber by a cylindrical bore formed in its bottom wall, said bore being coaxial with the distributing means, said apparatus including means adapted to permit a milk flow to the distributing means through the cylindrical bore only when a predetermined milk quantity is received in the buffer chamber, said means interrupting said milk flow at a second smaller milk quantity in the buffer chamber.

4,386,524

MANOMETER TYPE APPARATUS WITH IMPROVEMENT

Eugene W. Vest, Wappingers Falls, and Dean C. McGahey, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 25, 1981, Ser. No. 238,186
Int. Cl.³ G01F *23/14*
U.S. Cl. 73—299 **4 Claims**



4. In a sensitive J-tube instrument for measuring change in the surface level of a fluid in an underground tank or the like, said instrument having a U-tube portion containing indicator fluid therein with the shorter leg of said J-tube being open and subject to being immersed in said underground tank fluid, the improvement comprising

means for avoiding the formation of a capillary seal when said open leg is immersed in said underground tank fluid, comprising

a relatively small diameter wire,

means for attaching said wire adjacent to the top of said open leg on the outside thereof,

said wire being draped over to lie along the inside surface of said open leg and extending down far enough to reach through said capillary seal.
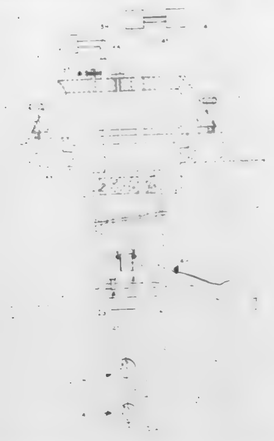
4,386,525

DEVICE FOR AND METHOD OF DETECTING LEAKS IN A LIQUID STORAGE RESERVOIR

Joseph R. Mooney, 33 Hawk St., New Orleans, La. 70124

Filed Sep. 2, 1982, Ser. No. 414,305
Int. Cl.³ G01M *3/32*
U.S. Cl. 73—49.2 **10 Claims**

1. An improved method of detecting leaks in an underground liquid storage reservoir of the type including a hollow tank having a top portion located beneath the ground surface, and including one or more hollow tube members extending upwardly above said top portion of said tank and communicating the interior of said tank with said ground surface, the combined cross-sectional area of said tube members being greatly less than the cross-sectional area of the tank, said method comprising: filling said reservoir with liquid until the level of the liquid rises into said tube members and is above said top portion of said tank and below said ground surface; measuring any change in the level of the liquid in one of said tube members over a period of time; and measuring any change in the temperature of the liquid in said reservoir over the same said period of time that any change in the level of the liquid in said one of said tube members is measured; wherein said improvement comprises: determining any change of elevation of the surface of the liquid in said one of said tube members due to evaporation from that surface over the same said period of time that any change in the level of the liquid in said one of said tube members is measured.

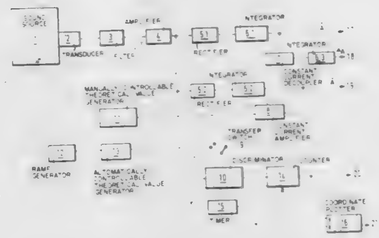


4,386,526

METHOD FOR QUALITY CONTROL OF PROCESSES AND CONSTRUCTION COMPONENTS

Eckhard Roeder, Lesumer Heerstr. 5, 2820 Bremen 77, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,572
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012773
Int. Cl.³ G08B *21/00*
U.S. Cl. 73—587 **8 Claims**



1. A method for testing a device which emits sound vibrations by producing and displaying signals representative of said sound vibrations occurring during a predetermined time period, comprising the steps of:

integrating said signal representative of said sound vibrations with first integrating means having a first time constant to produce a signal representative of peak values of said signal representative of said sound vibrations;

integrating said signal representative of peak values with second integrating means having a second time constant smaller than said first time constant to produce a signal representative of an oscillation height of said signal representative of said sound vibrations; and

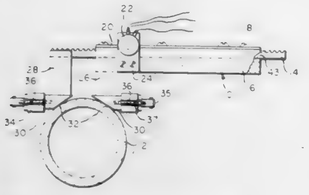
providing a visual display indicative of said signal representative of peak values and said signal representative of an oscillation height.

4,386,527

ULTRASONIC MEASURING INSTRUMENT

Charles Maucher, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 4, 1981, Ser. No. 260,194
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—597 **3 Claims**



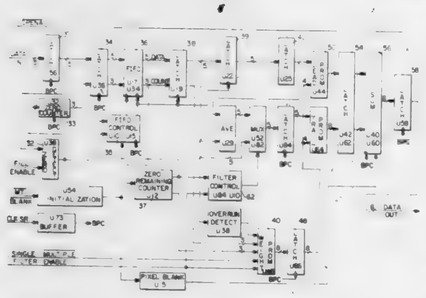
1. A portable instrument comprising:
an elongated support;
a first ultrasonic transducer fixed mounted with respect to said support;
a second ultrasonic transducer slidably mounted with respect to said support;
a potentiometer operably connected between the transducers for generating a signal dependent on the distance therebetween;
first circuitry connected to the transducers for generating a signal related to the elapsed time for transmission of sound energy through an object located between the transducers; and
second circuitry connected to the first circuitry and said potentiometer for generating a signal representative of the velocity of the sound energy, said velocity signal being based on the distance between said transducers and the output of said first circuitry.

4,386,528

METHOD AND MEANS FOR GENERATING PIXEL DATA IN AN ULTRASONIC SCANNING SYSTEM

Gary L. Engle, Fair Oaks, Calif., assignor to General Electric Company, Rancho Cordova, Calif.

Filed Aug. 7, 1981, Ser. No. 290,839
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—606 **10 Claims**



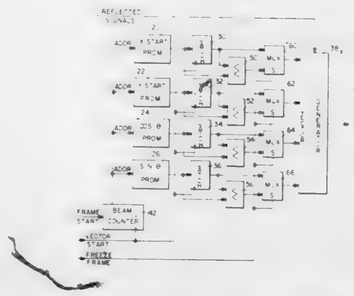
1. In an ultrasonic sector scanner and video display in which pixel data for said display are obtained from vectors of ultrasonic wave reflections, a method of obtaining data for pixels in a horizontal display line between a first pixel data point in one vector and a second pixel data point an an adjacent vector comprising the steps of
storing a first value for said first pixel datum point,
counting the number of intermediate zero data values for pixels until said second pixel data point,
storing a second value for said second pixel data point, and
assigning values to said intermediate pixels based on said first value and said second value.

4,386,529

METHOD AND MEANS FOR IMPROVING VIDEO DISPLAY IMAGE

Gary L. Engle, Fair Oaks, Calif., assignor to General Electric Company, Rancho Cordova, Calif.

Filed Aug. 7, 1981, Ser. No. 290,851
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—606 **3 Claims**



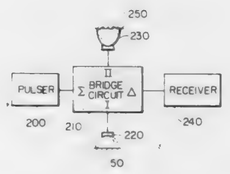
1. In an ultrasonic sector scanner, a method of providing an improved frozen video display comprising the steps of generating first pixel data for a first frame from reflected ultrasonic data for a first plurality of vectors generated by said sector scanner, and generating second pixel data for a second frame from said reflected data for a second plurality of vectors lying intermediate said first plurality of vectors.

4,386,530

ULTRASONIC IMAGING EQUIPMENT

Hiroshi Kanda, Tokorozawa; Isao Ishikawa, Hino, and Toshio Kondo, Kunitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 21, 1981, Ser. No. 226,820
Claims priority, application Japan, Jan. 21, 1980, 55-4623
Int. Cl.³ G01N *24/04, 29/04*
U.S. Cl. 73—613 **6 Claims**



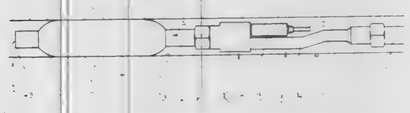
1. In an ultrasonic imaging equipment wherein an acoustic transducer which includes a first acoustic propagating medium, a piezoelectric member disposed at one end of said first acoustic propagating medium, a spherical hole formed at the other end thereof, and a second medium interposed between said spherical hole and a first specimen is used to obtain an ultrasonic image of said first specimen on the basis of a reflected wave from said first specimen, said acoustic transducer generating acoustic waves reflected from a boundary between said spherical hole and said second medium as a lens echo; the improvement comprising dummy acoustic transducer means comprising a third acoustic propagating medium, a piezoelectric member disposed at one end of said third acoustic propagating medium, a spherical hole formed at the other end thereof, and a fourth medium interposed between said spherical hole and a second specimen for generating acoustic waves reflected from a boundary between a spherical hole thereof and a medium proximate to said spherical hole as a lens echo identical to the lens echo of said first-mentioned acoustic transducer, wherein the second specimen is an acoustic absorber whose reflection of acoustic waves is substantially less than the reflection of said first specimen and means for providing a difference between the reflected lens echo from said first-mentioned acoustic transducer and the lens echo from said dummy acoustic transducer means so that the unwanted lens echo from said first-mentioned acoustic transducer is substantially eliminated by said dummy acoustic transducer means.

4,386,531

METHOD AND APPARATUS FOR DETERMINING THE INJECTION PRESSURE DURING INJECTION OPERATIONS DURING CONSTRUCTION WORK

Hans Heimgartner, Jona, and Karl Wirz, Meilen, both of Switzerland, assignors to Hüni & Cie. AG, Meilen, Switzerland

Filed Aug. 20, 1981, Ser. No. 294,625
Claims priority, application Switzerland, Sep. 15, 1980, 6893/80
Int. Cl.³ G01L *7/08, 9/00*
U.S. Cl. 73—756 **4 Claims**



1. A method for determining the injection pressure during injection operations performed during construction work, comprising the steps of:
providing an infeed line for infeeding an injection medium flowing in a predetermined direction to an injection site;
said infeed line containing a seal closing a ring-shaped space between the infeed line and a wall surrounding said infeed line; and
taking the pressure measurement internally of the infeed line at a location which, viewed with respect to the direction of flow of the injection medium, is situated upstream of the seal closing the ring-shaped space between the infeed line and the wall surrounding said infeed line.

4,386,532

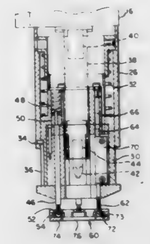
INSTRUMENTED TOOL

Harry L. Benjamin, Dayton, Ohio, assignor to Centro Corporation, Dayton, Ohio

Division of Ser. No. 109,722, Jan. 4, 1980, Pat. No. 4,338,723, which is a continuation-in-part of Ser. No. 843,414, Oct. 19, 1977, abandoned. This application Mar. 4, 1982, Ser. No. 354,862
Int. Cl.³ B25B *23/142*; G01C *9/06*; G01L *5/16*
U.S. Cl. 73—862.04 **14 Claims**

1. An instrumented tool for inserting a threaded fastener in a member, comprising:
a driver member having means for drivingly engaging said threaded fastener;
a rotatable shaft supporting said driver member for rotation therewith;
means engaging said shaft for causing axial rotation thereof;
means engaging said shaft for measuring the torque on said shaft;
means engaging said shaft for measuring the thrust on said shaft; and
means supporting said shaft and engagable with a surface of said member for measuring the angle between the axis of rotation of said shaft and said surface of said member.

10. An instrumented tool for inserting a threaded fastener or the like into a correspondingly threaded hole defined in a member, comprising:
a drive member having means for drivingly engaging said threaded fastener;
a rotatable shaft supporting said driver member for rotation therewith;



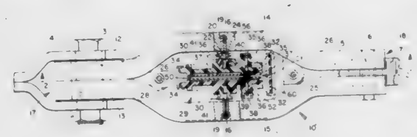
a plurality of potentiometer means equally angularly spaced in a concentric pattern around said shaft; and
means engageable with a surface of said member in which said hole is defined and operably associated with said potentiometer means, for causing a signal output from said potentiometer means in response to a change in angular relationship between the axis of rotation of said shaft and said surface.

4,386,533

CAPACITANCE TRANSDUCER

Jeffrey A. Jackson, Urbana, Ill.; Douglas J. Kluge, Golden Valley; Gary R. Bluem, Wayzata, both of Minn.; Eugenio Espiritu Santo, and Carl E. Kittle, both of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jan. 26, 1981, Ser. No. 228,440
Int. Cl.³ G01L *1/14*
U.S. Cl. 73—862.64 **10 Claims**



1. A sensor for sensing tension in load bearing members, the sensor comprising:
a deformable member with first and second ends for connecting to respective load bearing members, the deformable member having a pair of laterally spaced-apart central portions interconnecting the first and second ends, the deformable member being deformable to vary the separation of the central portions as a function of longitudinal tension applied to the load bearing members;
a capacitive transducer comprising a first capacitor plate movable with one of the central portions and a second capacitor plate spaced apart from the first capacitor plate, movable with the other central portion and movable relative to the first capacitor plate, the capacitor plates cooperating to define a variable capacitance therebetween; and
pivot means for pivotally coupling each plate to its corresponding central portion.

4,386,534

SYSTEM FOR OBTAINING EXHAUST SAMPLES AND ANALYZING THE SAME

Michael S. Englund; Joseph C. Hafele, both of Peoria, and Dwain C. Schulze, Jr., North Pekin, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 16, 1981, Ser. No. 311,858
Int. Cl.³ G01N *1/24, 1/26*
U.S. Cl. 73—863.01 **11 Claims**



1. A system for obtaining samples of the exhaust of a combustor for subsequent constituent level analysis, comprising:
- means defining a first system gas inlet (**10**) adapted to be disposed in the exhaust stream of a combustor;
- means defining a second system gas inlet (**26**) adapted to be in fluid communication with the ambient;
- means defining a system outlet (**56,58**) adapted to be sealingly coupled to a sample receiving and collecting container (**60,62**);
- a pump (**32**) associated with said gas inlets and alternately connectable to either said first or said second gas inlet (**10,26**) for alternately receiving and pressurizing exhaust or ambient gases, said pump having an outlet (**36**) for discharge of said gases;
- an air cooled heat exchanger (**38**) connected to said pump outlet to receive said gases therefrom;
- means (**40**) for flowing air past said heat exchanger (**38**) to thereby cool said gases therein to condense water vapor in said gases;
- means (**42,44**) for removing condensed water vapor from said system;
- means (**48,50,52,64,66**) connecting said heat exchanger (**38**) to said system outlets (**56,58**); and
- a chemical gas dryer (**54**) selectively connectable in said system between said second system inlet and said system outlet.

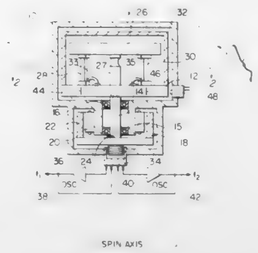
4,386,535

RESONATOR RESTRAINED GYRO

William C. Albert, Boonton, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Sep. 12, 1980, Ser. No. 187,010
Int. Cl.³ G01C *19/28*
U.S. Cl. 74—5.6 D **4 Claims**

1. A gyroscope comprising:
- a first member rotating about a spin axis;
- a second member rotating about the spin axis and positioned in spaced relation to the first member;
- flexible means securing the first and second rotating members together for permitting linked rotation therebetween;
- a plurality of oscillating means;
- a plurality of force sensing means respectively connected in circuit with the oscillating means, the force sensing means being physically angularly spaced from each other and connected between the first and second rotating members for producing a digital signal having a vibrational frequency dependent upon axial force along the spin axis as modulated by an input angular rate; and
- means connected in circuit with the oscillating means and the force sensing means for resolving the frequency modulated signal into components indicative of input rates about two orthogonal axes.

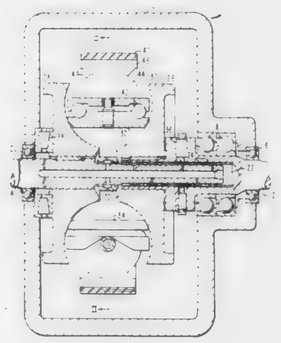


4,386,536

INFINITELY VARIABLE TRACTION ROLLER TRANSMISSION

James H. Kraus, Huntington Beach, Calif., assignor to Excelermatic Inc., Austin, Tex.

Filed Dec. 18, 1980, Ser. No. 217,852
Int. Cl.³ F16H *15/16*
U.S. Cl. 74—200 **4 Claims**



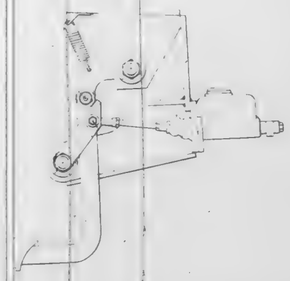
1. An infinitely variable traction roller transmission comprising: coaxial input and output shafts; toric discs supported opposite each other, one by said input and the other by said output shaft for rotation therewith, said toric discs defining therebetween an annular space of circular cross-section having a center circle; at least two motion transmitting traction rollers disposed in the annular space between said toric discs in radial symmetry with respect to the axis of said input and output shafts; means for forcing said toric discs and said traction rollers in engagement with each other for the transmission of motion therebetween; a pivotal support structure for said traction rollers; and force balancing tension means extending between said roller support structures for balancing radial forces therebetween; said force balancing tension means consisting of a flexible band loop assembly extending completely around the traction roller support structures and having curved sections adjacent said traction roller support structures, said band loop assembly having saddles nested in said curved sections thereof and having curved seating surfaces for the traction roller support structures, each with a center of curvature along an axis which is essentially a tangent to said center circle of the annular space between said toric discs to permit pivoting of said traction roller support structure about such center circle tangent for a change of the transmission ratio of said transmission.

4,386,537

VARIABLE RATIO BRAKE PEDAL

Steven A. Lewis, London, Canada, assignor to Clark Equipment Company, Buchanan, Mich.

Continuation of Ser. No. 950,205, Oct. 10, 1978, abandoned. This application Sep. 22, 1980, Ser. No. 189,507
Int. Cl.³ G05G *1/14*
U.S. Cl. 74—512 **1 Claim**



1. A variable ratio brake pedal mechanism comprising:
- a pivoted pedal lever pivotable about a first axis,
- a second oppositely disposed pivoted lever mounted adjacent the pedal lever and having opposite ends,
- a forward end of the second lever disposed in front of the pedal lever and a rear end disposed behind the pedal lever, the forward end pivotable about a second axis parallel to and adjacent to the first axis, the second axis also forward of the pedal lever, the second lever extending adjacent the pedal lever with a rear portion thereof engaging a brake push rod receivable in a brake cylinder, the push rod pivotably connected to the rear portion of the second lever to form a toggle linkage between the second axis and the brake cylinder, the rear end of the second lever extending rearward of the toggle link connection between the second lever and the push rod, a cam surface on the second lever extending between the rear end of the second lever and the toggle link connection and cam engaging means on said pedal lever engageable with the cam surface of said second lever to provide a varying lever arm as the pedal lever is engaged and the cam engaging means engages the cam surface of the second lever to pivot said second lever with a varying lever arm and drive the toggle linkage toward an aligned position as the brake pedal mechanism moves toward a brake applied position, thereby to create a substantial mechanical advantage as the cam engaging means moves along the cam surface from the rear end of the second lever to the toggle link connection between the second lever and the brake push rod.

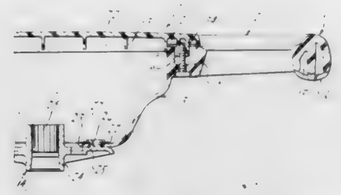
4,386,538

ENERGY ABSORBING STEERING WHEEL

Warren A. Van Wicklin, Jr., Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 116,378, Jan. 29, 1980, abandoned. This application Sep. 23, 1981, Ser. No. 304,745
Int. Cl.³ G05G *1/10*
U.S. Cl. 74—552 **2 Claims**

1. An energy absorbing steering wheel mounted on a hub for turning movement about an axis of rotation;
- the steering wheel having a rim coaxially mounted through a plurality of spokes on one end of an axially extending energy absorbing sleeve;
- the spokes extending outwardly from the one end of the sleeve to the rim;
- the other end of the sleeve being coupled to the hub;
- and the rim, spokes and sleeve being a one-piece structure homogeneously molded of a high impact elastomeric material;
- the rim and the spokes having circumferentially and longitudinally extending rib configurations, respectively, on their undersides to provide weight reduction and a desideratum of flexibility in the direction of the axis of rotation of the steering wheel;
- the energy absorbing sleeve at the level of its connection to the spokes having a substantially rectangular configuration that is maintained through any cross-section plane taken normal to the axis of rotation for the length of the sleeve to a level contiguous to the hub;



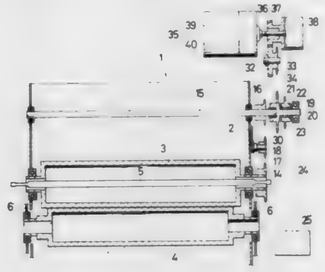
- the hub having a width defined in planes normal to the axis of rotation that does not exceed the width of the sleeve in any radial direction from the axis of rotation;
- the sleeve having thin side walls each of which has a substantially ogival configuration that slopes inwardly toward the axis of rotation from the one end to the other end of the sleeve whereby the cross-sectional areas of the sleeve decrease from the one end of the sleeve toward the other;
- the energy absorbing sleeve upon axial forces being applied thereto permitting a large amount of crush at relatively constant load to provide a high degree of energy absorption.

4,386,539

FIXING AND HEATING DEVICE FOR ELECTROSTATIC COPYING APPARATUS

Minoru Motomura, Nara; Kiyoshi Shibata, Osaka, and Toshio Watanabe, Takatsuki, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Division of Ser. No. 158,381, Jun. 11, 1980, Pat. No. 4,316,719. This application Apr. 15, 1981, Ser. No. 254,279
Claims priority, application Japan, Jun. 15, 1979, 54-75886; Jun. 15, 1979, 54-75887
Int. Cl.³ F16H *37/06*
U.S. Cl. 74—661 **3 Claims**



1. A variable speed driving device for use in a copying apparatus of the type including a housing, said device comprising:
- a casing mounted for movement into and out of the housing;
- high speed driving means, mounted on the housing, for generating a high speed driving force;
- low speed driving means, separate from said high speed

driving means and mounted on the housing, for generating a low speed driving force;

a rotary member having a first rotary shaft rotatably mounted on the housing by a bearing;

a follower member including a second rotary shaft rotatably mounted on said casing for movement therewith between a first inserted position adjacent said rotary member and a second drawn-out position removed from said rotary member;

a magnetic clutch operatively connected to said low speed driving means and having a first mode for transmitting said low speed driving force therefrom and a second mode for interrupting transmission of said low speed driving force;

first power transmitting means for, when said magnetic clutch is in said first mode thereof, transmitting said low speed driving force from said low speed driving means to said rotary member, thereby rotating said rotary member;

first one-way clutch means provided on said first rotary shaft;

second power transmitting means for, upon operation of said high speed driving means, transmitting said high speed driving force from said high speed driving means via said first one-way clutch means to said first rotary shaft, thereby rotating said rotary member;

second one-way clutch means, mounted between said rotary member and said second rotary shaft, for, when said second rotary shaft is in said first position thereof, transmitting rotation of said rotary member to said second rotary shaft; and

control means, operatively connected to said high speed driving means and to said magnetic clutch, for, upon said high speed driving means being operative, causing said magnetic clutch to be in said second mode thereof, and for, upon said high speed driving means being rendered inoperative, causing said magnetic clutch to change from said second mode thereof to said first mode thereof only after a delay sufficient to ensure that inertia forces of said high speed driving means acting on said rotary member have been damped.

4,386,540

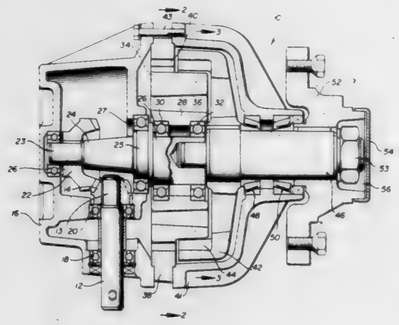
HYPOCYCLIC DRIVE TRANSMISSION APPARATUS

Riley E. Skaggs, Jr., Dodge City, Kans., assignor to Curtis Machine Company, Dodge City, Kans.

Continuation-in-part of Ser. No. 793,613, May 4, 1977, abandoned. This application Jun. 9, 1978, Ser. No. 914,173

Int. Cl.³ F16H *1/28*

U.S. Cl. 74—805 **3 Claims**



1. An improved hypocyclic drive transmission apparatus for reducing the rotational speed of the output of a motor and increasing the torque thereof, said improved transmission apparatus comprising:

a transmission spindle shaft rotating about a central axis in a first radial direction;

a circular gear having first and second sets of lug-shaped, external gear teeth, and defining an interior diameter, a pitch diameter and an outside diameter, said circular gear operatively connected to said transmission spindle shaft for rotational movement thereby;

a fixedly disposed annulus gear having lug-shaped internal gear teeth, the internal gear teeth of said annulus gear engageable with the first set of external gear teeth of said circular gear upon overlap between said circular gear and said annulus gear;

eccentric means fixedly mounted on said transmission spindle shaft, said eccentric means having a center defining a cam offset distance from said spindle shaft central axis, and freely mounting said circular gear on said eccentric means for maintaining said circular gear and said annulus gear in overlapping relationship, for engaging the respective gear teeth thereof, and for tracing a hypocycloid at reduced rotational speed within said annulus gear by said circular gear in a second radial direction which is opposite the first radial direction of said transmission spindle shaft, said overlap defining a point of maximum overlap;

a rotatable drive hub having internally disposed lug-shaped teeth and disposed to surround a portion of said circular gear, the internal teeth of said drive hub engaging the second set of external gear teeth of said circular gear upon overlap between said circular gear and said drive hub;

rotational output means connected to said drive hub for receiving the reduced rotational speed output;

the first set of external gear teeth of said circular gear and the internal gear of said annulus gear being disengaged at said point of maximum overlap, and in engagement at a radial distance of greater than 0 degrees but less than 90 degrees as measured in said angular direction from said point of maximum overlap, said circular gear teeth tracing a prolate cycloid at each of said circular gear interior, pitch and outside diameters immediately prior to, during and immediately after said engagement.

4,386,541

TOOL FOR STRIPPING PLASTICS COATINGS FROM OPTICAL FIBRES

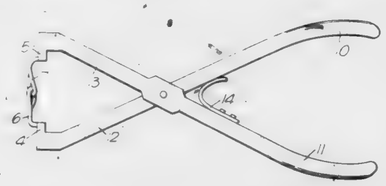
Alexander J. Robertson, Hoddesdon, and Colin Shutt, Leeds, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 27, 1981, Ser. No. 238,870

Claims priority, application United Kingdom, Nov. 4, 1980, 8035349

Int. Cl.³ H02G *1/12*

U.S. Cl. 81—9.5 R **8 Claims**



1. A hand tool for stripping a plastic coating from a glass optical fiber, said tool including a pair of pivoted jaw members movable toward and away from each other, each jaw having a bifurcated end so as to form a pair of generally parallel fingers separated by a space extending therefrom, the fingers of one jaw extending toward the fingers of the other jaw, the fingers on each jaw supporting some portion of filamentary fiber to form a loop such that a length thereof extends across the space separating the fingers, said length of said loops being such that they overlap each other and form an aperture for receiving an optical fiber and can be tensioned to grip the fiber when the jaws are moved relative to each other.

4,386,542

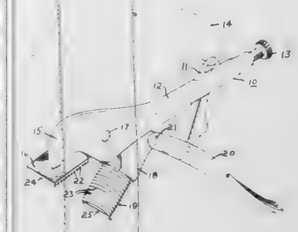
GRIPPING TOOL

Louis R. Verna, 41 Brookside Dr., Holland, Pa. 18966

Filed Sep. 22, 1980, Ser. No. 189,230

Int. Cl.³ B25B *7/02*

U.S. Cl. 81—420 **7 Claims**



1. A plier type gripping tool comprising in combination,

(a) a first tool arm having rigidly secured to one end a first gripping platen having a free end,

(b) a second tool arm having rigidly secured to one end a second gripping platen having a free end,

(c) means interconnecting said first and second tool arms so that said first and second gripping platens are swingable with respect to one another between a spaced apart condition and an apposed condition in which the gripping faces of said platens are in planer apposed and contactable relationship with one another with the said free ends of said platens defining one end of said gripping tool,

(d) a plurality of arcuate teeth or serrations on each of said platens, the centers of curvature of at least some of said teeth or serrations on each said platen being located in front of the free end of said platen.

4,386,543

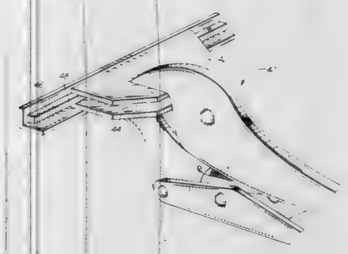
DEVICE FOR LOCKING STANDING SEAM ROOF PANELS

Walter N. Walker, Jr., 1226 W. Edgewater Dr., Tucson, Ariz. 85704

Filed Mar. 6, 1981, Ser. No. 241,445

Int. Cl.³ B25B *7/02*

U.S. Cl. 81—420 **2 Claims**



1. An improvement to toggle type pliers having two opposing jaws and co-acting handles, the improvement adapted to interlock male and female seam component parts in adjacent sheet metal standing seam roof panels, the improvement comprises:

an elongated rod attached to the inside of one of the pliers' jaws proximate the edge of the jaw and extending beyond the sides of the jaw, said elongated rod forming a lip adapted to engage the male seam component part; and

an elongated right angle iron piece attached to the outside of the pliers' other jaw to define a groove between the outer edge of the jaw and the inside corner of the right angle iron piece, said elongated right angle iron piece extending beyond the sides of the jaw and said groove adapted to receive and secure the top of the female same component part whereby as the handles are brought together, the jaws come together and the elongated rod lip engaging the male seam component part brings the male seam component part into the female component part secured by the groove to effect a locking between the male and female seam component parts.

4,386,544

DEVICE FOR ROTATABLY GRIPPING A CYLINDRICAL PIECE

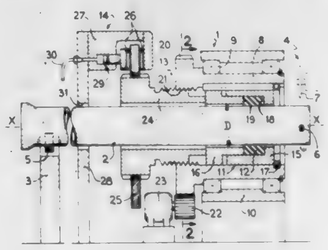
Claude Fuminier, Pont-a-Mousson, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Jan. 26, 1981, Ser. No. 228,531

Claims priority, application France, Feb. 6, 1980, 80 02557

Int. Cl.³ B23B *31/04*

U.S. Cl. 82—101 **15 Claims**



1. A device (**1**, **1***a*) for gripping and rotating a cylindrical piece (**2**, **2***a*), comprising:

a radially expandable sleeve grip (**12**, **12***a*), said sleeve grip gripping said cylindrical piece when in a radially expanded state;

a bolt-nut system (**13**, **13***a*) for radially expanding said sleeve grip so as to grip said cylindrical piece, said bolt-nut system including first (**8**, **8***a* and **33**) and second (**24**, **34**) threadably engaged elements;

a motor (**23**);

means (**20**, **22**) for interconnecting said motor and said first element for rotating said first element;

a brake (**14**, **14***a*) having a movable part (**25**, **25***a*) interconnected with said second element;

whereby braking said movable part while said first element is being rotated in a predetermined direction causes axial displacement of one of said first and second elements which radially expands said sleeve grip.

4,386,545

ALINEMENT AND SUPPORT MEANS FOR GUIDING PULLEY OF BAND SAW

Peter C. Chaconas, Glyndon, Md., assignor to Black & Decker Inc., Newark, Del.

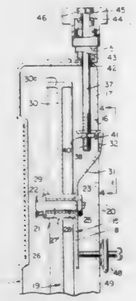
Filed Aug. 7, 1981, Ser. No. 290,941

Int. Cl.³ B27B *13/08*; **B23D** *55/10*

U.S. Cl. 83—817 **17 Claims**

1. In a band saw having a housing with a guiding pulley therein, an alinement and support means for the pulley, comprising, in combination, an elongated slider member having a first portion within the housing and disposed in a plane transversely of the pulley axis, means for rotatably supporting the pulley on the first portion of the slider member, the slider member further having an integral second portion bent away

from the pulley and disposed at an obtuse angle with respect to the first portion of the slider, the housing having a side wall with an opening formed therein, the second portion of the slider extending through the opening and having a portion externally of the housing, the external portion of the slider member having means engaging the outer surface of the housing wall and forming therebetween a fulcrum for pivotal movement of the slider member and hence the pulley about an axis generally perpendicular to the pulley axis, a jack screw carried by the wall of the housing and extending within the



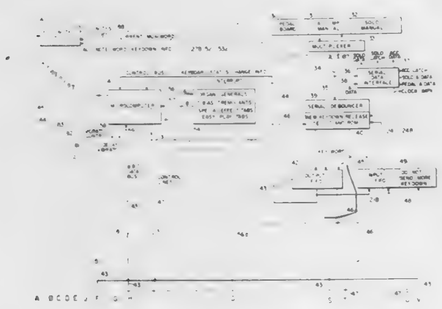
housing for engaging the first portion of the slider member for pivoting the slider member, thereby facilitating an adjustment of the pulley axis, the slider member further having a third portion integral with the external portion and bent thereto, the third portion extending back through the opening in the housing wall and into the housing along a plane substantially at right angles to the plane of the first portion of the slider member, and supporting means for the pulley, the supporting means including screw means extending from the top of the housing, the screw means having a lower end portion secured to the third portion of the slider member.

4,386,546

PHASE LOCKING SYSTEM FOR AN ELECTRONIC ORGAN

Gary R. Fritz, Ferdinand; Stephen L. Howell, Huntingburg, and John W. Robinson, Jasper, all of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Jun. 22, 1981, Ser. No. 276,033
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **25 Claims**



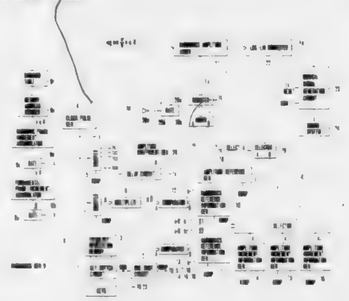
1. An electronic musical instrument comprising:
a keyboard having playing keys,
a plurality of tone generator-keyer means each adapted for generating and keying a respective tone having a selectable frequency and a separate amplitude envelope,
assignment control means connected to said tone generator-keyer means and responsive to the actuation of at least two keys of said keyboard for capturing at least two of said tone generator-keyer means and causing the captured tone generator-keyer means to generate respective tones, and
phase locking means connected to said tone generator-keyer means for producing a synchronizing signal in response to the condition of one of the captured tone generator-keyer means producing a tone of the same pitch as the other captured tone generator-keyer means wherein the synchronizing signal represents the state of the phase of the tone generated by said one captured tone generator-keyer means and for transmitting the synchronizing signal to the other captured tone generator-keyer means, said other captured tone generator-keyer means including means responsive to said synchronizing signal for causing the tone generated thereby to be in phase with the tone generated by said one captured tone generator-keyer means.

4,386,547

ELECTRONIC MUSICAL INSTRUMENT

Manobu Chibana, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

Continuation of Ser. No. 77,319, Sep. 20, 1979, abandoned. This application May 4, 1981, Ser. No. 259,907
Claims priority, application Japan, Sep. 25, 1978, 53-116692
Int. Cl.³ G10H *1/06*
U.S. Cl. 84—1.22 **9 Claims**



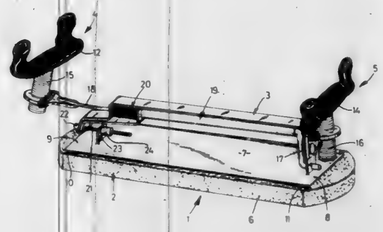
1. An electronic musical instrument comprising first means for producing harmonic components inclusive of a fundamental wave; second means for generating amplitude coefficients respectively corresponding to said harmonic components; means for multiplying an output of said first means with an output of said second means to obtain products; means to synthesize said products for forming a musical tone; said second means comprising means for generating at least one increment value, and means for repeatedly accumulating the increment value thus generated, thereby obtaining a plurality of values which constitute ordinate values of a plotted line as depicted by a graph, said plotted line being a frequency characteristic curve, said obtained values defining amplitude coefficients for said harmonic components; harmonic information generating means for generating harmonic information representing pitches of respective harmonic components which form a musical tone to be generated; harmonic reference information generator means for generating harmonic reference information representing a pitch; comparator means for sequentially comparing an output of said harmonic information generating means and an output of said harmonic reference information generator means; and means responsive to an output of said comparator means for selecting one of said increment component generating means.

4,386,548

SHOULDER REST FOR A STRING INSTRUMENT

Wilhelm Wolf, Zandweg 78, NL-DeMeern (UTR), Netherlands

Filed Aug. 28, 1981, Ser. No. 297,131
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1980, 3033310
Int. Cl.³ G10G *5/00*
U.S. Cl. 84—280 **4 Claims**



1. A shoulder rest for a string instrument, comprising:
a flexible support plate having a first end and a second end;
a relatively rigid support bracket extending longitudinally on said support plate, said bracket having a first end fixed to said support plate first end and having a second free end;
a first height-adjustable, instrument clamping device mounted on said support bracket first end;
plate tensioning means connecting said support plate second end with said support bracket free end, said tensioning means including an upright member fixed to said support plate adjacent said second end, and adjusting screw means connecting said upright member and said support bracket free end for adjusting the longitudinal distance therebetween;
a support arm extendably connected with said support bracket free end for movement longitudinally of said support bracket, said support arm having a first end external to said support bracket, said support arm being mounted adjacent to but independent of said tensioning means; and
a second height-adjustable, instrument clamping device mounted on said support arm external end.

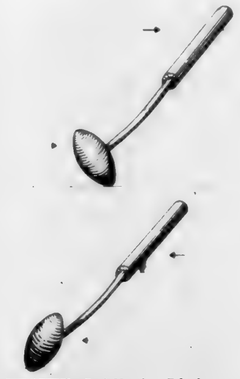
4,386,549

SPECIAL EFFECTS MALLET

Leonice L. Shinneman, 1234 Skeel Dr., Camarillo, Calif. 93011

Filed Oct. 5, 1981, Ser. No. 308,357
Int. Cl.³ G10D *13/00*
U.S. Cl. 84—422 S **7 Claims**

1. A device for producing unique sound effects with percussion instruments, comprising:
a handle and;
a mallet head of semi-rigid material affixed to the handle, said mallet head having a surface which has a high coefficient of friction when in contact with a drum head or the like and having sufficient resilience so that when moved across a drum head or the like the mallet head rapidly in succession engages and is distorted then releases engagement with the drum head and rapidly regains its original



shape thereby producing the effect of a sustained, highly uniform roll.

4,386,550

OPTICALLY COUPLED DECORATIVE LIGHT CONTROLLER

Michael R. Newsome, Falls Church, Va.; Marc H. Segan, and Sayre Swarztrauber, both of New York, N.Y., assignors to Calfax, Inc., New York, N.Y.

Filed Sep. 10, 1980, Ser. No. 185,680
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—464 R **11 Claims**



1. An apparatus for controlling power, in synchronism with the sounding of musical tones, from a power source supplied to an output terminal to which a light source is connected, comprising:
(a) at least one means for producing sound;
(b) means for producing an electrical signal;
(c) control means associated with said electrical signal producing means for controlling the signal so as to produce musical tone waveforms of predetermined frequency;
(d) means for transmitting said musical tone waveforms to said means for producing sound;
(e) means for transmitting said musical tone waveforms to light emitting means for producing light having an intensity varying at the frequency of the musical tone waveforms;
(f) power control means for controlling power from said power source supplied to said output terminal;
(g) light detector means for receiving light from said light emitting means, said light detector means varying in resistance at said frequency of said musical tone waveform in response to said light produced by said light emitting means;

(h) means for integrating a current generated in response to said varying resistance to produce a voltage; and

(i) means for activating said power control means when said voltage reaches a predetermined level during each half cycle of the power source whereby power is supplied to said light source so as to vary its intensity in response to said musical tone waveform and in synchronism with musical tones produced by said means for producing sound.

4,386,551

METHOD AND APPARATUS FOR TEACHING MUSICAL INSTRUMENTS

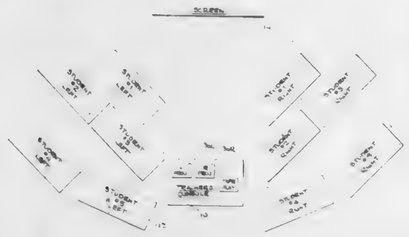
John P. Morgando, 3903 El Conlon, Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 935,345, Aug. 21, 1978, Pat. No. 4,331,061. This application Jan. 17, 1980, Ser. No. 112,936

The portion of the term of this patent subsequent to May 25, 1999, has been disclaimed.

Int. Cl.³ G09B *15/04*

U.S. Cl. 84—470 R **1 Claim**



1. In an audio-visual system for combining programmed audio-visual instruction with "live" individual instruction presented simultaneously to two or more students learning to play at their own separate musical instrument stations each equipped with an associated guidance light strip, the improvement comprising:

a viewing screen at a forward portion of a teaching classroom;

a teacher's console facing forwardly with an unobstructed line of sight to said viewing screen and coupled separately and collectively through connecting wire means to the separate musical instrument stations of the students, and further including a musical instrument, slide projector means visually aligned with said viewing screen, cassette means for activating said slide projector means and for providing programmed audio-visual instruction directly to said student stations, first monitor/control means operably connected to said slide projector means and said cassette means, and second monitor/control means operably connected with each student station; and

two or more individual student instrument stations facing at least partially forward and visually aligned with said viewing screen, with the student's direct line of sight to said viewing screen when the student is in playing position being in the same general direction as the student's line of sight to his or her guidance light light strip, and with the keyboard of each student instrument station independently viewable from said teacher's console, and including at least one walking path accessible to each student station without crossing over said connecting wire means.

4,386,552

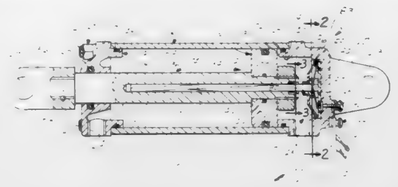
POWER CYLINDER WITH INTERNALLY MOUNTED POSITION INDICATOR

W. John Foxwell, 2557 Lake Charnwood Blvd., Troy, Mich. 48098

Continuation-in-part of Ser. No. 159,735, Jun. 16, 1980, abandoned. This application Feb. 9, 1981, Ser. No. 232,844

Int. Cl.³ F01B *25/26*

U.S. Cl. 91—1 **17 Claims**



1. In combination with a fluid pressure actuator of the piston and cylinder type comprising a cylinder and a piston assembly including a piston slidably mounted within said cylinder, a pair of end caps closing off either end of said cylinder to thereby define a fluid pressure chamber adjacent to each end cap on either side of said piston assembly, each end cap having an end face abutting against said piston in respective extreme positions of said piston in said cylinder; one of said fluid pressure chambers including a cavity formed between said piston and one of said end caps with said piston in abutment thereagainst, pressure port means for selectively pressurizing said one of said fluid pressure chambers, said piston assembly further including a piston rod affixed to said piston and extending through the other of said end caps:

an indicating arrangement comprising: a bore formed into said piston assembly extending axially away from said one end cap, a cam rod having one end slidably fit into said bore formed into said piston assembly, said cam rod other end extending axially away from said piston assembly towards said one end cap;

means axially fixing said cam rod element with respect to said cylinder whereby causing said one end of said cam rod to be reciprocated within said bore upon reciprocal stroking of said piston assembly in said cylinder;

at least one camming element carried by said piston assembly in engagement with a surface of said cam rod element causing rotation of said cam rod upon reciprocation of said piston assembly in said cylinder;

rotary potentiometer means mounted within said cavity including a rotary wiper element;

electrical connection means connected to said rotary potentiometer means and means providing a variable resistance in correspondence with the rotary position of said rotary wiper element;

means drivingly connecting the other end of said cam rod and said rotary potentiometer wiper element producing corresponding rotation of said rotary wiper element upon rotation of said cam rod, whereby an electrical signal corresponding to the position of said piston assembly in said cylinder may be generated by said rotary potentiometer means.

4,386,553

CONTROL SYSTEM FOR DOSER ACTUATOR

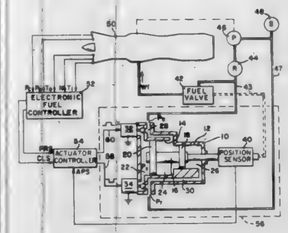
David C. Thoman, Mishawaka, and James M. Eastman, South Bend, both of Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 27, 1980, Ser. No. 200,869

Int. Cl.³ F15B *13/16*

U.S. Cl. 91—361 **13 Claims**

1. In a closed loop control system for an electrohydraulic actuator having means responsive to a periodic pulse width signal, for moving the actuator in one direction; means, also responsive to the pulse width signal, for moving the actuator in the other direction; means for generating the pulse width signal from a schedule based upon an error signal representative of the difference between the actual actuator position and the desired actuator position; and means for gating said pulse width signal to each of said moving means such that the actuator moves in a direction to null said error signal, wherein the improvement comprises:



means for correcting the pulse width signal with an incrementally increasing signal; said increasing signal being incremented each time period that the scheduled pulse width is uncertain to move the actuator in a direction to null the error.

4,386,554

BRAKE BOOSTER

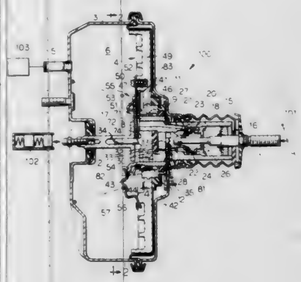
Masayoshi Katagiri, Toyota, and Osamu Ogura, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisin Seiki Kabushiki Kaisha, both of Aichi, Japan

Filed Dec. 15, 1980, Ser. No. 216,654

Claims priority, application Japan, Dec. 28, 1979, 54-172922

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—369 A **6 Claims**



1. A brake booster comprising:

a casing;

an axially movable input member for receiving an input force;

an axially movable output member for providing a boosted output force;

a power piston axially movably disposed in said casing between said input and output members to divide the interior of said casing into two chambers, said power piston being moved in accordance with a difference of pressure between the two chambers and having an axially formed central bore;

a control piston having therein a control valve for controlling the difference of pressure between said two chambers and a first transmission mechanism for transmitting said input force from said input member to said output member, said control piston being coaxially fitted in said central bore and axially movable relative to said power piston;

at least one reaction lever having an intermediate output portion, a first input portion and a second input portion located on opposite sides of said output portion thereof, said output portion abutting on said output member, and said first input portion abutting on said first transmission mechanism;

a second transmission mechanism having at least one ball interposed between two recesses formed in the internal peripheral surface of said power piston and in the external peripheral surface of said control piston, respectively, and a ball retainer loosely retaining the ball and abutting on said second input portion of said reaction lever, said second transmission mechanism transmitting an output force of said power piston to said reaction lever and a reactionary force of said reaction lever to said power piston in an initial operation stage of said booster, and transmitting said reactionary force of said reaction lever to said control piston after advancement of said power piston relative to said control piston by a predetermined amount;

a return spring for backwardly biasing said power piston toward said input member; and

at least one first abutting portion disposed on said power piston and abutting on a corresponding second abutting portion of said ball retainer on the front side thereof when said power piston, said ball retainer and said control piston are retracted to the original positions thereof.

4,386,555

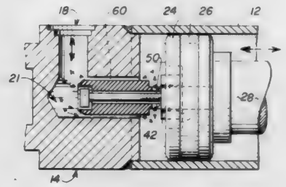
HYDRAULIC CYLINDER CUSHION DEVICE

George H. Horiuchi, Kingsburg, Calif., and Edward J. Wynn, Leola, Pa., assignors to Sperry Corporation, New Holland, Pa.

Continuation of Ser. No. 10,570, Feb. 9, 1979, abandoned. This application Nov. 13, 1981, Ser. No. 206,402

Int. Cl.³ F15B *15/22*

U.S. Cl. 91—395 **3 Claims**



1. In a hydraulic cylinder having a generally elongate cylindrical hollow body with a first end and an opposing second end, a cylindrical piston with first and second opposing faces sealingly and slidingly positioned within the body, an elongate rod affixed to the second face of the piston and extending away therefrom past the second end of the body, a sealing member affixed to the second end of the body slidably and sealingly contacting the rod, an end cap sealingly affixed to the first end of the body, a first fluid port of at least partially cylindrical cross-sectional configuration having an effective diameter and extending through the end cap and having a portion thereof substantially parallel to the length dimension of the body, and a second fluid port into the body located between the piston and the sealing member, and means to cushion the piston movement, the improvement wherein the means to cushion comprises:

a cushion pin having an axial opening therethrough of a first diameter and a length dimension parallel to said axial opening, said cushion pin including at least one orifice therein adjacent said first face of said piston extending into said axial opening to allow fluid to flow through said axial opening and said orifice, said cushion pin further having

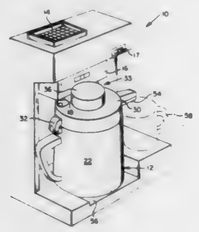
an outside diameter substantially smaller than said effective diameter of said portion of said first fluid flow port parallel to the length dimension of said body to provide a first path between a wall of said parallel portion and said outside diameter of said cushion pin for the flow of fluid between said flow port and said body and to provide room for a centering movement of said cushion pin within said portion parallel to the line of movement of said piston; and an elongate cap screw including a head portion and a shaft portion having a second diameter smaller than said first diameter, said cap screw extending through said axial opening in said cushion pin with a length substantially parallel to the line of motion of said piston and greater than the length of said cushion pin and loosely fixing same to said first face of said piston for flotation relative thereto in directions both substantially parallel to and substantially perpendicular to said length dimension of said body, said cylindrical portion of sid first fluid port, said cap screw and said cushion pin positioned relative to each other such that as said piston approaches said end cap said cushion pin extends concentrically into and partially closes said first fluid port, the flow of fluid between said fluid flow port and said body being along said first path and a second path during the extension of said cushion pin from said fluid flow port and only along said first path during the retraction of said cushion pin into said fluid flow port, said second path being between said cushion pin and said cap screw, the movement of said cushion pin parallel to the line of movement of said piston permitting said cushion pin to engage said head portion of said cap screw to seal off the flow of fluid along said second path during said retraction of said cushion pin into said fluid flow port.

4,386,556

COFFEE MAKER WITH INSULATED DISPENSING CONTAINER

Edward J. Romey, Sr., 3216 SE. 157th, Portland, Oreg. 97236

Filed Nov. 9, 1981, Ser. No. 319,215
Int. Cl.³ A47J *31/46, 31/50*
U.S. Cl. 99—290 **5 Claims**



1. In a coffee maker of the type which, upon request, generates a metered amount of heated water, passes such heated water through ground coffee contained within a porous filter and collects the resulting brewed coffee in a suitable container for later use, the improvement comprising:

(a) said container having a pneumatically sealed, thermally insulated storage vessel located within;

(b) air pump means associated with said container for introducing pressurized air into said vessel;

(c) spout means associated with said container including a stand tube which opens into said vessel proximate the bottom thereof, for dispensing coffee out of said container when said air pump means is actuated to introduce pressurized air into said vessel;

(d) a reservoir located in said container for receiving the brewed coffee as it flows from the filter;

(e) a passageway extending between said reservoir and said vessel; and

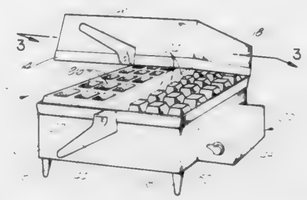
(f) valve means located in said passageway for preventing the escape of air through said reservoir upon actuation of said air pump means.

4,386,557

HEATING APPARATUS FOR PREPARATION OF PRECOOKED FROZEN WAFFLES

Paul P. Meraj, 18065 Greenmeadow, Encino, Calif. 91316, and David Meraj, 888 Toulon Dr., Pacific Palisades, Calif. 90272

Filed Aug. 22, 1977, Ser. No. 826,448
Int. Cl.³ A47J *37/06*
U.S. Cl. 99—372 **1 Claim**



1. A heater unit for heating precooked and frozen waffles comprising:

(A) a base including a first hollow shell-like member having one open side and disposed upon a plurality of legs;

(B) a first solid cast-metal waffle mold affixed to said base and closing said one open side thereof to define a first hollow chamber;

(C) a cover including a second hollow shell-like member having one open side;

(D) a second solid cast metal waffle mold affixed to said cover and closing said one open side thereof to define a second hollow chamber, said first and second molds each including a substantially flat continuous peripheral surface, said flat surfaces when in contact with each other effectively sealing the interior of said molds to substantially retain the moisture present in a frozen waffle being heated in said unit;

(E) hinge means interconnecting said first and second waffle molds at one edge thereof to allow the opening and closing thereof to cause faces thereof to be confronting when closed, said confronting faces including lugs and recesses defining a pattern therein substantially the reciprocal of a precooked and frozen waffle to be placed therein for heating, said lugs having a dimension which is slightly less than the dimension of a depression in the surface of a freshly cooked waffle before it is frozen for receiving a frozen slightly shrunken precooked waffle within said lugs without damage thereto and to accommodate return of the waffle to its original freshly cooked size, said lugs including peripheral lugs and central lugs, said peripheral lugs defining a smaller surface area than said central lugs to accommodate a differential in contraction and expansion between the periphery and the center of the precooked waffle on freezing and reheating thereof; and

(F) a heater element secured to and in intimate contact with each of said first and second waffle molds and disposed within said chamber.

4,386,558

CONVECTION COOKING EQUIPMENT

J. Harrison Holman, P.O. Box 5, Kennebunk, Me. 04043, and Jay C. Holman, 40 Montrose Ave., Portland, Me. 04103

Filed Feb. 12, 1981, Ser. No. 233,912
Int. Cl.³ A47J *37/08*
U.S. Cl. 99—386 **5 Claims**

1. Food cooking equipment comprising:

an outer casing;

an inner food cooking chamber;

a heat source adapted to cook food placed inside said inner food cooking chamber;

at least one channel defined between said inner food cooking chamber and a corresponding portion of said outer casing;

air movement means adapted to force air through said channel associated with said portion of said outer casing adapted to cool said portion of said outer casing; and

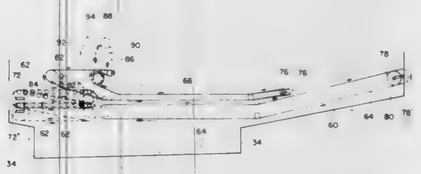
means for directing said air used for cooling said portion of said outer casing once heated by proximity to said inner food cooking chamber back into said inner food cooking chamber to assist in the food cooking process.

4,386,559

APPARATUS FOR CONTINUOUS PREPARATION OF RECONSTITUTABLE BATTER-COATED COMESTIBLES

Nabil A. El-Hag, Peekskill; Gary T. Dulin, Tarrytown, and Todd J. Krasnow, White Plains, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 9, 1980, Ser. No. 214,597
Int. Cl.³ A47J *37/12*
U.S. Cl. 99—404 **5 Claims**



1. An apparatus for continuously preparing a partially-fried batter coated comestible product, wherein said apparatus forms a ridged batter topography on said comestible with a first and a second frying stage, said apparatus comprising:

(a) a hot cooking oil bath, said bath heated to at least partially heat-set a batter coating comestible during said first stage, and completely heat setting said batter during said second stage;

(b) a first stage cooking means for supporting the batter coated comestible adjacent to surface of said oil bath to heat set the batter as gravitational forces cause the batter to droop from the comestible, said first stage having:

(i) a plurality of support elements, said elements having a diameter of ¼ to ⅜ inches and spaced apart from one another to define a droop opening that does not exceed 1¼ inches;

(ii) means for transporting said support elements through said oil bath;

(iii) means for adjusting the distance between said support elements and the surface of said oil bath, whereby the support elements support the comestible during the first frying stage to heat set the batter as it droops between said support elements,

(c) a second stage cooking means for completely submerging said comestible below the surface of said oil bath to completely heat set the batter, said second stage having:

(i) means for physically submerging said comestible below the surface of said oil bath;

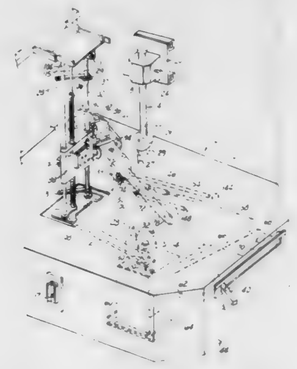
(ii) transport means for transporting said comestible through said oil bath to completely heat set the batter, said transport means also elevating said comestible to remove it from the oil bath after the batter is heat set.

4,386,560

SPIRAL MEAT SLICER

Allan V. Ditty, Grosse Pointe Woods, Mich., assignor to Portable Tool & Electronics, Inc., Warren, Mich.

Continuation-in-part of Ser. No. 41,767, May 24, 1979, abandoned. This application May 20, 1980, Ser. No. 151,625
Int. Cl.³ A23N *7/00;* **A47J** *17/00*
U.S. Cl. 99—538 **12 Claims**



1. A spiral meat slicer for forming a continuous spiral slice on a cut of meat having an irregularly shaped bone extending therein including a framework enclosing the meat slicer comprising:

means for mounting the meat with the bone as a substantially vertical axis about which to rotate the meat;

a vertically movable carriage;

a horizontally pivotable support structure pivotally mounted on said carriage;

a knife for slicing the meat mounted on said support structure, said knife being positioned with respect to the axis of rotation of the bone to enable a spiral cut to be made in the meat;

means for longitudinally reciprocating the knife against the meat;

means for rotating the meat;

means for relatively moving said carriage vertically with respect to the meat to advance the knife along the axis of rotation of the meat to form a continuous spiral slice in the meat;

lever means for moving the knife into slicing engagement with the meat;

resilient means interconnecting said lever means with said support structure to yieldingly maintain the knife in contact with the meat bone;

said means for relatively moving said carriage vertically with respect to the meat comprising a substantially vertical power driven worm, a freely rotatable worm gear mounted on said carriage in engagement with the worm, said worm having a reduced diameter upper end portion;

means for rotatively retaining the upper end portion of said worm comprising a bridge plate spanning opposed sides of said framework and having its edge portions attached to such sides by threaded fastener means; and

a bearing mounted in said bridge plate for journalling said

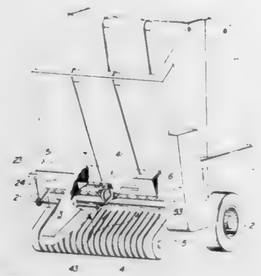
upper end portion of said worm and a flat end surface of such end portion including a circular center drilled portion engagable with a variable magnitude downward force applying means, said last means axially aligned with said center drilled portion.

4,386,561

TYING DEVICE FOR CYLINDRICAL-BALE-FORMING BALER

Jean Viaud, and Jean P. Berthet, both of Gray, France, assignors to Deere & Company, Moline, Ill.

Filed May 18, 1981, Ser. No. 264,747
Claims priority, application France, May 29, 1980, 80 11920
Int. Cl.³ B65B *13/02*
U.S. Cl. 100—5 **9 Claims**



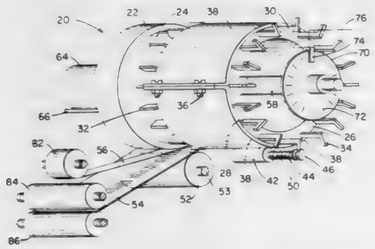
1. In a baler for forming cylindrical bales, said baler including a bale-forming chamber and a tying mechanism for tying a bale formed in said chamber, said mechanism comprising a rectilinear guide adjacent an entrance to the chamber, a supply of bale-tying twine and a twine guide means movable on said rectilinear guide, said twine engaged with said twine guide means intermediate said supply and said bale-forming chamber; wherein the improvement comprises said rectilinear guide is a threaded screw and said twine guide includes a pulley engaged with the threads of said screw and is displaceable on said screw responsive to the force exerted on the twine wrapped around a bale in said chamber when the bale in said chamber is rotated.

4,386,562

BAR CODE PRINTER

Robert B. Nally, Waterloo, Canada, assignor to NCR Canada Ltd - NCR Canada LTEE, Mississauga, Canada

Continuation of Ser. No. 135,818, Mar. 31, 1980, abandoned. This application Mar. 9, 1982, Ser. No. 356,588
Int. Cl.³ B41L *47/46*
U.S. Cl. 101—91 **5 Claims**



1. A high-speed printing system for printing a plurality of coded bars on a record member representing a coded message comprising:

a rotatable drum member having a plurality of axially extending slots disposed about its periphery, said drum member having first and second axial end portions and includes a recessed portion in communication with said slots and extending in a circumferential direction adjacent said first end portion;

a plurality of elongated printing members each slidably mounted for axial movement in one of said slots having one end comprising a bar printing portion, said bar printing portion being slidable with said printing member from a first location adjacent said recessed portion to a printing location within said recessed portion and the opposite end comprising a depending arm portion positioned adjacent said second end portion;

means for feeding a record member to a printing position adjacent said recessed portion;

means for selectively rotating said drum member in which the bar printing portion of one of said printing members is positioned adjacent the record member;

a single actuator member positioned adjacent said second end portion and aligned with said printing position, said actuator member having means for engaging the depending arm portion of one of said printing members upon movement of said printing member to said printing position, means for moving said actuator member to thereby move said engaged printing member to locate the bar printing portion in said printing position when operated;

an inking member positioned between the record member and the bar printing portion of the positioned printing member;

means for positioning the record member against the inking member and the bar printing portion of a printing member when operated allowing said bar printer portion to print a coded bar on the record member;

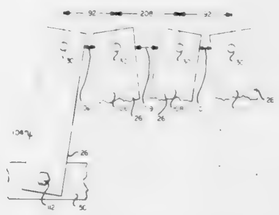
and means secured to said drum member for generating control signals for operating said rotating means, and for moving successive bar printing portions from their first location to their printing location said actuator member and said positioning means enabling the printing portion of one of said printing members to print a coded bar on the record member.

4,386,563

PRINTING SYSTEM HAVING STAGGERED HAMMER RELEASE

Norman E. Farb, Villa Park, Calif., assignor to Printronix, Inc., Irvine, Calif.

Filed Jul. 2, 1981, Ser. No. 279,688
Int. Cl.³ B41J *7/70*
U.S. Cl. 101—93.04 **11 Claims**



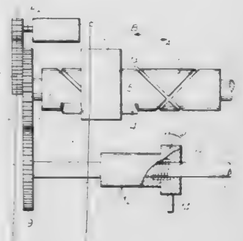
1. In an impact printer in which a hammer bank is capable of undergoing movement relative to a printable medium, the hammer bank comprising a plurality of hammer springs mounted in side-by-side relation along a portion of the hammer bank, each of the hammer springs having an impact tip mounted thereon for impacting the printable medium when the hammer spring is released, each of the hammer springs forming a part of a magnetic hammer spring release circuit and disposed to contact a different one of a plurality of pole pins, each having an energizable coil thereon, the improvement comprising an arrangement mounting the hammer springs on the hammer bank to form the hammer springs into pairs along the hammer bank with each of the pairs comprising a first hammer spring and a second hammer spring, the impact tips of the first and second hammer springs of each of the pairs being separated by approximately a first fixed distance and the impact tip on each hammer spring of each of the pairs of the hammer springs being separated by approximately a second fixed distance from the impact tip on an adjacent hammer spring of an adjacent one of the pairs of the hammer springs, the second fixed distance being greater than the first fixed distance.

4,386,564

SERIAL PRINTER

Seiichi Hirano, and Toshiaki Ooshima, both of Shiojiri, Japan, assignors to Epson Corporation, Nagno, Japan

Filed Feb. 12, 1981, Ser. No. 234,068
Claims priority, application Japan, Feb. 14, 1980, 55-17004
Int. Cl.³ B41J *1/16*
U.S. Cl. 101—93.15 **22 Claims**



1. A printer for printing on a print medium during displacement in at least one direction of a print head means across the print medium, comprising:

a frame;

cylindrical cam means rotatably mounted on said frame;

print head means for printing on said print medium slideably mounted on said frame and adapted to be displaced across said print medium in a first print direction in response to rotation of said cylindrical cam means in a first rotational direction and in an opposed second print direction in response to rotation of said cylindrical cam means in an opposed second rotational direction;

drive means rotating in one direction intermittently operatively engaged to said cylindrical cam means for rotating said cylindrical cam means in the two rotational directions; and

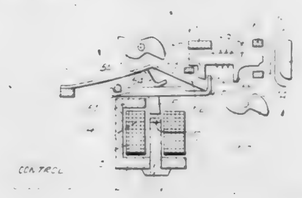
clutch means for intermittently operatively coupling said drive means to said cylindrical cam means for rotating said cam means, said clutch means including reversing means for reversing direction of rotation of said cylindrical cam means when said cam means is at rest and not engaged to said drive means wherein said clutch means is a rotary clutch including a rotary member and clutch engaging means for intermittently operatively engaging said rotary member to said drive means for causing rotation of said rotary member, and holding means for engaging said clutch engaging means for holding said engaging means out of engagement with said drive means and holding said rotary member in at least two positions with said cam means in operative engagement with said drive means, said reversing means including gear means for rotating said cam means in two directions, said gear means mounted on said rotary member and engaged with said drive means and adapted to be intermittently engaged with said cylindrical cam means when said rotary member is held by said holding means, said gear means not engaged with said cylindrical cam means when said rotary member is intermittently rotated.

4,386,565

PRINTER APPARATUS USING ELECTROMAGNET

Yoshihiro Mitsui, Shiojiri, Japan, assignor to Shinshu Seiki Kabushiki Kaisha and Kabushiki Kaisha Suwa Seikosha, both of Tokyo, Japan

Filed Nov. 6, 1980, Ser. No. 204,732
Claims priority, application Japan, Nov. 6, 1979, 54-143709
Int. Cl.³ B41J *3/04, 9/36*
U.S. Cl. 101—93.34 **9 Claims**



1. A printer for printing characters on a recording medium, comprising:

an electromagnet including a fixed core, a coil wound around said fixed core, and a movable element, said movable element being attracted to said core when said coil is energized;

an engaging portion being connected to said movable element;

flying means movable independently of said movable element for striking against said recording medium, said flying means including means for connecting said flying means with said engaging portion of said movable element for holding said flying means in a first position spaced from said recording medium and for disconnecting said flying means from said engaging portion to allow said flying means to strike said recording medium;

first mechanical means acting on said movable element for increasing and decreasing the dimensions of a gap existing between said fixed core and said movable element, reduction in said gap dimension causing said engaging portion of said movable element to disconnect from said flying means;

second mechanical means acting on said flying means for resetting said flying means to said first position after advancement of said flying means to said recording medium, and for restraining and releasing said flying means at said first position prior to said advancement, said restraint being terminated and said flying means being released in synchronism with said periodic reduction in said gap dimension between said fixed core and said movable element, energization of said coil being timed to occur while said gap dimension is reduced, said movable element being attracted to said core and held in said position of reduced gap until said coil is de-energized; and

means for advancing said flying means toward said recording medium, said advancement being subject to said flying means being free from obstruction and restraint.

4,386,566

MANDREL ASSEMBLY FOR DEMOUNTABLE PRINTING CYLINDER

Lester I. Moss, Hackensack, N.J., assignor to Mosstype Corporation, Waldwick, N.J.

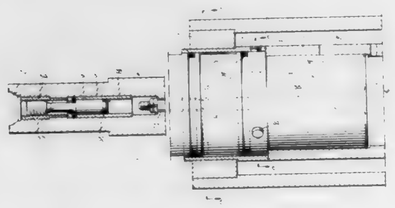
Continuation-in-part of Ser. No. 194,616, Oct. 6, 1980. This application Nov. 18, 1980, Ser. No. 207,976
The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.
Int. Cl.³ B41F *13/10*
U.S. Cl. 101—375 **5 Claims**

1. The combination of a mandrel assembly and a standard printing cylinder of predetermined diameter and length sup-

ported thereby in a printing machine having bearings, said cylinder having annular end heads projecting radially inward from the inner surface of the cylinder fitted into either end thereof provided with circular bores coaxial with the cylinder and being demountable on said assembly, said assembly comprising:

A. a tube having a smaller diameter and length than said cylinder receivable within said cylinder between said end heads;

B. journals joined to opposing ends of the tube and extending axially therefrom for insertion in said machine bearings, each journal having an expansible metal sleeve pinned thereon whose normal diameter is such that the sleeve fits into a respective end head bore of the cylinder, said sleeve surrounding as annular hydraulic chamber formed on said journal, said chamber communicating with



an axially-extending main internal duct filled with hydraulic fluid and having an inlet section in line therewith whose mouth opens into the free end of the journal, said journal having a leading section which is shrunk fit onto an end of said tube and an intermediate section which is surrounded by said sleeve to define said annular hydraulic chamber, said intermediate section having grooves on either side of said chamber in which "O" rings are received to effect a seal preventing leakage of said fluid when said sleeve is expanded; and

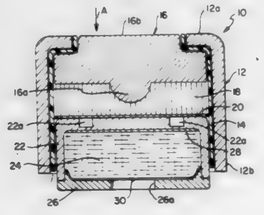
C. a piston slidable in said inlet section and a piston screw therein which is accessible through said mouth, the screw when turned in advancing said piston to produce hydraulic pressure which is transmitted through said chamber to said sleeve to cause expansion thereof whereby the sleeve grips said end head to lock the cylinder to the mandrel.

4,386,567

COMBINATION PERCUSSION-ELECTRIC PRIMER

Thomas Q. Ciccone, Ocean City, and Thomas A. Doris, Jr., Sparta, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 28, 1981, Ser. No. 287,598
Int. Cl.³ F42B *5/08, 5/00*
U.S. Cl. 102—202.5 **5 Claims**



1. A combination percussion-electric primer operable in a percussion mode or an electric mode, comprising:

a primer cup adapted to be received in the primer pocket of a cartridge case;

an insulation layer lining the inside of said primer cup;

a contact button formed of conducting material and disposed within one end of said primer cup, the outer surface of said button defining a contact surface for engagement with a firing pin, and the inner surface of said button having a protrusion formed thereon in substantially the central portion thereof;

a booster charge supporting cup disposed within said primer cup at the other end thereof, said booster cup containing booster charge;

a closure member disposed on the outer surface of said supporting cup and having an opening in the center thereof;

a supply of priming composition contained within said primer cup and disposed between said contact button and said supporting cup;

in the percussion mode, said contact button moves axially within said primer cup upon engagement by a firing pin to compress said priming composition between said protrusion and said supporting cup and to ignite said booster charge so that the output is transmitted through the central opening of said closure member; and

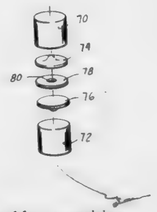
in the electric mode, said contact button adapted to be supplied with electric current from a firing pin and to conduct said electric current to said priming composition and to said booster charge to ignite same so that the output is transmitted through the central opening of said closure member.

4,386,568

DETONATOR ASSEMBLY

Richard T. Ziemba, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Sep. 5, 1980, Ser. No. 184,587
Int. Cl.³ F42C *19/08*
U.S. Cl. 102—204 **7 Claims**



1. A detonator assembly comprising:

a pair of primer face to primer face opposed, longitudinally aligned and spaced apart detonators,

an initiator mechanism disposed between said primer faces of said detonators, and

means for longitudinally compressing said detonators onto said initiator mechanism,

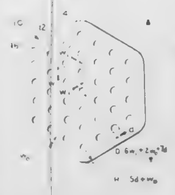
wherein said initiator mechanism comprises a pair of percussion caps spaced apart by a disk having a flash hole, and each of said primer faces is stab sensitive.

4,386,569

SOLID PROPELLANT GRAIN FOR IMPROVED BALLISTIC PERFORMANCE GUNS

Robert W. Deas, Aberdeen, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 43,767, May 30, 1979, abandoned. This application Sep. 26, 1980, Ser. No. 191,656
Int. Cl.³ C06D *5/06*
U.S. Cl. 102—292 **6 Claims**



1. A solid propellant grain structure having a smooth exterior surface comprising:

a longitudinally extending, progressive externally burning grain having a generally hexagonal cross-sectional shape, said grain having six flat outer surfaces joined by rounded longitudinal edges;

a plurality of spaced equally sized longitudinally extending throughbores formed in said grain wherein an optimum throughbore configuration includes seven throughbores along a line connecting diametrically opposite edges, said throughbores including;

perimetric throughbores positioned adjacent said longitudinally extending flat outer surfaces; and

internal throughbores positioned so that interstial distances between adjacent perimetric and internal throughbores are substantially equal, and wherein extrastitial distances between each of said perimetric throughbores and the normally adjacent longitudinally extending outer surface of the grain are substantially equal to said interstitial distance, which includes;

each of said rounded longitudinal edges having a radius of generation equal to one-half the diameter of said internal and perimetric throughbores plus the value of said extrastitial distances;

said substantially equal interstitial and extrastitial distances promoting more nearly simultaneous and uniform ignition and improving burning characteristics of said grain by maintaining higher average pressures and velocity during projectile acceleration without increasing maximum pressure.

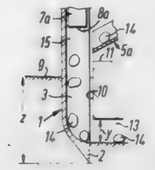
4,386,570

MAINTENANCE OF RAILWAY TRACK

John M. Waters, Derby, England, assignor to British Railways Board, Great Britain

Continuation of Ser. No. 41,394, May 22, 1979, abandoned. This application Nov. 27, 1981, Ser. No. 325,385
Claims priority, application United Kingdom, May 23, 1978, 21274/78
Int. Cl.³ E01B *27/18*
U.S. Cl. 104—11 **15 Claims**

1. In apparatus for re-levelling railway track of the kind having rails fastened to sleeper supported on a ballast bed, and including means for lifting said sleepers off said ballast bed; an injection tool having an inlet and outlet; means for driving said injection tool into said ballast bed adjacent a face of said sleeper and positioning said tool in said ballast bed so that said outlet faces said sleeper side face at a level below said lifted sleepers; a source of high pressure air; means connecting said source of high pressure air to said injection tool inlet; a source of ballast stones; means connecting said source of ballast stones to said injection tool inlet; and deflection means adjacent said injection tool outlet, the improvement wherein said injection tool comprises an elongated hollow member having a single, open-mouthed channel of U-shaped cross-section adjacent its outlet, said channel having a length not less than 1.25 times its depth, said stones being accelerated along said open-mouthed



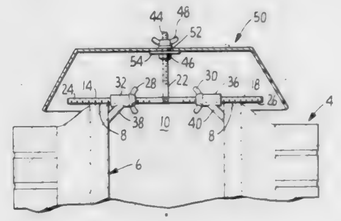
channel by gravity and by said air stream to a relatively high velocity approaching that of said air stream into which said stones are introduced whereby said stones normally are carried along said injection tool open-mouthed channel to said deflection means.

4,386,571

ADJUSTABLE SPARK ARRESTER FOR FIREPLACE FLUE

Richard A. Dortzbach, 12801 Marsh Creek Rd., Clayton, Calif. 94517

Filed Feb. 5, 1982, Ser. No. 346,276
Int. Cl.³ F23J *15/00*
U.S. Cl. 110—119 **4 Claims**



1. An adjustable spark arrester for chimney flues comprising in combination:

a. at least three horizontal arms radiating from a central point, said arms being secured together at said point,

b. a plurality of downwardly directed prongs slidably mounted on said arms,

c. a vertical member extending upwardly from said arms adapted to hold a spark arrester hood,

d. adjustment nut means adapted to hold said prongs in an extended position whereby:

e. said arms can rest on the top of a flue and said prongs can engage the inner surface of the flue holding the spark arrester in place.

4,386,572
DEVICE FOR DISPLACING THE COLOR-CHANGE CARRIAGE ON MULTIPLE-HEAD EMBROIDERY MACHINES

Heinz-Georg Slomma, Viersen, Fed. Rep. of Germany, assignor to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Sep. 11, 1981, Ser. No. 301,062
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1980, 3035704
Int. Cl.³ D05C *3/02*
U.S. Cl. 112—98 **9 Claims**



1. A device for displacing a color-change carriage on multiple-head embroidery machines having in each case a plurality of embroidery needles per head which can be coupled selectively with a needle-bar drive for a change in color or thread, with needle-bar carriers of all of the embroidery heads being laterally displaceable jointly by a displacement bar which is connected with the color-change carriage, the improvement comprising

a rack-like control bar formed with incisions is arranged on said color-change carriage,

a servomotor,

a crank pin is operatively drivingly connected to said servomotor,

said crank pin engages from to time into one of said incisions of said control bar in an operative position, said crank pin in said operative position moving said control bar via said servomotor and thereby said color-change carriage,

a locking lever having a locking member thereon cooperating from time to time with one of said incisions, and via the control bar, positioning the color-change carriage in a specific desired position,

said crank pin constitutes means for swinging said locking lever when said crank pin engages into one of said incisions.

4,386,573
EMBROIDERY ATTACHMENT FOR ELECTRONIC SEWING MACHINE

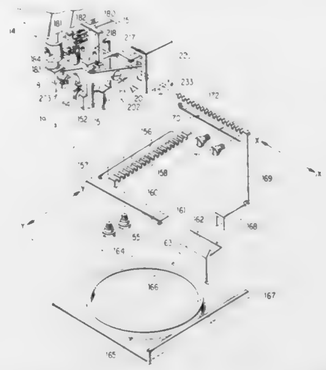
Donald R. Davidson, Berkeley Heights, N.J., and Gerhard Reinert, Bayside, N.Y., assignors to The Singer Company, Stamford, Conn.

Filed Oct. 20, 1982, Ser. No. 435,531
Int. Cl.³ D05C *9/06*; D05B *3/02*
U.S. Cl. 112—103 **15 Claims**

1. An embroidery attachment for a sewing machine having stitch forming instrumentalities including an endwise reciprocatory and lateral jogging needle bar and a work feeding member, a memory in which data is stored for influencing movements of said stitch forming instrumentalities, and means responsive to data extracted from said memory for influencing movements of said stitch forming instrumentalities, including the lateral jogging movements of said needle into predetermined position prior to each work penetrating endwise reciprocation in the formation of patterns of stitches without benefit of an embroidery attachment,

said embroidery attachment comprising a work holding frame supported on said sewing machine for movement in angularly related directions,

operative connections between said work holding frame of said embroidery attachment and said sewing machine stitch forming instrumentalities responsive to movements



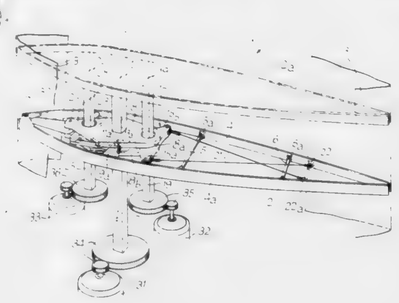
of said stitch forming instrumentalities for imparting movements to said work holding frame in each of said angularly related directions,

and means responsive to data extracted from said memory including data unrelated to that for influencing patterns of stitches without benefit of an embroidery attachment for influencing movement of at least one of said stitch forming instrumentalities to control the magnitude and sense of movement of said work holding frame.

4,386,574
SAIL ASSEMBLY OF VARIABLE PROFILE, REVERSIBLE AND COLLAPSIBLE

Pierre L. Riolland, 15205 Peacock Hill Ave., Gig Harbor, Wash. 98335

Filed Dec. 15, 1981, Ser. No. 331,010
Int. Cl.³ B63H *9/06*
U.S. Cl. 114—103 **5 Claims**



1. Sail assembly of variable profile, reversible and collapsible, comprising a mast on which are mounted ribs set apart one from the other, each one being constituted of two flexible laths joined together by means of hinge members, the said ribs being covered with a supple material, such as for example sail cloth, an assembly wherein each rib comprises a slide piece on which the two laths are pivotally mounted and on which a mast is slidably mounted, said mast being fast in rotation with said slide and being adapted to be driven in rotation, the said slide piece being provided at the back with a first cam which is fast with a shaft driven in rotation and which comprises two arms connected by transmission members pivotally mounted on the rear portion of the flexible laths, said slide piece being provided at the front with a second cam which is fast with a shaft driven in rotation and which comprises two arms connected by small rods to the pivoting axles of the flexible laths on the slide piece, and said slide piece being joined at the front by way of a tension rod to a pivoting point on the front part of the two-flexible laths.

4,386,575
BOAT ANCHOR

Robert F. Brown, 2625 State Rd. 590, Apt. 2524, Clearwater, Fla. 33519

Filed Dec. 22, 1980, Ser. No. 218,468
Int. Cl.³ B63B *21/46*
U.S. Cl. 114—299 **4 Claims**



1. A dynamic anchor for watercraft, comprising:

a fluke plate including two laterally spaced flukes connected into a planar relationship establishing a longitudinal slot therebetween with the edges of said flukes defining guide rails;

an anchor retractor comprising two retractor parts positioned together by means extending between said retractor parts and through said slot enabling said retractor to be guided by said guide rails;

said retractor being reciprocal relative to said fluke plate between an extended position and a retracted position;

means for producing a drive between said retractor and said fluke plate for moving said retractor between said extended and retracted position;

hook means on said retractor angled relative to said fluke plate for engagement into the water course bottom to enhance the relative movement between said fluke plate and said retractor;

said means for providing said drive comprising a first and a second cable;

said first cable being connected to said fluke plate for moving said flukes into the extended position for engaging with the water course bottom; and

said second cable being reaved about a turnpost disposed on said retractor and secured to said fluke plate to move said flukes into said retracted position to disengage the flukes from the water course bottom.

4,386,576
GLUE APPLICATOR FOR PAPER CUP MACHINES

Craig N. Johnson, Milwaukee, Wis., assignor to Paper Machinery Corporation, Milwaukee, Wis.

Filed Jan. 11, 1982, Ser. No. 338,348
Int. Cl.³ B05C *1/02*
U.S. Cl. 118—211 **2 Claims**

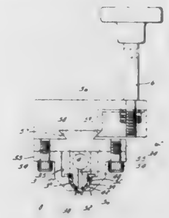
1. A machine for making paper articles such as paper cups, each formed from at least one paper blank and having a glued seam that extends along a long, narrow area of the blank, said machine being of the type comprising means providing a source of glue under pressure, a glue applicator connected with said source, and means for delivering blanks individually to said applicator for application of glue to said area of each blank, said machine being characterized by

said glue applicator comprising:

A. a body member having therein a cavity that opens downwardly through an elongated slot in a flat bottom surface of said body member, which slot substantially conforms in shape and size to an area of glue to be applied, the lower portion of said cavity having oppositely downwardly convergent surfaces that extend along the full length of said slot and respectively intersect said bottom surface along opposite longitudinal edges of said slot;

B. a pad of resilient foam material received in the bottom portion of said cavity, said pad being substantially longer and wider than said slot; and

C. a hollow inner member confined in said cavity in the body member, said inner member



(1) having an elongated ridge-like bottom portion which is received between said convergent surfaces along substantially the full length of said slot and which forces a central portion of the pad to bulge through said slot, to below the plane of said bottom surface, while cooperating with said convergent surfaces to clampingly compress portions of the pad that are on opposite sides of said central portion and extend all along the same,

(2) having an upper portion defining an elongated glue receiving chamber which is above said bottom portion, extends along substantially the full length thereof and is communicated with said source of glue under pressure, and

(3) having in said bottom portion a plurality of outlets, at intervals along the length thereof, that open downwardly from said glue receiving chamber, for conducting glue from said chamber to said central portion of the pad.

4,386,577
DEVELOPING APPARATUS FOR ELECTROSTATIC IMAGE

Nagao Hosono, Shizuoka; Koichi Kinoshita, Narashino, and Toru Takahashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 938,494, Aug. 31, 1978, abandoned. This application May 28, 1981, Ser. No. 267,771
Claims priority, application Japan, Sep. 10, 1977, 52-109240; Sep. 10, 1977, 52-109241
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—657 **24 Claims**

1. A developing apparatus for forming a developer image, comprising:

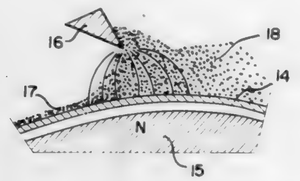
developer supporting means having a support surface upon which developer may be moved to a developing zone where said developer supporting means faces a member to which the developer is to be transferred for developed image formation;

means for supplying magnetic developer onto said support surface;

magnetic field producing means so arranged that in use a portion of the developer supporting means lies between said magnetic field producing means and the developer

carried on said support surface, and a magnetic field produced thereby extends across said portion of said developer supporting means and through the developer thereon; and

a magnetic means closely spaced from said support surface



to define a regulating zone, said magnetic means being adapted and arranged to cooperate with the magnetic field to limit the thickness of the developer layer moved on said support surface towards the developing zone.

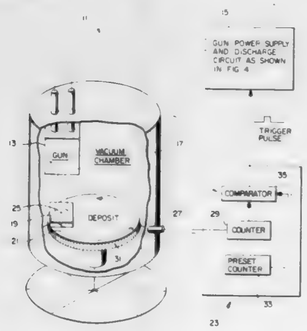
wherein said magnetic field producing means is arranged to move relative to the regulating zone.

4,386,578

HIGH VELOCITY METALLIC MASS INCREMENT VACUUM DEPOSIT GUN

Ralph L. Haslund, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 26, 1981, Ser. No. 266,978
Int. Cl.[3] C23C *13/12*
U.S. Cl. 118—669 **28 Claims**



1. A vacuum deposit apparatus comprising:

(a) a gun having first and second rail electrodes, and operable within a vacuum chamber

(b) means for supporting a metallic mass in an initial position adjacent said electrodes,

(c) an electrical discharge circuit including:

(1) capacitor means for storing a charge,

(2) circuit elements in circuit with said capacitor means, said rail electrodes and said mass for providing a bipolar discharge current, at least a portion of said discharge current passing through said mass for accelerating said mass adjacent said electrodes, and

(3) switch means operative in a predetermined state for preventing said discharge current from passing through said mass,

(d) a time delay circuit, coupled to said switch means, for operating said switch means in said predetermined state prior to a change in polarity of said bipolar discharge current, and

(e) said circuit elements and time delay circuit cooperate to control the magnitude and time duration of said discharge current to accelerate said mass along said rails without vaporization of said mass.

16. A high velocity metallic spray vacuum deposit device comprising:

(a) a vacuum chamber,

(b) an electromagnetically driven linear mass accelerator gun for heating a metallic mass and accelerating the mass to a desired terminal velocity, said gun being positioned within said vacuum chamber,

(c) a discharge circuit connected to said gun for supplying a cyclic discharge current having a predetermined time variation and magnitude, said discharge current passing through said mass for accelerating said mass, said discharge circuit including means for preventing said discharge current from passing through said mass at a time prior or equal to the zero crossing of said current, said discharge current producing a magnetic pinch pressure on said mass larger than the thermal expansion pressure of said mass for maintaining said mass in a solid, non-vapor state during acceleration within said gun,

(d) means for triggering said discharge circuit for accelerating said mass,

(e) a movable support positioned within the vacuum chamber for supporting a substrate having a desired deposition area, and

(f) means for coordinating the motion of said support with the triggering of said gun to precisely locate the metallic mass on the desired deposition area of the substrate.

4,386,579

ANIMAL LITTER

Angie Harsh, Hagerstown, Md., and Benjamin M. Schulein, Jr., St. Louis, Mo., assignors to Alfa-Pet, Inc., St. Louis, Mo.

Filed Aug. 13, 1981, Ser. No. 292,645
Int. Cl.[3] A01K *1/015*
U.S. Cl. 119—1 **8 Claims**

4. For use with an animal litter comprising an absorbent soil selected from the group consisting of diatomaceous earth and clay, an agent for potentiating the effectiveness of said litter comprising natural, untreated cedar presented in stratum-forming condition and in underlying relationship to the soil, said cedar being in unbound and unmixed relationship with respect to the soil, and of such particulate character as to militate against the development of air pockets within the cedar stratum, said soil substantially completely covering said cedar.

4,386,580

ANIMAL LITTER AND METHOD FOR DEODORIZING ANIMAL WASTE WITH DRIED CITRUS PULP

Robert M. Johnson, Weston, Conn., assignor to Green Mountain Products, Inc., Norwalk, Conn.

Filed May 10, 1982, Ser. No. 376,584
Int. Cl.[3] A01K *1/015*
U.S. Cl. 119—1 **11 Claims**

1. A method for deodorizing animal waste comprising the step of depositing said waste into contact with dried citrus pulp wherein said dried citrus pulp is obtainable by:

(a) squeezing raw citrus fruit to remove the juice therefrom;

(b) cutting said squeezed citrus fruit into small pieces of citrus pulp;

(c) drying said citrus pulp; and

(d) chopping the dried citrus pulp into bits to obtain a desired size for adhering to animal waste.

4,386,581

ANIMAL BREEDING CONVEYOR HOUSE

Yakov Rokhvarg, 308 6th St., Fairview, N.J. 07022

Filed Sep. 21, 1981, Ser. No. 309,043
Int. Cl.[3] A01K *1/12, 1/00, 1/01*
U.S. Cl. 119—14.03 **28 Claims**

1. An animal breeding conveyor house, comprising

a stationary part including radially inner and radially outer stationary annular elements spaced from one another so as to form a gap therebetween and each formed by a plurality of immovable annular plane members spaced from one another in an upright direction and connected with one another;

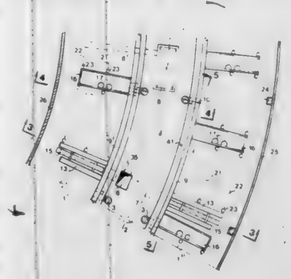
a main service conveyor including a plurality of plane rotary platforms located in said gap and also spaced from one another in the upright direction and connected with one another so as to form a unitary upright spatial frame;

means for rotating said frame and thereby said main service conveyor relative to said stationary part;

first feed distributing means cooperating with said main service conveyor so that when the latter rotates said first feed distributing means distributes the food;

first liquids manure cleaning means cooperating with the main service conveyor so that when the latter rotates said first liquid manure cleaning means cleans the liquid manure.

a secondary conveyor including a plurality of pairs of annular rotary bars spaced from one another in the upright direction, each rotary bar of each of said pairs carrying a plurality of radial partitions associated with a respective



one of said immovable annular plane members and forming a plurality of animal accommodating compartments so that when said secondary conveyor with said platforms rotates the animals accommodated in said compartments are urged to move;

a plurality of further means for rotating each of said rotary bars independently of other of said rotary bars together with the respective plurality of radial partitions;

second feed distributing means arranged so that when at least one of said bars with the respective plurality of partitions rotates, at least one of said first and second feed distributing means distributes the food;

second liquid manure cleaning means;

connecting means for connecting said main conveyor with at least one of said bars so that when said first mentioned rotating means rotates said main conveyor, the latter rotates said one bar with the respective partitions so that they rotate together, said second feed distributing means distributes the food and said second liquid manure cleaning means cleans the liquid manure.

4,386,582

LIQUID STORAGE CONTAINER HAVING ANIMAL FEEDING MEANS

Gordon H. Adsit, Hwy. 60, One Mile West, Lake Wales, Fla. 33853

Filed May 4, 1981, Ser. No. 259,844
Int. Cl.[3] A01K *5/00*
U.S. Cl. 119—51 R **16 Claims**

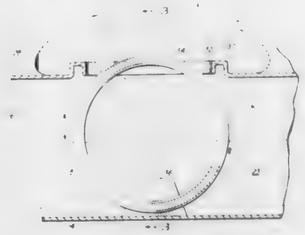
1. A liquid feed dispenser for cattle, horses and other animals comprising:

(a) a housing defined by an outer peripheral wall forming a liquid storage chamber and having a slot along said peripheral wall;

(b) ingress means for permitting said chamber to be filled with a liquid feed;

(c) a feeding wheel which is buoyant in the liquid to be stored in said chamber, said wheel comprising an annular ring free of mechanical connection to said housing;

(d) means for positioning said wheel with a first portion extending through said slot and the remainder extending into the liquid feed within said chamber, said wheel being



supported relatively free for movement responsive to pressure from feeding animals; and where

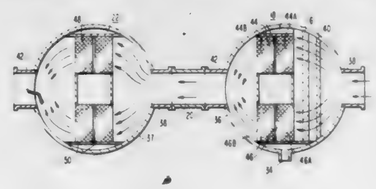
(e) cattle, horses and other animals to be fed may obtain the liquid feed from said chamber by rotating said portion of said wheel in said slot, causing liquid feed to be presented along said wheel for consumption.

4,386,583

MOISTURE SEPARATOR REHEATER APPARATUS

Thomas J. Rabas, Broomall, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 156,139, Jun. 3, 1980, abandoned, which is a continuation of Ser. No. 12,917, Feb. 16, 1979, abandoned, which is a continuation of Ser. No. 836,113, Sep. 23, 1977, abandoned. This application Nov. 5, 1981, Ser. No. 318,507
Int. Cl.[3] F22G *1/00*
U.S. Cl. 122—483 **1 Claim**



1. A steam reheating apparatus comprising:

a first enclosed shell member;

a plurality of first cycle steam inlets arranged on one sidewall of said first shell;

a plurality of first cycle steam outlets arranged on an other sidewall of said first shell, said other sidewall being substantially oppositely situated from said one sidewall;

first means for reheating said cycle steam, said first reheating means extending longitudinally in said first shell between said first cycle steam inlets and said first cycle steam outlets;

a second shell member;

a plurality of second cycle steam inlets arranged on one sidewall of said shell, and disposed in fluid communication with said first steam cycle outlets in a series flow relation;

a plurality of second cycle steam outlets arranged on an other sidewall of said second shell, said other sidewall being substantially oppositely situated from said one sidewall;

second means for reheating said cycle steam, said second reheating means extending longitudinally in said second shell between said second cycle steam inlets and said second cycle steam outlets;

said first and second reheating means each including a plurality of heat exchange tubes grouped in a plurality of

fluidly communicating tube passes wherein all successive tubeside fluid communicating passes are successively downstream from said respective cycle steam inlets, said tube passes including inlet and outlet passes in each shell, all said inlet pass tubes being in fluid communication with a heating fluid;

means for separating moisture from said cycle steam, said moisture separating means being disposed in said first enclosed shell between said first cycle steam inlets and said first reheating means; and

means for distributing cycle steam to said moisture separating means, said distributing means being disposed in said first enclosed shell between said moisture separating means and said first cycle steam inlets;

said tube passes being grouped in a plurality of tube bundles, each of which have an inlet in fluid communication with a source of heating fluid, the shell side of said bundles being in parallel flow relation with the fluid in said tubes to eliminate subcooling within said tubes.

4,386,584

THERMOSTATICALLY CONTROLLED VALVE

Noel C. Calkins, 352 Boyer, Los Alamos, N. Mex. 87544

Continuation of Ser. No. 273,683, Jun. 21, 1981, Pat. No. 4,359,972. This application Aug. 26, 1982, Ser. No. 411,891

Int. Cl.³ F01P *7/16*

U.S. Cl. 123—41.08 **1 Claim**



1. A thermostatically controlled valve which comprises:

(a) an elongated body having an internal chamber and an inlet port and an outlet port opening into said chamber;

(b) first and second valve port means disposed in said chamber;

(c) valve means disposed in said chamber and axially movable to and from said first and second valve port means so as to adjust flow rate therethrough;

(d) spring means disposed in said chamber and biasing said valve means toward a valve closed position with respect to said second valve port means;

(e) means in said second valve port means for providing a desired continuous fluid communication through said second valve port means; and

(f) a temperature-responsive axial force actuator connected to and forming a part of said valve means,

increasing temperature causing expansion of said actuator to move said valve means against the biasing action of said spring means, thereby increasing the flow rate through said second valve port means and reducing the flow rate through said first valve port means and hence through said outlet port over at least a portion of the path of said valve means.

4,386,585

LIQUID FRICTION COUPLING

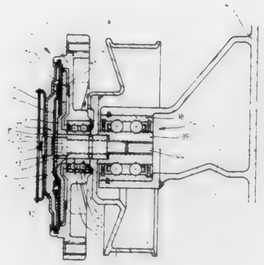
Friedrich Kittel, Schweinfurt; Kurt Fädler, Niederwerrn, and Peter Anders, Schweinfurt, all of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Jan. 21, 1982, Ser. No. 341,477

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1981, 3103064

Int. Cl.³ F01P *5/04*

U.S. Cl. 123—41.12 **13 Claims**



1. In a liquid friction coupling, especially for driving fans of liquid-cooled internal combustion engines, comprising a shaft (2) rotating about an axis of rotation and driven at its end facing the internal combustion engine (4) by the engine (4) and carrying a rotor (3) at the end remote from the internal combustion engine (4), further comprising a housing (5) surrounding the rotor (3), which housing (5) defines shear liquid torque transmission means together with the rotor (3) and carries the fan wheel, a shear liquid within said housing (5) a bearing arrangement (8) between said housing (5) and said shaft (2), a housing front wall (6) facing the radiator of the internal combustion engine (4), said front wall (6) carrying on its outer side a temperature-responsive actuator member (9) acting through at least one transmission member (10) upon a valve lever (11) arranged in the housing (5), the improvement which consists in that the shaft (2) carrying the rotor (3) is connectable with a drive member (15) driven by said internal combustion engine (4), through a centrally arranged screw (14) which is accessible from the exterior through an appropriate opening (12, 13) in at least one of the actuator member (9, 19, 21) and the front wall (6), and the transmission of the control movement from the actuator member to the valve lever (11) occurs in an area radially offset from said openings (12, 13).

4,386,586

MANIFOLD ON A SIX-CYLINDER IN LINE ENGINE

Andres Santiago, and Enrique Santiago, both of Diedorf, Fed. Rep. of Germany, assignors to Zeuna-Staerker GmbH & Co. KG, Fed. Rep. of Germany

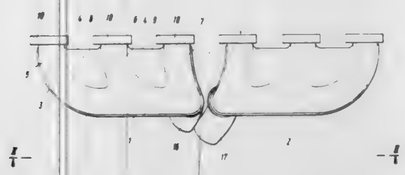
Filed Sep. 4, 1980, Ser. No. 184,090

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2935925; Sep. 6, 1979, 7925201[U]

Int. Cl.³ F02B *75/18*

U.S. Cl. 123—52 M **2 Claims**

1. A manifold for a six-cylinder in-line engine for conducting exhaust gases from the engine to exhaust piping, said manifold being comprised of a first partial manifold and a second partial manifold, said first partial manifold communicating with a first, second and third cylinder of said engine, said second partial manifold communicating with a fourth, fifth and sixth cylinder of said engine; each of said partial manifolds being comprised of two single layer half shells of sheet metal welded together along their respective joining seams so as to form each said partial manifold, each said partial manifold thereby having single layer sheet metal walled passages for conducting exhaust gases; said passages bounding and defining two areas between said passages and the engine, the first said area being located in the region next to and between a first pair of adjacent cylinders of the engine with which each said partial manifold communicates, the other said area being located in the region next to and between a second pair of adjacent cylinders with which each said partial manifold communicates, one of said second pair of cylinders not being one of said first pair of cylinders, said half shells including planar web portions adjacent said passages, said web portions of each half shell contacting in a common



plane corresponding web portions of the half shell to which it is welded, said contacting web portions being welded together at a plurality of spots; said web portions comprising sheets which substantially extend over and enclose each of the said two areas, said web portions providing support against thermal deformation of said partial manifold; each said partial manifold including flanged connection sockets for each of the three cylinders with which the partial manifold communicates; each said partial manifold also including a collecting pipe for conducting exhaust gases away from the manifold to exhaust piping, and means for connecting the collecting pipe to the exhaust piping.

4,386,587

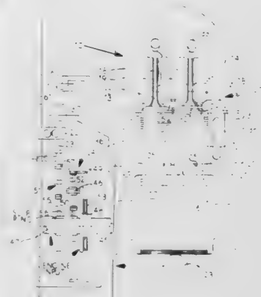
TWO STROKE CYCLE ENGINE WITH INCREASED EFFICIENCY

Aladar O. Simko, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1981, Ser. No. 333,244

Int. Cl.³ F02B *75/06, 77/08*

U.S. Cl. 123—65 R **15 Claims**



1. A method of decreasing fuel consumption in a two cycle internal combustion engine having an air chamber surrounding working cylinder, the air chamber normally receiving pressurized air for supply to the working cylinder when the piston is in a preselected expanded position, the method comprising:

decreasing the compression ratio of the engine by permitting fluid communication between said working cylinder and air chamber during the upward stroke when the engine is under part load conditions, said communication being maintained up to about 85°–105° BTDC during which time the cylinder gases can flow back into the air chamber reducing engine friction by a delay in the rise of cylinder pressure during compression and a reduction in peak compression pressure.

4,386,588

CANISTER RETAINER ASSEMBLY

David D. Drenner, Parkersburg, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jul. 25, 1980, Ser. No. 172,365

Int. Cl.³ F02M *1/16*

U.S. Cl. 123—187.5 R **3 Claims**



1. A canister retainer assembly capable of holding an aerosol canister in an upright position against an electric solenoid valve associated with an engine and of sealing said electric solenoid valve from outside air when no canister is present, said electric solenoid valve including an inlet opening, a rubberized gasket surrounding said inlet opening, a plunger movably positioned within said inlet opening, and means for activating said plunger to contact an outlet valve located in the top of said aerosol canister to thereby release pressurized fluid from said aerosol canister, said assembly comprising:

(a) a collar-shaped adapter secured to said electric solenoid valve which has an end surface with an opening therein, said adapter further having a 360 degree circular groove formed on an inner circumferential surface which is aligned adjacent to said opening; and

(b) a holder having a hollow cylindrical body which is opened at one end and closed at a second end, and having a plurality of outwardly extending members arranged on the outer circumference of said holder in an equally spaced-apart configuration and lying in a plane aligned perpendicular to the elongated axis of said cylindrical body, said members being engageable with said circular groove to position said holder in a first position wherein said holder is capable of retaining said aeeosol canister is an upright position against said electric solenoid valve with said one end in contact with said adapter therewithin and being reversably engageable with said circular groove to position said holder in a second position wherein said holder in inverted 180 degrees to seal said electric solenoid valve from contamination when no aerosol canister is present and with said second end in contact with said adapter therewithin.

4,386,589

INTERNAL COMBUSTION ENGINE

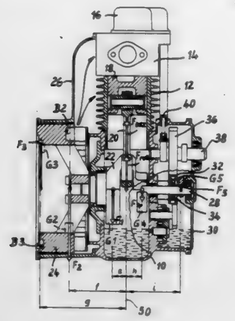
Ernst Hatz; Erich Absenger, both of Ruhstorf, and Johann Schmuck, Bad Feilnbach, all of Fed. Rep. of Germany, assignors to Motorenfabrik Hatz GmbH & Co. KG, Ruhstorf, Fed. Rep. of Germany

Filed May 13, 1981, Ser. No. 263,325

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1981, 3102154

Int. Cl.³ F02B *75/06*

U.S. Cl. 123—192 B **11 Claims**



1. A single cylinder internal combustion engine, comprising rotatably supported crankshaft means, a piston, a connecting rod operatively connecting said piston and crankshaft means and counterweight means for balancing centrifugal forces produced by rotating masses and free mass forces of the first order produced by reciprocating masses of the engine, said counterweight means including means defining a balancing mass on said crankshaft means which has the out-of-balance mass needed to balance said centrifugal forces and the out-of-balance mass needed to balance a portion of said free mass forces of the first order, and including two rotatably supported balance shafts which are parallel to and rotationally driven by said crankshaft means in the same direction with respect to one another and in a direction opposite the direction of rotation of said crankshaft means, each said balance shaft having thereon a first balancing weight which has half of the out-of-balance mass needed to balance the remainder of said free mass forces of the first order, said means defining a balancing mass on said crankshaft means being located on one side of a plane which is perpendicular to said crankshaft means and contains said connecting rod, and said first balancing weights on said balancing shafts being located on the other side of said plane.

4,386,590

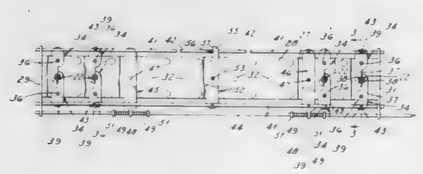
MULTI-CYLINDER INTERNAL COMBUSTION ENGINE HAVING SELECTIVE CYLINDER CONTROL

Bradford Bates, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 11, 1976, Ser. No. 695,221

Int. Cl.³ F02D *13/06*

U.S. Cl. 123—198 F **10 Claims**



1. A multi-cylinder internal combustion engine having an intake valve and an exhaust valve for each cylinder and a rocker arm assembly for operating each valve,

each rocker arm assembly including a rocker arm operatively engageable at one end by a rocker arm actuator and having operative engagement at its other end with a valve, fulcrum means about which each rocker arm is pivotable to transmit actuator motion to the valve, and a fulcrum supporting means positioned intermediate the ends of each rocker arm, each fulcrum supporting means comprising an elongated stud mounted on a surface of the engine and extending generally perpendicular to the mounting surface to project through apertures formed through the rocker arm and fulcrum means,

wherein the improvement comprises:

modified rocker arm assemblies for the intake and exhaust valves of selected ones of the cylinders,

each modified rocker arm assembly having a load transfer means comprising a tubular member superposed on the fulcrum means and encompassing the stud,

the fulcrum means and the superposed load transfer means being slidably supported on the stud of the fulcrum supporting means for movement from and toward the engine surface along the longitudinal axis of the stud,

an interposer means comprising independent opposed levers pivotably mounted intermediate their ends coacting with each load transfer means,

support plate means mounting each lever on the engine for movement transversely of the stud from a nonblocking position into a position to block movement of the load transfer means and associated fulcrum means away from the engine surface thereby to maintain the fulcrum means in a substantially stationary position to provide a substantially fixed pivot axis about which each rocker arm is pivotable,

the opposed levers being swingable in a plane normal to the axis of the stud and having end portions constructed and arranged to semi-encompass the stud upon the end portions being moved toward each other into abutting relation to the stud,

the interposer means for each load transfer means when in nonblocking position with respect thereto permitting the latter and its related fulcrum means to reciprocate relative to the engine surface and render the rocker arm inoperative to transmit motion from the actuator to the valve,

biasing means urging each load transfer means toward a position in which each interposer means is movable into the blocking position contiguous to the load transfer means,

and operating means for shifting the interposer means transversely from the stud into and out of blocking position relative to the related load means, the operating means comprising control rods mechanically interconnecting the intake interposers of the selected cylinders to each other and the exhaust interposers of the selected cylinders to each other,

and an actuation control means coupled to the control rods.

4,386,591

METHOD OF AND APPARATUS FOR CONTROLLING THE AIR INTAKE OF AN INTERNAL COMBUSTION ENGINE

Masaomi Nagase, Toyota; Hideo Miyagi, Okazaki, and Masumi Kinugawa, Kariya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed Sep. 18, 1981, Ser. No. 303,492

Claims priority, application Japan, Sep. 25, 1980, 55/132267

Int. Cl.³ F02D *9/02*

U.S. Cl. 123—339 **16 Claims**

1. A method of controlling the air intake of an internal combustion engine having an intake passage, a throttle valve disposed in the intake passage, and an air bypass passage which interconnects the intake passage at a position located upstream of the throttle valve with the intake passage at a position located downstream of the throttle valve, said method comprising the steps of:

detecting the actual rotational speed of the engine to produce a rotational speed signal which represents the detected rotational speed;

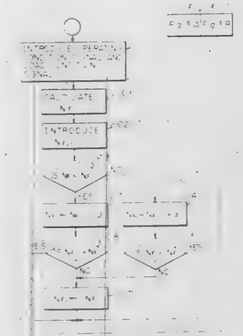
producing at least one engine condition signal related to at least one of the operating condition and the load condition of the engine;

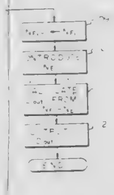
repeatedly determining, in response to said at least one engine condition signal, a desired rotational speed;

gradually changing a transitional rotational speed from the previous desired rotational speed toward the current desired rotational speed in response to a change in said at least one engine condition signal;

by using the produced rotational speed signal and the transitional rotational speed, calculating the difference between the actual rotational speed of the engine and the transitional rotational speed, to produce a control output signal which is determined depending upon the calculated difference; and

adjusting, in response to the control output signal, the sectional area of the air bypass passage to control the flow rate of air passing through the air bypass passage so as to reduce the difference between the actual rotational speed and the transitional rotational speed.





4,386,592

AIR-FUEL RATIO CONTROL SYSTEM

Masaaki Ohgami, and Fujio Matsui, both of Musashino, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Feb. 4, 1981, Ser. No. 231,557

Claims priority, application Japan, Feb. 6, 1980, 55-13240

Int. Cl.³ F02B *3/00;* **F02M** *7/12;* **F02B** *3/10;* **F02D** *35/00*

U.S. Cl. 123—440 **5 Claims**



1. In an air-fuel ratio control system for an internal combustion engine having an intake passage and an exhaust passage, air-fuel mixture supply means for supplying the air-fuel mixture to the engine, on-off type electromagnetic valve means for correcting the air-fuel ratio of the air-fuel mixture supplied by said air-fuel mixture supply means, the improvement comprising

dither signal generating circuit means for producing a periodical dither signal having a waveform,

a shift control circuit means for shifting the level of the center of said dither signal,

driving circuit means operatively connected to said shift control circuit means for producing a driving output according to said dither signal and for driving said on-off type electromagnetic valve means,

detecting means for detecting the concentration of oxygen in exhaust gases passing through said exhaust passage,

a memory circuit means for memorizing a peak level of output of said detecting means and for producing an output according to the memorized peak level,

first circuit means being applied with outputs of said detecting means and of said memory circuit means for detecting deviation of the dither signal detected by said detecting means,

decision circuit means responsive to outputs of said first circuit means for producing a decision output representing the direction and amount of deviation of the detected dither signal from a stoichiometric air-fuel ratio,

second circuit means responsive to said decision output of said decision circuit means for controlling said shift control circuit means dependent on said decision output of said circuit means in such a manner that the deviation of said dither signal is corrected to the stoichiometric air-fuel ratio.

4,386,593

FUEL-AIR INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Oscar Tibbs, Ripley, Tenn., assignor to William Dan Douglas, Jr.; Diane Douglas Wood and Paul E. Conway

Filed May 12, 1981, Ser. No. 262,824

Int. Cl.³ F02M *17/26*

U.S. Cl. 123—523 **23 Claims**

1. A fuel-air injection control system for feeding air and fuel vapor to the combustion chambers of an internal combustion engine wherein combustion air is drawn into the intake ducts of the engine by the engine vacuum, said system comprising:

means for directly delivering unheated and unmixed fuel

vapor to the combustion chambers of the engine including vacuum pump means connected to a fuel supply tank for continuously drawing off fuel vapor from the tank and means for supplying the fuel operator controlled vapor to the combustion chambers of the engine;

means for selectively controlling the amount of combustion



air which is drawn into the intake ducts by the engine vacuum; and

means for heating the controlled amount of combustion air which is drawn into the intake ducts and for supplying the heated combustion air to the combustion chambers so as to provide a mixture of unheated fuel vapor with the heated combustion air for ignition.

4,386,594

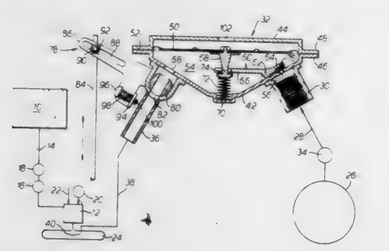
APPARATUS FOR ENABLING AN ENGINE TO BURN EITHER LIQUID FUEL OR GASEOUS FUEL

David T. Szloboda, 10591 Skagit Dr., Richmond, British Columbia, Canada (V7E 1Z9)

Continuation-in-part of Ser. No. 190,921, Sep. 26, 1980, abandoned. This application Apr. 30, 1981, Ser. No. 259,110

Int. Cl.³ F02M *21/02*

U.S. Cl. 123—525 **9 Claims**



1. Apparatus for enabling an engine to burn either liquid fuel or gaseous fuel, which apparatus comprises:

(i) a gaseous fuel control valve for installation in a gaseous fuel supply line leading from a gaseous fuel storage container to an intake manifold of the engine,

(ii) a liquid fuel shut-off valve for shutting off the supply of liquid fuel when the engine is to run on gaseous fuel, and

(iii) a gaseous fuel shut-off valve for shutting off the supply of gaseous fuel when the engine is to run on liquid fuel,

the gaseous fuel control valve comprising:

(a) housing means defining a compartment,

(b) a single diaphragm which is positioned in the compartment and which defines one wall of a chamber, the housing means defining the remaining boundaries of the chamber, and the side of the diaphragm opposite the chamber being in communication with atmospheric pressure,

(c) a gas inlet into the chamber and adapted for connection with a conduit leading from a gaseous fuel storage container,

(d) a gas outlet from the chamber and adapted for connection to an intake manifold of the engine,

(e) outlet valve obturator means which is controlled by an accelerator pedal of the vehicle in use of the apparatus and which is for controlling the intensity of the suction applied to the chamber in response to the position of the accelerator pedal, whereby the flow rate of the gaseous fuel through the gas outlet to the intake manifold of the engine is regulated by the suction created by the engine in the intake manifold so that a correct air:gaseous fuel mixture is achieved for varying engine operating requirements, and

(f) inlet valve obturator means for controlling the flow of gaseous fuel through the gas inlet into the chamber, the inlet valve obturator means being connected to the diaphragm such that movement of the diaphragm in a direction tending to decrease the size of the chamber increases the size of the inlet and movement of the diaphragm in a direction tending to increase the size of the chamber decreases the size of the inlet, whereby the pressure of the gaseous fuel in the chamber is balanced about a value which is appropriate for the engine's momentary operating requirements and which is determined by the suction created by the engine in the intake manifold.

4,386,595

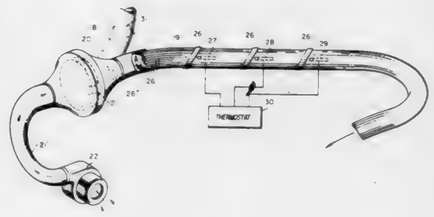
AIR TREATING DEVICE FOR FUEL BURNING ENGINES

James W. Young, 2513 Oakwood Dr., Grand Prairie, Tex. 75051

Filed Oct. 18, 1979, Ser. No. 85,908

Int. Cl.³ F02M *27/00*

U.S. Cl. 123—539 **9 Claims**



1. Apparatus for decreasing the amounts of pollutants discharged by a fuel driven engine comprising air intake means, means comprising a plurality of individual conduits segregating the air into a plurality of streams for conducting the air to a treatment station, heating means and temperature controlling means regulating the heat discharged by the heating means acting on the air on its way to said treatment station, said treatment station including a cup-shaped housing having its interior wall recessed in a stepped fashion, a plurality of sets of at least two sealed glass tubes with one being of a lime type and the other of an unleaded nature and containing inert gas with one being capable of emitting ultraviolet rays and the other being capable of emitting heat, said sets being bunched together and wrapped at spaced intervals by a wire wrapped therearound in a figure eight configuration over and under the individual tube thereof, said wires being connected to a power generating circuit causing the wires and tubes to be heated whereby the specific wrapping thereof will increase the heat of each to enhance the movement of the gas therein, said sets being received in respective ones of said recesses of said interior wall and conforming in shape thereto and an outlet through which the treated air passes.

4,386,596

FUEL CONDITIONING DEVICE

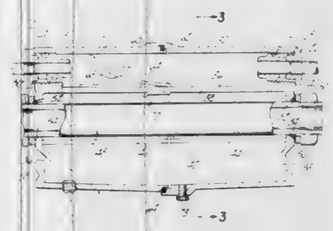
Charles R. Tuckey, 9684 Dexter-Pinckney Rd., Floor One, Pickney, Mich. 48169

Filed Feb. 3, 1981, Ser. No. 231,248

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **6 Claims**

1. A fuel conditioning device comprising: an elongated housing forming a fuel duct and a heating chamber extending longitudinally thereof and communicating with each other, a fuel inlet port and a fuel outlet port formed in walls of said housing and communicating with opposite ends of said fuel duct, a temperature responsive valve disposed between said duct and said heating chamber and being movable from an open position permitting substantially direct communication between said inlet and said outlet ports and a closed position diverting fuel from said inlet port to said heating chamber, said



temperature responsive valve being a bimetal element in the form of an elongated leaf which is in its open position at a relatively high temperature and in its closed position when the temperature is relatively low, and said fuel duct having a slot extending longitudinally thereof, said leaf having one end supported in said duct in fixed position adjacent said slot, the other end of said leaf being movable relative to said slot to open and close said slot.

4,386,597

EXHAUST GAS RECIRCULATION CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE AND ASSOCIATED METHOD

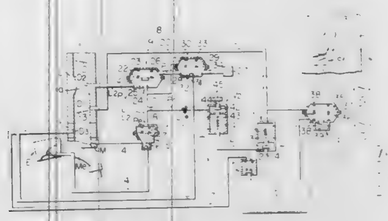
Shoichi Ootaka, Kawagoe; Etsuo Kawabata, Wako; Yutaka Otobe, Niiza; Michio Kawamoto, Tokyo, and Norio Sato, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1980, Ser. No. 205,938

Claims priority, application Japan, Nov. 15, 1979, 54-147904

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—568 **17 Claims**



1. In apparatus for controlling exhaust gas recirculation for an internal combustion engine having an exhaust gas recirculation passage connecting an exhaust passage of the engine to an intake passage of the engine, vacuum-response type control valve means in said recirculation passage for controlling recirculation flow of exhaust gases in said recirculation passage, and vacuum passage means connecting said valve means to said intake passage for operating said valve means in response to the vacuum produced in said intake passage, the improvement comprising vacuum storage means connected to said intake passage at a location downstream of the connection of the vacuum passage means to the intake passage, change-over valve means for selectively connecting said vacuum storage means to said vacuum passage means, and differential pressure switch means connected to said vacuum passage means and to said vacuum storage means for comparing the pressures therein and for selectively operating said change-over valve means in response thereto.

4,386,598

SLING SHOT APPARATUS

Anton J. Blaser, 700 E. Mason, Santa Barbara, Calif. 93103

Filed Jul. 2, 1981, Ser. No. 280,079

Int. Cl.³ F41B *7/00*

U.S. Cl. 124—21 **6 Claims**



1. A sling shot apparatus including, in combination:

(a) a handle;

(b) left and right arms extending laterally from opposite upper side portions of said handle;

(c) elastic cord means extending from the far ends of said arms in a rearward direction to define a sling;

(d) projectile holding means connected to said sling;

(e) rectilinear guide means secured to said handle and cooperating with said projectile holding means to guide said projectile holding means for movement along a rectilinear path, the forward end of said rectilinear guide means including a front sighting member for use with said projectile holding means;

(f) a shoulder support secured to a rear underside portion of said rectilinear guide means; and

(g) means for adjusting the position of the shoulder support horizontally and vertically relative to said rectilinear guide means whereby said projectile holding means can be pulled rearwardly with one end while holding said handle with the other hand, and then released, said guide means assuring that a projectile held by said projectile holding means will be propelled along said given rectilinear path.

4,386,599

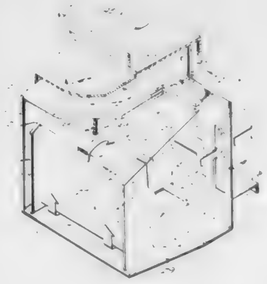
FIREPLACE STOVE

Robert A. Berryhill, Greensboro, N.C., assignor to Austin-Berryhill Fabricators, Inc., Greensboro, N.C.

Filed Jul. 25, 1979, Ser. No. 60,501

Int. Cl.³ F24C *15/30*

U.S. Cl. 126—126. **14 Claims**



1. A stove for insertion as a unit into an existing fireplace,

said stove having a fan positioned in an air space therein for forcing air in heat exchange relationship with said stove and wherein said fan is located in said air space to prevent fan burn-out, said stove comprising:

a fire chamber adapted for combusting fuel, said chamber having a pair of sidewalls, top and bottom walls, an end wall and a door opposite said end wall, said door being in a frontal portion of said stove and said walls forming heat exchange surfaces, said bottom wall of said fire chamber sloping downwardly from the frontal portion of said stove to said end wall;

a frame positioned about said fire chamber and being spaced from said side, end, top and bottom walls of said fire chamber, said frame and fire chamber defining an air space therebetween;

an air inlet formed in said frame at the frontal portion of said stove for passing air from the exterior of said stove to said air space;

a fan disposed in said air space in front of and below said fire chamber for forcing air through said air space in a heat exchange path along the bottom, end and top walls of said fire chamber, said air being thereby heated, said fan being positioned in a relatively cool portion of said air space and wherein convection air flow in said air space causes cool air from said inlet to flow about said fan, along said end wall and over said top wall to thereby prevent fan burn-out due to heat from said fire chamber; and

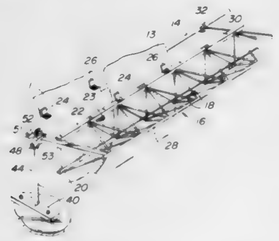
an air outlet positioned in a frontal portion of said stove for passing said heated air from said air space to the exterior of said stove.

4,386,600

SUPPORT STRUCTURE FOR SUPPORTING A PLURALITY OF ALIGNED SOLAR REFLECTOR PANELS

Walter S. Eggert, Jr., Huntington Valley, Pa., assignor to The Budd Company, Troy, Mich.

Filed Feb. 23, 1981, Ser. No. 236,862
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—438 **8 Claims**



1. A support structure for supporting a plurality of aligned longitudinally disposed solar reflector panels curved to reflect energy from sun rays to a receiver member comprising:

(a) a truss structure including a plurality of angularly disposed tube elements welded together for holding said reflector panels and said receiver member;

(b) a pair of elongated connector members connected to said truss structure extending along the entire length of said plurality of solar reflector panels;

(c) connector elements connected to each of said solar collector panels attached to said pair of elongated connector members on said truss structure;

(d) a pair of support base means at opposite ends of said truss structure;

(e) receiver member comprising a tubular member and conduit connectors connected to both ends of said receiver member to permit fluid from a reservoir to be circulated therethrough; and

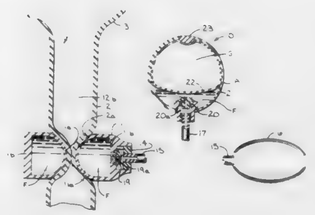
(f) rotatable means for connecting the ends of said truss structure to said pair of support base means to permit said support structure with said receiver member to be rotated about 360° between said pair of support base means.

4,386,601

ARTIFICIAL SPHINCTER

Robert E. Trick, Racine, Wis., assignor to Medical Engineering Corporation, Racine, Wis.

Filed Aug. 12, 1981, Ser. No. 292,051
Int. Cl.[3] A61B *17/00*
U.S. Cl. 128—1 R **4 Claims**



1. An artificial sphincter for controlling the flow of fluid through a body passage which comprises a closed system which includes:

(a) an inflatable occlusion means which is normally inflated with hydraulic fluid to close the body passage;

(b) an improved accumulator including a rigid inelastic shell which serves as a reservoir for hydraulic fluid and a gas filled bladder disposed within said shell, said bladder having a resealable means which permits gas to be introduced into or removed from the bladder with a hollow needle thereby permitting the fluid pressure in closed system to be adjusted without opening said system;

(c) pump means for sucking hydraulic fluid from the inflatable occlusion means causing it to deflate and the body passage to open;

(d) tubing connecting the pump means to the inflatable occlusion means and the pump means to the accumulator balloon to form a closed system;

(e) valve means allowing free flow out of the inflatable occlusion means and into the accumulator reservoir; and

(f) resistance means fluidly interposed between said occlusion means and said accumulator which allows fluid to flow at a low rate into the inflatable occlusion means and out of the accumulator.

4,386,602

INTRACRANIAL SURGICAL OPERATIVE APPARATUS

Charles H. Sheldon, 1345 Bedford Rd., San Marino, Calif. 91108; Robert E. Frazer, 317 San Juan Way, La Canada, Calif. 91011, and Harold R. Lutes, 556 Michigan Blvd., Pasadena, Calif. 91107

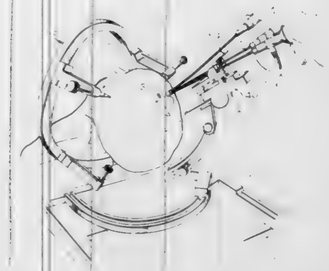
Filed May 17, 1977, Ser. No. 797,843
Int. Cl.[3] A61B *1/00*
U.S. Cl. 128—4 **5 Claims**

3. Surgical operative apparatus, comprising:

a frame;

a plurality of leaves having inner ends mounted on said frame and outer ends that can move together and apart to respectively form a largely closed and open end;

means for moving said leaves, including an annular member slidable within said leaves to force them apart, and a pair of rods connected to said annular member to move it; and



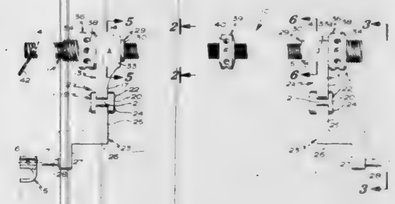
a collar mounted to said frame and forming a first pair of holes slidably receiving said rods, and forming a second hole for guiding a surgical instrument.

4,386,603

DISTRACTION DEVICE FOR SPINAL DISTRACTION SYSTEMS

Jack K. Mayfield, 12 Evergreen Rd., St. Paul, Minn. 55110

Filed Mar. 23, 1981, Ser. No. 246,299
Int. Cl.[3] A61F *5/00*
U.S. Cl. 128—69 **4 Claims**



1. A distractor device for exerting force on spaced apart hooks used in a spinal distraction system in which each hook is positioned between a pair of vertebrae, and each hook has an axial opening therethrough, said device comprising:

an elongate substantially straight threaded rod,

a movable force applying member and a non-movable force applying member on said rod,

means mounting said non-movable force applying member on said rod for pivoting movement relative thereto, means mounting said movable force applying member on said rod for pivotal and sliding movement relative thereto, said mounting for said force applying members including a pair of sleeves each positioned around said rod, means pivotally connecting each force applying member with one of said sleeves,

adjustable stop means for said force applying members cooperating with the latter while limiting pivotal movement of the force applying members, said stop means including a pair of nuts threadedly engaging said rod and each nut engaging one of said sleeves,

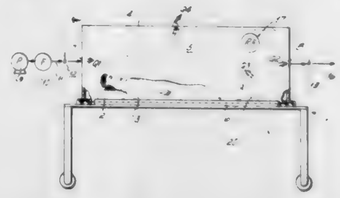
each force applying member including an attachment element and a hook engaging element, means pivotally connecting the attachment and hook engaging element of each force applying member, a hook engaging pin on the hook engaging element of each force applying member for engaging a distraction hook, and means on said rod being movable relative thereto and engagable with said movable force applying member for shifting the same longitudinally of said rod.

4,386,604

DETERMINATION OF THE BASAL METABOLIC RATE OF HUMANS WITH A WHOLE-BODY CALORIMETER

Daniel Hershey, 726 Lafayette Ave., Cincinnati, Ohio 45220

Filed Feb. 27, 1981, Ser. No. 239,113
Int. Cl.[3] A61B *5/00*
U.S. Cl. 128—718 **18 Claims**



1. A whole-body calorimeter for use in obtaining data for calculating the basal metabolic rate of a human subject, comprising,

means presenting a chamber for enclosing the subject to be measured,

a base on which the subject can recline in said chamber,

an inlet for admitting ambient air into said chamber,

an air outlet,

said chamber being substantially sealed except for said inlet and outlet,

means for establishing a constant, known flow of ambient external air through said chamber from said inlet to said outlet, said flow being discharged to atmosphere,

means for measuring the temperature of air external to said chamber, the temperature of air entering said chamber by said inlet, and the temperature of air leaving said chamber by said outlet,

means for measuring the relative humidity of air in said chamber, and

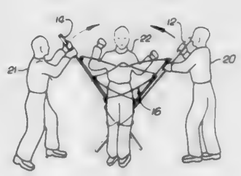
a heat source comprising an electric heater of known heat output within said chamber for heating air in said chamber at a known energy input rate when no subject is present, in order to calibrate heat losses through the walls of said chamber from said heat source when no subject is present in the chamber, said heat source being inactive when the subject is present in said chamber.

4,386,605

CAPTURE AND RESTRAINING DEVICE

Albert Wong, 948 Micheltorena St., Los Angeles, Calif. 90026

Filed Sep. 15, 1980, Ser. No. 187,587
Int. Cl.[3] A61F *5/37*
U.S. Cl. 128—134 **12 Claims**



2. A portable capture and restraining apparatus comprising: first and second poles, said poles being independently and angularly movable relative to each other and each having first, second, third and fourth retainers secured thereto and sequentially spaced thereover; and

a plurality of flexible strands extending between said poles and connected thereto by said retainers, said strands including a first strand having a segment which runs between said second retainers of said first and second poles, a segment which runs between said second retainer of said first pole and said third retainer of said second pole, a segment which runs between said third retainers of said first and second poles, and a segment which runs between said third retainer of said first pole and said second retainer of said second pole, and a second strand having a segment which runs between said first retainers of said first and second poles, a segment which runs between said first and fourth retainers of said first pole, a segment which runs between said fourth retainers of said first and second poles, and a segment which runs between said first and fourth retainers of said second pole.

4,386,606

SYRINGE LOCK

Carl W. Tretinyak, and Thomas A. Burton, both of Rochester, Minn., assignors to Waters Instruments, Inc., Rochester, Minn.

Continuation-in-part of Ser. No. 106,525, Dec. 26, 1979, abandoned. This application Nov. 28, 1980, Ser. No. 210,290

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—220 **17 Claims**



1. In a syringe having a barrel and a plunger having radially and axially extending webs and moveable axially in the barrel: locking means for locking the plunger to the barrel and including cam means carried by and within the barrel between the barrel and plunger, and means for moving the cam means to force the plunger into binding contact with the barrel.

4,386,607

ENEMA APPARATA IMPROVEMENTS RELATING TO DOUBLE CONTRAST STUDIES

Roscoe E. Miller, 7400 W. 88th St., Indianapolis, Ind. 46278

Division of Ser. No. 131,965, Apr. 4, 1980, Pat. No. 4,333,460, which is a continuation-in-part of Ser. No. 39,502, May 16, 1979, abandoned. This application Nov. 30, 1981, Ser. No. 326,014

Int. Cl.³ A61M *3/00*

U.S. Cl. 604—37 **10 Claims**



1. An enema-administering related device for use with an enema-administering tip and stem for the purpose of conducting double contrast studies, said device comprising:

cuff means adapted to be independently assembled to and removed from said enema-administering stem, said cuff means including an air delivery passageway disposed therein and extending therethrough;

an inflatable annular element disposed about the periphery of said cuff means; and

an air tube being adapted for air inflation of said annular element.

4,386,608

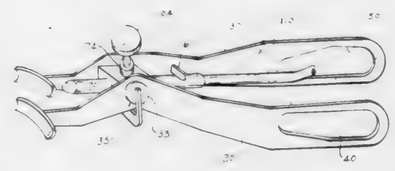
EYE IRRIGATING APPARATUS

Kenneth B. Ehrlich, 101 Temple Ave., Manahawkin, N.J. 08050

Filed Jul. 15, 1981, Ser. No. 283,555

Int. Cl.³ A61M *7/00*

U.S. Cl. 604—298 **13 Claims**



1. Eye irrigation apparatus comprising

a scissors-like mechanism comprising two blades which are pivotably connected at about their centers,

first means comprising a tubular valve body disposed between said blades and adapted to receive fluid from a source and positioned to provide a stream of fluid into the eye when the apparatus is disposed in operative relation with the eye,

an adjustable valve in said tubular body of said first means for controlling the flow of fluid therethrough,

said first means including a body portion disposed between said blades and engaged by said blades whereby said first means is supported between said blades, and

auxiliary support means on said blades for engaging said first means and maintaining said first means positioned properly so that fluid is directed at the eye.

4,386,609

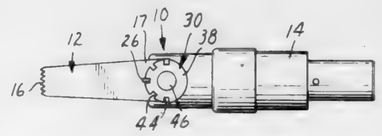
ATTACHING ASSEMBLY FOR AN OSTEOTOMY SAW BLADE

Douglas R. Mongeon, Orange, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 104,653, Dec. 17, 1979, abandoned. This application Sep. 18, 1981, Ser. No. 303,553

Int. Cl.³ A61B *17/14*

U.S. Cl. 128—317 **5 Claims**



1. An attaching assembly for releasably attaching a plate-like osteotomy saw blade having parallel major side surfaces to a drive mechanism for reciprocating the blade, which blade includes an end portion having a through aperture between said side surfaces including a narrow aperture portion opening through one edge of the blade and a larger aperture portion spaced from the edge of the blade, and a projection from one of the surfaces of the blade adjacent the aperture, said attaching assembly comprising:

a drive member having an axis, a stem portion adapted to be reciprocated about said axis by the drive mechanism, and a head portion at one end of said stem portion having a slot defined by spaced parallel planar surfaces at right angles to said axis opening through one side of said head portion and extending into said head portion past said axis, having an axially extending socket communicating with said slot and through the end of said head portion opposite said stem portion, and having a plurality of radially extending notches opening through its periphery and communicating with said slot, said slot being adapted to receive the end portion of a said blade with the larger aperture portion in the blade aligned with said socket in said head portion and the projection on the blade in any one of said notches so that the blade projects from the drive member at a desired angle;

a locking button mounted in said socket for movement axial of said drive member between a locking position and a release position; and

means for biasing said locking button to its locking position;

said locking button having a narrow portion aligned with said slot when said button is in its release position and adapted to be received in the narrow portion of the aperture in a said blade, and a larger locking portion aligned with said slot when said button is in its locking position, said locking portion being slightly tapered so that it will be biased by said biasing means into engagement with walls defining the enlarged slot portion of the blade to releasably retain the blade in the attaching assembly.

4,386,610

VENTRICULAR-INHIBITED CARDIAC PACER

Michael Leekrone, Fort Lauderdale, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed May 27, 1980, Ser. No. 153,422

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 PG **24 Claims**



1. In a fully implantable cardiac pacer comprising an implantable enclosure having means for repeatedly timing a fixed heart rate interval and for producing an output pulse at a predetermined point therein, means defining a first channel associated with a part of the heart, and means defining a second channel associated with another part of the heart, means for resetting said timing means in response to an electrical signal on said first channel, and output circuit means responsive to said timing means output for applying stimulation output pulses on said second channel, the improvement comprising

inhibiting logic means responsive to an electrical signal on said second channel for producing an inhibit output for a predetermined inhibit interval, shorter than said fixed rate interval,

means for disabling said output circuit means in response to said inhibit output,

first noise detection means responsive to electromagnetic interference on said second channel for disabling said inhibit output in the presence of noise.

4,386,611

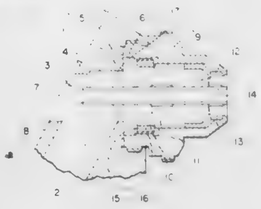
TONOMETER WITH IMPROVED FLUID DISCHARGED TUBE

Joseph W. Kantorski, and Robert G. Lavallee, both of Southbridge, Mass., assignors to Warner Lambert Technologies, Inc., Southbridge, Mass.

Filed Jun. 2, 1980, Ser. No. 155,283

Int. Cl.³ A61B *3/16*

U.S. Cl. 128—645 **2 Claims**



1. A non-contacting tonometer including a plenum chamber, an objective means having a discharge tube, means for delivering compressed air to the chamber, a portion of said discharge tube extending into said chamber, said portion being effective to disrupt wavefronts affecting the uniformity of repeated air pulses discharged through said discharge tube, wherein said objective means is interchangeable in other non-contacting tonometers.

4,386,612

ULTRASONIC TRANSMITTER

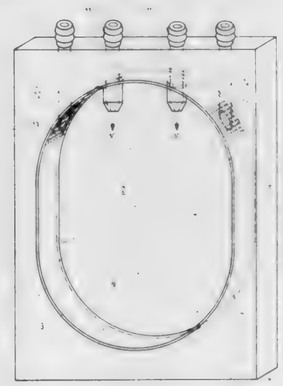
Ulrich Röder, Munich; Harald Seidlitz, Eching, and Christof Scherg, Munich, all of Fed. Rep. of Germany, assignors to Gesellschaft für Strahlen-und Umweltforschung mbH München, Neuherberg, Fed. Rep. of Germany

Filed Oct. 5, 1981, Ser. No. 308,938

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1980, 3037641

Int. Cl.³ A61B *6/00*

U.S. Cl. 128—660 **7 Claims**



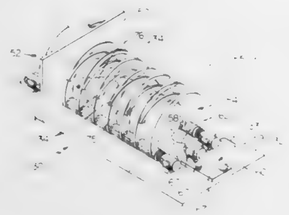
1. In an ultrasonic wave transmitter for generating spatially incoherent ultrasonic radiation, said transmitter including a source of ultrasonic acoustic radiation, wherein the improvement comprises: means holding a fluid medium in a region exposed to the acoustic radiation; a plurality of particles immersed in said medium and having a diameter of the order of magnitude of the wavelength of the acoustic radiation and an acoustic radiation impedance different from that of said medium; and means for subjecting said particles to an irregular movement in said medium and within said region.

4,386,613

METHOD AND APPARATUS FOR BLEEDING A TEST ANIMAL

Anthony A. Locsei, Cincinnati, Ohio, assignor to Biodec, Inc., Cincinnati, Ohio

Filed Nov. 24, 1980, Ser. No. 209,710
Int. Cl.³ A61B *17/42*
U.S. Cl. 128—760 **14 Claims**



14. A method of bleeding a test animal having a tail to provide a blood sample therefrom, comprising:

(a) rotating a support about a rotational axis;

(b) securing a test animal onto said support with the head of the animal being disposed proximal to said rotational axis and the tail of the animal being disposed radially outward from said rotational axis with respect to said head;

(c) cutting an incision in the tail of said test animal to provide a bleed opening therein;

(d) disposing a tubular seal means for the open end of a blood sample receiving test tube-like receptacle in a telescoped relation on said tail of said animal so as to be intermediate said bleed opening and the body of said animal;

(e) adjusting the telescoped position of said open end of said receptacle on said seal means to select a desired volume of the chamber in said receptacle beyond said seal means; and

(f) collecting blood discharged from said incision in said tail in said chamber of said receptacle as said support is rotated about its rotational axis.

4,386,614

SYSTEM FOR COMPARING A REAL-TIME WAVEFORM WITH A STORED WAVEFORM

Gregory J. Ryan, King County, Wash., assignor to Myo-Tronics Research Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 264,834, May 18, 1981, abandoned. This application Oct. 9, 1981, Ser. No. 310,293
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—777 **15 Claims**

1. A system for storing and displaying a kinesiograph waveform on which a subsequently occurring, corresponding kinesiograph waveform may be superimposed, comprising:

sample means for periodically sampling at least one kinesiograph waveform;

analog-to-digital converter means for generating as digitized samples respective digital words indicative of the magnitude of said samples;

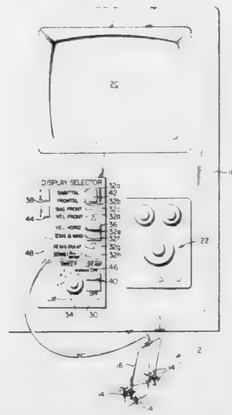
a random access memory;

addressing means for selectively writing a set of said digitized samples for each waveform in predetermined locations of said random access memory and then repetitively reading at least one of said sets of digitized samples from said random access memory in a predetermined order;

first digital-to-analog converter means receiving the digitized samples read out from said memory and generating a voltage having a magnitude proportional to the digital value of said samples;

display means including first and second outputs having a screen on which a spot is displayed at a location in two orthogonal directions corresponding to the magnitude of signals applied to said first and second inputs;

first switch means for selecting the kinesiograph waveform to which each set of samples read from said memory corresponds, said switch means further scaling and offsetting said kinesiograph waveform to match the scale and offset of the corresponding set of samples read from said memory;



first multiplexer means alternately applying the output of said digital-to-analog converter means and each kinesiograph waveform selected by said switch means to the first input of said display means such that each kinesiograph waveform is superimposed in real time on the screen of said display with a recorded kinesiograph waveform; and

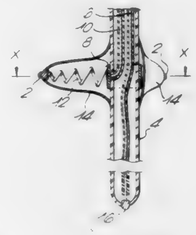
means for applying a signal to the second input of said display means having a predetermined relationship to the manner in which said multiplexer means applies signals to the first input of said display means.

4,386,615

ELECTRODES FOR CARDIAC PACEMAKERS

Edgar Sowton, 10 Beech Ave., Sanderstead, Surrey CR2 ONL, England

Filed Aug. 4, 1980, Ser. No. 175,346
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—786 **9 Claims**



1. A dual electrode for use in cardiac pacemaking and which simultaneously provides both ventricular and atrial electrical contact, said electrode comprising:

a relatively long and narrow catheter for insertion into the heart through a blood vessel leading to the heart, said catheter having a longitudinal axis;

a ventricular electrode for ventricular electrical contact disposed on the distal end of said catheter in an axially fixed position relative to the axis of said catheter;

flexible and resilient mounting means extending radially outwardly from said catheter and perpendicular to the axis of the catheter and being secured to said catheter at its end nearest said catheter in a fixed axial position relative to the axis of said catheter, said mounting means carrying an atrial electrode at a position thereon spaced from said catheter and said mounting means normally maintaining said atrial electrode in a predetermined position radially outwardly of said catheter but permitting said atrial electrode to move from said position thereof toward said catheter with the application of forces thereto by said blood vessel as the catheter is moved through said blood vessel; and

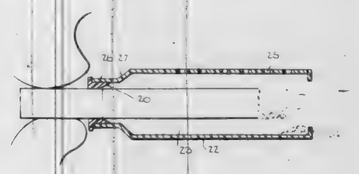
conductive means electrically connected to and extending from said ventricular electrode and said atrial electrode respectively to adjacent the proximal end of said catheter for making electrical connections to said ventricular electrode and to said atrial electrode.

4,386,616

CIGARETTE TUBE

Louis M. Rosen, 7 E. 14th St., Apt. 305, New York, N.Y. 10003

Filed Mar. 17, 1981, Ser. No. 244,683
Int. Cl.³ A24F *13/16*
U.S. Cl. 131—174 **4 Claims**



1. A two-piece tubular safety enclosure for use in conjunction with the smoking of a cigarette that has a filter at one end and a tobacco portion at the other end that is to be lighted, said safety enclosure comprising: an annular member having an inner diameter large enough along its entire length to fit over the filter, at least a portion of the inner diameter of the annular member being small enough to facilitate a tight slidable fit with the filter, said annular member including a small outwardly extending flange and a thin cylindrical sleeve portion extending from the flange toward the end that is to be lighted; the diameter of the inner surface of the forward end of the thin cylindrical sleeve portion of the annular member decreases with increasing distance from the forwardmost end of the annular member to facilitate sliding the annular member over the rear end of the filter; and a tubular extension member comprising a forward tubular portion and a rear tubular portion, said forward tubular portion being adapted to surround the tobacco portion of the cigarette and having an inner diameter larger than the diameter of the cigarette to provide, between the cigarette and the forward tubular portion, an air space that surrounds the tobacco portion of the cigarette and extends longitudinally along the tobacco portion, the inner diameter of the extension member being larger than that of said flange diameter and sufficiently larger than the outer diameter of the cigarette so that said air space is adequate to promote ignition of the tobacco portion, said forward tubular portion having a first wall portion impervious to cigarette ash and extending along the length of the tubular extension member to prevent ash from the tobacco portion of the cigarette from passing through said first wall portion, and a second wall portion extending longitudinally along the tubular extension member and having air intake aperture means to provide ventilation along the tobacco portion of the cigarette adequate to promote ignition thereof, said forward tubular portion having an inwardly extending lip disposed about the periphery of the forward end thereof to prevent the inadvertent dropping of ashes therefrom, said rear tubular portion having an inner diameter of a size to facilitate engagement with the outer surface of the thin cylindrical sleeve portion of the annular member, whereby the inner surface of the cylindrical sleeve portion of the tubular extension member and the outer surface of the thin cylindrical sleeve portion of the annular member can be securely joined together.

4,386,617

TOBACCO STEM SHREDDING

Warren A. Brackmann, Cooksville, and Stanislav M. Snaidr, Mississauga, both of Canada, assignors to Rothmans of Pall Mall Canada Limited, Don Mills, Canada

Filed Mar. 16, 1981, Ser. No. 244,083
Claims priority, application United Kingdom, Mar. 24, 1980, 8009823; Jun. 12, 1980, 8019273
Int. Cl.³ A24B *3/18, 5/16*
U.S. Cl. 131—290 **25 Claims**

6. Shredded tobacco stem material in substantially fibrous form characterized by:

(a) a burn rate of from about 40 to about 60 mg/min when formed into a cigarette having a diameter of 7.95 mm, a moisture level of 12.5 wt.%, and a density of 0.215 g/cc wrapped in a non-porous cigarette paper,

(b) a carbon monoxide content of smoke from burning a cigarette formed therefrom of 0.47 to 1.14 mg per puff of smoke, as determined by Canadian Standard smoking procedures,

(c) a pressure drop of 2.5 to 3.5 cm of water at a flow rate of 17.5 ml/sec through a cigarette formed therefrom having a tobacco length of 85 mm and a density of 0.215 g/cc, and

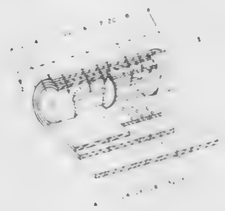
(d) a filling power of 5.2 to 6.0 g/cc.

4,386,618

CIGARETTE FILTER

Daniel V. Cantrell, Prospect, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Jun. 29, 1981, Ser. No. 278,529
Int. Cl.³ A24D *3/04*
U.S. Cl. 131—336 **7 Claims**



1. In combination with a tobacco column, a filter for said tobacco column comprising:

a first porous filter element of cylindrical configuration having a longitudinally extending first hollow tube extending from end to end, said first filter element being circumscribed by a non-porous wrapping material; and, a chamber disposed between said first filter element and said tobacco column including means to introduce ventilating air into said chamber, means to direct ventilating air into said hollow tube, and means to direct smoke from the tobacco column into said filter without mixing with said air.

4,386,619

HAIR HAIR-ENHANCING CAP

Raymond F. Williams, 32130 Plymouth Rd., Livonia, Mich. 48150

Filed Oct. 26, 1981, Ser. No. 314,802
Int. Cl.³ A41G *3/00*
U.S. Cl. 132—53 **9 Claims**



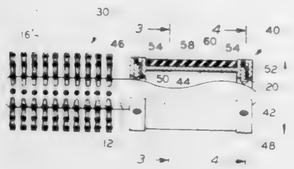
1. A cap for enhancing the existing hair of the wearer, said cap comprising: netting comprised of a plurality of thin, elongated strands of a tough wire-like elastic synthetic material that can be covered and obscured by the hair of the wearer; said netting including an outer member defining the periphery of the cap, a plurality of supporting members secured to said outer member and a plurality of inner members secured between said outer member and said supporting members; the thin, elongated strands of said netting being spaced apart and defining a plurality of openings in said cap; an elastic fastener secured to said outer member; said fastener holding said outer member under tension; hair secured to the netting of said cap; said cap being positioned on the head over the existing hair and being held in place by tension in the outer member with the netting of said cap conforming to the natural contour of the head; and wherein the existing hair is drawn through the openings in the cap and combined with the hair secured to the netting thereby obscuring the netting from sight beneath the combination of the existing hair and the hair secured to the netting.

4,386,620

HAIR STYLING BRUSH

Carol Handler, 84 Armour St., Long Beach, N.Y. 11561

Filed Feb. 12, 1981, Ser. No. 233,872
Int. Cl.³ A45D *44/18*
U.S. Cl. 132—85 **1 Claim**



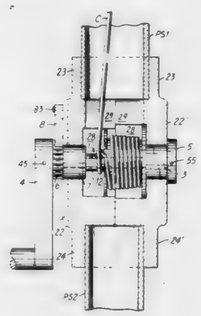
1. A hair styling brush of the type having a cylindrical core of a first small-sized diameter extending for the longitudinal length thereof and having radially extending bristles along one end of said core and said opposite end of said core serving as a first gripping handle for said brush the improvement to said hair styling brush comprising a cylindrical attachment member of an elastomeric construction material in the gripping surface thereof having an operative position disposed as an external second gripping handle over and in encircling relation about said first gripping handle, said elastomeric attachment member having a comparatively large-sized diameter at least of the same size as said radially extending bristles and thus of an extent which correspondingly increases the curvature required in the fingers of the user when in gripping contact therewith incident to use of said brush so as to minimize cramping in said fingers, and wherein said large-sized diameter of said attachment member additionally contributes to enabling the rotation of said bristles of said brush in hair-brushing strokes in response to an optimum minimum rotative force.

4,386,621

WIND-UP MECHANISM FOR A TILTABLE UMBRELLA

Stefan Redl, Midland Park, N.J., assignor to Finkel Outdoor Products, Inc., New York, N.Y.

Filed Apr. 23, 1982, Ser. No. 371,075
Int. Cl.³ A45B *17/00*
U.S. Cl. 135—20 M **7 Claims**



1. In a tiltable umbrella having a wind-up mechanism mounted on the umbrella pole for opening the umbrella and then tilting same in response to the winding of respective first and second portions of the same flexible cable, the improvement wherein the wind-up mechanism comprises: a rotatable wind-up shaft; a wind-up spool connected to the cable; means for effecting rotation of the spool in response to the rotation of the shaft; and wherein the spool comprises first and second axial sections of unequal diameters, with the first axial section being relatively larger for winding the first portion of the cable and the second axial section for winding the second portion of the cable; whereby the wind-up mechanism opens the umbrella at a relatively higher speed than during tilting.

4,386,622

BREAKAWAY VALVE

John M. Munsch, Libertyville, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Division of Ser. No. 86,102, Oct. 18, 1979, Pat. No. 4,340,049.
This application Jul. 13, 1981, Ser. No. 282,507
Int. Cl.³ A61M *5/00*
U.S. Cl. 137—1 **4 Claims**

1. The method of opening a valve inside a flexible tube, said valve comprising a tubular portion having a closed end to prevent fluid flow in the tube, a handle extending from and integral with the closed end of the tubular portion, a zone of weakness positioned whereby at least a portion of the closed end is removable by manipulating the handle to separate said closed end from the tubular portion to permit fluid flow through the valve, and projection means extending radially outwardly from the handle and pressing in frictionally retaining relation with the interior surface of the flexible tube, which method comprises:

bending said handle and flexible tube about the handle to sever said zone of weakness, and continuing said bending of the flexible tube to cause the handle and closed end to



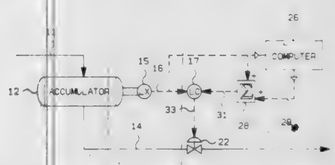
"walk" along the flexible tube away from the remainder of said valve.

4,386,623

NONLINEAR CONTROL OF LIQUID LEVEL

Gary L. Funk, and William S. Stewart, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 30, 1980, Ser. No. 221,679
Int. Cl.³ F17D *3/01*
U.S. Cl. 137—2 **8 Claims**



5. A method for implementing nonlinear level control, for a liquid in a means for containing said liquid, using a conventional level controller, said method comprising the steps of:

establishing a first signal representative of the actual liquid level in said means for containing said liquid;

supplying said first signal as a process variable input to said conventional level controller;

establishing a variable set point signal which automatically changes in magnitude when said actual liquid level changes, wherein said automatic changes are a nonlinear function of the changes in said liquid level;

supplying said variable set point signal as a set point input to said conventional level controller, wherein said conventional level controller establishes a control signal which is responsive to the difference between said first signal and said variable set point signal; and

manipulating the flow rate of the liquid withdrawn from said means for containing said liquid in response to said control signal.

4,386,624

PILOT CONTROLLED REGULATOR SECOND STAGE

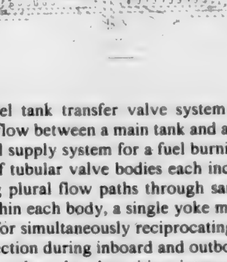
Tony Christianson, P.O. Box 3700, Manhattan Beach, Calif. 90266

Division of Ser. No. 84,421, Oct. 12, 1979, Pat. No. 4,297,998.
This application Aug. 24, 1981, Ser. No. 295,535
Int. Cl.³ A62B *7/04*
U.S. Cl. 137—102 **3 Claims**

1. An improved diaphragm assembly for use in a breathing apparatus of the type having an air flow control valve situated within a case and operative to supply breathable gas to a user in response to sensed inhalation pressure, comprising:

a first resilient, generally conical diaphragm, having an open central portion the periphery of which central portion is attached to said case interiorly thereof,

a second resilient, generally conical diaphragm facing said first diaphragm with the outer periphery of said first diaphragm being in contact with the outer periphery of said second diaphragm, each diaphragm generally decreasing in diameter with increasing distance from the other diaphragm, the space between said first and second diaphragms being exposed to the user's inhalation pressure communicated via said central opening, wherein the outer



peripheries of said first and second diaphragms are connected together in a first region and are not connected together in a second region, the outer peripheries in said second region being displaceable away from each other by the pressure of exhaled gases communicated via said central opening to said space between said diaphragms, thereby permitting the exhaust of said exhaled gases through the resultant opening, and

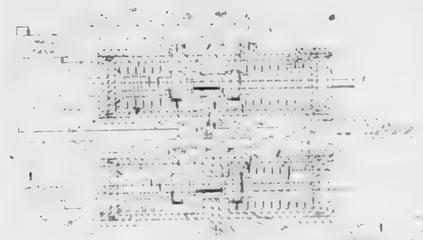
linkage means for transmitting displacement of said second diaphragm to said air flow control valve.

4,386,625

FUEL TRANSFER VALVE

Jimmie G. Perkins, Cookeville, Tenn., and Robert E. MacMillan, Andover, Mass., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed May 7, 1981, Ser. No. 261,402
Int. Cl.³ F16K *11/10*
U.S. Cl. 137—255 **3 Claims**



1. A dual fuel tank transfer valve system for selectively regulating fuel flow between a main tank and an auxiliary tank of a vehicle fuel supply system for a fuel burning engine comprising a pair of tubular valve bodies each including multiple fittings defining plural flow paths through said body, a push rod located within each body, a single yoke means coupled to each push rod for simultaneously reciprocating said push rods in the same direction during inboard and outboard movements and through a valve closed position intermediate first and second control positions, electric motor driven gear means operatively connected to said yoke means, means defining valve seats in each of said valve bodies, a pair of valve sealing

elements selectively positioned with respect to said valve seats, means for carrying each of said sealing elements including a pair of sleeve inserts slidably supported on each of said push rods and a ring fixedly secured to each of said push rods, spring means to produce selective opposite engagement of said inserts with said ring when said push rods are in said first and second control positions, said ring on the push rod being spaced from said inserts when in the valve closed position whereby all of said sealing elements are spring biased closed against said valve seats, said ring being positioned on the inboard and outboard movements to engage one of the inserts to carry a previously seat engaged sealing element away from its seat while a push rod slides through a seated other one of the sealing elements thereon and wherein the ring and push rod will thereafter position a previously opened sealing element to a closed position to complete a fuel flow path between one or the other of the tanks and the fuel supply system, both of the sealing elements remaining closed at the valve closed position whereby fuel flow will be blocked between either one of the tanks and the carburetor to prevent tank overflow during a fuel transfer operation.

4,386,626

PROPORTIONAL VALVE FOR HYDRAULIC SYSTEMS

Karl Hehl, Arthur-Hehl Strasse 32, D-7298 Lossburg 1, Fed. Rep. of Germany

Filed Apr. 16, 1980, Ser. No. 140,701
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1979, 2916172
Int. Cl.³ F16K *31/04*
U.S. Cl. 137—529 **11 Claims**



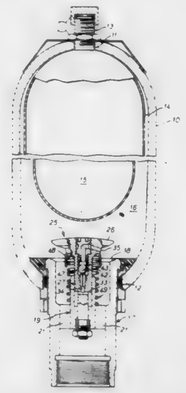
1. In a proportional valve arranged to control a parameter of a hydraulic medium in a hydraulic system of an injection molding machine, which valve includes a movable flow-influencing component disposed in a flow path of the system for causing the value of the parameter to be dependent on the position of the component, movable actuating means connected to the component for moving the component in response to movement of the actuating means and connected to receive a control signal the value of which determines the position to which the actuating means moves, position monitoring means connected to the actuating means and having an output providing a response signal having a value representative of the position of the actuating means, and control means having a first input connected with a source of an externally derived operating signal having a value representative of the desired value of the hydraulic medium parameter, a second input connected in circuit with the output of the position monitoring means, and an output connected to provide the control signal and operative for giving the control signal a value such that the actuating means is moved to a position at which a predetermined relationship is established between the values of the signals at its inputs; whereby the value of the parameter determined by the position of the valve component is a single-valued, but inherently non-linear, function of the value of the operating signal, the improvement comprising non-linearity correcting means connected ahead of one of said inputs of said control means for giving the signal supplied to that input a value which compensates for the non-linearity of said parameter value-to-operating signal value function, said correcting means comprising a memory storing a discrete correcting signal value for each of a selected plurality of discrete values of the signal associated with the input to which said correcting means are connected, each correcting signal value being selected on the basis of the measured parameter value-to-operating signal value function for said valve, whereby said correcting means constitute a structure for correcting for the form of such non-linearity which is specific to said valve.

4,386,627

ACCUMULATOR HIGH FLOW VALVE

Maurice Lachaux, Eaubonne, France, assignor to Mercier Accumulator Corporation, Dover, Del.

Filed Apr. 12, 1982, Ser. No. 367,746
Claims priority, application France, Apr. 21, 1981, 81 07885
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—30 **21 Claims**



1. A valve for a pressure vessel, the pressure vessel comprising a casing having a gas orifice and a liquid orifice which are disposed opposite to each other, and a movable separator which extends within the casing between the two orifices and which divides it into a gas compartment and a liquid compartment which are variable in volume, the valve comprising a stem portion which is mounted slidably in a guide and a head portion which is adapted to close the liquid orifice, said stem portion defining with said guide a variable-volume liquid chamber, said chamber decreasing in volume when the stem portion is moved inwardly and said chamber communicating by passage means with an orifice disposed in the vicinity of the head portion of the valve, the valve being characterized in that said passage means comprise means for interrupting the flow of liquid from said chamber responsive to decreases in volume of said chamber and leakage means between said chamber and an active portion of said liquid flow interrupting means.

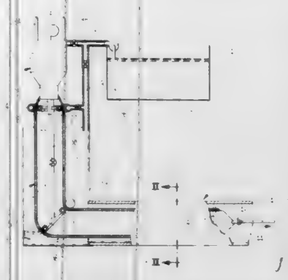
4,386,628

MAINTENANCE LINING OF PASSAGEWAYS

Robert K. Stanley, Media, Pa., assignor to Pro-Tech Advisory Services Limited, Douglas, Isle of Man

Filed Nov. 20, 1980, Ser. No. 208,651
Int. Cl.³ F16L *55/18*; E21D *11/00*; B29C *27/16*; B29D *27/00*
U.S. Cl. 138—97 **17 Claims**

15. Subterranean sewer or water pipe or conduit maintained by being lined while in place with a tubular laminate having an inside skin and a cellular contiguous layer expanded by foaming in situ, the outside surface of the laminate thereby being



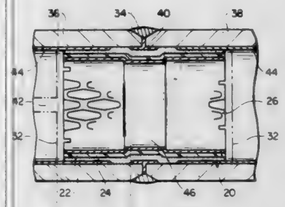
forced outward into contact with the inside wall of the pipe or conduit over essentially the entire surface thereof.

4,386,629

APPARATUS FOR INTERNAL PIPE PROTECTION

Paul M. Cook, Menlo Park; Richard F. Otte, Los Altos Hills; James L. Claypool, Mountain View; Lawrence J. White, San Jose; Harry C. Broyles, Sunnyvale, and Peter L. Brooks, Los Altos, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 174,304, Jul. 31, 1980, Pat. No. 4,355,664. This application Jul. 7, 1981, Ser. No. 279,631
The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.
Int. Cl.³ F16L *9/14*
U.S. Cl. 138—110 **8 Claims**



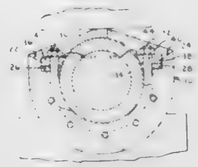
1. A device for protecting the inside of a pipe, the pipe comprising a cylindrical member, said device comprising:
- a radially compressed, tubular delivery means of high modulus engineering plastic, said delivery means being generally frustro-conical in shape and having a radially continuous sidewall which is cage-like with a plurality of slots therein, said delivery means being flexible in both radial and axial directions;
- tubular liner means outside of and in contact with said delivery means to radially constrain said delivery means, said liner means being generally frustro-conical in shape, corrosion resistant and being softenable and deformable substantially only radially upon application of heat; and
- bonding means outside of and in contact with said liner means to bond said liner means to the inside surface of a cylindrical pipe, said bonding means being flowable and activated by application of heat, said delivery means expanding radially when said liner means has been softened through the application of heat uniformly along the length of the device, the radial expansion of the frustro-conical shape delivery and liner means causing said bonding means to flow progressively axially along the outer surface of said liner means to preclude air entrapment between said liner means and the inside of a cylindrical pipe.

4,386,630

METHOD AND MEANS FOR INSULATING A PIPE

Maurycy A. Gapinski, 4800 E. 29th Ave., Lake Station, Ind. 46405

Continuation of Ser. No. 220,521, Dec. 29, 1980, abandoned. This application Aug. 16, 1982, Ser. No. 408,182
Int. Cl.³ F27D *3/02*
U.S. Cl. 138—149 **2 Claims**



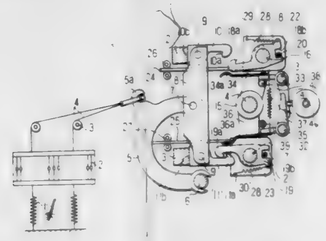
1. An insulating form comprising:
- a longitudinal body having opposingly coterminous sides, and being U-shaped in cross section for longitudinal seating against a pipe, said coterminous sides having inwardly extending shoulders and opposingly slanted sides extending above said shoulders;
- a U-bolt embedded in a cross section of said body, the ends of said bolt projecting from said inwardly extending shoulders being threaded;
- a collar member on each end of said bolts and being within the confines of said sides extending above said shoulders, a part of said collar member extending over a part of said other side of said pipe;
- threaded means for connecting each of said threaded end of said bolt and moveable thereon against said collar member to wedge said collar member between said ends of said bolt and said part of said other side of said pipe; and
- a plurality of rods embedded longitudinally in said body, said rods being connected to said U-bolt.

4,386,631

NEGATIVE DOUBLE LIFT DOBBY MACHINE

Hiroyuki Mizoguchi, Aichi, Japan, assignor to Yamada Dobby Co., Ltd., Aichi, Japan

Filed Feb. 9, 1981, Ser. No. 232,421
Claims priority, application Japan, Feb. 7, 1980, 55-13971
Int. Cl.³ D03C *1/06*
U.S. Cl. 139—68 **6 Claims**



1. A negative double lift dobby machine comprising:
(a) a casing;
(b) a jack-lever;
(c) a balance lever pivotally attached to said jack-lever;
(d) driving members positioned in front of both the upper and lower ends of said balance lever and reciprocating in opposite phases with each other;
(e) driving hook levers pivotally attached to corresponding driving members in opposition to said balance lever, each

driving hook lever having a hook on one end thereof, said driving hook levers moving in response to the reciprocating movement of the corresponding driving member;

(f) driven hook levers, which are engageable with said driving hook levers, pivotally attached to the upper and lower ends of said balance lever, each said driven hook levers having a hook on one end thereof and a flat surface on the opposite end thereof; and

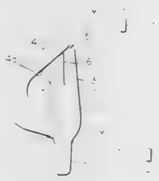
(g) stopper means for contacting said flat surface in a plane, said stopper means being fixed to said casing.

4,386,632

WEFT GUIDING COMB FOR A JET LOOM

Hiroshi Arakawa, Kariya, and Kinpei Mitsuya, Aichi, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jul. 17, 1980, Ser. No. 170,817
Claims priority, application Japan, Jul. 19, 1979, 54-92231
Int. Cl.³ D03D *47/28*
U.S. Cl. 139—435 **7 Claims**



1. In a weft yarn guiding comb for use in a jet loom of the type having a slay on which said comb is mounted to turn with the slay between a yarn guiding position and a yarn extricating position, said comb comprising a plurality of weft yarn guides each comprising a root portion, a substantially straight portion extending upwardly from said root portion, a curved portion extending upwardly from said straight portion while bending to form an aperture in association with said straight portion with an opening between the ends of said straight and curved portions, and flexible means for normally substantially closing said opening, the improvement wherein:

said end of said straight portion is spaced by said opening from an inner surface of said end of said curved portion; and

said flexible means comprises a flexible tongue provided on said straight portion, said tongue having a tip positioned closely adjacent to said inner surface of said end of said curved portion, thereby to normally close said opening.

4,386,633

WEFT RESERVOIR FOR AN ALTERNATE TWO-PICK CHANGE TYPE FLUID JET SHUTTLELESS LOOM

Tokujiro Shin, Matsutou, Japan, assignor to Tsudakoma Kogyo Kabushiki Kaisha, Japan

Filed Jun. 23, 1980, Ser. No. 161,679
Claims priority, application Japan, Jun. 22, 1979, 54-079384; Oct. 9, 1979, 54-131059; Oct. 17, 1979, 54-134348; Oct. 24, 1979, 54-138217
Int. Cl.³ D03D *47/36*
U.S. Cl. 139—452 **14 Claims**

1. Weft reservoir adapted for controlling the rate of insertion of weft in an alternate two-pick change type fluid jet shuttleless loom comprising,

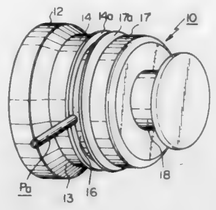
a weft reserving drum assembly arranged between a weft supply source and a jet nozzle of said loom,

means for driving said weft reserving drum assembly in continuous axial rotation,

means for continuously supplying a weft from said supply source to said weft reserving drum assembly,

a weft control pin arranged adjacent said weft reserving drum assembly adapted for controlling the rate of the terminal stage during the insertion of said weft, and

means for registering said weft control at prescribed timings during the rotation of said weft reserving drum assembly



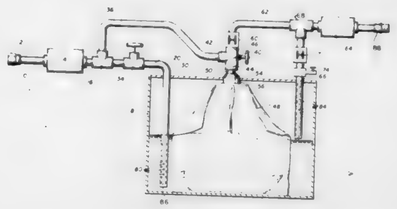
into an operative position whereat said weft control pin is placed in provisional engagement with said weft and into an inoperative position whereat said weft control pin is placed out of said provisional engagement with said weft, whereby said weft is initially inserted at a free delivery rate and thereafter terminally inserted at a controlled rate while said weft control pin is registered in said operative position in provisional engagement with said weft.

4,386,634

PROPORTIONING SYSTEM

Peter Stasz, Minneapolis, and Louis C. Cosentino, Wayzata, both of Minn., assignors to Renal Systems, Inc., Minneapolis, Minn.

Filed Oct. 10, 1980, Ser. No. 195,796
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—2 **13 Claims**



7. A method for producing solutions of predetermined concentration comprising:

(a) filling a rigid tank of predetermined volume having a flexible plastic container therein, said flexible container containing a predetermined volume of solution concentrate, with water to displace remaining air within said tank;

(b) closing said tank to the atmosphere when said tank is full;

(c) introducing further water into said tank;

(d) simultaneously providing exit paths for water from said tank and concentrated solution from said plastic container as further water is introduced into said tank, collapsing said flexible container inducing concentrated solution flows, said exit paths including narrow orifices of predetermined size such that the relative exit flow rates of water and solution are determined thereby; and

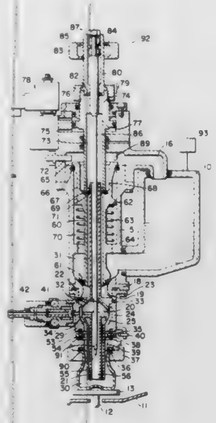
(e) merging said water and solution exit paths so as to cause mixing of said water and solution thereby to form a relatively more diluted solution of predetermined concentration.

4,386,635

METHOD FOR CONTROLLING ELECTRICALLY CONTROLLED FILLING ELEMENTS AND SYSTEM FOR CARRYING OUT THE METHOD

Egon Ahlers, Neu-Bamberg, and Hermann Schlosser, Bad Kreuznach, both of Fed. Rep. of Germany, assignors to Seitz-Werke GmbH, Bad Kreuznach, Fed. Rep. of Germany

Filed Mar. 4, 1981, Ser. No. 240,257
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1980, 3009405
Int. Cl.³ B65B *3/26*
U.S. Cl. 141—6 **27 Claims**



1. A method for control of a liquid flow valve of electrically controlled filling elements in filling machines for dispensing of liquids into filling containers to be filled via an actuating device for the liquid flow valve, and filling elements respectively including the liquid flow valve and at least one signal emitter which is responsive to the liquid at a predetermined filling height in a respective filling container, said method in combination including the steps of:

opening a respective liquid flow valve;

supplying a signal from the signal emitter to the actuating device for adjustment of the fluid flow valve; and

after a response of said signal emitter, closing said liquid flow valve with a time delay to the actuating device of the fluid flow valve under the influence of a first correction factor.

4,386,636

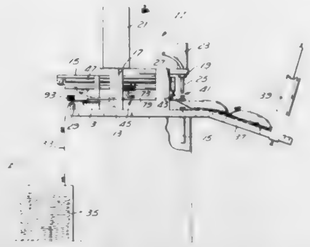
CONTAINER CONVEYOR FOR FLEXIBLE CONTAINER FILLING MACHINE

Roger H. Ellert, San Clemente, Calif., assignor to Scholle Corporation, Irvine, Calif.

Filed Mar. 19, 1981, Ser. No. 245,394
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—10 **28 Claims**

26. A method for advancing a web of connected, flexible containers toward the filling station of a container filling machine, to place the filling spout of each container, sequentially, into fluid communication with a filling nozzle at said filling station, comprising the steps of:

capturing one of said spouts in a guide mechanism; and



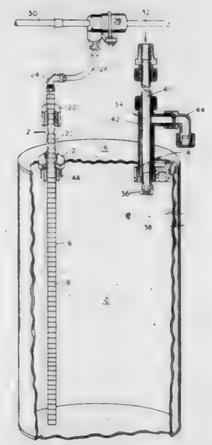
advancing said web of connected, flexible containers by pushing said one of said spouts along said guide mechanism toward said filling station.

4,386,637

CHEMICAL DRUM FEEDING AND FLUSHING SYSTEM

William T. Buchanan, Oak Brook; Frances C. Pocius, Lombard, and Donald L. Peters, Naperville, all of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jul. 13, 1981, Ser. No. 282,889
Int. Cl.³ B67C *9/00, 1/06*
U.S. Cl. 141—65 **2 Claims**



1. An apparatus for safely slug feeding hazardous chemicals from conventional drums having first and second top bung openings comprising in combination with the drum:

(a) a threaded bushing screwed into the first bung opening adapted to receive and hold a disposable calibrated dip tube in a liquid-tight relationship, the dip tube adapted to be movable in a downward direction only, a feed line attached to the dip tube adapted to remove liquid from the drum through the calibrated dip tube, check valve means located in said feed line adapted to prevent the flow of liquid back to the drum, through the dip tube, vacuum-producing means connecting with the feed line for withdrawing fluid from the drum through the dip tube feed line and check valve; and,

(b) spray means fitted into the second bung opening, spray means having means for allowing outside air to flow into the drum to prevent pressure and/or vacuum buildup from occurring in the drum, nozzle means positioned in

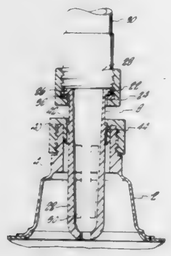
the drum for washing the interior surfaces of the drum, said nozzle means adapted to receive a source of cleaning fluid under pressure, said spray means being removable from the drum.

4,386,638

COUPLING FOR WATERBED MATTRESS VALVES

Charles P. Hall, Muir Beach, and John B. Johenning, Beverly Hills, both of Calif., assignors to Monterey Manufacturing, Inc., Los Angeles, Calif.

Filed Apr. 3, 1981, Ser. No. 250,727
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—98 **4 Claims**



2. A coupling for filling and draining a waterbed by interposition between and connection with a male-threaded fitting on the outer end of a fill conduit and the externally male-threaded fill neck of a waterbed, the coupling comprising:

(a) an elongated hollow tube having opposed first and second ends, the first end having associated therewith a first end portion for telescopic insertion into the male-threaded fill neck;

(b) a first external stop flange on the tube adjacent the second end of the tube;

(c) a first female-threaded nut-type fitting rotatably mounted on the tube adjacent the first stop flange and intermediate the first stop flange and the first end portion of the tube for coupling to the male-threaded fitting of the fill conduit;

(d) a second female-threaded nut-type fitting rotatably mounted on the tube intermediate the first nut-type fitting and the first end portion of the tube for coupling with the male-threaded neck;

(e) a second external annular stop flange on the tube adjacent the second nut-type fitting and intermediate the second fitting and the first portion of the tube; and

(f) a plurality of fill and drain openings in the wall of the first end portion of the tube.

4,386,639

OIL DRAINAGE APPARATUS

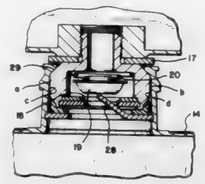
Derek J. Gable, Rancho Palos Verdes; Roger H. Sweet, Long Beach, and Nicol S. Wilson, Redondo Beach, all of Calif., assignors to Sta-Lube, Inc., Compton, Calif.

Filed Aug. 17, 1981, Ser. No. 293,505
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—351 **8 Claims**

4. An apparatus for facilitating draining oil from the crank case of an automobile having a conventional threaded drain plug, including, in combination:

(a) a normally closed drain valve comprised of a main body incorporating a valve seat, valve head and compression spring for holding said valve head on said seat, and an integrally formed exteriorally threaded neck for substitution for said drain plug in said crank case;

(b) a drain valve coupler having an upper open end for receiving said main body and including an internal arm positioned to be received into the underside of said valve seat and automatically lift off said valve head to open said drain valve in response to urging of said upper open end into further telescoped relationship with said main body to a position in which said upper open end extends beyond said valve head; and



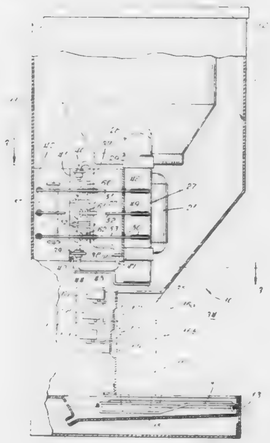
(c) a bag secured to and communicating with said upper open end for receiving and containing oil passing through said drain valve when actuated to open position by said coupler.

4,386,640

ICE BODY DISPENSER

Keith E. Carr, Stevensville, and John J. Symons, Benton Harbor, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Continuation of Ser. No. 972,806, Dec. 26, 1978, Pat. No. 4,226,269. This application Sep. 15, 1980, Ser. No. 187,320
The portion of the term of this patent subsequent to Oct. 7, 1997, has been disclaimed.
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—361 **22 Claims**



12. An ice body dispenser comprising:

means defining a storage chamber for storing a plurality of ice bodies;

means defining a delivery duct having an upper portion opening into said storage chamber for receiving ice bodies therefrom, and a lower outlet for dispensing ice bodies therefrom;

a plurality of vertically spaced control elements selectively insertable laterally into said duct at a corresponding plurality of vertically spaced preselected positions intermediate said upper portion and outlet to prevent delivery of ice bodies downwardly from above an inserted one of said control elements;

a closure selectively closing said outlet for preventing delivery of ice bodies through said outlet;

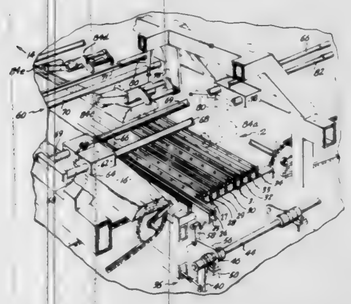
operating means responsive to disposition of a selected one of a plurality of different size cups below said outlet to cause concurrently (a) an inserting of one of said control elements corresponding to the selected size cup into said duct and (b) withdrawal of said closure from said outlet to dispense from said duct outlet into the selected cup those ice bodies previously delivered to the duct from said storage chamber disposed above said outlet and below the inserted control element, and means for returning the closure to close said outlet and withdrawing the inserted control element after said ice bodies have been dispensed through said outlet; and delivery means for urging ice bodies from said storage chamber through said duct upper portion after the closure is returned and the inserted control element is withdrawn to refill the duct above the returned closure.

4,386,641

RETRACTABLE CANT SUPPORTS FOR LUMBER CANT POSITIONER-FEEDERS

James N. Horn, Seattle, Wash., assignor to Saab-Scania Aktiebolag, Sweden

Filed May 8, 1981, Ser. No. 261,874
Int. Cl.³ B27B *31/00*
U.S. Cl. 144—329 **9 Claims**



1. A feed table means for a lumber cant positioner-feeder, comprising:

a feed table frame;

a plurality of feed chain means movably arranged across said feed table frame to provide a movable surface for engaging and moving cants; and

retractable cant support means interpositioned between at least some of said feed chain means for supporting a cant away from said feed chains while the cant is being positioned thereon, said cant support means being retractable between said feed chain means thereby allowing a supported cant to be engaged and moved by said feed chain means.

4,386,642

UNIVERSAL PORTABLE PACK

William H. Durbin, P.O. Box 416, Redwood City, Calif. 94064

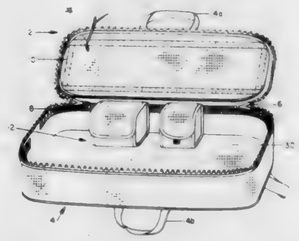
Filed Dec. 2, 1980, Ser. No. 212,328
Int. Cl.³ A45C *11/00, 13/02*
U.S. Cl. 150—34 **4 Claims**

1. A portable pack having a structure similar to an attache case in that there is a relatively thin lid portion and a thick or deep bottom portion which are hinged together along one side, and which may be fully opened so that both lid and bottom portions face in the same direction, thereby permitting ready acess to the contents therein, the pack comprising:

a tray for holding relatively flat, long articles which is adapted for releasable attachment to the inner surface of said lid portion, said tray comprising:

a flat support member having on one side thereof means adapted for releasable attachment to said lid, and on the other side thereof receptacles for positioning article to be transported, so that they are readily available when needed, said receptacles comprising a VELCRO fastener having one portion attached to the pouch near the center area, and having the other section free so that the size and location of the positioning receptacles may be changed to accomodate different sized articles for transport;

a heavy duty nylon pouch having the opposite ends thereof sealed closed for protecting the other ends of said positioned articles, having the center open when said cover is in the open position, and having the receptacles placed at the open area for ease of storage of said positioned articles;



a cover for protecting the positioned articles when not in use; and

means for attaching said cover to the other side of said support member so as to cover said positioned articles;

a continuous holding strip mounted along the perimeter of the interior sides of the bottom portion;

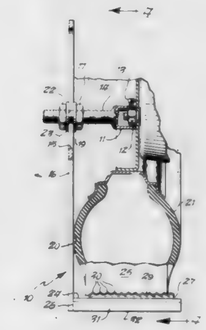
a plurality of storage pouches of varying sizes, each having holding strips on the back thereof, said strips being adapted to mate with holding strips of the interior surfaces of said bottom portion, so that these pouches may be rapidly removed and secured in any desired location within the interior of said bottom portion.

4,386,643

TIRE TRACTION DEVICE

John C. Belknap, III, 17 Fair Oaks La., Cheektowaga, N.Y. 14227, and Brian D. Belknap, 1740 Amherst St., Buffalo, N.Y. 14214

Filed Jun. 11, 1981, Ser. No. 272,666
Int. Cl.³ B60C *27/00*
U.S. Cl. 152—216 **9 Claims**



1. A tire traction device comprising a cup member for mounting on a rim-securing nut in mounted position on a wheel rim having a tire mounted thereon, an elongated shank extending outwardly from said cup member, an elongated link extending transversely to said elongated shank, securing means for securing said elongated shank to said elongated link, a

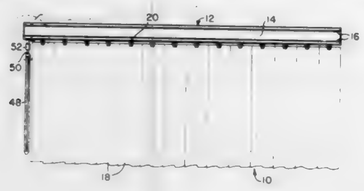
traction member extending transversley to said elongated link for engagaing the tread of said tire and the ground, and a set screw extending radially through said cup member for securing said cup member to said rim-securing nut.

4,386,644

VERTICAL BLIND TILT CONTROL

Victor Debs, Staten Island, N.Y., assignor to Levolor Lorentzen, Inc., Lyndhurst, N.J.

Filed Apr. 16, 1981, Ser. No. 254,655
Int. Cl.³ E06B *9/26*
U.S. Cl. 160—174 **1 Claim**



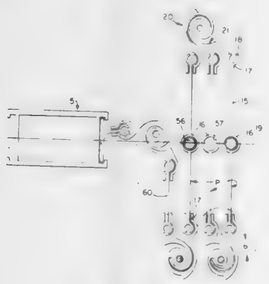
1. An end cap for connection to one end of a head of a vertical blind and for receiving therein tilt rod operating means selectively formed by (a) a sprocket wheel having a sleeve and to be rotated by a bead chain, and (b) the combination of a gear having a sleeve, and a worm arranged on a worm shaft and meshing with said gear; said cap comprising: a housing having a wall, a bushing connected to said wall for receiving therein part of a tilt rod in spaced relationship thereto and for selectively rotatably supporting one of said sleeves when connected to said tilt rod, said housing being open opposite said wall and adapted to receive in said housing said sprocket wheel and worm gear respectively, said housing also having a passage for receiving therein said worm shaft below said worm, and a supporting surface extending substantially horizontally and semi-annularly around said passage for supporting thereon said worm, whereby said worm shaft and worm can be introduced from one side into said passage and said worm supported on said surface.

4,386,645

SIDE FOLDING CLOSURE

James E. Dever, Tresckow; John A. Stascavage, Exeter, and William W. Rawls, Mountaintop, all of Pa., assignors to Cornell Iron Works, Inc., Mountaintop, Pa.

Filed Feb. 10, 1981, Ser. No. 233,176
Int. Cl.³ E05D *11/06, 5/08*
U.S. Cl. 160—183 **7 Claims**



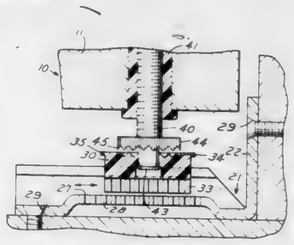
1. A closure including, a plurality of panel sections having opposite ends and lateral edges, hinge assemblies joining opposed lateral edges of adjacent said panel sections, said hinge assemblies including cooperating outer and inner pivot elements comprising separate elements each respectively joined to said opposed lateral edges of adjacent panel sections, said outer and inner pivot elements each having a base joined to an adjacent said lateral edge, a curved arm extending from said outer pivot base, said arm having an inner surface and outer surface and provided with an end disposed to describe a curved arm arc substantially greater than 180°, a cylindrical enlargement extending radially inwardly from said arm end and having a curved outer surface spaced from said arm inner surface to define a curved groove therebetween describing an arc substantially greater than 180°, a single curved arm extending from said inner pivot base and freely insertable within said outer pivot groove, said inner pivot curved arm describing an arc substantially greater than 180°, said inner pivot element curved arm having inner and outer surfaces loosely disposed within said outer pivot element groove during relative angular displacement of said inner and outer pivot elements, cooperating abutment means on said outer and inner pivot elements disposed respectively on the intermediate portion of said outer pivot curved arm outer surface and on said inner pivot base, said outer pivot element abutment means comprising a stop shoulder projecting outwardly from an intermediate point on said outer pivot element curved arm, female attachment means on said outer and inner pivot element bases, male attachment means extending from said panel section lateral edges and axially insertable within said female attachment means and fastener means fixing each said female attachment means relative its attached panel section inwardly of said panel section ends whereby, with said inner pivot curved arms inserted within said outer pivot grooves of each of said hinge assemblies, said closure is shiftable from an extended position with said panel sections extended and said cooperating abutment means engaging one another, to a stacked position with said panel sections collapsed into a stacked parallel arrangement.

4,386,646

FOLDING DOOR HARDWARE

George W. Matyas, Detroit, Mich., assignor to Alliance Metal Products Inc., Detroit, Mich.

Filed Apr. 28, 1982, Ser. No. 372,646
Int. Cl.³ E05D *15/26*
U.S. Cl. 160—206 **27 Claims**



1. For use in a folding door which comprises a plurality of panels pivoted to one another about vertical axes, a top pivot assembly and a bottom pivot assembly wherein the bottom pivot assembly comprises

a bracket adapted to be mounted beneath a section of the door,

said bracket defining a track,

a pivot block guided along said track by said bracket,

a pivot pin,

a sleeve adapted to be mounted in a vertical opening in the lower end of a section of the door,

said sleeve and said pivot pin having interengaging threads such that the pivot pin is vertically adjustable relative to the door,

said block having a vertical opening therein,

said pivot pin having the lower end thereof extending through said opening,

first vertically engageable and disengageable means between said pin and said block such that said first means are engaged when the pin is moved relatively downward onto said block and said first means are disengaged when said pin is moved relatively upward with respect to said block,

second vertically engageable and disengageable means between said pivot block and said bracket such that when the block is moved downwardly onto the bracket, said second means are engaged, and when said block is moved upwardly relative to said bracket, said second means are disengaged,

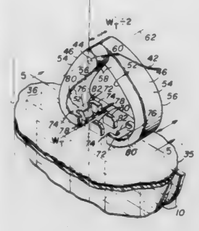
and third means between said pin and said block operable upon lifting the door to disengage the first means between the pivot pin and the block and when said first means are disengaged permitting the pivot pin to be rotated to adjust the door vertically, and further lifting of the door will cause said third means between the pin and the block to lift the block to disengage said second means between the block and the bracket and when said second means are disengaged permitting horizontal adjustable of the block relative to the bracket.

4,386,647

TOOL FOR FORMING INTERPLATE CONNECTIONS

Roy Painter, Ashton-u-Lyne, England, assignor to Energy Research Associates, San Bruno, Calif.

Filed Sep. 22, 1980, Ser. No. 189,188
Int. Cl.³ B22D *19/04*
U.S. Cl. 164—332 **2 Claims**



1. A tool for forming joints between a plurality of cell plate lugs comprising,

a rod shaped pin; and

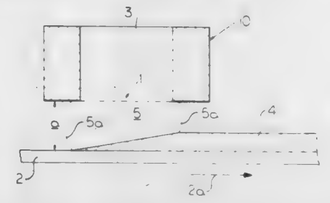
a pair of unitary identically shaped arcuate jaws, each of said jaws having two arcuate side surfaces, a planar side surface extending perpendicular to and intermediate said arcuate surfaces and a curved side surface also formed perpendicular to said arcuate surfaces, said curved side surface being formed such that one terminal end of said jaw has a width perpendicular to said planar side surface which is one-half the width of the other terminal end of said jaw, said narrower end of said jaw having a circular aperture formed therethrough along an axis perpendicular to said planar side wall, said aperture receiving said rod shaped pin, each of said jaws being disposed so that said circular aperture of each jaw engage said pin with curved side surfaces of said jaws about said aperture being positioned immediately adjacent to each other, whereby said jaws are secured to each other by said rod shaped pin so as to be pivotable about the axis of said pin, said wider terminal end of each of said jaws being shaped identically so as to form mated combs, each of said combs having a set of projecting teeth all of said teeth having planar terminal end surfaces formed coplanar with the axis about which the jaws rotate, said combs being formed with a planar upper surface formed perpendicularly to said plane of said planar terminal end surfaces, each set of projecting teeth include a pair of end wall teeth and a well-forming tooth with the end wall teeth located at opposite terminal ends of the comb respectively adjacent to the planar side surface and the curved side surface of the jaw and a well-forming tooth intermediate end wall teeth, said well-forming tooth having an arcuate upper well-forming surface all of said teeth having planar side surfaces formed perpendicular to the axis about which the jaws rotate, said well-forming tooth being of a width equal to the separation between said immediately adjacent side surfaces of said plate lugs and the width of said side teeth being equal to the thickness of said plate lug, said immediately adjacent teeth being separated and forming U-shaped troths for receiving the plate lugs.

4,386,648

METHOD AND DEVICE FOR MANUFACTURE OF AMORPHOUS METAL TAPES

Hans-Reiner Hilzinger, Maintal; Kurt Krueger, Ronneburg, and Stefan Hock, Hanau, all of Fed. Rep. of Germany, assignors to Vacuumschmelze GmbH, Fed. Rep. of Germany

Filed Sep. 10, 1980, Ser. No. 186,141
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1979, 2938709
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—463 **7 Claims**



1. In a method of producing amorphous metal tapes wherein a metallic melt is expressed from a supply container through a nozzle having at least one nozzle opening defined therein and is allowed to solidify on a surface of a cooling body positioned in close proximity to and travelling in a direction of motion past the nozzle opening at a rate sufficient to produce an amorphous metal tape, the improvement comprising, in combination,

moving said cooling body surface at a velocity of at least 5 m/s past said nozzle opening;

providing a nozzle having at least one nozzle opening with a width dimension of 1.5 to about 6 mm, as measured in the direction of motion of said cooling body surface; and

maintaining a distance of about 0.005 to about 0.6 times the width of said nozzle opening between said cooling body surface and said nozzle opening.

4,386,649

PROGRAMMABLE THERMOSTATIC CONTROL DEVICE

Randal C. Hines, Morristown, Tenn., and Thomas J. Black, Dallas, Tex., assignors to Nuclear Systems, Inc., Morristown, Tenn.

Filed Jul. 15, 1980, Ser. No. 169,175
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—12 **8 Claims**

1. A programmable thermostatic control device for controlling a temperature within a preselected mode of an enclosed environment by selective operation of the heating, ventilation and air conditioning system sections, said device comprising:

a power supply for maintaining a regulated voltage, said power supply including a DC voltage regulator and a AC signal generator, said AC signal generator, serving to generate a signal which is superimposed upon the signal generated by said DC voltage regulator;

a temperature monitor for determining the existing temperature within the control zone ambient said device, said temperature monitor comprising circuitry for determining

said ambient temperature through successive approximations and supplying said temperature information at its output in the form of an electronic signal;

heating, ventilation and air conditioning controls for selectively providing and output signal used in controlling the heating, ventilation and air conditioning systems response to the plurality of input signals, said heating, ventilation and air conditioning controls including AND gates which are provided at their respective inputs, with first signals indicating the enablement condition of preselected sections of the heating, ventilation and air conditioning system and further signals;

processing means for controlling said heating, ventilation and air conditioning controls and including memory means for storing operating instructions, said memory means including a permanent memory including a plurality of subroutines and a programmable memory which enters and loads information entered by the user together with information supplied by the temperature monitor, said processor means supplying said further signals to the input of said heating, ventilation and air conditioning controls indicating whether said processor means is directing the various sections of the heating, ventilation and air conditioning system to be turned on, said heating,



ventilation and air conditioning controls providing signals at its output for energizing selected sections of the heating, ventilation and air conditioning system only upon signals being supplied at its input indicating that a preselected section of the heating, ventilation and air conditioning system is enabled and being commanded to operate by processor means;

means operably connected to said processing means for entering and loading instructions and temperature information for controlling the operation said processing means;

display means operably connected to said processing means for selectively providing a visual readout of selected information concerning the operation of said device;

further display means operably connected to said processing means for cueing the operator during the operation of entering and loading instructions for said processing means; and

an interface unit serially connected between said heating, ventilation and air conditioning control and said heating, ventilation and air conditioning system, said interface unit selectively applying power to preselected sections said heating, ventilation and air conditioning system responsive to predetermined input signal being received from said heating, ventilation and air conditioning controls.

4,386,650

TEMPERATURE CONTROL SYSTEM

Walter K. Moen, Newport Beach, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 5, 1976, Ser. No. 655,331
Int. Cl.³ F28F *27/00;* **G05D** *23/00*
U.S. Cl. 165—12 **18 Claims**

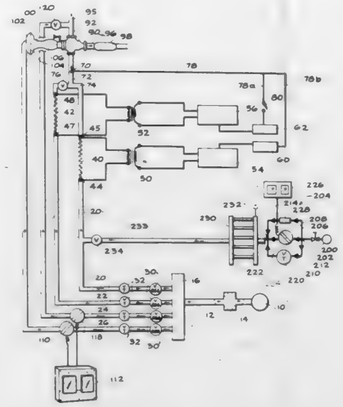
1. A temperature control system comprising:

supply means for supplying fluid, the fluid acting as the temperature effecting agent for the temperature control system;

an outlet;

fluid conveying means for conveying the fluid from the supply means to said outlet;

temperature control means for regulating temperature of the fluid at said outlet, said temperature control means including a helix of electrically resistant tubing, said helix being connected to said fluid conveying means in fluid conveying relation such that the fluid being conveyed from said supply means to said outlet passes through said helix while being conveyed to said outlet; and



fluid control means for regulating flow of the fluid through said fluid conveying means, said fluid control means including a diverting means responsive to said temperature control means for diverting for a predetermined time the fluid from said fluid conveying means which passes through said helix to prevent the fluid diverted from being conveyed to said outlet in order to allow only the fluid at a desired temperature to be conveyed to said outlet.

4,386,651

HEAT EXCHANGER ACCESSORY FOR ELECTRONIC CIRCUIT CABINETS

Heinrich Reinhard, Heidelberg, Fed. Rep. of Germany, assignor to Autz + Herrmann Metallwaren-und Maschinenfabrik, Heidelberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 210,320, Nov. 25, 1980, abandoned. This application Oct. 23, 1981, Ser. No. 314,219
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1980, 3045326
Int. Cl.³ H01F *27/20*
U.S. Cl. 165—104.33 **12 Claims**

1. Dust-sealed heat exchanger to cool dust-free air cooling air, for association with, or assembly to an electronic circuit cabinet (**0**, **50**) having first (**4**, **5**) and second (**7**, **8**) blower means for circulating air;

first means (**10***a*) defining a cooling air flow circuit in communication with ambient air and second means (**10***b*) defining a dust-free air flow circuit in air flow communication with the interior of the cabinet, said air flow circuits being separated in dust-free sealed relation with respect to each other;

comprising the combination of

a package of essentially rectangular identically stacked plates (**20**), each having oppositely located edge portions projecting in a first direction and at right angles from the major plane of the plate to form side flanges (**22**, **23**) and having a further side portion projecting from the major plane of the plate at a right angle to form an end flange (**27**);

one (**23**) only of the side flanges being shorter than the other

to form a cut-out or notch (**26**) adjacent the end flange (**28**);

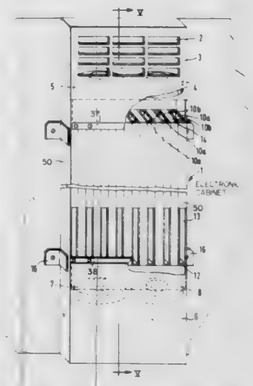
said plates being assembled in said package with adjacent plates being reversely oriented so that the cut-out or notch (**26**) of adjacent plates will be at respectively opposite end portions of the package of the plates;

stiffening ribs (**24**, **28**) formed at the marginal end portions of said flanges and extending in a plane parallel to the major plane of an adjacent plate, the stiffening ribs being bonded to a next adjacent plate at the side opposite said first direction thereof to provide dust-tight sealing engagement therewith;

said package being applied to the cabinet with the plates extending at right angle to a wall thereof;

a first manifold box (**3**) positioned at an end portion of said package of plates and retaining said first blower means (**4**, **5**);

a cooling air flow communication opening (**2**) communicating with ambient air formed in said first manifold;



a second manifold box (**6**) positioned at the other end of the package of plates and retaining said second blower means (**7**, **8**);

a dust-free air flow communication opening (**9**) communicating with the interior of the cabinet,

said package being oriented such that the plates which are open at the end portion and in air flow communication with the first manifold have their cut-outs or notches (**26**) facing ambient air, and adjacent plates, which are open at the end portions and in air flow communication with the second manifold have their cut-outs or notches facing the interior of the cabinet, the plates with their respectively differently positioned cut-outs or notches (**26**) separating said air flow circuits while providing for heat exchange through the thickness thereof;

and a cover plate (**30**) closing off the flanges of the final plate of the package.

4,386,652

HEAT EXCHANGE ASSEMBLY

Bozo Dragojevic, Downsview, Canada, assignor to North York Mobile Wash Limited, Downsview, Canada

Filed Sep. 8, 1980, Ser. No. 185,230
Claims priority, application Canada, Jun. 27, 1980, 355066
Int. Cl.³ F28F *1/00, 9/02, 9/22;* **F28D** *1/04*
U.S. Cl. 165—144 **7 Claims**

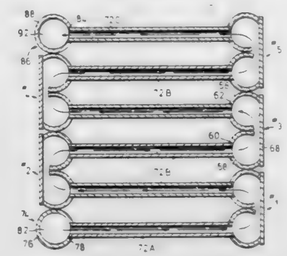
1. A heat exchange assembly to allow heat exchange with a fluid to pass through said assembly comprising:

(a) a plurality of headers sequentially numbered from a first header to a last header, each header being elongated, having sealed ends, and comprising

two pipes of circular cross-section sealably and fixedly connected along their lengths to each other at a single line of contact, each having an interior and a pipe wall,

a longitudinal array of inlet holes passing through said pipe wall of one of said two pipes and a longitudinal array of outlet holes passing through said pipe wall of said other of said two pipes, with each pipe wall further having an elongate aperture therethrough running throughout the entire length of the pipe; and

at least one plate member sealably affixed to both said pipes so that an inner chamber is defined by said sealed ends, said pipe walls, and said at least one plate member whereby fluid communication is provided through said chamber traverse to the longitudinal from said inlet holes to said outlet holes through said interior and said elongate aperture of both pipes,



(b) a plurality of tubes consisting of connecting tubes, entrance tubes and departure tubes,

wherein one end of an entrance tube is received in each of the inlet holes of the first header, one end of a departure tube is received in each of the outlet holes of the last header, and each outlet hole of each header other than the last header receives one end of a connecting tube the other end of which is received in an inlet hole of the next higher sequentially numbered header,

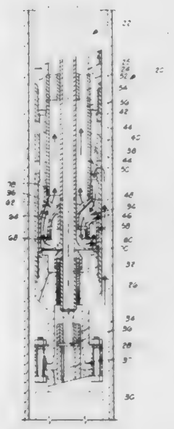
whereby said fluid may pass from said entrance tubes through said headers in increasing numerical succession to the departure tubes.

4,386,653

ANTI-GAS LOCKING APPARATUS

Eldon L. Drake, 25 La Donna Dr., Shawnee, Okla. 74801

Filed Feb. 8, 1982, Ser. No. 346,639
Int. Cl.³ F04D *29/66;* **E21B** *43/12*
U.S. Cl. 166—105 **3 Claims**



1. In an apparatus for preventing gas locking of a downhole

pump, said apparatus being of the type suspended from the pump and having a tubular sleeve communicating at its upper end with the inlet of the pump, a tubular housing disposed concentrically about the sleeve and having openings through upper portions thereof to receive well fluids into the annulus between the sleeve and the housing, and a cross-over assembly fluidly communicating said annulus with the interior of the sleeve, the cross-over assembly including:

a cross-over diffuser including:

a jacket member having a lower portion disposed within lower portions of the housing, a reduced diameter upper portion mating with the lower end of the sleeve, and a frusto-conical intermediate portion between said upper and lower portions, wherein a plurality of apertures are formed through said intermediate portion of the jacket member;

an upwardly converging dome member disposed within the intermediate portion of said jacket member and having an aperture formed therethrough for each aperture formed through the jacket member, said dome having a lower end spaced a selected distance above the lower end of the jacket member; and

a plurality of webs connecting the jacket member to the dome member about each set of apertures formed through the jacket member and the dome member so as to form with each set of apertures an inlet passage from said annulus to the interior of the dome member and so as to form a plurality of outlet passages from the interior of the dome to the upper portion of the jacket member; and

an impeller disposed within the lower portion of the jacket member,

the improvement wherein:

the dome member converges more rapidly than the intermediate portion of the jacket member such that said outlet passages radially diverge toward the upper portion of the jacket member;

webs disposed to either side of apertures formed through the jacket member and the dome member curve about the dome member with an ever increasing vertical slope such that portions of such webs adjacent the upper portion of the jacket member are disposed substantially parallel to the axis of the housing and sleeve and portions of such webs adjacent the lower end of the dome member make a small angle with a plane perpendicular to said axis of the housing and sleeve;

the vanes of the impeller increase in vertical dimension from central portions of the impeller toward the outer periphery thereof; and

wherein the cross-over diffuser further comprises a flow shaping vane spiraling about said dome member within each of the outlet passages substantially equidistant to the webs forming the walls of the inlet and outlet passages, said flow shaping vanes having an ever increasing upward slope from the lower end of said dome member to the upper end of said dome member such that upper portions of said flow shaping vanes are disposed substantially parallel to the axis of the housing and sleeve and lower portions thereof make a small angle with a plane perpendicular to said axis of the housing and sleeve.

4,386,654

HYDRAULICALLY OPERATED DOWNHOLE OIL WELL PUMP

John A. Becker, 449 Peralta Ave., Long Beach, Calif. 90803

Filed May 11, 1981, Ser. No. 262,747
Int. Cl.³ E21B *43/12*
U.S. Cl. 166—105.5 **9 Claims**

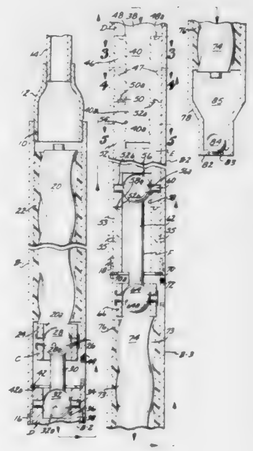
1. In combination with a well bore having a string of casing therein that extends downwardly from the ground surface to a position adjacent a geological formation to communicate with the latter, said formation containing production fluid and some gas, a first tubing string of substantially less external diameter than the interior diameter of said casing string that extends downwardly in the latter from the ground surface, said tubing string in communication with a source of pressurized working oil, a hydraulically operated pump disposed in said bore hole adjacent said formation and actuated by said pressurized working oil, said hydraulically operated pump including:

a. an elongate tubular housing having an upper end portion in which a first opening is defined through which said pressurized working oil discharges downwardly and (a) an externally threaded lower (open) end portion having a second opening therein through which said production fluid from said formation may enter the interior of said housing;

b. upper and lower elongate helical screws in said housing that are vertically spaced;

c. upper and lower stationary resilient tubular stators inside said housing that define double threads and that substantially envelop said upper and lower helical screws and are in pressure contact therewith;

d. first means for establishing communication between said first opening in upper end portion and said first tubing, with said pressurized working oil after entering said housing rotating said first helical screw in a first direction to allow said pressurized working oil to flow downwardly in said first stator to discharge through a third opening in



said housing below said first stator to subsequently flow to the ground surface in a path within said casing;

e. second means for connecting said first helical screw to said second helical screw to rotate the latter in said first direction relative to said lower stator to draw said production fluid from said bore hole into said housing to subsequently flow to the ground surface in a path within said casing;

f. a threaded probe secured to said threads on said housing, said probe including a tubular member; and

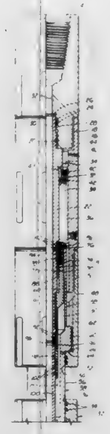
g. a packer disposed in said casing above said formation, said packer having a first passage engaged by said tubular member of said probe with pressurized working oil when discharged downwardly through said first tubing string exiting through said third opening into an annulus space between said first tubing string and casing above said packer after having driven said upper helical screw, and production fluid and gas in said bore hole below said packer being drawn upwardly through said tubular member of said probe structure by the rotation of said lower helical screw to discharge into the same annulus space as said pressurized working oil.

4,386,655

DOWNHOLE PUMP WITH FLOATING SEAL MEANS

John T. Brandell, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 57,093, Jul. 12, 1979, Pat. No. 4,246,964.
This application Nov. 4, 1980, Ser. No. 204,058
Int. Cl.³ E21B *23/06*
U.S. Cl. 166—106 **5 Claims**



1. A downhole tool, comprising:

a first cylindrical body member having a longitudinally extending annular cavity disposed therein and defined between a radially inner internal surface and a radially outer internal surface of said first cylindrical body member, and including a relief port means for communicating said cavity with a space outside of said tool, said space being filled with a first fluid;

a cylindrical extension member having a first end slidably received in said annular cavity and having a second end extending longitudinally from said annular cavity; and

an annular floating seal means, slidingly disposed in said annular cavity between said relief port means and said first end of said cylindrical extension member, for sealingly engaging said radially inner and outer internal surfaces of said first cylindrical body member and for separating a second fluid in said annular cavity between said floating seal means and said cylindrical extension member from said first fluid.

4,386,656

TUBING HANGER LANDING AND ORIENTING TOOL

Edmund A. Fisher, and Henry W. Miller, both of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Jun. 20, 1980, Ser. No. 161,432
Int. Cl.³ E21B *23/04*
U.S. Cl. 166—117.5 **6 Claims**

1. A tubing hanger landing and orienting tool for a subsea wellhead including a blowout preventer stack, comprising

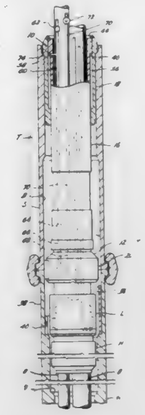
a tubular mandrel,

means for connecting said mandrel to a tubing hanger,

a tubular sleeve surrounding said mandrel and spaced outwardly therefrom to define a chamber therebetween,

an external downwardly facing seat on said sleeve for engaging a landing shoulder within the subsea wellhead,

means in said mandrel and said sleeve confining a liquid in the chamber so that downward movement of said mandrel within said sleeve after said sleeve seat engages the landing shoulder is resisted by liquid pressure in the chamber, and



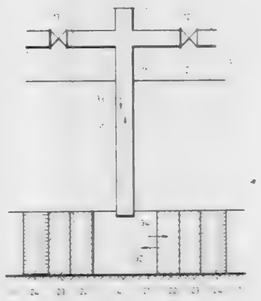
means controlling the pressure in said chamber to cushion the landing of the hanger.

4,386,657

PROCESS FOR THE UNDERGROUND GASIFICATION OF COAL AND CARBONACEOUS MATERIALS

Jozsef Kiss; Andras Solymos; Jozsef Berczes, and Karoly Szabo, all of Tatabanya, Hungary, assignors to Központi Banyaszati Fejlesztesi Intezet, Budapest and Tatabanyai Szenbanyak, Tatabanya, both of, Hungary

Filed Apr. 21, 1980, Ser. No. 142,340
Claims priority, application Hungary, Apr. 20, 1979, KO 2986
Int. Cl.³ C10J *5/00*; E21B *43/243*
U.S. Cl. 166—261 **9 Claims**



1. In a process for the underground gasification of seams of coal and other combustible minerals within an underground generator by means of gasifying agents, wherein a well is provided in the seam to be gasified, an ignition means is brought into the bottom of said well, the seam around the bottom is heated by said ignition means in alternating compression and expansion phases, the improvement comprising

(1) forming an active and a passive zone around the bottom of the well within the seam, the passive zone being nearest the well and being formed by slag of previous combustions in the active zone, the active zone comprising a reaction zone around the passive zone, a distillation zone surrounding the reaction zone, and a desiccation zone surrounding the distillation zone, the underground generator consisting of said active and passive zones;

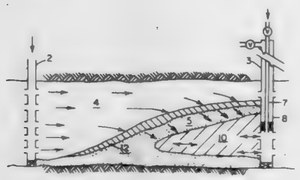
(2) injecting gasifying agents through said well into said reaction zone under pressure, thus forming said compression phase, forcing gaseous products beyond the reaction zone into the distillation and desiccation zones, but not beyond the boundary of the generator,
(3) releasing pressure, thus forming said expansion phase and causing gases to flow out from the generator through said well, and
(4) maintaining a large volume of the distillation and desiccation zones by sustaining the temperature of the reacton zone at a value enabling heat to flow into the distillation and the desiccation zones.

4,386,658

SOLVENT PUSH-PULL PROCESS FOR IMPROVING VERTICAL CONFORMANCE OF STEAM DRIVE PROCESS

William C. Hunt, III, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,407
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—263 **6 Claims**



1. A method for recovering viscous oil from a subterranean, permeable, viscous oil-containing formation, said formation being penetrated by at least two wells, one injection well and one production well, said wells being in fluid communication with a substantial portion of the oil formation, comprising:
(a) injecting steam into the injection well and recovering fluid including oil from the formation by the production well until the fluid being recovered from the production well comprises an unfavorable amount of steam or water;
(b) thereafter closing off the fluid communication between the production well and at least a portion of the upper part of the oil formation while maintaining fluid communication with the lower portion of the formation;
(c) thereafter injecting a predetermined volume of a solvent into the formation via the fluid communication between the production well and the lower portion of the formation while simultaneously continuing injection of steam into the injection well;
(d) recovering fluids including solvent and oil from the lower portion of the formation through the production well until the fluid being recovered from the production well comprises a predetermined amount of solvent; and
(e) repeating steps (c) and (d) for a plurality of cycles until the fluid being recovered from the production well comprises an unfavorable amount of steam or water.

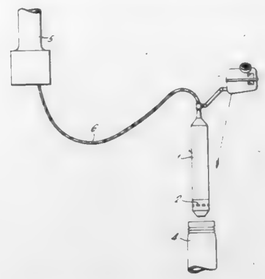
4,386,659

GUIDES FOR FORMING CONNECTIONS

Keith Shotbolt, London, England, assignor to Constructors John Brown Limited, England

Filed Feb. 9, 1981, Ser. No. 232,548
Claims priority, application United Kingdom, Feb. 14, 1980, 8005069
Int. Cl.³ E21B *41/00*
U.S. Cl. 166—342 **9 Claims**

1. A guide for use in connecting a tubular member, to a subsea riser base, which guide comprises a guide post, having a reversibly radially expandable portion to locate in and rigidly attach the guide post to the subsea riser base, an elongate portion to be received in the end of the tubular member, and buoyancy means contained within the guide post to reduce the



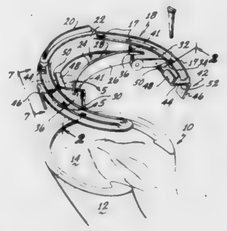
effective weight of the post underwater to a level at which it can be readily manipulated and manoeuvred.

4,386,660

HORSESHOE FOR A THOROUGHBRED

Jimmy L. Sparks, Norco, Calif., assignor to William Ray Lawson and Jarald Allen Phillips, both of Norco, Calif., part interest to each

Filed Jul. 27, 1981, Ser. No. 287,174
Int. Cl.³ A01L *7/04*
U.S. Cl. 168—32 **13 Claims**



1. An improved race horseshoe including a front end calk, comprising: a second calk having a downwardly directed configuration similar to said front end calk, said second calk comprising a blade removably insertable into engaging slots in holding members with locking means fixedly secured to said horseshoe for removably locking said second calk to said horseshoe.

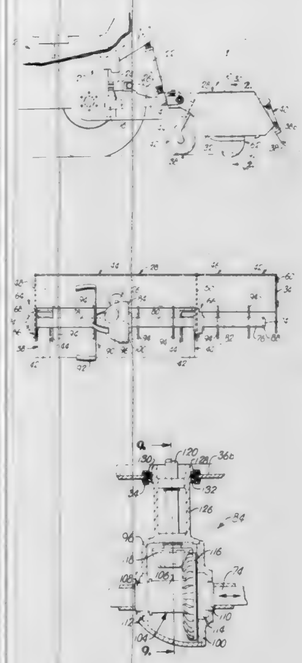
4,386,661

REAR MOUNTED ROTARY TILLER

James E. McCanse, and Jugraj S. Dhaliwal, both of Oregon, Ill., assignors to Hesston Corporation, Hesston, Kans.

Filed Sep. 8, 1981, Ser. No. 299,785
Int. Cl.³ A01B *33/02, 33/14, 59/042, 71/02*
U.S. Cl. 172—112 **9 Claims**

1. A rotary tiller mountable on the two, parallel lower lift links of a three-point hitch of a tractive vehicle for direct drive by the vehicle power takeoff shaft having a rear end disposed between, above, and forwardly of the rear ends of said links, said tiller comprising:
a support;
a ground-working rotor carried by said support for rotation about a horizontal axis extending transversely of the normal path of travel of the tiller;
a gearbox unit on said rotor having output means drivingly coupled therewith and rotatable about said axis of rotation thereof,
said gearbox unit further including an input shaft coupled with said output means, disposed normal to said axis, and projecting upwardly and forwardly from said axis; and
a pair of mounts on said support above and forwardly of the rotor and on opposite sides of the axis of rotation of said input shaft for rigidly attaching the tiller to said links,
said mounts including link-engaging pivotal coupling means and structure for holding said support against pivoting movement relative to said links about said coupling means when the links are raised and lowered whereby to permit raising and lowering of the tiller between ground-working



and transport positions without changing the angle between said links and the axis of rotation of said input shaft, said input shaft having coupling means at its upper forward end adapted for connection to the vehicle power takeoff shaft through an intermediate drive shaft having an axis of rotation which remains sufficiently aligned with the axis of rotation of the input shaft during raising and lowering of the tiller between said ground-working and transport positions to transfer driving power to said input shaft and thereby permit the rotor to remain in operation during such raising and lowering of the tiller.

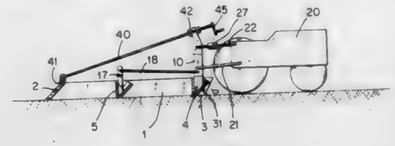
4,386,662

LEVELER FRAME ATTACHED TO AN AGRICULTURAL TRACTOR

Aitan Kalif, 20b, Yehoshua St., Afula, Israel

Filed May 21, 1981, Ser. No. 266,106
Claims priority, application Israel, Dec. 22, 1980, 61788
Int. Cl.³ A01B *49/02*
U.S. Cl. 172—445.1 **8 Claims**

1. A leveler frame adapted to be attached to a conventional three-point-hitch of an agricultural tractor comprising two parallel lateral members extending longitudinally and in the direction of travel, at least two transverse members interconnecting said lateral members and comprising a rear member rigidly connected to said lateral members and a front member pivotally attached to said lateral members by means of two end pivots so that said front member may oscillate about the longitudinal horizontal axis thereof, each of said transverse members having forwardly and upwardly inclined working blade surfaces and the angle of inclination of the working blade surface of said front member being variable according to the pivotal position of said front member, an upstanding lever



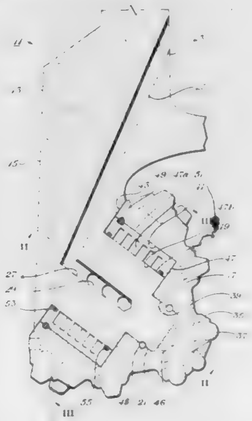
member rigidly connected to said front member including means for connecting said lever member to the arms of the three-point-hitch at two spaced levels along said lever member, and sliding bar or cable means loosely connecting the distal end of said lever member to the rear of said leveler frame, whereby a front-to-back rocking of a drawing tractor causes oscillation of said front member without exertion of substantial force on said rear member through said sliding bar or cable means.

4,386,663

COOLED JOURNAL BEARING

Rodolfo M. Ippolito, Euless, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Feb. 25, 1981, Ser. No. 238,258
Int. Cl.³ E21B *10/18, 10/22*
U.S. Cl. 175—17 **8 Claims**



1. In an earth boring bit of the type having rotatable cutters carried by depending bearing pins, an improved bearing means for each cutter, comprising:
a bushing having an inner surface in stationary contact with an outer surface of the bearing pin;
one of said surfaces having a plurality of grooves; and
passage means formed in the bearing pin and bit for circulating cooling fluid through the grooves;
the cutter being mounted on the bushing in rotating and sliding contact to form a journal bearing; and
seal means for sealing the cooling fluid from the journal bearing.

4,386,664

METHOD FOR GUIDING ROTARY DRILL

Thomas R. Miller, Waynesburg, Pa., assignor to Conoco Inc., Ponca City, Okla.

Filed Jun. 26, 1980, Ser. No. 163,245
Int. Cl.³ E21B *7/04*
U.S. Cl. 175—45 **2 Claims**

1. A method of controlling the direction of a generally horizontal borehole being drilled with a rotary drilling unit in a subterranean formation such as a coal seam comprising:

(a) predetermining a set of drilling conditions for the formation being drilled and the equipment being utilized which will provide a substantially level borehole trajectory, said conditions including the number of drill bit revolutions per unit length of borehole drilled;

(b) predetermining a set of drilling conditions for the formation being drilled and the equipment being utilized which will provide an upward change in borehole trajectory, said conditions including the number of drill bit revolutions per unit length of borehole drilled;

(c) predetermining a set of drilling conditions for the formation being drilled and the equipment being utilized which will provide a downward change in borehole trajectory, said conditions including the number of drill bit revolutions per unit length of borehole drilled;

(d) determining the trajectory of the borehole being drilled and the borehole position relative to the upper or lower boundary of said formation; and

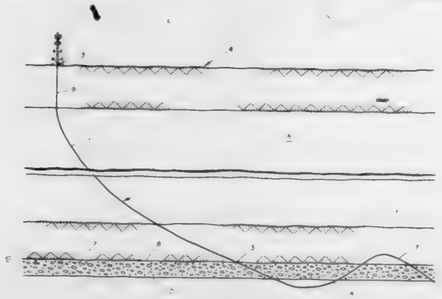
(e) drilling a portion of said borehole utilizing one of the predetermined sets of conditions to maintain the borehole within the upper and lower boundaries of said formation.

4,386,665

DRILLING TECHNIQUE FOR PROVIDING MULTIPLE-PASS PENETRATION OF A MINERAL-BEARING FORMATION

Thomas B. Dellinger, Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 111,751, Jan. 14, 1980, abandoned, which is a continuation of Ser. No. 906,905, May 18, 1978, abandoned. This application Oct. 27, 1981, Ser. No. 315,394
Int. Cl.³ E21B *7/06*
U.S. Cl. 175—61 **4 Claims**



1. A method of providing a wellbore that extends from a surface location of the earth into the earth's crust and communicates with a subsurface hydrocarbon-bearing formation comprising:

(a) forming a first portion of said wellbore to extend essentially vertically from said surface location into said earth's crust;

(b) forming a second portion of said wellbore that is deviated from said first portion and extends from the lower end of said first portion through the upper boundary of said subsurface hydrocarbon-bearing formation, through said hydrocarbon-bearing formation and into the earth's crust therebelow, said second portion of said wellbore upon passing said upper boundary of said hydrocarbon-bearing formation making an angle with the verticle within the range of 60° to 80°;

(c) forming a third portion of said wellbore that extends from the lower end of said second portion and is deviated and extended in an upwardly direction through the lower boundary of said hydrocarbon-bearing formation and into said hydrocarbon-bearing formation, and

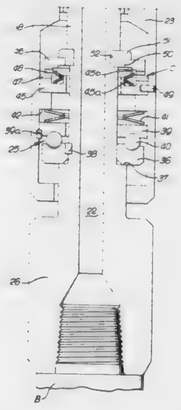
(d) completing and casing said wellbore to provide a well of producing hydrocarbons from said hydrocarbon bearing formation to the surface of the earth.

4,386,666

IN-HOLE MOTOR DRILL WITH LOCKING BIT CLUTCH

Gary M. Crase, Cypress, and John E. Tschirky, Long Beach, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Continuation of Ser. No. 67,924, Aug. 20, 1979, abandoned. This application Jun. 8, 1981, Ser. No. 271,656
Int. Cl.³ E21B *4/02*
U.S. Cl. 175—101 **24 Claims**



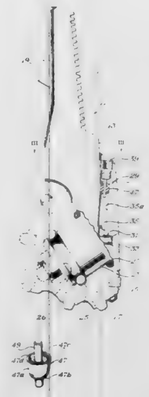
1. An in-hole motor adapted for connection with a rotatable pipe string and a bit, said assembly comprising: a motor stator including a housing structure adapted to be installed in a pipe string; a rotor in said stator; a shaft connected at one end of said rotor for rotation therewith and extending at its other end from said housing to drive a drill bit; thrust bearings between said shaft and said housing, a clutch engageable between said shaft and said housing to couple said housing and shaft for mutual rotation upon movement of said housing, relative to said shaft, in the direction of said one end of said shaft, for a predetermined distance; said thrust bearings including a bearing to transfer thrust from said housing to said shaft, said last named bearing having a race on said shaft, a coupling between said shaft and said rotor, and an abutment between said race and said shaft, said abutment normally preventing engagement of said clutch said abutment mounted between said housing and said shaft and spaced from said race for a distance less than said predetermined distance and said abutment releasable when the thrust load is increased to move said housing relative to said shaft for said predetermined distance to permit engagement of said clutch.

4,386,667

PLUNGER LUBRICANT COMPENSATOR FOR AN EARTH BORING DRILL BIT

Stuart C. Millsapps, Jr., Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed May 1, 1980, Ser. No. 145,549
Int. Cl.³ E21B *10/22*
U.S. Cl. 175—228 **5 Claims**



1. In an earth boring drill bit of the type having a plurality of rotatable cutters mounted on bearings on depending head sections, an improved means for supplying lubricant to the bearings, comprising:

a lubricant reservoir having a plunger section with a cylindrical wall surface;

a vent hole leading from the reservoir to the exterior of the bit for admitting borehole fluid to the reservoir; and

a resilient plunger carried in the plunger section with a lubricant end in contact with the lubricant and a borehole fluid end adapted to be in contact with the borehole fluid, the plunger engaging the wall surface of the plunger section and being freely and axially slidable in the plunger section to equalize pressure differential across the plunger;

stop means located in the reservoir for stopping movement of the plunger toward the vent hole at a selected point in the plunger section;

the plunger having pressure relief means that causes deformation of the plunger for allowing leakage of lubricant to the exterior when the plunger is stopped by the stop means and when the lubricant pressure exceeds the borehole fluid pressure by a selected amount.

4,386,668

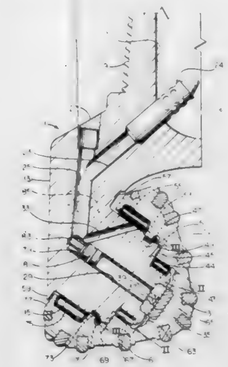
SEALED LUBRICATED AND AIR COOLED ROCK BIT BEARING

Verble W. Parish, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Sep. 19, 1980, Ser. No. 188,443
Int. Cl.³ E21B *10/22*
U.S. Cl. 175—228 **6 Claims**

1. In an earth boring bit of the type having at least one rotatable cutter with a cavity for mounting on a depending bearing pin, the cutter and the bearing pin having an inner bearing area in an inner portion of the cavity and an outer bearing area containing roller bearings in an outer portion of the cavity, the improvement comprising:

air passage means for discharging through the outer bearing area gaseous fluid pumped from the surface; and



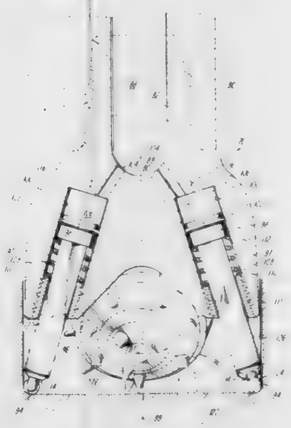
seal means for sealing the inner bearing area from the gaseous fluid in the outer bearing area, the inner bearing area being filled with liquid lubricant.

4,386,669

DRILL BIT WITH YIELDING SUPPORT AND FORCE APPLYING STRUCTURE FOR ABRASION CUTTING ELEMENTS

Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Filed Dec. 8, 1980, Ser. No. 214,216
Int. Cl.³ E21B *10/14, 10/34*
U.S. Cl. 175—269 **14 Claims**



1. A rotary drill bit for drilling a well bore in an earth formation, which includes a body structure, and at least one cutter wheel rotationally connected to the body structure at a fixed operative position, and a first predetermined plurality of compression cutting elements connected to the cutter wheel and rotatable into contact with a drill face of the earth formation in primarily an indentor mode of attack, a second predetermined or heel portion of compression cutting elements connected to the cutter wheel, said heel portion of compression cutting elements movable into contact with a gage corner of the earth formation in a significant degree of drag mode of attack when said cutter wheel rotates, and at least one abrasion cutting element operatively retained for contact with the earth formation in a drag mode of cutting contact, and an improvement in

combination therewith for decreasing the adverse wear effects on the heel portion of the compression cutting elements due to adverse contact with the gage corner in the drag mode of attack, comprising:

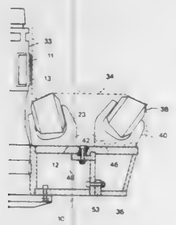
means connecting the abrasion cutting element to the body structure for operative reciprocative movement between an extended position and a retracted position and wherein in the extended position the abrasion cutting elements contacts substantially only the gage corner of the earth formation in a drag mode of attack to reduce the amount of earth material to be cut by the heel portion of the compression cutting elements and allowing the drill face to be cut substantially only by the first portion of the compression cutting element.

4,386,670

BORING HEAD WITH EXTENSION ELEMENTS

Gustav L. Westermark, Arsunda, Sweden, assignor to Santrade Ltd., Lucerne, Switzerland

Filed Apr. 23, 1981, Ser. No. 256,972
Claims priority, application Sweden, May 27, 1980, 8003905
Int. Cl.³ E21B *10/20*
U.S. Cl. 175—344 **12 Claims**



1. A boring head for rotary boring of the face of earth formations comprising:

a rotary carrier including an abutment, and a first surface which faces generally radially outwardly,

a plurality of roller cutters,

mounting means for mounting said roller cutters on said rotary carrier,

an extension element for extending the boring head radially, said extension element carrying a roller cutter and including a second surface facing generally radially inwardly, and

wedge means engaging said first and second surfaces for forcing said extension element radially outwardly against said abutment,

said at least one roller cutter being located such that forces imposed on said extension element during a boring operation are so directed as to urge said extension element against said abutment.

4,386,671

TORQUE ARM MOUNTING FOR WEIGH SCALE

George Dyck, 1306-13th St., Saskatoon, Saskatchewan, Canada

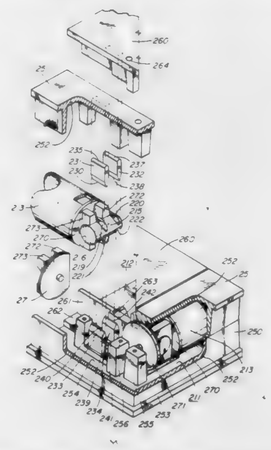
Filed Sep. 29, 1981, Ser. No. 306,721
Claims priority, application Canada, Jul. 10, 1981, 381493
Int. Cl.³ G01G *5/04, 19/02, 21/12*
U.S. Cl. 177—208 **22 Claims**

1. In a weigh scale including a fixed peripheral frame base structure, a central, movable load-supporting platform, and means for interconnecting said platform with said peripheral frame base structure to allow limited vertical motion of the platform, the interconnecting means comprising at least four torque-transmitting tubular arms arranged evenly around the perimeter of said load-supporting platform, with one portion of each said torque-transmitting tubular arm being supported with respect to said fixed peripheral frame base structure, and another portion of each said torque-transmitting tubular arm being supported with respect to the central load-supporting platform, the improved mounting for said torque-transmitting tubular arm comprising:

(a) a pair of vertically-disposed, spaced-apart, inner and outer guideways, extending along spaced-apart chords of the end of each said torque-transmitting tubular arm;

(b) a horizontally-extending, hardened wear surface intersecting said guideways, thereby providing an inner upper, an inner lower, an outer upper and an outer lower guideway; and

(c) an inner upper, an inner lower, an outer upper and an outer lower support shoe operatively associated with a respective inner upper, inner lower, outer upper and outer lower guideway, each of said inner upper and inner lower support shoes having a broad arcuate support surface and a narrow arcuate support surface, with the narrow arcuate



support surface of each said support shoe bearing against the hardened wear surface, and with the broad arcuate support surface of each such support shoe bearing against respective upper and lower surface of an associated movable central load-supporting platform, each said upper outer support shoe and said lower outer support shoe having a narrow arcuate support surface, with such narrow arcuate support surface of each such support shoe bearing against the hardened wear surface, and either the outer upper support shoe or the outer lower support shoe having a broad flat support surface, the other of the outer upper support shoe or the outer lower support shoe having a broad arcuate support surface, and with the broad support surfaces of each outer support shoe bearing against respective upper and lower surfaces of associated fixed peripheral frame base structure.

4,386,672

DETACHABLE ELECTRIC DRIVE UNIT FOR WHEELCHAIR

Theodore R. Coker, 5500 N. Bay Ridge Ave., Milwaukee, Wis. 53217

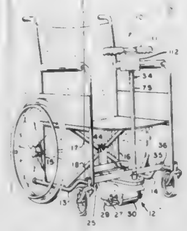
Filed Jun. 11, 1981, Ser. No. 272,536
Int. Cl.³ B60K *1/00*
U.S. Cl. 180—13 **10 Claims**

9. In an electric drive unit for a wheelchair which has a pair of laterally spaced apart frame members extending fore and aft and a pair of cross members connected together by a pivot pin, each cross member being connected to a frame member:

a framework including a transverse member for disposition between said pair of frame members on said wheelchair and a second member rigidly secured to said transverse member and extending rearwardly therefrom;

connecting means on said framework for releasably connecting said framework to said wheelchair, said connecting means comprising first connection means at opposite ends of said transverse member for releasable attachment to said frame members of said wheelchair, and a second connection means on said second member for releasable attachment to said pivot pin on said wheelchair;

a drive assembly steerably mounted on said framework, said drive assembly including a reversible electric motor and a ground-engageable wheel drivable by said motor;



a steering column pivotably and rotatably mounted on said framework and operatively connected to said drive assembly to effect steering motion thereof when said column is rotated about its longitudinal axis;

a handle mounted on said steering column and rotatable in either direction about its longitudinal axis;

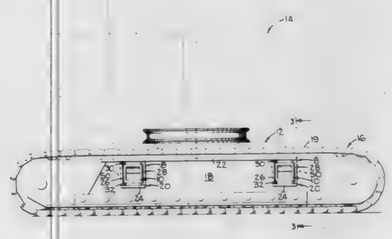
and control means responsive to rotation of said handle for controlling the direction and speed of rotation of said motor.

4,386,673

AXLE JOINT

Robert M. Carter, and Robert J. Vrba, both of Cedar Rapids, Iowa, assignors to FMC Corporation, Chicago, Ill.

Filed Dec. 4, 1981, Ser. No. 327,314
Int. Cl.³ B62D *55/08*
U.S. Cl. 180—9.2 R **10 Claims**



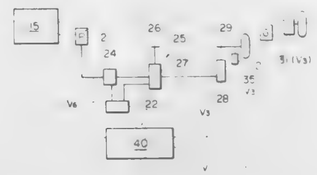
1. A vehicle axle joint for releasably connecting an axle to a mobile vehicle support comprising means defining a first joint member included in said mobile vehicle support, means defining a second joint member on said axle, said first and second joint members being of relative size and shape which provides ample clearance for easily moving said joint members in coupling position and for allowing a limited range of pivotal movement in a pivot plane therebetween when pivotally connected together, pivot means for releasably connecting said first and second joint members together, and turning moment applying means including power means connected between said mobile vehicle support and said axle for applying a continuous turning moment in said pivot plane for maintaining said first and second members at one end of said limited range of pivotal movement during operation of the vehicle.

4,386,674

APPARATUS FOR PREVENTING OVERTURN

Takashi Sugata, Ryugasaki, Japan, assignor to Toyo Umpanki Co., Ltd., Osaka, Japan

Filed Dec. 19, 1980, Ser. No. 218,131
Claims priority, application Japan, Dec. 27, 1979, 54-169450
Int. Cl.³ B62D *5/06*
U.S. Cl. 180—142 **7 Claims**



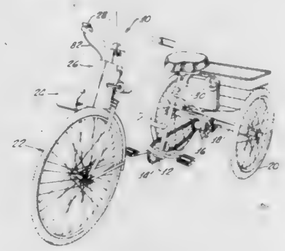
1. An apparatus for preventing a vehicle from turning over comprising: means for producing a signal representative of the speed of the vehicle; means for producing a second signal representing a steering angle of the vehicle; means for summing and amplifying said first and second signals to produce a third signal; means for producing a fourth signal when said third signal exceeds a predetermined constant value; and means for varying an operational parameter of said vehicle in response to said fourth signal.

4,386,675

SELF-ENGAGING DRIVE FOR WHEELED VEHICLES

Robert K. Landon, Hemet, Calif., assignor to Philip V. Nelson and James A. Holcomb, both of Hemet, Calif.

Filed Sep. 10, 1981, Ser. No. 301,041
Int. Cl.³ B62M *7/10*
U.S. Cl. 180—221 **12 Claims**



1. A motor powered drive means for propelling a vehicle having a frame and at least one wheel comprising:

a motor,

said motor having an output drive shaft means for frictionally engaging and rotating said wheel,

means for pivotably mounting said motor on said frame permitting said drive shaft means to pivot into substantial frictional engagement with said wheel in response to reactive torque produced when said motor is activated, and

counterbalance means operatively connected to said mounting means for pivoting said drive shaft means out of substantial frictional engagement with said wheel when said motor is inactivated.

4,386,676

SOUND-DAMPING MAT OR DRAPE

Villy Gadde, Bergsgatan 4B, S-593 00 Västervik, and Jan E. Larsson, Hagtornsvägen 10, S-594 00 Gamleby, both of Sweden

Filed Nov. 6, 1980, Ser. No. 204,479
Claims priority, application Sweden, Nov. 19, 1979, 7909573
Int. Cl.[3] E04B *1/82*
U.S. Cl. 181—290 8 Claims



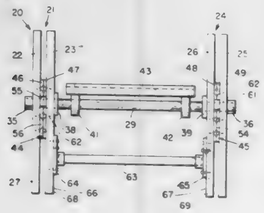
1. A sound-damping mat or drape comprising:
a flexible layer made of an open cellular material of given thickness, said open cellular material having open pores and walls between said open pores, said walls having wall surfaces defining said open pores;
a plurality of particles of a higher specific gravity than the material from which said flexible layer is made, said particles filling said pores over at least half of the thickness of said layer, said particles substantially not being embedded in said walls between said open pores;
the open pores at at least one surface of said flexible layer being unfilled with said particles to thereby provide a rough sound-absorbing surface; and
bonding means forming an elastic coating on said particles and for bonding said particles to each other and to the defining wall surfaces of said filled pores, said bonding means comprising an adhesive which forms said elastic coating on said particles.

4,386,677

SAWBUCK WITH JUXTAPOSED PLATES JOURNALLED ON AN AXLE

Walter W. Gulezian, 389 Andover St., Georgetown, Mass. 01833

Filed Jun. 17, 1981, Ser. No. 274,407
Int. Cl.[3] B27B *21/00*; F16M *11/00*
U.S. Cl. 182—154 7 Claims



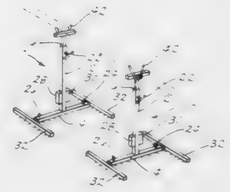
1. Hardware for assembling a rigid saw buck from four lengths of 2"×4" lumber adapted to form two pairs of "X" shaped, foldable legs said hardware comprising:
an elongated metal pipe-like cross bar axle of predetermined length having a pair of removable lock means, each at an opposite end thereof and having a pair of collars each fixed thereon at a spaced distance inwardly from one of said lock means;
two pairs of elongated flat, planar metal plates, each pair at an opposite end of said metal pipe cross bar axle between one of said lock means and one of said collars, and having registering holes therein journalled on said axle for rotation thereon;
the two plates of each said pair being juxtaposed to each other and the inside plates of each said pair having at least one integral lug extending from at least one side edge thereof into the path of rotation of the outer plate of the pair to serve as a stop when said plates are in "X" configuration;
said plates each having screw holes for screws for attaching each of said plates near the top of one of said lengths of lumber; and
at least one cross brace adapted to extend axially between the lower portions of the two said lengths which are attached to the inside plates of each pair.

4,386,678

COLLAPSIBLE WORK SUPPORT

John R. Wendell, 1304 Riddle St., Gowrie, Iowa 50543

Filed Aug. 14, 1981, Ser. No. 292,827
Int. Cl.[3] B27B *21/00*
U.S. Cl. 182—182 4 Claims



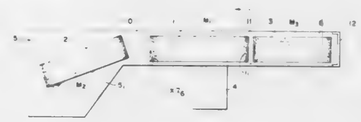
1. A collapsible work support comprising:
a "T" shaped frame having a stem portion and a base portion with both the base and stem of the "T" having open ends defining elongated passageways,
said "T" shaped frame adjacent each open end having means to releaseably but securely grip any member which telescopes within it;
said "T" stem portion having attached to said stem a pair of holding sleeves for releaseably holding other pieces of said collapsible work support;
a pair of leg supports, each of which has a longer leg member and a shorter attaching member,
said attaching members being adapted to telescopically fit within the respective open ends of said base portion of the "T" frame, said longer leg members being adapted to slidably fit within said holding sleeves,
a top support member having a top support surface and an attaching short stem which is adapted to telescopically fit into the open end of said stem portion of said "T" shaped frame.

4,386,679

TRANSFER DEVICE ESPECIALLY FOR PRODUCT CHECKOUT SYSTEMS IN STORES

Raymond Mary, Saint Nom la Breteche, France, assignor to Societe Alser, Saint Cloud, France

Filed Sep. 4, 1980, Ser. No. 183,902
Claims priority, application France, Sep. 6, 1979, 7922317
Int. Cl.[3] B65G *47/00*
U.S. Cl. 186—68 5 Claims



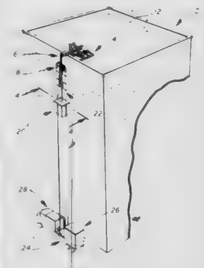
1. Checkout counter apparatus associated with an exit till for registering prices and reference information on articles bought by customers, comprising a registering conveyor belt extending from a first position upstream of said till to a second position within reach of a till operator, a discharge area disposed downstream of said second position for receiving articles from the till operator after they are registered, and at least one loading conveyor belt, said loading conveyor belt having a downstream end aligned with and juxtaposed to the upstream end of said registering belt and said loading belt extending further upstream to receive articles from a customer lining up for checkout, separately actuable electrical drive means for said registering belt and loading belt, and selectively operable actuating means for actuating said registering and loading belts simultaneously to transfer articles from said loading belt to said registering belt, and for actuating said registering belt without actuating said loading belt to move articles along said registering belt without moving articles on said loading belt, wherein said discharge area includes a discharge conveyor belt for receiving registered articles from the till operator and for transfering said articles to an inclined collection surface, further electrical drive means for driving said discharge belt, and timing means responsive to said actuating means for actuating said further drive means during and after operation of said actuating means.

4,386,680

EMERGENCY RESCUE SYSTEM

Waymon B. Reed, Gunter, Tex., assignor to Multi-Story Transporters, Inc., Celina, Tex.

Continuation-in-part of Ser. No. 243,365, Mar. 13, 1981, abandoned. This application Dec. 9, 1981, Ser. No. 328,870
Int. Cl.[3] B66B *9/00*
U.S. Cl. 187—6 12 Claims



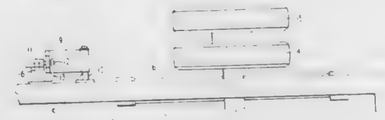
1. A system for enabling rescue of the occupants of a building comprising:
a lookout member to be attached to the roof of said building, said lookout member being comprised of a crane means to overhang the edge of said building, a pulley attached to one end of said crane means, a first cable reeved through said pulley and having first and second ends, said first cable having a length sufficient to extend from the ground to said pulley and from said pulley back to the ground;
means located on the ground for reeling said first end of said cable in and out;
a housing large enough to contain and support a plurality of people and to be raised and lowered along the side of the building in order to allow escape of occupants of the building in emergency situations;
a yoke means to be connected to said second end of said cable for being raised from the ground to the crane means and operatively and releasably coupled thereto, said yoke means being carried to the building and raised from the ground in an emergency; and
a second cable operatively connecting said yoke means to said housing for providing stability to said housing as said housing is raised and lowered along the side of the building and for raising and lowering said housing along the side of the building, whereby said system is operated by first fixedly attaching said lookout member to said roof, lowering said first and second ends of said first cable to the ground, coupling one end thereof to said yoke means and the other end thereof to said means located on the ground for raising said yoke means to said crane means and coupling said yoke means to said crane means, and then raising said housing as appropriate by said second cable and thereafter disassembling said yoke means by reversing such steps.

4,386,681

SAFETY DROP BRAKE

Colin W. Skelton, 160 Kilaben Rd., Kilaben Bay, New South Wales 2283, Australia

Continuation of Ser. No. 798,978, May 20, 1977, abandoned. This application Oct. 19, 1978, Ser. No. 952,741
Int. Cl.[3] B60T *1/04, 1/14*
U.S. Cl. 188—4 R 9 Claims



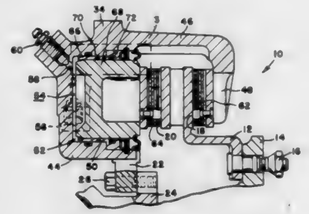
1. A drop brake for a vehicle or trailer having on either side thereof at least one dual wheel arrangement comprising two coaxial wheels which are rigidly interconnected to rotate together with both wheels in contact with the ground, said brake being positioned on at least one side of said vehicle or trailer and comprising a reinforced belt of suitable material having a fixed end and a free end and of sufficient length to extend at least from the intersection of the ground and a vehicle tire to a suitable point of connection on the vehicle; a support member for the fixed end of said belt and releasable holding means for holding the free end of said belt and actuable to release said free end so that the free end of said belt drops to be run over by one only of said wheels of each dual wheel arrangement which has a drop brake associated therewith, whereby the belt is interposed between the ground and said one wheel to retard rotation thereof by frictional drag between said one wheel and the belt while the other wheel remains in contact with the ground and continues to rotate, thus urging said one wheel further onto the belt to increase the frictional drag exerted on said one wheel by the belt.

4,386,682

PISTON RETRACTION AND WEAR COMPENSATION FOR LOW-DRAG DISC BRAKES

Ji Y. Woo, and Irving R. Ritsema, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 9, 1981, Ser. No. 252,631
Int. Cl.[3] F16D *55/224, 65/54*
U.S. Cl. 188—71.8 1 Claim



1. An improvement to a low-drag disc brake caliper having

a fluid motor portion of the type including: a sleeve member reciprocably received in the caliper and frictionally coupled for movement in unison with a relatively movable pressure-responsive piston which is received by said sleeve member; said caliper body, sleeve member, and piston cooperating to substantially define a variable-volume chamber for said fluid motor portion, said variable-volume chamber receiving a pressurized fluid to move said piston and said sleeve member, said piston moving a friction element to effect a brake application, and resilient means for biasing said sleeve member to a retracted position relative to said caliper in engagement with a shoulder on said caliper, said sleeve member imparting movement to said piston via the frictional coupling to retract said piston upon termination of braking, and said caliper carrying an abutment member opposing said sleeve member in the direction of said friction element, the improvement being characterized in that an annular chamber is defined substantially by said sleeve member and said piston, said annular chamber opening radially inwardly and extending to said piston, said annular chamber receiving said resilient means, said sleeve member including a small diameter portion adjacent said variable-volume chamber and a large diameter portion opposing said shoulder and said abutment member, said large diameter portion including a recess forming said annular chamber, said large diameter portion being normally spaced from said abutment member in its rest position and said resilient means extends outwardly of said recess to engage said abutment member whereby said resilient means is compactly arranged between said sleeve member and said abutment member.

4,386,683

BRAKE FOR A WEAVING MACHINE

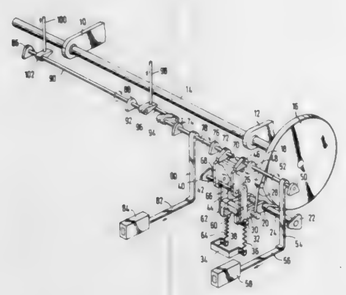
Gerd Schmitz, Sulz-Attikon, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Continuation of Ser. No. 45,939, Jun. 6, 1979, abandoned. This application Apr. 14, 1981, Ser. No. 254,091

Claims priority, application Switzerland, Jun. 13, 1978, 6421/78

Int. Cl.³ F16D *49/04*

U.S. Cl. 188—77 R **2 Claims**



1. A brake for a weaving machine comprising

a rotatable brake drum;

a brake band about said drum for braking said drum;

at least two springs for selectively generating a braking force;

a positioning member for transmitting a braking force from at least one of said springs to said brake band to brake said drum, said positioning member being connected to one of said springs and separated from the other of said springs;

a first pawl and ratchet means for releaseably holding said one spring in a tensioned state;

a first release means for actuating said pawl and ratchet means to release said one spring from said tensioned state and to cause said one spring to generate a braking force through said positioning member to said brake band, said first release means including a rotatable shaft having a pawl of said first pawl and ratchet means thereon, a lever secured to one end of said shaft, a spring strip secured to an opposite end of said lever from said shaft, and an electromagnet connected to said strip for pulling of said strip in response to a given signal whereby pulling of said strip causes rotation of said shaft and release of said first pawl and ratchet means;

an abutment connected to said other spring for abutting said positioning member;

a second pawl and ratchet means for releaseably holding said other spring in a tensioned state; and

a second release means for actuating said second pawl and ratchet means to release said other spring to generate a braking force through said abutment to said positioning member and to said brake band, said second release means including a rotatable stop-motion shaft having a second pawl of said second pawl and ratchet means thereon, a second abutment secured to said second pawl for abutting said first pawl, and means for rotating said stop-motion shaft in response to a second signal, and latter means including a second lever secured at one end to said stop-motion shaft, a second spring strip secured to an opposite end of said second lever, and a second electromagnet connected to said second strip for pulling said second strip in response to said second signal whereby pulling of said second strip causes rotation of said stop-motion shaft and release of each pawl and ratchet means.

4,386,684

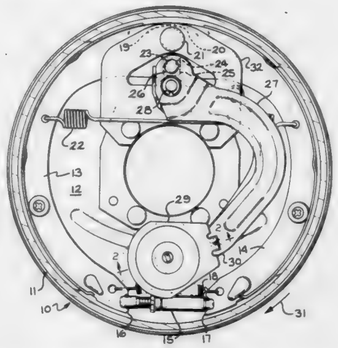
ELECTRIC BRAKE MAGNET

B. Robert Prokop, Elkhart, Ind., assignor to Kelsey-Hayes Company, Romulus, Mich.

Continuation of Ser. No. 173,527, Jul. 30, 1980, abandoned. This application Apr. 28, 1982, Ser. No. 372,865

Int. Cl.³ B60T *7/12*

U.S. Cl. 188—138 **5 Claims**



1. An improved electromagnet assembly for magnetically engaging a brake drum to move a brake actuator, said electromagnet assembly comprising a stamped ferromagnetic housing having a flat surface for engaging the brake drum and a cup shaped portion extending from said surface, said cup shaped portion having a bottom with a central opening, said central opening having a stepped edge, a center pole mounted in said central opening and extending to the plane of said housing surface, said stepped edge having areas contacting said center pole alternating with gap areas spaced from said center pole, ferromagnetic washer means abutting said housing bottom for bridging said gap areas between said housing and said center pole, said housing, said center pole and said washer defining an opening which is opened at said housing surface, and a solenoid winding located in said annular opening.

4,386,685

BRAKE TAKE-UP MECHANISM WITH A SPRING BIASED ROTARY ADJUSTMENT

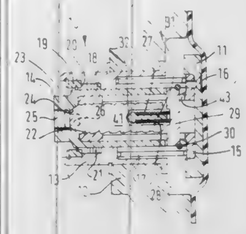
John F. Cole, and Frederick S. Dowell, both of Coventry, England, assignors to Dunlop Limited, London, England

Filed Dec. 4, 1980, Ser. No. 213,015

Claims priority, application United Kingdom, Aug. 28, 1980, 8027865

Int. Cl.³ F16D *65/56*

U.S. Cl. 188—196 P **5 Claims**



1. A take-up mechanism for a brake pressure application device which has a fixed housing and a two-part plunger movable relative to the housing to transmit brake pressure between opposite ends of said plunger, the two parts of the plunger being relatively telescopic to change the effective length of the plunger between said ends thereof, means biasing the plunger to a retracted position, fixed stop means fixed relative to the housing and movable stop means frictionally engaging one of said plunger parts, said movable stop means co-operating with said fixed stop means to determine the telescopic extension of said plunger parts when retracted by said biasing means, the take-up mechanism being positioned to transmit thrust between said plunger parts when moved in opposition to said biasing means, said take-up mechanism comprising a member which is in screw threaded engagement with one of said plunger parts, biasing means acting between said member and the other plunger part and between abutment surfaces of said member and said other plunger part, the biasing means acting between said screw threaded member and the other plunger part tending to rotate said screw threaded member to maintain said abutment surfaces in contact and the arrangement being such that any tendency of the means biasing the plunger to the retracted position to separate said abutment surfaces will be compensated by rotation of said member under the bias thereof to bring said abutment surfaces into contact.

4,386,686

HYDRAULIC SHOCK ABSORBER

Ieaki Miura, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Dec. 29, 1980, Ser. No. 221,070

Claims priority, application Japan, Jan. 8, 1980, 55-579

Int. Cl.³ F16F *9/00*

U.S. Cl. 188—322.17 **9 Claims**

1. A hydraulic shock absorber, comprising:

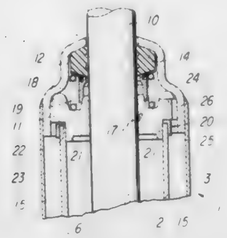
an inner cylinder filled with hydraulic fluid;

an outer cylinder surrounding said inner cylinder for defining an annular reservoir therebetween, said reservoir being filled with hydraulic fluid and gas;

a piston provided in a chamber in the inner cylinder;

a piston rod passing through a rod guide and a seal member, one end of said piston rod being secured to said piston; and

a seal ring pressed and tightly held between the rod guide and one end of the inner cylinder, said seal ring having an annular flat part and a cylindrical part integral with the outer circumference of the annular flat part and extending perpendicular to the annular flat part, the inner diameter of said annular flat part being equal to the inner diameter of the inner cylinder and the inner circumferential surface of said cylindrical part fitting to the outer circumferential surface of the inner cylinder to cover the outer circumferential surface adjacent to the end face of said one end of the inner cylinder.



4,386,687

ELECTRONIC DEVICE CONTROLLING THE BRIDGING OR LOCKING OF A HYDRODYNAMIC TORQUE CONVERTER AND METHOD OF APPLICATION

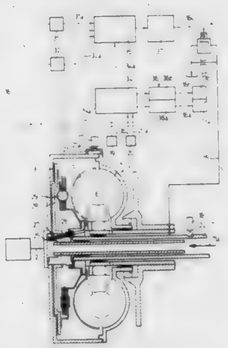
Claude Chevalier, Jouars-Pontchartrain; Gino Zammarchi, Paris, and Jean M. Bouvet, Boulogne-Billancourt, all of France, assignors to Regie Nationale des Usines Renault, France

Filed Jun. 12, 1980, Ser. No. 158,674

Claims priority, application France, Jun. 13, 1979, 79 15192

Int. Cl.³ F16D *25/12*; **B60K** *41/02, 41/28*

U.S. Cl. 192—3.3 **12 Claims**



1. A control system for controlling the engaging and disengaging of the clutch of a hydrodynamic torque converter in an automatic transmission having at least two forward gear ratios, each gear ratio being established in response to receipt by the automatic transmission of a shift signal generated by an electronic ratio controller, said system comprising:

means for generating a first signal indicative of the input speed to the torque converter;

means for generating a second signal indicative of the output speed of the torque converter;

a comparator responsive to the comparison of the first signal and the second signal for generating a control signal when that comparison exceeds a preset value;

timing means responsive to the generation of the shift signal for generating an inhibiting signal of a predetermined time duration and applying the shift signal to the automatic transmission after said predetermined time duration has elapsed;

output means responsive to the presence of the control signal and the absence of the inhibiting signal for providing an output signal; and

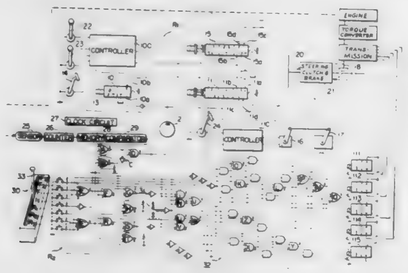
clutch control means responsive to the presence of said output signal for causing engagement of the clutch and responsive to the absence of said output signal for causing disengagement of the clutch.

4,386,688

VEHICLE SPEED RESPONSIVE BRAKE AND DECELERATOR CONTROLS

Yoshito Sato, and Tokuhiro Yato, both of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 14, 1980, Ser. No. 196,663
Claims priority, application Japan, Oct. 11, 1980, 54/129982
Int. Cl.³ B60K *41/28*
U.S. Cl. 192—0.033 **5 Claims**



1. An automatic decelerator device for use in track-type vehicles such as a bulldozer or the like, characterized by the combination of:

(a) a vehicle speed change lever means having a plurality of speed stages for forward and backward drives, said speed change lever means including a gear shift lever, wherein a change of the vehicle speed and/or the drive direction is effected by said gear shifting lever;

(b) a plurality of solenoid operated valves provided in a transmission gear and selectively used for changing over the vehicle speed and/or the drive direction;

(c) a first controller with a servo-motor adapted to actuate the braking action of a brake means;

(d) a second controller with a servo-motor adapted to actuate a decelerator;

(e) a comparator adapted to compare an actual vehicle speed, which is detected by means of a revolution sensor provided near an output shaft of the transmission gear, with a preset vehicle speed previously supplied into the comparator so as to detect whether the actual vehicle speed thus detected is higher or lower than the preset one, and then generate a signal corresponding to the result of the detection; and

(f) a solenoid operated valve control circuit coupled to said vehicle speed change lever means and said comparator and arranged to control said first and second controllers and said solenoid operated valves in response to the state of said speed change lever means and the actual vehicle speed.

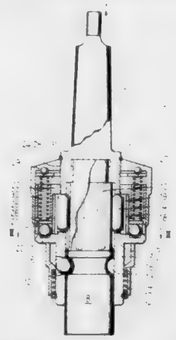
4,386,689

TORQUE LIMITER

Taizo Kato, 3007-104 Kobatahigashijima, Moriyama-ku, Nagoya 463, Japan

Filed Nov. 28, 1980, Ser. No. 211,052
Claims priority, application Japan, Aug. 27, 1980, 55-118821; Sep. 6, 1980, 55-123832
Int. Cl.³ F16D *7/06, 43/20*
U.S. Cl. 192—56 R **6 Claims**

1. A torque limiter comprising first and second rotational members arranged coaxially with and rotatable relative to each other, the first member having at least one axial groove formed therein, the second member having a cylindrical portion formed with at least one axial slot therethrough, an annular member positioned radially opposite the first member across from the second member, said annular member being rotatable relative to each rotational member and having at least one axial groove formed therein and at least one axial hole formed therethrough with its axis offset from the axis of the tubular member, a roller in movable engagement with both the slot of the second member and the groove of the tubular member and engageable with the groove of the first member, the second member further having at least one axial recess formed therein with its axis eccentric from the axis of the second member, a ball in movable engagement with both the hole of the tubular member and the recess of the second member and spring-urged



into the recess to angularly align the hole and recess with each other, the angular relationship among said axial grooves, hole and recess being such that, when the hole and recess are in angular alignment, the groove of the tubular member and the slot of the second member are angularly displaced from each other forcing the roller from the groove of the tubular member into the groove of the first member through the slot but keeping the roller angularly within the groove of the tubular member and, when the slot of the second member and the groove of the tubular member are in angular alignment so that the roller can leave the groove of the first member and move into the groove of the tubular member, the recess and the hole are angularly displaced from each other, thereby forcing the ball away from the recess against the spring-urging but keeping it angularly within the recess.

4,386,690

COIN RELAY SELECTOR CARD

Gerald B. McGough, Huntsville, Ala., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Dec. 29, 1980, Ser. No. 220,668
Int. Cl.³ G07F *9/04*
U.S. Cl. 194—1 D **4 Claims**

1. A selector card for use in a coin handling mechanism of a paystation comprising:

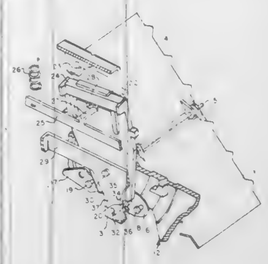
a generally deltoid shaped planar card including;

a permanent magnet bar of approximately the length of a first side of said card,

a first tongue shaped projection from a first side of said deltoid shaped planar card,

said first tongue shaped projection including a terminal end

of saddle shape for confining said bar magnet along 3 of its axial sides; and



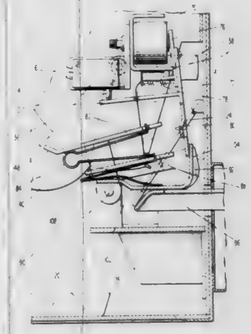
a pair of tines at each side of said tongue shaped projection for axially restraining said bar magnet.

4,386,691

ELECTROMECHANICAL COIN-OPERATED LATCH MECHANISM

Ronald C. Voegeli, 918 Gibbs Rd., Venice, Fla. 33595

Filed Jan. 7, 1981, Ser. No. 223,137
Int. Cl.³ G07F *5/16*
U.S. Cl. 194—7 **19 Claims**



1. A coin-operated, electronically controlled latch mechanism, comprising:

coin receiving means including a coin chute and a coin receptable for receiving deposited coins passing through said chute;

coin value detecting means disposed in said chute and responsive to the passing of a deposited coin through said chute to generate an electrical signal indicative of the monetary value of a deposited coin;

an electronic control circuit including means for receiving the electrical signals generated by said detecting means and means for producing an output signal when the total monetary value of deposited coins equals or exceeds a predetermined amount;

an electromagnetic device actuated by the output signal of said electronic control circuit;

a latch member; and

a latching assembly including

a pivotally mounted actuator having a locking means and adapted to be pivoted in response to actuation of said electromagnetic device,

a pivotally mounted latch lock normally engaged by the locking means of said actuator,

a latch hook biased into engagement with said latch member by said latch lock when said latch lock is engaged by said actuator locking means, and

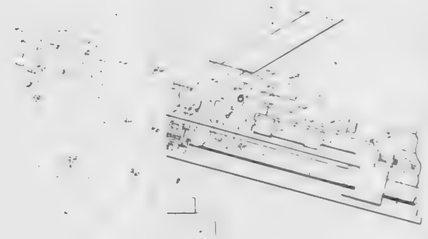
biasing means for pivoting said latch lock away from said actuator and biasing said latch hook out of engagement with said latch member when said actuator is pivoted in response to actuation of said electromagnetic device.

4,386,692

APPARATUS FOR AUTOMATICALLY LOADING AND ORIENTING A CYLINDRICAL WORKPIECE

Heinz-Dieter Wenzel, Weidenweg, Fed. Rep. of Germany, and Melville Hanson, deceased, late of Nurtingen, Fed. Rep. of Germany, assignors to The Cross Company, Fraser, Mich.

Filed Jun. 26, 1981, Ser. No. 277,621
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—394 **13 Claims**



1. Apparatus for automatically orientating a part having a cylindrical outer surface which is provided with at least one opening of selected dimensions, said apparatus comprising:

a feeding mechanism for moving said part onto a guide;

a pin in position to be engageable with the opening in said part on said guide;

means for moving said pin forwardly into engagement with the periphery of said part on said guide, and for advancing said part along said guide to a final position; and

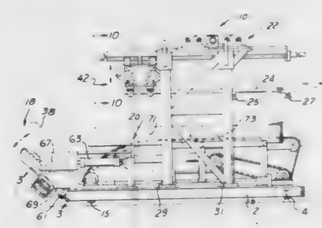
the forward movement of said pin operating to roll said part along said guide until one of said openings moves into alignment with said pin, to permit said pin to enter the opening and to prevent further rolling movement of the part, so that further forward movement of said pin causes a sliding movement of the part along the guide with the opening at a desired orientation, the part reaching said final position with the opening at the desired orientation.

4,386,693

TRANSFER APPARATUS

Jack L. Bachman, Newtown, Pa., assignor to The Budd Company, Troy, Mich.

Filed Apr. 23, 1981, Ser. No. 256,954
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—409 **8 Claims**



1. Transfer apparatus for transferring a part longitudinally from a first station to a second station comprising:

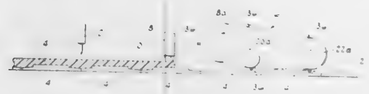
(a) receiving apparatus for receiving said part from said first station;
(b) said receiving apparatus including a pair of spaced adjustable plates disposed to be spaced to receive said part therebetween;
(c) adjustable means to laterally align said receiving apparatus with respect to said first and second stations;
(d) conveyor means disposed to receive said part from said receiver apparatus and transport it towards said second station;
(e) means for actuating said receiving apparatus to transfer said part to said conveyor means;
(f) lifting means for lifting said part from said conveyor means;
(g) gripping means to remove and hold said part away from said lifting means; and
(h) longitudinally movable means for holding said gripping means to move a part held by said gripping means to said second station.

4,386,694

CONVEYING APPARATUS FOR TILE MAKING MACHINES

Theodore Van Heel, and Henry Van Heel, both of Narre Warren, Australia, assignors to Burgos Pty. Limited, Melbourne, Australia

Continuation-in-part of Ser. No. 732,662, Oct. 15, 1976, abandoned. This application Feb. 14, 1978, Ser. No. 877,712
Claims priority, application Australia, Oct. 15, 1975, PC3586
Int. Cl.[3] B65G *49/00*
U.S. Cl. 198—648 **9 Claims**



1. Conveying apparatus for conveying pallets of the type having a projecting shoulder portion and being of pre-determined length, said apparatus including a support over which the pallets are conveyed in a continuous stream with adjacent pallets in contact with one another, drive means for moving the pallets along the support, said drive means including a first sprocket located above and adjacent to the support, a first chain which passes about the first sprocket, drive members fixedly connected to the first chain, and means cooperating with said first sprocket for defining a run of the first chain in the direction which the pallets are conveyed over the support, said first sprocket being located at the beginning of the run, said drive members projecting outwardly from the first chain for engagement with the shoulders of the pallets for moving pallets, and wherein the spacing between the drive members is slightly less than the pre-determined length of the pallets so that, on engagement of a portion of a drive member with a shoulder of a pallet, movement of the pallet by the drive member causes the preceding pallet in the stream to move forwardly and lose contact with the preceding drive member.

4,386,695

SWEEP AUGER CONSTRUCTION FOR A BOTTOM UNLOADING MECHANISM

George E. Olson, Arlington Heights, Ill., assignor to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Filed Nov. 10, 1980, Ser. No. 205,461
Int. Cl.[3] B65G *33/24, 65/46*
U.S. Cl. 198—661 **2 Claims**

1. A sweep auger for a bottom unloading mechanism used to unload relatively free flowing granular material from a storage structure, comprising a plurality of shaft sections connected in axial alignment, each shaft section having a different diameter than adjacent shaft sections, and the innermost shaft section having the largest diameter and the outermost shaft section having the smallest diameter, and a helical flight attached directly to each shaft section, the helical flight of each shaft section having a varying radial depth with said depth of said flight at the inner end of each shaft section being greater than said depth of said flight at the outer end of said shaft section,



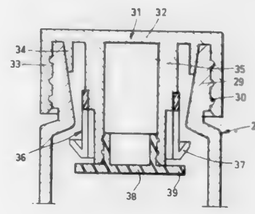
the radial depth of the flight at the outer end of each shaft section being greater than the radial depth of the flight at the inner end of the next adjacent shaft section, the pitch of the helical flight on the outermost shaft section decreases in a direction toward the outer end of the sweep auger, the volumetric capacity of the sweep auger progressively increasing from the outer end to the inner end.

4,386,696

DEVICE FOR STORING SEPARATELY TWO PRODUCTS WHICH ARE TO BE DISPENSED SIMULTANEOUSLY

Antonin Goncalves, Groslay, France, assignor to L'Oreal, Paris, France

Continuation of Ser. No. 771,632, Feb. 24, 1977, abandoned. This application Sep. 27, 1978, Ser. No. 946,215
Claims priority, application France, Mar. 2, 1976, 76 05827
Int. Cl.[3] B65D *25/08*
U.S. Cl. 206—221 **17 Claims**



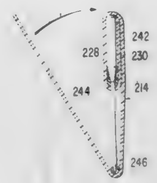
1. In a device for storing at least two products which are isolated from each other during storage and which it is not desired to mix until the moment of use, said device comprising:
a container having a neck and a body constituting a first compartment in which one of the products may be placed;
a member closing said neck and supporting an ejectable element, said member and said ejectable element defining a second compartment and in which the other product may be placed;
a one piece elastic collar the external dimension of which is greater than an internal dimension of the neck of the container, said collar being removably carried by said member in a position which is beyond the neck of the container when the member is in closed position on said container, the collar being adapted, during separation of the member from the container, to come into abutment against an end of the neck of the container to cause separation of the ejectable element from the member, said collar during insertion through the neck being convex toward the body of the container;
the improvement according to which said collar has a diverging upper surface inclined upwardly toward the end of the neck when the member is in said closed position on the container, the collar comprises at least one radial slot, the total width of said at least one slot being substantially equal to the difference between the inner perimeter of the neck at its narrowest point and the external perimeter of the collar when free from constraint, said collar comprising means for readily folding upwardly and inwardly during insertion of the collar through the neck, and said upper surface of said collar comprising elastic means for deforming to expand radially outwardly against the end of the neck as a result of upward movement during separation of said member from the container.

4,386,697

NEEDLE PACK

Josef Zocher, Aachen, Fed. Rep. of Germany, assignor to The Singer Company, Stamford, Conn.

Filed Jun. 14, 1979, Ser. No. 48,425
Int. Cl.[3] B65D *85/28*
U.S. Cl. 206—383 **14 Claims**



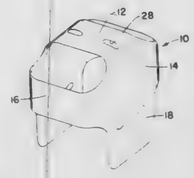
1. Needle pack comprising:
a web of flexible material; and
a plurality of needles, each of which has a generally cylindrical shank portion and a blade portion of generally reduced cross section extending generally longitudinally outward of an end of said shank portion and terminating in a point portion, said plurality of needles being generally parallel and disposed in generally planar relationship with said shank portions contiguous one another to thereby dispose said reduced cross-section blade portions in generally parallel spaced apart relationship, each of said blade portions piercing said web along a generally straight line of concatenated fenestrations contiguously framing each of said blade portions;
at least one reinforcing rib extending along said line of fenestrations and pierced by said blade portions;
said web being wrapped generally tightly around said contiguous shank portions and tightly sealed therearound, binding said plurality of needles tightly together to thereby provide a generally rigid pack of needles.

4,386,698

BOTTLE MULTI-PACKAGE AND PACKAGING DEVICE

Mindaugas J. Klygis, Barrington, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Sep. 11, 1981, Ser. No. 301,079
Int. Cl.[3] B65D *65/00, 75/00*
U.S. Cl. 206—432 **11 Claims**



1. In a package for a plurality of bottles arranged in a predetermined array of ramps and rows of bottles in upstanding, side-by-side, generally abutting relationship, the array in the composite defining a bottom, a top, two sides in the row direction and two ends in the rank direction, a package device of thin, flexible, thermoplastic material nonstretchingly associated about the array, the device including a pair of opposing side walls, a pair of opposing end confining means, a top region extending integrally between the top margins of the side walls and a bottom region extending continuously across the bottom of the array and supportingly contacting at least portions of the bottoms of each of the containers in the array, the top region extending across the package at an elevation below the uppermost extremities of the array and supportingly engaging the necks of the bottles in the array, the top region including a pair of opposing, oblong aperture means for receiving and isolating the neck regions of two opposing bottles in the array, the perimeter of the device generally equal to the perimeter of the array.

4,386,699

BOTTLE PACKAGE

Robert L. Sutherland, Campbell Hall, N.Y., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

Filed Dec. 24, 1980, Ser. No. 219,598
Int. Cl.[3] B65D *5/04, 65/22, 71/00*
U.S. Cl. 206—434 **6 Claims**



1. In a package for a plurality of articles in the form of bottles which are arranged in double row transversely aligned pairs, a wrapper formed by a blank of paperboard or the like which is cut and scored to provide wall and partition forming panels, the wall forming panels being adapted to fold about the top, sides and bottom of an assembly of the articles with said blank having two opposed blank end panels having wall forming portions, one of said blank end panels having a narrow hinged terminal panel adapted to be hinged to a partition forming position to separate the articles in the two rows and the opposed blank end panel having a narrow hinged terminal panel forming a locking panel with locking and latching elements on outermost edges thereof which are adapted to interengage in locking and latching relation with cooperating locking and latching elements in the partition forming blank end panel, wherein said hinged terminal locking panel has a primary locking element on the hinged edge thereof and secondary latching elements on the terminal edge which are in offset relation relative to the primary locking element.

4,386,700

DRAIN CONTROL FOR MULTIPLE STACKED CONTAINERS

Thomas P. Deaton, Mason, Ohio, assignor to Nestier Corporation, Cincinnati, Ohio

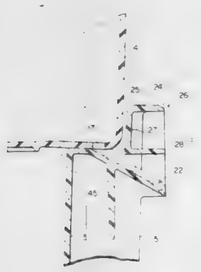
Filed May 28, 1981, Ser. No. 267,915
Int. Cl.[3] B65D *21/04*
U.S. Cl. 206—507 **19 Claims**

1. A stackable, nestable container with drainage, comprising:
a one-piece construction including a bottom, opposed upwardly, outwardly slanting side walls, and opposed upwardly, outwardly slanting end walls forming an open top generally rectangular container;
said container including means interacting with a second identical container for stacking at least the two containers in a first stacked position wherein the bottom of the upward container is adjacent the topmost portion of the side

and end walls of the lower container and a second nested position of 180° relative rotation as between said containers about a vertical axle wherein the containers are telescopically nested with the bottom of the upper container adjacent the bottom of the lower container;

said means including two foot portions at the intersection of said bottom and each of said end walls, with each pair of diagonally opposite foot portions having one foot portion closely adjacent the respective side wall and the other foot portion being spaced from the respective side wall, and two seat portions adjacent the topmost portion of each end wall correspondingly closely adjacent and spaced inwardly from respective side walls, so that in said first stacked position the one end wall of the lower container is vertically aligned with the other end wall of the upward container and the foot portions engage respective seat portions to provide vertical support of the upward container on the lower container;

each of said foot portions having a bottom wall with a drainage hole for draining liquid within said container through said drainage holes to the exterior of said container;



a completely separate drainage channel with bottom and side walls extending from one end in each of said seat portions at a position vertically aligned with the drainage hole of an upward container in said first stacked position downwardly and outwardly directly through an adjacent wall of its container to an opposite terminal end at a position spaced outwardly from the top of said adjacent wall;

said container including an integral top flange as a part of said one-piece construction that extends horizontally around the upper periphery of said side and end walls in a loop with a portion vertically spaced above and covering said channel;

said terminal end having means discharging the drainage to fall freely along a vertical path spaced from said container and intersecting the top flange of the next lower container in said stacked position at a position spaced outwardly from its walls; and

wall portions integrally connected in one piece with said top flange and channel walls to form a tubular passage including said channel.

4,386,701

TIGHT HEAD PAIL CONSTRUCTION

Herbert W. Galer, Pine Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 588,453, Jun. 19, 1975, abandoned, which is a continuation of Ser. No. 383,002, Jul. 26, 1973, abandoned. This application Oct. 25, 1977, Ser. No. 845,097

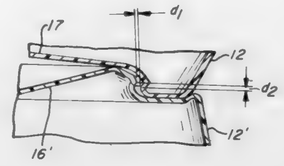
Int. Cl.³ B65D *21/02*

U.S. Cl. 206—509 **11 Claims**

1. In a tight head, blow molded, cylindrical, plastic container having a top section, a sidewall section and a bottom section, said top section having an eccentric pour opening, and convolutions in its surface to define upstanding members integral with said top section, said upstanding members cooperating with said pour opening to form a pour surface for said container, said bottom section having a central recess adapted to receive upstanding members on the top section of a similar container, the improvement comprising:

a groove in the outward portions of the upstanding members of said top section,

a tongue in the interior sidewalls of said recess, and



an upstanding rim about said top section, wherein said tongue, said groove, and said rim cooperate with each other to provide an interlocking connection between the top and bottom sections of similar containers when stacked one upon another so that said stack remains axially aligned when tilted through an angle of 45° to the vertical.

4,386,702

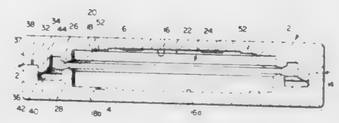
MOLDED FOAM PLASTIC PLATE PACKING BOX

Frank L. Schultz, and Marilyn Schultz, both of 600 Sunset Dr., McAllen, Tex. 78501

Filed Oct. 23, 1981, Ser. No. 314,511

Int. Cl.³ B65D *85/30, 81/16*

U.S. Cl. 206—523 **7 Claims**



1. A box formed of yieldable and springy foam plastic for a plate of the type having a depending annular rib around the underside and a generally frusto-conical peripheral portion extending upwardly therefrom, comprising:

relatively shallow separable bottom and top portions having hollow inner sides,

said bottom and top portions each having an annular ridge means on the inner side thereof, said ridge means being spaced inwardly from the peripheral flanges thereon and being oppositely directed from one another and defining therebetween nip means for yieldably embracing the peripheral portion of a plate.

4,386,703

FOOD SERVICE TRAY

William W. Thompson, and Samuel L. Belcher, both of Maumee, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

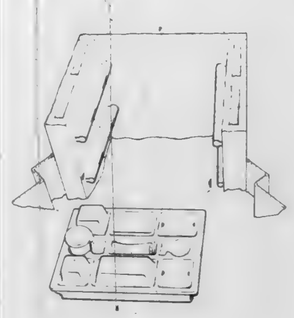
Filed Dec. 15, 1977, Ser. No. 861,050

Int. Cl.³ B65D *1/34, 6/04*

U.S. Cl. 206—557 **4 Claims**

1. An improved food-serving and storage tray for use in a cabinet, said tray comprising a generally planar bottom, an upstanding perimetric wall with front, rear and end wall sections, a thermal divider extending from one of said end wall sections to the opposite end wall section, defining with said walls two separate parallel thermalizing air channels, one on each side of said divider, a top having a plurality of dish-receiving apertures, said receiving apertures opening into said channels and being designed to hold food dishes in sealing conformity therein with a substantial portion of each dish

protruding downwardly into its respective air channel, and a pair of oblong apertures through each of said end wall sections, each one of said pair opening into its respective one of such channels with the apertures of a channel being in directly confronting alignment with one another so the mass flow of air



is in one direction through a channel, each of said end walls having a tapered wedge connector member formed therein encompassing said pair of oblong apertures, said connector extending from said front wall section to said rear wall section and being uniformly tapered from a smaller diameter at the rear end thereof to a larger diameter at the front end.

4,386,704

METHOD OF FORMING PACKS OF ROLLS OF METAL WIRE NETTING

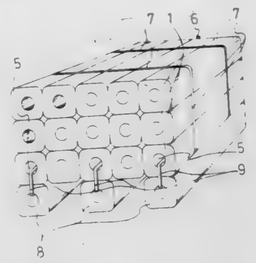
Pierre Maillet, Bourbourg, France, assignor to Trefileries de Bourbourg, Bourbourg, France

Filed Jun. 17, 1981, Ser. No. 274,673

Claims priority, application France, Jun. 20, 1980, 80 13768

Int. Cl.³ B65D *19/00, 85/62, 71/00;* **B65B** *21/06*

U.S. Cl. 206—597 **13 Claims**



1. A method of forming stable coils of wire fabric, comprising the steps of:

a. spirally winding a length of said fabric into a substantially cylindrical coil having an axially extending core structure and a plurality of spiral layers; and,

b. deforming said coil into a stable substantially prismatic body having at least two substantially flat non-adjacent axially extending faces having rounded edges therebetween while maintaining said core structure in said deformed stable coil.

4,386,705

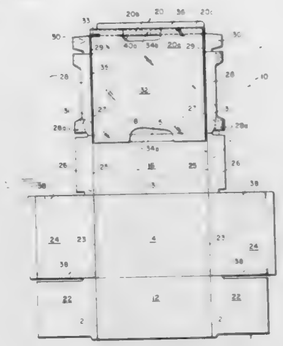
ICE CREAM CARTON

David C. Meuller, Ashland, Ohio, assignor to James River-Dixie/Northern, Inc., Greenwich, Conn.

Filed Jan. 26, 1981, Ser. No. 228,597

Int. Cl.³ B65D *5/54, 5/66*

U.S. Cl. 206—626 **6 Claims**



1. An easily opened paperboard carton construction, comprising:

a front wall, a bottom wall, a rear wall, opposed end walls and a top cover panel hingedly attached along one edge to the upper edge of the rear wall and having a front cover panel hingedly attached to the opposite edge of said top cover panel and overlapping the upper portion of the front wall when the carton is erected, said front cover panel having a pair of parallel weakness lines spaced from a free edge of said front cover panel and defining a tear strip, said free edge being adherent to said front wall;

a release liner for said top cover panel, comprising uniaxially oriented polymer film affixed along one edge thereof to the interior surface of said rear wall, said film extending to substantially completely cover the interior surface of said top cover panel and being affixed to the inner surface of said front cover panel in the region thereof between said weakness lines, said film being uniaxially oriented to the extent that it exhibits tensile strength in the orientation direction that is substantially greater than the tensile strength in the direction perpendicular to the orientation direction, said film having a with-grain to cross-grain tensile stength ratio greater than 1.5 to 1 and a maximum elongation in both with-grain and cross-grain directions of no more than 150%; and

the with-grain direction of said film being substantially aligned with said weakness lines, and said film extending along the entire length of the tear strip region to which it is affixed, thereby strengthening the tear strip to facilitate its complete removal, and ensuring tearing of the tear strip along said weakness lines, preparatory to hingedly opening said top cover panel.

4,386,706

FOOD CONTAINER AND COVER THEREFOR

Ralph J. Korte, Darien, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 6, 1981, Ser. No. 309,020

Int. Cl.³ B65D *5/74, 47/04*

U.S. Cl. 206—628 **5 Claims**

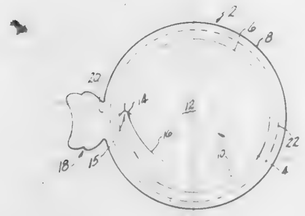
4. A food container comprising:

(a) a relatively heavy gauge metallic foil pan;

(b) a relatively light gauge metallic foil cover;

(c) a crimping skirt defined by marginal portions of said foil pan and foil cover which are bonded together to seal the interior of said container and to form said crimping skirt;

(d) a paperboard cover overlying said light gauge metallic foil cover, said paperboard cover having a marginal outer edge, and rupturable means defining a central removable portion on said cover, said rupturable means being inwardly spaced from said marginal outer edge on said paperboard cover, and an interrupted non-rupturable perforated line in said paperboard cover interposed between said rupturable means and said marginal outer edge of said paperboard cover, said interrupted non-rupturable perforated line surrounding said rupturable means to provide for flexibility of the cover between said non-rupturable perforated line and said rupturable means; and



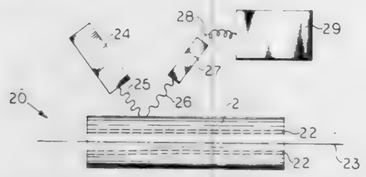
(e) said crimping skirt being folded down over and crimped onto a marginal portion of said paperboard cover so as to overlie said marginal outer edge of said paperboard cover to secure said paperboard cover to said container, said interrupted perforated line being operable to provide relief of stress forces imparted to said paperboard cover by said crimped crimping skirt to prevent premature rupture of said rupturable means.

4,386,707

LASER BEAM IMPERFECTION DETECTION FOR PLASTIC FILM ROLLS

Steven H. Stube, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 2, 1981, Ser. No. 250,380
Int. Cl.³ B07C 5/00
U.S. Cl. 209—546 **14 Claims**



1. In cooperative combination assembly as a system for quality control test detection of wrinkle and other imperfections in a plastic film supply roll without physical contact or destruction thereof:

(a) a multiple-layered, convolutely wound supply roll of a plastic film, the roll having a core upon which the plastic film is wound;

(b) means for mounting said supply roll in longitudinally-extending disposition along its axial center line in the assembly;

(c) means for generating a laser beam of electromagnetic radiation at a given wave length;

(d) means for generating said laser beam into said supply roll along a path that is incident to and at a predetermined angle of orientation with respect to said supply roll so as to impinge at least substantially through and within a normal, upright plane that at least about intersects said center line of said supply roll; such that

(i) any portion of said laser beam which passes through the multiple layers of said supply roll unobstructed by wrinkles or analogous structurally imperfect defects in or within the multiple film layers therein does so along a predictable and precisely deflected and reflected and unimpeded path; and

(ii) any portion of said laser beam which impinges one of said wrinkles or the like defects is thereby scattered along predictable scattering paths including paths different than said unimpeded path;

(e) means for picking up and indicating the unimpeded and impeded laser beam reflections whereby to detect and indicate through an intelligent reporting appliance any of said scattered electromagnetic radiations caused by said wrinkle and the like impediment(s); and

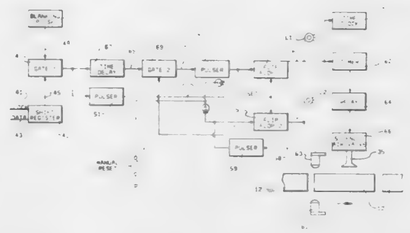
(f) means for causing said laser beam to longitudinally sweep and scan the longitudinal length of said supply roll.

4,386,708

CONTAINER REJECT SYSTEM

Walter J. Sieverin, McHenry, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Feb. 12, 1981, Ser. No. 233,946
Int. Cl.³ B07C 5/36
U.S. Cl. 209—549 **4 Claims**



1. A system for the reject of a single container from a plurality of closely spaced containers moving on a conveyor;

conveyor means for transporting closely spaced containers past processing stations;

container reject means positioned at a reject station, along the conveyor path;

means for sensing the presence of containers at said reject station and generating signals thereof;

circuit means including shift register means for generating signals to actuate said container reject means at the appropriate time to reject a container accurately as it passes said reject station, said circuit means including first gate means for combining the output from said shift register means with blanking pulse signals and second gate means for combining signals from said sensing means with the output of said first gate means;

means for mechanically fine tuning the position of the sensing signals relative to the shift register means output,

said fine tuning means including a timing clock to indicate the time duration between the leading edge of the output of the shift register means and the trailing edge of the signals from the sensing means, and

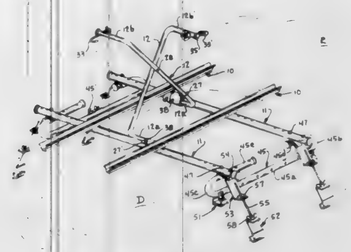
visual display means connected to said sensing means and to said shift register means for comparatively showing the respective signals of each.

4,386,709

BICYCLE SUPPORT DEVICE

Joseph V. Graber, 3739 County Trunk M, Middleton, Wis. 53562

Division of Ser. No. 241,099, Mar. 6, 1981, Pat. No. 4,345,705.
This application Jun. 10, 1982, Ser. No. 386,938
Int. Cl.³ B60D 3/06
U.S. Cl. 211—20 **10 Claims**



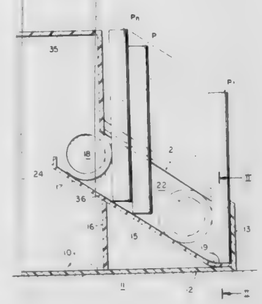
1. In a bicycle support device including an elongated channel for receiving a wheel of a bicycle, means for supporting a bicycle in a plane generally bisecting the channel when the bicycle wheel is resting in the channel, the improvement wherein the channel has a stepped V-shaped cross-section and includes a base wall, upwardly diverging lower side wall portions, lateral flange portions extending outwardly from the upper edge of the lower side wall portions, and upwardly diverging upper side wall portions on the outer edges of the lateral flange portions, the upper and lower side wall portions diverging at an included angle of less than 50°.

4,386,710

COMBINATION POINT-OF-SALE DISPLAY AND DISPENSER DEVICE

Sidney M. Dauman, Beverly Hills, Calif., assignor to Dauman Displays, Inc., New York, N.Y.

Filed Sep. 11, 1981, Ser. No. 301,318
Int. Cl.³ A47F 1/00
U.S. Cl. 211—49 D **6 Claims**



1. A combination point-of-sale display and dispenser device for elongated cartridge-like packages (P) comprising

a support frame (10) adapted for positioning on a horizontal support surface (11);

an inclined chute (15) extending from an elevated position (36) of the frame downwardly to a forward portion (12) of the frame;

a horizontal portion (19) formed at the forward end of the chute and having a dimension which is at least as great as the diameter of the packages to permit seating of the bottom surface of the foremost package on said horizontal portion;

side walls (22, 23) positioned adjacent the chute and extending laterally adjacent thereof to retain the packages on the chute;

a front wall (13) extending vertically from the forward portion of the frame (12) and holding the foremost package in vertically extending position;

a roller (18) positioned on said chute adapted to press against the rearmost package (Pn) of a set of packages positioned on the chute and to push the packages forwardly to said horizontal portion, and move the set of packages forwardly upon removal of the foremost package (P1) from the chute;

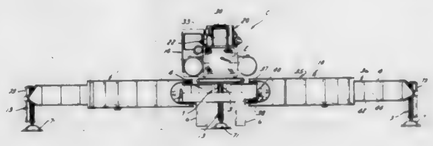
and retaining means (20, 21) constricting the space between the side walls (22, 23) and positioned over said roller to prevent removal of the roller (18) from the chute.

4,386,711

CRANE HAVING STABILIZER OUTRIGGERS AND VERTICALLY POSITIONABLE JACKS FOR SAME

Narahari Gattu, and Joseph C. Terranova, III, both of Cedar Rapids, Iowa, assignors to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Nov. 7, 1980, Ser. No. 203,943
Int. Cl.³ B66C 15/00
U.S. Cl. 212—189 **1 Claim**



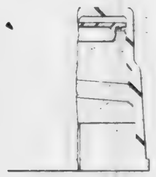
1. In a crane having an outrigger including an outer end disposed outwardly of the crane in a stabilizing position, a power operated, vertically positionable jack located at and fixed in a vertical attitude in the said outer end of said outrigger, said jack including a large nut stationarily mounted in said outer end but rotatably mounted in anti-friction bearings mounted in the outer end of said outrigger with the axis of said nut extending in a vertical direction; an elongated, tubular and externally threaded shaft threadably engaged in said nut and extending in and movable in a vertical direction, hydraulic motor power means located within and adjacent the outer end of said outrigger, a gear reducer connected to and driven by said motor, said nut and said power means mounted on a supporting bracket which is located within and secured to the outer end of said outrigger, a sprocket carried by an output shaft of said gear reducer of said power means and another sprocket fixed to said large nut, and an endless chain trained around both of said sprockets for providing driving power from said power means to said nut to rotate the latter, said power means being reversible, whereby said nut may be driven in either direction of rotation to cause said threaded shaft to rise and fall to any one of a number of selected vertical positions between a lower ground engaging, crane stabilizing position and an upper position free of the ground, the upper end of said threaded shaft when in the ground engaging position not extending appreciably above said outrigger, a torque bar carried by and at the end of said outrigger and which is vertically positionable with respect to said outrigger and connecting means between said torque bar and said threaded shaft to prevent rotation of the latter as said nut is rotated to thereby cause said threaded shaft to move in a vertical direction.

4,386,712

SAFETY CLOSURE WITH LINER

Robert C. DeWallace, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 6, 1981, Ser. No. 280,753
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—211 **7 Claims**



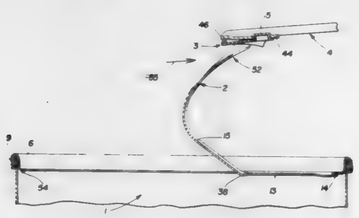
1. A closure for a container having a neck including a radial annular rim surface defining the container opening, comprising, in combination, a closure body having a top panel and a sidewall depending therefrom, said sidewall having means for securing said closure body to the neck of said container and a circumferential retainer rib defining a retaining channel adjacent said top panel, a liner disposed within said retaining channel, said liner including a planar circular disk and a depending plug defined by a cylindrical wall normal to the underside of said disk and coaxial with the center axis of said disk for sealing engagement with said neck below the opening of said container, said cylindrical wall having a straight inner surface and a compound tapered outer surface, the first tapered region of said outer surface adjacent said disk being of a diameter to fit and seal inside the neck opening of the container below said rim and the lower tapered region being a frusto-conical surface smaller than the opening of the container, and an annular V-shaped rib depending from the underside of said disk concentrically about said cylindrical wall and located for sealing engagement on said rim surface of the container neck.

4,386,713

FULL OPENING STEEL CAN END CONSTRUCTION

Phillip E. Baumeyer, North Canton; Karl O. Frentzel, Canton; William A. Kirk, Clinton, and Gary L. Manack, Brewster, all of Ohio, assignors to Van Dorn Company, Cleveland, Ohio

Filed Feb. 24, 1982, Ser. No. 351,869
Int. Cl.³ B65D *17/34*
U.S. Cl. 220—269 **9 Claims**



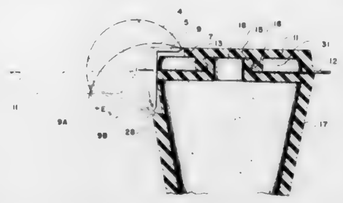
1. In a metal can end of a type having a seam flange adapted to be connected by seam means to a food products can body and having a recessed corner located below the seam flange with an end wall extending inward from the recessed corner, and having a triple fold formation extending entirely around the end wall, with a score line located close to said recessed corner and extending around the end wall in the top layer of the triple fold defining a removable panel portion in the end wall, with the triple fold forming a protective peripheral edge on the panel portion when torn along the score line by an aluminum pull tab connected by a rivet formed integrally in the panel portion and located close to the score line, and with the removable panel portion of the end wall extending flatwise inward in the plane of the bottom layer of the panel portion protective peripheral triple fold formation, the pull tab having a flat nose bottom wall with an opening formed in its rear portion through which the rivet extends when the pull tab is staked to the removable panel portion and with a stepped tip formed at its front terminal portion and with its flat bottom wall held flatwise around the rivet by the rivet in contact with the flatwise extending panel portion when staked by the rivet to the panel portion; wherein the improvement comprises an annealed, tempered, tin-free steel can end; the pull tab stepped tip engaging the triple fold formation at an inner portion of the top layer of the triple fold where it curves downwardly to join the middle triple fold layer; the outer end of the stepped tip overlying the score line; and a moustache cut formed in the upper surface of the flatwise extending panel portion close to the rivet and encompassing the rear and sides of the rivet and terminating in wings lying laterally in front of the front portion of the rivet.

4,386,714

CONTAINER COVER ASSEMBLY

Louise Roberto, 864 Rockland Ave., and Stephen Casale, 70 Sommer Ave., both of Staten Island, N.Y. 10314

Continuation-in-part of Ser. No. 193,204, Oct. 2, 1980, abandoned. This application Feb. 16, 1982, Ser. No. 348,699
Int. Cl.³ B65D *43/14, 51/04*
U.S. Cl. 220—339 **5 Claims**



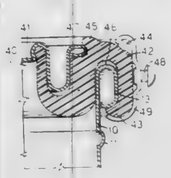
1. A cover assembly adaptable for fastening to a container formed of flexible plastic material, comprising
a hollow neck section that may be fitted to the mouth of a container,
a cap section pivotally mounted to the neck section by resilient hinge means, said hinge means shaped and located so as to be elastically deformed and to provide a spring bias so as to alternatively maintain the cap section in either a fully open position or a fully closed position, said cap section formed with an internal flat surface,
said neck section formed with an annular flange bounding a central opening at the exterior end of the neck section, with said opening communicating to the hollow interior of the neck section and the mouth of a container to which the neck section may be joined,
said annular flange formed with an external flat surface that engages, in sealing relation, the internal surface of the cap in the fully closed position of the cap to the neck section so as to seal the central opening of the neck section in the fully closed position of the cap section to the neck section,
together with elastic means to maintain the cap normally in the fully closed position, in which
a first upraised neck sleeve section extends from the flange of the neck section to bound the neck central opening, and in which
a second upraised cover sleeve section extends from the internal surface of the cap section, said second cover sleeve section formed with a blind central opening bounded by an interior wall of a shape and size to fit about the first neck sleeve section, in the closed position of the cap, where
said first neck sleeve section terminates in an annular flange that forms a projecting rim of a greater diameter than the minimum diameter of the central opening of the second cover sleeve section, and said second cover sleeve section is formed with an annular slot concentric to and communicating with said central opening, said slot of a diameter at least that of the said annular flange of the neck sleeve section, with said slot located substantially at the junction of the second cover sleeve section and the internal surface of the cap section,
such that said annular flange serves to both wipe against the surface of the interior wall of the cover sleeve section during closure of the cap section to the cover section so as to wipe any extruded contents of a container to which the assembly is fastened and to force such wiped contents back into the container through the neck central opening and to latch the cap section to the neck section when the annular flange of the cover section is engaged on the annular slot of the cap section.

4,386,715

CONTAINER

Clifton G. Morton, 4 Stella St., Holland Park, Australia (4121)

Division of Ser. No. 98,872, Nov. 30, 1979, Pat. No. 4,285,188, which is a division of Ser. No. 963,610, Nov. 24, 1978, Pat. No. 4,220,254. This application Apr. 28, 1981, Ser. No. 258,397
Claims priority, application Australia, Nov. 25, 1977, PD2561
Int. Cl.³ B65D *43/06*
U.S. Cl. 220—354 **1 Claim**



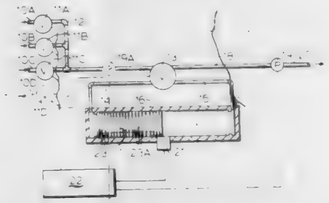
1. A container assembly comprising
(a) a substantially frusto-conical body having sidewalls, a closed bottom and a hollow bead formed at the top of said sidewalls, the outer face of said bead being spaced substantially from the plane of said sidewalls, the frusto-conical shape of said body permitting interfitting of a plurality of bodies for stacking and storage purposes.
(b) a separate top ring formed of resilient plastic material and adapted to be shipped separately from said body and applied thereto after the container has been filled, said top ring being formed with an outer annular inverted channel adapted to extend over and around said bead but spaced from the top thereof so as to form a space into which sealing compound can be placed before said top ring is secured to said body and bead, said ring being further formed with an inner annular channel open at its top, the sidewalls of said inner channel being substantially spaced to receive a downwardly projecting annular section of a separate friction-fit lid, said outer inverted channel being formed at the top thereof with a plurality of arcuately spaced lid-retaining projections, and
(c) a separate friction-fit lid having an annular downwardly turned peripheral channel adapted to extend into and be frictionally retained by said inner channel of said top ring, and a bead extending laterally outwardly at the top thereof and adapted to engage under said projections and be resiliently retained thereby when said lid is fully closed, said lid thus being adapted to be either shipped and/or stored separately from said top ring or frictionally engaged therewith for mounting the same to said body and hollow bead after the container body has been filled.

4,386,716

LIQUID MEASURING DEVICE

Robert T. Buck, Raleigh, N.C., assignor to Becton Dickinson and Company, Paramus, N.J.

Continuation-in-part of Ser. No. 72,828, Sep. 6, 1979, abandoned, which is a continuation-in-part of Ser. No. 880,423, Feb. 23, 1978, abandoned. This application Feb. 3, 1981, Ser. No. 231,082
Int. Cl.³ B67D *5/22*
U.S. Cl. 222—37 **6 Claims**



1. A liquid measuring device comprising:
a cylinder having closed input and output ends with connections for passage of fluid therethrough;
a double-acting free-floating piston sealed within the cylinder and movable between said ends of the cylinder;
a pump for feeding fluid into and out of the cylinder;
a fluid source having an on-off input valve for the fluid to be fed into the cylinder;
a four-way valve connected to the pump, both ends of the cylinder and the input valve, whereby, depending on the setting of the four-way valve, the pump applies pressure to either end of the cylinder, moves the piston from the input end to the output end of the cylinder and pumps fluid from the output end and whereby, when the input valve for the fluid is open, movement of the piston feeds the fluid into the input end of the cylinder;
transducer means associated with the piston and cylinder having an output variable with respect to linear displacement, whereby the movement of the piston within the cylinder is accurately measured with respect to the length of the cylinder;
microprocessor means for sensing the lateral movement of the piston and forming a representative signal of the volume of liquid within the cylinder; and
connections from the microprocessor means to actuate the pump, input valve and four-way valve whereby, when the predetermined amount of fluid has been introduced into the cylinder the input valve is shut off, the piston direction is reversed and the fluid is dispensed from the cylinder.

4,386,717

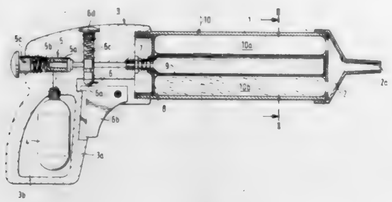
DISPENSER HAVING HOSE-LIKE EXPANDABLE MEMBER

Friedrich Koob, Munich, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Nov. 18, 1980, Ser. No. 208,036
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949368
Int. Cl.³ G01F *13/00;* **F04B** *9/08*
U.S. Cl. 222—94 **7 Claims**

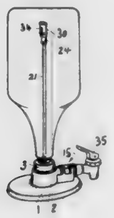
1. Device for the measured discharge of a single or a multiple component adhesive, sealing, filling, or putty-like substance comprising an axially extending tubular container for holding the substance, said container having a first end from which the substance is discharged and a second end, said container having an inlet opening in the second end thereof for admitting an expanding medium to the container for displacing

the substance out of the container, an expandable hose-like member located within said container and arranged to be in pressure transfer contact with the substance located within said container, said hose-like member extending from the second end toward the first end of the container, and means for



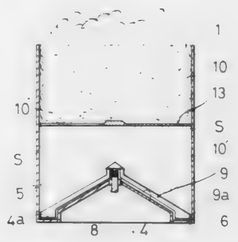
introducing an expanding medium into said hose-like member so that said hose-like member expands and exerts a pressing action the substance within the container for displacing the substance from the first end of the container, and said hose-like member having a decreasing elasticity in the direction from the second end toward the first end of said container.

4,386,718
LIQUID DISPENSING MEANS WITH NOVEL AIR BLEED VALVE
David P. J. Stewart, and Richard M. Bonnin, both of 47A Penrose St., Lane Cove, Sydney, N.S.W., Australia (2066)
Filed Oct. 30, 1980, Ser. No. 202,121
Claims priority, application Australia, Jul. 8, 1980, PE4432
Int. Cl.³ B67D *3/00*
U.S. Cl. 222—185 **7 Claims**



1. Dispensing means for liquid, said dispensing means comprising a base, a boss on the base, a stepped bore in the boss, means in a first part of the bore at the upper end of the boss for engaging the neck of an inverted liquid container, a shoulder where the bore decreases in size from the first bore part to a second bore part, sealing means in the shoulder encircling the second bore part, a lateral port extending from the second bore part to atmosphere, a nose on the boss through which said port exits to atmosphere, a third bore part, an elongated tubular stem externally sealingly engaged in the third bore part and extending through the second and first bore parts, air bleed means from atmosphere to the third bore part so as to place the bore of the stem in communication with the atmosphere, and a one way valve means on the other end of the stem to permit air entering the stem through the air bleed means to exit through the one way valve, said one way valve comprising a sleeve made of resilient material closed at one end and open at the other end, a longitudinal cut in the sleeve for part of its length to provide face to face sealing contact of the sides of the cut, a tubular adapter externally sealingly engaged on the said other end of the stem, a fluid tight connection of the open end of the sleeve to the adapter so as to position part of the adapter inside the sleeve, an external enlargement on the adapter behind and closely adjacent the cut in the sleeve to prevent inwards deflection of the sleeve at the cut.

4,386,719
CONSTANT FEED APPARATUS
Nobuo Serizawa, 7-3, Oyamadai 2-chome, Setagayaku, Tokyo, Japan
Filed Jul. 9, 1980, Ser. No. 167,215
Claims priority, application Japan, Jul. 10, 1979, 54-87193
Int. Cl.³ B65D *83/06;* **B65G** *53/16*
U.S. Cl. 222—242 **5 Claims**

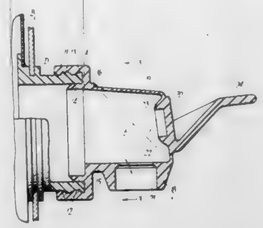


1. A constant feed apparatus for feeding a dry powdery, fibrous or like material, comprising a straight tubular housing having a circumferential wall and a bottom wall, at least one rotary arm rotating in said tubular housing and having a lower edge moving in proximity to said bottom wall and to the lower end of said circumferential wall said tubular housing having a discharge opening in a portion of the housing wall along which said rotary arm moves, such that rotation of said rotary arm discharges material from the bottom of said tubular housing through said discharge opening, and a transverse frame means, extending across said housing and spaced above said rotary arm, and having therethrough sufficient openings across generally the entire area of the housing such that the material above said frame means is caused to form a soft bridge across said tubular housing at said frame means and thereby remove the weight of said material above said frame means for said rotary arm, and such that upon discharge of sufficient of the material beneath said frame means to create a space just beneath said frame means, additional of the material is allowed to pass downwardly through said openings in said frame means.

4,386,720
ONE-PIECE PLASTIC TAP
Robert Speedie, Frankston, Australia, assignor to Illinois Tool Works Inc., Chicago, Ill.
Continuation of Ser. No. 120,601, Feb. 12, 1980, abandoned.
This application Jan. 22, 1982, Ser. No. 343,622
Claims priority, application Australia, Feb. 19, 1979, PD7731; Jan. 9, 1980, PE1946
Int. Cl.³ B65D *47/20, 43/24*
U.S. Cl. 222—498 **16 Claims**

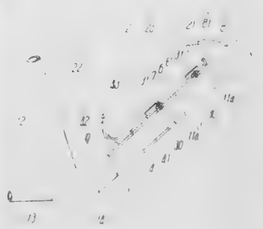
1. A one piece plastic tap including a substantially continuous hollow barrel open at one end, closed at its opposite end, and having a side wall with a laterally disposed outlet opening, means at the one open end of the barrel for communicating with and attaching said barrel to a container for liquid, plug means extending into the interior of said barrel and carried by the closed opposite end of said barrel, said barrel side wall including a first portion having a substantially rigid wall section that encompasses said attaching means at said one end and said lateral opening and a second portion having a thin-walled flexible diaphragm-like wall section, said flexible second portion adapted to move with a snap action from an initial open position to a closed position and from said closed position to said open position on opposite sides of a dead-center position a seat around said lateral outlet opening engaged by said plug

means when said second portion is in the closed position to shut off the flow of liquid through the tap, and integral control



means on the exterior of said barrel adjacent said opposite end for initiating movement of said second portion between said open and closed positions.

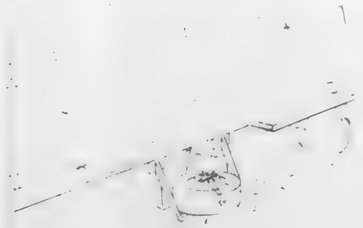
4,386,721
FIXTURE FOR A WATER BOTTLE TO A BICYCLE FRAME
Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed Jun. 9, 1981, Ser. No. 272,043
Claims priority, application Japan, Jun. 25, 1980, 55-89766[U]
Int. Cl.³ B62J *11/00*
U.S. Cl. 224—39 **5 Claims**



1. A fixture for mounting a water bottle on a bicycle frame comprising:
(a) a fixing member fixed to said frame;
(b) a support member supported to said fixing member and detachably engaging with said water bottle to support said water bottle; and
(c) a pair of skirts mounted on said fixing member and contacting with both lateral surfaces of said water bottle supported to said support member and both lateral surfaces of said frame to thereby cover recessed gaps produced between said water bottle and said frame.

4,386,722
VEHICLE SPARE TIRE HOLDER
R. Nelson Gearhart, P.O. Box 415, Liberal, Kans. 67901
Filed May 22, 1981, Ser. No. 266,445
Int. Cl.³ B65D *43/04*
U.S. Cl. 224—42.23 **5 Claims**

1. A vehicle spare tire holder for receiving and securing a spare tire mounted on a wheel, the tire holder comprising:
a frame adapted for receiving the spare tire and wheel thereon;
an air operated cylinder mounted on the frame, the cylinder having a push rod extending outwardly therefrom when air pressure is applied to the cylinder;
wheel gripping means for engaging the sides of the wheel, a portion of the gripping means received through the center of the wheel releasably attached to the push rod, the wheel



gripping means securing the tire and wheel on the frame when air pressure is relieved from the air cylinder.

4,386,723
FIREARM SLING ATTACHMENT
Carmine P. Mule, 596 Lake Dr. East, Lake Peekskill, N.Y. 10537
Filed May 26, 1981, Ser. No. 267,398
Int. Cl.³ A45F *5/02;* **F41C** *33/00*
U.S. Cl. 224—150 **8 Claims**

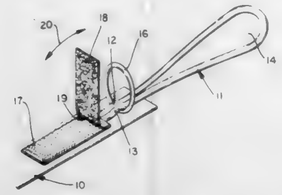


1. A firearm sling device for mounting to a user's garment comprises:
a channel member which surrounds a small segment of the sling which is affixed at its ends to the firearm and through which the sling is free to move, the exterior surface of said member facing towards the firearm having a plurality of small plastic hooks, and,
a patch detachably mounted to the user's garment having a plurality of mating eye portions on the outer surface thereof to engage the hooks on the channel member whereby the sling slides longitudinally through the channel member as the user changes position but at the same time maintains the firearm securely in position so that the user's hands are free and yet permits rapid unslinging of the firearm by forcing the hooks and eyes apart.

4,386,724
CAMERA STRAP
Norman L. Kotler, 6420 Colewood Ct., Atlanta, Ga. 30328
Filed Feb. 22, 1982, Ser. No. 351,771
Int. Cl.³ A44B *15/00*
U.S. Cl. 224—255 **12 Claims**

1. A support strap for supporting cameras and the like from the human body comprising a flexible strap, a flexible loop string connected to said strap, and a pair of matable hook and loop strips, with the first of said hook and loop strips attached in flat abutment to said strap and the second of said hook and loop strips mounted to pivot toward and away from the first

hook and loop strip to overlap and connect to and open and disconnect from said first hook and loop strip, a ring member pivotably mounted to said strap with the portion of said ring member remote from the pivot portion thereof being pivotable into the overlap of said hook and loop strips so that said hook and loops can be pressed together to hold said ring member,



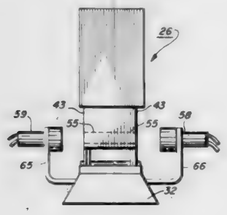
whereby the free end portion of the flexible loop string first is extended through the opening of a camera support ring or the like and then is looped about the ring member, the ring member is pivoted toward the first of the hook and loop strips, and the other of the hook and loop strips is connected to the first of the hook and loop strips with the ring extending through the overlap of the hook and loop strips.

4,386,725

STAPLER APPARATUS WITH MEANS TO DETERMINE STAPLE SUPPLY

James E. Chambers, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 3, 1980, Ser. No. 203,741
Int. Cl.³ B27F *7/00, 7/34*
U.S. Cl. 227—2 **2 Claims**



2. In a printing machine having a stapler apparatus being movable between an inoperative position and a work position and having a staple magazine for holding a supply of staples in stick form movably related to a staple drive member during a stapling operation, the magazine being provided at an end thereof with staple dispensing means; an anvil member; and a base member for supporting the anvil; the anvil member and the staple dispensing means being adapted to cooperate to permit individual ones of the staples to be dispensed toward and against the anvil member during a stapling operation, the improvement including:

means for producing the transmission of light through the magazine when a predetermined number of staples are present therein; and

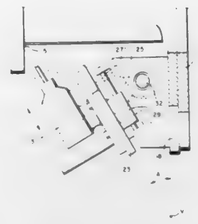
means for mounting said means for directing light rays and said means for producing a signal to the base member of the apparatus to be movable therewith.

4,386,726

ADAPTER FOR SOCKET WELDS

James T. Taff, Simi Valley, Calif., assignor to Dimetrics, Inc., Diamond Springs, Calif.

Filed Nov. 28, 1980, Ser. No. 211,358
Int. Cl.³ B23K *37/02*
U.S. Cl. 228—29 **1 Claim**



1. An adapter for socket welds including, in combination:

(a) a mounting plate for securement to a weld head carriage;

(b) a movable plate forming an acute angle with said mounting plate for carrying a welding torch;

(c) left and right mounting fixtures having flat bottom edges secured to said mounting plate and top portions supporting in sloping relationship left and right guide rods forming said acute angle with said mounting plate;

(d) left and right guide blocks secured to the underside of said movable plate and having bores receiving said rods to constrain said movable plate to movement parallel to said rods;

(e) driving means for positively moving said movable plate along said guide rods comprising:

(1) left and right rack members secured to the underside of said movable plate respectively adjacent to the inside faces of said left and right fixtures, and

(2) a single elongated pinion mounted by and extending between said left and right fixtures to bridge said racks with pinion teeth in meshing engagement with the rack teeth so that rotation of said pinion simultaneously drives both said racks to effect movement of said movable plate in its own plane further from and closer to the vertex of said acute angle; and

(f) a servo motor mounted on said mounting plate and coupled to said pinion for rotating the pinion whereby a torch carried on the movable plate can be moved closer to and further from a socket area to be welded to assure an optimum weld for the socket area.

4,386,727

PREVENTION OF BUILD UP OF RESIDUAL STRESSES IN WELDS DURING WELDING AND SUBSEQUENT REHEAT CYCLES

Madhav A. Unde, 3606 Lake Forest Dr., #7, Omaha, Nebr. 68164

Filed May 23, 1980, Ser. No. 152,625
Int. Cl.³ B23K *28/00*
U.S. Cl. 228—102 **9 Claims**

1. A process for applying stress cycles during welding comprising the steps of:

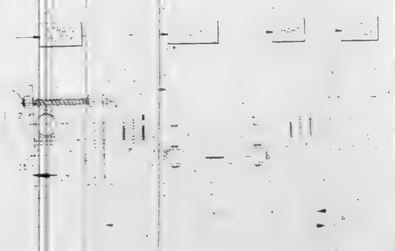
(a) providing a vibration producing device for applying stress to s specimen plate:

(b) attaching said device to a specimen plate on which two studs are welded to a surface opposite to a surface on which a weld is made, said studs being adapted to carry a strain gage assembly;

(c) suspending the specimen plate between two brackets in order to substantially reduce the loss of energy of stress to objects other than the suspended specimen plate;

(d) mounting a strain gage to said studs for measuring residual stresses generated during a welding operation;

(e) applying stress cycles to said specimen plate while performing a welding operation thereon and monitoring residual stresses generated therein during the welding operation; and



(f) cooling said strain gage throughout said welding operation.

4,386,728

HERMETIC SEALING OF ABUTMENT JOINTS BY NON-VACUUM FOCUSED ENERGY WELDING

George E. Torok, Clarence, N.Y., and Ernest Gajdusek, Jr., Lemoyne, Pa., assignors to Houdaille Industries, Inc., Fort Lauderdale, Fla., by said George E. Torok and Leybold-Heraeus Vacuum Systems, Inc., Enfield, Conn., by said Ernest Gajdusek, Jr.

Filed Apr. 15, 1981, Ser. No. 254,288
Int. Cl.³ B23K *26/16, 33/00*
U.S. Cl. 228—111 **14 Claims**



1. A method of hermetically sealing by NVFE (non-vacuum focused energy) welding, an abutment joint formed by two elongate surfaces comprising:

providing at substantially spaced intervals narrow shallow vent grooves across one of said surfaces while leaving between said vent grooves separating lengths of said one surface and each of which lengths extends between a pair of the grooves many times the groove width;

effecting substantially uninterrupted abutment joint contact of said surfaces along each of said lengths;

NVFE welding the abutment joint in a continuous unidirectional pass therealong;

venting gases from the abutment joint through the successive vent grooves as said welding progresses continuously along said joint;

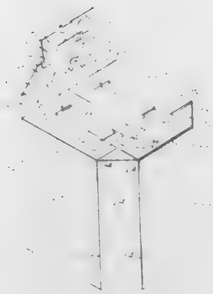
and continuously after the venting of the gases at each of the successive vent grooves, sealing each vent groove by said NVFE welding without interrupting the welding progression.

4,386,729

SELF-LOCKING DESIGN FOR OCTAGONAL CONTAINER

Dennis A. Schmidt, Fond du Lac, Wis., assignor to International Paper Company, New York, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,473
Int. Cl.³ B65D *5/10*
U.S. Cl. 229—39 R **8 Claims**



1. An octagonal container comprising a body section and a closure section,

the body section comprising a pair of major wall panels, a pair of minor wall panels, and four corner wall panels, each of the corner wall panels being foldably connected to a minor wall panel along one edge and to a major wall panel along the opposite edge so that the major and minor wall panels are foldably connected in alternating series by the corner wall panels;

the closure section comprising a pair of major cover flaps, a pair of minor cover flaps, and four corner flaps,

each of the corner flaps being foldably connected to and folded inward at right angles to a corner wall panel;

each of the major cover flaps being foldably connected to and folded inward at right angles to a major wall panel in externally overlapping relation to the two adjacent corner flaps, and, each of the minor cover flaps being foldably connected to and folded inward at right angles to a minor wall panel in externally overlapping relation to the two adjacent corner flaps and the major cover flaps;

wherein the improvement comprises: a pair of integral locking tabs located in parallel, spaced relation to one another on each of the minor cover flaps, each locking tab being defined by slit lines extending across the central portion of the flap and being joined to the flap at the end of the locking tab furthest from the foldable connection between the flap and the adjacent minor wall panel, whereby each such locking tab extends inwardly from the junction joining tab and flap, and toward the foldable connection between the flap and the adjacent minor wall panel; and,

a pair of slots located in spaced, substantially parallel relation to one another on each of the major cover flaps, each of the slots being aligned with and adapted to receive a locking tab in an abutting minor cover flap,

and each locking tab being inserted into one of the slots whereby each major cover flap is caught between the two minor cover flaps on the outside and a pair of locking tabs on the inside to form a secure closure.

4,386,730

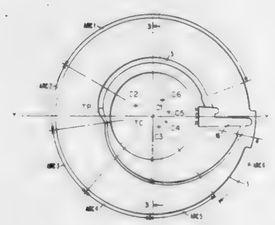
CENTRIFUGE ASSEMBLY

Alfred P. Mulzet, Endicott, N.Y., assignor to International Business Machines Corporation, Endicott, N.Y.

Continuation of Ser. No. 926,676, Jul. 21, 1978, abandoned. This application Jul. 16, 1981, Ser. No. 283,856

Int. Cl.³ B04B *11/00*

U.S. Cl. 494—81 **10 Claims**



1. A disposable elongated container of semirigid material for use in a centrifuge, said container having first and second ends, a first portion of said container being adapted to have a circular-like configuration and a second portion of said container being adapted to have a spiral-like configuration with an increasing radius,

a transisition portion connecting the terminal end of the first portion with the initial end of the second portion, said initial end of the second portion being adapted to be located radially inward of the terminal end of the first portion,

a plurality of fluid connections to the first end of said elongated container for introducing fluid near the inner wall and for withdrawing the component of said fluid which accumulates beyond the inlet,

at least one fluid connection to the second end of said elongated container for withdrawing the remaining fluid,

whereby some of the fluid that enters at the first end of said container counterflows back to said first end and exits at said first end while the remaining fluid exits at said second end.

4,386,731

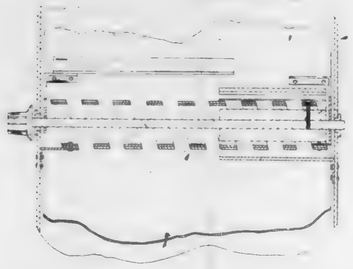
DAMPER CONSTRUCTION FOR A GAS FIRED COMBUSTION APPARATUS

James T. Barth, 3082 Pine La., Wisconsin Rapids, Wis. 54494

Filed Nov. 12, 1981, Ser. No. 320,319

Int. Cl.³ G05D *23/08*

U.S. Cl. 236—1 G **5 Claims**



1. A thermally controlled damper for a gas fired combustion apparatus, comprising,

a stack connected to the combustion apparatus and adapted to conduct waste gases of combustion,

a damper pivotally mounted within the stack and being movable from a normally closed position to an open position,

a thermally responsive means disposed in the stack on the upstream side of the damper for opening and closing said damper in response to predetermined operation of the combustion apparatus,

said thermally responsive means comprising an elongated shaft rotatably mounted in said stack and extending thereacross, said shaft having first and second ends, said damper being operatively secured to said shaft, a helical bi-metal means embracing said shaft between the ends thereof and comprising first and second bi-metal elements secured together in an end-to-end relationship, each of said bi-metal elements having first and second ends, said first end of said first bi-metal element being operatively secured to said stack,

a first heat sink means mounted on and secured to said shaft adjacent its said second end,

said second bi-metal element embracing said first heat sink means and having its said second end operatively secured to said shaft,

and a second heat sink means embracing said second bi-metal element and spaced therefrom,

said first and second bi-metal elements being oppositely disposed whereby said first bi-metal element urges said damper to its open position when said first bi-metal element is subjected to a predetermined temperature and whereby said second bi-metal element yieldably urges said damper towards its closed position when subjected to a predetermined temperature.

4,386,732

THERMALLY RESPONSIVE VALVE ASSEMBLY

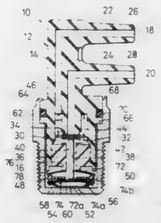
Atsushi Satomoto, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 18, 1981, Ser. No. 244,907

Claims priority, application Japan, Mar. 25, 1980, 55-39761[U]

Int. Cl.³ G05D *23/10*

U.S. Cl. 236—48 R **2 Claims**



1. A thermally responsive valve assembly comprising:

a hollow valve body having two ports;

a valve mechanism in the body interposed between the ports and including a seat and a valve member for closing and allowing communication between the ports;

a pair of first and second dish-shaped bimetallic elements in side by side relation with each other, said second bimetallic element having a central hole formed therein;

a spacer member having a central hole formed therein and a bead edge, said spacer member being interposed between the first and second bimetallic elements in concentric relation with the first and second bimetallic elements;

transfer pin means operatively connecting the first bimetallic element to the valve member by freely passing through the central hole of the second bimetallic element and the central hole of the spacer member;

a first member surrounding the transfer pin means in a freely movable condition for providing an anchoring means for the second bimetallic element around the central hole of the second bimetallic element;

a second member providing a second anchoring means for the second bimetallic element outside of the first member on the same side of the second bimetallic element such that snap lengths of the first and second bimetallic elements cancel each other at a predetermined temperature to thereby provide a series of closed, opened and again closed positions of the valve mechanism in successive steps upon an increasing degree of temperature wherein said valve body includes a first valve member having a single common cavity formed therein in which the first and second bimetallic elements are disposed for maintaining alignment of the assembly, said second bimetallic element is movable in said cavity, and said spacer member is movable in conformity with snap over operation of said first and second bimetallic elements; and

resilient means for resiliently supporting the first bimetallic element, interposed between the first bimetallic element and a wall portion of the first valve body part wherein the first valve body part further comprises a first valve body part of thermally conductive material and further comprises a wall portion exposed to ambient temperature and an externally threaded portion for being screwed into a tapped bore for installation and wherein the valve body further comprises a second valve body part and wherein the second valve body part further comprises a glass fiber filled nylon and having said two ports formed therein as a unit, the first valve body part having said cavity formed therein adjacent to an end portion of the first valve body part, and wherein said second valve body part further comprises a bushing member anchored therein by press fitting, the bushing member forming said first anchoring means in a face portion thereof adjacent the second bimetallic element at a peripheral edge portion thereof.

4,386,733

AIR CONDITIONING SYSTEM

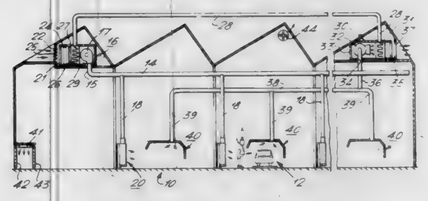
Norman F. Bradshaw, Richmond, England, assignor to Carrier Drysys Limited, Great Britain

Division of Ser. No. 906,749, May 17, 1978, Pat. No. 4,284,236. This application Nov. 14, 1980, Ser. No. 206,762

Claims priority, application United Kingdom, May 18, 1977, 20935/77

Int. Cl.³ F24F *7/00*

U.S. Cl. 236—49 **14 Claims**



1. An air conditioning system for conditioning the air at each of a plurality of locations, said system comprising monitoring means provided at each location for monitoring parameters of the environment at that location, each of said monitoring means comprising at least two sensors, each of said sensors being arranged to sense a different parameter of the environment at the associated location and to produce an output signal dependent upon the sensed parameter, and air delivery means provided at each location, each air delivery means being adapted to be connected to receive air from a common input air delivery device and arranged to deliver air to its associated location, and each of said air delivery means being responsive to the output signals of the monitoring means at that location, the sensors of at least one of the monitoring means comprising an infrared thermometer responsive to radiant heat at the associated location and a pollutant sensor responsive to pollutants in the air at the associated location.

4,386,734

DEVICE FOR OPERATION OF A FLUID CIRCUIT

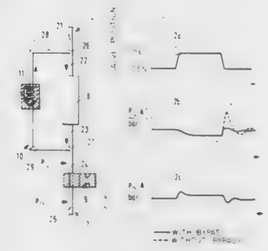
Reinhold Weible, Stuttgart, Fed. Rep. of Germany, assignor to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Oct. 24, 1980, Ser. No. 200,511

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1979, 2943064

Int. Cl.³ F28F *13/06*

U.S. Cl. 237—12.3 B **11 Claims**



1. A fluid circuit, comprising:

a heat exchanger having a fluid inlet and a fluid outlet;

a primary fluid flow line having a first section coupled with said fluid inlet and a second section coupled with said fluid outlet;

means, including an on-off control valve located in said primary fluid flow line, for abruptly terminating the flow of fluid through said heat exchanger upon closure of said control valve, whereby pressure peaks are produced in said primary fluid flow line and in said heat exchanger in response to abrupt termination of the fluid flow;

a bypass fluid flow line connected in parallel to said heat exchanger to provide fluid between said first and second sections bypassing said heat exchanger; and

means, including a valve positioned in said bypass line, for selectively permitting fluid flow in said bypass line in the direction of said fluid inlet only in response to closure of said control valve, whereby said pressure peaks are dissipated by the fluid flow in said bypass line.

4,386,735

APPARATUS FOR HEATING AN OPERATOR'S CABIN

Paul Tholen, Gladbach, and Achim Z. Nieden, Cologne, both of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Jan. 16, 1981, Ser. No. 225,610

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1980, 3001564

Int. Cl.³ B60H *1/02*

U.S. Cl. 237—12.3 R **21 Claims**

1. Apparatus for heating the operator's cabin of a machine driven by an internal combustion engine having an oil sump, said apparatus comprising:

a high-pressure lubricating oil pump having a suction and a discharge;

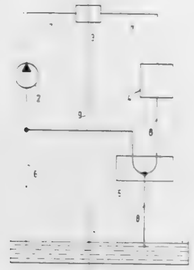
first conduit means for hydraulically interconnecting said suction and said sump;

a load element having an inlet connection and an outlet connection and operable to heat oil passing therethrough;

second conduit means hydraulically interconnecting the discharge of the pump and the inlet connection of the load element;

fluid to air heat exchanger means adapted for mounting in said cabin for heating air in the latter, said exchanger having inlet and outlet heating oil connections;

conduit structure for hydraulically interconnecting the outlet connection of the load element and said sump, said conduit structure comprising a third conduit means hydraulically interconnecting the outlet connection of the load element and the inlet connection of the exchanger means and a fourth conduit means for hydraulically interconnecting the outlet connection of the exchanger means and said sump; and



adjustable flow apportionment means positioned in said conduit structure for selectively apportioning the flow of heated oil downstream from said load element between a shunt stream and a sump return stream for introducing heat from said shunt stream into the oil at the pump suction to a predetermined temperature level above an initially low temperature level of the sump oil, said flow apportionment means being arranged such that said sump return stream is directed to the sump through the conduit structure, and such that heat is delivered to said heat exchanger means at said predetermined temperature level.

4,386,736

ELECTRICALLY INSULATED RAIL JOINT CONNECTION

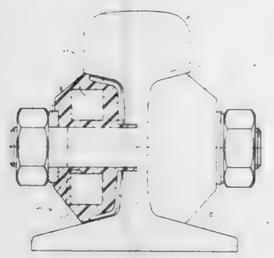
Walter Benkler, Wohlerstrasse 22, CH-5612 Villmergen, Switzerland, and Werner Hartmann, Kirchgasse 9, 8990 Lindau (B), Fed. Rep. of Germany

Filed Dec. 15, 1980, Ser. No. 216,306

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007204

Int. Cl.³ F01B *11/054*

U.S. Cl. 238—159 **7 Claims**



1. An electrically insulated rail joint for longitudinally-extending rails each having a rail foot and a rail head interconnected by a rail web forming a profiled rail face and having two electrically insulating plastic fishplate bodies located on opposite sides of the rail webs with the one of said electrically insulating plastic fishplate bodies extending over the rail joint and secured to the rails by bolts passing through bores in the other of said electrically insulating plastic fishplate bodies and the rail web, characterized by each electrically insulating plastic fishplate body being formed as one integral piece having plural, substantially vertical, longitudinally-spaced, integral ribs extending perpendicular to the longitudinal direction of said rail and projecting toward and engaging the rail web and the inner faces of the rail head and foot, and a longitudinally-extending steel reinforcement member embedded and enclosed within each of said electrically insulating plastic fishplate body.

4,386,737

FLAME GUNITING LANCE

Veniamin V. Antonov, ulitsa Ogloblina, 6, kv. 43; Evgeny D. Shtepa, ulitsa Artema, 76, kv. 35; Alexandr P. Krivenko, ulitsa Elevatornaya, 19, kv. 81; Adelaida L. Kurbatova, ulitsa Druzhkovskaya, 9, kv. 19; Ivan R. Vedkalov, ulitsa Universitetskaya, 2, kv. 25; Viktor M. Chervonenko, ulitsa Artema, 179, kv. 40; Anatoly A. Yarmal, bulvar Shkolny, 18, kv. 61, all of Donetsk; Semen A. Donskoi, ulitsa Baiseintovoi, 13, kv. 12, Temirtau; Vladimir A. Korotky, ulitsa 8 Marta, 54, Donetskaya oblast, Volodarsky raion, Kalchik; Jury I. Zhavoronkov, prospekt Lenina, 8, kv. 22; Vadim I. Germanov, 6 mikroraion, 29, kv. 34, both of Temirtau; Alexei S. Kornienko, prospekt Nakhimova 66, kv.22, Zhdanov; Pavel A. Kaduba, prospekt Mettallurgov, 47, kv. 75, Zhdanov; Anatoly A. Chvilev, bulvar Shevchenko, 247, kv. 95, Zhdanov; Edvin I. Gamalei, ulitsa Baiseitovoi, 23/1, kv. 11, Temirtau; Fedor E. Dolzhenkov, bulvar Pushkina, 27, kv. 29, Donetsk; Valentin A. Kulichenko, prospekt Lenina, 5, kv. 2, Temirtau; Pavel B. Maikher, Karagandinskoe shosse, 22, kv. 13, Temirtau; Oleg I. Tischenko, prospekt Lenina, 6/2, kv. 2, Timertau, and Galia A. Atlasova, ulitsa Lesnaya, 8/12, kv. 13, Moscow, all of U.S.S.R.

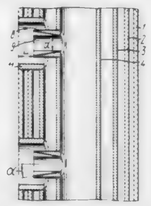
PCT No. PCT/SU80/00017, § 371 Date Jan. 30, 1981, § 102(e) Date Jan. 29, 1981, PCT Pub. No. WO80/02738, PCT Pub. Date Dec. 11, 1980

PCT Filed Feb. 1, 1980, Ser. No. 229,648

Claims priority, application U.S.S.R., May 30, 1979, 2771814

Int. Cl.³ B05B *1/24*

U.S. Cl. 239—79 **10 Claims**



1. A flame guniting lance comprising inner and outer tubes forming a water-cooled casing inside which are concentrically arranged spaced pipes for supplying a powdered mixture of refractory material fuel and for supply oxygen;

said pipes having nozzles for delivering said powdered mixture, fuel and said oxygen;

said nozzles being arranged in pairs longitudinally and concentrically;

said nozzles for delivering said mixture having outlet cross-sections located underneath the outlet cross-sections of the corresponding nozzles for delivering oxygen at a distance equal to 1 to 5 times the inside diameter of said nozzle for delivering said mixture; at least one of said nozzles of each of said pairs being partly or completely other than cylindrical in cross section;

said nozzles for supplying oxygen having openings in the bottom part thereof.

4,386,738

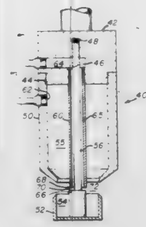
SONIC ATOMIZING SPRAY NOZZLE

Wesley P. Bauver, II, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 2, 1981, Ser. No. 308,003

Int. Cl.³ B05B *3/14*

U.S. Cl. 239—102 **4 Claims**



1. A spray nozzle comprising:

a. a body;

b. an open-ended outer annular shell extending from said body;

c. an open-ended inner annular shell extending from said body and coaxially disposed within said outer annular shell so as to define a first annular passage between said inner and outer shells, said inner annular shell extending from said body for a distance at least equal to the distance said outer annular shell extends therefrom;

d. a resonator cup spaced from the open end of said outer annular shell and disposed substantially coaxially therewith defining a resonator cavity which opens facing the open end of said outer annular shell;

e. a stem extending coaxially through said inner annular shell between said resonator cup and said body so as to define a second annular passage between said inner shell and said stem, said stem having a circumferential lip at a point adjacent but spaced from the open end of said inner annular shell, the lip extending radially outward from said stem to form a circumferential slit between the lip and the end of said inner annular shell, the slit communicating between said second annular passage and the space between said resonator cup and said outer annular shell;

f. atomizing gas-feeding means communicating with said first annular passage; and

g. liquid-feeding means communicating with said second annular passage.

4,386,739

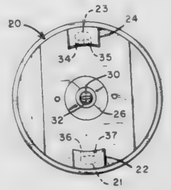
NOZZLE FOR HYDROSTATIC FLUID TIP

Kui C. Kwok, Arden Hills, Minn., assignor to Graco Inc., Minneapolis, Minn.

Filed Dec. 18, 1981, Ser. No. 332,089

Int. Cl.³ B05B *7/08*

U.S. Cl. 239—296 **5 Claims**



1. In a spray gun of the type where pressurized liquid is forced through a generally elliptical orifice in a spray tip to achieve atomization of the liquid, and compressed air is selectively directed against the sprayed liquid through selectively placed air jets in an atomizing nozzle, the improvement in atomizing nozzle construction comprising:

(a) a pair of projecting horns on said atomizing nozzle, said horns extending forwardly of said orifice and each horn having therein an air passage for receiving compressed air; and

(b) a pair of air jets in each of said horns, in flow communication with said air passage and opening toward said elliptical orifice, each of said air jets being aligned along an axis which is normal to the major axis of said elliptical orifice, the axis of each of said pair of air jets being in alignment with the axis of an oppositely facing air jet and passing in proximate tangential relationship to said spray tip.

4,386,740

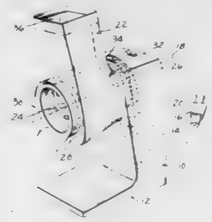
FOOD PROCESSOR

Gary E. Van Deursen, Upper Saddle River, N.J., assignor to General Electric Company, New York, N.Y.

Filed Jun. 11, 1981, Ser. No. 272,674

Int. Cl.³ B02C *18/00*

U.S. Cl. 241—93 **5 Claims**



1. A food processor of the slicer/shredder type comprising,

an L-shaped upstanding base housing with a top and an electric motor therein,

a rotatable generally horizontal shaft in the upper housing portion drivingly connected with said motor and with its axis aligned to extend centrally over the L,

a separate chute offset from the upstanding base and operatively locked to extend above and long enough to substantially fill the space over the L to the top of said base,

a cylindrical hollow cutter disposed in one end of said chute,

a driving connection between said shaft and cutter,

an axially aligned outlet in said chute at and adjacent said cutter,

a clutch around said shaft rotatably connecting said chute and housing and,

control lock means connecting adjacent said clutch

whereby the chute may be partly rotated in one direction from vertical about the shaft for removal and may be rotated substantially 180° in the other direction from vertical for aligning and locking said chute and housing together box-like for compact inoperative storage.

4,386,741

APPARATUS FOR THE MULTIPLE UNWINDING OF WEBS

Peter Weiss, and Georg Schaffner, both of Neuss, Fed. Rep. of Germany, assignors to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Oct. 24, 1980, Ser. No. 200,243

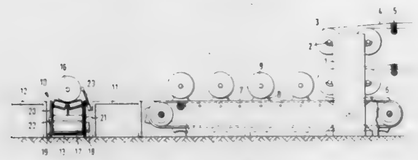
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944265

Int. Cl.³ B65H *19/04, 19/12*

U.S. Cl. 242—58.6 **5 Claims**

1. In an apparatus for the unwinding of multiple webs of the type having an unwinding stand with spaced apart bearing brackets for a plurality of web rolls and means for storing a plurality of web rolls upstream of the stand, the improvement

comprising aligning means upstream of the storing means for aligning each web roll to be stored with respect to its axial and angular positions, wherein the storing means comprises first conveying means for transferring webs rolls aligned by the aligning means to the unwinding stand including a plurality of holding cribs, wherein the holding cribs are spaced apart the same distance as the bearing brackets and hold the web rolls transferred to them in their aligned position and wherein the



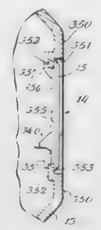
aligning means comprises second conveying means movable perpendicular to the first conveying means and thereby in the axial direction of the web roll to be aligned, and drive control means including a sensor-actuated control device and two spaced apart sensors for moving the second conveying means as a function of the path of displacement of the web roll between the two sensors responsive to the ends of the web roll and stopping the second conveying means when the web roll is in the centered position.

4,386,742

SPINNING REEL HOUSING WITH AN IMPROVED ACCESS OPENING AND REMOVABLE CAP

Elvis W. Moss, Tulsa, and Richard L. Gifford, Adair, both of Okla., assignors to Brunswick Corporation, Skokie, Ill.

Filed Jul. 31, 1981, Ser. No. 289,034
Int. Cl.³ A01K *89/00*
U.S. Cl. 242—84.1 R **10 Claims**



1. In a spinning reel (**10**) having a back housing (**11**) with an opening (**14**) for access into the interior of the reel and having a removable cap (**15**) to seat in and close said opening (**14**), the improvement comprising:

a flange (**352**) within said opening (**14**) providing a seat for said cap (**15**);

said cap (**15**) having at least one lug (**357**) to engage said flange (**352**), said cap (**15**) movable from a first, removable position to a second, closed position where said lug (**357**) traps said flange (**352**) to hold said cap (**15**) to said flange (**352**);

means (**361**) for stopping the movement of the cap (**15**) at said second position;

means (**355,358**) for warping said cap (**15**) at said second position to forcibly secure said cap (**15**) to said flange (**352**) including at least one cam (**358**) on said flange (**352**) engageable by at least one detent (**355**) on said cap (**15**); and

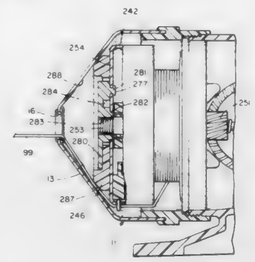
at least one seat (**362**) is provided to hold said detents (**355**) in said second position.

4,386,743

LINE BRAKE FOR SPIN CAST REELS

Elvis W. Moss, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 22, 1980, Ser. No. 218,922
Int. Cl.³ A01K *89/01*
U.S. Cl. 242—84.2 A **8 Claims**



1. In a closed face spinning reel including a front cover, a rear cover and a reel body, the front cover having a conically-shaped portion tapering to a line guide, the reel body having a deck plate with a forwardly extending hub, a center shaft extending axially through the hub along the longitudinal axis of the reel, a spinner head carried on a forward end of the center shaft, a crank drive mechanism mounted on the deck plate for rotating the center shaft, means carried by the reel and contacting the center shaft for selectively moving the center shaft and the spinner head forward relative to the deck plate, and means for urging the center shaft and spinner head rearward relative to the deck plate, the improvement comprising:

(a) line braking means carried by the spinner head,

(b) attaching means loosely fastening the line braking means to the spinner head for limited movement of the line braking means relative to the spinner head in a plane transverse to the longitudinal axis of the reel whereby movement of the spinner head forward in the front cover causes engagement of the line braking means with the inside surface of the conically-shaped portion of the front cover, and wherein the engagement of the line braking means with the inside surface causes the line braking means to shift and properly align and mate the line braking means with the conically-shaped portion,

(c) the attaching means is a retainer secured to he spinner head and having a body portion overlapping a web on the braking means, the body portion of the retainer being spaced from adjacent portions of the braking means to permit the braking means to move relative to the body portion of the retainer,

(d) the retainer is spaced from the spinner head by plural spacing collars, and

(e) the collars are formed on rivets extending from the retainer and being anchored to the spinner head.

4,386,744

COMFORT MECHANISM FOR SAFETY BELT RETRACTORS

Wallace C. Higbee, Romeo, Mich., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 16, 1981, Ser. No. 244,246
Int. Cl.³ A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.7 **5 Claims**

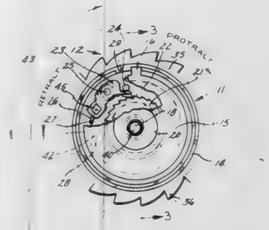
1. A comfort mechanism for safety belt retractors, the retractors including a frame, a webbing storage drum on a shaft supported in the frame and having a rewind motor acting on one of the retractor shaft and lock-out means preventing protraction of webbing under emergency conditions, the combination comprising:

a shallow cylindrical case adapted to be attached to the frame of a retractor and said case having an opening in one side for the projection of said retractor shaft and said case including a stop;

a ratchet keyed to said shaft and resting against said case;

a pawl element normally biased away from contact with said ratchet and said pawl pivotal in said case toward and away from said ratchet for locking said ratchet;

a combination clutch plate and cam element, said cam element extending in an integral skirt to selectively manipulate said



pawl and frictionally rotatable with said ratchet and said combination element limited to less than one revolution by engagement against said stop in said case, said skirt having a gap registrable with said pawl and said skirt urging said pawl to engagement with said ratchet on one side of skirt and away from engagement with said ratchet on the other side of said skirt; and

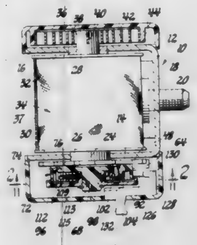
spring means acting coaxially against said shaft and said combination element urging compression contact between said combination element and said ratchet.

4,386,745

TENSION RELIEVER FOR SEAT BELT RETRACTOR

Chimanbhai M. Patel, Troy; Joseph J. Magyar, Rochester, and David N. Lee, Almont, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1981, Ser. No. 291,284
Int. Cl.³ B65H *75/44, 75/48*
U.S. Cl. 242—107.4 B **3 Claims**



1. A seat belt retractor comprising:

a belt reel rotatably journaled on a frame and having a toothed ratchet plate carried by the reel, each tooth including one side facing in the belt unwinding direction and another side facing in the belt winding direction;

a spring biasing the reel in the belt winding direction;

a pawl normally disengaged from the ratchet plate to permit belt winding and unwinding rotation of the reel and movable to an engaged position for engagement by the unwinding facing side of the teeth upon attempted belt unwinding to prevent unwinding rotation of the reel or for engagement by the winding facing side of the teeth upon winding rotation by the spring to prevent winding rotation;

a clutch member mounted for rotary movement relative the reel and operably connected with the pawl to move the pawl to the engaged position upon clutch member rotation in the unwinding direction from a rest position;

coupling means selectively coupling the reel with the clutch member in response to a sensed emergency condition and unwinding reel rotation so that initiation of reel unwinding by occupant restraining load moves the pawl into engagement with the unwinding facing side of the teeth to prevent unwinding reel rotation; and

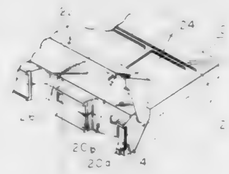
operating means operable to rotate and maintain the clutch member in the belt unwinding direction independently of the coupling means so that the pawl is moved to and maintained in the engaged position for engagement with a winding facing side of one ratchet plate tooth to block belt winding rotation of the reel by the spring so that the belt is held at a tension-free slackened length about the seat occupant.

4,386,746

MAGNETIC TAPE CASSETTE

Masatoshi Okamura; Haruo Shiba, and Kimio Tanaka, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 26, 1980, Ser. No. 210,803
Claims priority, application Japan, Dec. 4, 1979, 54-167913[U]; Dec. 8, 1979, 54-169973[U]
Int. Cl.³ G03B *1/04;* **G11B** *15/32, 23/04*
U.S. Cl. 242—199 **1 Claim**



1. A magnetic tape cassette comprising:

a housing having a first end including a surface defining a tape travel path;

a guard panel movably attached to said housing and positionable in a closed position to protect tape travel path;

a recess at one corner of said guard panel for positioning said cassette in a deck;

a tape guide in one corner of said housing corresponding to said one corner of said guard panel; and

a projection formed on at least one of said one corner of said guard panel and said surface of said housing, said projection extending towards, and contacting, the other of said guard panel and housing when said guard panel is in said closed position;

whereby said projection maintains said guard panel spaced from said tape guide and said tape travel path.

4,386,747

PROJECTILE STABILIZATION FROM SMOOTH BORE BARREL

Raymond D. Kuhl, 134 Aranda St., NE., St. Petersburg, Fla. 33704

Filed Oct. 9, 1981, Ser. No. 310,602
Int. Cl.³ F42B *13/00*
U.S. Cl. 244—3.1 **8 Claims**

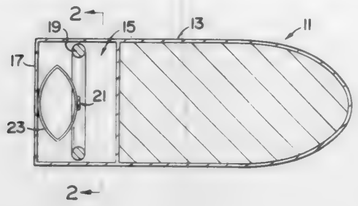
1. A projectile for use with a smooth bore weapon comprising;

an elongated body with a leading edge and a cavity formed at its trailing edge;

a rear base plate attached to said elongated body thereby enclosing said cavity; and

a longitudinally oscillating member disposed within said

cavity, said oscillating member comprising a toroidal mass disposed within said cavity and a spring disposed in interconnecting relation between said rear base plate and said



toroidal mass whereby sudden acceleration of the projectile will result in longitudinal oscillation of said toroidal mass.

4,386,748

AIRCRAFT WITH COUNTERROTATING MEMBERS

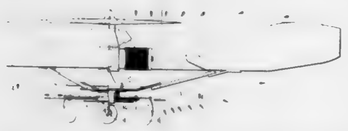
Heinz Jordan, Woelfnitz, Austria, assignor to Technische Geräte -u Entwichlungsgesellschaft m.b.H., Wolfnitz, Austria

Continuation of Ser. No. 956,005, Oct. 30, 1978, Pat. No. 4,273,302. This application Mar. 17, 1981, Ser. No. 244,570

Claims priority, application Austria, Oct. 31, 1977, 7749/77; Jun. 13, 1978, 4309/78; Jun. 13, 1978, 4310/78

Int. Cl.³ B64C *39/06*

U.S. Cl. 244—12.2 **15 Claims**



1. A flying craft comprising a rotationally symmetrical supporting means for creating vertical lift in response to the movement of air over its upper surface, said supporting means having convex upper and lower surfaces which are shaped to give the supporting means a complete cross section in the shape of an airfoil, said supporting means having a central opening defined by an inner circumference where the upper and lower surfaces merge, said upper surface having a major radial portion thereof inclined inwardly and downwardly toward said central opening, said inner circumference of the central opening being rounded and leading directly from the upper convex surface to the lower convex surface of the supporting means to enable air to flow downwardly from the upper surface and radially outwardly along the lower surface of the supporting means, an inner driving unit coaxially arranged with said supporting means, said driving unit having a rotationally driven impeller portion and a base portion, said base portion being connected to said supporting means so as to rotationally drive the supporting means by the counter torque generated by the driving unit in a direction which is opposite to the rotating direction of the impeller portion, said driving unit being spaced from the supporting means to provide a gap therebetween, said driving unit being oriented and operated to draw air across the upper surface of the supporting means and to impel it downwardly through said gap whereby the movement of air across the upper surface of the supporting means provides said vertical lift, and a carrier which is rotatably mounted in relation to the supporting means and to the driving unit.

4,386,749

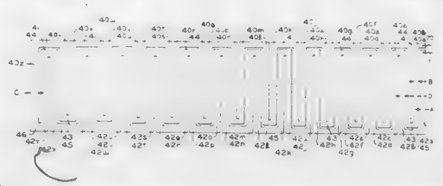
PROPELLER DEICER

David B. Sweet, Akron, Ohio, and Wayne E. Hoffman, Richwood, W. Va., assignors to The B. F. Goodrich Company, New York, N.Y.

Continuation-in-part of Ser. No. 774,576, Mar. 4, 1977, abandoned. This application Jun. 12, 1978, Ser. No. 914,636

Int. Cl.³ B64D *15/12*

U.S. Cl. 244—134 D **16 Claims**



1. An electrically heated propeller deicer pad for a propeller blade with a shank end and an outboard end, said deicer pad comprising a generally flexible sheet of electrically non-conductive material for mounting upon the leading edge of the propeller blade with one end of said deicer pad defining a deicer shank end at the shank end of the propeller blade and the other end of said deicer pad extending on said blade in a direction away from said shank end toward the outboard end of said propeller blade defining a deicer outboard end, said deicer pad having a pair of laterally spaced side edges interconnecting said one end with said deicer outboard end, an electrically conductive heating element being the sole means for deicing located within said deicer flexible sheet material, said heating element extending as a continuous electrically conductive heating element across said leading edge and laterally toward said side edges of said deicer pad back and forth for the full length of said deicer pad, electrical power input means connected to said heating element at said shank end, and said heating element having a gradient power density extending from said one end to said other end of said deicer pad with the greatest power density being at said shank end.

4,386,750

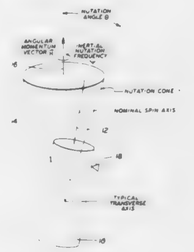
METHOD OF DAMPING NUTATION MOTION WITH MINIMUM SPIN AXIS ATTITUDE DISTURBANCE

Henry C. Hoffman, Baltimore, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 29, 1980, Ser. No. 182,881

Int. Cl.³ B64G *1/26, 1/38*

U.S. Cl. 244—169 **13 Claims**



1. A method of operating a gas thruster to control nutation in a spinning body while minimizing body spin axis attitude disturbances, comprising the steps of:

sensing nutation of the spinning body;

in response to a predetermined maximum nutation, pulsing said gas thruster including gradually increasing the duration of successive gas pulses from a first duration to a subsequent second duration and then maintaining the durations of successive gas pulses at said second duration; and

in response to a predetermined minimum nutation, gradually reducing the duration of successive gas pulses from said second duration to said first duration.

4,386,751

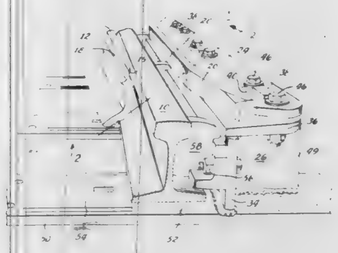
SWITCH POINT GUARD

J. Joe Meyer, Williamsburg, Ind., assignor to Western-Cullen-Hayes, Inc., Chicago, Ill.

Filed Apr. 6, 1981, Ser. No. 251,467

Int. Cl.³ E01B *5/18, 7/02, 7/20*

U.S. Cl. 246—441 **10 Claims**



1. In a switch point guard for railroad track, having a guard rail positioned to prevent flanges of railroad wheels from striking the switch point, said guard rail being carried on support members for rigid retention at a fixed, predetermined position relative to the track, the improvement comprising, in combination:

said guard rail being carried by horizontally positioned guard rail plate means attached to the side of said guard rail, apertures defined in said rail plate means, reversible chock plate means positioned in said apertures, said chock plate means defining an aperture off center in the direction perpendicular to said guard rail, said support members defining attached projecting members occupying said off center apertures, whereby peripheral edges of said chock plate means occupy different positions depending upon which side thereof faces toward said track, and the predetermined position of said deflector rail can accordingly be varied.

7. In a switch point guard for railroad track having a guard rail positioned to prevent flanges and railroad wheels from striking the switch point, said guard rail being carried on support members for rigid retention at a fixed, predetermined position relative to the track, the improvement comprising, in combination:

said guard rail being carried by horizontally positioned guard rail plate means attached to the side of said guard rail, apertures defined in said rail plate means, reversible chock plate means positioned in said apertures, said chock plate means defining an aperture off center in the direction perpendicular to said guard rail, said support members defining attached projecting members occupying said off center apertures, whereby peripheral edges of said chock plate occupy different positions depending upon which side thereof faces toward said track, and the predetermined position of said guard rail can accordingly be varied, each support member including a support piece which abuts a rail of the railroad track with an edge profiled to mate with the side of said rail, and in which said support members are directly secured to a rail of said railroad track by strap member means bolted between said support members and said rail of the railroad track, the bolt attached to said rail projecting through an aperture in said rail.

4,386,752

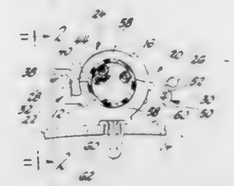
HINGED COLLAR CLIP

John J. Pavlak, Youngstown, and Robert G. Plyler, Vienna, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 13, 1981, Ser. No. 243,520

Int. Cl.³ F16L *3/08*

U.S. Cl. 248—73 **5 Claims**



1. A collar clip for retaining an elongated element or elements comprising:

a pair of sections connected at one end by an integral flexible hinge so that the sections are relatively moveable about a hinge axis between an open and a closed position,

a safety catch at the one end of the sections connected by the flexible hinge,

said safety catch comprising a resilient arcuate socket attached to one of the sections and an arcuate tongue which is attached to the other of the sections and is positively engaged in the arcuate socket when the sections are in a closed position, and

a latch at the opposite end of the sections for retaining the sections in the closed position.

4,386,753

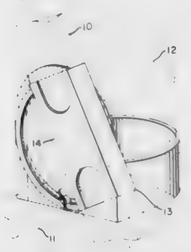
LEVELABLE RECEPTACLE LADDER ATTACHMENT

LeRoy Smith, Kettering, Ohio, assignor to Lo-Rich Enterprises, Inc., Miamisburg, Ohio

Filed Aug. 7, 1981, Ser. No. 290,944

Int. Cl.³ E06C *7/14*

U.S. Cl. 248—210 **4 Claims**



1. A device for use with a two-rail ladder having a receptacle that can be positioned to be level with the ground regardless of the angle of inclination of the ladder comprising:

a. Rail attachment means comprising a U-channel member with the length of one leg less than one-half the length of the other leg;

b. Rung securing means having two oppositely positioned open-ended slots in the shorter leg of the U-channel member of sufficient size to fit onto a ladder rung;

c. Receptacle support member having a vertical plate perpendicular to a horizontal plate wherein the vertical plate is pivotally and releasably attached to the longer leg of the U-channel member with pivotal means that permit freedom of movement about an axis parallel to the ground;

d. Receptacle locking means whereby a connector affixed to the receptacle support member passes through a semicircular slot incorporated in the longer leg of the U-channel member to a releasable clamping receptor; and

e. A receptacle, cylindrically shaped, having an open top and a closed bottom affixed to the horizontal plate of the receptacle support member.

4,386,754

DEVICE FOR CONSTRUCTING IN SITU A CONCRETE RESERVOIR

Germain C. Orceyre, Saint Poncy, 15500 Massiac, France

Filed Jun. 19, 1981, Ser. No. 275,329
Claims priority, application France, Jun. 20, 1980, 80 13812
Int. Cl.³ E04G *11/00*
U.S. Cl. 249—19 **7 Claims**



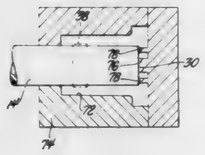
1. Apparatus for constructing a concrete tank-like structure having a floor and vertical walls, said apparatus comprising an external framework supported on a lower level surface and including outer peripheral panels, an upper outwardly extending external peripheral bracket mounted on said external framework. a carriage mounted for movement on and along said external peripheral bracket and arm means extending downwardly from an inner side of said carriage for supporting floor forming and smoothing means on its lower end.

4,386,755

MOLD FOR REMOTE CONTROL ASSEMBLY (VIBRATION DAMPENING)

William G. Bennett, Troy, and Arthur L. Spease, Livonia, both of Mich., assignors to Teleflex Incorporated, Limerick, Pa.

Division of Ser. No. 162,172, Jun. 23, 1980, Pat. No. 4,348,348.
This application Jan. 29, 1982, Ser. No. 343,887
Int. Cl.³ B29F *1/00*
U.S. Cl. 249—83 **1 Claim**



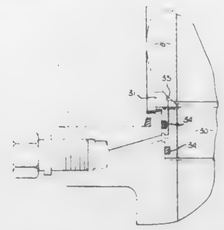
1. A mold (**74**) for molding a motion transmitting remote control assembly (**10**) of the type including a flexible motion transmitting core element (**12**) supported by a conduit (**14**) having an end fitting (**16**) at the end thereof, said mold (**74**) comprising; a hollow mold body (**74**) defining a cavity (**72**) having an end wall therewithin including a mandrel (**76**) extending from said end wall and into said cavity for defining the bore (**32**) of the end fitting (**16**) and including at least one pin (**78**) radially spaced from said mandrel (**76**) and extending from said end wall for abutting the end of the conduit (**14**) as the conduit (**14**) is inserted into the cavity (**72**) for spacing the end of the conduit from said end wall and along the mandrel.

4,386,756

SELF CENTERING FLOATING METAL SEAL FOR A BALL VALVE

John D. Muchow, Long Beach, Calif., assignor to Valve Concepts International, Carson, Calif.

Continuation of Ser. No. 134,660, Mar. 27, 1980, abandoned, which is a continuation of Ser. No. 16,354, Mar. 1, 1979, abandoned. This application Jan. 5, 1981, Ser. No. 222,738
Int. Cl.³ F16K *35/00*
U.S. Cl. 251—172 **3 Claims**



1. A ball valve apparatus having an improved self-centering, floating metal seal means used in combination with a trunnion mounted ball flow closure element which controls the flow of fluid in a conduit and which includes:

a fluid containing valve body having a bore extending therethrough for forming a flow passage extending therethrough, said valve body having an inlet and an outlet which are axially aligned and adapted to be mechanically secured in a flow controlling relationship to the flow conduit and said valve body also having an aperture formed therein;

a spherical valve member having a flow enabling port, the axis of said flow enabling port alignable with the longitudinal axis of the bore of said valve body to provide a substantially unrestricted flow path, said spherical valve member enabling flow through said bore when said port rotatably positioned out of flow communication with said bore;

a valve operating stem having an inner end mechanically coupled to said spherical valve member for effecting operating rotation of said valve member and an outer end which extends in a sealed relationship through the aperture of said valve body;

means operably secured with said spherical valve and cooperating with said valve operating stem to form trunnions for rotatably mounting said valve member with said stem while blocking movement of said valve member along the longitudinal axis of said bore; and

sealing means for forming a self-centering seal between said valve body and said valve member, said sealing means comprising:

a metal seat ring having a planar annular surface and a spherical contoured surface disposed in sealing contact with said spherical valve member, said metal seat ring forming an axis positioned concentrically on said longitudinal axis of the bore of said valve body and disposed for radial eccentric movement relative to said axis of the bore; and

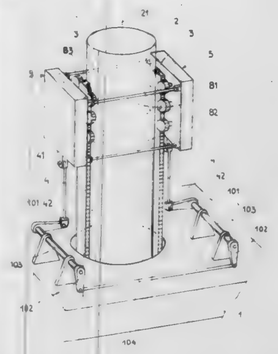
a piston sleeve having a first planar annular surface disposed in sealing contact with said planar annular surface of said metal seat ring, said piston sleeve having means for urging said piston sleeve toward said spherical valve member along said longitudinal axis of said valve body, said seat ring radially slidable relative to said piston sleeve on said contacting planar sealing surface to enable natural centering movement of said seat ring in effecting sealing contact with said spherical valve member by moving radially eccentrically relative to said longitudinal axis.

4,386,757

MARINE PLATFORM LIFTING DEVICE

Lucien Vezole, Draveil, France, assignor to Societe des Engrenages Durand, Fourchambault, France

PCT No. PCT/FR79/00122, § 371 Date Aug. 5, 1980, § 102(e) Date Aug. 5, 1980, PCT Pub. No. WO80/01181, PCT Pub. Date Jun. 12, 1980
PCT Filed Dec. 5, 1979, Ser. No. 244,131
Claims priority, application France, Dec. 6, 1978, 78 34358
Int. Cl.³ B66F *7/12*
U.S. Cl. 254—89 R **9 Claims**



1. A lifting device for a marine platform comprising

(a) a bridge supported by feet on which are fixed uprights each provided with two racks located symmetrically with respect to a plane;

(b) locomotor units each comprising a frame equipped with pinions rotatably driven by motors and meshing with said two racks;

(c) said bridge being suspended at each locomotor unit by a suspension system connected to each frame of a said locomotor unit by an articulation located substantially in said plane of symmetry of said racks and connected to said bridge by two suspension connecting rods each connected by an articulation to said bridge;

(d) each frame of said locomotor unit being connected to at least one other locomotor unit frame by at least three horizontal tie rods articulated each to two said frames and located on opposite sides of said plane of symmetry.

4,386,758

METHOD AND APPARATUS FOR STRINGING POWER LINES ACROSS SUPPORTING TOWERS

Paul Despins, 380 Bingay St., Kimberley, British Columbia, Canada (V1A 1X4)

Filed Nov. 17, 1980, Ser. No. 207,127
Int. Cl.³ B66D *1/36*
U.S. Cl. 254—134.3 R **8 Claims**



1. Apparatus for stringing a line across supporting towers using a helicopter trailing a hoisting cable, said apparatus comprising;

a needle having leading and trailing ends,

means for detachably securing one end of the line to the trailing end,

a plurality of latch hooks longitudinally spaced along the needle between the leading and trailing ends, said latch hooks projecting outwardly from the needle and being directed towards the trailing end,

each latch hook being mounted on the needle for movement about a transverse axis between a normal extended position and a retracted position;

biasing means on each latch hook tending to swing said hooks towards the extended position; and

A hanger attachable to the hoisting cable for releasably gripping the needle whereby said needle can be flown to a position projecting across a part of a supporting tower and be detachably secured thereto by one of the latch hooks.

4,386,759

LINE TRANSPORTER

Mark D. Grover, 1700 Spanish Canyon Dr., Ukiah, Calif. 95482, and Gary B. Moore, Ukiah, Calif., assignors to Mark D. Grover, Ukiah, Calif.

Filed Jun. 25, 1981, Ser. No. 277,261
Int. Cl.³ H02G *1/02*
U.S. Cl. 254—134.5 **11 Claims**



1. An apparatus for transporting a line or other object from one end of a strung cable to the other end by driving along the cable, the apparatus comprising:

a housing;

a least one motor having a drive shaft;

a power supply;

means for controlling the supply of power to the motor, said motor, power supply and control means being mounted on the housing;

a first drive wheel rotatably mounted to the forward portion of the housing for contacting the underside of the cable, a second drive wheel rotatably mounted to the housing behind said first drive wheel for contacting the top side of the cable, said drive wheels being oriented in substantially the same plane of rotation and being urged into engaging contact with the cable by the weight of the apparatus;

means interconnecting said at least one motor and said drive wheels for rotating said drive wheels in opposite directions, thereby driving the apparatus along the cable; and

means for attaching a line or other object to the housing.

4,386,760

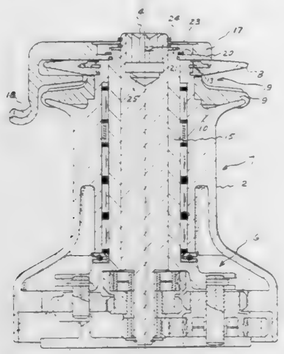
SELF-TAILING WINCH

Albert J. Hutton, 42 Kareela Rd., Baulkham Hills, N.S.W. 2153, Australia

Filed Jul. 18, 1980, Ser. No. 170,162
Int. Cl.³ B66D *1/30, 1/22*
U.S. Cl. 254—371 **2 Claims**

1. A self-tailing winch for a sheet comprising in combination a stationary frame; a rotatable input shaft supported by said frame; an upstanding rotatable drum supported by said frame; a radially outwardly extending rim adjacent the top of said drum, said rim having an upper outer end surface which is angled upwardly at an acute angle to the drum axis; a reduction gear train connecting said input shaft to said drum so that said drum is driven by said shaft; a clamping pulley attached to and axially aligned with the upper end of said drum for rotation therewith, said pulley comprising a rigid upper jaw and a flexible radially extending lower jaw formed from elastomeric

material, said material contacting the upper outer end surface of said rim over a radially outwardly area thereof and gradually increasing in thickness radially inwardly from that area of contact, said thickness increase being to a lesser extent than the angle of the rim to thus define a recess between the underside of the elastomer material and the upper end surface of said rim, said recess being radially inward of the area of contact between the elastomer material and the rim; said jaws each having inner annular surfaces defining an annular groove between them, whereby said groove defines a constant winding diameter for

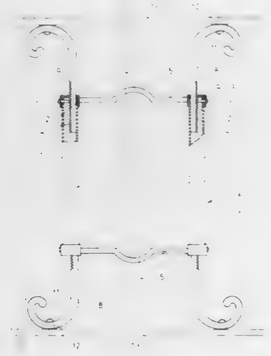


said sheet, said groove having an effective root diameter substantially less than the winding diameter of said drum, a stationary member anchored to said frame on top of said pulley, sheet deflector means supported by said stationary member and adapted to feed a sheet from said drum to said groove, said recess permitting flexure of said lower jaw by closing said recess, at least in part, in response to the temporary jamming of a sheet within said groove when said sheet is of a size greater than that of a sheet otherwise grippable within said groove frictionally without said flexure of said lower jaw.

4,386,761
BALUSTER

Chizuo Kato, Tokyo, Japan, assignor to Aluteck Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1980, Ser. No. 219,522
Claims priority, application Japan, Sep. 22, 1980, 55-135177[U]
Int. Cl.³ E04H *17/16, 17/14*
U.S. Cl. 256—21 **1 Claim**



1. A baluster in the form of an open frame comprising a pair of hollow bodies which extend vertically and are spaced apart from each other, a pair of spaced members connecting said hollow bodies betweeen the upper and lower ends of said bodies, a U-shaped socket member fitted over the corresponding ends of said hollow bodies, said U-shaped sockets being provided with an opening in the base of the U, baluster bars comprising a curved supporting portion and a straight portion integral therewith, the straight portion of each baluster bar being telescopically inserted in the opening formed in the base of the U-shaped member and into the baluster hollow bodies at the corresponding end of the latter and means mounted on said hollow bodies for securely holding the straight portion of the baluster bar in position.

4,386,762
FENCE

Jake Collins, 11724 80th Ave. Northeast, Kirkland, Wash. 98033

Filed Aug. 3, 1981, Ser. No. 289,740
Int. Cl.³ E04H *17/14;* **E02D** *27/00*
U.S. Cl. 256—59 **10 Claims**



1. A fence post for setting in concrete, comprising:
(a) a metal tubular member having four corners and at least one bolt hole extending through opposed sides of the member near one end;
(b) two concrete reinforcing rods projecting downwardly from the other end of the member from non-adjacent corners; and
(c) at least two uprights bolted to the member to project upwardly from the member opposite the rods, wherein the two uprights straddle the member.

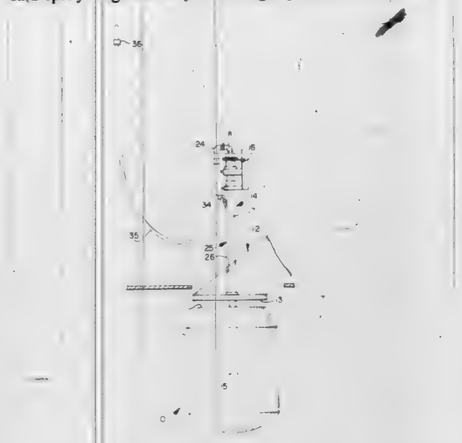
4,386,763
LANCE MOUNTED SPRAY APPARATUS

Leo L. Meinert, Baden, and Nicholas M. Rymarchyk, Wexford, both of Pa., assignors to Pullman Berry Company, Harmony, Pa.

Filed Oct. 8, 1981, Ser. No. 309,646
Int. Cl.³ C21C *5/32*
U.S. Cl. 266—158 **24 Claims**

1. For a steelmaking operation including a metal refining vessel having an upper open mouth portion normally positioned upwardly and receiving a vertically moveable gas blowing lance,
means for moving said lance relative to said vessel through said mouth portion,
a hood and duct structure including a hood portion disposed over said mouth portion for gathering fumes emanating from said vessel,
said hood and duct having opening means accommodating movement of said lance the improvement comprising,
a cooling fluid distribution means supported on said lance for

movement therewith and being constructed and arranged to direct cooling fluid into contact with the fumes emanating from said vessel,
said cooling fluid distribution means comprising a spray ring assembly adapted to direct streams of fluid in a generally outward direction,
said spray ring assembly including a plurality of nozzles,

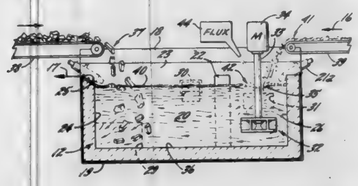


a manifold member supporting said nozzles to direct fluids outwardly from said manifold member for suppressing and cooling of gases emanating from said vessel,
said plurality of nozzles being interchangeable to achieve a variety of different spray patterns and flow rates,
including means for supporting said spry ring on said lance for accommodating lengthwise thermal expansion of said lance relative to said spray ring.

4,386,764
APPARATUS FOR SUBMERGING, ENTRAINING, MELTING AND CIRCULATING METAL CHARGE IN MOLTEN MEDIA

Raymond J. Claxton, 7123 Lyre La., Dallas, Tex. 75214

Division of Ser. No. 110,657, Jan. 9, 1980, Pat. No. 4,322,245.
This application Jan. 4, 1982, Ser. No. 336,912
Int. Cl.³ F27B *3/04*
U.S. Cl. 266—235 **7 Claims**



1. A recirculating melting system for submerging and entraining a charge in a molten melting media wherein said charge comprises pieces not capable of self-submergence, said system including in combination,
a closed heating bay, and
an open charging bay having vertical walls,
said molten melting media filling said closed heating bay and said open charging bay to a predetermined level,
vertical wall means separating said closed heating bay from said open charging bay,
said vertical wall means having integral therewith a vertical wall segment extending into said open charging bay, said vertical wall means further having two openings through said vertical wall means, such that said openings are always beneath the surface of said molten melting media, one of said openings on either side of said vertical wall segment,
a molten media circulator submerged in said molten melting media and positioned to one side of said vertical wall segment and at a point beneath one of said openings in said vertical wall means,
means to introduce said charge into said open bay in the vicinity of said submerged molten media circulator to thereby initiate melting of said charge in said molten melting media,
said molten media circulator acting upon said molten melting media to circulate said molten melting media from said closed heating bay into said open charging bay by drawing molten media from said closed heating bay through said opening in said wall in the immediate vicinity of said molten media circulator, said initial scrap melting and drawing of said molten melting media being induced directly by said molten media circulator, said molten media circulator cooperating with said molten melting media and said vertically disposed walls to thereby establish a molten melting media circulation path,
said molten media circulator having a spaced apart bottom plate and top plate, said top plate having a circular opening centrally disposed therein, said bottom plate having centrally disposed a frusto conical hub integrally secured thereto at its base, said frusto conical hub having a central axis coincident with the center axis of said top plate circular opening, said hub having a drive shaft secured thereto; radially extending vanes secured to said hub and along the entire radial length thereof to said bottom plate, said top plate central circular opening having an inside diameter greater than that of said frusto conical hub, said vanes secured at the ends thereof to said top plate;
rotation of said drive shaft creating by the cooperation of said molten melting media with said circulator vanes, frusto conical hub, top and bottom plate, a mild vortex in said molten melting media to thereby entrain said charge in said molten melting media and deliver entrained charge into and through said central opening in said top plate in a vertically downward direction whereupon said molten melting media and said charge is turned from said vertically downward direction and thence through the space betweeen said plates into horizontally outward direction to thereby provide said molten melting media circulation path in said molten melting media which draws said molten melting media from said closed heating bay through said wall opening adjacent said circulator and into said open charging bay and thereafter from said open charging bay through said opening remote from said molten metal circulator to said closed heating bay.

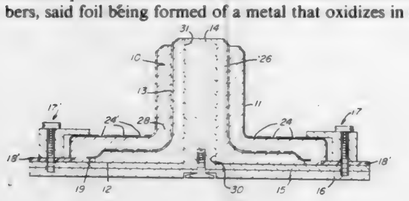
4,386,765
COMPOSITE MOULDED REFRACTORY ARTICLES

Michael A. Roberts, and Martin Copperthwaite, both of Sheffield, England, assignors to USS Engineers and Consultants, Inc., Pittsburgh, Pa.

Division of Ser. No. 206,582, Nov. 13, 1980, Pat. No. 4,323,529.
This application Oct. 21, 1981, Ser. No. 313,437
Int. Cl.³ C21C *5/46*
U.S. Cl. 266—236 **9 Claims**

1. A refractory article having a surface portion which, in service, is contacted by a molten metal stream, comprising an integral composite body having a first refractory member providing said surface portion, a second, back-up refractory member supporting said first refractory member, and a metal

foil interposed between said first and second refractory members, said foil being formed of a metal that oxidizes in service,



to effect the formation of slag or ceramic bonds to the two refractory members.

4,386,766

LENGTHWISE ADJUSTABLE GAS SPRING

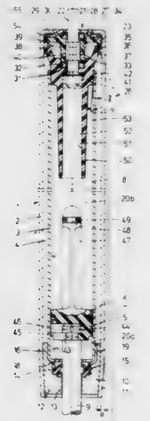
Fritz Bauer; Hans-Peter Bauer, both of Altdorf, and Hans J. Bauer, Röthenbach, all of Fed. Rep. of Germany, assignors to Fritz Bauer & Söhne oHG, Altdorf, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 187,183

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942455

Int. Cl.[3] **A47B** *9/10;* **A47C** *3/30;* **F16F** *9/44*

U.S. Cl. 267—64.12 **15 Claims**



1. In a longitudinally adjustable gas spring, comprising a housing filled with gas under pressure and formed by an outer tube (**2**) having a rim and an inner tube (**3**) coaxially disposed therein and forming a gas-filled interior volume and an annular channel; a closed piston sealed against the inner tube and axially movable therein to define a variable partial housing volume on each side of said piston; a piston rod connected to said piston and sealingly protruding through a plug at one end of the housing; and a valve comprising a valve stem and a valve body disposed at the other end of the housing for the regulated connection of the partial housing volumes located on either side of the piston by way of the annular channel, which annular channel is also connected with the interior volume in the vicinity of the plug, said valve body having said valve stem disposed therewithin which closes or opens gas port bores and which is sealed against the valve body, and said valve body and said plug being braced axially against the inner tube and sealed against the inner wall of the outer tube, the improvement wherein

the valve body (**23**, **23'**) and the plug (**10**) are made from a softer material than the outer tube (**2**);

the plug (**10**) is provided with a sealing surface conically tapering in the direction of the adjacent housing and is placed in a section (**11**) of the outer tube (**2**) which has corresponding conical taper;

the valve body consists of an outer element (**27**, **27'**) and an inner element (**26**, **26'**), wherein said elements are provided with corresponding conical wedge surface (**36**, **37**, **36'**, **37'**) for the radial pressure sealing of said two elements of the valve body (**23**, **23'**) against the inner wall of the outer tube (**2**), and the valve body (**23**, **23'**) has a section (**41**, **41'**) which is conically tapered toward the interior volume (**20**, **20'**) of the housing (**1**), and which is tightly and surface-sealingly disposed in a corresponding conical expanded portion (**42**, **42'**) of the inner tube (**3**), the seal between the outer tube (**2**) and the valve body (**23**,**23'**) being achieved by an axial bracing by means of flanging the rim (**55**) of the outer tube (**2**) under axial pressure.

4,386,767

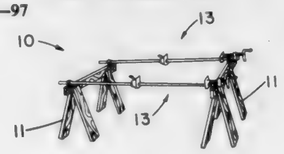
PORTABLE CLAMPING DEVICE

Dennis B. Dyckes, 5531 N. 66 St., Omaha, Nebr. 68104; Ross Johnson, 4339 Fowler Ave., Omaha, Nebr. 68111, and Richard Hibbeler, 1616 Cuming St., Omaha, Nebr. 68102

Filed May 14, 1981, Ser. No. 263,405

Int. Cl.[3] **B25B** *1/02*

U.S. Cl. 269—97 **6 Claims**



1. A portable clamping device for securely holding a work piece, comprising:

at least two elongated saw horses arranged in generally parallel transversely spaced apart relation, each saw horse including spaced apart pairs of legs and an upper cross bar connecting said pairs of legs,

a pair of elongated pipes extending transversely between said saw horses for supporting a work piece thereon,

pipe clamp means operatively mounted on each pipe for clamping a work piece supported on said pipes, and

attachment means for attaching said pipes to said saw horses, said attachment means comprising a plurality of

pipe holder means adapted for slidably receiving one end of one of said pipes,

means releasably securing said pipe holder means at a selected axial position along a pipe,

saw horse mounting means connected to said pipe holder means and comprising a generally inverted U-shaped bracket means adapted for placement onto a saw horse cross bar, and

means for releasably securing said U-shaped bracket means at a selected position on said cross bar.

4,386,768

SIGNATURE FEEDING AND STITCHING APPARATUS

Victor A. Zugel, Parma, Ohio, assignor to Harris Corporation, Melbourne, Fla.

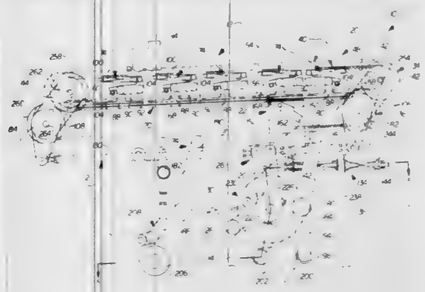
Filed Feb. 17, 1981, Ser. No. 234,923

Int. Cl.[3] **B42B** *2/00*

U.S. Cl. 270—53 **4 Claims**

1. An apparatus for moving a group of signatures to a work station, stitching the signatures at the work station, and moving the signatures away from the work station, said apparatus comprising upper and lower belt means for engaging opposite sides of a signature, said upper belt means having a lower run and said lower belt means having an upper run, said upper and lower belt means having inlet portions disposed on a first side

of the work station, outlet portions disposed on a second side of the work station and central portions disposed between the inlet and outlet portions, belt drive means for driving said upper and lower belt means to move the signatures from the first side of the work station to the second side of the work station, actuator means for separating the central portions of the lower run of said upper belt means and the upper run of said lower belt means when the signature arrives at the working station, stitcher means at the work station for stitching the group of signatures while the central portions of the lower run of said upper belt means and the upper run of said lower belt



means are separated, register means at the work station for moving the signatures relative to said upper and lower belt means to a predetermined position relative to said stitcher means while the central portions of the lower run of said upper belt means and the upper run of said lower belt means are separated, and control means for controlling the operation of said upper and lower belt means, actuator means, and stitcher means, said control means including means for interrupting operation of said belt drive means to maintain said upper and lower belt means stationary during stitching of the group of signatures by said stitcher means.

4,386,769

AUTOMATIC PAPER FEEDING ARRANGEMENT

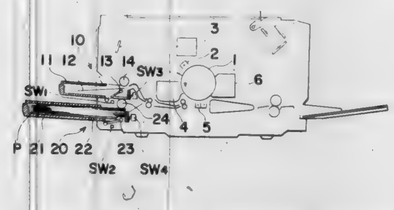
Masazumi Ito, Toyokawa; Kenji Shibazaki, Aichi, and Tsuneo Kitagawa, Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 6, 1981, Ser. No. 251,283

Claims priority, application Japan, Feb. 17, 1981, 56/22686

Int. Cl.[3] **B65H** *3/44*

U.S. Cl. 271—9 **12 Claims**



1. An automatic paper feeding arrangement for use in a copying machine and the like and having a plurality of stages of paper feeding sections for feeding paper from a selected one of the paper feeding sections, said automatic paper feeding arrangement comprising means for detecting a presence or absence of paper at each of the paper feeding sections, and a control means for cancelling a designation of the paper feeding section previously effected therebefore, based on a signal from said detecting means which is generated when the paper is detected as being absent from each and every one of said paper feeding sections, and for also designating the paper feeding section in which the paper is initially loaded, based on the signal from said detecting means which is generated when the paper is loaded in any one of said paper feeding sections under the condition that papers were previously absent from each and every one of said paper feeding sections.

4,386,770

NEEDLE FOR AUTOMATICALLY HANDLING LAYERS OF MATERIAL

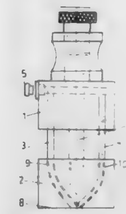
Jean P. Hellin, Chemin des Cretes, Les Bourgailles, I3820 Ensues la Redonne, France

Filed Oct. 27, 1980, Ser. No. 201,034

Claims priority, application France, Oct. 26, 1979, 79 26955; May 6, 1980, 80 10648

Int. Cl.[3] **B65H** *3/22, 3/48*

U.S. Cl. 271—18.3 **5 Claims**



1. A needle selector assembly for separating one or more layers of material from a pile of a plurality of layers of the material, said assembly comprising first and second hollow curved needles and a container assembly for housing said needles, said container assembly including a single bore and comprising a first, upper container attached to a second, lower container by an adjustable screw, said first container retaining said needles, said second container comprising first and second curved passageways adapted to receive and guide said needles when said containers are moved towards one another by adjustment of said screw, said needles adapted to project outwardly from said bore into said pile of layers of material to comprise means for directing air between material layers.

4,386,771

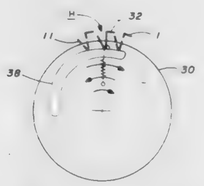
METHOD OF REMOVING A SHEET FROM A DRUM

Kushkumar N. Lakdawala, Plano, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed May 8, 1981, Ser. No. 261,443

Int. Cl.[3] **B65H** *29/06*

U.S. Cl. 271—82 **1 Claim**



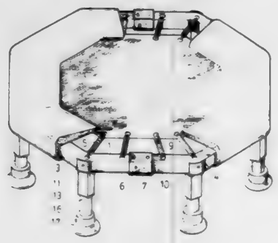
1. The method of removing a sheet from the drum of a facsimile transceiver device, which facsimile transceiver device processes a sheet attached to said drum while said drum is rotating in a first direction in which the leading edge of said sheet is gripped by a gripper bar, which comprises:

stopping said drum;

reversing the direction of rotation of said drum so that the free edge of said sheet becomes the leading edge of said sheet and allowing the beam strength of said sheet to raise

said free edge of said sheet from said drum while simultaneously stripping said sheet from said drum and opening said gripper bar to release said sheet, said reverse direction rotation continuing until said gripper bar passes a home position;
stopping said drum;
rotating said drum again in said first direction until said gripper bar passes said home position;
stopping said drum;
reversing the rotation of said drum; and
stopping said drum when said gripper bar is in said home position.

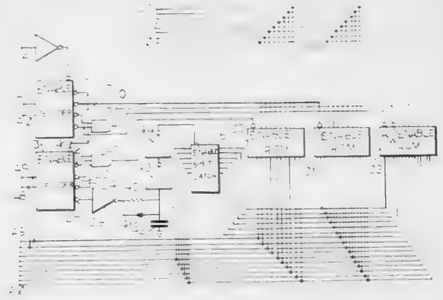
4,386,772
TRAMPOLINE WITH HORIZONTAL AND VERTICAL ELASTIC FORCE
Hann C. Wu, Tainan, Taiwan, assignor to Horng Meei Spring Enterprise Co., Ltd., Tainan, Taiwan
Filed Apr. 23, 1981, Ser. No. 256,715
Int. Cl.³ A63B *5/18*
U.S. Cl. 272—65 **4 Claims**



1. A trampoline with horizontal tension springs and vertical compression springs, said trampoline comprising at least two trampoline frame means; a plurality of horizontal tension springs connected to said frame means; a strong cloth connected to said tension springs; a plurality of detachable trampoline legs coupled to said frame means; and at least one protector for covering said frame means, said horizontal tension springs and the outer edge of said cloth characterized in that each of the detachable trampoline legs comprise an upper tube, having four sides with two of the opposite sides extending upwardly to straddle the frame means and be releasably attached thereto, a lower round tube telescoped in said upper tube and a plastic stand on the lower end of said round tube, wherein the upper tube and the lower round tube has a compression spring therein to increase the jumping ability of the trampoline, said upper tube being formed from an iron plate having an inwardly bent portion at the top of at least one side to prevent the upward releasing of the spring therein; and means having a respective inverted U-shaped metal means for pivotally connecting the two trampoline frame means together at their respective ends for using said trampoline when the inverted U-shaped metal means holds said frame means in the same plane, and for allowing folding said two trampoline frame means while said U-shaped metal means is still connected thereto.

4,386,773
TV GAME CARTRIDGE WITH EXPANDABLE MEMORY
John M. Bronstein, 338 Lakelawn Blvd., Aurora, Ill. 60506
Filed Jun. 22, 1981, Ser. No. 275,935
Int. Cl.³ A63F *9/22*
U.S. Cl. 273—1 E **3 Claims**

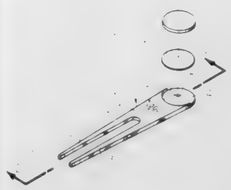
3. A memory expansion device for use in increasing ROM and adding RAM to a program cartridge without increasing or changing a number of conductor contact ribbons formed in parallel for interfacing the cartridge directly to a bus connector of an electronic video game, the conductor contact ribbon interfacing the cartridge to the electronic video game having no RAM write enable signal line from the video game unit to the cartridge, comprising:
a ROM containing a program and its starting address suitable for controlling a microprocessor in the video game unit, and having low order address lines, high order address lines, data lines, and an enable input;
a RAM having data lines and low order address lines connected in parallel with the equivalent lines of the cartridge interface bus and the ROM, and having high order address lines and enable inputs;
a multi-bit latch having an enable input, outputs connected to the upper order address lines of the ROM and the upper order address lines of the RAM, and having inputs connected to various input bus lines of the cartridge;
an address decoder having inputs which are connected to the upper order address lines of the cartridge, and having outputs enabled by an enable signal from the cartridge input bus, the outputs of the address decoder are each connected separately to the enable input of the ROM, to the enable



inputs of the RAM, and to the enable input of the multi-bit latch, and the outputs of the address decoder are, when enabled, determined by logical combinations of the address bits presented to the inputs in such a way as to divide the range of possible address inputs to the cartridge interface into several smaller ranges;
a first pulse shaper connected between the output of the address decoder and the enable input of the multi-bit latch for rejecting logic transients occuring during the propagation of the transition of the address lines of the cartridge interface bus through the address decoder logic, thus avoiding false enables of the multi-bit latch; and
a second pulse shaper connected between the output of the address decoder and the write enable input of the RAM to reject logic transients occuring during the propagation of the transition of the address lines of the cartridge interface bus through the address decoder logic, thus avoiding false write enables of the RAM, and also to provide signal delay and pulse length limiting necessary to match the timing of the enable and period of valid data.

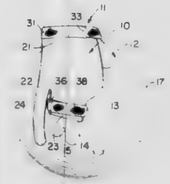
4,386,774
BALL MARKER AND GROUND REPAIR TOOL
Charles E. Buckman, Summerville, S.C., assignor to Wrightman Enterprises, Inc., Charleston, S.C.
Continuation of Ser. No. 178,143, Sep. 14, 1980, Pat. No. 4,315,624. This application Dec. 10, 1981, Ser. No. 329,255
The portion of the term of this patent subsequent to Feb. 16, 1999, has been disclaimed.
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—32 A **3 Claims**

1. A device for use in holding and placing a ball marker and in ground repair comprising:
a. a ball marker structurally comprising a substantially flat bottom, a substantially flat top, and a body extending from said substantially flat bottom to said substantially flat top;
b. a structure containing a center section;
c. a plurality of prongs extending from said center section and operative for use in ground repair; and
d. a ball marker retaining section secured to said center section and operative to hold said ball marker comprising:
1. a ball marker retaining area, the approximate shape and size of said ball marker and indented into said ball marker retaining section with the shoulder of said in-



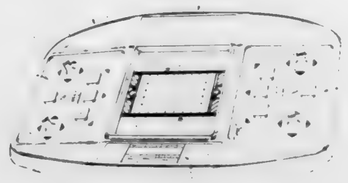
dented ball marker retaining area forming a guide for the movement of said ball marker, said ball marker retaining area being of appropriate depth so that said ball marker would extend above said structure which includes said ball marker retaining section wherein movement of an object from said center section toward said ball marker retaining section would encounter the perimeter of said ball marker causing said ball marker to slide outward from said device; and
2. a magnet secured onto said ball marker retaining area.

4,386,775
HAND SUPPORT FOR BOWLING
Thomas C. Kouros, 440 Creekwood Dr., Palatine, Ill. 60067
Filed Jul. 16, 1981, Ser. No. 283,918
Int. Cl.³ A63B *69/00*
U.S. Cl. 273—54 B **5 Claims**



1. A rigid hand support for bowling, comprising a one piece rigid member shaped to cover a portion of the back of a hand, including a first portion for covering substantially the second to fifth metacarpal region terminating in a base portion adjacent the wrist area of a hand, an extension from said first portion for covering the entire fifth finger of a hand, means for removably attaching said one piece rigid member to the hand of a user whereby said means for removably attaching are the only portion of said support in contact with front side of the user's hand and said one piece rigid member having a longitudinal contour generally proximating the curvature of a bowling ball to thereby guide the user's hand into a cup shape to embrace and grasp the ball.

4,386,776
ELECTRONIC SPORTS-ACTION GAME WITH IMPROVED GAME-OBJECT SIMULATION
Eric Bromley, West Simsbury, Conn., assignor to Coleco Industries, Inc., Hartford, Conn.
Filed Feb. 17, 1981, Ser. No. 234,903
Int. Cl.³ A63F *7/06*
U.S. Cl. 273—85 G **9 Claims**



1. An electronic sports-action game comprising:
a. a housing;
b. a display panel on the upper surface of said housing including a visual simulation of a playing field and adapted to display symbols at discrete positions on said playing field between side and end boundary "lines" in response to electrical signals applied thereto, the simulated playing field being of the type on which is played a game between two teams in which each team attempts to maneuver a game object into a goal associated with it and thereby to achieve a score, said display panel simulating a goal associated with one team and located in a goal area that includes at least one of the discrete positions in that end of the playing field defended by the other team, said display panel also simulating a goal associated with the other team and located in a goal area that includes at least one of the discrete positions in that end portion of the playing field defended by the one team;
c. operational-circuit means disposed in said housing and electrically connected to said display panel for generation and transmission of electrical signals to said display panel to produce symbols on said simulated playing field, said symbols including offensive-player symbols which simulate players of the team currently on offense, defensive-player symbols which simulate players of the team currently on defense, and a game-object symbol which simulates a game object in two modes, a control mode in which the game-object symbol moves with an offensive-player symbol to simulate the game object under control of that simulated offensive player, and an independent mode in which the game-object symbol moves independently of said player symbols, said operational-circuit means including:
(i) means for moving at least one offensive-player symbol about said playing field and thereby moving said game-object symbol when the game object is simulated to be under the control of the offensive-player symbol being moved;
(ii) means for moving at least one defensive-player symbol about said playing field;
(iii) game-object movement means operable to move said game-object symbol independently of said player symbols when simulation of the game object is in said independent mode, said game-object movement means being operable to move said game object in a straight-line path to simulate a "pass" or a "shot" of the game object and being operable to stop said game object symbol after traversing a number of said discrete positions on said playing field;
(iv) coincidence-detection means for detecting coincidence between said game-object symbol and a goal position during a simulated shot from a player symbol

of the team associated with said goal position and thereby detecting a score;

(v) means for monitoring play action to record information concerning the status of said simulated game and for producing signals indicative of said status information, said signals conveying the recorded information to an operator of the game; and

d. a control board on said housing including a multiplicity of manually operable control elements electrically connected to said operational-circuit means for transmission of electrical signals thereto through manual operation of said control elements, at least one of said manually operable control elements being operable to transmit signals to said operational-circuit means to produce manually controlled movement of at least one of said offensive-player symbols, at least one of said manually operable control elements being operable to transmit signals to said operational-circuit means for production by said game-object movement means of the straight-line movement of said game-object symbol independent of said player symbols, said straight-line movement being stopped by said game-object movement means upon independent movement through a predetermined number of positions along said straight-line path that is less than the number of discrete positions along the longer axis of the playing field, said game-object movement means then maintaining said game-object symbol in a stationary position until coincidence with one of said player symbols, said operational circuit means permitting play action to continue while said game object is in its stationary position, whereby an operator can operate said manually operable control elements to move an offensive-player symbol having simulated control of said game-object symbol about said simulated playing field to avoid said defensive-player symbols and to put said offensive-player symbol into position for a "pass" or "shot" and then operate a manually operable control element to cause a simulated shot at said goal area.

4,386,777

TOY VEHICLE RACING GAME

Barry V. Prehodka, Ridgefield, Conn., assignor to Aurora Products Canada Limited, Mississauga, Canada

Filed Mar. 22, 1982, Ser. No. 360,527
Int. Cl.³ A63F 9/14; A63H 18/04, 18/12
U.S. Cl. 273—86 B **31 Claims**



29. A first segment and a second segment of track for a toy vehicle racing game, and adapted for use with a vehicle including magnetic means, comprising:

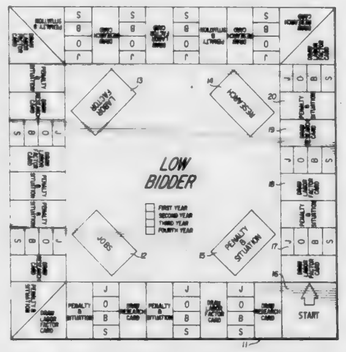
a non-conducting running surface, said segments being releasably connectable together, said running surface being continuous between said first and second segments when connected; magnetically permeable and electrically conductive rails connected to said running surface, said rails being electrically continuous between said connected track segments, said rails being attracted by said magnetic means to urge said vehicle against said track surface, rails connected to said first segment having a greater thickness along essentially their entire length than the rails connected to said second segment, said attraction being greater to said first segment, the attraction between said vehicle and said first segment being sufficient to normally hold the vehicle to the track during passage of the vehicle therealong if said first segment were disposed vertically.

4,386,778

CONSTRUCTION INDUSTRY TEACHING GAME

William C. Hall, 29 Briardale Ct., Derwood, Md. 20855

Filed Feb. 10, 1982, Ser. No. 347,667
Int. Cl.³ A63F 3/00
U.S. Cl. 273—256 **4 Claims**



1. A construction board teaching game apparatus wherein players strive to maximize their financial worth comprising

a plurality of playing pieces, each piece representing one player during use of said board game apparatus;

a game board having a playing surface and a track on said game board having a series of spaces forming a continuous path along which a game piece is movable in increments determined by chance means, said path having a plurality of spaces having indices relating to the action to be taken when said playing piece alights on one of said spaces;

a pair of dice, each one of said pair of dice having indicia means for indicating numbers to dictate movement of the playing pieces over the path of said game board from the starting space;

a plurality of job cards, each card representing a specific type of construction and indicating thereon estimated material and labor costs, total costs, cost of bidding job and type of construction;

a plurality of labor factor cards with differing predetermined mathematical factors, such factor to be used in multiplying the labor cost for any job;

a plurality of research cards with differing predetermined mathematical factors, such factors to be used in multiplying the total job cost for a specific type of construction work;

a plurality of penalty and situation cards indicating various penalties and situations involving the construction industry;

a bid submittal form to be completed by each player whenever said player bids on any job;

an annual accounting form to be completed by each player for each year (one turn around board) of the game; said bid submittal form and said annual accounting form including entry lines correlated with said labor factor cards, said research cards and at least one of said costs indicated on said job cards;

a graph to be utilized for determining fixed costs based on total dollar volume of business for said year; and

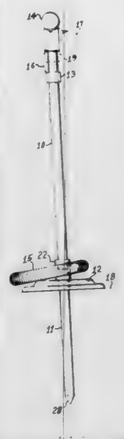
a plurality of investigation cards given to each player to permit investigation of research cards.

4,386,779

GAME APPARATUS

Darrell D. Whitlock, 5171 S. Pine Dr., Jacksonville, Fla. 32207

Filed Oct. 26, 1981, Ser. No. 314,530
Int. Cl.³ A63B 67/06
U.S. Cl. 273—336 **10 Claims**



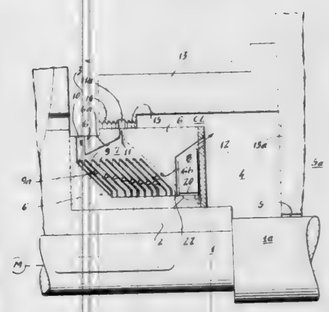
1. A game apparatus comprising an elongated rod-like rigid member adapted to be affixed to the ground and project vertically upwardly therefrom and having a recess at the top end thereof, a passageway extending from said recess downwardly and outwardly of said member, a collar slideably mounted around the outside of said member, a ball removably seated on said recess, and a filament slideably threaded through said passageway, one end of said filament being attached to said ball and the other end of which being attached to said collar.

4,386,780

APPARATUS FOR CLEANING LIQUIDS IN CENTRIFUGAL PUMPS OR THE LIKE

Robert Dernedde, Frankenthal, Fed. Rep. of Germany, assignor to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,675
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026541
Int. Cl.³ F16J 15/00
U.S. Cl. 277—15 **15 Claims**



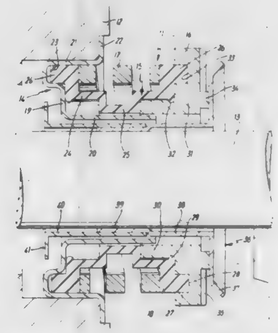
1. In a fluid flow machine, such as a centrifugal pump, wherein contaminated liquid is conveyed from a first space toward a second space and the contaminants are to be removed upstream of the second space, a cleaning apparatus comprising a housing disposed between the first and second spaces and having inlet means for admission of contaminated liquid from the first space, first chamber means communicating with said inlet means, second chamber means communicating with said first chamber means, first outlet means connecting said second chamber means with the second space and second outlet means connecting said first chamber means with the first space; and means for rotating said housing, said second outlet means being positioned to discharge into the first space contaminants which are separated from the liquid entering said first chamber means by way of said inlet means and migrate toward said second outlet means as the liquid in said first chamber means is set in rotary motion.

4,386,781

ANNULAR FLUID FACE SEAL WITH DIAPHRAGM

Charles W. Potter, Manchester, England, assignor to J. H. Fenner & Co., Ltd., Yorkshire, England

Filed Jul. 15, 1981, Ser. No. 283,625
Claims priority, application United Kingdom, Jul. 17, 1980, 8023469
Int. Cl.³ F16J 15/36
U.S. Cl. 277—38 **8 Claims**



1. A face seal arrangement for effecting a fluid seal between a housing and a shaft rotatable therein, comprising an annular shell, a diaphragm seated in said shell and having an end remote from the shell, a spring applying a loading to said diaphragm, a sealing member adjacent said end of the diaphragm and movable in the axial direction of the seal under the effect of the spring-loaded diaphragm, the said sealing member having an annular sealing surface at an outer face thereof, and a sealing ring arranged in opposed disposition relative to the sealing member for cooperation with the annular sealing surface to effect a fluid seal therebetween, the annular shell and sealing ring being respectively mountable in the housing and on the shaft, or vice versa, the improvement being that the sealing ring comprises a forged element having an annular part with a profiled periphery and a smooth surface to receive the sealing surface into direct sealing engagement therewith.

4,386,782

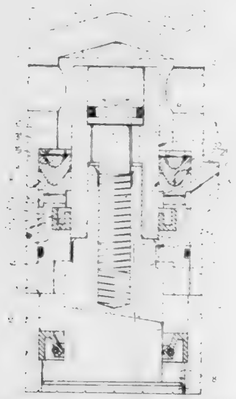
GUIDE AND SEAL ASSEMBLY FOR A PISTON OF A DROWNED PISTON TYPE PUMP

Corrado Reverberi, Modena, Italy, assignor to Annovi Reverebi S.p.A., Italy

Filed Jul. 20, 1981, Ser. No. 284,549
Claims priority, application Italy, Jul. 24, 1980, 53423/80[U]
Int. Cl.³ F16J 15/18; F04B 39/00
U.S. Cl. 277—59 **3 Claims**

1. A guide and seal assembly for a piston of a drowned piston type pump comprising at least a chamber within which the said piston reciprocates to suck into and supply from the said chamber a liquid, the said seal assembly being arranged to guide the

said piston and create a seal between the said chamber and the outside, characterized in comprising a ring delimited by a single inner cylindrical surface having a diameter substantially equal to the diameter of a seat in which the assembly is housed, the said ring having a first frontal seat for a first annular seal element having a substantially C-shaped cross-section with inner and outer diameters substantially equal to the corresponding diameters of the said ring, and an annular groove formed in the said inner cylindrical surface of the said ring and arranged to accomodate a second annular seal element of



substantially U-shaped cross-section, having an inner diameter substantially equal to the said inner diameter of the said ring and an outer diameter smaller than the outer diameter of the ring itself, a first annular cavity formed in the said outer surface of the said ring and between the said seal elements, and a second annular cavity formed in the said inner surface of the said ring and between the said seal elements, the said annular cavities communicating with each other by means of at least a radial hole formed in the ring, and the said first annular cavity communication with at least a discharge hole for the liquid which gathers in the said first cavity.

4,386,783

PACKING NUT AND STUFFING BOX FOR HYDRAULIC OR MANUAL ACTUATION

Glenn R. Davis, Irving, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Aug. 26, 1981, Ser. No. 296,459
Int. Cl.³ F16J *15/46*
U.S. Cl. 277—73 **21 Claims**

1. A device for compressing packing in a stuffing box which may be hydraulically or manually actuated comprising:

a. housing means including:

(1) an upper housing with a bore therethrough; and

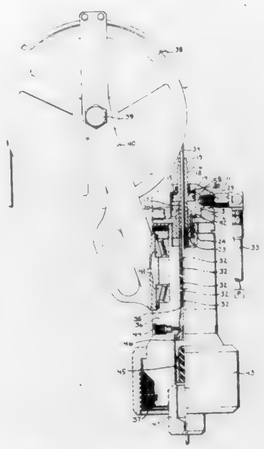
(2) a lower housing with a bore therethrough and means on its lower end for attachment to a stuffing box;

b. means on said upper and lower housings for connecting them together; and

c. rod means in said housing means for engaging said packing, including:

(1) a rod with a passage therethrough;

(2) length adjusting means on said rod for applying more or less compression to said packing; and



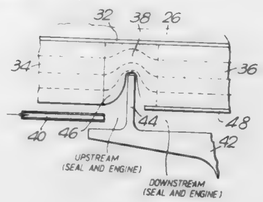
(3) pressure responsive means on said rod for moving said rod means to compress said packing.

4,386,784

MAGNETIC SEAL WITH MAGNETIC POWDER HELD IN POLE PIECE GAP

Michael D. Banks, Conventry, England, assignor to Rolls-Royce Limited, London, England

Filed Nov. 12, 1981, Ser. No. 320,561
Claims priority, application United Kingdom, Nov. 25, 1980, 8037791
Int. Cl.³ F16J *15/40, 15/16*
U.S. Cl. 277—80 **9 Claims**



1. A seal for use between a fixed structure and a rotatable structure to restrict the leakage of gas between the two structures, the seal comprising a casing, magnetic pole-pieces mounted in the casing, a gap being defined between the pole pieces, means for generating a magnetic field across the gap, a magnetic powder located in the gap and held therein by a magnetic field, a means for making good lost powder, the rotatable structure being non-magnetic and at least a part of the rotatable structure extending into the gap.

4,386,785

SHAFT SEALS INCLUDING A SEAL ELEMENT AND A DRIVE RING ASSEMBLY THEREFOR

Anthony C. Back, Slough, England, assignor to Crane Packing Limited, Slough, England

Filed Apr. 19, 1982, Ser. No. 369,893
Claims priority, application United Kingdom, Apr. 21, 1982, 8112403
Int. Cl.³ F16J *15/36, 15/38*
U.S. Cl. 277—82 **10 Claims**



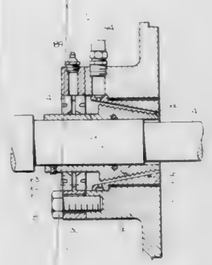
1. A shaft seal including a sealing element and a drive ring assembly for mounting the sealing element with respect to a shaft, for rotation therewith; said drive ring assembly which is adapted to be mounted around a shaft comprising; an outer ring the bore of which is enlarged towards one end, so that a radially or substantially radially extending shoulder is provided part way along its length; a radially deformable inner ring co-axial with the outer ring and located in the enlarged bore portion thereof; and a sealing ring located in the enlarged bore portion of the outer ring between the shoulder thereof and the opposed end of the inner ring; a plurality of circumferentially spaced radial screws engaged in correspondingly threaded holes in the portion of the outer ring surrounding the inner ring, so that they may be tightened against the outer surface of the inner ring, the engaging surfaces of the screws and the inner ring being mutually inclined, so that tightening of the screws against the inner ring, when the assembly is positioned about a shaft, will force the inner ring to move axially towards the shoulder of the outer ring, thereby compressing the sealing ring positioned therebetween and causing the sealing ring to expand radially into sealing engagement with the opposed surfaces of the shaft and the outer ring, while at the same time said screws deform the inner ring into clamping engagement with the shaft.

4,386,786

ADJUSTABLE PUMP SEAL WITH TAPERED CONICAL MEMBERS

Ali Agrama, Freemont, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 8, 1982, Ser. No. 346,697
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—135 **4 Claims**



1. An adjustable seal for a pump having a housing and an impeller mounted on a rotatable shaft which comprises:

(a) a seal housing;

(b) a bushing fixedly mounted on said seal housing having a tapered conical shaped outer surface;

(c) a sleeve having a tapered conical outer surface surrounding the impeller shaft and rotatable therewith and slidably movable thereon, said outer surface being adjacent the outer surface of said bushing;

(d) an O-ring between the impeller shaft and the sleeve to prevent leakage between shaft and sleeve;

(e) a grease seal resting on one end of said sleeve and being fixedly secured to said seal housing;

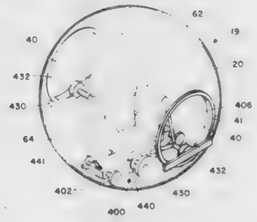
(f) means to slidably move and adjust said sleeve along said shaft when wear occurs on said sleeve and bushing so that the adjacent tapers of the sleeve and bushing are in close proximity to form a seal.

4,386,787

SPHERICAL VEHICLE

Clifford Maplethorpe, 2727 N. 32 St., Phoenix, Ariz. 85008, and Kenneth E. Kary, 1221 N. 58 Pl., Scottsdale, Ariz. 85254

Filed Jul. 14, 1980, Ser. No. 168,005
Int. Cl.³ A63G *29/02*
U.S. Cl. 280—206 **1 Claim**



1. A vehicle comprising:

a transparent, substantially rigid shell in the general shape of a sphere, said shell having circular ports with bearing surfaces along the edges thereof, the centers of said ports being on opposite ends of a diameter of said shell;

a carriage adapted to seat a person, said carriage having a pair of drive wheels with rims directly engaging and rotatable over the interior surface of said shell;

a pair of idler wheels having respective rims that are rotatably maintained upon said bearing surface;

a pair of support members, coupled to said carriage and to said idler wheels, that maintain said carriage substantially equidistant from said idler wheels; and

means for providing power to said drive wheels.

4,386,788

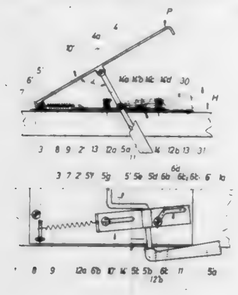
SKI BRAKE

Erwin Krob, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Feb. 13, 1981, Ser. No. 234,226
Claims priority, application Austria, Feb. 15, 1980, 824/80
Int. Cl.³ A63C *7/10*
U.S. Cl. 280—605 **13 Claims**

1. A ski brake adapted to be mounted on a ski, comprising a base plate, an operating pedal supported on said base plate for pivotal movement about a first axis, two bearing plates having first and second slots therein supported above and generally parallel to said base plate for movement relative thereto in directions generally longitudinal of the ski between first and second positions, said bearing plates being closer to said first axis in said first position than in said second position, four upright holding bolts secured to said base plate and slidably received in respective said slots in said bearing plates, a spring yieldably urging each said bearing plate toward said first axis, a braking bar which is made of a bent wire material, has two braking mandrels, has two sections which are respectively supported on said bearing plates for pivotal movement about a second axis, and is pivotally supported on said operating pedal

at a location remote from said first and second axes, and an upward projection provided on said base plate which engages said braking bar as said bearing plates move between said first and second positions and has rising and falling sections which cause said sections of said braking bar to move upwardly and then downwardly during movement thereof longitudinally of said ski with said bearing plates, each said first slot in said bearing plates being generally rectilinear and extending generally longitudinally of the ski, and each said second slot being bent and, viewed in said first position of said bearing plates, having a rectilinear first section which extends substantially

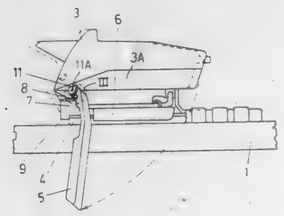


parallel to the longitudinal axis of the ski and, at the end thereof nearest said first axis, has a bend connecting it to a second section which defines an acute angle with respect to the longitudinal axis of the ski, wherein said bend of said bent second slot is positioned to cooperate with said holding bolt slidably receiving therein when, viewed with said bearing plates in said second position, said section of said braking bar is engaging a rising section of said projection, and wherein the length of said second section of said bent second slot is at least as long as the longitudinal distance which said section of said braking bar travels as it moves over said projection.

4,386,789
SKI BINDING

Hans Horn, Bern, Switzerland, assignor to TMC Corporation, Baar, Switzerland

Continuation of Ser. No. 71,522, Aug. 31, 1979, abandoned. This application Aug. 11, 1981, Ser. No. 291,901
Claims priority, application Austria, Sep. 5, 1978, 6395/78
Int. Cl.³ A63C *5/00*
U.S. Cl. 280—605 **3 Claims**

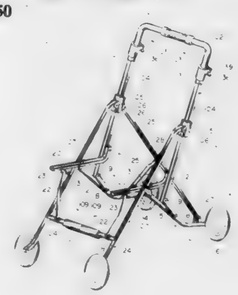


1. A ski brake, comprising:
an elongated guide rail adapted to be mounted on a ski;
a ski boot holding mechanism mounted on said guide rail for reciprocal movement therealong and having at least one elongated outwardly facing and downwardly inclined surface thereon;
resilient means for continually urging said holding mechanism toward one end of said guide rail, said holding mechanism moving away from said one end against the urging of said resilient means in response to an engagement of said holding mechanism with a ski boot;
elongated ski brake blade means and pivotal support means for pivotally mounting said ski brake blade means on said holding mechanism for movement between a retracted position wherein said ski brake blade means is oriented above the upper surface of said ski and in engaging relation over a major portion of the length of said blade means with said outwardly facing and downwardly inclined surface and a braking position wherein said ski brake blade means extends along a lateral edge of said ski and projects below the bottom surface of said ski, said pivotal support means including a pivot axis located below said inclined surface and which is outwardly and upwardly inclined from said guide rail, said ski brake blade means having a closing tooth means located on one side of said pivotal support means and facing in a longitudinal direction of said ski when said ski brake blade means is in said braking position; and
cam means fixedly oriented relative to said guide rail means and oriented to operatively engage said closing tooth means for effecting a movement of said ski brake blade means to said retracted position in response to a movement of said holding mechanism away from said one end and said closing tooth means toward said cam means caused by an engagement of said holding mechanism with said ski boot and permitting a movement of said ski brake blade means to said braking position in response to a movement of said holding mechanism toward said one end and said closing tooth means away from said cam means under the urging of said resilient means caused by a disengagement of said holding mechanism with said ski boot.

4,386,790
BABY CARRIAGE

Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan

Filed Mar. 2, 1981, Ser. No. 239,420
Int. Cl.³ B62B *7/08*
U.S. Cl. 280—650 **21 Claims**

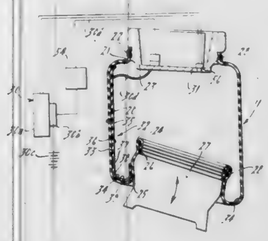


1. A collapsible infant carrier comprising: a pusher member (**101, 1**) having a pair of substantially vertically extending slide guide rods (**104, 3**), a pair of sliders (**105, 4**) which are slidable on said slide guide rods (**104, 3**), a pair of front legs (**107, 6**) turnably connected at their upper ends to said sliders (**105, 4**) to form a pivotal coupling, said pair of front legs having a pair of front wheels connected to the respective lower ends of said pair of front legs, a pair of rear legs (**112, 9**) turnably connected to said front legs (**107, 6**) in the intermediate portions thereof to form a pivotal coupling, said pair of rear legs having a pair of rear wheels connected to the respective lower ends of the pair of rear legs, a pair of support angle bars (**117, 15**) turnably connected at one of their respective ends to said rear legs (**112, 9**) in the intermediate portions thereof to form a pivotal coupling and at the other ends thereof to the lower end of said pusher member (**101, 1**) to form a further pivotal coupling; a pair of folding operative connecting rods (**120, 18**) which are turnably connected to the intermediate portions of said front legs (**107, 6**) to form a third pivotal coupling and turnably connected to the pusher member (**101, 1**) at positions spaced a predetermined distance from the lower end of the pusher member to form a fourth pivotal coupling, and width defining connecting rod means for defining the widthwise measured dimension between one side of the carrier defined by one of said slide guide rods, one of said front legs, and one of said rear legs, and the other side of the carrier defined by the other slide guide rod, the other front leg and the other rear leg, whereby the carrier is collapsible in the front to back direction between an opened state and a closed state by the sliding action of the sliders (**105, 4**) on the pusher member slide guide rods (**104, 3**) and by the turning action of the respective pivotal couplings including the turning of the support angle bars (**117, 15**) relative to both the rear legs (**112, 9**) and the pusher member (**101, 1**) simultaneously, so that the front wheels and rear wheels are brought together in the front to back direction to form a stable pedestal wheel base and so that the pusher member (**101, 1**), slide guide rods (**104, 3**), pair of front legs (**107, 6**), pair of rear legs (**112, 9**), and folding operative connecting rods (**120, 18**) are collapsed to generally vertical orientation in adjacent relationship to form a collapsed generally vertical assembly centered and supported over the stable pedestal wheel base when the carrier is collapsed to the closed state.

4,386,791
ACTIVELY CONTROLLED SUSPENSION SYSTEM AND HEIGHT SENSOR

Shunso F. Watanabe, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 6, 1981, Ser. No. 280,760
Int. Cl.³ B60G *11/26*
U.S. Cl. 280—707 **10 Claims**



1. An actively controlled suspension system, comprising:
a vehicle having a suspended mass;
a nonsuspended mass supported on ground engaging wheels of said vehicle;
suspension means having at least one gas filled distensible suspension member interposed between said masses and including at least one curvilinear section;
means for changing the pressure in said distensible member comprising an electrically operated gas pump and electrical conductors connecting an energy source with said gas pump;
a height sensor responsive to a change in the curvature of said curvilinear section in response to a compression change to thereby regulate the operation of said pressure changing means, said height sensor comprising a distensible rubber belt mounted to said distensible suspension member, said belt having switching means carried by opposite converging walls of notches in said belt and effective to normally interrupt said electrical conductors and to close said electrical conductors upon a predetermined change in shape of said curvilinear section.

4,386,792
FABRICATED LOAD SUPPORT STRUCTURAL MEMBER

Thomas S. Moore, Northville, and Terrence Smith, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 4, 1978, Ser. No. 948,598
Int. Cl.³ B62D *21/00*
U.S. Cl. 280—781 **14 Claims**



10. A motor vehicle frame comprising:
longitudinal extending side members;
cross members connecting the two side members;
each side member has a front stamped section including a C-shaped channel member with a top flange, bottom flange, and vertical interconnecting portion connecting the top and bottom flanges at the inner edges thereof; the top flange having two opposing and spaced apart upwardly extending portions forming a taller section of the longitudinal side member; the taller section having seat means integrally formed therewith for securing thereon a spring member being connectable to a wheel assembly to the motor vehicle.

4,386,793
WEBBING LOCK DEVICE

Mitsuaki Katsuno, and Mitsuhiro Ogura, both of Toyota, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki Seisakusho, Aichi, Japan

Filed Mar. 18, 1981, Ser. No. 244,883
Claims priority, application Japan, Mar. 21, 1980, 55-37615[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—802 **10 Claims**



1. A webbing lock device for use in a seatbelt system wherein the intermediate portion of an outer webbing is turned back adjacent the forward end of an inner webbing, comprising:
(a) a holder connecting the inner webbing to an intermediate portion of the outer webbing, said holder provided therein with inner webbing contact portions and an outer webbing contact portion;
(b) a lock bar slidably held between said inner webbing contact portions in said holder and capable of being moved, by operation of the inner webbing, in a perpendicular direction to the longitudinal direction of the outer webbing passing through said holder;
(c) holding means for holding said lock bar at a position spaced apart from the outer webbing when the tension of the inner webbing is less than a predetermined value, the

tension in the inner webbing moving said lock bar toward said outer webbing contact portion to contact the outer webbing, in a direction perpendicular to the longitudinal direction of the outer webbing, together with said outer webbing contact portion when the tension of inner webbing is more than the predetermined value, whereby the positional relationship between the outer webbing and said holder is made adjustable during normal operation of the vehicle, so that the occupant can be brought into a proper webbing fastened condition, and whereby the outer webbing is prevented from moving in the longitudinal direction thereof with respect to said holder when the tension of the inner webbing is more than the predetermined value.

4,386,794

SKATING VELOCIPEDE APPARATUS

Hermand Roberts, 3941 S. Halldale Ave., Los Angeles, Calif. 90062

Filed Dec. 23, 1977, Ser. No. 863,933
Int. Cl.³ A63C *3/04, 17/28*
U.S. Cl. 280—826 **9 Claims**



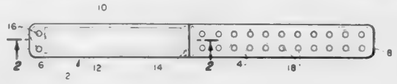
1. A skating velocipede apparatus to facilitate high speed skating propulsion of a skater along a smooth hard ground surface while in a seated position, comprising: structurally strong framework means including at least one longitudinal support member having a front end and a rear end and an intermediate seat-supporting portion positioned therebetween, said intermediate seat-supporting portion being provided on an upper side thereof with seat means for a skater operating the skating velocipede apparatus to sit upon, said longitudinal support member being provided forwardly of said intermediate seat-supporting portion with transversely extending thigh-receiving thigh-abutment means adapted to receive the thighs of a skater who is seated on the seat means in a manner such that force is adapted to be exerted by the skater's thighs upwardly and forwardly against said thigh-abutment means while force is exerted downwardly relative to said support member by the weight of the skater resting upon said means carried by said support member rearwardly of said thigh-abutment means, thus causing said longitudinal support member to comprise and function as an effective lever means, with said thigh-abutment means comprising and functioning as an effective fulcrum means, and with said rear end being adapted to be forced downwardly and to comprise and function as an output end of said effective lever means; said rear end of said longitudinal support member being provided with downwardly projecting wheel means for downwardly forced contact with a smooth hard underlying ground surface; said rear end of said longitudinal support member being provided with an effectively downwardly directed frictional brake means at a location rearwardly displaced beyond said downwardly projecting wheel means whereby to be controllably effectively pivotally moveable downwardly into forced braking contact with an underlying smooth hard-ground surface whenever the front end of said longitudinal support member is forcibly manually lifted upwardly in a manual braking action, said front end of said longitudinal support member being rigidly provided with a three-axes-torque-applying positional orientation control means comprising a substantially upwardly extending neck portion rigidly angularly related to the remainder of said longitudinal support member and having an upper terminus rigidly provided with a substantially transversely symmetrically mounted and extending manually graspable rigid handle means for use in forcibly performing said uplifting manual braking action when desired and effectively applying torque around a transverse axis of rotation substantially coincident with said thigh-abutment means and, alternatively, for use in response to the application of torque manually applied thereto around a longitudinal axis of rotation substantially coincident with the longitudinal axis of the rest of said longitudinal support member, and of torque manually applied, thereto around a vertical axis of rotation substantially coincident with said neck portion, to cause corresponding tilting of said thigh-abutment means, said seat means, and said rear-positioned, downwardly-projecting wheel means in a manner causing a corresponding turning movement of the entire apparatus relative to a forward direction of skating propulsion of the apparatus in response to conventional skating movements of a skater's legs and skate-bearing feet while seated on the seat means and while having his thighs engaged by said thigh-abutment means.

4,386,795

IDENTIFICATION DEVICE WITH VERSATILE IMPRINTING MEANS

Stanley E. Charles, La Canada; Donald A. Long, Burbank; Peter G. Katsenis, Tujunga, and Walter W. Mosher, Jr., Granada Hills, all of Calif., assignors to Precision Dynamics Corporation, Burbank, Calif.

Division of Ser. No. 758,063, Jan. 10, 1977, Pat. No. 4,318,234. This application Jun. 11, 1979, Ser. No. 47,282
Int. Cl.³ B42D *15/00*
U.S. Cl. 283—5 **11 Claims**



1. In an identification device, the combination of: an elongate, flexible band having first and second end portions adapted to be juxtapositioned to encircle an object, said first end portion comprising at least one layer of plastic material, self-imprinting means adjacent a surface of said plastic material layer for imprinting indicia onto said surface of said layer and means for releasably retaining said self-imprinting means adjacent said surface, said self-imprinting means comprising at least a layer of micro-encapsulated marking substance for pressure transference of said indicia to said surface of said plastic material layer and said surface of said layer being receptive to absorption, absorption and retention of said marking indicia, and means associated with said flexible band for securing said first and second end portions into encircling captive relationship of an object to be identified.

4,386,796

PIPE REPAIR COUPLING

Robert W. Lyall, Fountain Valley, and Donald C. Hill, Pasadena, both of Calif., assignors to R. W. Lyall Co., Inc., Santa Fe Springs, Calif.

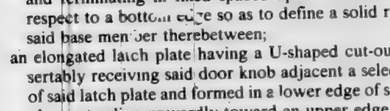
Filed Jul. 27, 1981, Ser. No. 287,357
Int. Cl.³ F16L *21/00*
U.S. Cl. 285—31 **10 Claims**

1. A pipe repair coupling of organic thermoplastic polymeric material for joining aligned, spaced apart first and second pipe ends and comprising:

a cylinder formed medially with a barrel defining an interior cylindrical sealing surface and having first and second extremities, said first extremity being formed with a first fitting for being bonded to said first pipe end and said second extremity being formed with a neck;

a cylindrical protective sleeve surrounding said barrel to support weight applied to the exterior thereof;

a hollow piston telescopically received in said cylinder and including a plurality of seals for cooperating with said sealing surface in forming a dynamic seal, said piston further including a tube projecting telescopically through said neck and formed on its free end with a second fitting for joining with said second pipe end; and,



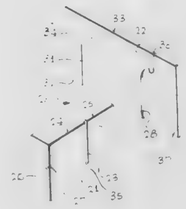
a cylindrical stiffener sleeve in said piston and surrounded by said seals, whereby said piston may be telescoped axially into said cylinder to facilitate joining said first and second fittings with said first and second pipe ends and said protective sleeve will protect said cylinder from exterior forces and when the binding forces are applied to said coupling, said stiffener sleeve will support the walls of said piston from collapsing radially inwardly and consequently, breaking the sealing engagement between said seals and said sealing surface.

4,386,797

DOOR KNOB LATCH APPARATUS

Joe Duran, Sr., 944 E. Renton, Carson, Calif. 90745

Filed Jan. 5, 1981, Ser. No. 222,703
Int. Cl.³ E05C *19/18*
U.S. Cl. 292—292 **1 Claim**



1. In a door latching apparatus including a door knob with a knob shaft comprising:

an elongated base member having an outwardly projecting tang normal to the longitudinal axis of said base member and a slot provided substantially mid-way between its opposite ends opening at a top edge of said base member and terminating in fixed spaced apart relationship with respect to a bottom edge so as to define a solid region of said base member therebetween;

an elongated latch plate having a U-shaped cut-out for insertably receiving said door knob adjacent a selected end of said latch plate and formed in a lower edge of said latch plate extending upwardly toward an upper edge thereof;

said latch plate further having a slot provided therein opening at said lower edge and extending upwardly to terminate in fixed spaced apart relationship with respect to said upper edge so as to define a solid region of said latch plate therebetween and whereby said base member slot and said latch plate slot are adapted to be slidably related so as to join said base member and said latch plate together in a right angled relationship;

said base member includes a flange carried on its end opposite to its end carrying said tang which outwardly projects lateral from the longitudinal axis of said base member;

said latch plate slot is provided substantially adjacent to the end of said latch plate from its end provided with said U-shaped cut-out;

said latch plate cut-out terminates in a semi-circular configuration so as to fit with said door knob shaft in conformal relationship;

a strike plate having an opening therein secured to a door jamb;

said door knob including knob shaft carried on a door; and

said tang of said base member adapted to be insertably received through said strike plate opening and said U-shaped cut-out adapted to be slidably placed over said door knob shaft so as to secure said door to said door jamb.

4,386,798

LOCKING AND LATCH CONTROL DEVICE FOR VEHICLE DOORS

Michel Menard, Beynes, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Oct. 20, 1980, Ser. No. 199,058
Claims priority, application France, Oct. 19, 1979, 79 26018
Int. Cl.³ E05C *3/16*
U.S. Cl. 292—336.3 **4 Claims**

1. A lock control device for a motor vehicle door, comprising:

a lock plate fixed to said door;

a locking lever pivoted to said lock plate at a first axis, said locking lever having a shape approximately a U, a first leg of said U including a third axis;

a second axis on said lock plate, said second and third axes being parallel and being coaxial when said locking lever is pivoted into a first unlocked position about said first axis but being moved from said coaxial location when said locking lever is pivoted into a second locked position;

an outside opening control lever pivotable about said second axis; and

an intermediary lever pivoted to said third axis and being movable therewith, said intermediary lever being engageable and rotatable by said outside opening control lever when said locking lever is in said first unlocked position and being moved by said third axis from said engageable and rotatable position when said locking lever is in said second locked position.

4,386,799

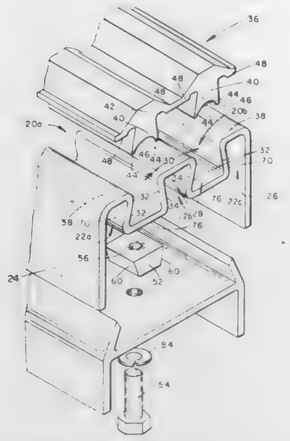
SHOCK ABSORBING DEVICE HAVING PREDICTABLE DEFLECTION CHARACTERISTICS

Arpad A. Molnar, Boulder, Colo., assignor to Molnar Industries, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 228,257, Jan. 26, 1981, abandoned. This application Mar. 13, 1981, Ser. No. 234,330
Int. Cl.³ B60R *21/14, 19/00*
U.S. Cl. 293—120 **18 Claims**

18. An elongated shock absorbing device of uniform transverse cross-sectional area having a front face, a centroid, and

being adapted to be mounted on an object at two longitudinally spaced support locations, said device having a stiffener with the same elastic modulus as said device being mounted on said device along a portion of the length of said device, said stiffener further being of uniform transverse cross-sectional area



and being symmetric with respect to the longitudinal center of said device, the maximum deflection of said bumper being calculated in accordance with the following formula wherein the maximum deflection occurs at the longitudinal center of the device in a rearward direction:

$$W_2\,(\text{Max}) = \frac{F}{E}\left[\frac{1}{I_2}\left(\frac{L_2^3}{3}\right) + \frac{L_1 L_2}{2I_1}\,(2L_2 + L_1)\right].$$

wherein,

F is a force applied to the device in a rearward direction at two locations defined by the ends of the stiffener;

E is the elastic modulus of the material forming the bumper and the stiffener;

I_1 is the moment of inertia of the transverse cross-sectional area of the bumper and stiffener about an axis passing through the centroid and being perpendicular to the length of the device and the direction of the forces F applied to the device;

I_2 is the moment of inertia of the transverse cross-sectional area of the bumper without the stiffener about said axis;

L_2 is the longitudinal distance from each end of the stiffener to the nearest support location of the bumper; and

$2L_1$ is the length of the stiffener.

4,386,800

TOOL FOR PULLING CABLE

Joe Stegall, 312 Missouri St., Steele, Mo. 63877

Filed Aug. 14, 1981, Ser. No. 292,986

Int. Cl.³ B25B *7/16*

U.S. Cl. 294—100 **1 Claim**



1. A pulling tool for pulling cable through a hole in a wall where the thickness of the wall is much greater than the diameter of the hole, comprising:

a long slender stem sized to pass through the hole and of length greater than the thickness of the wall;

a sleeve surrounding the stem and having an outer diameter sized to pass through the hole, the sleeve having a cylindrical portion with a bore sized to receive the end of the cable, and the sleeve having a tapered portion with a smaller bore communicating with the first mentioned bore and sized to slide snuggly on the stem, the outer surface of the sleeve tapering down gradually from the outer diameter of the cylindrical portion substantially to the diameter of the stem;

a cable grasping member secured to the end of the stem inside said sleeve and comprising spring-wire wound around said end of the stem and soldered to it, the wire extending from the stem inside said cylindrical portion of the sleeve and forming plural fingers having hooked outer ends bent radially inwardly toward each other, the sleeve being moveable along the stem between an unlocked position exposing the hooked ends of the fingers separated from each other by more than the thickness of the cable and a cable locking position in which the fingers and the end of the cable lie entirely inside the cylindrical portion of the sleeve with the hooked ends driven radially into the cable;

the stem supporting a stop member located and operative to limit movement of said sleeve at said unlocked position to keep the soldered portion of the wire just inside the cylindrical portion of the sleeve, said soldered portion of the wire serving as a stop in said locking position by abutting the sleeve near its smaller bore; and

the length of the cylindrical portion of the sleeve being at least twice as long as the length of the wire fingers so that in said locking position at least half of the length of the sleeve covers the cable beyond said hooked outer ends of the fingers.

4,386,801

GROUND EFFECT VEHICLE

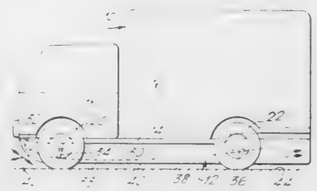
Anthony C. B. Chapman, and Peter G. Wright, both of Norwich, England, assignors to Team Lotus International Limited, Norfolk, England

Filed Nov. 28, 1980, Ser. No. 211,038

Claims priority, application United Kingdom, Nov. 28, 1979, 7941128

Int. Cl.³ B62D *35/02*

U.S. Cl. 296—1 S **9 Claims**



1. A vehicle comprising:

body means,

wheel means for supporting the vehicle on a support surface,

suspension means connecting together said body means and said wheel means, said suspension means being adapted to permit relative movement between said wheel means and said body means,

underbody means shaped to co-operate with said support surface to form therewith a venturi duct, and

means mounting said underbody means for movement with said wheel means relative to said body means.

4,386,802

VEHICLE SLIDING ROOF ASSEMBLY

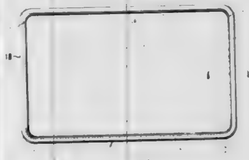
Douglas J. Cunningham, Lutterworth, and Brian S. Bennet, Coventry, both of England, assignors to Britax Weathershields Limited, Birmingham, England

Filed Mar. 3, 1981, Ser. No. 239,980

Claims priority, application United Kingdom, Feb. 27, 1980, 8006564

Int. Cl.³ B60J *7/04*

U.S. Cl. 296—213 **4 Claims**



1. A sliding roof assembly for a vehicle comprises a panel formed of sheet material and slidable between a closed position in which it closes an aperture in the vehicle roof and an open position adjacent to said aperture, a pair of mutually parallel side members, a respective drain channel integral with each of said side members, and an inwardly facing guide channel formed on the outer wall of the drain channel of each of said side members and engaging with a respective edge of the panel, the side members extend below the vehicle roof so that the panel extends below the vehicle roof when in its open position.

4,386,803

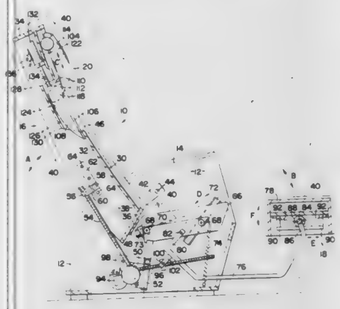
MOTORIZED RECLINING CHAIR

Clarence W. Gilderbloom. 1504 New Bedford Dr., Sun City Center, Fla. 33570

Filed Nov. 5, 1981, Ser. No. 318,604

Int. Cl.³ A47C *1/02*

U.S. Cl. 297—84 **10 Claims**



1. In a motorized reclining chair including a chair frame having arms the improvement comprising: a chair back pivotally connected to the frame wherein said pivotal connection between said back and the frame is offset with respect to the plane defined by said back; first motor means operatively mounted in interconnecting relation between the frame and said back; a seat member movably mounted on the frame; seat engaging means mounted on one end of said back in abutting relation to said seat member, whereby predetermined movement of said back by said first motor means will cause said seat engaging means to move said seat member; an ottoman member pivotally connected to the frame; second motor means operatively mounted in interconnecting relation between the frame and said ottoman member; headrest means movably mounted on said back; and third motor means operatively mounted on said back in interconnecting relation between said back and said headrest means, whereby each of said chair back, said ottoman member and said headrest may be selectively positioned by its corresponding one of said first, second and third motor means independently of the others.

4,386,804

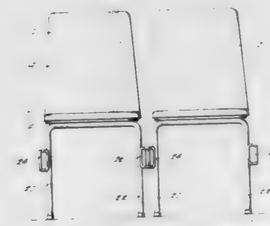
CHAIR GANGING EQUIPMENT

Ronald D. Ware, and Robert J. Bomber, both of Green Bay, Wis., assignors to Krueger Metal Products, Inc., Green Bay, Wis.

Filed Apr. 6, 1981, Ser. No. 251,412

Int. Cl.³ A47C *15/00*

U.S. Cl. 297—248 **5 Claims**



1. In a chair construction including a seat, a frame including pairs of legs on each side for supporting the seat, and ganging means for connecting adjacent chairs in side-by-side relation, the improvement wherein the ganging means comprises:

a. keyway means connected to and projecting laterally from the frame and defining a vertically oriented open-ended slot, the keyway means comprising:

i. support means attached to one pair of legs; and

ii. a pair of spaced loops connected to the support means, the loops having inturned bight portions in allochiral relation to define the slot; and

b. key means connected to and projecting laterally from the frame on the opposite side of the chair from the keyway means, the key means comprising:

i. support means attached to the second pair of legs; and

ii. a pair of spaced loops connected to the support means, the loops having outturned bight portions in allochiral relation to define a key, the key means adapted to interfit in the keyway means of a second chair,

so that the interlocking key means and keyway means afford assembly and disassembly by lifting either the first or second chair, but which provide an interlock against lateral or rotational displacement of either one of the chairs when the key is assembled in the slot.

4,386,805

SEATS WITH AN ADJUSTABLE-TILT BACK-REST

Bernard Boisset, Etampes, France, assignor to Societe Industrielle Bertrand Faure, Etampes, France

Filed Mar. 24, 1981, Ser. No. 246,948

Claims priority, application France, Mar. 26, 1980, 80 06769

Int. Cl.³ A47C *1/025*

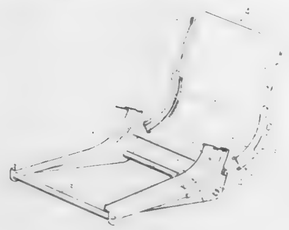
U.S. Cl. 297—362 **8 Claims**

1. A seat, comprising:

a seat bottom having a framework including two transver-

sally spaced, longitudinally extensive guide members which are arcuately curved about the same axis, that being a horizontally disposed axis which extends tranversally of the seat at a level and position approximating the expected disposition of the pivoting axis of the hips of the seat-user; and

a back-rest having a framework including two transversally



spaced, longitudinally extensive bars which are arcuately curved about said same axis;

the back-rest being tilt-adjustably mounted to the seat bottom by having said bars telescopically, slidably, interfittingly mounted to respective of said guide members; and

adjustment and lock means connected between said seat bottom and back-rest for selectively fixing the back-rest at a desired degree of tilt.

4,386,806

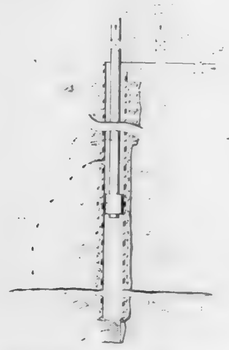
WELL REPAIR FOR IN SITU LEACHING

Steven G. Axen, Miami, Ariz.; Ray V. Huff, Littleton, and Jerry R. Bergeson, Golden, both of Colo., assignors to Occidental Minerals Corporation, Lakewood, Colo.

Filed Feb. 23, 1981, Ser. No. 236,843

Int. Cl.³ E21B *43/28*

U.S. Cl. 299—5 **24 Claims**



1. In an in situ leaching system utilizing an acidic material as a leachant, a method for repairing a permeable portion of a well bore for such in situ leaching system comprising the steps of:

isolating such a permeable portion of the well bore;

introducing into the isolated portion of the well bore a non-acidic aqueous liquid for displacing at least a portion of such acidic material from a region of subterranean formation adjacent the permeable portion of the well bore;

introducing into the isolated portion of the well bore a basic aqueous composition including a polymeric material that gels under acidic conditions;

applying sufficient pressure to the isolated portion of the well bore to displace at least a portion of the basic aqueous composition from the well bore into the region of subterranean formation adjacent the well bore;

introducing sufficient non-acidic aqueous liquid into the well bore for displacing at least a portion of such polymeric material from the well bore; and

discontinuing liquid flow through the well bore for a sufficient time for residual acidic material in the subterranean formation to gel such polymeric material.

4,386,807

PRESSURE REGULATING VALVE FOR HYDRAULIC BRAKE SYSTEMS

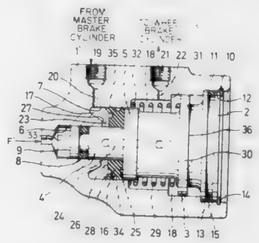
Lucas H. Haar, Niddatal, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 18, 1981, Ser. No. 244,998

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016208

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—6 C **18 Claims**



1. A pressure regulating valve for a vehicular hydraulic brake system comprising:

a housing having a stepped longitudinal bore containing a pressure chamber communicating with a master brake cylinder through an inlet and with at least one wheel brake cylinder through an outlet;

a differential stepped piston disposed in said pressure chamber dividing said pressure chamber into an inlet chamber and an outlet chamber and acted upon by a force toward said outlet, said piston having its larger surface exposed to outlet pressure in said outlet chamber communicating with said outlet and its smaller surface exposed to inlet pressure in said inlet chamber communicating with said inlet; and

an elastomeric sealing ring disposed in said pressure chamber between said inlet and said outlet in a pressure-sealed engagement with a shoulder of said differential piston between a larger diameter section and a smaller diameter section thereof and said smaller diameter section, said sealing ring having a surface thereof remote from said shoulder defining together with a sealing surface of a bottom of said inlet chamber a first passageway communicating with a connecting channel disposed internally of said differential piston, said first passageway and said connecting channel extending between said inlet chamber and said outlet chamber, said first passageway being closed by engagement of said surface of said sealing ring and said sealing surface of said bottom of said inlet chamber by an axial displacement of said differential piston on attainment of a pressure in said inlet chamber and said outlet chamber which is predetermined by said larger and smaller surfaces and said force, said sealing ring including a sealing lip on said surface thereof remote from said shoulder cooperating with a wall of said inlet chamber to close a second passageway between said inlet chamber and said outlet chamber in the event of a first pressure gradient from said inlet chamber to said outlet chamber and to open said second passageway in the event of a second pressure gradient from said outlet chamber to said inlet chamber.

4,386,808

PRESSURE CONTROL VALVE

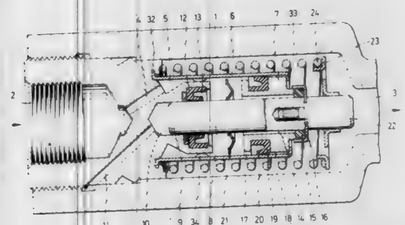
Jochen Burgdorf, Offenbach; Hans-Dieter Reinartz, and Horst Quitmann, both of Frankfurt am Main, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jul. 30, 1981, Ser. No. 288,633

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1980, 3034738

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—6 C **17 Claims**



1. A pressure control valve for a vehicular hydraulic brake system comprising:

a housing having a longitudinal axis, a pressure fluid inlet and a pressure fluid outlet;

a valve disposed in said housing between said inlet and said outlet for pressure control, said valve including

a tubular member disposed in said housing coaxial of said axis,

an annular member disposed coaxial of said axis within said tubular member in an axially slidable relationship therewith,

a control piston disposed coaxial of said axis extending through and in a slidable relationship with said annular member, and

a sealing device carried by said control piston cooperating with said annular member to provide said pressure control; and

a compression spring disposed in said housing coaxial of said axis outside said tubular member, said spring acting on said control piston to provide a force against which said spring must act to establish a predetermined change-over point for said pressure control valve, said spring abutting against at least one abutment surface which is adjustable during assembly.

4,386,809

DRIVING-GUIDANCE SYSTEM FOR A RESILIENT VEHICLE PROPULSION BAND

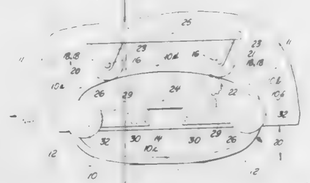
Algis L. Lapsys, Bloomfield Hills, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 16, 1981, Ser. No. 244,548

Int. Cl.³ B62D *55/24, 55/30*

U.S. Cl. 305—31 **7 Claims**

1. In a military ground vehicle supported at its sides on endless resilient bands, each band including a lower run engageable with the ground, an upper run spaced above the ground, and curved end sections connecting the lower and upper runs; the improvement comprising two floating end rollers engageable with inner surfaces of the band end sections; a spring mechanism continuously biasing each end roller into pressure engagement with the respective band surface when the band end sections move away from each other incident to movement of the upper and lower runs toward each other; two load rollers carried by the vehicle in pressure engagement with the upper surface of the band upper run; said load rollers being located above and between the end rollers so that each load roller carries approximately the same load; each of the four



rollers having axially-spaced radial flanges overlapping the band lateral edges to preclude sidewise slippage of the band off of the rollers.

4,386,810

RADIAL AND BI-DIRECTIONAL THRUST BEARING

Michael J. McGuffie, Harwinton, Conn., and David A. Lorinovich, Centerville, Ohio, assignors to The Torrington Company, Torrington, N.J.

Filed Jul. 31, 1981, Ser. No. 288,975

Int. Cl.³ F16C *19/18*

U.S. Cl. 308—174 **3 Claims**



1. A radial and bi-directional thrust bearing comprising: a stationary inner-annular race; rotatable tandem outer raceways separated by radially, inwardly-directed annular shoulder means, the inside diameters of the rotatable outer raceways being equal to one another and larger than the outside diameter of the inner-annular race to provide an annular space; two tandem sets of rollers rotatably-mounted in the annular space, the rollers of each set adapted to engage the radially, inwardly-extending annular shoulder means; a radially, outwardly-extending shoulder extending from the inner race partially across the annular space, said shoulder being axially-spaced from the shoulder means of the outer raceways and normally axially spaced from but adapted to be engaged by the rollers of one set of rollers; a thrust ring mounted about the inner race and extending partially across the annular space, said thrust ring being normally axially spaced from but adapted to be engaged by the rollers of the other set of rollers; a sealing member extending across the annular space between the inner race shoulder and one outer raceway; and a sealing member extending across the space between the thrust ring and the other outer raceway, whereby axial thrust loads in one direction will move one set of rollers into engagement with the inner race shoulder and the thrust load is carried through the outer raceway shoulder means, through one set of rollers, and through the inner race shoulder, and an axial thrust load in the other direction will move the other set of rollers into engagement with the thrust ring and the thrust load is carried through the outer raceway shoulder means, through the other set of rollers, and through the thrust ring.

4,386,811

BALL BEARING

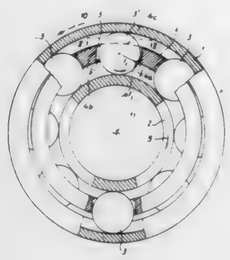
Rutgerus S. Heemskerk, Vianen, and Hendrik v Engelenburg, Driebergen, both of Netherlands, assignors to SKF Industrial Trading & Development Co., Nieuwegein, Netherlands

Filed Jul. 7, 1981, Ser. No. 281,051

Claims priority, application Netherlands, Jul. 7, 1980, 8003921

Int. Cl.³ F16C *33/38*

U.S. Cl. 308—188 **4 Claims**



1. A ball bearing having inner and outer race rings, a plurality of balls in the annular space between the race rings and a cage for circumferentially spacing the balls and spaced from the outer ring by a small radial clearance, said cage being formed by an annular member having a plurality of openings for the balls, each opening having a generally circular cylindrical wall with a longitudinal axis directed toward the center of the cage, said balls engaging in the openings with a small clearance, projection means adjacent the inner circumferential edge of the cage directed inwardly from said cylindrical wall whereby when the cage is in contact with the outer race ring, the balls near this point of contact engage the projections producing a force directed in a circumferential direction, said balls engageable with the cylindrical circular wall producing a force which is directed generally radially outwardly to displace the cage towards the outer ring whereby the cage rotates eccentrically in a stable manner and means guiding the cage against displacement in an axial direction.

4,386,812

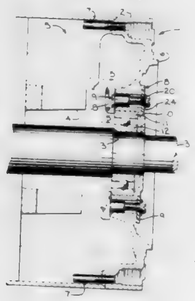
BEARING LOCK FOR A DYNAMOELECTRIC MACHINE

Wesley K. Anderson, Schofield, Wis., assignor to Marathon Electric Manufacturing Corp., Wausau, Wis.

Filed Jul. 6, 1981, Ser. No. 280,799

Int. Cl.³ F16C *35/077, 33/30*

U.S. Cl. 308—236 **11 Claims**



1. A bearing locking assembly for a dynamoelectric machine having a frame and shaft, comprising a bearing bracket assembled over an end portion of the shaft of the dynamoelectric machine and secured to the frame of the dynamoelectric machine, a bearing seat provided in the bracket around the shaft of the dynamoelectric machine, a bearing disposed around the shaft in said seat, said bearing including an outer peripheral member located outwardly of the bearing seat, at least one abutment provided in the bracket on one side of the bearing and shaft, a generally centrala opening located in the abutment and an inboard wall disposed at the inner end of the central opening, said inboard wall having a slotted opening, said slotted opening being noncircular and having a width extending across the bearing seat and having a radial depth less than said width, and bearing fastening means extending through the slotted opening and the central opening and having a support means and a symmetrical head of a length greater than said radial depth and less than said width and movable through said slotted opening and rotatable about the support means to a position crossways of said slot and preventing movement through the opening and said head having a first portion to one side of said support means disposed to overlap a portion of the peripheral member of the bearing so that when the fastening means is secured within the abutment the bearing is held securely within its seat around the motor shaft.

4,386,813

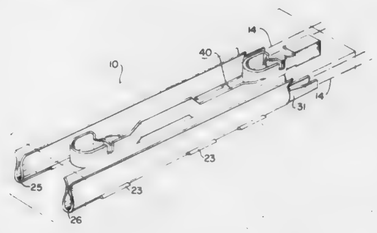
CURRENT TAP GROUND CONTACT

Richard H. Griffin, Riverside, R.I., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 3, 1981, Ser. No. 270,088

Int. Cl.³ H01R *13/652*

U.S. Cl. 339—14 R **10 Claims**



1. In a current tap of the type comprising a molded body having a first pair of parallel plug receivable openings in one side of said body, second and third pairs of parallel plug receivable openings in the opposite side of said body, a ground connection opening adjacent each of said pair of parallel plug receivable openings, a pair of parallel contact strips disposed in said body in adjacent relationship to said pairs of parallel plug receivable openings, the combination therewith of a ground contact strip comprising:

a generally planar strip disposed between said contact strips and including first and second D shaped loop receptacles each underlying one of said ground connection openings associated with said first and second pair of receivable openings, and having an arcuate front portion terminating at a location spaced from said strip and an arm extending toward said strip, said strip further including first and second slots in said strip, each said slot being adjacent the end of one of said arms for receiving the same to allow each said arm to move when a ground plug is inserted into said associated ground opening.

4,386,814

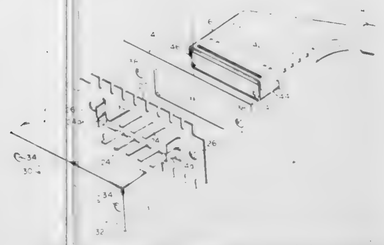
KIT FOR CONVERTING A PANEL OPENING TO A SHIELDED PIN RECEPTACLE

John C. Asick, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 17, 1981, Ser. No. 293,058

Int. Cl.³ H01R *4/66*

U.S. Cl. 339—14 R **7 Claims**



1. A kit for converting a connector receiving aperture in a panel or the like to a shielded pin receptacle, comprising:

a metal ground plane spring having a plurality of outwardly directed spring fingers, a central opening and a plurality of tines directed toward said opening and extending at substantially right angles to the plane of said spring, and means to mount said spring on said panel; and

a shroud of insulative material having a central cavity profiled to receive the tines of said spring therein, a patterned array of apertures in the bottom of said cavity, and means for mounting said shroud on said panel,

whereby a shielded connector can be accepted through said panel in wiping engagement with said tines of said spring to effect grounding of said shielding to said panel and engage pin terminals entering said shroud cavity through the apertures thereof.

4,386,815

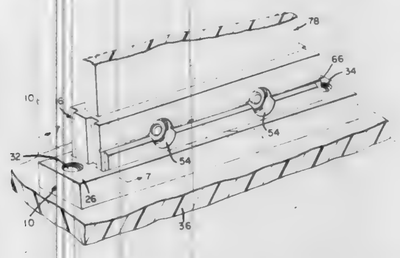
CONNECTOR ASSEMBLY FOR MOUNTING A MODULE ON A CIRCUIT BOARD OR THE LIKE

Clyde T. Carter, Shermans Dale, and Reuben E. Ney, Mt. Joy, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 8, 1981, Ser. No. 252,509

Int. Cl.³ H01R *9/09*

U.S. Cl. 339—17 M **13 Claims**



1. An electrical connector system for effecting mother/-daughter circuit board interconnections comprising:

a header member mounted on a mother circuit board, said header member having a central cavity at least partially enclosing a plurality of contact pads on said mother circuit board; and

a plug assembly mounted on said daughter circuit board, said plug assembly comprising an outer housing defining a cavity, an inner housing slidably received in said cavity, means for attaching said daughter circuit board to said inner housing, a spring terminal array mounted between said outer housing and said daughter circuit board, and at least one back-up spring member mounted between said inner and outer housings in opposition to said spring terminal array,

whereby relative movement of said inner housing with respect to said outer housing after initial engagement of said plug assembly into said header causes said terminal array to engage with said mother circuit board to interconnect said mother and said daughter circuit boards.

4,386,816

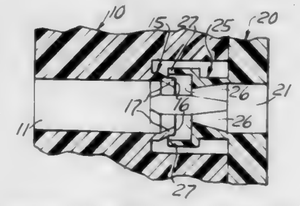
ELECTRICAL CONNECTOR INSERT ASSEMBLY

David L. Frear, Afton, and David O. Gallusser, Oneonta, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 30, 1981, Ser. No. 279,144

Int. Cl.³ H01R *13/42*

U.S. Cl. 339—59 R **6 Claims**



1. In combination with an electrical connector having front releasable and rear removable contacts, said connector of the type having: a housing; a plurality of contacts, each having a rear portion, a forward mating portion, and an enlarged middle portion having a forwardly facing shoulder and a rearwardly facing shoulder; and means for releasably mounting said contact in said housing including a rear insert having a plurality of bores each having the rear portion of a respective contact therein, a plurality of resiliently and radially deflectable members extending from the forward portion of each of said bores, and a forward insert having a plurality of bores aligned with the bores in the rear insert and having a portion of the forward portion of a respective contact therein, the improvement wherein:

the forward insert includes a second plurality of resiliently and radially deflectable members extending from the rear portion of each said bores, each of said members having a free end portion that includes a rearwardly facing shoulder, said rearwardly facing shoulder of said forward insert engaging the forwardly facing shoulder of a respective contact, and a tapered surface, tapering radially outwardly away from the rearwardly facing shoulder of the forward insert, the tapered surfaces of said forward insert members adapted to receive a tool inserted into a respective bore from the front of the forward insert to deflect said members radially outwardly; and

each of said deflectable members of said rear insert includes a free end portion and a forwardly facing shoulder located rearwardly of said free end portion, said forwardly facing shoulder of the rear insert engaging the rearwardly facing shoulder of a respective contact, the free end portion of said members of the rear insert overlapping a portion of the free end portion of said members of the front insert, the members of said rear insert adapted to be deflected radially outwardly by the members of the forward insert when the members of the forward insert are radially deflected, whereby when a tool is inserted into one of the bores in the front insert to engage and radially deflect the members of the first insert, the deflectable members of said second insert are also deflected thereby disengaging the forwardly facing shoulder of the second insert members from the rearwardly facing shoulder of the contact so that

the contact may be removed from the rear of the bore in the rear insert.

4,386,817

CABLE UNDERPINNING

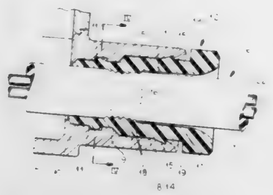
Horst Benker, Heilbronn; Lienhard Plensat, and Gernot Kratzer, both of Ostfildern, all of Fed. Rep. of Germany, assignors to Richard Hirschmann, Radiotechnisches Werk, Esslingen, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 218,946

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 7936017[U]

Int. Cl.³ H01R *13/58*

U.S. Cl. 339—103 B **4 Claims**



1. A cable underpinning comprising:
an electrical cable having a flexible sheath;
a housing;
a cable inlet in the form of a pipe stub connected to said housing and provided on an inner surface with at least one recess; and
a deformable circumferentially continuous sleeve-shaped clamping member provided with gripping means including at least one longitudinally extending slit-shaped window bounded at its ends for lockingly engaging said sheath upon a force-fit insertion of said member into said stub, said clamping member having an outwardly projecting portion protruding into said recess upon said force-fit insertion, whereby rotation and axial motion of said member relative to said stub is prevented, said stub having an inner diameter smaller than a corresponding outer diameter of said member in an unstressed state thereof, whereby said member is clamped to said sheath upon said force-fit insertion, said stub having at an end spaced from said housing a first cylindrical inner surface having a diameter substantially equal to the outer diameter of said member in an unstressed state thereof, said stub being provided between said first cylindrical surface and said housing with a second cylindrical surface having a diameter smaller than the outer diameter of said member in an unstressed state thereof, said cylindrical surfaces being connected by a frusto-conical surface, said gripping means including on an inner surface of said member an arcuate projection disposed substantially at said window and in the region of said frusto-conical surface upon said force-fit insertion whereby said frusto-conical surface drives said sheath partly into said window and said projection into said sheath.

4,386,818

POLARITY INDICATING CONNECTOR FOR BATTERY JUMPER CABLES

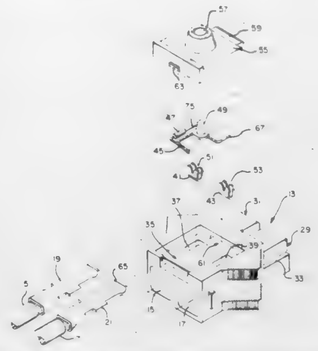
Wayne L. Millhimes, Hershey, and Daniel J. Murren, Dillsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 27, 1981, Ser. No. 257,689

Int. Cl.³ H01R *3/00, 25/02*

U.S. Cl. 339—113 L **1 Claim**

1. Polarity indicating connector for battery jumper cables, comprising
a. a pair of mateable housings with each housing including a pair of contacts positioned in separate passages extending therethrough, said contact having cable attaching means at one end and contact blades at another end with the free end of the blades being curved back to provide a cup-shaped end, and a pair of electrically conductive spring members with one end staked in the housings and with the other end received in the cup-shaped end on the contacts;
b. polarity indicating means including an indentation in one housing with a pair of apertures extending from the indentation through the housing to the spring members, a pair of



U-shaped displacement contacts having wire-receiving slots at the free ends thereof, said contacts being positioned in the apertures with the bights engaging the spring members to effect electrical contact with the contacts through said spring members, and with the free ends extending into the indentation, and an LED electrically connected to the free ends of the contacts by wires being received in said slots; and
c. a cover having an opening therethrough, said cover covering the indentation with the opening exposing the LED.

4,386,819

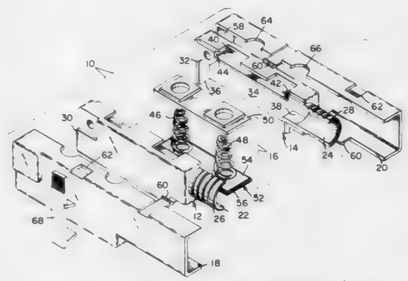
RF SHIELDED ASSEMBLY HAVING CAPACITIVE COUPLING FEATURE

John C. Asick, Harrisburg; Leon T. Ritchie, Mechanicsburg, and Clair W. Snyder, Jr., York, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 31, 1981, Ser. No. 297,543

Int. Cl.³ H01R *4/66*

U.S. Cl. 339—147 R **14 Claims**



1. In combination with an electrical connector terminating a shielded cable, shielding means providing capacitive coupling to ground all cabled equipment to like ground potential, comprising:
a pair of mating metal shells together defining a cavity having an opening forming a connector engaging face, said cavity receiving said connector therein with its mating portion exposed at said face, and a cable entry extending at right angles to said cavity and through which said cable extends;
annular crimp ring adapted to secure shielding of said cable to the mated shells; and
a capacitor assembly received in said shell members in extending in the opposite direction from said connector engaging face, said capacitor assembly engaging a closure of the cabled equipment to assure like ground potential for the entire system.

4,386,820

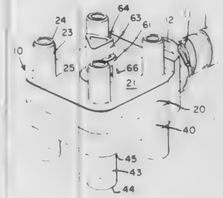
MODULAR CONNECTOR FOR POWER SYSTEMS

Frank P. Dola, Port Richey, and Vincent Nicholas, Brooksville, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 29, 1980, Ser. No. 182,345

Int. Cl.³ H01R *13/64, 27/02*

U.S. Cl. 339—156 R **5 Claims**



1. A modular connector, comprising:
a first plurality of conductive terminals, each said terminal having a first mating end and a second mating end on a common linear axis with an integral web therebetween, said web having termination means thereon, said first end of one such terminal being matable to said second end of another such terminal by moving said first end of one such terminal axially toward said second end of another such terminal,
a male housing having a first face and a second face, said first face having a first plurality of parallel male legs extending therefrom, each said leg having a remote end and a housing end, each said leg having a passage extending axially inward from said remote end to said housing end, each said passage communicating with said second face, one of said male legs being a male keying leg having a certain external profile, said keying leg being positioned centrally of the remaining male legs, said remaining male legs being a second plurality, said remaining male legs having radial symmetry about said male keying leg, said male keying leg being an extension of a male keying member having a profiled base which complements a profiled recess in said second face of said male housing in a second plurality of orientations,
a female housing having a first face and a second face, said first face having a first plurality of parallel female legs extending therefrom, each said leg having a remote end and a housing end, each said leg having a passage extending axially inward from said remote end to said housing end, each said passage communicating with said second face and being profiled to accommodate a male leg, one of said female legs being a female keying leg, said passage having a certain internal profile which complements said certain external profile of said male keying leg, said female keying leg being positioned centrally on the remaining female legs, said remaining female legs being a second plurality, said remaining female legs having radial symmetry about said female keying leg, said female keying leg being an extension of a female keying member having a profiled base which complements a profiled recess in said second face of said female housing in a second plurality of orientations, each said orientation being such that one modular connector can be mated with another modular connector in only one orientation, whereby, a modular connector may be assembled by terminating a conductive element to said termination means on each of said terminals and sandwiching said terminals between said second faces of said male and female housings, each said terminal having its first end received in the passage of a male leg and its second end received in the passage of a female leg, said second faces being profiled to accommodate said termination means and said conductive elements therein, said modular connector being matable to another said modular connector by inserting said remote ends of said male legs into the passages in the remote ends of the female legs of said other modular connector, said first ends of said terminals in said modular connector mating to said second ends of said terminals in said other modular connector, and said orientation of each said keying leg relative to its housing may be changed by removing the respective keying member from the housing and rotating it to another orientation where said base complements said profiled recess and inserting the keying member back into the housing, said keying legs shaped to permit or prevent mating depending upon their rotational orientation.

4,386,821

OPTO-ELECTRONIC COUPLING HEAD AND METHOD FOR FITTING SUCH A HEAD

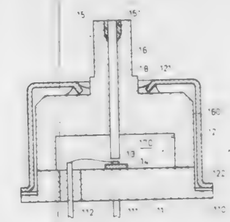
Jacques Simon, and Bernard Defaut, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 2, 1980, Ser. No. 193,019

Claims priority, application France, Oct. 5, 1979, 79 24892

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.2 **6 Claims**



1. In an opto-electronic coupling head of the type incorporating a device for supporting an opto-electronic component, the improvement comprising:
an optical fiber section;
a fiber holder for positioning an optical fiber section;
an encapsulating device including a semiconductor case having a base and a cap, said cap having a circular opening via which the fiber holder extends through the case, wherein said fiber holder on one end bears against said base of said case and wherein a slot is provided at said one end in which said opto-electronic component is situated, the other end of said fiber holder being formed with a shoulder having an annular face which bears against the edge of said circular opening of said cap and wherein said shoulder has a diameter substantially equal to the internal diameter of said cap.

4,386,822

POLARIZER AND METHOD

Ralph A. Bergh, Palo Alto, Calif., assignor to The Leland Stanford Junior University, Stanford, Calif.

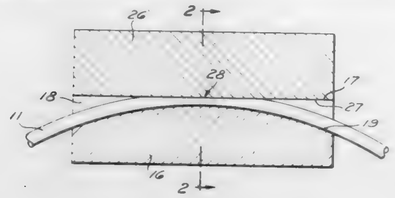
Filed Oct. 10, 1980, Ser. No. 195,934

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.15 **13 Claims**

1. In apparatus for controlling the polarization of light: a fiber optics waveguide for transmitting light along a predetermind path, said fiber optics waveguide including a core and a

cladding, and a body of birefringent material disposed in proximity to a portion of said fiber optics waveguide, the cladding of said portion having a thickness such that the evanescent field of light transmitted by said fiber optics waveguide propagates within said birefringent material, said fiber optics waveguide and said birefringent material having refractive indices such that the wave velocity of light of a first selected polarization in the birefringent material is on the order of or less than the wave velocity of light in said fiber optics waveguide and the wave velocity of light of a second selected polarization in the birefringent material is greater than the wave velocity of light in said fiber optics waveguide for coupling light of the first polarization from said fiber optics waveguide to a bulk wave mode in said birefringent material while light of the second polarization remains in said fiber optics waveguide.

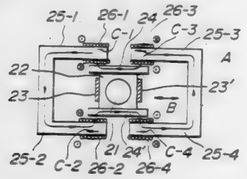


4,386,823

OBJECTIVE LENS DRIVING DEVICE

Toru Musha, Hachioji, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Dec. 17, 1980, Ser. No. 217,117
Claims priority, application Japan, Jun. 16, 1980, 55-81011
Int. Cl.³ G02B *7/02*
U.S. Cl. 350—247 **5 Claims**



1. In an objective lens driving device for driving an objective lens and correcting a relative positional error, i.e. a tracking error between an information track recorded spirally or concentrically on a record medium and a light spot projected onto the record medium by means of the objective lens, the improvement comprising

a supporting means for movably supporting said objective lens or its holding means in a direction perpendicular to an optical axis of the objective lens as well as the information track;

first and second magnetic members arranged at both sides of the objective lens or its holding means as viewed in a direction perpendicular to said moving direction of the objective lens or its holding means and made integral therewith;

first, second, third and fourth yokes each including one portion opposed through an air gap to one of the two ends of one of said magnetic members;

first, second, third and fourth coils each wound around that portion of said yoke which is opposed to said one end of one of said magnetic members; and

a magnetic field generation means for producing a closed loop of magnetic field passing through said first, second, third and fourth yokes as well as said first and second magnetic members;

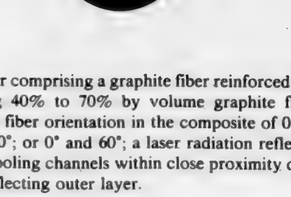
whereby said first, second, third and fourth coils are supplied with an electric current corresponding to a tracking error signal representing said relative positional error so as to displace said first and second magnetic members and said objective lens in a direction perpendicular to its optical axis and to the information track, thereby correcting the tracking error.

4,386,824

MOTOR VEHICLE LAMP REFLECTOR

Geoffrey R. Draper, Lichfield, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 17, 1980, Ser. No. 217,468
Claims priority, application United Kingdom, Dec. 22, 1979, 7944313
Int. Cl.³ F21V *7/06*; G02B *5/12*
U.S. Cl. 350—296 **5 Claims**



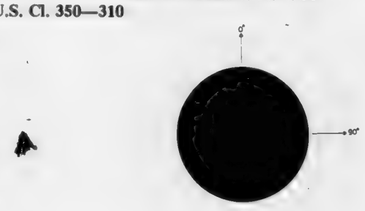
1. A rectangular reflector comprising a dished body having means defining a front opening and an internal reflective surface, said reflective surface having upper, lower and lateral reflective surface portions, wherein at least one of said upper and lower reflective surface portions comprising a muliplicity of non-circular curves extending forwardly of said body to terminate at said front opening, said curves having coincident foci, and said curves increasing in focal length from the centre of the reflective surface portion to said lateral reflective surface portions.

4,386,825

COOLED, THERMALLY STABLE COMPOSITE MIRRORS

Robert K. Stalcup, Lake Park, Fla., and Karl M. Prewo, Vernon, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 54,098, Jul. 2, 1979, Pat. No. 4,256,378. This application Dec. 23, 1980, Ser. No. 219,771
The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.
Int. Cl.³ G02B *5/10, 7/18*
U.S. Cl. 350—310 **5 Claims**



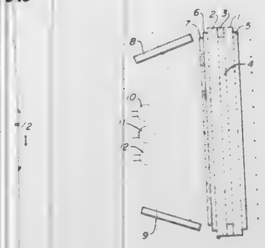
1. A laser mirror comprising a graphite fiber reinforced glass matrix containing 40% to 70% by volume graphite fibers, having a graphite fiber orientation in the composite of 0° and 90°; 0°, 45° and 90°; or 0° and 60°; a laser radiation reflecting outer layer and cooling channels within close proximity of the laser radiation reflecting outer layer.

4,386,826

ALPHANUMERIC DISPLAY WITH ELECTRONICALLY CONTROLLED COLORS

Michael Stolov, 25 Hapoel St., Nof-Yam, Israel

Filed Sep. 10, 1980, Ser. No. 185,738
Claims priority, application Israel, Sep. 10, 1979, 58213
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—345 **7 Claims**



1. A display device for displaying alphanumeric characters, and indication figures in any desired color, comprising in combination:

a liquid crystal display means having polarizing means and a pair of opposed light transmissive plate means for displaying a desired pattern;

a plurality of light sources of different colors for illunitating the said liquid crystal display means, said light sources being centrally disposed behind a first of said plate means;

a number of flat mirrors disposed about said plurality of light sources, the edges of said mirrors being positioned close to the edges of said first plate means, at least two of said mirrors making an acute angle with respect to each other thereby making it possible to increase the illumination efficiency of the light sources;

light diffusing means interposed between said first plate means and said light sources thereby causing a uniform light output by mixing of several light sources of different colors over the surface of said display means; and

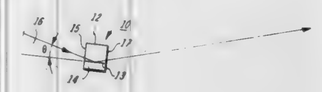
means for energizing predetermined parts of the liquid crystal display and simultaneously for energizing different colored light sources causing the energized pattern of the liquid crystal display to emit light in a desired color, according to the colors of the energized light sources.

4,386,827

ELECTROOPTICAL SCANNING DEVICE

Donald R. Scifres, Los Altos, and Robert A. Sprague, Saratoga, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 27, 1980, Ser. No. 200,756
Int. Cl.³ G02F *1/03*
U.S. Cl. 350—356 **22 Claims**



1. An electrooptical scanning device for deflection of an optical beam of light across an image plane comprising

a body of electrooptical material,

a source of light for providing a wide beam of light through said body such that the light suffers a single internal reflection from a major surface of said body,

a periodic array of spaced electrodes associated with said major surface of said body, at least a portion of the lengths of said electrodes extending in the general direction of travel of said light beam and arranged, in response to a voltage applied thereto, to provide an electric field in said body along said electrode portions to influence the deflection of said light beam at the point of said internal reflection at said major surface,

circuit means to individually address each of said electrodes with a selected voltage, the manner of voltage selection to be applied by said circuit means across said electrodes and characterized in that the voltages selected approximte the instantaneous phase retardation desired along the phase front of said light beam, said selection comprising the division of said electrodes into groups serially across said electrode array wherein the voltage values are applied to the electrodes in each electrode group starting from a minimum voltage value at the first electrode of each group and progressing monotonically to a maximum voltage value at the last electrode of each group, the monotonical representation of said voltage progression across each electrode group being an approximation of the instantaneous phase retardation along the phase front of said light beam associated with each electrode group,

a change in the instantaneous phase retardation desired along the phase front of said light beam accomplished by changing the number of electrodes in each group in combination with a change in said maximum voltage value and monotonical voltage progression across said electrode groups so that the monotonical representation of said voltage progression across each electrode group approximates a new phase retardation for said light beam representing a new phase front for said light beam.

4,386,828

TELECENTRIC ILLUMINATION SYSTEM

Hideo Hirose, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed May 13, 1981, Ser. No. 263,174
Claims priority, application Japan, May 26, 1980, 55-68997
Int. Cl.³ G02B *13/22, 15/16, 21/06*
U.S. Cl. 350—427 **5 Claims**



1. An illumination system for performing telecentric illumination throughout a wide variation range of magnification while maintaining a large distance to an object to be illuminated, said illumination system comprising:

a converging first lens group remaining fixed when the magnification is varied;

a diverging second lens group movable along the optical axis;

a converging third lens group movable along the optical axis;

a converging fourth lens group remaining fixed when the magnification is varied; and

a light source located at the focal point of said fourth group,

said first to fourth groups and said light source being arranged in this order as viewed from the side of said object, and said second and third groups are moved along the optical axis in a determined relation in such manner as to make an image of said light source formed between said first and third groups thereby changing the state of illumination between that for high magnification and that for low magnification.

4,386,829

MECHANICAL MOUNTING SYSTEM FOR A ZOOM LENS ASSEMBLY

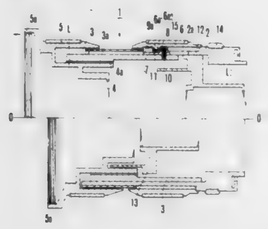
Akiyasu Sumi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 166,825

Claims priority, application Japan, Jul. 13, 1979, 54-89118; Jul. 20, 1979, 54-92308; Aug. 31, 1979, 54-111537

Int. Cl.³ G02B *7/10*

U.S. Cl. 350—429 **11 Claims**



1. In a zoom lens assembly defining an optical axis having first and second movable lens means operative to effect zooming operation, first and second lens holding means operatively supporting said first and second movable lens means, a cylindrical member operative to enable said first and second lens holding means to move in the axial direction of said lens assembly, and focusing means rotatable about said optical axis for moving said first and second lens means to effect focusing thereof, the improvement comprising:

a zoom actuator member rotatable about said optical axis and arranged to be accessible from outside of said assembly having a first and second cam portion for controlling axial movement of said first and second movable lens means upon rotation of said zoom actuator member, said first and second cam portions having a camming surface formed on one axial side of a projected portion extending from the inner peripheral surface of said zoom actuator member;

cam follower means responsive to rotation of said zoom actuator member for causing said first and second movable lens means to follow said first and second cam portion, respectively, said cam follower means having a key member fitted in a linear guide slot extending parallel to said optical axis and provided in said cylindrical member, a detent element held in said key member and contacting said camming surface of said cam portion and a stop member affixed to said key member and arranged to bracket said cam portion; and

biasing means urging said detent element in an axial direction of said assembly so that said detent element is pressed against said camming surface.

4,386,830

INCIDENT LIGHT, BRIGHT-FIELD KOHLER ILLUMINATING DEVICE

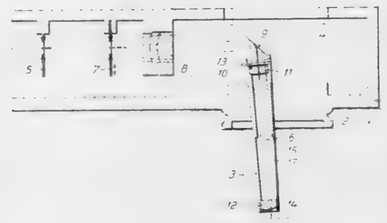
Hans-Werner Stankewitz, Steindorf; Hans Determann, Nauborn, and Guenter Reinheimer, Biebertal, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 298,158

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1980, 3033758

Int. Cl.³ G02B *21/06*

U.S. Cl. 350—524 **14 Claims**



1. An incident light, bright-field, Kohler illuminating device for a microscope which reflects an illuminating beam into one half of the pupil of a microscope objective; said illuminating device comprising:

(a) luminous field diaphragm;

(b) a first optical element for producing an intermediate image of said luminous field diaphragm;

(c) a deflecting mirror disposed adjacent said intermediate image of the luminous field diaphragm, said deflecting mirror covering less than half of the cross section of the observation beam of said microscope and having an inclination such that the optical axis of an illuminating beam deflected by said mirror converges with the optical axis of the microscope objective;

(d) an aperture diaphragm;

(e) means disposed adjacent said intermediate image of the luminous field diaphragm for imaging said aperture diaphragm; and

(f) a second optical element disposed adjacent the pupil of the microscope objective for deflecting the optical axis of an illuminating beam such that the rearward extension of the illuminating beam passes through the center of an intermediate image produced by the microscope objective.

4,386,831

DEVICE FOR THE MEASUREMENT OF ELECTRICAL POTENTIALS OF THE EYE

Pierre-Alain Grounauer, Rue de l'Ale 38, 1003 Lausanne, Switzerland

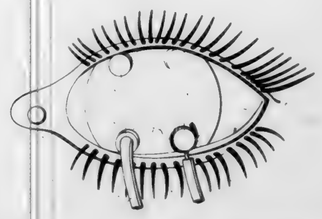
Filed Feb. 24, 1981, Ser. No. 237,737

Claims priority, application Switzerland, Mar. 14, 1980, 2009/80

Int. Cl.³ A61B *3/10*; G02C *7/04*

U.S. Cl. 351—205 **9 Claims**

1. A device for the measurement of electrical potentials appearing on the cornea of the human or aninal eye in response to a light stimulation of said eye and so as to establish an electroretinogram (ERG), which consists in a corneal lens provided with a measurement electrode, at least a portion of said electrode being flush with the concave surface of the lens or protruding from said surface so as to be in service position directly in contact with the cornea of the eye, and the convex



surface of the lens comprising means for maintaining in service position the eyelids opened.

4,386,832

ADJUSTABLE LUMINOUS INTENSITY SUN GLASSES

Giorgio Nannini, Via Grandi 153, Modena, Italy

Continuation of Ser. No. 53,848, Jul. 2, 1979, abandoned. This application Jul. 22, 1981, Ser. No. 285,764

Claims priority, application Italy, Sep. 1, 1978, 289898/78

Int. Cl.³ B02C *7/12*; G02C *1/00, 5/02*

U.S. Cl. 351—49 **5 Claims**

1. In adjustable luminous intensity sun glasses of the type having a frame provided with a bridge portion connecting right and left frame sections each supporting a pair of polarizing lenses with the front lens of each pair being fixed and the rear lens being rotatable, and rearwardly extending temple pieces, the improvement comprising:

an elastic front frame component having a bridge portion connecting right and left sections each supporting a fixed polarizing lens and having a tab on its lateral outer side provided with a dap-seat engaging portion and a portion extending inwardly toward said bridge portion in spaced relation to the rear side of the corresponding section, said front frame component normally being forwardly convex and rearwardly concave in plan view;

an elastic rear frame component having a bridge portion connecting right and left sections each rotatably supporting a polarizing lens, said rear frame component being adapted normally to seat closely against said front frame component, said rear frame component having dap seats on its lateral edges to receive said dap-seat engaging portions of said tabs with said inwardly extending portions of said tabs in overlying engagement with said rear frame component sections to secure said front and rear components together, whereby said elastic frame components may be deformed to flatten their concavo-convex configuration sufficiently to disengage said dap-seat engaging tab portions from said dap seats and permit said components to be detached from one another by relative sliding movement therebetween.

4,386,833

EPI-ILLUMINATION TYPE PROJECTION DEVICE

Hideo Hirose, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jun. 11, 1981, Ser. No. 272,760

Claims priority, application Japan, Jun. 20, 1980, 55/88883

Int. Cl.³ G03B *21/06, 3/02*

U.S. Cl. 353—67 **13 Claims**



1. An epi-illumination type projection device for forming a projected image of an object, said device comprising:

a body having a screen;

first and second projection lens means alternately mounted at a predetermined location on said body to form different projected images on said screen;

each of said first and second projection lens means having an engaging surface engaged with said body at said predetermined location, a beam splitter disposed obliquely with respect to the optical axis of said projection lens means, a convergent lens group provided on that side of said beam splitter which is adjacent to the object, and an auxiliary condenser lens provided laterally of said beam splitter;

the distance between the position whereat the beam splitter of said first projection lens means intersects the optical axis and said engaging surface of said first projection lens means being equal to the distance between the position whereat the beam splitter of said second projection lens means intersects the optical axis and said engaging surface of said second projection lens means; and

an illuminating system having a light source and a main condenser lens provided in said body to supply an illuminating light to the object through said projection lens means when each of said projection lens means is positioned at said predetermined location.

4,386,834

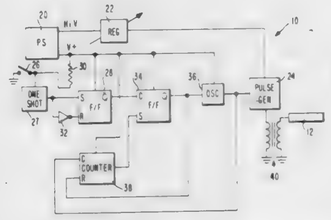
KIRLIAN PHOTOGRAPHY DEVICE

William K. Toolan, Dix Hills, N.Y., assignor to Kirlian Equipment Corporation, Jericho, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,621

Int. Cl.³ G03B *41/00*; H01T *19/00*

U.S. Cl. 354—3 **12 Claims**



1. A corona discharge photography device comprising electrode means; means for holding a photographic recording medium adjacent said electrode means to contact a specimen to

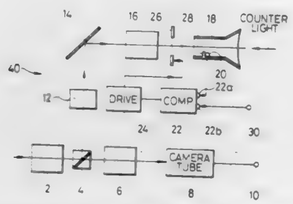
be subjected to corona discharge photography; a source of electrical control pulses; activating means for activatin g said electrical control pulse source; a counter for counting electrical control pulses from said electrical control pulse source and deactivating said electrical control pulse source in response to counting of a preset number of electrical control pulses; a voltage source; voltage regulator means for regulating the voltage level of the voltage from said voltage source; high voltage generating means coupled to said voltage regulator means and said electrical control pulse source and responsive to each electrical control pulse for generating from the regulated voltage a high voltage electrical pulse; and means coupling said high voltage pulse generating means to said electrode means for application of the high voltage pulses thereto to cause corona discharge about a specimen contacting a photographic recording medium adjacent said electrode means to make a corona discharge photograph of the specimen on the photographic recording medium.

4,386,835

DEVICE FOR REDUCING COUNTER-LIGHT INCIDENT ON A SINGLE-LENS REFLEX VIEW FINDER

Yuzuru Inoue, Machida, Japan, assignor to Victor Company of Japan, Limited, Yokoham, Japan

Filed Sep. 9, 1981, Ser. No. 300,540
Claims priority, application Japan, Sep. 11, 1980, 55-126375
Int. Cl.³ G03B *13/02*
U.S. Cl. 354—23 R **9 Claims**



1. A device for reducing counter-light incident on an eyepiece of an eyepiece assembly of a single-lens reflex view finder, comprising:

(a) first means responsive to counter-light incident on said eyepiece for producing an electrical signal indicative of the intensity of said counter-light;

(b) second means responsive to said signal from said first means for producing a control signal; and

(c) third means for reducing the amount of said counter-light in said view finder in response to said control signal.

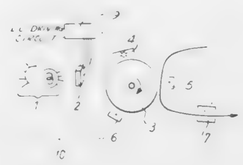
4,386,836

ELECTRO-PHOTOGRAPHIC PRINTER

Kenji Aoki; Haruo Nakamura; Teiji Miura, and Mitsuo Nagata, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 220,484
Claims priority, application Japan, Dec. 28, 1979, 54-171799; Jan. 8, 1980, 55-745; Jan. 10, 1980, 55-1576; Feb. 13, 1980, 55-16326; May 26, 1980, 55-69857; Oct. 6, 1980, 55-139458
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **36 Claims**

1. An electro-photographic printer comprising light cell means having first and second opposed electrode means and a nematic liquid crystal material in a twisted nematic mode disposed between said first and second electrode means, said liquid crystal material having a dielectric anisotropy equal to zero at a relatively low critical frequency, fc, said critical frequency being less than 100 kHz when the temperature of said liquid crystal material is 40° C., the dielectric anisotropy being positive for frequencies below said critical frequency, fc, and negative for frequencies above said critical frequency, fc, illuminating means for directing light at one of said first and second electrode means, driving means coupled to said first and second electrode means for selectively driving said liquid crystal material by a two frequency driving mode so that light from said illuminating means is selectively transmitted through said cell means said driving means driving said liquid crystal material by selectively applying at least two signals across said liquid crystal material, a first said signal being a frequency fl, fl being lower than fc and a second signal being of frequency fh, fh being higher than fc, photo-sensitive means for receiving the light from said illuminating means transmitted through said cell means for forming an image in response thereto, said first electrode means including a common electrode having a plurality of transparent regions, said second electrode means including a plurality of signal electrodes, each said transparent



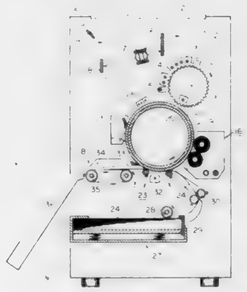
region on said common electrode being in registration with one said signal electrode, the portions of said signal electrodes in registration with said transparent regions on said common electrode being transparent, the transparent regions of said common electrode and said signal electrodes in registration with one another defining micro-shutters, said driving means being coupled to said common electrode and each said signal electrode, said driving means being adapted to selectively apply at least said signals of frequency fH and fL to said common electrodes and said signal electrodes for selectively permitting the transmission of light from said illuminating means through said micro-shutters, said driving means selectively applying said signals to said common and signal electrodes in a plurality of writing times, a signal having an effective frequency fL being applied across said common and signal electrodes in each said writing time.

4,386,837

CORONA DISCHARGING DEVICE

Yujiro Ando, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 97,864, Nov. 27, 1979. This application Feb. 12, 1981, Ser. No. 233,873
Claims priority, application Japan, Dec. 7, 1978, 53-151812
Int. Cl.³ G03G *15/02*
U.S. Cl. 355—3 CH **3 Claims**



2. An image forming apparatus comprising:
a photosenstive screen having a number of fine openings;

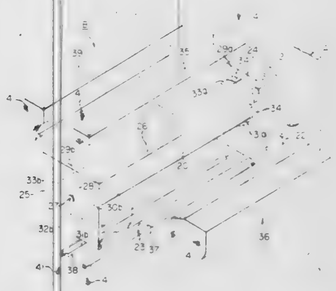
means for forming a primary electrostatic latent image on said photosensitive screen, wherein said screen is relatively movable with respect to said image forming means;
an image bearing member;
means disposed at a modulating station for applying a flow of ions through said screen, wherein said screen modulates the flow of ions in accordance with the primary latent image to form a secondary electrostatic latent image on said image bearing member;
means, at a developing station, for developing the secondary electrostatic latent image;
means, at a transferring station, for transferring the developed image onto a transfer material; and
a corona discharging device for uniformly charging or discharging the surface of said image bearing member, said corona device being disposed in a faced relation with said image bearing member and downstream of said transfer station but upstream of said modulating station, and said corona device including two shields cases disposed side-by-side along the direction of said movement, with at least one corona wire provided in each of said shield cases, wherein a voltage of a first polarity and a voltage of the opposite polarity to said first polarity are applied respectively to said wires, said corona device further including grid means provided between each of said wires of the respective shield cases and said image bearing member, wherein a common bias voltage is applied to said grid means, and wherein the grid wire spacings of said grid means are gradually closer in the direction of movement of said image bearing member.

4,386,838

COMPONENT MOUNTING ARRANGEMENT FOR ELECTROSTATIC RECORDING APPARATUS

Tsugio Hirabayashi, and Isao Ikemoto, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1981, Ser. No. 244,349
Claims priority, application Japan, Apr. 4, 1980, 55-44486
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—3 DR **2 Claims**



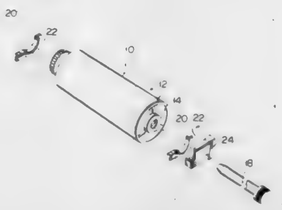
1. In an electrostatic recording apparatus having a rotatably mounted photosensitive drum and a plurality of processing units arranged about said drum, the improvement comprising a sub-assembly comprising a pair of end frames supporting the drum between them and connecting means holding said end frames apart, means detachably attaching said unitary structure to said apparatus, and a plurality of pairs of positioning means extending inwardly from each end frame supporting said processing units about said drum.

4,386,839

ELECTROSTATIC COPYING APPARATUS

Junichi Kumagai, Tokyo, and Nobutaka Wakao, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 20, 1981, Ser. No. 245,974
Claims priority, application Japan, Mar. 26, 1980, 55-38652; Mar. 26, 1980, 55-38669
Int. Cl.³ G03G *15/00, 21/00*
U.S. Cl. 355—3 DR **9 Claims**



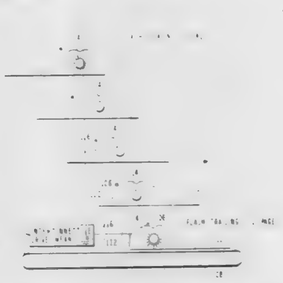
1. In an electrostatic copying apparatus which comprises a photosensitive drum including a drum body and a photosensitive layer provided around the outer peripheral surface of said drum body, a supporting mechanism for rotatably and detachably supporting said photosensitive drum, and peripheral devices which are in contact with the outer peripheral surface of said photosensitive drum at a prescribed contact force and constituting a copying process, the improvement in which said drum body is formed of a thin metal tubular body of which the strength per unit length is between 0.17 g/mm and 2.4 Kg/mm, and wherein said periphery devices contact the surface of said photosensitive drum at a maximum contact force of 50 g, whereby said drum body is not substantially deformed when contacting with said periphery device and whereby said drum body when it has been removed from said supporting mechanism may be crushed by foot.

4,386,840

DUAL FLASH FUSER REFLECTOR WITH ALTERNATING FLASH FOR POWER REDUCTION

Albert N. Garthwaite, Boulder, and Luis A. Suarez, Jr., Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1981, Ser. No. 267,131
Int. Cl.³ G03G *15/20*
U.S. Cl. 355—3 FU **7 Claims**



1. A flash fusing apparatus operable to fix toner onto copy sheets outputted from an electrophotographic copier, said fusing apparatus comprising in combination:

a movable fusing assembly comprising of a flash lamp disposed within the cavity of a reflector;

a sheet transport means disposed in spaced relation with the fusing assembly, said sheet transport means being operable to transport a sheet carrying an unfixed toner image for fusing by said fusing assembly;

a carriage assembly means operable to transport the fusing assembly;

a circuit means operable to energize the flash lamp intermittently so that a copy sheet is being fused by intermittent flashes; and

a speed controller means operable to control the sheet transport means and the carriage assembly means so that the relative velocity of the carriage assembly means is less than the relative velocity of the sheet transport means.

4,386,841

IMAGE-FORMING DEVICE HAVING A PHOTOSENSITIVE MEMBER

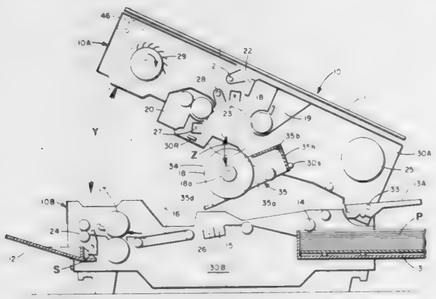
Nobutaka Wakao, Kawasaki; Reiji Murakami; Katsuhiko Okamoto, both of Yokohama, and Kohachi Uchida, Sagamihara, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 16, 1981, Ser. No. 312,162

Claims priority, application Japan, Oct. 31, 1980, 55-154402

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 DR **8 Claims**



1. An image-forming device comprising:

a. a casing including a lower unit and an upper unit, said upper unit being movable upward and away from said lower unit to obtain access to the interior of said casing;

b. a photosensitive member positioned in said upper unit; and

c. a subframe attached to said upper unit to support said photosensitive member when said upper unit is moved upward and away from said lower unit, said subframe being movable downward from said upper unit to position said photosensitive member at an open space between said upper and lower units.

4,386,842

PROGRAMMED ACCELERATION

Jack Beery, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1980, Ser. No. 219,417

The portion of the term of this patent subsequent to Feb. 1, 2000, has been disclaimed.

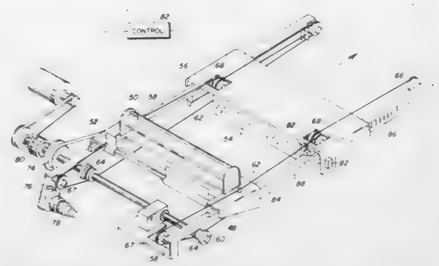
Int. Cl.³ G03G *15/28*

U.S. Cl. 355—8 **5 Claims**

4. In a reproduction machine including a scanning carriage, a grating having a plurality of apertures and an electro-optic sensor, the sensor detecting pulses through said apertures, the grating and sensor mounted for relative motion, the sensor detecting light pulses through the apertures,

a speed control comprising a clutch connected to the carriage and

a counter responsive to the sensor to determine the number of pulses for an aperture pitch whereby a predetermined



count initiates activation of the clutch to accelerate the movement of the carriage.

4,386,843

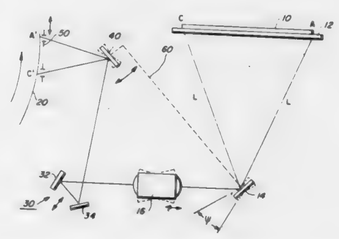
SCANNING SYSTEM FOR DOCUMENT REPRODUCTION DEVICE

Frederick A. Seedhouse, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 15, 1981, Ser. No. 273,793

Int. Cl.³ G03G *15/04, 15/28*

U.S. Cl. 355—8 **3 Claims**



1. A scanning system for projecting light images of a stationary object along an optical path onto a photosensitive surface comprising:

an object plane for supporting an object to be copied;

a projection lens having a rotational and translational motion;

a pivoting mirror for scanning said object and reflecting said light image towards said projection lens,

an aperture slit located adjacent said photoreceptor surface, the aperture slit moving in a direction opposite the direction of movement of said surface;

means for maintaining constant conjugate during scan; said means including a translatable mirror assembly movable along a translation path which reflects an image projected from the lens onto a rotatable mirror opposite the photosensitive surface; said rotatable mirror motion synchronized with the movement of said aperture slit so as to reflect the images received from said mirror assembly through said aperture onto the photosensitive surface so as to maintain parallel object, lens and image planes during the entire scan cycle;

whereby said lens rotates simultaneously with said reflector and slit motion to continually maintain said projected image at the photosensitive surface at the same angle of incidence as the angle of the principal scanning ray at the object plane.

4,386,844

TWO-CYCLE ELECTROPHOTOGRAPHIC COPYING APPARATUS IN WHICH A CLEANING LAMP AND A NEUTRALIZING ELECTRODE ARE DISPOSED ON OPPOSITE SIDES OF AN ELECTRIC CHARGING DEVICE

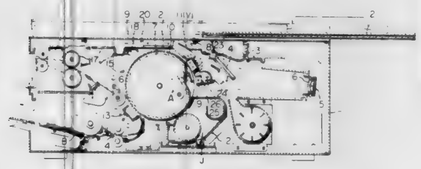
Nin-ichi Kamogawa; Tadashi Umezawa, and Masakazu Fukuchi, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd.

Filed Feb. 19, 1980, Ser. No. 122,709

Claims priority, application Japan, Feb. 20, 1979, 54/18768

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **5 Claims**



1. In an improved two-cycle electrophotographic copying apparatus including an operatively rotatable photosensitive body, and in which electric charging means, exposing means, transferring means, and separating means are respectively sequentially disposed about the body in the direction of its rotation for operation during a first rotation of the body to produce a toner-based copied image of an original, while cleaning of residual toner from the photosensitive body is effected during a second rotation thereof to prepare the body for a next succeeding copying operation, the improvement comprising:

preliminary processing means for preparing the body for subsequent cleaning during the second rotation thereof, and comprising a cleaning lamp disposed upstream of the electric charging means and downstream of the transferring means for operatively discharging the photosensitive body of residual electric charge remaining thereon after production of the copied image and thereby facilitating subsequent cleaning of the photosensitive body during its second rotation, and a neutralizing electrode disposed downstream of the electric charging means for neutralizing electric charge on residual toner remaining on the photosensitive drum after production of the copied image.

4,386,845

ELECTROSTATIC COPYING APPARATUS

Yoshitake Miyoshi, Ikoma; Kiyoshi Shibata, Osaka; Toshio Watanabe, Takatsuki; Masami Kai, Ikoma, and Yousuke Ohata, Habikino, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Dec. 29, 1980, Ser. No. 220,721

Claims priority, application Japan, Dec. 29, 1979, 54-173526; Dec. 29, 1979, 54-181555[U]; Feb. 29, 1980, 55-26914[U]; Mar. 21, 1980, 55-36726; Apr. 15, 1980, 55-49854

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **9 Claims**

1. In an electrostatic copying apparatus of the type wherein a stationary original document image is projected onto a photosensitive member during movement of an optical device for exposing the original document, an electrostatic latent image of toner particles is developed on said photosensitive member and is transferred onto a copy sheet which is moved through the apparatus along a copy sheet transport path, and the image transferred to said copy sheet is fixed thereon, the improvement comprising:

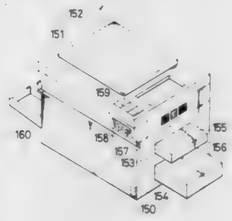
jam detecting means for detecting immediately the occurrence of a jammed copy sheet along said copy sheet transport path;

a cleaning device for removing, by means of magnetic force, residual toner particles remaining on an outer periphery of said photosensitive member after transfer of said electrostatic latent image therefrom;

a sump for storing said residual toner particles removed by said cleaning device, said sump including an inlet opening positioned such that said removed residual toner particles pass through said inlet opening and into said sump; and

toner detecting means for determining the relative amount of said residual toner particles stored in said sump, said toner detecting means comprising:

a shaft rotatably mounted in said sump and including an internal portion extending across said sump parallel to said inlet opening and at a level beneath the level of said inlet opening and an external portion extending outwardly beyond an end of said sump;



responsive plate means, fixed to said internal portion of said shaft and extending radially therefrom, for, when the level of toner particles in said sump is approximately below said shaft, extending upwardly from said shaft at an angle inclined to the vertical such that toner particles entering said sump through said inlet opening slide downwardly along a surface of said responsive plate means and into said sump, and for, when the level of toner particles in said sump is approximately above said shaft, being pressed downwardly by additional toner particles entering said sump through said inlet opening and thereby rotating said shaft with respect to said sump; and

means positioned exteriorly of said sump for detecting rotation of said external portion of said shaft as an indication of the relative amount of said toner particles in said sump.

4,386,846

METHOD AND APPARATUS FOR LIMITING BOOK WEAR WHILE BEING COPIED

William D. Clark, Longmont; Earl G. Edwards, Boulder, and Carl A. Queener, Lyons, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 27, 1981, Ser. No. 296,683

Int. Cl.³ G03B *27/32, 27/52*

U.S. Cl. 355—25 **19 Claims**

1. A document copier machine comprising:

a housing containing elements for producing a copy of an original document;

top surface areas located on said housing in a substantially flat plane providing a document path for documents to be copied;

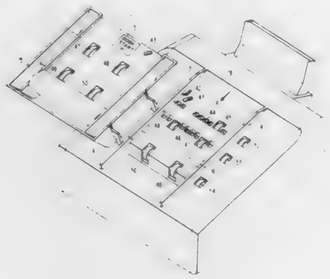
a stationary transparent document viewing station located substantially within said document path;

rail guide means protruding above the plane of said top surface means for receiving the center break of a bound but opened multipage document such as an opened book, the length of said rail guide means positioned perpendicular to the major dimension of said viewing station and

parallel to the direction of document movement down said document path; and

exterior roll means located across said rail guide means from said document path, said exterior roll means protruding through the plane of said top surface means for supporting the portion of said opened multipage document lying outside of said document path and for reducing drag present in moving said multipage document across said viewing station.

17. A method of copying multipage bound documents such as a book by a document copying machine comprising the steps of:



placing the open book on the viewing surface of said machine with one page to be copied within a document feed path and a facing page to said one page to be copied outside of said document feed path;

providing a support protruding substantially above said viewing surface under the center break of said book at the binding to aid in preserving the structural integrity of the binding; and

moving said book down said document feed path across a viewing station and retaining said support under said center break substantially throughout the moving step.

4,386,847

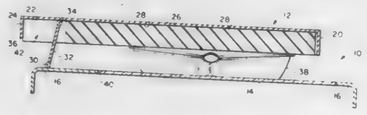
OFFICE COPIER WITH ARTICULATED HINGE COVER

Nicholas L. Torto, Burlington, and Samuel R. DiNallo, Sr., Framingham, both of Mass., assignors to Coulter Systems Corporation, Bedford, Mass.

Filed Mar. 3, 1980, Ser. No. 126,535

Int. Cl.[3] **G03B** *27/62*

U.S. Cl. 355—75 **9 Claims**



1. In an electrostatic document copier chassis having a framing structure and an upwardly facing rectangular platen framed by said structure, said platen adapted to receive thereon an article such as a document or the like with a surface of said article facing downwardly against the platen in order to enable illumination of said surface from the interior of the chassis for imaging purposes, a cover member having an articulated connection with said framing structure and adapted for covering the article when the latter is in an imaging position and accommodating to different thicknesses of respective articles being imaged, said cover member and articulated connection comprising:

A. a rigid inverted tray-like member having peripheral walls defining a downwardly opening chamber and of a size and configuration normally to overlie the platen,

B. a hinge link concealed within the tray-like member and coupling said member to said framing structure for articulated swinging movement relative to said platen,

i. said hinge link having one pivotal connection with said tray-like member on its interior defining a first axis parallel with and spaced from an end peripheral wall thereof,

ii. said hinge link having a second pivotal connection with the framing structure at an end of said platen defining a second axis parallel with and spaced from said first axis, and

iii. said hinge link having a right angle bend along its length parallel with said axes and forming connected arms substantially seated in a corner of said tray-like member when the latter is engaged against said framing structure,

C. the resulting articulated connection enabling accommodation of articles of different thickness on the platen covered by said tray-like member while said latter member remains substantially parallel with said platen.

4,386,848

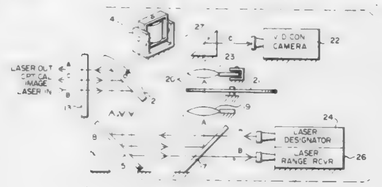
OPTICAL TARGET TRACKING AND DESIGNATING SYSTEM

Ralph M. Clendenin, and Raymond S. Freeman, both of Orlando, Fla., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Aug. 11, 1980, Ser. No. 177,039

Int. Cl.[3] **G01C** *3/08;* **F41G** *7/00, 1/40, 7/22*

U.S. Cl. 356—5 **20 Claims**



1. In an optical sight for a target acquisition and tracking system having a two-axis gyroscope in a system for stabilizing a mirror, a laser designator, a laser ranger, and a television camera, the improvement comprising:

a unitary optical bed having a fore and aft axis;

a pair of gimbal support brackets integral with said optical bed;

a first gyroscope gimbal for said two axis gyroscope having a horizontal central axis and pivots along said central axis, said pivots rotatably supported by said pair of gimbal support brackets;

first optical means supported by said optical bed for directing a laser beam from said laser designator to said mirror whereby such beam is reflected along said fore and aft axis for designating a target, for directing a laser beam reflected from a target to said laser ranger via said mirror, and for directing an optical image on said mirror to said television camera;

a pair of optical means support brackets integral with said optical bed; and

second optical means having an adjustable density optical filter, a narrow field of view lens system, and a movable wide field of view lens system; said narrow field of view lens system, said wide field of view lens system, and said optical filter supported by said optical means support brackets and disposed in said optical path to said television camera; said optical means including drive means for selectively adjusting said optical filter to vary the average light intensity at said television camera and selectively moving said wide field of view lens system in and out of said optical path.

4,386,849

METHOD OF MOIRE-METRICAL TESTING OF OPTICAL IMAGING SYSTEMS

Gerd Häeusler, Erlangen, and Walter Jäerisch, Boeblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1981, Ser. No. 266,242

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019930

Int. Cl.[3] **G01B** *9/00*

U.S. Cl. 356—124 **11 Claims**



1. A method for testing optical imaging systems using moire patterns to indicate imaging system errors, said method comprising the steps of:

generating a first copy of an optical grating structure on a substrate,

generating a second copy of said optical grating structure on said substrate by the imaging system to be tested, wherein said second copy of said grating structure is rotated relative to said first copy by a small angle α, and

illuminating said superimposed grating copies to create a moire pattern and observing said pattern in an order of diffraction higher than a first order of diffraction.

4,386,850

CALIBRATION DEVICE AND METHOD FOR AN OPTICAL DEFECT SCANNER

Michael F. Leahy, East Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 23, 1980, Ser. No. 219,515

Int. Cl.[3] **G01N** *21/88*

U.S. Cl. 356—243 **11 Claims**



1. A calibration device for a system of the type for visually detecting microscopic defects in a certain specularly reflecting surface of a given object, said system comprising first means for scanning said reflecting surface with an incident beam of light that illuminates a relatively small spot area of said entire reflecting surface area, which spot area is large relative to the area of any microscopic defect, the incident beam of light being directed to said surface illuminated by the incident beam of light is detected substantially independently of light specularly reflected from the same surface, and a second means for varying the threshold of detection of the scattered light, wherein said calibration device service as a reference object with artificially created microscopic defects comprises:

a substrate having a characteristic pattern of a plurality of different arrays of artificial defects,

all of the artificial defects of a particular array being of the same size and being evenly spaced from each other,

each artificial defect being provided with a surface, which, in response to an incident beam of light of said system at a preselected intensity, scatters the incident light to provide together with a predetermined plurality of adjacent artificial defects a visually observable pattern corresponding to actual microscopic defects of a known dimension.

4,386,851

INSTRUMENT FOR MEASURING OR MARKING OUT DISTANCES FROM A LINE OR A PLANE

Stig K. Eidorff, No. 2 A Engstien, Dragor, Denmark (2791)

Filed Sep. 3, 1980, Ser. No. 183,744

Claims priority, application Denmark, Sep. 17, 1979, 3867/79

Int. Cl.[3] **G02B** *27/32*

U.S. Cl. 356—254 **10 Claims**



1. Instrument for measuring or marking out the distance of a point from a basic plane or line comprising:

a definition sub-unit including at least two and at the most three mutually perpendicular planar reflecting mirror surfaces enclosing between them an angle bisectrix defining said basic plane or line, and a planar semitransparent mirror surface facing said reflecting mirror surfaces and intersecting said bisectrix,

an object sub-unit including a visual object adapted to be held in a predetermined relation to said point,

a viewing sub-unit arranged to observe through the intermediary of said definition sub-unit a pair of oppositely oriented mirror images of said visual object and to register their relative position as a measure of said distance, and

said object sub-unit being optically arranged between the definition sub-unit and the viewing sub-unit.

4,386,852

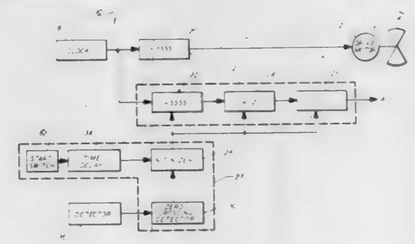
PHASE SYNCHRONIZATION APPARATUS

Joseph A. Cassidy, Trumbull, and Paul C. Talmadge, Ansonia, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 29, 1981, Ser. No. 229,683

Int. Cl.[3] **G01J** *3/02, 3/42*

U.S. Cl. 356—323 **6 Claims**



1. Apparatus for phase synchronizing a sample signal and a demodulation signal in a spectroscopic analytical instrument, said apparatus comprising:

an incrementally steppable motor having a light beam chopper affixed to the shaft thereof whereby when said chopper is placed in the path of a light beam, said light beam is interrupted, thus resulting in a pulsed light beam having a frequency associated therewith;

means, responsive to said pulsed light beam, for producing an electronic sample signal having the same frequency as said pulsed light beam; said electronic sample signal being phase synchronized with said pulsed light beam;

means, including a plurality of serially connected counters,

for producing an electronic demodulation signal, said counters producing, upon initiation, a demodulation signal having the same frequency as that of said pulsed light beam; and

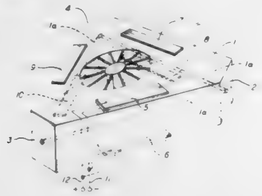
means, responsive to the phase of said sample signal, for initiating said demodulation signal producing means whereby said demodulation signal and said sample signal are phase synchronized.

4,386,853

BENDING ACTUATOR FOR RING LASER GYROSCOPE

Bo H. G. Ljung, Wayne, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Dec. 1, 1980, Ser. No. 211,992
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **11 Claims**



1. An apparatus for correcting bias shift resulting from change in the pyramid angle of a ring laser gyroscope comprising a block containing a cavity in which at least three, interconnected, elongate paths form a loop along which oppositely directed beams of light may travel, comprising:

at least one electromechanical transducer coupled to the block and adapted to bend the block in response to the application of an electric voltage; and

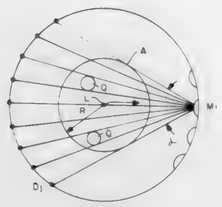
means for connecting the transducer to a drive voltage.

4,386,854

METHOD AND MEANS FOR OPTICALLY GENERATING SIGNALS FOR USE IN MONITORING AN ENVIRONMENT USING TOMOGRAPHIC TECHNIQUES

Robert L. Byer, Stanford, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Feb. 27, 1980, Ser. No. 125,126
Int. Cl.³ G01N *21/00*
U.S. Cl. 356—438 **12 Claims**



1. In the monitoring of an environment within an area using tomographic reconstruction techniques, the method comprising the steps of

(a) placing a coherent light source within said area,

(b) placing a plurality of light detectors and a plurality of light reflectors about said area, said light reflectors and said light detectors being cooperatively arranged whereby light from said source is reflected by each of said reflectors to a plurality of detectors within an angle,

(c) sequentially illuminating each of said reflectors by said light source,

(d) detecting light by a plurality of detectors for each of said sequential illuminations and generating electrical signals from the detected light, and

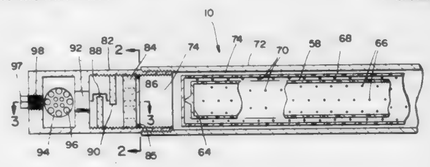
(e) tomographically reconstructing an image of said environment from said signals.

4,386,855

HIGH PRESSURE MECHANICAL MIXER FOR EPOXY COMPOUNDS

Jesse R. Neal, Jr., Panama City, Fla., and Truman W. Humphries, Napa, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 25, 1981, Ser. No. 277,368
Int. Cl.³ B01F *7/12*
U.S. Cl. 366—177 **7 Claims**



1. Apparatus for mixing viscous, curable liquid materials, which comprises:

(a) a mixing head having a central, longitudinal chamber and having inlet ducts for introducing components for forming a curable liquid material into said central longitudinal chamber, said components being introduced under high pressure;

(b) a drive shaft extending longitudinally through said longitudinal chamber of said mixing head;

(c) a rotary drive means coupled to one end of said drive shaft for rotating said drive shaft;

(d) an inner mixing tube having an enclosed downstream end and having a multiplicity of apertures in its side wall, said inner mixing tube having a pair of inlet apertures in its upstream end communicating with the central chamber of said mixing head, said inner tube being coupled to said drive shaft for rotation therewith;

(e) a second mixing tube concentric with and surrounding said inner mixing tube, said second mixing tube having a multiplicity of apertures in its side wall, the ends of said second mixing tube being enclosed so that an annular chamber is formed between the wall of said inner mixing tube and the wall of said second mixing tube;

(f) an outer sleeve concentric with and surrounding said second mixing tube, the upstream end of said outer sleeve being closed so that a second annular chamber is formed between the outer sleeve and the wall of the second mixing tube; and

(g) an outlet means communicating with said second annular chamber for discharging the resultant mixture.

4,386,856

MINIATURE ELECTRONIC DEVICE HAVING TIME INFORMING SOUND GENERATING FUNCTION

Masayuki Hakata, Ome, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,497
Claims priority, application Japan, Dec. 17, 1979, 55-175217[U]
Int. Cl.³ G04B *23/02, 21/02*
U.S. Cl. 368—72 **5 Claims**

1. A miniature electronic device having a time informing sound generating function, comprising:

a source of reference frequency signals;

a time counting means for counting said reference frequency signals and for producing present time information and a signaling time signal;

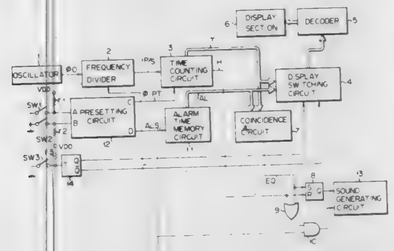
means for setting an alarm time;

alarm signal generating means coupled to said time counting means and to said alarm time setting means for generating an alarm signal at the time of practical coincidence of an alarm time set in said alarm time setting means and the present time information provided by said time counting means;

sound generating means including means for receiving at least one of a signalling time signal and an alarm signal, a piezoelectronic buzzer and a driver coupled to said receiving means for push-pull driving of said piezoelectronic buzzer to thereby audibly inform of the signaling time and alarm time in response to said signaling time signal and to said alarm signal, respectively;

signal judging means responsive to a signal supplied to said receiving means of said sound generating means for judging whether the signal supplied to said sound generating means is a signaling time signal or an alarm signal; and

sound volume control means coupled to said sound generating means and to said signal judging means for changing the voltage provided to said piezoelectric buzzer by said driver in accordance with the output signal from said signal judging means so as to generate different volume sounds responsive to said signaling time signal and alarm time signal, respectively.

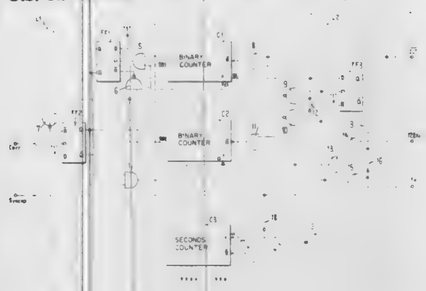


4,386,857

ELECTRONIC TIMEPIECE WITH AUTOMATIC CORRECTION OF THE VARIATION OF RATE

Bernard Maire, Marin, Switzerland, assignor to Ebauches Electroniques SA, Marin, Switzerland

Filed Nov. 27, 1978, Ser. No. 963,992
Claims priority, application Switzerland, Feb. 12, 1977, 14763/77
Int. Cl.³ G04C *9/00*
U.S. Cl. 368—187 **5 Claims**



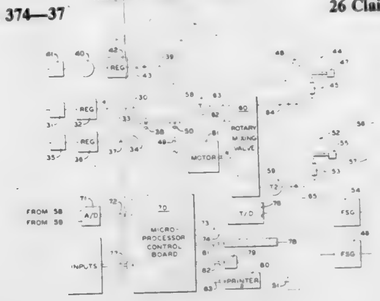
1. An electronic timepiece having automatic correction of the variation of rate, comprising:

4,386,858

METHOD AND APPARATUS FOR DETERMINING THE HEAT CONTENT OF GASEOUS FUELS

William B. Kude, Plymouth; A. Noel J. Pearman, and Daniel L. Youngbauer, both of St. Paul, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 105,794, Dec. 20, 1979, abandoned.
This application Dec. 16, 1981, Ser. No. 331,431
Int. Cl.³ G01N *25/22*
U.S. Cl. 374—37 **26 Claims**



1. Apparatus for determining the heating value of gaseous fuels comprising:

means for establishing a mixture of a gaseous fuel, the heat content of which is sought to be determined, and air of known volumetric proportions;

means for causing the oxidation of said fuel in said mixture of known proportions;

sensing means for sensing the presence of combustibles or oxygen in the products of oxidation of said mixture, said sensing means having an output quantitatively indicative of said combustibles or oxygen in said products of oxidation and wherein said sensing means exhibits a high sensi-

tivity in the form of a rapid change in output about a particular combustible/oxygen percentage composition;

means for adjusting the proportions of fuel and air in said mixture in response to the output of said sensing means until said sensing means indicates that said mixture of known proportions produces oxidation products substantially at said percentage composition of high sensor sensitivity.

means for determining the heating value of said fuel from a known relationship between the heating value of the fuel constituents and the amount of oxygen required to produce oxidation products at said percentage composition of high sensor sensitivity.

4,386,859

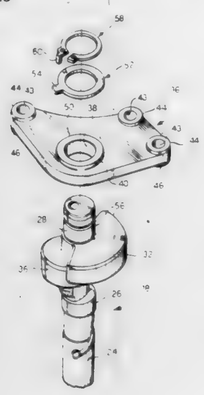
COMPRESSORS FOR REFRIGERANT FLUIDS

Norbert Andrione, and Fulvio Bandoli, both of Turin, Italy, assignors to Aspera S.p.A., Asti, Italy

Filed Jun. 15, 1981, Ser. No. 274,000

Int. Cl.³ F16C *17/04*

U.S. Cl. 384—420 **5 Claims**



1. A compressor for refrigerant fluids comprising a casing defining a horizontal cylinder of the compressor and having upper and lower main radial bearings, a crank shaft vertically mounted for rotation within said casing including upper and lower main journals rotatable in said upper and lower main bearings respectively and a crank pin disposed between said upper and lower main journals within said casing and an axial thrust bearing for supporting said shaft axially in said casing, said axial thrust bearing being comprised of a flat radial surface machine on said upper main bearing, an annular shoulder having a flat lower radial surface carried by said upper main journal for rotation therewith, an annular washer element of a material having a low coefficient of friction having flat upper and lower faces being interposed between said upper main bearing and said annular shoulder in engagement therewith and means for mutually engaging said washer and shoulder to impart rotation to said washer.

4,386,860

HIGH SPEED LABEL PRINTER

Robert J. Price, and Bruce C. Taber, both of El Cajon, Calif., assignors to Data Card Corporation, Minnetonka, Minn.

Filed Mar. 13, 1981, Ser. No. 243,564

Int. Cl.³ B41J *3/12, 11/44*

U.S. Cl. 400—124 **14 Claims**

1. A printing apparatus for selectively printing on labels, having a backing strip, supplied by a continuous supply roll, comprising:

housing means for supporting the supply roll for free rotation about an axis and for limiting the radius of the unravelled outer turns of the supply roll, said housing means comprising:

a printer housing;

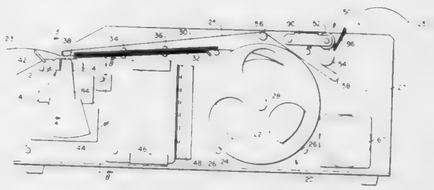
a fixed spindle mounted on said printer housing, the supply roll being freely rotatable on said fixed spindle;

at least two spacers extending from said printer housing radially of said fixed spindle so as to limit the radius of the supply roll including the unravelled outer turns of the supply roll; and

a housing cover mounted on said fixed spindle;

sensor means for sensing the position of a label to be printed and for generating a position signal;

control means, operatively connected to said sensor means, for receiving said position signal and for generating an advance signal and a print signal;



printing means, operatively connected to said control means, for printing indicia on a label supplied by the supply roll and for peeling the printed label from the backing;

friction drive means, for frictionally engaging the backing and for transporting the labels past said printing means; and

a motor, operatively connected to said control means, for selectively and intermittently driving said friction drive means in accordance with said advance signal, said housing means holding the supply roll so that the unravelled outer turns of the supply roll abut said at least two spacers prior to the time said motor is driven, said motor having a low start-up torque due to the free rotation of the supply roll in said housing means.

4,386,861

DOT MATRIX IMPACT PRINTER

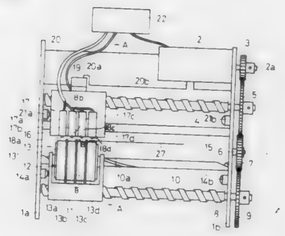
Toshio Kurihara; Masao Kunita; Makoto Yasunaga, and Satoru Uchida, all of Tokorozawa, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jun. 18, 1981, Ser. No. 274,742

Claims priority, application Japan, Jun. 26, 1980, 55-86777; Jun. 26, 1980, 55-86778

Int. Cl.³ B41J *3/12, 27/02*

U.S. Cl. 400—124 **4 Claims**



1. A dot matrix impact printer comprising a platen comprising a plurality of disk members disposed side by side in the axial direction of the platen, each of said disk members being made of a porous material, impregnated with a colour ink different from the ink of the adjacent member; a print wire carrier juxtapositioned to and slidably mounted along the axial line of said platen having a plurality of print wires provided on said print wire carrier, each of said print wires being adjacent to a corresponding disk member; a print wire driving unit provided on said print wire carrier for moving said each print wire to said platen; means for shifting said print wire carrier along the axial line of said platen; means for shifting said platen along the axial line thereof to keep the respective adjacent relationship to the corresponding print wire; and means for feeding a printing medium in the direction perpendicular to the moving direction of said print wire.

4,386,862

SYSTEM FOR INTRODUCING FUNCTION CONTROL INSTRUCTIONS INTO A DATA WRITING OFFICE MACHINE

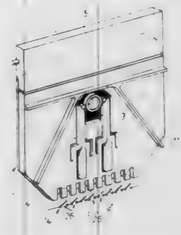
Arthur Kittel, Wilhelmshaven; Heiner Gerken, Jever, and Herbert Behrens, Neuenburg, all of Fed. Rep. of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Continuation of Ser. No. 96,376, Nov. 21, 1979, abandoned. This application Aug. 26, 1981, Ser. No. 296,485

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1978, 2850378

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—144.2 **22 Claims**



1. In the combination of an office machine for writing data and a source of a set of printing types including a carrier carrying such printing type set and a cassette in which the carrier is housed and which is insertable in the machine and exchangeable for other cassettes housing carriers carrying respectively different type sets, the office machine being provided with receiving means for receiving at least a portion of such cassette and holding such portion in an inserted position in the machine, the improvement comprising: means defining control elements carried by said portion of said cassette and receiving members located in the region of said receiving means to cooperate with said control elements of a cassette portion in the inserted position for initiating at least one of the operations of setting the machine to the particular printing type carried by the carrier and identified by said control elements and supplying operating power to the machine, and wherein said cassette comprises a removable cover member constituting said portion carrying said control elements, and said receiving means present a receiving passage for receiving said removable cover member.

11. In the combination of an office machine for writing data and a source of a set of printing types including a carrier carrying such printing type set and a cassette in which the carrier is housed and which is insertable in the machine and exchangeable for other cassettes housing carriers carrying respectively different type sets, the office machine being provided with receiving means for receiving at least a portion of such cassette and holding such portion in an inserted position in the machine, the improvement comprising: means defining control elements carried by said portion of said cassette and receiving members located in the region of said receiving means to cooperate with said control elements of a cassette portion in the inserted position for initiating at least one of the operations of setting the machine to the particular printing type carried by the carrier and identified by said control elements and supplying operating power to the machine, and wherein said control elements comprise an electronic memory device for a microprocessor disposed in the machine, and said memory device comprises means for producing electrical control signals when said portion is in the inserted position in the machine, and electrical contacts connectable to the microprocessor for delivering the electrical signals thereto when the machine is in operation.

4,386,863

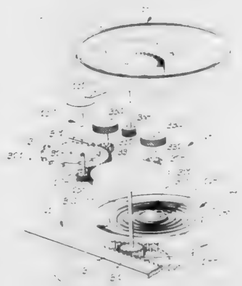
PRINTER MECHANISM FOR TYPEWRITER

Craig E. Rooney, Prairie Village, Kans., assignor to Engineering Research Applications, Leawood, Kans.

Continuation of Ser. No. 122,761, Feb. 19, 1980, abandoned. This application May 13, 1982, Ser. No. 377,797

Int. Cl.³ B41J *23/34, 23/36*

U.S. Cl. 400—185 **25 Claims**



1. Printing apparatus for sequentially printing a series of characters onto a proximal surface along a predetermined line of write, comprising:

printing structure including means for printing said characters, and means for causing relative translatory movement along said predetermined line of write between said printing means and said surface during operation of said apparatus,

said printing means including an element having a series of characters thereon, means for shifting said element to sequentially position selected ones of said characters for printing thereof on said surface, and means for causing said selected characters to be sequentially printed on said surface,

said printing means being characterized by the property of having different total motive energy requirements for operation thereof during different printing cycles, each of said printing cycles including operation of said movement-causing means to effect said relative translatory movement, operation of said element-shifting means to effect shifting of said element as necessary until a selected character is positioned for printing, and operation of said print-causing means to effect printing of the selected character on said surface; and

coupling means comprising a source of motive energy selectively operably coupled to said element-shifting means and movement-causing means for supplying a limited amount of motive energy to the element-shifting means and movement-causing means during each printing cycle for operation thereof, said limited amount of energy being substantially constant for each printing cycle,

said coupling means including energy distribution means for initially supplying respective portions of said limited motive energy amount to said element-shifting means and movement-causing means for concurrent operation thereof and until the total motive energy requirement of said element-shifting means for the printing cycle is supplied, and for thereafter supplying remaining energy of said limited amount to said movement-causing means in order to vary the speed of translation depending upon the

magnitude of said energy portion used by said element-shifting means,

said coupling means comprising mechanical linkage means for operably coupling said source of motive energy and said element-shifting means and movement-causing means respectively.

4,386,864

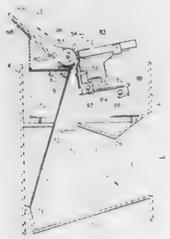
SELECTIVE PAPER INSERTION AND FEEDING MEANS FOR INDIVIDUAL SHEET PRINTING APPARATUS

An Wang, Lincoln, and Gerald J. Crean, Topsfield, both of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Nov. 4, 1980, Ser. No. 204,020

Int. Cl.³ B41J *13/10*

U.S. Cl. 400—625 **6 Claims**



1. Individual sheet printing apparatus operable in a multiple sheet collating mode, comprising

front, rear, top, bottom, and side walls and a generally horizontal center wall defining an upper and a lower vertically spaced chamber, and

printing mechanism received within said upper of said vertically spaced chambers,

said generally horizontal center wall having a configuration for receiving said printing mechanism, with a narrow opening adjacent said rear wall extending therealong communicating with the lower of said vertically spaced chambers,

said top wall having a wide central portion removably mounted thereon providing a narrow aperture adjacent said rear wall extending therealong and two side portions each removably mounted on one of said side walls, said central portion and said side portions providing access to said printing mechanism mounted within said upper chamber,

said central portion being of transparent plastic material providing viewing of said printing mechanism,

said bottom wall having a generally downwardly and rearwardly extending central portion defining one of the walls of said lower chamber and providing lower chamber hopper means for receiving printed sheets,

said front wall having an aperture providing access to said lower chamber hopper means, and

said printing mechanism comprising

a frame removably mounted within said upper chamber,

a rotatable platen mounted on said frame,

a printing element mounted on said frame adjacent the front of said platen for printing on individual sheets interposed between said platen and said printing element,

reversible platen drive means for rotating a front surface of said platen in a direction upwardly or downwardly relative to said printing element,

lower platen feed roll means adjacent the bottom of said platen cooperating with said platen for feeding an unprinted sheet from the bottom of said platen upwardly and forwardly to the front of said platen,

upper hopper means extending upwardly and rearwardly from said lower platen feed roll means through said narrow aperture of said transparent top wall central portion for feeding said unprinted sheet to said lower platen feed roll means and said platen,

upper platen feed roll means adjacent the top of said platen cooperating with said platen for feeding a printed sheet rearwardly toward said upper hopper means, and

printed sheet guide means for guiding a printed sheet with its printed side down through said narrow opening of said horizontal center wall toward said lower chamber hopper means to collate successive printed sheets in their order of printing in said lower chamber hopper means

said platen drive means after completion of printing of a sheet rotating said platen front surface in said downward direction to move said printed sheet downwardly for sequential stacking in said lower chamber hopper means.

4,386,865

AUTOMATIC SHARP PENCIL

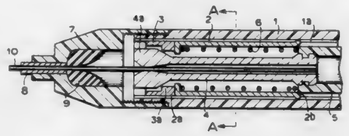
Hidehei Kageyama, and Takahiko Suzuki, both of Kawagoe, Japan, assignors to Kotobuki & Co., Ltd., Kyoto, Japan

Filed Dec. 11, 1980, Ser. No. 215,311

Claims priority, application Japan, Dec. 28, 1979, 54-182260[U]; Dec. 28, 1979, 54-182262[U]; Dec. 28, 1979, 54-182263[U]; Mar. 4, 1980, 55-28522[U]; Mar. 29, 1980, 55-41756[U]; May 9, 1980, 55-63436[U]; May 23, 1980, 55-71077[U]; May 23, 1980, 55-71079[U]

Int. Cl.³ B43K *21/22*

U.S. Cl. 401—67 **8 Claims**



1. A knock type sharp pencil comprising:

(a) an outer cylinder formed of synthetic resin and held by a user;

(b) a mouth piece secured to the front end of said outer cylinder;

(c) a core pipe inserted into said mouth piece and operative to guide a core;

(d) a sleeve coaxially arranged in said outer cylinder;

(e) a lead chuck inserted into said sleeve and including a chuck portion projecting out of the front end of said sleeve;

(f) a chuck ring inersted between said flange portion of said sleeve and said chuck portion of said lead chuck;

(g) a core case provided at its rear end with a knock portion and connected to the rear end of said lead chuck; and

(h) a spring means arranged in said sleeve and inserted between said flange portion of said inner cylinder and the front end portion of said core case; said spring means urging said core case backwardly; and

(i) said sleeve being provided at its rear end with a hook portion whose retractive movement is restricted by engagement of said hook portion with the inner peripheral surface of said outer cylinder and being provided at its front end with an inwardly bent flange portion, said flange portion defining one end of the range of movement of said chuck ring and being simply and accurately positioned by said engagement of said hook portion with said outer cylinder.

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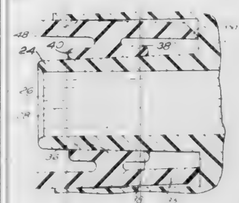
FOUNTAIN PEN CARTRIDGE

George W. Graham, North Kingstown, and William E. Tucker, Harmony, both of R.I., assignors to A. T. Cross Company, Lincoln, R.I.

Continuation-in-part of Ser. No. 142,701, Apr. 22, 1980, abandoned. This application Jun. 26, 1981, Ser. No. 277,862

Int. Cl.³ B43K *5/04, 5/14*

U.S. Cl. 401—133 **3 Claims**



1. In a fountain pen having a writing point, a feed bar and a casing for supporting the point and feed bar, a partition in the casing adjacent the feed bar having a cylindrical boss extending away from the feed bar with a bore therethrough, said bore having capillary slots in the wall thereof, a cartridge having a closed end and an open end and an exterior tapered nose, the open end having a sealing means located on the inner wall and spaced longitudinally inward of the open end, inner wall casing means engaging the tapered nose, said sealing means defining a protrusion with diverging lips, the inner diameter of the sealing means being smaller than the outer diameter of the boss, the engagement of said tapered nose with the inner wall forcing the sealing means inwardly whereby a tight joint is achieved by the sealing means engaging said cylindrical boss, a second seal being provided between the nose engagement point and the inner wall casing means, said open end engaging said partition to provide an additional seal.

4,386,867

MULTANGULAR PEN NIB CONSTRUCTION

Shizuo Yamanaka, 16-13-301, Shimorenjaku 4-chome, Mitaka-shi, Tokyo, Japan

Filed Mar. 24, 1981, Ser. No. 246,963

Claims priority, application Japan, Mar. 26, 1980, 55-37517

Int. Cl.³ B43K *1/12, 3/00*

U.S. Cl. 401—292 **4 Claims**



1. A multangular pen nib construction connected to a main ink chamber comprising

a plurality of substantially V-shaped pen nib pieces attached back to back along the convex portions of the V-shape to form projecting arms and a common center of the bases of the V-shaped pen nib pieces,

a pointed end on one end of each of said pen nib pieces forming a writing point on the end of the pen nib construction,

a channel having walls producing capillary action between said walls formed between said pen nib pieces at said common center of said V-shaped pen nib pieces running longitudinally along said channel walls of said pen nib pieces,

each of said pen nib pieces having notches near said pointed ends forming a recess along a projecting arm of the V-shape from the point on said pointed end to said notch,

at least one of said pen nib pieces having at least one inflow slit through the base of the V-shape extending longitudinally along the base of said pen nib piece for a predetermined length within the central portion between said pointed end and the end opposite the pointed end, spaced from said ends and connecting said capillary sized channel to the outside surface of the pen nib construction,

a pen nib holder having feeder tongues contacting outer projecting arms of the V-shape of said pen nib pieces,

said pen nib holder connected to the main ink chamber

whereby ink emanating from the main ink chamber passes through said capillary sized channel and also flows by said feeder tongues through said inflow slit into said channel to said pointed ends of said pen nib pieces.

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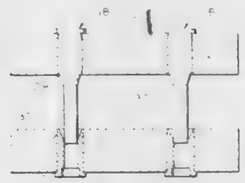
LEADER PIN LOCKING DEVICE

David B. Bluver, 2 S. Forrest Ave., and Carl S. Nelson, 742 Hickory, both of Arlington Heights, Ill. 60004

Filed Jan. 12, 1981, Ser. No. 224,104

Int. Cl.³ B22C *21/10*

U.S. Cl. 403—24 **7 Claims**



4. A tool having opposed parts which open and close during a work cycle, a plurality of leader pins mounted on at least one of said parts with opposing bushings mounted on the other of said parts, said leader pins and bushing cooperating to form guides for aligning said parts as they open and close, said leader pins and bushing having complementary contours comprising first elongated cylindrical members for slidingly guiding said parts during final closing movement of said parts, and second and frustoconical members formed on the end of said cylindrical member for aligning said parts as they move toward said final closing movement, said frustoconical parts in said complementary contours terminating in abutting ledges which come together to limit closing travel of said parts in order to limit the pressure between said frustoconical members.

4,386,869

INTEGRALLY SEALED VIBRATION DAMPENING BALL AND SOCKET JOINTS

Joseph E. Smith, Birmingham, Mich., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

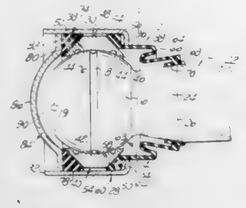
Filed Jul. 24, 1981, Ser. No. 286,470

Int. Cl.³ F16C *11/06*

U.S. Cl. 403—39 **48 Claims**

1. A sealed bearing comprising an inner member having a peripheral surface of regular predetermined contour, a tubular shell, a bearing ring disposed in said shell and having a bearing surface in sliding engagement with the peripheral surface of said inner member, said bearing ring having a peripheral surface generally conforming to the inner surface of said shell and fitting in said shell, a pair of resiliently deformable rings each made of elastomeric material and each disposed on one side of said bearing ring, means in said shell holding said deformable rings under compression such as to firmly engage said deformable rings with a portion of said bearing ring for biasing the

bearing surface of said bearing ring towards the peripheral surface of said inner member, an elastomeric bellows seal having a flange at an end held by one of said means in said shell for holding one of said deformable rings under compression, said bellows seal having a garter flange at its other end in firm elastic engagement with a portion of the peripheral surface of said inner member, sealing means at the other end of said shell



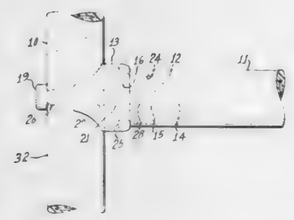
sealing the interior of said shell and said bearing surfaces from the ambient, and a clearance annular space between the peripheral surface of said bearing ring and the inner surface of said shell, wherein radial loads between said bearing inner member and said bearing shell beyond a predetermined load are transmitted by engagement of a portion of said bearing ring peripheral surface with a portion of said shell inner surface.

4,386,870

STRUCTURAL TEE JOINT

Terrance A. Baroody, 2127 Foxwood Dr., Orange Park, Fla. 32073

Filed Nov. 19, 1980, Ser. No. 208,158
Int. Cl.³ F16B *7/00*
U.S. Cl. 403—234 **23 Claims**



10. A connector for joining two pieces of plastic tubing into a structural tee joint which comprises

a transitional plastic connector member having a saddle on one side thereof to receive the outside surface of a first piece of plastic tubing nestingly therein and having a recess on the opposite side thereof to abuttingly receive the end of a second piece of plastic tubing to form said tee joint;

an elongated externally threaded plastic plug to mate with internal threads within said end of said second piece of tubing, said plug containing an embedded metal nut positioned generally along the axis of said plug; and

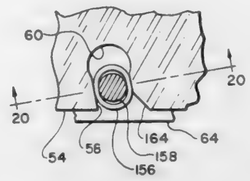
an elongated headed and threaded metal bolt positioned generally along the axis of said second piece of tubing with its head outside of said first piece of tubing and its shank extending through aligned openings through the wall of said first piece of tubing, generally centrally through said saddle and said recess, and through an aligned bore generally centrally of said plug with its threads mating within the threads of said nut.

4,386,871

INTERLOCKING BED FRAME MEMBERS

Richard B. Hooker, Linwood, and Thomas R. Bishop, Hickory, both of N.C., assignors to Hickory Springs Manufacturing Company, Hickory, N.C.

Continuation-in-part of Ser. No. 900,763, Apr. 27, 1978. This application Jan. 14, 1980, Ser. No. 112,165
The portion of the term of this patent subsequent to Sep. 30, 1997, has been disclaimed.
Int. Cl.³ B25G *3/00;* **F16B** *7/10;* **F16D** *1/00*
U.S. Cl. 403—377 **6 Claims**



1. An interlocking joint for snap-together assembly of first and second members of a metal bed frame and the like comprising:

(a) a first projection on said first frame member having a body adjacent said first member;

(b) a first projection receiving slot formed in said second frame member, said first slot having an entry portion for entry of said first projection into said slot, a communicating portion extending from said entry portion, and a projection retaining portion spaced away from said entry portion, said projection retaining portion being larger than said communicating portion, and connected to said entry portion by said communicating portion; and

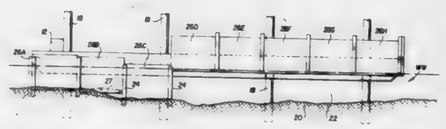
(c) resilient retaining means associated with said first projection for engaging the periphery of said retaining portion for releasably retaining said first projection in said enlarged retaining portion of said first slot, said retaining means comprising a resilient bushing mounted on said body of said first projection.

4,386,872

DREDGE ENVIRON PROTECTION ASSEMBLY

Frederick A. Smith, 335 N. Palm Dr., Beverly Hills, Calif. 90210

Filed Aug. 26, 1981, Ser. No. 296,400
Int. Cl.³ E02D *19/04, 23/02*
U.S. Cl. 405—13 **24 Claims**



1. A barge mounted protection assembly for isolating a portion of a waterway preparatory to dredging said portion, thereby preventing sediment disturbed during dredging from polluting a remaining portion of said waterway, and comprising:

a plurality of separate support column assemblies spaced about an outer hull of said barge, with each support column assembly projecting from said outer hull into soil forming a bottom surface of said waterway;

a plurality of separate side panel members, each panel member having a pair of opposite end portions slidably engaging a pair of adjacently disposed support column assemblies, wherein said plurality of side panel members and plurality of support column assemblies interposed therebetween form a continuous barrier encircling said barge and projecting from said barge to the soil forming the bottom surface of said waterway; and

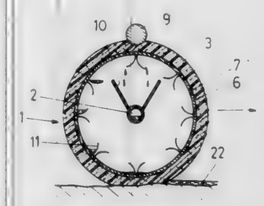
separate sealing means compressed between confronting end portion of each side panel member and support column assembly for preventing water from leaking through said continuous barrier, even though water is removed from said isolated portion preparatory to dredging operations.

4,386,873

DEVICE FOR DRAINING SANDY GROUND AREAS

Franz Messner, Radfeld Nr. 126, Radfeld, Austria (A-6240), and Adolf Unterwaditzer, Kramsach 321a, Kramsach, Austria (A-6233)

Filed Dec. 18, 1980, Ser. No. 218,011
Claims priority, application Austria, Dec. 19, 1979, 7998/79
Int. Cl.³ A47L *11/292*
U.S. Cl. 405—36 **8 Claims**



1. An apparatus for draining water from ground areas, particularly sandy ground areas, without removing particles such as sand from the ground areas, said apparatus comprising:

suction means for contacting a ground area and for withdrawing water therefrom, said suction means comprising a closed, hollow cylindrical roller having a perforated peripheral wall, and a layer of elastic, open-pore foam plastics material covering the entire outer surface of said peripheral wall;

means mounting said roller for rolling movement over a ground area to be drained such that said layer is compressed by contact with the ground area by a predetermined dimension;

air pump means, connected to the interior of said roller by pipe means, for applying to said interior of said roller a vacuum sufficient to ensure that, in cooperation with said predetermined dimension, the water to be drained from the ground area is drawn into said interior of said roller through said layer and said perforations, while particles such as sand on the ground area are prevented from passing into said layer, and for removing said water along with air from said interior of said roller; and

water separating means, connected by said pipe means between said air pump means and said roller, for separating said removed water from said air.

4,386,874

METHOD FOR INSTALLATION OF A MOORING CABLE

Per-Einar Engelsen, Drobak, and Reidar O. Nybo, Heggedal, both of Norway, assignors to A/S Akers Mek. Verksted, Oslo, Norway

Filed Mar. 17, 1980, Ser. No. 131,272
Claims priority, application Norway, Mar. 19, 1979, 790922
Int. Cl.³ B63B *21/50, 35/44*
U.S. Cl. 405—224 **6 Claims**

1. A method of mooring a vessel to an anchoring means connected to the floor of a body of water, said method comprising the steps of

(a) lowering a drum-like means which contains a coiled mooring cable having a first end and a second end below the surface of the body of water such that it remains generally vertically oriented during its descent,

(b) attaching the first end of the coiled mooring cable to the anchoring means,



(c) raising the second end of the coiled mooring cable to the surface of the body of water while unwinding the mooring cable from the coil thereof which remains adjacent the anchoring means, and

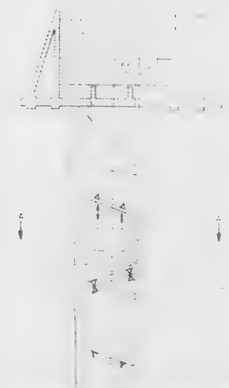
(d) attaching the second end of the coiled mooring cable to the vessel to be moored.

4,386,875

APPARATUS TO SUPPORT A FRAME OF CASING ELEMENT FOR FORMING A BEAM ON A PILE-PLANK SCREEN

Remi DeBlende, Zijdijk, 1A, Grembergen, Belgium

Continuation of Ser. No. 96,405, Nov. 21, 1979, abandoned. This application Sep. 2, 1981, Ser. No. 298,644
Int. Cl.³ E02D *5/00*
U.S. Cl. 405—229 **5 Claims**



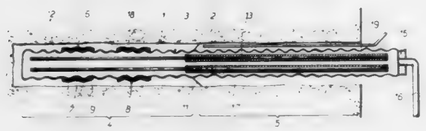
1. An apparatus for supporting a casing form for casting concrete into a beam, said apparatus resting against or being supported by the upper surface of a wall or flooring of pile-planks, each of said pile-planks having a flaring U-shaped cross-section, said apparatus comprising member means for laterally blocking a depression between upstanding wings or sidewalls of the U-shaped cross-section of a pile-plank, and means for securing said member means, while in said U-shaped cross-section, said member means being mounted transversely for blocking off at least the U-shaped cross-section while said securing means locks said member means against lateral movement relative to said pile-planking.

4,386,876

PRODUCTION OF ANCHORED TIE-RODS

Paul Dupeuble, Noisy-le-Roi, France, assignor to Sondages Injections Forages (SIF) Enterprise Bachy, France

Continuation of Ser. No. 31,134, Apr. 18, 1979, abandoned. This application Apr. 30, 1981, Ser. No. 259,088
Claims priority, application France, Apr. 18, 1978, 78 11345
Int. Cl.³ E02D *5/74*
U.S. Cl. 405—260 **14 Claims**



1. A device for use in the production of a tie-rod anchored in the ground, comprising a protective tubular element having a top part and a base part, and provided in its base part with at least one injection aperture and at least one metallic element constituting a tie-rod placed inside the tubular element, the part of the element constituting the tie-rod which extends through the top part of the tubular element being enclosed by a protective casing, with lubricant inserted between the element constituting the tie-rod and the casing, the part of the element constituting the tie-rod which extends through the base part of the tubular element being surrounded by said base part, and annular separating means affixed around the tubular element at the location where the base part and top part merge for preventing the annular space between the wall of the bore-hole and the base part of said tubular element to be filled with setting composition used for filling the annular space between the wall of the bore-hole and the top part of said tubular element.

4,386,877

MINE ROOF BOLTING

Guy McDowell, Jr., Marion, Ky., assignor to Peabody Coal Company, St. Louis, Mo.

Division of Ser. No. 11,067, Mar. 28, 1979, Pat. No. 4,303,354. This application Sep. 8, 1981, Ser. No. 300,390
Int. Cl.³ E21D *21/00*
U.S. Cl. 405—261 **3 Claims**



1. The method of supporting a roof of a mine utilizing anchoring means comprising a bolt having a head at one end and a screw thread at said one end, and a nut threaded on the screw thread on the bolt having an end surface toward the headed end of the bolt engageable with the inner face of the head, whereby when the nut is rotated relative to the bolt in one direction, the nut moves along the bolt away from said headed end thereof and when the nut is rotated relative to the bolt in the other direction, the nut moves along the bolt toward said headed end thereof until the nut engages the head, at which point the nut cannot be rotated further relative to the bolt in said other direction so that the application of any torque to rotate the nut in said other direction will tend to rotate the nut and bolt together in said other direction; said method comprising:

drilling at least one blind end bore up into the roof;

inserting two charges of resin grouting material in the bore, each charge comprising components to be mixed for providing hardened resin grouting in the bore, the first charge inserted in the bore being a relatively fast setting resin adhesive material and the second being a relatively slow setting resin adhesive material, sufficient grouting material being provided in the bore to secure the bolt in the bore over the entire portion of the length of the bolt in the bore, the charge of fast setting resin adhesive material being at the upper end of the bore and the charge of slow setting resin adhesive material being below the fast setting charge,

inserting the bolt in the bore with the headed end of the bolt and the nut outside the bore,

rotating the nut in said other direction until the nut engages the head,

continuing to rotate the nut in said other direction so as to rotate the bolt in said other direction to mix the components of the slow setting resin material together and the components of the fast setting resin material together,

allowing the fast setting resin adhesive material to set so as to anchor the bolt at its upper end in the bore,

then, with the bolt so anchored at its upper end in the bore and before the slow setting resin adhesive material in the bore below the fast setting resin adhesive material has set, rotating the nut in said one direction to move the nut into pressure relation with the mine roof to tension the remaining portion of the bolt in the bore with resultant compression of the roof strata surrounding the bore between the nut and the upper portion of the bolt, and

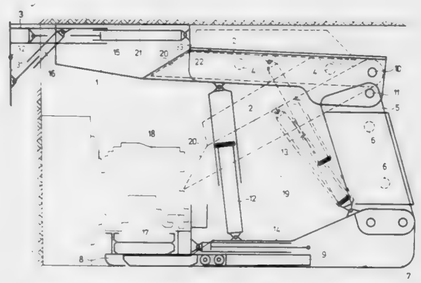
allowing the slow setting resin to harden so as to anchor said remaining portion of the bolt under tension in the bore.

4,386,878

MINING EQUIPMENT, MAINLY FOR EXTRACTION OF HEAVY BEDS

Matvas Martinko, Varpalota; Andras Elekes, Budapest; Kalman Simon, Budapest; Jozsef Bohnert, Budapest; Janos Nemeth, Budapest; Karoly Bole, Varpalota, and Zoltan Ilyes, Budapest, all of Hungary, assignors to Kozponti Banyaszati Fejlesztesi Intezet, Budapest and Varpalotai Szenbanyak, Varpalota, both of, Hungary

Filed May 4, 1981, Ser. No. 260,216
Claims priority, application Hungary, May 6, 1980, 1104
Int. Cl.³ E21D *23/00*
U.S. Cl. 405—291 **6 Claims**



1. A mining apparatus especially for the excavation of a heavy bed at least in part by the caving of a portion of the roof thereof, said apparatus comprising:

a main base displaceable along a mining gallery in the direction of a mining face;

a conveyor mounted on said main base and disposed at least in part at a forward portion thereof for receiving mineral matter excavated from said face;

a roof plate overhanging said forward portion and adapted to support the roof of said gallery immediately behind the face during excavation thereof;

a rear base mounted on a rear portion of said main base and extending upwardly therefrom;

a back member pivotally connected to said rear base for tilting movement relative thereto, said back member being connected to said roof plate and overhanging said main base, thereby shielding a portion of said main base from material falling from the roof of said gallery, said back member being provided with a door tiltable downwardly and forwardly from said back member to form a chute directing cave material from said roof onto said conveyor at said forward portion; and

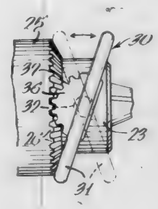
means mounted between said main base and door for pivotally displacing said door relative to the remainder of said back member.

4,386,879

OPERATING MEANS FOR A CHUCK

Werner W. Martinmaas, 3461 Cashill Blvd., Reno, Nev. 89509

Filed Apr. 20, 1981, Ser. No. 255,674
Int. Cl.³ B23B *45/00*
U.S. Cl. 408—241 R **17 Claims**



1. In a hand tool having a chuck with tool gripping elements, a collar in which said elements are movably supported, and a ring gear rotatable on the collar, said ring gear having bevel teeth engageable by a toothed chuck operator to rotate said ring selectively in a forward or reverse direction to tighten or loosen the tool gripping elements on a tool spindle, an improved chuck operator comprising, in combination:

ring gear engaging means permanently supported on the chuck collar and movable on the collar to rotate the ring gear selectively in a forward or reverse direction;

and means permitting manual movement of the engaging means into and out of engagement with the ring gear teeth.

4,386,880

TRAILER TRANSPORTING RAIL-WAY CAR

Werner K. Schimmeyer, 8937 Acorn Pl., Santa Rosa, Calif. 95405

Filed Apr. 13, 1981, Ser. No. 253,109
Int. Cl.³ B60F *3/07*; **B61D** *3/10, 3/16*
U.S. Cl. 410—56 **10 Claims**

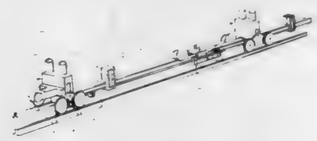
1. An elongated rail transport vehicle for carrying highway trailer units in an articulated train, comprising:

railway wheel truck means including left and right sets of rail engaging wheels, left and right side plate means respectively joining together the wheels of each said set, and means forming a transversely extending beam the ends of which are connected to said left and right side plate means, body means enveloping at least part of said transverse beam, and lift means coupling said body means to said transverse beam and operative to lift said body means relative to said transverse beam from a lowered position to a raised position;

means forming a longitudinally extending main beam having one end attached to and carried by one side of said body means, the other end of said main beam including a first coupling means, said main beam and said first coupling means being adapted to handle buff, draft and vertical loads;

jack means carried by said main beam and disposed proximate said first coupling means, said jack means being operative to lift said other end of said main beam to a selected elevation;

means disposed upon said main beam proximate said jack means and extending upwardly therefrom for engaging a



tractor coupling means of a highway trailer unit to be carried by said transport vehicle and for supporting a forward end of such trailer unit;

axle support means affixed to and carried by said main beam for engaging, lifting and supporting an axle assembly of a carried trailer unit, said axle support means being disposed low enough when said body means is in said lowered position so as to allow the axle assembly of the trailer unit to pass thereover, and being raised high enough when said body means is in said raised position so as to lift the wheels of the trailer unit off the ground; and

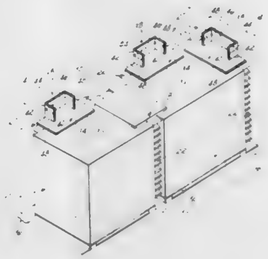
second coupling means affixed to the opposite side of said body means and adapted for engagement by a first coupling means of another transport vehicle.

4,386,881

SIDE LOAD SPACER

Henry L. Liebel, Cincinnati, Ohio, assignor to Angleboard Inc., Cincinnati, Ohio

Filed Apr. 13, 1981, Ser. No. 253,771
Int. Cl.³ B61D *45/00*
U.S. Cl. 410—154 **8 Claims**



1. A side load spacer adapted to be removably suspended from the top of a load laterally spaced from the vertical side wall of a container comprising:

an expandable-contractible cellular structure having a top and a pair of generally planar sides,

a suspension member laminated to said top of said cellular structure, said suspension member having a generally planar top surface and including a first side portion extending be-

yond one of said sides of said structure and a second side portion extending beyond the other of said sides of said structure, said second side portion being bendable to a position generally perpendicular to said top surface of said suspension member, and

means for maintaining said second side portion in said generally perpendicular position comprising at least one flap formed in said second side portion of said suspension member, said flap being bendable to a position overlying the top surface of said suspension member with an edge thereof contacting said top surface in said bent position,

whereby said load spacer is suspendable by said first side portion from the top of said load with said second side portion lying against the vertical side wall of said container.

4,386,882

SELF-DRILLING ANCHOR DOWEL

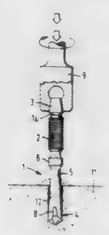
Rolf Bereiter, Buchs, Switzerland, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Mar. 6, 1981, Ser. No. 241,389

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1980, 3009312

Int. Cl.[3] **F16B** *35/00*

U.S. Cl. 411—387 **8 Claims**



1. Self-drilling dowel comprising an axially elongated anchoring member having a first leading end and a second trailing end with the first end being placed against the receiving material so that the dowel can form a borehole into the receiving material, a drilling head formed at the first end of said anchoring member and attaching means formed at the second end thereof, an axially extending clamping part extending between said first end and second end with the clamping part being frusto-conically shaped and tapering inwardly toward the second end, a circumferentially uninterrupted circular collar fixedly formed between the smaller diameter end of said clamping part and the second end of said anchoring member said circular collar projecting laterally outwardly from the small diameter end of the clamping part, and said collar having an outside diameter corresponding to the outside diameter of said drill head whereby said collar has an outside diameter substantially the same as the diameter of the borehole formed by said drill head.

4,386,883

MATERIALS LIFTING APPARATUS

Arthur S. Hogan, and Paul G. McCann, Jr., both of Oklahoma City, Okla., assignors to Rig-A-Matic, Inc., Oklahoma City, Okla.

Filed Sep. 30, 1980, Ser. No. 192,440

Int. Cl.[3] **E21B** *19/14*

U.S. Cl. 414—22 **30 Claims**

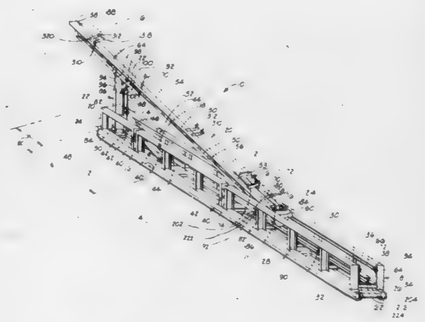
1. A materials lifting apparatus comprising:

a support frame having a first end and an opposed second end, the support frame defining a carriage receiving passageway extending between the first and opposed second ends thereof;

a carriage positionable within the carriage receiving passageway and adapted to receive and support materials thereon, the carriage having a first end and an opposed second end;

means for connecting the opposed second end of the carriage to the support frame so as to secure the opposed second end of the carriage to the support frame while providing relative movement between the opposed second end of the carriage and the support frame; and

forward linkage means for pivotally connecting the first end of the carriage to the support frame, the forward linkage means movable between a lowered position and a raised position, in the lowered position the forward linkage means disposed within the carriage receiving passageway between the first and second ends of the carriage and maintaining the carriage in a substantially horizontal position within the carriage receiving passageway of the support frame, in the raised position the forward linkage means maintaining the first end of the carriage in a raised, longitudinally shifted position a distance from the first end of the support frame; the forward linkage assembly comprising:



at least one tubular linkage member having a first end portion and an opposed second end portion, the first end portion of the tubular linkage member pivotally connected to the first end of the support frame;

at least one linkage member having a first end portion and an opposed second end portion, the linkage member extends a distance from the opposed second end portion of the tubular linkage member, the opposed second end portion of the linkage member pivotally connected to the carriage; and

at least one second ram having a base portion and a reciprocating rod, the base portion of the ram pivotally connected to the support frame, the reciprocating rod pivotally connected to at least one of the tubular linkage member such that upon activation of the second ram the carriage is movable between the substantially horizontal position in the carriage receiving passageway of the support frame and the raised, longitudinally shifted position.

4,386,884

AUTOMATIC TUB DUMPER

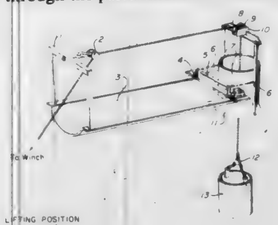
Edward B. Newell, Voglers Cove, Lunenburg County, Nova Scotia, Canada (B0J 2H0)

Filed Apr. 27, 1981, Ser. No. 257,670

Int. Cl.[3] **B65G** *65/23*

U.S. Cl. 414—653 **5 Claims**

1. A mechanical combination for lifting fish from the water or a boat and discharging same into a truck or other receptacle, consisting of a tub provided with an inverted V-shaped handle, a hollow topless and bottomless container flared at one end and a trough closed at one end and open at the other end, the container and the trough each being provided with two vertical rectangular bars, two of the said bars being attached by conventional means to a point near the open end of the trough on opposite sides thereof and two of the said bars being attached by conventional means to the opposite sides of the container, the two bars attached to the trough being connected by a horizontal bar at the tops thereof, the horizontal bar being provided with a loop to hold a pulley projecting therefrom, the two bars attached to the container, each having projecting from the other ends thereof a rectangular bar section disposed to receive and hold between them off-centre a wedge-shaped pulley, two other rectangular bars perforated at their ends are attached by conventional means to the two upright rectangular bars attached to the opposite sides of the container, the two perforated ends of the said bars are disposed and adapted to be aligned against two perforated blocks which act as tripping devices by means to the trough near its closed end, and a rod is projected through the perforations in the blocks or tripping



devices and through the perforations in the two bars projecting from the bars on the sides of the container and secured by means in said position, so that the container works backwards and forwards on the bar, the horizontal bars over the top of the container and over the open ends of the trough are provided with perforations so that each may be bolted to a stationary support in alignment with the other, the container is disposed and adapted to receive the tub within it, the inverted V-shaped handle of the tub is disposed and adapted to receive one end of a line, the other end of the line running through the wedge-shaped pulley above the container to another pulley attached to the loop on the horizontal bar over the trough and thence to a conventional winch, the tub being disposed and adapted to being pulled inside the container by winch means and the container being adapted to being pulled against the blocks or tripping devices on the trough and discharging its load into the trough.

4,386,885

COOLED GUIDE SUPPORT VANE

Wolfgang Beckershoff, Nussbaumen, Switzerland, assignor to BBC Brown Boveri & Company Limited, Zurich, Switzerland

Filed May 4, 1981, Ser. No. 260,336

Claims priority, application European Pat Off., May 19, 1980, 80200461.4

Int. Cl.[3] **F01D** *5/18;* **F02C** *7/16*

U.S. Cl. 415—178 **11 Claims**

1. In a guide vane support for a gas turbine, which guide vane support possesses an at least two-part construction and is equipped with cooling channels and carries cooled guide vanes and is of substantially conical construction concentrically with respect to the lengthwise axis of the turbine, the improvement which comprises:

said two-part guide vane support comprising wall means;

cooling agent channels arranged in said wall means;

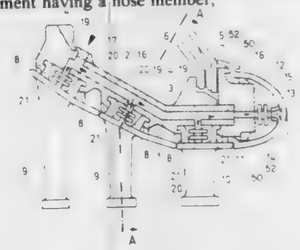
said cooling agent channels being distributed over the circumference of the wall means so as to define alternately infeed means and outfeed means for a cooling agent;

connection channel means provided for said cooling agent channels for flow communicating said cooling agent channels with individual guide vanes;

said guide vane support possessing a substantially conical configuration over its axial extent;

said wall means of said guide vane support defines a conical portion merging with a substantially cylindrical portion;

a locking element having a nose member;



hollow entry segment means secured to said locking element; and

a first row of guide vanes suspendingly secured by said nose member at said substantially cylindrical portion.

4,386,886

ADJUSTABLE VORTEX PUMP

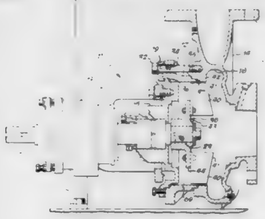
Maynard J. Neal, North Tonawanda, N.Y., assignor to Buffalo Forge Company, Buffalo, N.Y.

Division of Ser. No. 140,161, Apr. 14, 1980, Pat. No. 4,338,062.

This application Mar. 25, 1982, Ser. No. 361,620

Int. Cl.[3] **F04D** *29/22*

U.S. Cl. 415—213 A **2 Claims**



1. A vortex pump comprising a power frame of a centrifugal pump, a casing of a centrifugal pump, shaft means mounted on said power frame, annular spacer means interposed between said power frame and said casing for providing space in said casing for receiving a vortex impeller, and a vortex impeller mounted on said shaft and located in operative relationship to said casing.

4,386,887

CONTINUOUS HARMONIC SHROUDING

Ralph J. Ortolano, Rancho Palos Verdes, Calif., assignor to Southern California Edison Company, Rosemead, Calif.

Filed Jun. 30, 1980, Ser. No. 164,318

Int. Cl.[3] **F01D** *5/22*

U.S. Cl. 416—190 **23 Claims**

1. A rotor structure for an axial flow elastic fluid utilizing machine, comprising:

(a) a rotor spindle;

(b) an annular row of radially-extending blades carried by the rotor spindle;

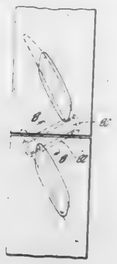
(c) an arcuate shroud ring structure attached to the radially outermost tips of the blades for rigidly connecting the blades to each other in first long arc groups which comprise more than 12 blades and include an end blade at each

end of a group, the first long arc groups being of substantially equal central angular extent,

the blades being susceptible to vibrate in a tangential inphase mode having a resonant frequency at least that of the rated maximum running speed of the rotor,

the number of first long arc groups being an integer multiple of the blade resonant frequency divided by the rotor running speed; and

(d) tie means flexibly connecting the adjacent end blades of a pair of adjacent first long arc groups for reducing axial vibration of the blades, said tie means being connected to the adjacent end blades at a location adjacent to the shroud ring structure.

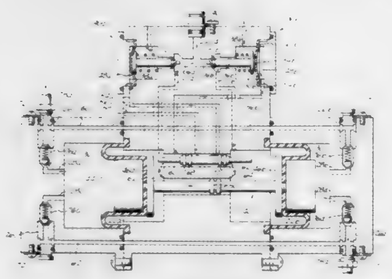


4,386,888

DOUBLE DIAPHRAGM OPERATED REVERSING VALVE PUMP

Donald J. Verley, Valencia, Calif., assignor to McCann's Engineering and Manufacturing Company, Los Angeles, Calif.

Filed Sep. 29, 1980, Ser. No. 191,527
Int. Cl.³ F04B *43/06*
U.S. Cl. 417—393 **14 Claims**



1. In a fluid powered reciprocating pump having a housing, a first and a second pumping chamber, a first and a second working chamber, wherein said first working chamber is separated from said first pumping chamber by a first piston head, and wherein said second working chamber is separated from said second pumping chamber by a second piston head, a rod connecting said piston heads, said rod adapted for reciprocating movement between a first and a second position, the improvement comprising:

a single supply line adapted to carry a power medium;

a first duct adapted to carry said power medium from said supply line to said first working chamber;

a second duct adapted to carry said power medium from said supply line to said second working chamber;

a means for alternately closing said first and second ducts;

a first channel adapted to carry said power medium from said first working chamber to said closing means;

a second channel adapted to carry said power medium from said second working chamber to said closing means;

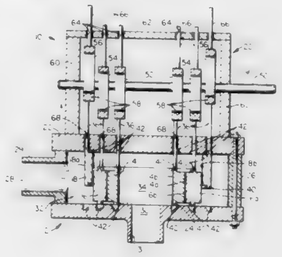
a pilot valve operative upon reciprocating movement of said rod from said first position to said second position to cause movement of power medium from said first working chamber to said closing means through said first channel to close said second duct, and upon reciprocating movement of said rod from said second position to said first position to cause movement of power medium from said second working chamber to said closing means through said second channel to close said first duct.

4,386,889

RADIAL WAVE PUMP

James B. Tichy, P.O. Box 746 Waldo Point, Sausalito, Calif. 94965

Filed Aug. 17, 1981, Ser. No. 293,552
Int. Cl.³ F04B *19/00*
U.S. Cl. 417—487 **11 Claims**



1. A radial wave pump comprising:

an enclosure having parallel walls;

at least three rings, each ring having two radial faces, an inner cylindrical wall and an outer cylindrical wall, said rings being reciprocably mounted within the enclosure and the inner cylindrical wall of the innermost ring defining an inner chamber and the outer cylindrical wall of the outermost ring defining an outer chamber;

means for reciprocating the rings in an equally spaced-apart phase relationship, adjacent rings having inner and outer cylindrical walls closely spaced to one another so that fluid is substantially prevented from passing therebetween; and

means secured to both radial faces of each ring for substantially preventing the flow of fluid between the radial face and the opposed wall during a portion of the reciprocation cycle.

4,386,890

DELIVERY VALVE ASSEMBLY, ESPECIALLY FOR ROTARY COMPRESSORS

Murray Berkowitz, Woodcliff Lake, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Feb. 2, 1981, Ser. No. 230,636
Int. Cl.³ F04C *29/08*
U.S. Cl. 418—61 A **9 Claims**

1. In a rotary mechanism such as a compressor, expansion engine or the like having a housing with axially spaced end walls and a peripheral wall interconnecting the end walls to form a cavity therebetween, said peripheral wall having at least one flow control means comprising at least one passage means, opening into said cavity, said passage means having a valve chamber having an inner and outer end and an end portion disposed thereacross substantially flush with the surface of said engine cavity and having an aperture therethrough constituting port means and a delivery valve assembly, disposed within said valve chamber, comprising:

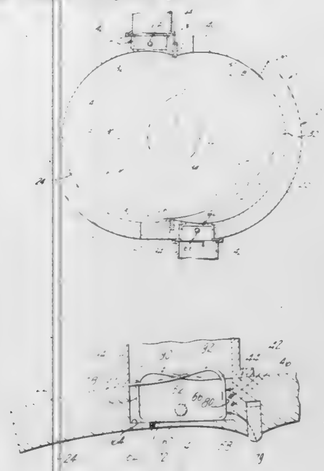
a stop means fixedly disposed within said valve chamber;

a valve seat formed in said end portion; and

a movable valve element having an open and closed position including,

a resilient planar portion disposed against said valve seat and covering said aperture when said valve element is in a closed position and disposed against said stop means when said valve element is in an open position, and

resilient side portions integral with and of smaller width than the width of the planar portion;



each of said side portions extending away from the opposite ends of the planar portion and so formed as to have part thereof overlying in spaced relation the plane of the planar portion; and

holding means for securing the distal end portions of each of said side portions against movement relative to said peripheral wall so that the side portions exert a biasing force on the planar portion in a direction urging the latter into the closed position.

4,386,891

ROTARY HYDRAULIC VANE PUMP WITH UNDERVANE PASSAGES FOR PRIMING

Richard P. Riefel, Saginaw; John G. Henne, Frankenmuth, and David A. Dean, Saginaw, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 23, 1981, Ser. No. 256,722
Int. Cl.³ F04C *2/00, 15/00*
U.S. Cl. 418—81 **2 Claims**



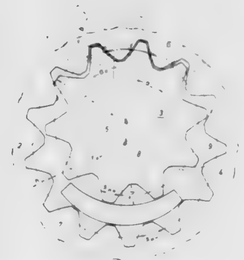
1. An improvement in self-priming, pressure balanced sliding vane pumps having a ported pressure plate and a ported thrust plate with passage means in each plate being axially aligned with the undervane cavities formed in the pump rotor, wherein the improvement comprises; said passage means in the thrust plate comprising two kidney-shaped passage means each of which extend the arcuate distance of adjacent ports and said kidney-shaped passage means being joined by a pair of restricted passages of predetermined flow area for accommodating undervane flow; and said passage means in said pressure plate comprising four kidney-shaped passages each aligned with respective ports and a pair of restricted passages joining adjacent kidney-shaped passages for flow from under the outlet port to under the inlet port in the direction of pump rotation and said restricted passages having a flow area of 15 to 23% of the restricted passages in said thrust plate to permit a small amount of fluid flow to bypass the passage means in said thrust plate.

4,386,892

HYDROSTATIC MESHING GEAR MACHINE WITH ARCUATE TOOTH FLANKS

Bodo Stich, Urspringen; Horst Fischer, Lohr, and Helmut Schulz, Witten-Bommern, all of Fed. Rep. of Germany, assignors to G. L. Rexroth GmbH, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 197,937
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943948
Int. Cl.³ F03C *2/08*; F04C *2/10*; F16H *55/08*
U.S. Cl. 418—170 **9 Claims**



1. In a hydrostatic gear machine of the type having a generating internal gear with inwardly extending teeth, and a produced external gear with outwardly extending teeth, the external gear being surrounded by and meshing with the internal gear, wherein each tooth of the internal gear has tooth flanks which, as viewed axially, are at least partly arcuate, and wherein the shapes of active tooth flanks of the external gear are determined by hobbing of the teeth of the internal gear, the improvement wherein

said internal gear has an odd number of teeth between 11 and 17, inclusive;

the pressure angle of said teeth at the pitch point is between about 30° and about 40°;

each flank of each tooth of said internal gear is defined by first, second and third successive arcs selected such that the ratio of the addendum circle radius to the radius of each of said arcs is, respectively, between about 30 and 40, between about 0.55 and about 0.9 and between about 15 and about 25;

said arcs merge tangentially into each other and into one of the addendum and dedendum circles of the internal gear with each tooth flank thereof being predominantly convex; and

the height of each internal gear tooth is substantially equal to the tooth thickness thereof as measured on the pitch circle.

5. In a hydrostatic gear machine of the type having a produced internal gear with inwardly extending teeth, and a generating external gear with outwarding extending teeth, the external gear being surrounded by and meshing with the internal gear, wherein each tooth of the external gear has tooth flanks which, as viewed axially, are at least partly arcuate, and wherein the shapes of active tooth flanks of the internal gear

are determined by hobbing of the teeth of the external gear, the improvement wherein

said external gear has an even number of teeth between 8 and 14, inclusive;

the pressure angle of said teeth at the pitch point is between about 30° and 40°;

each flank of each tooth of said external gear is defined by first, second and third successive arcs selected such that the ratio of the addendum circle radius to the radius of each of said arcs is, respectively, between about 15 and 25, between about 0.09 and about 0.125, and between about 30 and about 40;

said arcs merge tangentially into each other and into one of the addendum and dedendum circles of the internal gear with each tooth flank thereof being either predominantly concave or concave and convex in substantially equal parts; and

the height of each external gear tooth is substantially equal to the tooth thickness thereof as measured on the pitch circle.

4,386,893

GEAR PUMP OR MOTOR WITH A SHAFTLESS GEAR

Herbert J. Hauser, Jr., Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 4, 1981, Ser. No. 260,142
Int. Cl.³ F01C *1/20*; F03C *2/08*; F04C *2/20*
U.S. Cl. 418—191 **7 Claims**



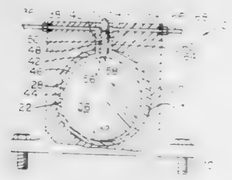
1. In a gear pump or motor having a housing and at least two intermeshing gears, one of said gears fixed to a rotatable shaft and having a plurality of gear teeth and the other being a shaftless gear having a plurality of gear teeth rotatable on a film or fluid in close proximity to an interior surface of said housing, the improvement comprising top lands having a narrow thickness on said gear teeth of said gear fixed to said shaft and top lands having a wider thickness on said gear teeth of said shaftless gear for increasing the bearing surface of said shaftless gear on said film of fluid within said housing.

4,386,894

HYBRID HIGH PRESSURE HYDRAULIC TURBINE

Barto John A., 3416 Croydon Rd., Baltimore, Md. 21207

Filed Jan. 11, 1982, Ser. No. 338,287
Int. Cl.³ F03C *2/00*
U.S. Cl. 418—215 **1 Claim**



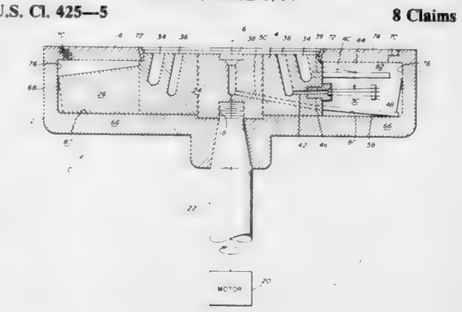
1. In a system for developing rotary power from pressurized liquid in an engine having a direction of rotation, a housing, a shaft portion with a cylindrical periphery journalled in a bore in the housing, means for forming at least one expansion chamber between the shaft portion and the housing said means for forming including: a plunger valve assembly, a valve plunger and biasing means being part of said plunger valve assembly; a fluid inlet adjacent a first side of said plunger valve assembly and a fluid exhaust adjacent a second side of said plunger valve assembly; including: said means for forming, forming at least one expansion chamber including said shaft portion defining a first groove extending partway around the circumference of a first portion of said shaft portion, a first end of said valve plunger engaging said first groove under said bias, said fluid inlet and said fluid exhaust located for cyclically connecting with said first groove, and said first groove tapering in depth in the direction of said rotation from a point of extinction to a uniform depth portion, the improvement comprising: said shaft portion being an integral part of said shaft, said first groove merging with said shaft portion cylindrical periphery at said point of extinction, said shaft portion defining at least a second substantially identical one of said grooves thereon in axially spaced relation from said first groove, a second said plunger valve assembly for said second groove, said shaft portion having equal diameter at each of said first and second grooves, said first and second grooves in end view partially overlapping around said shaft portion, each said groove having a rounded cross-section, each said valve plunger having a rectangular cross-section, said housing having a rectangular cross-section passage therein holding each said valve plunger, said first end of each valve plunger having a bevel, said bevel defining a knife edge at said first end of each of said plungers for fitting a said groove rounded cross-section, a respective plunger keeper for forcing each said plunger into a respective groove under said bias, each valve plunger having a convex second end and the plunger keeper having a convex first end contacting said convex second end, said bias being a spring bias acting on a second end of said plunger keeper, each said knife edge including a front end, said front end being rounded.

4,386,895

APPARATUS FOR PRODUCING CAPSULES

Lester A. Sodickson, Newton, Mass., assignor to Damon Corporation, Needham Heights, Mass.

Filed Nov. 13, 1981, Ser. No. 320,881
Int. Cl.³ B28B *1/54*
U.S. Cl. 425—5 **8 Claims**



1. An apparatus for producing capsules by forming liquid droplets containing a core material and then immersing the droplets in a liquid gelling agent to produce shape-retaining capsules, said apparatus comprising:

a rotor disposed about a central axis of rotation and defining means for connection with a source of rotary power and plural radially disposed conduits for carrying said liquid droplets and core material;

means integral with said rotor defining ports spaced uniformly apart from said central axis, each said port being in communication with at least one of said radial conduits; and

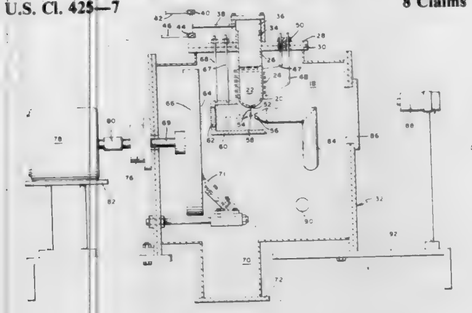
a member integral with said rotor defining a liquid gelling agent reservoir comprising an annular surface spaced radially apart from said ports on which said liquid gelling agent rests during rotation of said reservoir, whereby during rotation about said central axis the liquid and core material are forced through said radially disposed conduits, droplets are formed and propelled radially as said liquid material and core material pass from said ports, and the droplets are gelled upon immersion in the liquid gelling agent contained in said reservoir.

4,386,896

APPARATUS FOR MAKING METALLIC GLASS POWDER

Ranjan Ray, Randolph, N.J., assignor to Allied Corporation, Morristown, N.J.

Continuation of Ser. No. 23,413, Mar. 23, 1979, abandoned. This application Feb. 18, 1982, Ser. No. 349,807
Int. Cl.³ B01J *2/02*; B22F *9/08*
U.S. Cl. 425—7 **8 Claims**



1. An apparatus for making metallic glass powder comprising, in combination:

(a) holding means for holding molten metal;

(b) nozzle means in communication with said holding means for generating a jet of molten metal;

(c) means for expelling molten metal through said nozzle means to generate a jet of molten metal;

(d) means for atomizing said jet into a stream of discrete droplets of molten metal;

(e) a chill surface located in the path of said stream of discrete droplets of molten metal for impingement of said droplets thereon;

(f) gating means for directing said stream of droplets along said path, said gating means having a width through which said droplets pass; and

(g) means for adjusting the surface speed of said chill surface and the width of said gating means to solidify said atomized droplets at a rate of at least about 10^{4}° C./second and minimize overlap of the droplets during said impingement.

4,386,897

SYSTEM FOR RECOVERING FILM FROM PRESSURIZED EXTRUSION ZONE

Gordon P. Hungerford, Palmyra, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

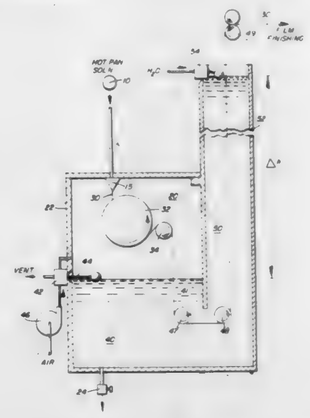
Division of Ser. No. 156,708, Jun. 5, 1980, Pat. No. 4,321,230. This application Oct. 20, 1981, Ser. No. 313,102
Int. Cl.³ B29C *25/00*
U.S. Cl. 425—71 **6 Claims**

1. A system for producing continuous acrylonitrile polymer film from a high pressure feedstream comprising, in combination:

means for feeding an acrylonitrile polymer-solvent mixture under pressure through a film forming means into an extrusion zone;

means for maintaining super-atmospheric pressurized gas in said extrusion zone;

means for directing said polymer-solvent mixture in film form against adjacent rotating drum means in said extrusion zone for casting a substantially uniform continuous film of polymer;



product withdrawal means operatively connected to said extrusion zone for recovering said film from said drum means, said product withdrawl means comprising a standing liquid column in fluid communication with said extrusion zone and adapted to receive a continuous supply of said film at a lower portion of said column; and

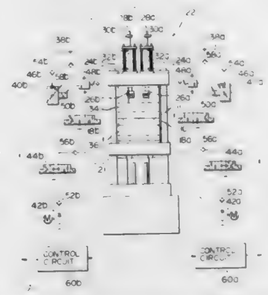
means for passing said continuous film upwardly through said liquid column and recovering said film at ambient pressure.

4,386,898

MOLDING MACHINE FOR ENCAPSULATION

Michitoshi Sera, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 8, 1981, Ser. No. 271,118
Claims priority, application Japan, Jun. 18, 1980, 55-81363
Int. Cl.³ B29G *3/00*
U.S. Cl. 425—145 **5 Claims**

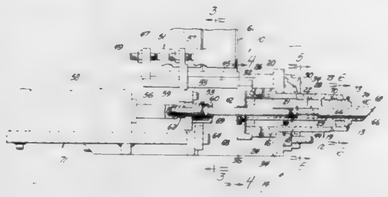


1. A molding machine for encapsulation which comprises:

a transfer molding press having a plurality of cylinders, a piston rod associated with each said cylinder and movable relative thereto in accordance with pressurized fluid delivered to the cylinders, and a resin-pressing plunger movable with each said piston rod;

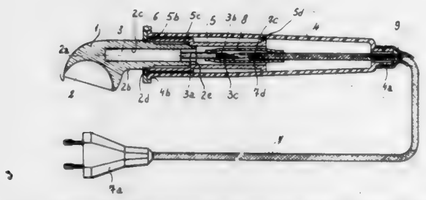
a molding die including a plurality of pots allowing for the passage of said plungers, runners branched off from the pots, and a plurality of cavities connected to the runners through corresponding gates;
a displacement transducer for detecting the rate of movement or displacement of each said plunger;
means generating an output signal from each of said transducers in accordance with the rate of displacement of the associated plunger;
a variable fluid flow rate control means associated with each said cylinder for controlling the fluid flow rate thereto;
a control circuit for receiving the output signal from each said transducer and operable to control the operation of the fluid flow rate control means to cause the plungers to be moved at the same speed.

4,386,899
INJECTOR FOR PLASTIC MOLDS
James E. Cook, Clarkston, Mich., assignor to Morrell Company, Troy, Mich.
Filed Jul. 27, 1981, Ser. No. 287,112
Int. Cl.³ B29F 1/03
U.S. Cl. 425—225 **13 Claims**



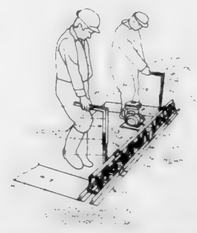
1. A material injection assembly (10) comprising: a body member (12) defining a nozzle (13) for injecting material into a mold (14) and including at least one central channel (16) for conveying a first material through said nozzle (13) and characterized by internal purging means for closing said central channel (16) to the mold (14) and a fluid channel means for admitting a purging fluid to purge said central channel (16) of the first material.

4,386,900
FROZEN FOOD SERVER
Jean-Claude Sultan, Marnaz, France, assignor to M T S International S.A., Annecy, France
Filed Jul. 15, 1981, Ser. No. 285,275
Claims priority, application France, Dec. 8, 1980, 80 26497
Int. Cl.³ A23G 9/00; B29C 1/00
U.S. Cl. 425—279 **6 Claims**



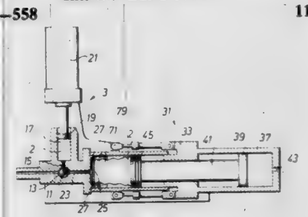
1. A scoop for dispensing ice cream and like frozen comestibles, comprising:
a massive head composed of a light-metal alloy and having a scoop-shaped concavity adapted to form a ball from a bulk food product, and an elongated stem;
a thermostatically controlled electric heater formed in a unit received at least partially in said stem and having conductors extending therefrom;
an elongated sleeve surrounding at least a portion of said stem receiving said unit and extending longitudinally away from said stem to form a handle, said sleeve being radially spaced from said stem;
a tubular separator surrounding said stem portion and bridging the latter portion and the sleeve in a generally radially spaced position therebetween, said tubular separator and said sleeve being composed of electrically and thermally insulating material;
a line cord extending through said sleeve and having conductors forming electrical connections with the conductors of said heater; and
a thermally shrunk tube enclosing said connections.

4,386,901
PORTABLE VIBRATING CONCRETE SCREED
Donald R. Morrison, 6228 Eagle Peak Dr., Charlotte, N.C. 28214
Filed Mar. 23, 1981, Ser. No. 246,249
Int. Cl.³ B28B 1/08
U.S. Cl. 425—456 **1 Claim**



1. A lightweight portable vibrating concrete screed adapted for "wet" or "mud" type screeding without the use of forms, comprising:
(a) an elongated open frame structure mounting a pair of spaced apart and fixedly positioned parallel screed blades of inverted T cross section and adapted to engage and level concrete as said screed is moved over the concrete and with he leading one of said blades in the direction of screeding being mounted and adapted whereby to effect a rough smoothing puddling-like action when lifted so as to avoid being fully supported on the concrete being screeded, said elongated open frame structure and blades being formed of lightweight metal members in a bolt-together construction and in the form of an isosceles triangle in cross section with the forward and trailing said screed blades being positioned at the lower outer corners of said triangle, said frame including an inverted V ridge member positioned at the apex of said triangle, said blades being positioned below and said apex being substantially evenly spaced between said forward and trailing blades and including cross braces fixed to and extending between said screed blades and said ridge member;
(b) bearings mounted on said frame between and above the base of said blades and spaced inwardly from each end of said frame;
(c) a vibrating element including a shaft supported for rotation in said bearings above said blades and extending throughout the length of said frame and beyond said bearings spaced inwardly from each end of said frame and structural means associated with said shaft designed upon rotation of said shaft to allow said shaft to vibrate said frame;
(d) a drive source comprising a lightweight gasoline engine mounted on the leading side of said frame with reference to the direction of screeding and at an elevation above said shaft and belt and pulley means drivingly connected said engine to said shaft, said engine being adapted for rotating said shaft at a speed sufficient to cause said shaft to impart uniform vibrations throughout the length of said blades, said engine being mounted on said frame in a manner effective when the weight of said engine is relieved by the operators from being fully supported by the concrete being screeded to cause said screed to creep forwardly during the screeding operation; and
(e) a pair of handles secured to said frame on the said leading side thereof and on either side of said drive source, said handles including vertical upright telescoping handle portions and horizontal outwardly and forwardly extending telescoping handle portions, said telescoping portions adapted to accommodate to the physical size and needs of the operators of said screed, and enabling said operators of said screed to partially support the frontal weight thereof during forward movement thereof to effect said forward creep.

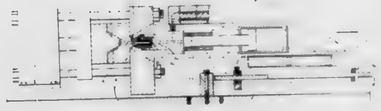
4,386,902
MACHINE FOR HANDLING OR TREATING PLASTIC MATERIAL
Jan Carlstein, Mariestad, and Sven Jonsson, Laxa, both of Sweden, assignors to Fjellman Press AB, Sweden
PCT No. PCT/SE80/00239, § 371 Date Jun. 2, 1981, § 102(e) Date May 20, 1981, PCT Pub. No. WO81/00983, PCT Pub. Date Apr. 16, 1981
PCT Filed Oct. 2, 1980, Ser. No. 269,050
Claims priority, application Sweden, Oct. 2, 1979, 7908162
Int. Cl.³ B29G 3/50
U.S. Cl. 425—558 **11 Claims**



1. A machine for injecting moulding or extruding plastic material which is available in packaged form, and which includes a feeding head with an extrusion nozzle, a feed channel for feeding plastic material to the nozzle, an emptying device for emptying a plastic material package and transferring the plastic material to said feed channel by deformation of the package after an exit opening for the plastic material has been provided in the packaging material, said device having an emptying cylinder for accommodating the package and a driven emptying piston movable in the emptying cylinder, characterized by an extrusion unit comprising an extrusion cylinder with an injection piston movable therein and a switch valve adapted to alternatively connect the extrusion cylinder to said feed channel and said extrusion nozzle for indirect feeding of material to the nozzle, and by means for moving the emptying cylinder away from the feeding head after complete emptying of the package in a direction away from the feeding head so that the deformed plastic material package resiliently expands and is set free, whereupon the emptying piston thereafter is moved away from the feeding head into the emptying cylinder so that the deformed package is no longer supported by said emptying piston or emptying cylinder for automatic removal of the deformed package.

7. A machine for the injection or extrusion of plastic material having injurious qualities and contained in a deformable package comprising:
a support frame;
an emptying unit including a body defining a space, an emptying piston movable in said space, an emptying cylinder for receiving a piston head portion of said emptying piston and means for movably mounting said emptying cylinder to said body;
an injection unit having a feeding head including a feed channel, a valve, an outlet nozzle, an injection cylinder and an injection piston movable in said injection cylinder, said valve movable from a first position communicating said injection cylinder with said outlet nozzle and a second position communicating said feed channel with said injection cylinder;
a gripping unit associated with said support frame for gripping and perforating a package containing plastic, said body being movable on said frame from a first position for receiving a package from said gripping unit to a second position which brings said emptying cylinder into alignment with said feeding head, said means for moving said emptying cylinder being operable to engage said emptying cylinder with said feeding head and communicating the interior of said emptying cylinder with said feed channel.

4,386,903
INJECTION-MOLDING MACHINE WITH HYDRAULIC MOLD CLAMPING
William J. Wybenga, Brampton, Canada, assignor to Husky Injection Molding Systems Ltd., Bolton, Canada
Filed May 1, 1981, Ser. No. 259,674
Int. Cl.³ B29F 1/03
U.S. Cl. 425—563 **5 Claims**



1. In an injection-molding machine having a bed, a first platen secured by a set of metallic tie bars to a structure rigid with said bed, a second platen movable along said tie bars toward and away from said first platen, drive means included in said structure for reciprocating said second platen along said tie bars to open and close a mold having portions respectively carried on said platens, said first platen having an aperture giving access to a sprue on the mold portion carried thereby, an injection unit on the side of said first platen opposite said second platen provided with a precompression chamber having an outlet terminating at an orifice of a nozzle which confronts said sprue by way of said aperture, and gating means on said nozzle for preventing the flow of precompressed plastic material from said chamber through said orifice into said sprue prior to closure of the mold;
the improvement wherein said gating means comprises a movable member blocking said outlet in a forward position and unblocking same in a rearward position, said member having a front end closely juxtaposed with said sprue in a mold-open position with a predetermined clearance and displaceable thereby from said forward position into said rearward position against a biasing force, constituted at least in part by the pressure of said plastic material, for unblocking said outlet upon closure of said mold by said drive means with exertion of a mold-clamping force causing elastic stretching of said tie bars, said first platen being mounted on said bed with freedom of limited movement to follow the stretching and subsequent contraction of said tie bars, said injection unit being supported on said bed by a slidable carriage anchored to said first platen by a hydraulic linkage provided with manually settable stop means for arresting said carriage in a selected

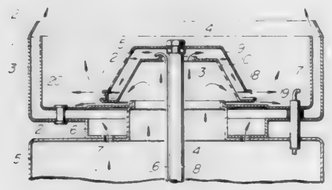
relative position on said bed in which said clearance amounts to a fraction of the maximum stretch of said tie bars in said mold-open position.

4,386,904
COLORED FLAME CANDLE
Hisao Miyahara, and Tatsumi Tsukamura, both of Okayama, Japan, assignors to Pegasus Candle Co., Ltd., Okayama, Japan
Filed Dec. 16, 1980, Ser. No. 216,857
Int. Cl.³ F23Q *2/32*
U.S. Cl. 431—126 **9 Claims**



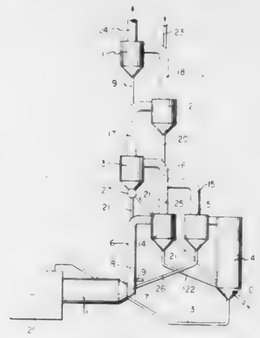
1. A colored flame candle comprising a primary combustable material that burns with the colorless flame, a combustion wick and a coloring wick wherein:
a combustion wick from plaited or twisted cotton yarn to which an oxidation accelerating catalyst which is selected from the group consisting of platinum, palladium and vanadium and mixtures thereof is added; and
a coloring wick separated from but adjacent to said combustion wick, said coloring wick comprising a flammable thread-like material, a metallic color former compound, an oxidation accelerating catalyst which is selected from the group consisting of platinum, palladium and vanadium and mixtures thereof and a combustible resin coating.

4,386,905
LIQUID FUEL GASIFYING BURNER
Kingo Miyahara, Tokyo, Japan, assignor to Dowa Co., Ltd., Tokyo, Japan
Filed Dec. 18, 1980, Ser. No. 217,907
Claims priority, application Japan, Dec. 25, 1979, 54-168616
Int. Cl.³ F23D *11/04*
U.S. Cl. 431—168 **3 Claims**



1. A liquid fuel gasifying burner comprising:
a combustion cylinder open at one end and formed with an air blowing chamber in the central portion of the other end;
a rotary gasifying member of the frustoconical shape closed at one end and open at the other end, said rotary gasifying member being rotatably mounted in said combustion cylinder;
a inner gasifying member formed with an air port in the central portion of one end and open at the other end, said inner gasifying member being connected to said rotary gasifying member in enclosed relation so that the two members can rotate as a unit;
a fuel-air mixture passage defined between the inner circumferential surface of said rotary gasifying member and the outer circumferential surface of said inner gasifying member;
a liquid fuel spreading surface formed on said one end of said inner gasifying member; and
a liquid fuel scattering portion formed in an outer peripheral portion of said liquid fuel spreading surface.

4,386,906
METHOD FOR BURNING GRANULAR OR PULVEROUS MATERIALS AND KILN PLANT THEREOF
Tage H. Dano, Copenhagen, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.
Filed Sep. 11, 1981, Ser. No. 301,407
Claims priority, application United Kingdom, Sep. 22, 1980, 8030508
Int. Cl.³ F27B *15/00, 7/02;* **C04B** *7/02*
U.S. Cl. 432—14 **12 Claims**



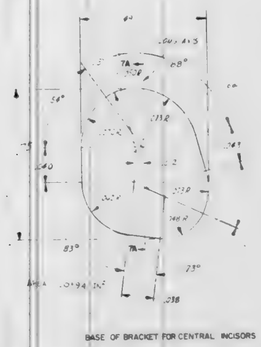
1. Method for burning granular raw materials in a plant comprising a single-string, multi-stage suspension preheater including at least a first preheater stage and at least a second preheater stage each having a gas inlet and a gas outlet, a suspension precalciner having a gas inlet and a gas outlet, the gas outlet being coupled to the single-string preheater, a kiln for burning the materials treated in the preheater and the precalciner, the kiln being coupled to the gas inlet of the first preheater stage, a cooler being coupled solely to the kiln for cooling the burnt material and also to the gas inlet of the precalciner so as to permit at least a portion of the spent cooling air to be admitted to the precalciner, wherein the precalciner gas outlet is coupled to the gas inlet of the second preheater stage, means for coupling the gas outlet of the first preheater stage to the gas inlet of the second preheater stage, comprising feeding the treated materials from the first preheater stage to the precalciner and then to the kiln, precalcining the materials in the precalciner solely by means of spent cooler air fed to the precalciner from the cooler, preheating the materials in the first preheater stage solely with kiln exhaust gases, and equalizing the pressure drops arising in the two gas flows through the precalciner and the first preheater stage by throtteling means positioned in said coupling means before the union of the two gas flows for preheating in the remaining portion of the preheater.

4,386,907
LADLE HEATER WITH STOPPER ROD OPENING
Daniel B. Smith, Gainesville, Ga., assignor to The Cadre Corporation, Atlanta, Ga.
Filed Aug. 31, 1981, Ser. No. 297,640
Int. Cl.³ F23C *7/06*
U.S. Cl. 432—225 **10 Claims**

1. Apparatus for heating ladles of the type which include an open top vessel with a rim extending about its open top and a valve with a valve gate at its lower portion and a rod extending upwardly from the valve gate through the open top of the vessel, said apparatus comprising a lid assembly for placement against the rim of the open top of the vessel, said lid assembly including a support frame and a layer of compressible refractory fiber material supported by said support frame and forming a lid surface of a breadth sufficient to span across and to close the open top of the vessel for sealing engagement with the rim of the vessel, a rod opening through said lid assembly for telescopically receiving the rod of the ladle, and plug means for closing the opening of the lid assembly about the rod of the ladle.

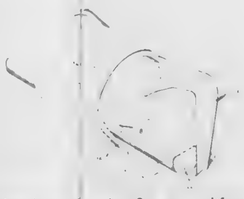


4,386,908
LINGUAL ORTHODONTIC APPLIANCE SYSTEM FOR THE MANDIBULAR ARCH
Craven H. Kurz, No. 6, N. Star, Apt. 106, Marina del Rey, Calif. 90291
Continuation-in-part of Ser. No. 741,850, Nov. 15, 1976, abandoned. This application Sep. 14, 1981, Ser. No. 301,452
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—9 **8 Claims**



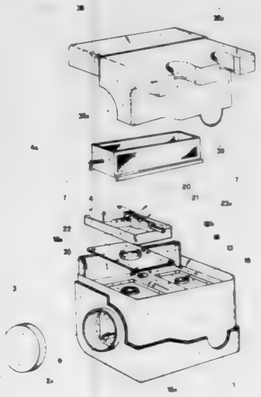
1. A fixed lingual arch wire appliance system comprising: a first pair of brackets to be respectively adhesively attached to the lingual surfaces of the mandibular central incisors of a patient; a second pair of brackets to be respectively adhesively attached to the lingual surfaces of the mandibular lateral incisors of the patient; a third pair of brackets to be respectively adhesively attached to the lingual surfaces of the mandibular cuspids of the patient; each of said brackets having a base adhesively attached to a corresponding tooth, and said base being tapered to have a decreasing transverse dimension from the incisal end to the gigival end thereof, and said base being shaped to fit between the marginal lingual ridges of the corresponding tooth and to fit the anatomy of the lingual surface thereof, the tooth-engaging surface of the base of each of said first pair of brackets having dimensions and configuration shown schematically in FIG. 7, and FIG. 7A, the tooth-engaging surface of the base of each of said second pair of brackets having dimensions and configuration shown in FIG. 8, and FIG. 8A, and the tooth-engaging surface of the base of each of said third pair of brackets having dimensions and configuration shown schematically in FIG. 9, FIG. 9A, and FIG. 9B.

4,386,909
ORTHODONTIC ARCH WIRES
Gustaf H. Hanson, Hamilton, Canada, assignor to Augusta Developments Inc., Hamilton, Canada
Filed Apr. 12, 1982, Ser. No. 367,652
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—20 **7 Claims**



1. An orthodontic arch wire for use with an orthodontic bracket of the kind having a mesial-distal extending slot of rectangular cross-section perpendicular to the mesial-distal axis,
the arch wire having a cross-section perpendicular to its direction of elongation such that the occlusal and gingival sides are straight and parallel to one another with the occlusal side longer than the gingival side,
the lingual side is straight and perpendicular to the occlusal and gingival sides, and
at least the major part of the labial side is smoothly outwardly-convex curved merging smoothly at one end with the gingival side, and at the other end with any remaining minor part of the labial side.

4,386,910
CONSOLE FOR SUCTION TUBES OF SUCTION UNITS USED IN DENTISTRY
Augusto Cattani, Parma, Italy, assignor to Officine Augusto Cattani & C.S.a.S., Parma, Italy
Filed Mar. 30, 1981, Ser. No. 249,234
Claims priority, application Italy, May 2, 1980, 28946/80[U]; Aug. 29, 1980, 28992/80[U]
Int. Cl.³ A61C *17/04*
U.S. Cl. 433—92 **9 Claims**



1. A console specifically designed for the suction tubes of suction units of the kind used in dentistry of a type having one

or more housing(s) for tube(s) comprising pneumatic devices for arresting the suction within a tube when the latter is replaced on the console, electrical devices for arresting the operation of the suction pump when all the tubes are replaced on the console, and filtering means for effecting a first stage filtering of the spittle and the like sucked into the tube, comprising a box-like shell furnished with a longitudinally disposed collector accessible from without at one of its lateral extremities, closed by a removable stopper, inside which collector is positioned a filter drawer with an open top and furnished with perforated walls whose shape and dimensions are such that it occupies substantially all of the internal space inside said collector, said collector being connected to the suction pump by means of a first hose and, by the interpositioning of a pneumatic valve, to each of the said tubes by means of second hoses each of which are connected to a duct located in said box-like shell, which gives out into the collector and correspondingly into the open top of the filter drawer, said box-like shell also comprising an upper compartment with an open top serving to accommodate the said pneumatic devices and the command components of said electrical devices; a cover, in which are located forked housings into which the tubes are placed, which can be attached to the top of the said box-like shell thereby making it secure; and checking means for determining a sole correct position of the filter drawer for its introduction into said collector, said checking means comprising a pair of upper guide rails located on the internal upper surface of said collector and running in a longitudinal direction parallel with each other at a reciprocal distance slightly greater than the width of the open top of the filter drawer; a pair of lower guide rails located on the lower internal surface of the said collector running in a longitudinal direction and parallel with each other at a reciprocal distance which is less than the width of said filter's open top, provision having been made on the wall of the filter opposite to its open top for a pair of corresponding elements inclined downwards and running longitudinally and parallel with each other at a reciprocal distance which is slightly greater than that distance existing between the outer surfaces of the lower guide rails; and the distance between the said pairs of lower and upper guide rails being less than the width of the open top of the said filter.

4,386,911

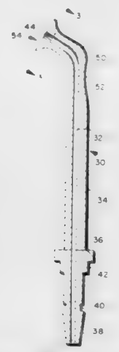
PRESSURIZED IRRIGATING ORAL SCRUBBER

Holly H. Maloney, and Albert L. Maloney, both of 16 Rue Grand Vallee, Newport Beach, Calif. 92660

Continuation-in-part of Ser. No. 152,341, May 22, 1980, abandoned. This application Nov. 30, 1981, Ser. No. 325,635

Int. Cl.[3] **A61C** *3/06*

U.S. Cl. 433—125 **21 Claims**



1. The improvement in a pressurized oral irrigator wherein a source of fluid pressure is provided through a conduit to be delivered to the oral cavity wherein the improvement comprises:

an outlet from said source of fluid pressure connected to a scrubbing member formed as a scrubbing cup having a depression therein through which the fluid flows, and a relieved surface within said depression, to provide an outer peripheral wall surrounding said cup for scrubbing the surface of the teeth of a user in conjunction with the relief within the depression; and,

at least one opening through said wall to provide a relief of pressure in said depression and flow through said wall when the cup is blocked at its face.

4,386,912

METHOD FOR FILLING TOOTH CAVITIES EMPLOYING A POLYMERIZABLE URETHANE CEMENT COMPOSITION

Yoshinori Nagase; Kyoichiro Shibatani; Junichi Yamauchi, and Ikuo Omura, all of Kurashiki, Japan, assignors to Kuraray Company Limited, Kurashiki, Japan

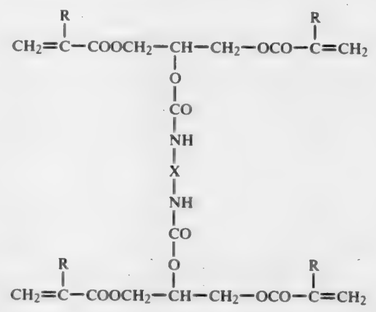
Division of Ser. No. 256,154, Apr. 21, 1981, Pat. No. 4,347,174. This application Apr. 26, 1982, Ser. No. 372,207

Claims priority, application Japan, Apr. 29, 1980, 55-57598; Nov. 17, 1980, 55-162515

Int. Cl.[3] **C07C** *125/07;* **C08K** *3/36, 5/54;* **A61K** *6/02*

U.S. Cl. 433—228 **18 Claims**

1. A method for restoring tooth cavities which comprises filling a tooth cavity with a dental filling material which comprises (a) a filler, (b) a binder to be used in admixture with the filler, and (c) a curing agent for polymerizing the binder, said binder comprising, based on the total weight of the binder, 20–100% by weight of (A) a free-radical polymerizable monomer of the following formura:



wherein R is a hydrogen atom or a methyl group and X is an organic residue having 1-48 carbon atoms, and 0–80% by weight of (B) a mono-, di- or tri-functional free-radical polymerizable monomer which is copolymerizable with the above monomer (A).

4,386,913

PSEUDO-RANDOM NOISE GENERATED TARGET SIMULATOR

Gerald L. Assard, Waterford, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 26, 1981, Ser. No. 266,852

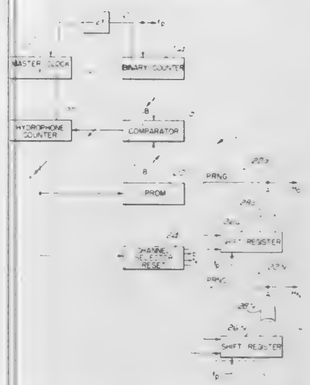
Int. Cl.[3] **G01S** *7/52*

U.S. Cl. 434—9 **3 Claims**

1. A pseudo-random noise target simulator comprising:

programming means including clocking means for providing timing pulses, a binary counter connected to said clocking means and advancing one count upon receipt of each timing pulse, a programmable readable memory for storing and providing predetermined counts, comparator means connected to receive inputs from said counter and said programmable readable memory and for providing an output signal when the received inputs are identical, and hydrophone counting means for updating said programmable readable memory and reset means upon receipt of the output signal from said comparator;

reset means connected to said programming means for cyclicly providing individual output signals on a plurality of outputs in response to the receipt of the independent signals from said programming means; and



pseudo-random noise generating means for synthesizing an acoustic wave front as detected by a line array in response to receiving said cyclicly provided individual output signals, said pseudo-random noise generating means includes a plurality of pseudo-random noise generators that generate individual output signals forming said wave front.

4,386,914

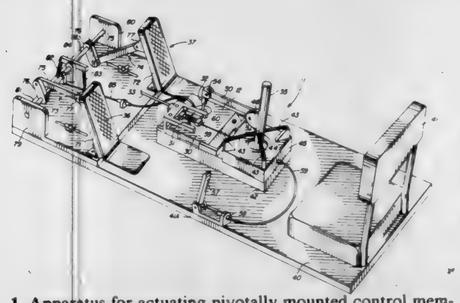
TRANSMITTER EXTENSION APPARATUS FOR MANIPULATING MODEL VEHICLES

Larry L. Dustman, 1706 E. Indian School Rd., Phoenix, Ariz. 85016

Filed Apr. 15, 1981, Ser. No. 254,405

Int. Cl.[3] **G09B** *9/08;* **A63H** *30/04*

U.S. Cl. 434—32 **4 Claims**



1. Apparatus for actuating pivotally mounted control members of a transmitter used for transmitting radio signals to a receiver on board a model aircraft comprising:

an elongated platform for positioning on a supporting surface,

a seat mounted at one end of said platform for seating an operator,

a pair of foot controls mounted at the other end of said platform on a common surface thereof in reach of the feet of the operator seated on said seat for independent movement thereof,

hand operated control means mounted on said platform between said seat and said foot controls within reach of the operator when seated on said seat,

said control means being pivotally biased to a neutral position,

a first means for mounting a transmitter having two pivotally mounted control members, the radial movement of which causes a plurality of different radio signals to be transmitted for receipt by a receiver mounted in a model aircraft for actuating various parts thereof,

a second means for transmitting a force corresponding to the independent movement of each of said foot controls to one of the control members of the transmitter, and

a third means for transmitting a force corresponding to the movement of said control means to the other of the control members of the transmitter,

said third means comprising a linkage mechanically interconnecting said hand control means with the other of the control members,

said linkage being pivotally connected to said control means at one end thereof and telescopically engaging the other of the control members at the other end thereof,

said hand operated control means comprising a shaft mounted on a base member for radial movement,

said base member comprising a pair of slide plates slidably mounted therein for movement in directions transversely of each other, and

said radial movement causing components of force to be applied to said plates, the movement of which is used to actuate said control members.

4,386,915

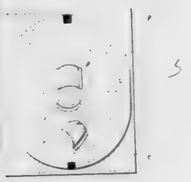
DRY LAND TRICK SKI TRAINER

Barry R. Gilliam, Maitland, Fla., assignor to Airoex Products, Inc., Apopka, Fla.

Filed Nov. 17, 1980, Ser. No. 207,645

Int. Cl.[3] **A63B** *69/18*

U.S. Cl. 434—253 **3 Claims**



1. An apparatus for facilitating the teaching of trick skiing maneuvers to a skier comprising:

a base adapted to be placed on a horizontal surface;

a platform disposed at an angle of between two and one half (2½) to ten (10) degrees from the horizontal surface;

single degree of freedom means for rotatingly coupling said platform to said base whereby the platform can only rotate about an axis normal to the platform;

a ski handle disposed within reach of the skier when the skier is on said platform;

a rope attached to the ski handle;

a rigid vertical surface;

a pulley coupled to said rope and disposed so that said rope is in a substantially horizontal position when the skier holds said ski handle; and

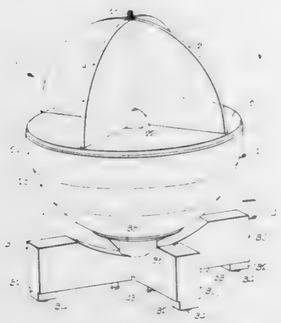
at least one weight attached to the end of the rope and disposed a predetermined distance from said pulley whereby the weight can be raised at least said predetermined distance.

4,386,916

MENTAL FUNCTIONS COMPLEXITY MODEL

George M. Beal, N-208 Regency Pl., Lawrence, Kans. 66044

Filed Mar. 29, 1982, Ser. No. 362,750
Int. Cl.[3] G09B *23/30*
U.S. Cl. 434—270 15 Claims



1. A mental functions complexity model comprising:

a plurality of individually variable, light-emitting sources focused on a single relatively restricted focal region; means proximal to said sources for receiving and diffusing light therefrom, including structure presenting a light-diffusing surface located substantially at said focal region, and at least one horizontally oriented disc and at least one vertically oriented disc, said discs being adjacent said surface-presenting structure; and

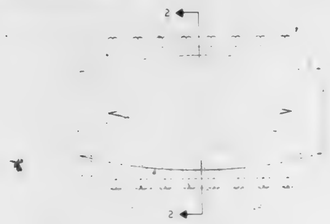
means operatively supporting said sources and said light-receiving and diffusing means.

4,386,917

SUTURING TRAINING DEVICE AND METHOD

Leonard E. Forrest, 3515 E. Scarborough Rd., Cleveland Heights, Ohio 44112

Filed Sep. 16, 1981, Ser. No. 302,822
Int. Cl.[3] G09B *23/28*
U.S. Cl. 434—267 8 Claims



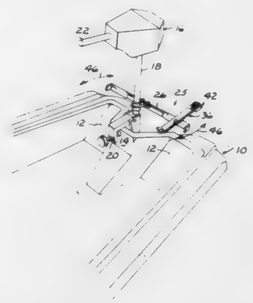
1. A simulator for practicing suture techniques comprising an open rectangular frame, a plurality of layers of material simulating human tissue received within said frame; said plurality of material layers comprising a first layer of elastic material, a layer of foam material having one side adhered to said first elastic layer, and a second layer of elastic material adhered to the opposite side of said foam material; and tension means attached to the long sides of said frame and to one or more of said layers to stretch said one or more layers between portions of said frame.

4,386,918

TROLLING MOTOR STEERING DEVICE

Carol L. Matthews, 532 S. Woodland Dr., and Bill R. Chavez, Sr., 312 E. Mohr La., both of Mustang, Okla. 73064

Filed Jul. 13, 1981, Ser. No. 282,780
Int. Cl.[3] B63H *25/00*
U.S. Cl. 440—7 2 Claims



1. In a fishing float having an electric outboard trolling motor mounted by its vertical shaft on the forward end of the float for swingable movement of the motor about the axis of the vertical shaft and guiding the float, the improvement comprising:

foot steering means comprising an elongated strap metal bar horizontally secured medially its ends to said vertical shaft above the upper limit of said float,

said bar being vertically disposed edgewise and further characterized by being twisted about its longitudinal axis adjacent its respective end portions to form a pair of foot pedals terminating at the respective ends of the bar in a rearwardly projecting foot retaining clip portion;

a generally vertical switch bar transversely secured intermediate its ends to one said foot pedal,

said switch bar having a rearwardly projecting heel support clip at its depending end; and,

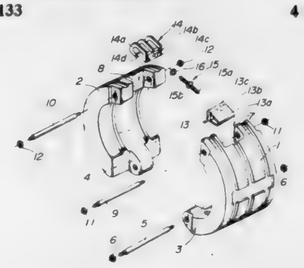
a trolling motor control switch mounted on the upper end portion of said switch bar.

4,386,919

FLOAT FOR LOADING HOSES

Mamoru Kadono, Yokohama, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Apr. 8, 1981, Ser. No. 251,841
Claims priority, application Japan, Apr. 14, 1980, 55-50242[U]
Int. Cl.[3] B63B *21/52*
U.S. Cl. 441—133 4 Claims



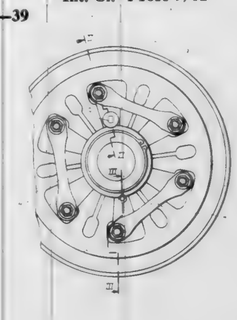
1. A float for loading hoses comprising: a pair of semi-annular hard floating bodies, a first pin extending through one end portion of each of said semi-annular floatingbodies and constituting a hinge on which said semi-annular floating bodies may pivot, a pair of opposed notches formed at the other end portions of said semi-annular floating bodies, a female screw threaded member having a width substantially equal to the width of one of the notches and composed of a U-shaped member opposed to the other notch and provided at its center portion with a tapped hole, said female screw member being secured to said one of said notches by a second pin extending through said one of said notches inside the U-shaped member, a hook-shaped member adapted to be engaged with a third pin extending through the other notch and having a width which is substantially equal to the width of the other notch, and a bolt provided at each end portion with screw threads inclined in opposite direction and threadedly engaged with said female screw threaded member and said hook-shaped member, respectively, whereby when the bolt is fastened to fit the float around the loading hose, the end portions of said bolt are in substantial contacting relationships with respective pins extending through the female screw threaded member and said hook-shaped member and the end of said bolt engaging said hook shaped member prevents said third pin from being disengaged from said hook-shaped member.

4,386,920

CONE PULLEY

Karl Keck, Leutesheim, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Continuation of Ser. No. 940,576, Sep. 8, 1978, abandoned. This application May 6, 1981, Ser. No. 260,976
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1977, 2740443
Int. Cl.[3] F16H *9/12*
U.S. Cl. 474—39 9 Claims



1. A pulley, particularly for use in a transmission, comprising:

(a) a first pulley part rotatable about a predetermined axis and movable in a direction substantially parallel to said axis;

(b) a second pulley part rotatable about said axis and fixed against movement in said direction, said first and second pulley parts cooperating to define a tapered groove for receiving a tapered tension member, and said second pulley part including a hub which is designed to be secured to a shaft rotatable on said axis, said first pulley part receiving said hub and being arranged to rotate about said axis while said hub is received therein, and said hub being threaded;

(c) a threaded locking member threaded onto said hub and having a section which extends radially of said axis, said section being arranged to abut said first pulley part upon displacement of said locking member away from said second pulley part to thereby draw said first pulley part away from said second pulley part; and

(d) a cup spring biasing said first pulley part towards said second pulley part, said cup spring having a portion which is radially spaced from said axis and acts on said first pulley part, and said cup spring being arranged such that displacement of said locking member away from said second pulley part causes a reduction in the biasing force of said cup spring.

4,386,921

METAL POWER TRANSMISSION BELT

Richard W. Roberts, Lombard, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 144,127, Apr. 28, 1980, abandoned. This application Feb. 1, 1982, Ser. No. 344,678
Int. Cl.[3] F16G *5/00*
U.S. Cl. 474—201 1 Claim



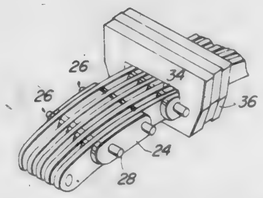
1. A power transmission belt especially adapted for use in a pulley transmission in which the pulleys are constructed of a pair of flanges each having an obliquely angled surface, said belt comprising the combination of at least one continuous metal loop member and a plurality of generally wedge-shaped metal drive blocks assembled in closely spaced relationship along the entire length of said loop member, said blocks each having a body portion which has been hardened and with tapered edges for frictionally engaging the flanges of said pulleys, said blocks each having wing members obliquely oriented with respect to the body portion which are deformed inwardly toward and over the loop member in order to retain the blocks on the loop member, the wing members being integral with and softer than the body portions permitting the deformation thereof over said loop member.

4,386,922

POWER TRANSMISSION CHAIN BELT

John S. Ivey, Ithaca, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 8, 1982, Ser. No. 346,813
Int. Cl.[3] F16G *5/16*
U.S. Cl. 474—242 18 Claims



5. A power transmission arrangement, comprising spaced pulleys each constructed with a pair of flanges, the flange spacing being variable to change the drive ratio between the pulleys, and a chain-belt drivingly connecting said pulleys, said chain-belt comprising a plurality of sets of links, a plurality of pivot means connecting the sets of links and a group of at least three generally trapezoidal load blocks surrounding each set of links and located between the two adjacent spaced pivot means associated with the set of links, each load block having edge surfaces to drivingly engage the pulley flanges and a central opening having a height dimension greater than the height of

aid links, said links of each set having upper and lower faces, and resilient means positioned between the lower faces of the links of a set and its associated group of load blocks, said resilient means being so constructed and arranged to apply a force on at least one of said load blocks of said group of load blocks without applying the same force to at least another load block of each group, leaving at least a second one of said load blocks free for limited radial movement during the time the force is applied to said one load block.

4,386,923

METHOD FOR FABRICATING BAG-IN-BOX PACKAGE

Masataka Okushita, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1981, Ser. No. 236,547

Claims priority, application Japan, Feb. 22, 1980, 55-21176; Feb. 22, 1980, 55-22041[U]; Apr. 24, 1980, 55-56090[U]; May 22, 1980, 55-68186; Jul. 22, 1980, 55-104127[U]

Int. Cl.³ B65B *3/17, 7/20, 43/36;* **B31B** *7/00*

U.S. Cl. 493—87 **6 Claims**



1. A method of fabricating a bag-in-box package which comprises:

(a) providing a semifinished bag-in-box package, in a collapsed state, which comprises

(1) a box having a set of four panels foldably connected together to form a rectangular tube, a set of four top flaps foldably connected to the respective panels for conjointly closing one end of the rectangular tube, and a set of four bottom flaps also foldably connected to the respective panels for conjointly closing the other end of the rectangular tube,

(2) a bag disposed within the box and formed by two substantially rectangular, superposed layers of flexible material hermetically sealed together,

(3) adhesive means securing one of the layers of the bag to at least one of the inside surfaces of the box, and adhesive means securing the bag to the inside surfaces of a pair of opposed ones of said bottom flaps;

(b) erecting the semifinished, collapsed bag-in-box package, the bag within the erected box being bent into the shape of a U;

(c) inflating the bag into close internal contact with the box while said pair of opposed bottom flaps are folded outwardly into approximately right angular relationship with the panels to which they are connected, thereby folding into triangular shape the end portions of the bag adhered to said pair of opposed bottom flaps, and while said other end of the rectangular tube and the corresponding end of the bag, including its triangularly folded portions, are held against a flat surface; and

(d) closing the opposite ends of the rectangular tube, formed by the panels of the erected box, with the sets of top and bottom flaps.

4,386,924

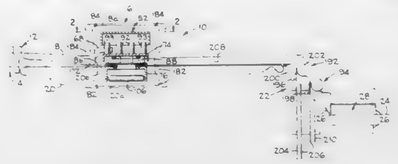
HANDLE BAG MAKING APPARATUS

Donald C. Crawford, and John S. Aterianus, both of Green Bay, Wis., assignors to FMC Corporation, Chicago, Ill.

Filed Oct. 23, 1980, Ser. No. 199,804

Int. Cl.³ B31B *1/86*

U.S. Cl. 493—196 **11 Claims**



1. A thermoplastic bag making apparatus comprising means, located in the processing path of thermoplastic web, for converting a segment of the web which is heat sealed at both ends by cutting out a rectangular portion to produce hand-grasping handles at one end, means for conveying the leading portion of the web toward and away from said converting means, said conveying means comprising upper and lower sets of transversely spaced bands following a linear path to said converting means, and means at the entrance and discharge of said converting means for diverting selected ones of said bands away and toward the linear path so that said diverted bands are not within the projected area in which cutting occurs while bands following the linear path conveys the web segment from said converting means.

4,386,925

APPARATUS FOR PRODUCING A TEAR LINE IN THE MULTI-LAYERED FOIL OF A CIGARETTE PACK

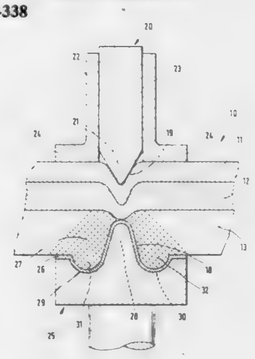
Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Division of Ser. No. 78,268, Sep. 24, 1979, Pat. No. 4,286,712. This application May 26, 1981, Ser. No. 266,698

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 2844238

Int. Cl.³ B31B *1/25*

U.S. Cl. 493—338 **6 Claims**



1. An apparatus for producing a tear line in a multi-layered, composite bonded foil for cigarette packs, said foil having a moisture and aroma proof layer of metal foil, and an exterior layer of a thermoplastic material, particularly polyethylene, characterized by: two oppositely disposed and mutually reciprocable tool members respectively contacting opposite sides of the foil, said tool members having cooperating shaping surfaces configured to form a tear line in said foil defined by the thermal deformation of at least the thermoplastic layer and a reduced thickness of said metal foil, and at least one of said tool members being heated.

4,386,926

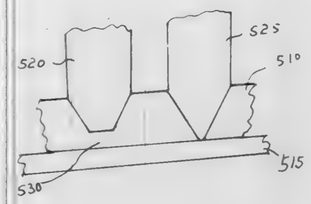
RELATIVELY RIGID SHEET PLASTIC FOLDING METHOD, APPARATUS AND ARTICLE

Joel Heller, 49 Kirkland Dr., Greenlawn, N.Y. 11740

Filed Feb. 17, 1981, Ser. No. 234,907

Int. Cl.³ B31B *1/25*

U.S. Cl. 493—396 **10 Claims**



7. A method of forming fold lines in relatively rigid plastic sheet material, said method comprising the steps of:

supporting the sheet material along one side of the sheet material along at least the line along which the fold line is to be formed on a steel platen polished in the area beneath the desired line of desired fold formation;

applying pressure to the side of the sheet opposed to the one which is being supported along the line of desired folding, said pressure of a magnitude sufficient to compress the material along the desired fold line to between 10% and 75% of its normal nominal thickness, and applying the pressure over an area having a width of between 15% and 85% of the normal nominal thickness of the sheet material to form a hinging membrane along the desired line of folding.

4,386,927

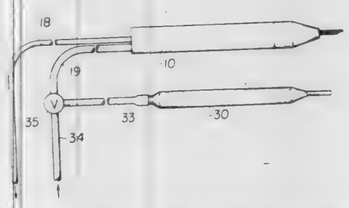
DEVICE TO BE UTILIZED IN EXTRACAPSULAR CATARACT SURGERY

Daniel M. Eichenbaum, Chappaqua, N.Y., assignor to Ocular Associates, Hollywood, Fla.

Continuation of Ser. No. 84,180, Oct. 12, 1979, abandoned. This application Jul. 21, 1981, Ser. No. 285,635

Int. Cl.³ A61M *1/00*

U.S. Cl. 604—51 **6 Claims**



1. Improved irrigation-aspiration apparatus for use during extracapsular cataract extraction comprising

a first elongated hollow housing having a substantially circular cross-sectional shape, having no obstructions thereon, open at one end and closed at its other end,

a double barreled cannula needle having a first channel for aspiration and a second channel for irrigation, said needle being mounted within said closed end of said housing with one end of said needle extending within said housing and the other end of said needle extending out from said housing,

a first tube attached within said housing to said aspiration channel of said needle,

a second tube attached within said housing to said irrigation channel of said needle; and,

a second elongated housing having a substantially circular cross-sectional shape, a single channel needle for irrigation attached to one end thereof and extending therefrom, tubing attached to the other end of said housing in flow communication with the channel of said needle, a valve having two outlet ports and one inlet port, said irrigation tubing of said first housing being connected to one of said outlet ports of said valve, said tubing of said housing being connected to the other outlet port of said valve and the inlet port of said valve adapted to be connected to a fluid flow pump.

4,386,928

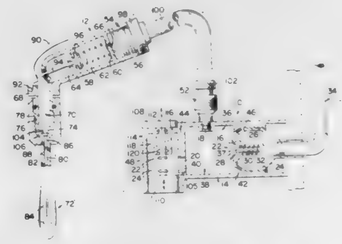
FEMININE HYGIENIC DEVICE

Nathan C. Hart, Rte. 2, Box 1049, Odessa, Fla. 33556

Filed Apr. 20, 1981, Ser. No. 255,657

Int. Cl.³ A61M *3/00*

U.S. Cl. 604—83 **10 Claims**



1. A feminine hygienic device for use with a pressurized water supply, said feminine hygienic device comprising a housing configured to be coupled to the pressurized water supply wherein said housing includes a body member including a pair of end walls formed on opposite ends thereof, a mixing chamber formed in said body member having a fluid reservoir formed in the lower portion thereof, to receive a predetermined volume of fluid medication therein, an inlet port disposed within said body member on one of said end walls having a one-way control valve disposed therein to selectively control the flow of water from the pressurized water supply to said mixing chamber, a first outlet portion formed on the upper portion of said body member having a coupling device disposed adjacent thereto and a second outlet port formed on said end wall opposite said inlet port having a diverter control valve including a valve member movable between a lower and upper position disposed in operative communication therewith to selectively control the flow of liquid from said mixing chamber through said first outlet port when in said upper position and through said second outlet port when in said lower position.

4,386,929

ELASTOMERIC BLADDER ASSEMBLY

John R. Peery, Palo Alto, Calif.; William K. Griesinger, Evergreen, Colo., and Peter F. Carpenter, Palo Alto, Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 113,224, Jan. 18, 1980, Pat. No. 4,318,400. This application Oct. 19, 1981, Ser. No. 312,430

Int. Cl.³ A61M *5/00;* **B65D** *37/00*

U.S. Cl. 604—132 **12 Claims**

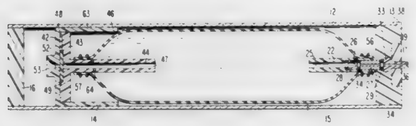
1. An elastomeric bladder assembly for dispensing a fluid under pressure comprising in combination;

(a) an elastomeric bladder having opposed ends;

(b) puncturable, resealable septum means in fluid sealing relationship to one end of said bladder whereby fluid may

be introduced into said bladder through said septum means and;

(c) lumen filling means disposed between said opposed ends, said lumen filling means comprising at least two posts received in and substantially filling the lumen of said elastomeric bladder when said elastomeric bladder is in a deflated condition, said posts in the deflated condition being axially aligned in end to end abutting relationship



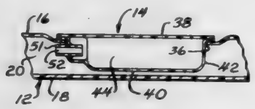
and being capable of resisting axial compressive loads between said opposed ends while offering substantially no resistance to axial expansion and contraction of said bladder; whereby said opposed ends may be maintained in spaced apart relationship while said bladder is deflated and said opposed ends are free to move axially apart during inflation and axially together during deflation of said bladder.

4,386,930

COLLECTION DEVICE FOR BODY FLUIDS WITH ANTISEPTIC PUMP

James P. Cianci, Cary, Ill., assignor to The Kendall Company, Boston, Mass.

Division of Ser. No. 149,787, May 14, 1980. This application Jun. 26, 1981, Ser. No. 277,499
Int. Cl.³ A61M *5/32*
U.S. Cl. 604—317 **5 Claims**



1. A device for collecting urine from a patient, comprising:

a container having a drainage tube and a chamber to receive urine, and a rigid header above the chamber; and

receptacle means permanently secured to the container header and having a cavity, a liquid antiseptic agent in said cavity, with the cavity communicating with the container chamber directly through means defining an opening having a sufficiently small internal diameter so as to impede the passage of the agent therethrough under ordinary ambient pressure, and means for generating pressure above ambient pressure in the cavity to cause dispensing of said antiseptic agent from the cavity to the container chamber through said opening, to thereby minimize the possibility of contamination to the patient's bladder caused by retrograde bacteria movement from collected urine in the container through the drainage tube, said receptacle means and cavity being completely sealed from the ambient atmosphere when the antiseptic agent is being dispensed from the cavity into the container.

4,386,931

OSTOMY LEAKAGE REPRESSER

Vernon L. Nelson, deceased, late of Portland, Oreg. (by Bernice A. Nelson, administrator)

Filed Jul. 15, 1981, Ser. No. 283,445
Int. Cl.³ A61F *5/44*
U.S. Cl. 604—338 **10 Claims**



1. An ostomy leakage represser comprising in combination:

a diversion pouch having a flanged opening on an upper portion thereof, said flanged opening removed from said pouch by an annular spacer,

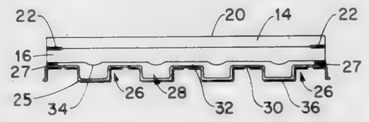
support means for detachably engaging said spacer including a belt means having a lower portion disposed at an elevation lower than the flanged opening adapted to girth the user and an upper portion defined by an apex having an opening means to provide a resilient frictional fit with the flanged opening and the lower portion below the flanged opening communicating with said belt means whereby said support means alters the pressure associated with the bearing surface of the flanged opening adapted to be used against a stoma embedded in the patient by providing greater pressure on a lower portion of the stoma induced by said lower portion of said belt means to provide a leak resistant seal through better support.

4,386,932

ABSORBENT ARTICLE

Linda F. Pitts, 196 Cherokee Rd., Asheville, N.C. 28804

Filed Oct. 21, 1981, Ser. No. 313,298
Int. Cl.³ A61F *13/16*
U.S. Cl. 604—383 **9 Claims**



1. An improved sanitary napkin comprising:

a first layer of fluid-absorbent material, a metal sheet, portions of said metal sheet are attached to and adjacent to said absorbent layer, said metal sheet having at least one embossment therein, at least one hole through said embossment; at least one well in said metal sheet located near said embossment, said well adapted to collect bodily fluids should said fluids penetrate through said first layer of fluid-absorbent material; when said napkin is worn said fluid-absorbent layer is positioned between the human body and said metal sheet whereby said napkin is breathable without high risk of the penetration of menstrual fluids completely through said napkin.

4,386,933

STERILE ADAPTER FOR USE IN BLOOD TRANSFERS

Enrique R. Sanchez, 226 E. 13 St., Hialeah, Fla. 33010

Filed May 21, 1981, Ser. No. 266,110
Int. Cl.³ A61J *1/00*
U.S. Cl. 604—408 **5 Claims**

1. A sterile entry system for transferring blood from a unit of blood to a transfer bag, the transfer bag including a cannula means extending through a disc, a unit of blood including an access-port-defining structure, said sterile entry system comprising a sleeve having a longitudinally extending axis, an upper open end snugly jacketing the exterior periphery of said disc for sliding longitudinal movement of said disc and canula means within said sleeve, said sleeve including a lower end closed by a base spanning said lower end, said base having an upper surface within the sleeve and a lower surface exterior of the sleeve, said base including a through bore between said surfaces, seal means spanning opposite ends of said through bore at the respective upper and lower surfaces, said seal means being rupturable by said cannula means when said cannula means is moved longitudinally within said sleeve and through said through bore.



4,386,934

NAVY DYE MIXTURES

Udo Bergmann, Darmstadt; Helmut Degen, Frankenthal; Guenter Hansen, Ludwigshafen; Reinhold Krallmann, Weisenheim, and Wolf-Dieter Kermer, Fussgoenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

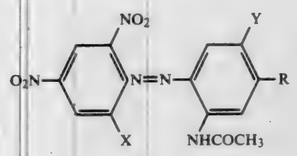
Filed Apr. 22, 1982, Ser. No. 370,904

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117366

Int. Cl.[3] **C09B** *29/00;* **D06P** *1/18*

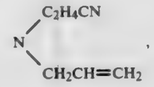
U.S. Cl. 8—639 **2 Claims**

1. A navy dye mixture which contains, as essential components, compounds of the formula I

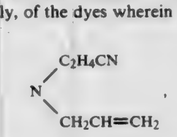


I

where X is chlorine or bromine, Y is methoxy or ethoxy and R is



NHC_2H_4CN, $NHCH_2CH{=}CH_2$ or $N(C_2H_4OCOCH_3)_2$, and wherein the dye of the above formula where X is Br, Y is OCH_3 or OC_2H_5 and R is $N(C_2H_4OCOCH_3)_2$ is present in an amount of 25–45%, based on the total weight of the mixture and wherein the mixture contains 35–60%, 0.8–12% and 3–20% respectively, of the dyes wherein R is



NHC_2H_4CN and $NHCH_2CH{=}CH_2$.

4,386,935

PROCESS FOR PRODUCING DISCHARGE RESERVE PRINTS ON TEXTILE MATERIALS WITH AMINO-AZO-BENZENE DYES

Ulrich Bühler, Schöneck; Klaus Kühlein, Kelkheim; Theo Stahl, Frankfurt; Horst Tappe, Dietzenbach, and Kurt Roth, Hofheim, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 28, 1981, Ser. No. 305,998

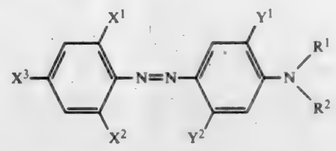
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 3041014

Int. Cl.[3] **D06P** *5/12;* **C09B** *29/08*

U.S. Cl. 8—451 **11 Claims**

1. In the process for production of discharge reserve prints on textile materials comprising water-repellent fibers or mixed water-repellent and cellulose fibers wherein a disperse dyestuff which is dischargeable to white is applied to the textile material in the form of a dye liquor or dye printing paste, at least partially drying the textile material, applying a discharge reserve printing paste to the material by printing on the material in the desired pattern and subsequently heating the printed material at temperatures from 100° to 230° C.,

the improvement comprises (a) the discharge reserve printing paste containing, as the discharging agent, an alkaline material which produces a pH value of at least 8 in 5% strength aqueous solution and (b) the disperse dyestuff which is dischargeable to white is a disperse dyestuff of the formula



wherein

X^1, X^2 and X^3 independently of one another are nitro, cyano, alkylsulphonyl having 1 to 4 carbon atoms, phenylsulphonyl chlorophenylsulphonyl, bromophenylsulphonyl, tolylsulphonyl, cyanophenylsulphonyl, dialkylphosphono having 1 to 4 carbon atoms in each alkyl moiety, aminosulphonyl, alkylaminosulphonyl having 1 to 4 carbon atoms in the alkyl moiety, dialkylaminosulphonyl having 1 to 4 carbon atoms in each alkyl moiety, or trifluoromethyl, said alkylaminosulphonyl and dialkylaminosulphonyl being unsubstituted or alkyl substituted by hydroxy, methoxy, ethoxy or methoxyethoxy;

with the proviso that not more than 2 of X^1, X^2 and X^3 are said aminosulphonyl, said unsubstituted or substituted alkylaminosulphonyl, said unsubstituted or substituted dialkylaminosulphonyl, said trifluoromethyl, said dialkylphosphono, said alkylsulphonyl, said phenylsulphonyl, said chlorophenylsulphonyl, said bromophenylsulphonyl, said tolylsulphonyl, or said cyanophenylsulphonyl,

Y_1 and Y^2 independently of one another are each hydrogen, chloro, bromo, alkyl of 1 to 4 carbon atoms, substituted alkyl of 1 to 4 carbon atoms substituted by 1 or 2 hydroxyls, alkoxy having 1 to 4 carbon atoms, or substituted alkoxy having 1 to 4 carbon atoms substituted by hydroxyl or disubstituted by hydroxyl or alkoxy having 3 to 8 carbon atoms and being optionally monosubstituted or polysubstituted by hydroxyl and wherein the carbon chain is interrupted by 1 to 3 oxygen atoms;

Y^2 is additionally —NHCOZ wherein Z is methyl, ethyl, propyl or i-propyl unsubstituted or substituted by hydroxyl, chloro, bromo, cyano, phenyl, phenoxy or Z is alkyl of 3 to 8 carbon atoms interrupted between one and three times by oxygen which is unsubstituted or substituted by hydroxyl, phenyl, amino or N-alkylamino having 1 to 4 carbon atoms;

R^1 is hydrogen or alkyl having 1 to 4 carbon atoms substituted by at least one substituent selected from chloro, bromo, cyano, hydroxyl, methoxy, ethoxy, phenyl, phenoxy, and alkylaminocarbonyloxy having 1 to 4 carbon atoms in the alkyl moiety; or R^1 is additionally alkenyl having 3 to 4 carbon atoms, benzyl, cycloalkyl having 5 to 6 carbon atoms, or alkyl having 3 to 8 carbon atoms wherein the carbon chain is interrupted by 1 to 3 oxygen atoms and is unsubstituted or substituted by hydroxyl, chloro, bromo or cyano;

R^2 is alkyl having 3 to 8 carbon atoms wherein the carbon chain is interrupted by 1 to 3 oxygen atoms and is unsubstituted or substituted by hydroxyl, chloro, bromo or cyano.

4,386,936

PRODUCTION OF POTASSIUM CHLORIDE USING POND CRYSTALLIZATION

Donald H. Geesen, Wilcox, Canada, assignor to PPG Industries Canada Ltd., Regina, Canada

Filed Feb. 1, 1979, Ser. No. 8,363

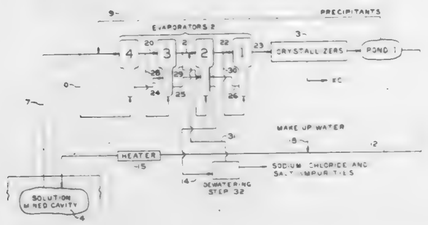
Int. Cl.[3] **B01D** *9/02*

U.S. Cl. 23—295 S **17 Claims**

1. In the method of producing potassium chloride from solution mined brine containing potassium chloride, sodium chloride and minor amount of other metal salts wherein said solution mined brine is withdrawn from a subterranean cavity

in a potassium chloride-containing ore deposit and forwarded to a refinery wherein potassium chloride crystals are produced from the solution mined brine, the improvement which comprises:

a. introducing brine liquor containing potassium chloride, sodium chloride and a minor amount of other metal salts into a pond crystallizer and coprecipitating crystals of said salts therein,



b. adding salt crystals coprecipitated in said pond crystallizer to solution mined brine forwarded to said refinery to produce a salt crystal-brine slurry,

c. heating the salt crystal-brine slurry to dissolve potassium chloride crystals present in said slurry to produce a potassium chloride enriched brine,

d. separating sodium chloride and other metal salt crystals from the potassium chloride enriched brine, and

e. preferentially precipitating potassium chloride crystals from the potassium chloride enriched brine.

4,386,937

WAX-IMPREGNATED FIRE KINDLING STICKS

Elizabeth L. Fareri, Pittsburgh, and Philip R. Templin, Oakmont Borough, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 9, 1981, Ser. No. 319,013
Int. Cl.³ C10L 11/02, 11/06
U.S. Cl. 44—41 **11 Claims**

1. A wax-impregnated fire kindling stick comprising a bonded cellulosic substrate comprising between about one and about 20 weight percent of an expanded vitreous material, said substrate being impregnated with a normally solid hydrocarbon wax.

2. A wax-impregnated fire kindling stick in accordance with claim 1 in which the cellulosic substrate comprises between about five and about 15 weight percent of an expanded vitreous material.

3. A wax-impregnated fire kindling stick in accordance with claim 2 in which the expanded vitreous material is perlite.

8. A wax-impregnated fire kindling stick in accordance with claim 1 comprising between about one and about 20 weight percent of a binder.

4,386,938

METHANOL AUTOMOTIVE FUEL

Roland D. Earle, Plantation, Fla., assignor to Prime Manufacturing Company, Lynn, Mass.

Continuation-in-part of Ser. No. 146,752, May 5, 1980, Pat. No. 4,298,351. This application Oct. 20, 1981, Ser. No. 313,211
The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.
Int. Cl.³ C10L 1/18
U.S. Cl. 44—53 **27 Claims**

1. A fuel for use in an internal combustion engine comprising a lower alcohol and an amount of a tertiary alkyl peroxide effective to impove the burning efficiency of the lower alcohol in an internal combustion engine.

4,386,939

REACTION PRODUCTS OF CERTAIN HETEROCYCLES WITH AMINOPHENOLS

Richard M. Lange, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 102,077, Dec. 10, 1979, abandoned. This application Apr. 1, 1982, Ser. No. 364,287
Int. Cl.³ C10L 1/22
U.S. Cl. 44—63 **37 Claims**

1. A nitrogen-containing composition prepared by reacting, at a temperature from about 25° C. to about 250° C.:

(A) at least one aromatic compound having the formula

$$R_a\text{—}Ar\text{—}(NH_2)_b$$
$$|$$
$$(OH)_c$$

wherein:

Ar is a single-ring or fused-ring aromatic radical;

R is a substantially saturated non-aromatic hydrocarbon-based radical containing an average of about 10 to about 750 aliphatic carbon atoms; and

each of a, b and c is an integer from 1 to three times the number of aromatic nuclei in Ar; with

(B) at least one 3- or 4-membered ring heterocyclic compound in which the heterocyclic atom is a single oxygen, sulfur or nitrogen atom;

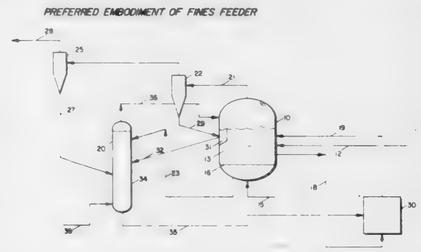
at least about one-half equivalent of reagent B being used per equivalent of reagent A.

4,386,940

GASIFICATION OF CARBONACEOUS SOLIDS

Martin E. Sacks, East Windsor, N.J., and Richard H. McClelland, Pittsburgh, Pa., assignors to Cogas Development Company, Princeton, N.J.

Filed Oct. 8, 1981, Ser. No. 309,637
Int. Cl.³ C10J 3/54
U.S. Cl. 48—197 R **3 Claims**



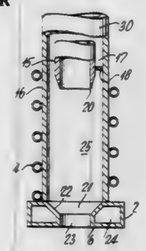
1. In a gasification system of converting ash containing carbonaceous solids into a gaseous mixture containing hydrogen and carbon monoxide by the endothermic reaction of said solids with steam in a fluidized gasification zone wherein heat for the endothermic reaction is supplied by continuously circulating a recycle stream of said solids between the gasification zone and a combustion zone in which the said recycle stream is heated by contact with hot combustion gases formed by burning at least a portion of carbonaceous fines elutriated from said gasification system, the improvement of reducing dust losses from the gasification system while maintaining ash balance in the gasification zone for optimum conversion comprising (A) introducing the elutriated fines into the combustion zone from the bottom of a fluidized fines feeder vessel, the finest fines in said elutriated fines being introduced at the lower end of the fines feeder vessel and the coarser fines in said elutriated fines being introduced into the fines feeder vessel at a point above where the finest fines are introduced, the finest fines being carried by the downwardly flowing coarser fines thereby ensuring that the finest fines are preferentially burned in the combustion zone and (B) introducing sufficient carbonaceous solids from the gasification zone into the fines feeder vessel at a point above the entry of the finest fines in order to control the ash content of the carbonaceous solids in the gasification zone for maintaining the gasification reaction.

4,386,941

PROCESS FOR THE PARTIAL OXIDATION OF SLURRIES OF SOLID CARBONACEOUS FUEL

William B. Crouch, Chappaqua, N.Y.; George N. Richter, San Marino, Calif.; Charles P. Marion, Mamaroneck, N.Y.; Blake Reynolds, Riverside, Conn.; Albert Brent, Huntington, and Edward T. Child, Tarrytown, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 107,215, Dec. 26, 1979, Pat. No. 4,338,099. This application Mar. 29, 1982, Ser. No. 362,683
The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.
Int. Cl.³ C10J 3/46
U.S. Cl. 48—197 R **6 Claims**



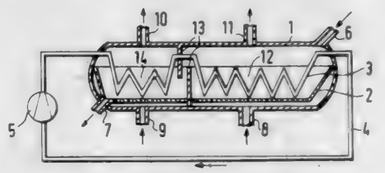
1. In a continuous process for the manufacture of gas mixtures comprising H_2, CO, CO_2 and at least one material from the group H_2O, N_2, A, CH_4, H_2S and COS by the partial oxidation of a feedstream comprising a pumpable slurry of solid carbonaceous fuel in a liquid carrier, and a feedstream of free-oxygen containing gas, and optionally a temperature moderator; said partial oxidation occuring in the reaction zone of a free-flow gas generator at an autogenous temperature in the range of about 1700° to 3500° F., and a pressure in the range of about 5 to 300 atmospheres, the improvement which comprises: passing said slurry feedstream of solid carbonaceous fuel in a liquid carrier in liquid phase and having a solids content in the range of about 30 to 75 weight % and being at a temperature in the range of about ambient to 500° F., a pressure in the range of about 76 to 4500 psia, and a velocity in the range of about 0.5 to 75 ft. per second through a free-flow annular passage of a burner and into an internal pre-mix zone in said burner, and wherein said burner comprises a central conduit coaxial with the central longitudinal axis of said burner and having a downstream exit orifice that discharges into said pre-mix zone, said central conduit providing a passage, an outer coaxial conduit providing said annular passage along the length of said central conduit between the inside diameter of said outer conduit and the outside diameter of said central conduit, an exit nozzle coaxial with and terminating said outer conduit at the downstream end of said burner comprising a converging frustoconical rear portion and a right cylindrical front portion which terminates at the downstream face of the burner, and the height of the front cylindrical portion of said exit nozzle is in the range of about 0.1 to 1.0 times its onw diameter, an annular shaped face-cooling chamber surrounding said exit nozzle at the burner tip, and wherein the tip of said central conduit is retracted upstream from the face of said burner a distance of two or more times the minimum diameter of said outer conduit converging exit nozzle to provide said pre-mix zone comprising a single communicating pre-mix chamber coaxial with the central longitudinal axis of said burner; simultaneously passing through the central conduit in said burner and into said pre-mix zone said feedstream of free-oxygen containing gas optionally in admixture with steam, at a temperature in the range of about ambient to 1200° F., a pressure in the range of about 76 to 4500 psia, and a velocity in the range of about 85 ft. per second to sonic velocity; intimately mixing together the two reactant streams and vaporizing without burning at least a portion of the liquid carrier in said pre-mix zone to produce a multiphase mixture at a temperature below its autoignition temperature; and discharging the resulting multiphase mixture into the reaction zone of the partial oxidation gas generator at a discharge velocity which is greater than the flame propagation velocity.

4,386,942

PRODUCTION OF H_2 AND CO-CONTAINING GASES

Karl H. van Heek, Essen-Heisingen; Harald Jüntgen, Essen, and Werner Peters, Bochum, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 117,973, Feb. 4, 1980, abandoned. This application Mar. 15, 1982, Ser. No. 357,875
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 2903985
Int. Cl.³ C10J 3/54
U.S. Cl. 48—202 **10 Claims**



1. In a method of generating product gases by partial gasification of particulate solid fuel constituted by coke or coal, by the steps of admitting particulate solid fuel into a gasification zone of a reactor; effecting partial gasification of the admitted solid fuel in the presence of steam and with the aid of heat supplied by a heater immersed into the gasification zone, with resultant generation of gas and a solid-fuel residue; passing the solid-fuel residue into a combustion zone of the reactor downstream of and horizontally adjacent to the gasification zone and combusting it therein in the presence of air so as to generate heat for said heater, the improvement comprising the separate use of a first and a second fluidized bed for said gasification zone and said combustion zone respectively, with generally horizontal flow of said fuel from said gasification zone to said combustion zone with removal of ash from said combustion zone and circulating a suitable gaseous medium in a closed circuit, by means of a blower in heat-exchanger tubes through the combustion zone to become heated before circulating it in further heat-exchanger tubes through said gasification zone; and recirculating the spent gaseous medium from said gasification zone back to said combustion zone to become reheated therein.

4,386,943

TREATED POLYESTER FABRIC FOR USE IN FLEXIBLE ABRASIVES

Harald Gümbel, Garbsen, and Günter Bigorajski, Gehrden, both of Fed. Rep. of Germany, assignors to Vereinigte Schmirgel- und Machinen Fabriken Aktiengesellschaften, Hannover-Hainholz, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 163,951

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928484

Int. Cl.³ B61L *29/08*

U.S. Cl. 51—298 **11 Claims**

1. A flexible abrasive comprising abrasive particles bonded to a carrier which comprises a polyester fabric impregnated with a substance comprising at least one amine formaldehyde resin.

4,386,944

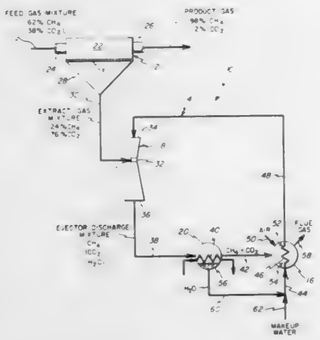
SYSTEM AND PROCESS FOR INCREASING THE COMBUSTIBLE COMPONENT CONTENT OF A GASEOUS MIXTURE

Shiro G. Kimura, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 171,908, Jul. 24, 1980, abandoned, which is a continuation of Ser. No. 592, Jan. 2, 1979, abandoned. This application Apr. 16, 1982, Ser. No. 368,948

Int. Cl.³ B01D *53/22*

U.S. Cl. 55—16 **10 Claims**



1. A process for increasing the combustible component content of a gaseous mixture, comprising

(A) contacting a first gaseous mixture comprising a combustible gaseous component and at least one additional gaseous component with a first major surface of a permselective membrane having at least a minor permeability (Pr_c) and a selectivity (Pr_a/Pr_c) of greater than 1.0 at the temperature of said mixture, wherein Pr_c and Pr_a are the permeabilities of said combustible and said additional components respectively,

(B) developing and maintaining a pressure difference across said membrane of $P_m - P_o > 0$, wherein P_m and P_o are the external pressures on said first major surface and on the opposite major surface of said membrane respectively, such that said additional component preferentially permeates said membrane to form both (1) a second gaseous mixture relatively rich in said combustible component and relatively lean in said additional component adjacent said first major surface and (2) a third gaseous mixture relatively lean in said combustible component and relatively rich in said additional component adjacent said opposite surface, and

(C) providing at least a portion of the energy employed to develop and maintain said pressure difference by combusting at least a portion of the combustible component in said third mixture.

5. A system for increasing the combustible component of a gaseous mixture, comprising:

housing means for contacting a first gaseous mixture comprising a combustible component and at least one additional gaseous component, with a first major surface of a permselective membrane disposed within said housing so as to define a first and second chamber therein, said membrane having at least a minor permeability, Pr_c, and a selectivity, Pr_a/Pr_c, of greater than 1.0 at the temperature of said first mixture, wherein Pr_c and Pr_a are the permeabilities of said combustible components and said additional component respectively; and

means for developing and maintaining a net pressure difference across said membrane of $P_m - P_o > 0$, wherein P_m and P_o are the total external pressures on said first major surface and on the opposite major surface of said membrane, respectively, such that said additional component preferentially permeates said membrane to form both a second gaseous mixture relatively rich in said combustible component and relatively lean in said additional component adjacent said first major membrane surface and in said first chamber and a third gaseous mixture relatively lean in said combustible component and relatively rich in said additional component adjacent said opposite surface and in said second chamber, said pressure developing and maintaining means being powered by combusting at least a portion of the combustible component in said third mixture, whereby combustion products are formed, said housing being configured so that said combustion products are segregated from said first chamber.

4,386,945

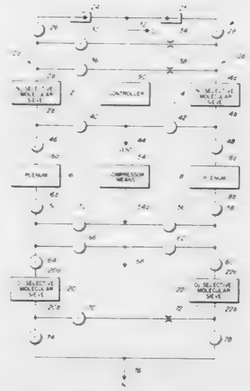
PROCESS AND COMPOUND BED MEANS FOR EVOLVING A FIRST COMPONENT ENRICHED GAS

Paul J. Gardner, Davenport, Iowa, assignor to Litton Systems, Inc., Davenport, Iowa

Filed Feb. 1, 1982, Ser. No. 344,894

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—26 **9 Claims**



1. A process for evolving a first component enriched gas from a pressurized gaseous feed mixture having at least first and second gaseous components comprising the steps of:

(a) providing a first column comprised of first and second adsorbent beds and a plenum chamber, said first adsorbent bed being arranged to receive said pressurized gaseous feed mixture somewhat enriched in said first component from said plenum chamber and evolve said first component enriched gas during a first column pressurizing mode, said second adsorbent bed being arranged to receive said prearranged gaseous feed mixture directly and evolve a second component enriched gas during said first column pressurizing mode;

(b) providing at least a second column essentially identical to said first column;

(c) counterflowing a portion of the first component enriched gas evolved from said first column through the first adsorbent bed of the second column to a low pressure vent;

(d) counterflowing at least a portion of the second component enriched gas evolved from said first column through the second adsorbent bed of the second column to the plenum chamber of said second column to thereby charge the plenum chamber of said second column with a gas enriched in said first component;

(e) communicating the second adsorbent bed of the first column to said low pressure vent; and,

(f) during a second column pressurizing mode delivering said pressurized gaseous feed mixture to the first adsorbent bed of the second column through the plenum of the second column to evolve said first component enriched gas and directly to the second bed of the second column to evolve said second component enriched gas.

5. A compound bed means for evolving a first component enriched gas from a pressurized gaseous feed mixture having at least a first and second gaseous component comprising:

a first column periodically receiving said pressurized gaseous feed mixture and comprised of first and second adsorbent beds and a plenum chamber, said first adsorbent bed being arranged to receive said pressurized gaseous feed mixture from said plenum chamber and evolve said first component enriched gas, said second adsorbent bed being arranged to receive said pressurized gaseous feed mixture directly to evolve a second component enriched gas;

at least a second column essentially identical to said first column periodically receiving said pressurized gaseous feed mixture;

a vent; and

valving means for supplying said pressurized gaseous feed mixture to said first column; a portion of the first component enriched gas from said first column to counterflow through the first adsorbent bed of the second column to said vent and at least a portion of the second component enriched gas from said first column to counterflow through the second adsorbent bed of the second column to the plenum of the second column during a first column pressurizing mode, and for supplying said pressurized gaseous feed to said second column during a second column pressurizing mode.

4,386,946

WATER COOLING TOWER INCLUDING A SUCTION FAN

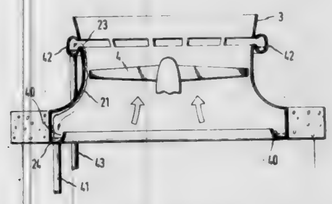
Dieter Wurz, Steinweg 48, 7507 Pfinztal, Fed. Rep. of Germany

Filed Oct. 1, 1981, Ser. No. 307,671

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1980, 3038363

Int. Cl.³ B01D *45/14*

U.S. Cl. 55—257 C **8 Claims**



1. A water cooling tower, comprising:

(a) a hollow housing having a plurality of circumferentially arranged lateral air inlet openings and a central air outlet passage, said outlet passage having successive converging and diverging portions in the discharge direction;

(b) a suction fan arranged in said air outlet passage adjacent the converging portion thereof;

(c) trickler means for establishing a downwardly directed curtain of water between said air inlet openings and said air outlet passage;

(d) cooling means on which the water curtain trickles and along which the air aspired by said fan passes to cool the water;

(e) collecting basin means for collecting the curtain of water supplied by said trickler means;

(f) water droplet separator means arranged between said trickler means and said air outlet passage;

(g) water catching means adjacent said suction fan for catching the water film that is centrifugally deposited by said fan on the inner surface of said air outlet passage, said water catching means comprising at least one annular channel formed in the wall of said outlet passage at a location other than the narrowest portion of said outlet passage; and

(h) discharge pipe means for draining the water from said catching means directly to said collecting basin means.

4,386,947

APPARATUS FOR ADSORBING FUEL VAPOR

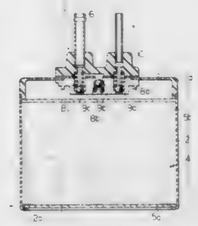
Junzi Mizuno; Akira Fukami; Kunio Okamoto, all of Okazaki, and KenIchi Hanaki, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 22, 1981, Ser. No. 256,664

Claims priority, application Japan, Apr. 25, 1980, 55-55865; May 28, 1980, 55-71945; May 29, 1980, 55-72277; Jun. 13, 1980, 55-80507

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—387 **10 Claims**



1. An apparatus for adsorbing fuel vapor comprising a container; a fuel vapor inlet for introducing the fuel vapor into the container; a gas outlet for taking the air-fuel mixture out from the container; an air inlet for introducing desorbing air into the container; and an adsorbent, being set in the container, for adsorbing the fuel vapor, said adsorbent including first, second and third monolithic structures each having many through passages separated by walls, at least one of said structures being constructed of integrally formed activated charcoal, said structures being so laminated together that the vapor/gas path through the three passage groups provided by said first, second and third structures are of zigzag configuration, the two opposite ends of the laminated product being fitted with plates for closing said ends with said ends being partially open by so designing the shape of said plates or providing said plates with holes, one of said partially open ends comprising a fuel vapor inlet and the other a desorbent air inlet, and said two partially open ends being arranged at positions not mutually confronting.

8. An apparatus for adsorbing fuel vapor comprising: a container, a fuel vapor inlet for introducing the fuel vapor into the container; a gas outlet for taking the air-fuel mixture out from the container; an air inlet for introducing desorbing air

into the container; and an adsorbent being set in the container, for adsorbing the fuel vapor, said adsorbent comprising a plurality of integrally formed activated charcoal monolithic honeycomb structures each provided with many through passages separated by walls, said structures being laminated in series so that their passages mutually communicate, the passage groups of said structures having pitches different from one another so as to form a disturbance in the flow of fuel vapor passing through the laminated product.

4,386,948

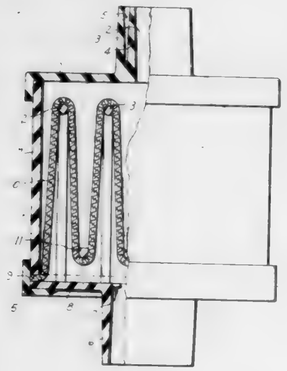
FILTER DRIVE

Pradip V. Choksi, Northridge; Alan A. Davidner, Claremont, and Claude A. Vidal, Los Angeles, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Continuation of Ser. No. 105,842, Dec. 20, 1979, abandoned. This application Sep. 21, 1981, Ser. No. 304,515

Int. Cl.³ B01D *46/52;* **A61M** *16/00*

U.S. Cl. 55—499 **25 Claims**



1. A filter device comprising: a housing having an inlet port and an outlet port; a filter member within the housing, which filter member comprises a porous sheet transversely pleated and draped to define a peripheral foot of such porous sheet, which peripheral foot is sealed along its entire periphery to the housing; and two sets of intermeshing hangers, both sets of hangers being anchored to the housing and distortingly maintaining the porous sheet in said pleated condition.

4,386,949

CONNECTOR FOR AN AIR FILTER ASSEMBLY

Alberto Bassi, Turin, Italy, assignor to ITW Fastex Italia S.p.A., Turin, Italy

Filed Oct. 2, 1981, Ser. No. 308,212

Claims priority, application Italy, Nov. 5, 1980, 25771 A/80

Int. Cl.³ B01D *46/42*

U.S. Cl. 55—507 **4 Claims**

1. A connector and air filter assembly for attachment to a carburetor, the filter assembly including a housing having a bottom wall and at least one sleeve projecting upwardly from the bottom wall and a cap having a wall, said sleeve being closed at its free end by a cross wall provided with a slot; said connector including an insert having a seat on its inner surface adapted to receive and be substantially fixed to the headed end of a pin permanently fixed to and projecting from said carburetor, said insert provided on its outer surface with two diametrically opposite ribs, two diametrically opposite legs having walls facing each other with teeth disposed to engage said ribs on the insert when said insert is moved axially between said legs with respect to said ribs, means for connecting said legs together and adapted to engage said cross wall of said sleeve, a head having an elongated shape connected to said means by a shank and arranged to pass through said slot of said cross wall and another slot in said wall of said cap, means in said cap wall adjacent said another slot for positioning said head when said head is out of alignment with said another slot, whereby when said head is passed through said slot in said cross wall



and said slot in said cap wall and located in said positioning means and said headed end of said pin is received in said seat and fixed relative to said insert said filter assembly is thereby attached to said carburetor.

4,386,950

METHOD AND APPARATUS FOR PRODUCING SOLID HYDROGEN

Peter M. Bell, Potomac, Md., and Ho-Kwang Mao, Fairfax, Va., assignors to Carnegie Institution of Washington, Washington, D.C.

Division of Ser. No. 126,082, Feb. 29, 1980, Pat. No. 4,339,252. This application Nov. 12, 1981, Ser. No. 320,900

Int. Cl.³ F25J *1/02*

U.S. Cl. 62—10 **2 Claims**



1. A method for producing a solid hydrogen in a a pressure applying apparatus having a chamber defined by diamond anvil means disposed on opposite sides of an apertured gasket comprising:

immersing said apparatus in a liquid hydrogen bath with said chamber open,

closing said chamber while said apparatus is immersed in said bath to trap an amount of liquid hydrogen in said chamber and

increasing the pressure on said liquid hydrogen until said hydrogen converts to sold form.

4,386,951

METHOD AND APPARATUS FOR PREHEATING GLASS BATCH

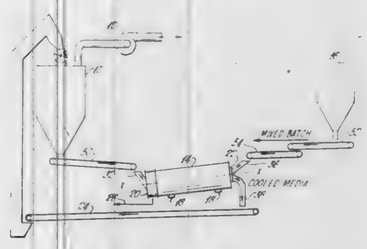
Charles M. Hohman, Granville; Mark A. Propster, Gahanna, and Stephen Seng, Bladensburg, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 181,589, Aug. 27, 1980, Pat. No. 4,319,903. This application Dec. 14, 1981, Ser. No. 330,064

The portion of the term of this patent subsequent to Mar. 16, 1999, has been disclaimed.

Int. Cl.³ C03B *1/00;* **F28D** *19/02*

U.S. Cl. 65—27 **3 Claims**



1. A process for producing glass by charging to a melting furnace and melting therein a particulate glass batch, including the steps of:

heating durable heat transfer media, larger in particle size than the glass batch, by direct contact with exhaust gases from the melting furnace;

introducing the hot media into one end of an inclined container rotatable about an axis having the same inclination as the container;

introducing the particulate glass batch into the other end of the container;

rotating the container, during rotation the batch and media tumbling and moving over each other in heat transfer relationship; and

moving the glass batch in one direction through the rotating container for discharge and moving the hot media in the opposite direction for discharge at the other end.

3. An apparatus for preheating particulate glass batch comprising:

means for heating durable heat transfer media by direct contact with exhaust gases from a melting furnace;

a container rotatable about an axis, the axis being inclined to the horizontal;

means for introducing the hot media, larger in particle size than the glass batch, into one end of the container for movement towards the other end for discharge;

means for introducing particulate glass batch into the other end of the container for movement towards the one end for discharge;

means for rotating the container along the inclined axis; and

means associated with the interior of the container for tumbling and mixing the hot media and the particulate glass batch in direct contact with each other during rotation of the container to heat the glass batch prior to charging to a melting furnace.

4,386,952

GLASS SHEET BENDING SYSTEM UTILIZING GAS JETS

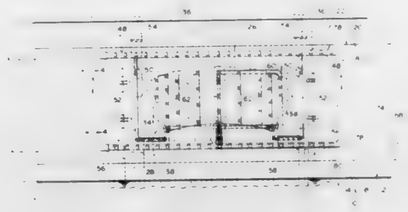
David B. Nitschke, 9102 Buck Rd., Perrysburg, Ohio 43551

Filed Mar. 31, 1982, Ser. No. 364,104

Int. Cl.³ C03B *23/023*

U.S. Cl. 65—268 **15 Claims**

1. In a glass sheet bending system including a furnace for heating glass sheets to a sufficiently high temperature for bending, a horizontal conveyor for conveying glass sheets in a generally horizontally extending orientation within the furnace for heating, a holder having a downwardly facing surface of a downwardly convex curved shape for receiving a heated glass sheet from the conveyor, and a mold for receiving the heated glass sheet from the holder, the improvement comprising: a compressed gas bending unit located above the conveyor in proximity to the holder spaced horizontally outward from the



periphery of the holder surface; and said bending unit including outlets through which compressed gas is fed to provide inclined gas jets directed toward the holder surface in a generally perpendicular relationship thereto and with a sufficient intensity to bend the heated glass sheet on the holder to the curved shape of its downwardly facing surface.

4,386,953

HERBICIDALLY ACTIVE SUBSTITUTED 6-HALOGENO-TERT.-BUTYL-1,2,4-TRIAZIN-5-ONES

Eckart Kranz, Wuppertal; Kurt Findeisen, Odenthal; Robert Schmidt, Bergisch-Gladbach, and Ludwig Eue, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

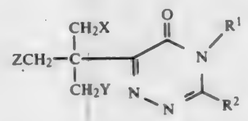
Filed Sep. 8, 1981, Ser. No. 299,919

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1980, 3037300

Int. Cl.³ C07D *253/06;* **A01N** *43/64*

U.S. Cl. 71—93 **12 Claims**

1. A substituted 6-halogeno-tert.-butyl-1,2,4-triazin-5-one of the formula



in which

R^1 is an amino or methyl group,

R^2 is a C_{1-4}-alkylmercapto, C_{1-6}-alkylamino or di-(C_{1-6})-alkylamino group,

X is a halogen atom, and

Y and Z each independently is a hydrogen or halogen atom.

7. A herbicidal composition, comprising a herbicidally effective amount of a compound according to claim 1 in admixture with a solid diluent.

4,386,954

HERBICIDAL DIPHENYL ETHERS

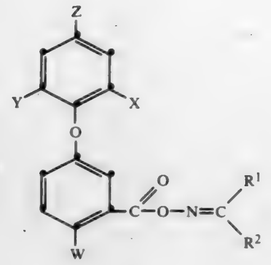
John W. Ashmore, North Wales, and Ted T. Fujimoto, Churchville, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Aug. 17, 1981, Ser. No. 293,743

Int. Cl.³ A01N *31/00, 33/00, 37/34, 37/44;* **C07C** *121/50, 131/00, 131/05, 149/00, 79/46, 101/16*

U.S. Cl. 71—98 **14 Claims**

1. A compound of the formula:



wherein X is hydrogen, halo, trihalomethyl, alkyl containing from 1 to 6 carbon atoms, nitro or cyano; Y is hydrogen or halo; Z is halo, trihalomethyl or pentahaloethyl; W is nitro, cyano, halo or a radical of the formula: $S(O)_{n'}R$ wherein R is lower alkyl containing from 1 to 6 carbon atoms, or trihaloalkyl containing from 1 to 6 carbon atoms; n' has a value of from 0 to 2; R^1 is hydrogen, halo, alkyl containing from 1 to 6 carbon atoms, mononuclear aryl, lower alkoxy containing from 1 to 6 carbon atoms, lower alkylthio or dialkylamino; R^2 is substituted alkyl, containing from 1 to 6 carbon atoms, trifluoromethyl, cyano, substituted or unsubstituted alkoxycarbonyl, alkylcarbonyl containing from 1 to 6 carbon atoms, aminocarbonyl, mononuclear arylcarbonyl, mononuclear aryloxy or carboxy wherein the alkyl and alkoxy substituents are selected from halo, cyano, hydroxy, alkoxy containing from 1 to 6 carbon atoms, alkylthio containing from 1 to 6 carbon atoms, arylthio, alkylsulfinyl containing from 1 to 6 carbon atoms, arylsulfinyl, alkylcarbonyl containing from 1 to 6 carbon atoms, arylcarbonyl, alkoxycarbonyl containing from 1 to 6 carbon atoms, aminocarbonyl, monoalkylaminocarbonyl wherein the alkyl contains from 1 to 6 carbon atoms, dialkylaminocarbonyl wherein the alkyl contains from 1 to 6 carbon atoms, trifluoromethyl, nitro, amino, monoalkylamino containing from 1 to 6 carbon atoms, dialkylamino containing from 1 to 6 carbon atoms, or carboxy including agronomically acceptable salts, esters and amides thereof.

8. A method of controlling weeds which comprises applying to the surface of the growth medium prior to the emergence of the weeds from the growth medium a herbicidally effective amount of a compound according to claims **1**, **2**, **3**, **4**, **5**, **6** or **7**.

12. A herbicidal composition comprising a herbicidally effective amount of a compound according to claims **1**, **2**, **3**, **4**, **5**, **6** or **7** and an agronomically acceptable carrier.

4,386,955

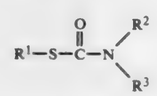
O-(SUBSTITUTED PHENYL) N-METHYLCARBAMATES AS HERBICIDE EXTENDERS

Daniel L. Hyzak, Saratoga, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 20, 1981, Ser. No. 255,514
Int. Cl.³ A01N *25/22*
U.S. Cl. 71—100 **15 Claims**

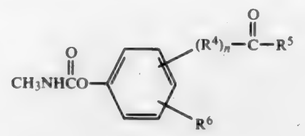
1. An herbicidal composition of extended soil life comprising

(a) an herbicidally effective amount of a thiolcarbamate having the formula



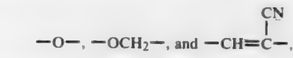
in which R^1, R^2, and R^3 are independently C_2–C_4 alkyl; and

(b) an amount of an O-(substituted phenyl) N-methyl carbamate sufficient to extend the soil life of said thiolcarbamate, said O-(substituted phenyl) N-methyl carbamate having the formula



in which

R^4 is selected from the group consisting of



R^5 is selected from the group consisting of hydrogen, hydroxy, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_2–C_6 alkylthioalkoxy, and thiocyanatomethyl,

R^6 is selected from the goup consisting of hydrogen, C_1–C_3 alkyl, and C_1–C_3 alkoxy, and

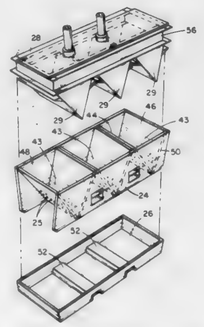
n is zero or one.

4,386,956

METAL RECOVERY PROCESS FROM ALUMINUM DROSS

David J. Roth; Lawrence R. Culler, both of Terre Haute, and Ralph D. Heifner, Rockville, all of Ind., assignors to The Anaconda Company, Denver, Colo.

Filed Dec. 3, 1980, Ser. No. 212,408
Int. Cl.³ C22B *7/00, 21/00*
U.S. Cl. 75—24 **18 Claims**



1. An improved method for recovery of free aluminum metal from a metal bearing dross containing free aluminum metal and oxides of said metal, said method comprising the steps of:

(a) collecting the dross in a receptacle of the type having at least one trough with at least one downwardly and inwardly inclined side wall with metal flow passages through the wall;

(b) collecting the free aluminum metal which decants through the passages;

(c) mechanically compacting the dross by applying a compressive force on the dross and against the inclined wall above a threshold pressure to pool free aluminum metal within a dross, effect migration of the free aluminum metal toward a boundary surface of the compacted dross, decant a portion of said free aluminum through the passage and inhibiting the oxygen supply to the free aluminum metal in the dross; and

(d) cooling the compacted dross and free aluminum metal to solidify the free aluminum metal;

such that thermite reaction of free aluminum metal and oxygen in the dross is diminished by the combination of compacting above the threshold pressure and cooling of the metal.

4,386,957

PROCESS FOR MAKING NONMAGNETIC STEEL

Audley J. Farmer, Kent; Robert B. Moffett, and Thomas R. Carney, both of Seattle, all of Wash., assignors to Earle M. Jorgensen Co., Seattle, Wash.

Filed Nov. 26, 1980, Ser. No. 210,855
Int. Cl.³ C21C *5/32, 5/34*
U.S. Cl. 75—51 **39 Claims**

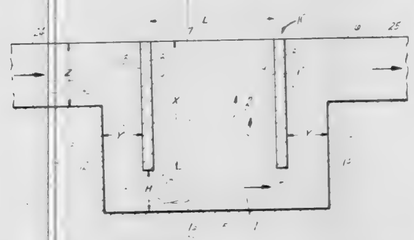
1. A method for reducing carbon content in a melt, comprising the steps of injecting a 1:3 mixture of oxygen to nitrogen (by volume) into the melt to reduce the carbon content to about 0.12%, followed by injecting a 1:8 mixture of oxygen to nitrogen (by volume) to reduce further the carbon content.

4,386,958

PROCESS AND FLOTATION BOX FOR INCLUSION REMOVAL

Derek E. Tyler, Cheshire; Ik Y. Yun, Orange, and Patrick D. Renschen, Middletown, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 4, 1981, Ser. No. 260,138
Int. Cl.³ C22B *9/02;* **B22D** *11/10*
U.S. Cl. 75—93 R **6 Claims**



1. A process for separating inclusions and inclusion clusters from a stream of molten metal or alloy, including the steps of:

(A) providing a flotation box having:

primary chamber means for directing a stream through said flotation box as a substantially laminar flow;

secondary chamber means located within and spaced above the bottom of said primary chamber means defining a secondary chamber for containing a substantially stagnant pool of molten metal or alloy for separating and entrapping inclusions and inclusion clusters which rise up through said stagnant pool from within the molten metal or alloy flowing through said primary chamber means;

said secondary chamber means formed by a portion of two lateral walls of said flotation box and two transverse baffles extending between the lateral walls, said baffles having bottom surfaces spaced above a bottom of said primary chamber means;

said primary chamber means having entry and exit channels formed by outer walls of said flotation box and said baffles;

said primary chamber means further having a through-passage defined by said bottom surfaces of the baffles and the bottom of the primary chamber means and arranged below the entry channel and the exit channel;

said through-passage providing a flow path between said entry and exit means for directing a stream of molten metal or alloy under the secondary means and in fluid contact with said secondary chamber;

said entry channel, exit channel, and through-passage having cross sections, taken transverse to the direction of flow of a stream of metal or alloy through each of said channels and passage, of substantially equal area for enhancing the laminar flow characteristics of said stream of molten metal or alloy flowing through said primary chamber means; and

(B) feeding molten metal or alloy to said flotation box comprising the steps of:

directing said stream through the primary chamber as a substantially laminar flow;

containing a substantially stagnant pool of molten metal or alloy in said secondary chamber;

separating and entrapping inclusions and inclusion clusters with a stream of molten metal or alloy which rise up into said secondary chamber from the molten metal or alloy flowing through the primary chamber; and

causing said stream to flow downward through said entry channel, beneath said secondary chamber in said through-passage and in fluid contact with said secondary chamber and upward through said exit channel.

4,386,959

METHOD FOR COMPOUND SINTERING

Fritz Frehn, Krefeld, Fed. Rep. of Germany, assignor to Thyssen Edelstahlwerke AG, Krefeld, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 163,960
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2928792
Int. Cl.³ B22F *5/00*
U.S. Cl. 419—8 **4 Claims**

1. A method for forming a joined connection between a sintered pressed body made by powder metallurgy and a metallic compact body, said method consisting essentially of:

(a) providing an unsintered pre-formed pressed body made from a mixture of powdered metallurgical components, at least one of said components forming a liquid phase at the sintering temperature of the pressed body;

(b) placing a surface of said pressed body directly in contact with a surface of a metallic compact body, made by melting metallurgy, without applying external pressure; and

(c) subjecting the contacted pressed body and compact body, in a vacuum or a protective gas atmosphere, without application of external pressure, to a temperature below the liquidus temperature of the compact body but sufficient to sinter said pressed body, thereby firmly joining together the compact body and the sintered pressed body.

4,386,960

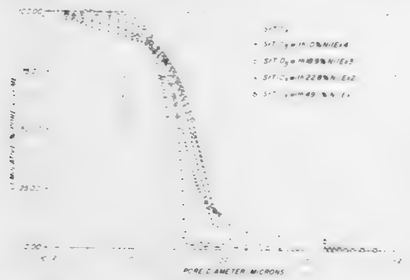
ELECTRODE MATERIAL FOR MOLTEN CARBONATE FUEL CELLS

Charles D. Iacovangelo, Schenectady, and Kenneth P. Zarnoch, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 194,474, Oct. 6, 1980, abandoned. This application Aug. 24, 1981, Ser. No. 295,440
Int. Cl.³ H01M *35/04*
U.S. Cl. 419—9 **3 Claims**

1. A method for forming an electrode useful for a molten carbonate fuel cell which consists of providing substrate particles selected from the group consisting of lithium aluminate, strontium titanate, α-alumina and mixtures thereof, said substrate particles ranging in size from about 0.1 micron to about 100 microns, catalyzing the surface of said substrate particles to allow electroless plating thereof, electroless plating a metal selected from the group consisting of copper and nickel onto said catalyzed substrate particles encapsulating them with said metal producing electrode powder, said encapsulating metal being at least sufficiently thick so that said electrode powder can be sintered together by the encapsulating metal without significantly exposing the surface of said substrate particles, forming a layer of said electrode powder on a support, said formed layer of electrode powder having substantially the same shape and pore volume as said electrode, and sintering said formed layer of electrode powder in an atmosphere in

which it is substantially inert at a temperature at least sufficient to sinter the contacting powder together by means of metallic bonds formed by the encapsulating metal without significantly exposing the surfaces of the substrate particles, said support and said sintering temperature having no significant deleterious effect on said electrode powder, said electrode having



substantially the same shape and porosity as said formed layer of electrode powder, and said electrode having a morphology which does not change significantly due to the sintering of said metal, said electrode having a pore volume greater than 40% by volume but less than 85% by volume of said electrode and a pore size ranging from about 0.1 micron to about 20 microns.

4,386,961

HETEROLOGOUS INK JET COMPOSITIONS

An-Chung R. Lin, New Town, Conn., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 17, 1981, Ser. No. 331,603

Int. Cl.³ C09D *11/02*

U.S. Cl. 106—22 **18 Claims**

1. A non-aqueous ink composition for use in an ink jet apparatus, comprising at least one non-aqueously miscible fluid component and at least one aqueously miscible fluid component, said non-aqueously miscible component and said aqueously miscible component being normally immiscible with each other, said composition further comprising a common solvent in which said immiscible fluid components are commonly miscible, said non-aqueously miscible component lending a print quality characteristic to said ink composition, and said aqueously miscible component lending an improved surface tension characteristic to said ink composition.

8. A ink for use in an ink jet apparatus, consisting essentially of a mixture of diethylene glycol and oleic acid in a common solvent of methoxytriglycol.

4,386,962

COMPOSITION AND METHOD FOR PRODUCING CERAMIC ARTICLES

William F. Walker, 422 Robney St., Sumter, S.C. 29150

Filed Sep. 12, 1980, Ser. No. 186,497

Int. Cl.³ C09K *3/00*; C04B *33/13*

U.S. Cl. 106—35 **2 Claims**

1. A ceramic composition consisting essentially of a particulate dental porcelain precursor and an amount of a transient binder sufficient for providing a paste for building up a green porcelain precursor layer on a dental appliance to be jacketed with dental porcelain said transient binder consisting essentially of an aqueous solution of about 0.02% to about 0.03% by weight of sodium hydroxide.

4,386,963

GRINDING AIDS FOR GRANULAR BLAST FURNACE SLAG

Bruce A. Lange, Hamstead, N.H., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Sep. 21, 1981, Ser. No. 304,272

Int. Cl.³ C04B *7/14*

U.S. Cl. 106—117 **10 Claims**

1. The method which comprises grinding granular blast furnace slag to reduce the particle size thereof in the presence of an additive comprising a salt formed by reacting an amine and an aromatic group-containing carboxylic acid, the amount of said additive present being sufficient to enhance the efficiency of the grinding operation.

4,386,964

MODELLING COMPOUNDS

Virginia Herbert, Dural, Australia, assignor to Verve Enterprises Pty. Limited, Brighton, Australia

Continuation-in-part of Ser. No. 130,128, Mar. 13, 1980, abandoned. This application Nov. 12, 1981, Ser. No. 320,501

Claims priority, application Australia, Mar. 13, 1979, PD7990

Int. Cl.³ C08L *89/00*; C08H *1/00*

U.S. Cl. 106—150 **22 Claims**

1. In a modelling powder suitable for producing a modelling compound, said modelling powder comprising a mixture of about 40 to about 45 parts by weight of grain flour and about 45 to about 50 parts by weight of sodium chloride, together with about the 2 to about 3 parts by weight of a food grade oil such that the resulting mixture has a dry, powdery consistency, the improvement comprising including in said mixture about 0.2 to about 0.4 parts by weight of tartaric acid or citric acid such that when said flour is gelatinized by the addition of heat and about 2 parts by weight of water to about 3 parts by weight of said modelling powder, the resulting modelling compound has a pH-value between about 2.6 and about 3.5.

4,386,965

PROCESS FOR OBTAINING COATING COMPOSITIONS OF IMPROVED WHITENESS

Werner Fringeli, Laufen; Max Flubacher, Basel, both of Switzerland, and Alain Lauton, St. Louis, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

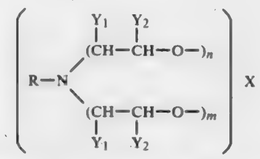
Filed Jan. 7, 1981, Ser. No. 223,174

Claims priority, application Switzerland, Jul. 3, 1980, 5140/80

Int. Cl.³ C09D *3/20*; C09K *11/06*; D06P *3/852*

U.S. Cl. 106—214 **16 Claims**

1. A process for obtaining a coating composition of improved whiteness, for coating paper or cardboard, comprising the step of adding to the coating composition, which includes an effective amount of a paper coating binder, a fluorescent whitening agent of the bis-triazinylaminostilbene-2,2-disulfonic acid series and an acid phosphoric acid ester of an oxyalkylated fatty amine of the formula



or an alkali metal salt, ammonium salt or amine salt thereof, wherein R is an aliphatic hydrocarbon radical of 8 to 22 carbon atoms, Y_1 and Y_2 are both hydrogen, or one of Y_1 and Y_2 is hydrogen and the other is methyl, X is the acid radical of phosphoric acid, the acid hydrogen atoms of which radical can be replaced by alkali metal ions, ammonium ions or amine salt ions, and m and n are integers, the sum of which is 2 to 30.

4,386,966

COPPER PHTHALOCYANINE PIGMENT PROCESS

Patrick H. Fitzgerald, Pitman, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 14, 1981, Ser. No. 330,333

Int. Cl.³ C09B *47/04*

U.S. Cl. 106—288 Q **9 Claims**

1. A process comprising premilling a crude semichloro copper phthalocyanine or a crude partially sulfonated semichloro copper phthalocyanine, forming a slurry of the premilled material in an aqueous solution of sulfuric acid of 50 to 60 percent by weight strength in the case of semichloro copper phthalocyanine or of 50 to 61 percent by weight strength in the case of partially sulfonated semichloro copper phthalocyanine, stirring the slurry while maintaining its temperature at from 50° to 85° C. for from ½ to 4 hours, diluting the slurry with water to less than 35 weight percent sulfuric acid in water, stirring the diluted slurry at from 60° to 95° C. for from ½ to 4 hours and recovering pigmentary grade semichloro copper phthalocyanine or partially sulfonated semichloro copper phthalocyanine.

4,386,967

PRETREATMENT OF PIGMENTS

Joseph M. Ramaglia, Chicago, Ill., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Oct. 13, 1981, Ser. No. 310,644

Int. Cl.³ C09C *3/08*; C09D *11/00*

U.S. Cl. 106—309 **4 Claims**

1. A pretreatment-by-spraying process for improving the dispersibility of a dry pigment in a dispersion medium which consists essentially of pretreating the pigment by spraying the pigment with at least one solvent immediately before it is added or while it is being added to the dispersion medium, said solvent being the same as at least one of the solvents in the dispersion medium wherein said pretreatment results in substantially less mixing time over the same process absent pretreatment.

4,386,968

METHOD OF MAKING SEMICONDUCTOR DEVICE STRUCTURES BY MEANS OF ION IMPLANTATION UNDER A PARTIAL PRESSURE OF OXYGEN

Holger Hinkel, Boeblingen; Jürgen Kempf, Schoenaich; Georg Kraus, Wildberg, and Gerhard E. Schmid, Stetten, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 18, 1981, Ser. No. 274,986

Claims priority, application European Pat. Off., Sep. 19, 1980, 80/105614

Int. Cl.³ H01L *21/263*, *21/265*

U.S. Cl. 148—1.5 **9 Claims**



1. A method of making semiconductor device structures using at least one ion implantation process for introducing dopants into a silicon semiconductor body comprising:

(a) covering the silicon body with a suitable surface layer acting as a masking layer during the subsequent ion implantation process;

(b) forming in said masking layer according to the desired doping region pattern one or more openings where the bare silicon body surface is exposed;

(c) performing the implantation process of doping ions in an atmosphere having a significant partial pressure of oxygen thereby causing a protective silicon oxide layer to be formed on the exposed surface of said silicon body during the initial stage of said implantation process, for preventing channeling and subsequent contamination effects, and thus eliminating the need for a separate oxidation process prior to said ion implantation step, and

(d) subjecting the device structure to an anneal heat treatment to cause the diffusion and electrical activation of the implanted ions within the silicon body.

4,386,969

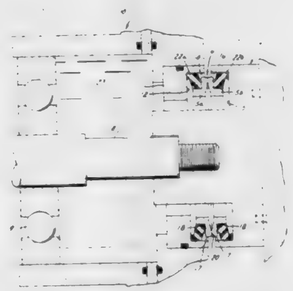
FERROUS ALLOY AND ABRASION RESISTANT ARTICLES THEREOF

Robert K. Kilbert, Racine, Wis., assignor to Harris Metals, Inc., Racine, Wis.

Continuation-in-part of Ser. No. 134,643, Mar. 27, 1980, abandoned. This application Jul. 1, 1981, Ser. No. 279,427

Int. Cl.³ C21C *1/00*; C21D *1/18*

U.S. Cl. 148—3 **5 Claims**



1. A tough, abrasion resistant ferrous alloy heat hardened at either 1750° F. to 1800° F. or at 950° F. to 1025° F. consisting essentially of, by weight: from about 2.75% to about 3.25% of carbon, from about 18% to about 22% of chromium, from about 3.5% to about 6.5% of molybdenum, up to 1% of silicon, up to 1% of manganese, from about 1.5% to about 4% of cobalt, up to 2% of vanadium not substantially more than trace quantities of sulfur, phosphorous and tungsten, and the balance iron.

3. A method of producing a rigid, abrasion resistant member capable of moving relative to another similar member, in biased engagement therewith, to cooperate with said other member in providing a grit seal, said method being characterized by:

A. preparing an alloy having not substantially more than trace quantities of sulfur, phosphorous and tungsten in its composition and consisting essentially of, by weight,

carbon	2.75% to 3.25%
chromium	18% to 22%
molybdenum	3.5% to 6.5%
silicon	up to 1%
manganese	up to 1%
cobalt	1.5% to 4%
vanadium	up to 2%
iron	balance;

B. casting said member in unfinished form, from said alloy; and

C. heat hardening the member by a selected one of the procedures of

(1) bringing the temperature of substantially all portions of the member to substantially 1750° to 1800° F. and then allowing the member to cool in air at ambient temperature, and

(2) bringing the temperature of substantially all portions of the member to substantially 950° to 1025° F. and then allowing the member to cool in air at ambient temperature.

4,386,970

PRODUCTION METHOD OF COMPOUND-TYPE SUPERCONDUCTING WIRE

Toshiro Fukutsuka, Kobe; Masato Moritoki, Miki, and Takao Fujikawa, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Oct. 20, 1981, Ser. No. 312,967

Claims priority, application Japan, Oct. 20, 1980, 55-146578; Oct. 20, 1980, 55-146579

Int. Cl.³ H01L *39/00*; B22F *3/16*

U.S. Cl. 148—11.5 P **27 Claims**



1. A method for producing a compound-type superconducting wire including forming a wire containing two kinds of metals which are, upon a reaction therebetween, capable of forming a compound pertaining superconducting characteristics and subjecting said wire to a heat treatment so as to cause said reaction to occur, said method comprising the steps of:

(i) mixing powder of the hydride of one of said two kinds of metals uniformly with copper powder and forming under pressure a resulting powder mixture into the green compact;

(ii) heating said green compact in vacuo so as to subject said hydride to dehydrogenation annealing, thereby forming a sintered mass;

(iii) drawing said sintered mass into a wire and compositing said wire with the other metal of said two kinds of metals to form a composite wire, or, alternatively, compositing said sintered mass with the other metal of said two kinds of metals and drawing a resulting composite sintered mass into a composite wire; and

(iv) subjecting said composite wire to a heat treatment to cause said reaction to occur between said two kinds of metals.

4,386,971

PROCESS FOR MANUFACTURING A FINISHED COMPONENT FROM AN NI/TI OR NI/TI/CU MEMORY ALLOY

Keith Melton, Busslingen; Olivier Mercier, Ennetbaden, and Günther Schröder, Birmenstorf, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

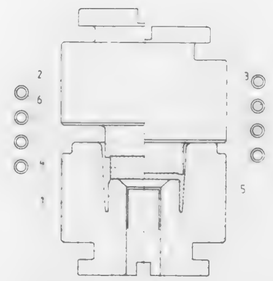
Filed Mar. 3, 1982, Ser. No. 354,358

Claims priority, application Switzerland, Mar. 13, 1981, 1729/81

Int. Cl.³ C22F *1/00*, *1/10*

U.S. Cl. 148—11.5 R **10 Claims**

1. A process for manufacturing a finished component from an Ni/Ti or Ni/Ti/Cu memory alloy which comprises processing semifinished product in the form of rod or wire, through several working steps, in the hot state and in the cold state, wherein a blank, in the form of a section of semifinished product, is initially subjected to a hot-working operation in the temperature range from 500° to 1,300° C., while simultaneously maintaining a die temperature within the temperature



range of the blank and 250° C., and wherein a workpiece, which has been shaped in this way, is cooled and is subjected to a further cold-working operation, at a temperature below the martensitic transformation point.

4,386,972

METHOD OF HEAT TREATING FERROUS METAL ARTICLES UNDER CONTROLLED FURNACE ATMOSPHERES

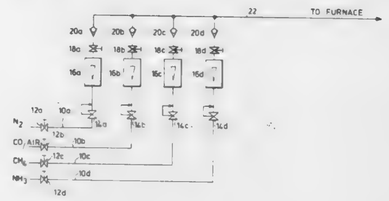
David G. Knight, Chesterfield, England, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 750,132, Dec. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 517,062, Oct. 22, 1974, abandoned. This application Mar. 13, 1981, Ser. No. 243,230

Claims priority, application United Kingdom, Oct. 26, 1973, 49963/73

Int. Cl.³ C21D *1/48*

U.S. Cl. 148—16 **3 Claims**



1. A method of heat treating a ferrous metal in a furnace chamber maintained at a temperature in excess of 690° C. and under a controlled atmosphere to effect a change in surface chemistry of the metal being treated comprising the steps of:

mixing at ambient temperature outside the furnace 35.9 to 72.2 percent by volume nitrogen, 15.1 to 30.0 percent by volume natural gas containing substantially methane and 11.4 to 38.7 percent by volume air with a natural gas to air ratio of from 0.6 to 2.0;

injecting said mixture into said furnace chamber whereby said mixture reacts under the influence of the temperature of the furnace chamber to produce a carbon controlled atmosphere inside said furnace chamber; and

maintaining said furnace chamber temperature and continuing injection of said mixture for a time sufficient to achieve a change in the surface chemistry of the article being treated.

4,386,973

VACUUM CARBURIZING STEEL

Richard J. Kawka, Roselle; Daniel H. Herring, Elmhurst; Philip Roth, Highland Park, and Richard J. Sitko, Norwood Park Township, Chicago County, all of Ill., assignors to General Signal Corporation, Stanford, Conn.

Filed May 8, 1981, Ser. No. 261,761

Int. Cl.³ C21D *1/48*

U.S. Cl. 148—16.5 **8 Claims**

1. A process for carburizing steel comprising carburizing said steel under vacuum in a vacuum furnace in the presence of a hydrocarbon carburizing agent while utilizing as a carrier gas an aliphatic alcohol having 1 to 4 carbon atoms, wherein fresh carburizing agent is supplied during said carburizing by cyclically reducing the pressure in the furnace followed by the addition of hydrocarbon carburizing agent to the furnace to replenish gas removed in the pressure reduction step.

4,386,974

HYDROGEN STORAGE MATERIAL

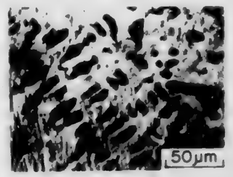
Muneyuki Amano, Chiba, and Yasuo Sasaki, Tokyo, both of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Continuation of Ser. No. 133,834, Mar. 25, 1980, abandoned. This application Dec. 23, 1981, Ser. No. 333,716

Claims priority, application Japan, Jul. 19, 1979, 54-90953

Int. Cl.³ C22C *14/00*, *29/00*, *38/14*

U.S. Cl. 148—31 **6 Claims**



1. A hydrogen storage material comprising a composite material comprising a matrix of an alloy consisting essentially of iron and titanium in an iron/titanium atomic ratio of 1/1.11–1.40, and dispersed therein as separate phases, a metallic oxide composed of iron, titanium and oxygen wherein the amount of said metallic oxide is 1.5 to 28% by weight based on the total weight of said composite material.

4,386,975

METHOD FOR THE MANUFACTURE OF EPITAXIAL $GA_{1-x}AL_xAS$:SI FILM

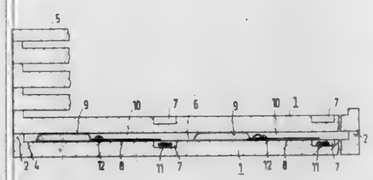
Siegfried Leibenzeder, Erlangen, and Christine Heindl, Mantel, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Division of Ser. No. 84,155, Oct. 12, 1979, Pat. No. 4,287,848. This application Jun. 16, 1981, Ser. No. 274,354

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1978, 2847091

Int. Cl.³ H01L *21/208*

U.S. Cl. 148—171 **5 Claims**



1. In a method for manufacturing epitaxial $Ga_{1-x}Al_xAs$:Si films by liquid phase epitaxy on GaAs substrate wafers at elevated temperature in an H_2-stream within a graphite push boat arranged in a quartz tube is utilized to receive Ga, Al, As-melts and said GaAs substrate wafers, the improvement comprising: baking out Ga melts contained in a graphite boat open longitudinally in a quartz tube at a temperature below the melting point of Al; permitting said Ga melts to run onto GaAs substrate wafers of non-uniform geometry, on which Si is deposited, at increased temperature by virtue of capillary effects; permitting the thin Ga-melts so formed to be drawn into the gap between the GaAs substrate wafers and the flat graphite surfaces of the boat; whereby the excess Ga then remaining is brought into contact with melted Al; and allowing the Ga melt formed, saturated with As by means of substrate separation and in which Al is dissolved, to cool in contact with the GaAs substrate wafers.

4,386,976

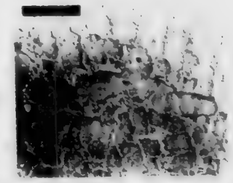
DISPERSION-STRENGTHENED NICKEL-BASE ALLOY

Raymond C. Benn, Suffern; LeRoy R. Curwick, Warwick, and Kenneth R. Andryszak, Goshen, all of N.Y., assignors to Inco Research & Development Center, Inc., Suffern, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,222

Int. Cl.³ C22C *19/05*

U.S. Cl. 148—410 **7 Claims**



1. An oxide dispersion strengthened alloy produced from mechanically alloyed powder consisting essentially of about 8% to about 14% chromium, about 6.5% to about 9% aluminum, about 3.4% to about 8% tungsten, up to about 4.5% molybdenum, up to about 4% tantalum, up to about 2.5% niobium, up to about 0.5% zirconium, up to about 0.025% boron, up to about 0.2% carbon, up to 2% hafnium, up to about 10% cobalt, up to about 1.5% titanium, about 0.5% to about 2% yttria and the balance essentially nickel.

4,386,977

WATER-IN-OIL EMULSION EXPLOSIVE

Yoshiyuki Ikeda; Atsuo Inoue; Yoshio Tanabe, and Toshinori Ariki, all of Yamaguchi, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1981, Ser. No. 239,410

Int. Cl.³ C06B *45/00*

U.S. Cl. 149—2 **3 Claims**

1. A water-in-oil emulsion explosive comprising 1 to 10% by weight of a continuous phase of a petroleum wax having a melting point of 160° F. or more and containing 30% by weight or more of a urea-non-adduct component, 50 to 95% by weight of a discontinuous phase of an aqueous oxidizer solution containing ammonium nitrate as a major component, and 0.5 to 7% by weight of an emulsifier selected from organic surface active agents containing an unsaturated long-chain aliphatic acid as a hydrophobic group.

4,386,978

CROSSLINKED SINGLE OR DOUBLE BASE PROPELLANT BINDERS

Robert J. Baczuk, Salt Lake City, Utah, and Anderson E. Robinson, Jr., Destin, Fla., assignors to Hercules Incorporated, Wilmington, Del.

Filed Sep. 11, 1980, Ser. No. 186,081
Int. Cl.³ C06G 45/10
U.S. Cl. 149—19.4 **6 Claims**

1. In a crosslinked binder suitable as the binder portion of a crosslinked single or double base propellant composition in which the crosslinked binder is a urethane rubber comprising the reaction product of nitrocellulose, a low molecular weight polyester diol and a polyfunctional isocyanate having an NCO functionality of at least 3, the improvement comprising a polyester diol prepared from an aliphatic diol containing 5 to 9 carbon atoms and a dicarboxylic acid function of which from 10 to 90 mole % is a phthalic acid and from 90 to 10 mole % is at least one aliphatic dicarboxylic acid containing from 5 to 9 carbon atoms.

6. In a crosslinked double base propellant composition comprising an energetic liquid nitroester plasticizer, organic and inorganic oxidizing agents, fuels, and a crosslinked binder, the improvement comprising as the crosslinked binder the urethane rubber of claim 1.

4,386,979

GAS GENERATING COMPOSITIONS

Charles H. Jackson, Jr., 17730 DeWitt Ave., Morgan Hill, Calif. 95037

Continuation-in-part of Ser. No. 58,938, Jul. 19, 1979, abandoned, which is a continuation of Ser. No. 911,344, Jun. 1, 1978, abandoned. This application Sep. 16, 1980, Ser. No. 187,797
Int. Cl.³ C06B 45/02
U.S. Cl. 149—21 **21 Claims**

1. A combustible gas generating composition consisting essentially of:

a fuel as a first component, an oxidant as a second component, and a coolant as a third component, and optionally other ingredients for burn rate enhancement, lubricity, or physical strength, wherein:

the first component is selected from the group consisting of calcium cyanamide, sodium hydrogen cyanamide, and mixtures thereof, said first component comprising from about 27 percent to about 35 percent by weight of the total combined weight of said first, second and third components; and

the second component comprises sodium nitrate, said second component comprising from about 43 percent to about 55 percent by weight of the total combined weight of said first, second, and third components; and

the third component is selected from the group consisting of hydrated aluminum oxide, aluminum oxide, calcium hydroxide, and mixtures thereof, said third component comprising from about 10 percent to about 30 percent by weight of the total combined weight of said first, second, and third components.

4,386,980

PRODUCTION OF QUILTING PIECEWORK

Elizabeth M. D. Fitzpatrick, McMahon's Point, and Matthew F. Fitzpatrick, Darlinghurst, both of Australia, assignors to Marguerite Trading Co. Pty. Limited, Sydney, Australia

Filed Nov. 14, 1980, Ser. No. 207,189
Claims priority, application Australia, Jul. 23, 1980, PE4665
Int. Cl.³ B32B 7/08, 31/10
U.S. Cl. 156—63 **9 Claims**

1. A method of forming quilting piecework comprising the steps of:

adhering a plurality of backing pieces each bearing an outline of a predetermined design thereon to respective ones of a plurality of fabric pieces,

cutting each fabric piece and adhered backing piece along the outline into the predetermined design of the respective backing piece to form respective quilting pieces,

placing two quilting pieces in an overlapping relationship with the fabric pieces face to face and the edge portions of the two quilting pieces which are intended to be joined adjacent to each other,



temporarily securing the two quilting pieces together along a predetermined seam line, with one of the quilting pieces being folded over itself after the two quilting pieces are temporarily secured,

sewing the two quilting pieces together along said seam line, and

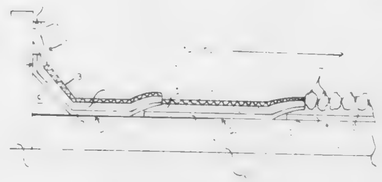
straightening the sewn pieces into a coplaner relationship.

4,386,981

METHOD OF WATERPROOFING ROOFS AND THE LIKE

Allan S. Clapperton, Toledo, Ohio, assignor to W. R. Grace & Co., Cambridge, Mass.

Filed May 29, 1981, Ser. No. 268,591
Int. Cl.³ B32B 3/00, 5/16, 11/00
U.S. Cl. 156—71 **27 Claims**



1/ A method of forming a continuous waterproofing layer upon a substrate, said method comprising, in sequence, the steps of:

(a) providing a plurality of pre-formed waterproofing laminates, said laminates being comprised, prior to application to said substrate, of (i) a flexible sheet support non-removably adhered to one face of (ii) a normally tacky, self-adherent layer of waterproofing, pressure-sensitive, bituminous adhesive composition having a thickness of at least 0.010 inches, the surface of said sheet support remote from said adhesive being non-adherent, and (iii) a protective sheet covering the face of said adhesive layer (ii) remote from said sheet support (i), said protective sheet being removably adhered to said adhesive layer;

(b) positioning said laminates in side-by-side fashion upon said substrate with the non-adherent surface of said flexible sheet support (i) of each laminate being adjacent said substrate;

(c) removing said protective sheets (iii) from said laminates to expose said self-adhesive bituminous layer (ii); and

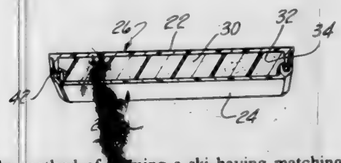
(d) covering said exposed adhesive layer with granular weathering material said adhesive serving to adhere said weathering material to the surface of said laminate, whereby a single-ply continuous, water-impermable waterproofing layer is formed upon said substrate wherein any moisture vapor beneath said waterproofing layer is able to move between said waterproofing layer and said substrate due to the said non-adherent nature of said surface of said support sheet adjacent said substrate.

4,386,982

METHOD OF MAKING A WATER SKI CONSTRUCTION

Harold R. Weinhaus, Southfield, Mich., assignor to The Budd Company, Troy, Mich.

Division of Ser. No. 176,612, Aug. 8, 1980, Pat. No. 4,314,384. This application Aug. 24, 1981, Ser. No. 295,888
Int. Cl.³ B32B 31/14, 5/20; B63C 5/12
U.S. Cl. 156—79 **3 Claims**



1. The method of forming a ski having matching top and bottom parts forming a cavity filled with foam core material, comprising the steps of forming a top ski part having a depending continuous flange at its perimeter, forming a lower ski part having an upwardly extending continuous flange having a trough therein spaced from said depending flange and having a surface complementary to a surface of said depending flange of said top ski part, positioning said bottom part horizontally, applying a coating of adhesive to the inner surface of said upwardly extending flange, applying a predetermined amount of foam resin to the cavity formed by said bottom part and said upwardly extending flange, placing said top part in mating relationship to said bottom part with said complementary surfaces of said depending flange and upwardly extending flange in adjacent abutting relationship to each other to form a cavity with excess adhesive between depending flange and said upwardly extending flange being received in said trough, and placing said top and bottom parts in a fixture to hold said top and bottom parts relative to each other while the foam resin expands and the adhesive cures.

4,386,983

METHOD OF MAKING A FOAM STRUCTURAL LAMINATE

Donald E. Hipchen, Seminole; Michael J. Skowronski, and Joseph R. Hagan, both of Clearwater, all of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Division of Ser. No. 266,562, May 22, 1981, Pat. No. 4,346,133, which is a continuation-in-part of Ser. No. 79,771, Sep. 28, 1979, Pat. No. 4,284,683, which is a continuation of Ser. No. 886,110, Mar. 13, 1978, abandoned, which is a continuation of Ser. No. 745,169, Nov. 26, 1976, abandoned, which is a division of Ser. No. 650,243, Jan. 19, 1976, Pat. No. 4,028,158. This application Nov. 16, 1981, Ser. No. 321,649
The portion of the term of this patent subsequent to Jun. 7, 1994, has been disclaimed.
Int. Cl.³ B32B 31/14, 5/28, 5/20
U.S. Cl. 156—79 **32 Claims**

1. A process for producing a structural laminate comprising the steps of:

I. contacting a thin, substantially incompressible yet expansible mat of glass fibers with a foam-forming mixture,

II. positioning a facing sheet on at least one face of the mat, and

III. passing the facing sheet, the mat and the foam-forming mixture through means for metering the amount of foam-forming mixture and causing it to fully penetrate between the fibers of said glass mat,

the mat of glass fibers being further characterized by



A. the glass fibers being arranged in layers, and

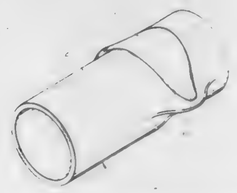
B. the glass fibers within each layer being greater than one foot in length.

4,386,984

HEAT-SHRINKABLE HOLLOW ARTICLE

James E. Jervis, Atherton, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 875,110, Feb. 3, 1978, Pat. No. 4,297,155. This application Jul. 10, 1981, Ser. No. 281,987
The portion of the term of this patent subsequent to Oct. 27, 1998, has been disclaimed.
Int. Cl.³ B29C 27/00; H02G 15/02; F10L 57/00; B65D 59/06
U.S. Cl. 156—86 **2 Claims**



1. A heat-recoverable hollow tubular article having a heat-recoverable wall which defines (a) a relatively large internal cavity, (b) a first open end affording access to the cavity, (c) a second end, and (d) a stop means projecting into the cavity at a position between the first and second ends, said article, when heated to cause complete recovery thereof, recovering to a heat-stable form in which (1) the portion of the wall defining the cavity has recovered to a form which defines a relatively small internal cavity, (2) the portion of the wall defining the stop means has recovered to a heat-stable form which does not project into the relatively small internal cavity, and (3) the portion of the wall defining the second end has recovered to form an open end.

2. A process for protecting the end of a cable which comprises

(1) positioning over the end of the cable of heat-recoverable hollow tubular article having a heat-recoverable wall which defines (a) a relatively large internal cavity, (b) a first open end affording access to the cavity, (c) a second end, and (d) a stop means projecting into the cavity at a position between the first and second ends, said article, when heated to cause complete recovery thereof, recovering to a heat-stable form in which (1) the portion of the wall defining the cavity has recovered to a form which defines a relatively small internal cavity, (2) the portion of the wall defining the stop means has recovered to a heat-stable form which does not project into the relatively small internal cavity, and (3) the portion of the wall defining the second end has recovered to form an open end; said heat-recoverable article being positioned over the end of the cable so that the end of the cable lies within the relatively large internal cavity and abuts the stop means; and

(2) heating the article to cause the portion of the wall defin-

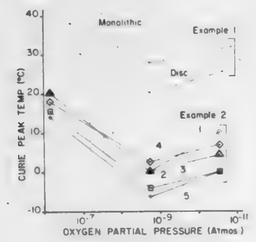
ing the internal cavity to shrink into contact with the end of the cable and to cause the portion of the wall defining the stop means to recover to a heat-stable form to leave a gap between the end of the cable and the second end of the article.

4,386,985

METHOD OF MAKING CERAMIC DIELECTRIC FOR BASE METAL ELECTRODE CAPACITORS

Roger T. Dirstine, Cedarburg, Wis., assignor to North American Philips Corporation, New York, N.Y.

Division of Ser. No. 164,419, Jun. 30, 1980, abandoned. This application Jun. 18, 1981, Ser. No. 274,959
Int. Cl.³ C04B *39/12*
U.S. Cl. 156—89 **2 Claims**



1. A method of manufacturing a base metal electrode multilayer ceramic capacitor comprising the steps of:

(a) preparing a tape from a ceramic powder, a binder, and a solvent;

(b) forming a monolithic body of multiple layers of said tape and multiple layers of a metal electrode material, the electrode layers being interposed between each tape layer; and

(c) sintering the body;

characterized in that:

said ceramic powder consists essentially of a major amount of BaO and TiO_2, the amounts of BaO and TiO_2 being approximately equal, a minor amount of CaO and ZrO_2 sufficient to shift and broaden the Curie peak of the ceramic to a preselected value, and MgO, wherein the MgO is at least approximately 1 mole % of the ceramic powder and the large to small cation ratio of the ceramic powder is less than or equal to 0.98 but greater than or equal to 0.89;

said metal electrode material is selected from the group comprising Ni and Co; and

said body is sintered at a temperature in the range of 1200° C. to 1425° C. in an atmosphere having an oxygen partial pressure which is between a maximum which is at least reducing to the oxide of the metal electrode material and a minimum of approximately 10^{-11} atmosphere.

4,386,986

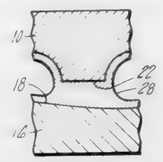
HIGH POWER LASER MIRROR REPAIR

John H. Bluege, Lake Park, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 6, 1981, Ser. No. 251,680
Int. Cl.³ B32B *35/00*
U.S. Cl. 156—94 **5 Claims**

4. A method of repairing a partially disbonded cooled mirror consisting of first and second members, said first member, having a first bonding surface including a plurality of coolant channels having channel surfaces, said channels being separated by land members having land surfaces disposed toward said second member, said coolant surfaces and said land surfaces together comprising a portion of said first bonding surface and a second member, in close proximity with said first member and having a second bonding surface with portions of said second bonding surface disposed with a predetermined relationship to said land surfaces; a portion of said first and second bonding surfaces being separated in a disbond area traversed by a plurality of disbond coolant channels, comprising the steps of:

passing a bonding medium of predetermined composition only through said plurality of disbond coolant channels; and



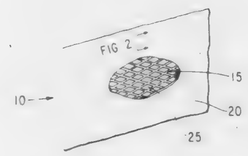
depositing a bonding chemical from said bonding medium on portions of said first bonding surface and second bonding surface, said bonding chemical being chemically and thermally compatible with said first and second members, in sufficient amount to form a bond joining said first and second members.

4,386,987

ELECTROLYTIC CELL MEMBRANE/SPE FORMATION BY SOLUTION COATING

Michael J. Covitch, Cleveland Heights; Mark F. Smith, Edison, and Leo L. Benezra, Mentor, all of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jun. 26, 1981, Ser. No. 277,951
Int. Cl.³ B32B *31/14*
U.S. Cl. 156—155 **16 Claims**



11. A method for making a perfluorocarbon copolymeric membrane having an equivalent weight of greater than 900 but less that about 1500 and solid polymer electrolyte electrode assembly for use in an electrochemical cell comprising the steps of:

(1) dispersing a quantity of the copolymeric perfluorocarbon in solvating dispersion media;

(2) providing a reticulate electrode structure including a surface portion comprising at least one electrocatalytic compound;

(3) placing a sheet of resinous material beneath a sheet of aluminum foil;

(4) placing the reticulate electrode structure upon the aluminum foil with the electrocatalytic surface portion opposing the aluminum foil;

(5)pressing the reticulate electrode structure into the aluminum foil, the resinous material undergoing cold flow whereby the aluminum foil generally conforms to contours of the reticulate electrode structure;

(6) at least once coating the reticulate electrode structure with the dispersion and removing the dispersion media until a coating of a desired thickness has been built upon the electrode bridging between the elements of the reticulate electrode structure; and

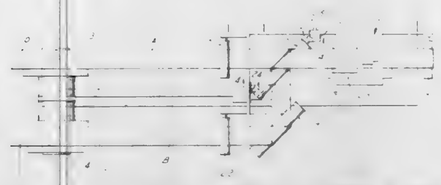
(7) removing the aluminum foil and resinous material.

4,386,988

WEB HANDLING APPARATUS

Robert F. Kontz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 4, 1981, Ser. No. 260,503
Int. Cl.³ B65H *19/10, 69/06*
U.S. Cl. 156—157 **7 Claims**



1. A method of handling web rolls and permitting the splicing of the end of the web from one roll to the leading end of the web of another roll which comprises

positioning a first roll for rotation about a horizontal axis,

aligning a splicing station so that it receives a web from said first roll,

positioning a second roll for rotation about a horizontal axis at a position spaced laterally of the first roll,

positioning a pair of turning bars adjacent said webs such that the web from the second roll is turned in its direction so that it becomes longitudinally aligned with the web from the first roll,

moving one of said turning bars from a position below the web from said first roll to a position above the web from said first roll such that the web from said second roll overlies the web from said first roll,

feeding the web from the second roll into overlying relation with the web from the first roll at the splicing station so that the web from the second roll can be spliced to the web from the first roll,

lowering said one turning bar to its lower position wherein the web from the second roll is aligned with the splicing station,

and continuing the feeding of the web from the second roll past the splicing station.

3. A web handling apparatus comprising

a first roll support for supporting a web roll for rotation about a horizontal axis,

a second roll support for supporting a web roll about a horizontal axis generally parallel and spaced laterally from the first web roll,

a frame,

a splicing station on said frame,

said first roll support being aligned with the splicing station such that the web from the first roll is fed longitudinally to and across said splicing station,

a pair of turning bars on said frame,

the first of said turning bars having its longitudinal axis positioned at an acute angle to the longitudinal axis of the web extending from the second roll for changing the direction of movement of the second roll web so that it extends transversely and toward the path of movement of the first roll web,

the second of said turning bars having its longitudinal axis at an acute angle to the longitudinal axis of the second roll web for receiving that web from said first turning bar and changing its direction so that the second roll web moves in the direction of and parallel to the longitudinal axis of the first roll web,

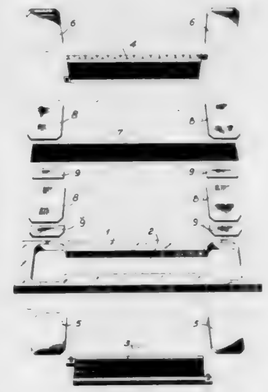
said second turning bar being pivotable about a vertical axis and movable vertically along said vertical axis such that the second bar can be moved from a position below the first roll web as it moves to the splicing station by pivotal movement of said second turning bar about the vertical axis and movement vertically upwardly and then pivoting about the vertical axis to a position wherein said second bar overlies the first roll web as it is moving toward the splicing station thereby permitting the second roll web to be trained over the turning bars to overlie the first roll web and be moved to the splicing station in overlying relation to said first roll web.

4,386,989

METHOD FOR PRODUCING A BENDABLE AND TWISTABLE ELEMENT AND SUCH AN ELEMENT PRODUCED THEREBY

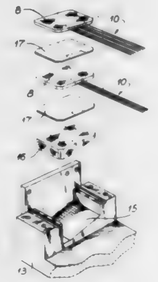
Jacques A. Aubry, Cabries, France, assignor to Societe Nationale Industrielle et Aerospatiale, France

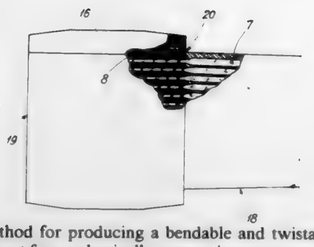
Filed Jan. 23, 1981, Ser. No. 227,879
Claims priority, application France, Jan. 28, 1980, 80 01745
Int. Cl.³ B32B *31/00;* **B29C** *19/00;* **F01D** *25/26;* **B29F** *1/00*
U.S. Cl. 156—182 **6 Claims**











6. A method for producing a bendable and twistable composite element for mechanically connecting two members such as a rotor blade and its hub comprising the steps of

impregnating filaments with a thermosetting resin which is still in the unpolymerised stated,

locating cut lengths of said impregnated filaments in a first mold with their middle portions in straight, parallel and calibrated grooves and with the two end portions of said cut lengths projecting in said first mold out of opposite sides beyond the ends of said grooves and resting on each end on at least one layer of fabric of resin-impregnated fibers,

disposing onto each of said two end portions of said cut lengths at least another layer of said fabric,

pressing and flattening said two end portions of said cut lengths between said resin-impregnated layers of fabric,

poymerising said resin on said impregnated cut lengths and in said layers of fabric forming a unitary layer,

stacking a plurality of said unitary layers in a second mold to form a bundle of said middle portions of said cut lengths in which bundle said cut lengths of said plurality of said unitary layers are in spaced relationship to each other,

disposing layers of adhesive between said layers of fabric of said stacked unitary layers at least at one end portion of said cut lengths,

applying heat and compression to the stack in said second mold to form at least one rigid connecting attachment end portion of the laminated type to be secured to at least one of the two members to be connected,

injecting elastomer in a viscous state into said bundle of said middle portions of said cut lengths, selecting said elastomer according to its characteristics of resiliency and damping,

curing said elastomer at a temperature and for a time appropriate to its selected characteristics to form a middle portion of said bendable and twistable composite element,

forming a depression in conjunction with a prior step at a location at which said cut lengths of said unitary layers enter between said impregnated layers of fabric. and

filling said depression by injecting therein an elastomer which is less flexible than said elastomer injected into said bundle of said middle portions of said cut lengths.

4,386,990

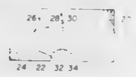
METHOD OF MAKING A MOLDED BRASSIERE CUP

Gerald Gluckin, 440 E. 57 St., New York, N.Y. 10022

Filed Nov. 16, 1981, Ser. No. 321,441

Int. Cl.³ A41C *3/14*; B29C *3/00*

U.S. Cl. 156—245 **1 Claim**





1. An improvement in molding a stretch fabric brassiere cup with a support fabric in attached relation thereto in which said support fabric and said fabric brassiere cup are initially adhered to each other in the flat and thereafter both correspondingly expanded in size incident to being molded into a three-dimensional shape of a brassiere cup, the improvement comprising the steps of preparing a non-stretch support fabric by making a semi-circular opening in an edge of said support fabric, orienting plural incisions in radial relation to said semi-circular opening and in circumferentially spaced relation thereabout thereby forming edges which bound the incisions, and positioning said support fabric semi-circular opening in a central location of said brassiere cup, adhering said prepared piece of support fabric to said fabric brassiere cup using heat while both said fabrics are in the flat, and molding said adhered fabrics insubstantial conformance with each other into a three-dimensional brassiere cup shape during which said edges bounding said radially oriented incisions of said support fabric separate from each other into a semi-circular shape to allow for the increase in said size of said support fabric as it assumes said three-dimensional shape of said fabric brassiere cup, whereby a support fabric with even only nominal stretch is usable as a support attachment for a molded brassiere cup.

4,386,991

METHOD OF BONDING 4-METHYL-1-PENTENE POLYMERS

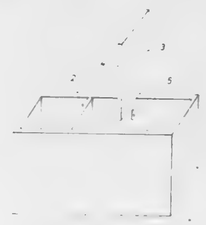
Teiichi Shiomi, Otake, and Katsumi Funakoshi, Iwakuni, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Feb. 13, 1981, Ser. No. 234,206

Claims priority, application Japan, Feb. 18, 1980, 55-17807; Jan. 16, 1981, 56-3747

Int. Cl.³ C09J *5/02*; B32B *17/00*

U.S. Cl. 156—308.6 **5 Claims**



1. A method of bonding a molded article comprised of a 4-methyl-1-pentene polymer wherein the content of the 4-methyl-1-pentene monomer in the 4-methyl-1-pentene polymer of the molded article to be bonded is at least 80 mole% to a molded article comprised of a vinyl alcohol type polymer, metal or glass, which comprises coating a solution of a modified 4-methyl-1-pentene polymer dissolved in cyclohexene and/or carbon tetrachloride on the surface to be bonded of at least one of the molded articles at a temperature lower than 50° C. and then bonding the molded articles.

4,386,992

TWO-PART ADHESIVE AND BONDING METHOD EMPLOYING SAME

Shuji Takegawa, Suita, and Tadao Kunishige, Takatsuki, both of Japan, assignors to Sunstar Chemical Ind. Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 122,702, Feb. 19, 1980, abandoned. This application Aug. 19, 1980, Ser. No. 179,461

Claims priority, application Japan, May 11, 1979, 54-058339; Australia, Nov. 26, 1979, 53183/79; Fed. Rep. of Germany, Nov. 28, 1979, 2947818

Int. Cl.³ C09J *5/00*; C08J *3/00*

U.S. Cl. 156—327 **6 Claims**

1. A method for bonding two substances together which comprises applying a two-part adhesive comprising an aqueous synthetic resin emulsion adhesive and a gelling agent selected from the group consisting of calcium pantothenate, glycine calcium salt, alanine calcium salt, serine calcium salt, threonine calcium salt, methionine calcium salt, phenylalanine calcium salt, and calcium aspartate to at least one of the substances to be adhered, disposing the substances one on the other, and then contact-pressing them together.

4,386,993

HEATING PRESS-ON APPARATUS FOR TRANSFER MARKS

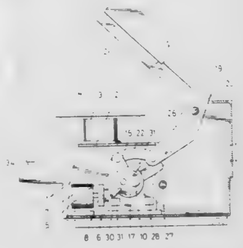
Mototsugu Matsuo, 4-36, 2-chome, Nakazakinishi, Kita-ku, Osaka-shi, Japan

Filed Dec. 30, 1981, Ser. No. 335,671

Claims priority, application Japan, Apr. 30, 1981, 56-64270[U]

Int. Cl.³ B30B *5/02*

U.S. Cl. 156—358 **3 Claims**



1. A heating press-on apparatus for transfer marks, comprising, a table mounted horizontally on the upper portion of a housing, a rocking member pivoted at an intermediate portion thereof to said housing and extending from the inside to the outside of said housing, a heater plate mounted on the upper end of said rocking member and to be placed on said table, a round-rod-shaped cam being fixed to an output shaft of a reduction gear provided within said housing and extending in a relation that the axes of said output shaft and cam extend in parallel to each other, a ring sleeved rotatably in idling onto the outer periphery of said cam, connecting arms projecting from the outer surface of said ring diametrically thereof, a support arm fixed to the outer periphery of a support disc rotatable together with said cam and projecting diametrically of said support disc at the position where said output shaft most approaches the outer periphery of said support disc, a connecting rod pivoted at one end thereof to said connecting arms and at the other end to the lower end of said rocking member, a shaft projecting from the lateral side of one of said connecting arms and supported by said support arm at one side thereof in its rotating direction, a stopper extending horizontally and for supporting said connecting arms when said heater plate is placed on said table, a limit switch for detecting rotation of said output shaft further at a desired angle after said connecting arms are supported by said stopper, thereby bringing to a half an electric motor which drives an input shaft of said reduction gear, and a limit switch which detects said support arm lifting said heater plate and brings said motor to a halt.

4,386,994

CONVEYOR CONTROL APPARATUS IN A FULLY AUTOMATIC LABELING SYSTEM

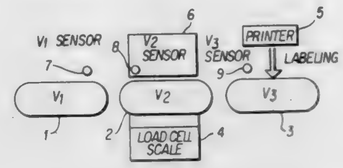
Kunihiko Fujii, Mishima; Koichi Haraga, Sumiyoshi; Yukihiro Hirosaki, and Koichiro Sato, both of Mishima, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1980, Ser. No. 117,613

Claims priority, application Japan, Feb. 28, 1979, 54-23932; Feb. 28, 1979, 54-23933; Feb. 28, 1979, 54-23934

Int. Cl.³ G05G *15/00*

U.S. Cl. 156—360 **8 Claims**



1. A conveyor control apparatus in a fully-automatic labeling system comprising:

a sending-in conveyor, a weighing conveyor and a sticking conveyor which have their operations controlled independently of one another and which are disposed in alignment with one another,

sensors which are disposed in proximity to the respective conveyors and which detect the existence of a commodity,

short-time timers which control outputs from these sensors,

an intermittent timer which controls the operations of said weighing conveyor and said sticking conveyor, depending upon whether or not the sensor of said sending-in conveyor has detected the commodity within a predetermined time,

a load cell, said weighing conveyor being a load of said load cell,

a printer which prints data based on a signal from said load cell or preset data on a label,

and

a sticking machine which sticks the printed label to the commodity on said sticking conveyor.

4,386,995

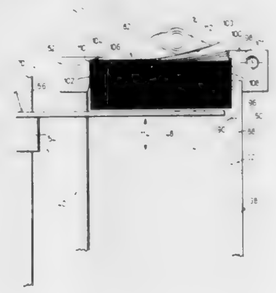
LABEL DISPENSER MAGAZINE

George W. King, Stouffville, Canada, assignor to Canadian Stackpole Limited, Scarborough, Canada

Filed Mar. 20, 1981, Ser. No. 245,905

Int. Cl.³ B32B *31/00*; B65C *9/40*, *9/08*

U.S. Cl. 156—362 **9 Claims**



1. A label magazine adapted to hold a stack of labels and from which individual labels are withdrawn for application to articles by a labelling machine, said label magazine including a

substantially stationary label supporting means comprising a base with label stack guide rails extending the length of the base and means for retaining a face of a stack of labels in the magazine, said retaining means comprising spaced parallel ramp portions extending upwardly from said base and adjustable to the width of a label to be retained, means for advancing such labels of the stack towards said retaining means, said advancement means comprising a plate slidably mounted for movement along said base, means for driving said plate towards said retaining means comprising a pneumatic piston and cylinder arrangement connected to a source of variable pressurized air controlled by a control means, said piston and cylinder arrangement having means for translating relative movement of said piston and cylinder to said plate, said retaining means being adapted to permit individual withdrawal of labels from the label stack as such labels are withdrawn from the stack of labels, said advancement means is adapted to cyclically compress the stack of labels and allow the compressed stack of labels to expand after each compression phase by said translator means causing said plate to advance towards said retaining means when said piston and cylinder arrangement is open to pressurized air to compress momentarily the stack of labels in said magazine, each said cycle including sufficient time to permit a compressed stack of labels to expand.

4,386,996

APPARATUS FOR THE JACKETING OF STEEL PIPES

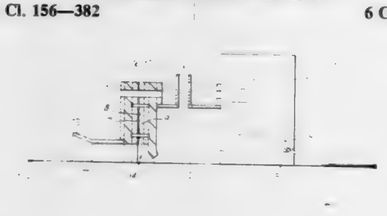
Helmut Landgraf, Duisburg, and Walter Stucke, Ratingen, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

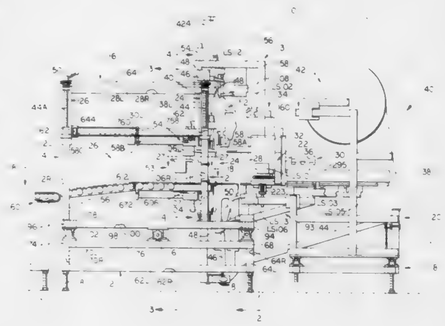
Filed Mar. 9, 1981, Ser. No. 242,105

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1980, 3009285

Int. Cl.[3] **B29D** *23/04;* **B32B** *31/00*

U.S. Cl. 156—382 **6 Claims**





1. An apparatus for jacketing steel pipes, including an extruder having a head with annular extrusion nozzle means, for extruding a hose onto a pipe passing through the head, the head having an entrance chamber in which a low pressure is maintained to be effective between the outer surface of the pipe and the hose as it is being depo ited, the improvement of an entrance construction for the pipe into the said chamber comprising

a plurality of spring-elastic steel disks, each having an annular opening and radial slots so that radially inwardly directed tongues are being formed, said tongues engaging the pipe, the steel disks providing sealing of the chamber at its entrance for the pipe.

4,386,997

MACHINE FOR BANDING A STACK OF ARTICLES

Edwin A. Molitor, Miami Township, Clermont County, and Edward H. Scholefield, Wilmington, both of Ohio, assignors to Multifold-International, Inc., Milford, Ohio

Filed Nov. 2, 1981, Ser. No. 317,327

Int. Cl.[3] **B65B** *13/20*

U.S. Cl. 156—443 **4 Claims**

1. A machine for wrapping a band around a stack of flat articles which comprises a band guiding assembly and a clamp assembly at a banding station, means for advancing an end portion of a strip of banding material from the band guiding assembly to the clamp assembly, clamp means mounted on the clamp assembly, means for closing the clamp means on the end portion of the strip of banding material, means for separating the clamp assembly from the band guiding assembly to provide an exposed section of the strip of banding material, means for advancing the stack against the exposed section of the strip of banding material to draw the banding material around three sides of the stack, the means for advancing the stack against the exposed section of the strip of banding material including a pusher member and means for advancing the pusher member to advance the stack from an input station to the banding station, the machine including input presser means at the input station engaging the stack as the stack is advanced against the exposed section of the strip of banding material, banding presser means at the banding station, means for advancing the banding presser means into engagement with the banding material on opposite sides of the stack at the banding station when the stack is at the banding station, means for cutting a section of the strip of banding material from the remainder thereof to provide a second end portion for overlapping the first mentioned end portion, means for depositing glue on one of the end portions in position for overlapping by the other of the end portions, a pair of hand members mounted for advancing adjacent a fourth side of the stack and against the first and second end portions, means for advancing one of the hand members against the glue carrying end portion to advance the glue carrying end portion into overlying relation to said fourth side of the stack, means for moving the other hand member against the other of the end portions to cause the other end portion to overlay the glue and the glue carrying end portion, a stack extraction assembly engageable with the stack at the banding station, means for moving the extraction assembly in a direction to discharge the stack from the banding station when the pusher member advances a subsequent stack from the input station to the banding station, the extraction assembly including discharge presser means engageable with the banding material on opposite sides of the stack to hold the stack under compression as the stack is discharged from the banding station, retractable backstop means for engagement with the banding material at a face of the stack between said opposite sides and opposed to the pusher member when the pusher member advances the stack to the limit of its advance to the banding station and the extraction assembly is at a discharge position, and means for retracting the backstop means when the extraction assembly is away from the discharge position.

4,386,998

ADHESIVE APPLICATOR AND METHOD FOR CIGARETTE-TO-FILTER ADHESION AND SIMILAR APPLICATIONS

Donald B. McIntyre, and Frederic S. McIntyre, both of Wellesley, Mass., assignors to Acumeter Laboratories, Inc., Marlborough, Mass.

Continuation of Ser. No. 69,972, Aug. 27, 1979, abandoned. This application Dec. 17, 1980, Ser. No. 217,383

Int. Cl.[3] **B31F** *1/00;* **B05C** *9/02, 11/08*

U.S. Cl. 156—473 **9 Claims**



1. A fluid adhesive applicator having, a nozzle head formed with a plurality of fine-orifice spaced nozzles disposed in a plane and extending transversely of a predetermined region; pumping means for simultaneously supplying the nozzles with the fluid adhesive; means for drawing a web of material-to-be-coated longitudinally through said predetermined region in juxtaposition to the orifices of said nozzles, said nozzles being situated to form a plurality of transversely spaced beads of adhesive upon the web; the nozzle head having edge means defining a recess extending inward from said plane and web, the edge means being located a short distance longitudinally in front of said orifices; and means for directing the drawing of said web to shear the web against said edge means at an acute angle to said plane, with said directing means and said angle being adjusted relative to the number and fineness of said orifices to cause said plurality of beads of adhesive to merge into a continuous, uniform, full coating extending transversely across said web.

4,386,999

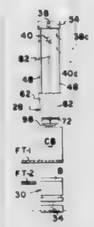
INERTIAL SPIN WELDING OF THERMOPLASTIC AND THERMOPLASTIC COATED CONTAINER PARTS

Vincent E. Fortuna, Huntington Beach, Calif., and Donald N. MacLaughlin, Midland, Mich., assignors to Cosden Technology, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 234,344, Feb. 13, 1981, abandoned. This application Sep. 7, 1982, Ser. No. 415,126

Int. Cl.[3] **B23K** *27/00;* **B29C** *27/08;* **B29D** *23/03*

U.S. Cl. 156—494 **12 Claims**





1. Spin welding apparatus comprising upper and lower mandrel means mounted for vertical movement toward and away from each other along a common vertical axis, said upper mandrel means being adapted to releasably support an open ended cylindrical container body and said lower mandrel means being adapted to releasably support a container bottom of thermoplastic material having an axially upwardly projecting peripheral flange insertable into said container body with a press fit, first drive means for driving at least one of said mandrel means in rotation about said vertical axis relative to the other mandrel means, and second drive means for driving said mandrel means in movement along said vertical axis to seat said container bottom within said container body while said mandrel means are rotating relative to each other to insert and frictionally weld said container bottom in said container body; with radially expansible and contractable body engaging means mounted on the lower end of said upper mandrel means in symmetrically disposed relationship about said vertical axis, said engaging means being normally disposed in a contracted position wherein said engaging means may be axially inserted into a container body, expanding means for radially expanding said engaging means to an expanded position wherein the radially outer surfaces of said expanding means lie on a common cylindrical surface having a diameter equal to the specified internal diameter of said container body and further comprising a seating member mounted at the lower end of said upper mandrel means and engagable with said container bottom to establish the depth to which said container bottom is inserted within said container body by operation of said second drive means.

4,387,000

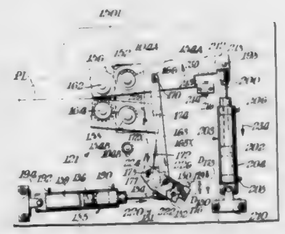
LAMINATING ROLL ACTUATING CRANK MECHANISM

Henry J. Tancredi, Gwynedd, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 17, 1981, Ser. No. 235,412

Int. Cl.[3] **B32B** *31/00;* **B30B** *3/04*

U.S. Cl. 156—495 **3 Claims**



1. In a roller arrangement including a first and a second roll, each roll being supported at a corresponding end by a first and a second arm, each arm being pivotally mounted at corresponding ends thereof to a fixed member, the improvement which comprises:

a first and a second force transmission bar respectively pivotally connected to the first and second arms;

a link pivotally connected to the first and second transmission bars at distinct pivot points;

a single actuator pivotally connected to the link at a third pivot point thereon for reciprocally moving the link from the first position in which the axis of the transmission bars are parallel to a second position in which the axis of the transmission bars intersect,

the link being responsive to a force imposed in a predetermined direction by the actuator to simultaneously apply through the force transmission bars a force on each arm tending to displace the rolls away from the position occupied while the link is in the first position, the link being responsive to a second force directed oppositely to the first force to simultaneously apply to the force transmission bars a force on each arm tending to restore the rolls to the position occupied while the link is in the first position.

4,387,001

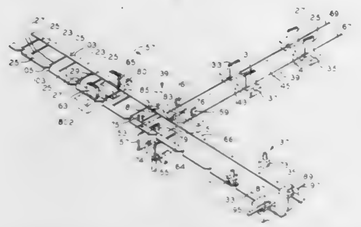
METHODS AND APPARATUS FOR FABRICATING ELECTRICAL PHASE INSULATORS FOR DYNAMOELECTRIC MACHINES

Richard D. Burns, and Albert J. Wesseldyk, both of Holland, Mich., assignors to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 51,029, Jun. 22, 1979, abandoned. This application Jun. 8, 1981, Ser. No. 271,327

Int. Cl.³ B32B *31/16*

U.S. Cl. 156—495 **16 Claims**



1. An apparatus for fabricating electrical phase insulators for providing electrical separation between winding phases of a dynamoelectric machine wherein a phase insulator includes two spaced apart planar portions formed of an insulating material interconnected by at least one connector made of an insulating material, the apparatus comprising: a conditioning station; a securing station; means for supplying first and second strips of planar insulating material of indeterminate length to the securing station; connector supply means for supplying at least one strip of connector insulating material of indeterminate length to the conditioning station; the conditioning station including stretching means for elongating a portion of the at least one strip of connector insulating material of indeterminate length and for straightening the at least one strip by removing curvature from the at least one strip, said stretching means including means for varying the amount of elongation of the portion of the at least one strip of connector insulating material; means for advancing a portion of the at least one strip of connector insulating material to the securing station after the portion has been elongated and straightened at the stretching station; means for severing the portion of the at least one strip for establishing an elongated segment for use as a phase insulator connector; and securing means located at the securing station for securing one end of the elongated segment to the first strip of planar insulating material and for securing the other end of the elongated segment to the second strip of insulating material thereby interconnecting the two planar strips.

4,387,002

ADHESIVE DISCHARGE DEVICE

Siegfried H. Knecht, Gevelsberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Fed. Rep. of Germany

Continuation of Ser. No. 234,650, Feb. 17, 1981, abandoned. This application Aug. 16, 1982, Ser. No. 408,145

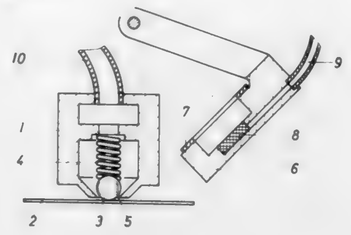
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 3012371

Int. Cl.³ B65D *47/40*; **B67D** *3/02*

U.S. Cl. 156—578 **7 Claims**

1. In an adhesive discharge device comprising a part of packaging apparatus for the application to packaging material of adhesive of the type which sets by the evaporation of a solvent, and wherein the device is comprised of a nozzle body having a nozzle outlet opening for adhesive controlled by a valve mechanism actuable to an open position by pressure contact with packaging material, the improvement comprising:

a closure cap pivotally mounted adjacent to said nozzle body and swingably movable between a remote, open position and a position in sealing engagement with said nozzle body around said nozzle outlet opening to define with said body an enclosed solvent vaporization space around said outlet opening; and



a solvent vaporizer contained inside of and carried by said closure cap for dispensing solvent in said enclosed space, whereby the vaporization of solvent within said enclosed space with said cap in said sealing position prevents the drying of adhesive around said nozzle outlet opening.

4,387,003

HEADBOX FOR PAPERMAKING MACHINE

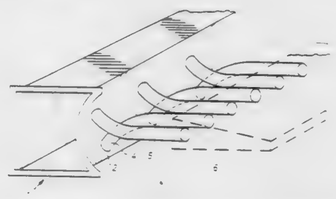
Albrecht Meinecke; Elemer Csordas, and Dieter Egelhof, all of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jul. 17, 1981, Ser. No. 284,525

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028186

Int. Cl.³ D21F *1/06*

U.S. Cl. 162—336 **8 Claims**



1. A headbox for a papermaking machine, comprising manifold-like chamber means for flowingly receiving therethrough a fluid supply of pulp stock, said manifold-like chamber means extending substantially horizontally and transversely of said papermaking machine, channel outlet means for discharging said fluid pulp stock therefrom for further processing into paper, said channel outlet means extending transversely the full width of said papermaking machine as to thereby define the full width of said discharged pulp stock, a plurality of distribution conduits communicating directly with and between said manifold-like chamber means and said channel outlet means, said plurality of distribution conduits being effective to flow said pulp stock directly from said manifold-like chamber means to said channel outlet means, each of said plurality of distribution conduits having an inlet end communicating directly with said manifold-like chamber means and an outlet end communicating directly with said channel outlet means, said inlet ends of adjacent ones of said distribution conduits respectively lying in separate planes spaced from each other, said outlet ends of said plurality of distribution conduits being disposed in a single plane and parallel to each other; each of said plurality of distribution conduits having a configuration comprising only a single bend of a single direction generally between the inlet and outlet ends thereof, said manifold-like chamber means comprising an inner wall surface at least partly defining the interior of said chamber means, wherein each of said inlet ends

of said plurality of distribution conduits communicates with said chamber means through said inner wall surface, and edge-defining flow separator means along said inner wall surface as to effectively define a portion of said chamber means, said edge-defining flow separator means extending longitudinally in said manifold-like chamber means, wherein said inlet ends lying in one of said separate planes communicate with said chamber means through said inner wall surface at a first longitudinal side of said edge-defining flow separator means, and wherein said inlet ends lying in an other of said separate planes communicate with said chamber means through said inner wall surface at a second longitudinal side of said edge-defining flow separator means opposite to said first longitudinal side.

4,387,004

SEAL FOR A COKE OVEN DOOR

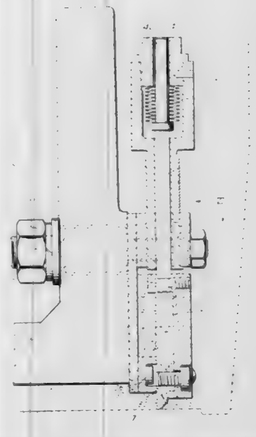
Klaar Prins, Velsen-Zuid, Netherlands, assignor to Estel Hoogovens B.V., Ijmuiden, Netherlands

Filed Oct. 5, 1981, Ser. No. 308,822

Claims priority, application Netherlands, Oct. 8, 1980, 8005548

Int. Cl.³ C10B *25/16, 29/06*

U.S. Cl. 202—248 **9 Claims**



1. In a seal for a door for a coke oven comprising

(a) an elongate knife edge element having as one long edge a knife edge which, in the closed position of the door, engages a sealing surface of the surround of the coke oven opening,

(b) pressing means urging the knife edge element laterally against a sealing side-surface on the side of the door,

(c) the knife edge element being movable past said side-surface in an adjustment direction so as to adjust the position of the knife edge relative to the door, and

(d) the knife edge element being divided into a plurality of mutually engaging parts located one behind another in the said adjustment direction,

(e) holding means adapted to hold the said parts against movement relative to each other in the adjustment direction and to restrain said parts against movement relative to the door in the lateral direction, said holding means permitting relative sliding of the parts in the longitudinal direction upon flexure of the knife edge element,

the improvement wherein, the length, in the adjustment direction, of the said sealing side-surface on the door against which the knife edge element is urged by said pressing means, is less than 25% of the width of the knife edge element in the adjustment direction.

4,387,005

PROCESS AND APPARATUS FOR CARRYING OUT THE FIRST STAGE OF SEPARATION OF CONSTITUENTS OF A REACTION MIXTURE OBTAINED DURING SYNTHESIS OF ASYMMETRIC DIMETHYLHYDRAZINE BY THE RASCHIG METHOD

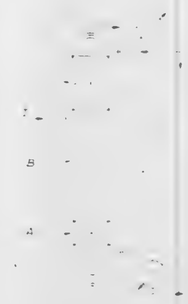
Guy Corteel, Gaillon, France, assignor to Societe Europeenne de Propulsion, Puteaux, France

Filed Jun. 2, 1981, Ser. No. 269,574

Claims priority, application France, Jun. 4, 1980, 80 12441

Int. Cl.³ B01D *3/14*

U.S. Cl. 203—81 **5 Claims**



1. A method of separating a feed fluid into constituents according to a reaction process comprising the steps of:

providing a distilling apparatus comprising an empty central section forming a clearance volume and receiving said feed fluid, an upper section for providing rectified distillation of volitile compounds contained in said feed fluid, and a lower section into which volitile compounds are exhausted;

feeding said feed fluid into said clearance volume; and

withdrawing said volitile compounds from said lower section.

4,387,006

METHOD OF TREATING THE SURFACE OF THE COPPER FOIL USED IN PRINTED WIRE BOARDS

Toshiyuki Kajiwara; Katsuhito Fukuda, both of Kyoto, and Yoshinori Tanii, Oumihachiman; all of Japan, assignors to Fukuda Metal Foil & Powder Co., Ltd., Kyoto, Japan

Filed Jul. 8, 1981, Ser. No. 281,510

Int. Cl.³ C25D *5/34, 5/48, 7/06*

U.S. Cl. 204—32 R **8 Claims**

1. A method of treating the surface of a copper foil used in printed wire boards comprising the steps of preliminarily roughing the surface of the copper foil, electrolytically treating the copper foil as a cathode in an aqueous solution of zinc chromate containing zinc ions at a concentration of 1.0 to 20 g/l, chromium VI ions at a concentration of 1.0 to 20 g/l and caustic alkalis under conditions sufficient to coat the roughened copper surface with a coating of chromium and zinc.

4,387,007

PROCESS FOR THE MANUFACTURE OF AN ALDEHYDE

Peter Seiler, Aesch, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 17, 1980, Ser. No. 207,824

Int. Cl.³ C25B *3/02*

U.S. Cl. 204—59 R **28 Claims**

1. A process for producing p-tert-butyl-benzaldehyde, comprising electrochemically oxidizing in an electrolytic cell containing electrolyte and anode and cathode electrodes, a composition consisting of p-tert.butyltoluene.

4,387,008

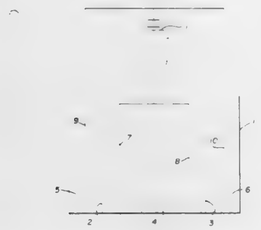
ELECTRODIALYTIC METHOD FOR PRODUCTION OF SILICA GEL

Milton E. Winyall, Columbia, Md., and Charles Davidoff, Manhasset, N.Y., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 80,485, Oct. 1, 1979, Pat. No. 4,279,879. This application Dec. 12, 1980, Ser. No. 215,763

Int. Cl.³ C25B *1/00*

U.S. Cl. 204—101 **38 Claims**



1. A method of preparing silica gel which comprises electrolyzing an aqueous anolyte solution of an alkali metal silicate and a salt of a non-siliceous anion in a concentration of at least about 0.01 normal in a cell having a cation permselective membrane separating the anolyte and an aqueous catholyte solution to deposit silica hydrogel on an anode of the cell and recovering the silica hydrogel from the anode.

4,387,009

METHOD OF OPERATING ELECTROCHEMICAL MACHINE TOOL

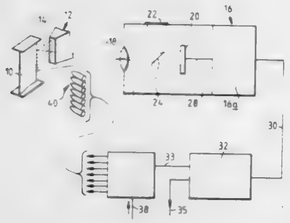
Charles S. Gardner, Allestree; Robert B. Price, Burton-on-Trent, and Keith G. Tillen, Mickleover, all of England, assignors to Rolls-Royce Limited, London, England

Filed Oct. 14, 1981, Ser. No. 311,397

Claims priority, application United Kingdom, Feb. 12, 1980, 8038631

Int. Cl.³ B23P *1/00, 1/16*

U.S. Cl. 204—129.2 **3 Claims**



1. A method of controlling an electrochemical machine tool from which electrolyte issues in jet form to strike a workpiece, and which during the machining process, generates a corona at the place of contact of electrolyte jet and workpiece, comprising the steps of aligning an air jet device with said electrolyte jet, observing the corona, generating a first electrical signal from said observation and using the presence and absence of said signal as the primary control over the operation of said air jet device which is aligned with said electrolyte jet for the purpose of directing air onto said electrolyte jet and blowing said electrolyte jet off the workpiece so as to effectively stop the machining action thereof.

4,387,010

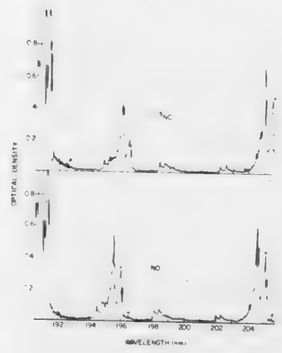
METHOD OF SEPARATING ^{15}N FROM NATURAL ABUNDANCE NO

Jimmie R. McDonald, Upper Marlboro, Md., and Andrew P. Baronavski, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 29, 1980, Ser. No. 154,348

Int. Cl.³ B01D *59/00*

U.S. Cl. 204—157.1 R **6 Claims**



1. A method for separating ^{15}N isotope from natural abundance nitric oxide which comprises

admixing natural abundance nitric oxide with an amount of carbon dioxide in excess of stoichiometry to form a gas mixture;

irradiating said gas mixture with radiation at a wavelength in the 1920–2060 A region which is preferentially absorbed by ^{15}NO, thereby causing ^{15}NO to preferentially react with carbon dioxide to form $^{15}NO_2$; and

isolating $^{15}NO_2$.

4,387,011

RESIN COMPOSITION FOR AQUEOUS PAINT

Keizo Makuuchi, Shimotakeshi; Tohru Takagi, Takasaki; Hiroyuki Nakayama, Ninomiyamachi, and Tsutomu Yamamoto, Kamakura, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo and Kansai Paint Co., Ltd., Hyogo, both of, Japan

Filed Aug. 18, 1980, Ser. No. 178,907

Claims priority, application Japan, Aug. 23, 1979, 54-107519

Int. Cl.³ C08F *2/46;* C08G *59/00*

U.S. Cl. 204—159.15 **5 Claims**

1. An epoxy resin composition for aqueous paint wherein substantially all oxirane rings in the epoxy resin remain intact, comprising a composition produced by

stirring at a temperature below 100° C. a mixture comprising 50 to 95 wt.% of an epoxy resin, 1 to 23 wt.% of an ethylenically unsaturated monomer having a carboxyl group, and 4 to 44 wt.% of a monomer having one ethylenically unsaturated bond in the molecule and

then exposing the mixture to electron beams at a dose rate of 2×10^{-2} to 30 MR/sec to give a total dose of 0.1 to 30 MR.

4,387,012

BLENDS OF POLY(P-METHYLSTYRENE) WITH POLYFUNCTIONAL MONOMER AND SHAPED ARTICLE

Harold A. Arbit, Highland Park, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 174,402, Aug. 1, 1980, Pat. No. 4,281,083, which is a continuation-in-part of Ser. No. 971,179, Dec. 20, 1978, abandoned. This application Jul. 10, 1981, Ser. No. 282,304

Int. Cl.³ C08F *257/02, 2/54*

U.S. Cl. 204—159.17 **1 Claim**

1. A method of making a shaped article that is resistant to fatty foods under microwave oven conditions, that comprises forming a blend consisting essentially of poly(methylstyrene) containing at least 90 weight percent poly(p-methyl styrene) with between about 0.1 weight percent and about 10 weight percent and about 10 weight percent of a polyfunctional monomer into a foamed or unfoamed sheet, thermoforming said sheet to produce a shaped article, and irradiating the shaped article with sufficient ionizing radiation to effect crosslinking sufficient to render said shaped article resistant to fatty foods under microwave oven conditions.

4,387,013

REACTIVE SPUTTER ETCHING OF ALUMINUM

Hans W. Lehmann; Klaus Frick, and Roland W. Widmer, all of Zurich, Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed Aug. 24, 1981, Ser. No. 295,513

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 E **3 Claims**

1. In a process for the reactive sputter etching of a substrate with a reactive gas comprising: placing said substrate in a suitable plasma chamber; introducing said reactive gas into said chamber under reduced pressure; generating a plasma discharge in said chamber thereby etching the substrate; and maintaining a high vacuum in said chamber with vacuum pump means thereby continuously removing volatile products of the etching process, the improvement comprising utilizing a cryogenic pump to maintain the high vacuum, thereby improving the reproducibility of the etch being a cryogenic pump.

4,387,014

ELECTROCHEMICAL METAL PROCESSING APPARATUS

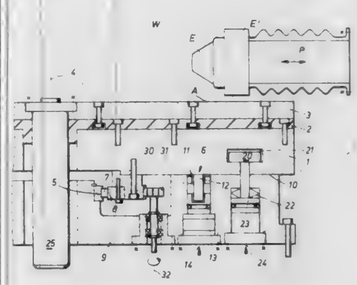
Edgar Stengel, Remscheid, Fed. Rep. of Germany, assignor to AEG-Elotherm G.m.b.H., Remscheid-Hasten, Fed. Rep. of Germany

Filed Nov. 4, 1981, Ser. No. 318,199

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046091

Int. Cl.³ B23P *1/12;* B23Q *3/18;* B23K *9/16;* B24B *41/06*

U.S. Cl. 204—212 **9 Claims**



1. Apparatus for the electrochemial processing of a metal workpiece by movement of an electrode into the surface of said workpiece comprising:

a table formed as a sandwich of three slabs, the middle slab being electrically insulating and the slab on which the workpiece rests being electrically conductive;

means for mounting said table for rotation about a vertical axis including a plurality of bearings;

fixed means defining a support surface for supporting said table;

means for raising said table above said surface including a plurality of rollers mounted for engaging said table and means for raising said rollers; and

means for clamping said table to said fixed means.

4,387,015

COAL LIQUEFACTION QUENCHING PROCESS

Robert M. Thorogood, Macungie; Chung-Liang Yeh, Bethlehem, both of Pa., and Ernest E. Donath, St. Croix, V.I., assignors to International Coal Refining Company, Allentown, Pa.

Filed Sep. 30, 1982, Ser. No. 431,511

Int. Cl.³ C10G *1/00, 1/06*

U.S. Cl. 208—8 LE **9 Claims**



1. In a process for the solvent refining of coal wherein a slurry of finely ground coal in process solvent is passed through a preheater to a coal liquefaction reactor in the presence of hydrogen rich gases at elevated temperatures and pressures, the improvement comprising passing effluent from the reactor directly to a gas/slurry phase separator, and recycling slurry from said separator through a cooling heat exchanger and back to the slurry phase in said separator for cooling the same to suppress coke formation.

4,387,016

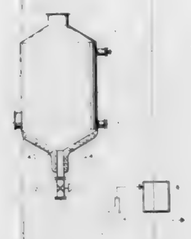
METHOD FOR EXTRACTION OF BITUMINOUS MATERIAL

Hugh W. Gagon, 3350 Florlita Ave., West Valley City, Utah 84119

Filed Nov. 10, 1980, Ser. No. 207,145

Int. Cl.³ C10G *1/04*

U.S. Cl. 208—11 LE **5 Claims**



1. A process for separating bituminous material from inorganic matter containing same, said process comprising:

introducing the bituminous containing, inorganic matter into a confined space, said confined space comprising an en-

closed chamber or vessel having a valved port at the bottom thereof, at least one closeable opening therein through which the inorganic matter can be changed to said chamber, and means for charging the halogenated organic solvent thereto;

introducing a halogenated organic solvent into the chamber;

contacting the inorganic matter contained within the confined space with the vapors of the halogenated organic solvent, whereby the solvent vapors interact with the bituminous material so that the bituminous material separates from the inorganic matter and accumulates at the bottom of said confined space;

heating the bottom portion of said confined space adjacent to said valved port so that the temperature of the bituminous material and any halogenated organic solvent which accumulates within the bottom portion of said confined space is maintained above the boiling point of said halogenated organic solvent at the pressure within the confined space; and

withdrawing the accumulated bituminous material from the bottom of said confined space through said valved port.

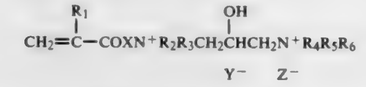
4,387,017

DEMULSIFICATION OF BITUMEN EMULSIONS USING POLYMERS OF DIQUATERNARY AMMONIUM MONOMERS CONTAINING HYDROXYL GROUPS

Edward E. McEntire, and David R. McCoy, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 2, 1981, Ser. No. 326,463
Int. Cl.³ C10G *33/04*
U.S. Cl. 208—188 **5 Claims**

1. A process for recovering petroleum from O/W bitumen emulsions by demulsifying said emulsions by adding thereto demulsifiers comprising polymers prepared from the monomer having the following structure



$$CH_2{=}C(R_1){-}COXN^+R_2R_3CH_2CH(OH)CH_2N^+R_4R_5R_6 \quad Y^- \quad Z^-$$

$R{=}H$, CH_3; R_2–R_6 are independently CH_3, C_2H_5, lower alkyl including branched alkyl, hydroxyethyl, hydroxypropyl; $X{=}NHR_7$ or OR_7, where R_7 is an alkylene or branched alkylene group such as CH_2CH_2, $CH_2CH_2CH_2$ having at least two carbon atoms and $CH_2C(CH_3)_2CH_2$; and Y and Z are independently halogen, carboxylate such as acetate or other anion from an acid of pKa <5.

4,387,018

METHOD OF REMOVING POLYCHLORINATED BIPHENYL FROM OIL

Gus T. Cook, Paducah; Stephen K. Holshouser, Boaz; Richard M. Coleman, Paducah; Charles E. Harless, Smithland, and Walter N. Whinnery, III, Paducah, all of Ky., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 17, 1982, Ser. No. 358,959
Int. Cl.³ C10G *21/16*
U.S. Cl. 208—262 **6 Claims**

1. A method of removing a polychlorinated biphenyl from a liquid petroleum product containing the same, comprising:

contacting the petroleum product with an alcohol selected from the group consisting of methanol, ethanol, and isopropyl alcohol to extract the polychlorinated biphenyl from the petroleum product into the alcohol;

distilling alcohol from the mixture of alcohol and polychlorinated biphenyl extracted therein; and

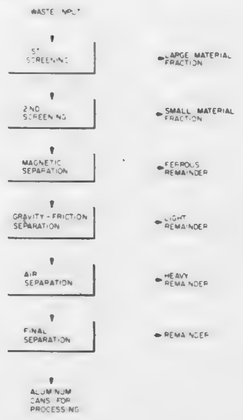
recycling the distilled alcohol into contact with the petroleum product.

4,387,019

ALUMINUM CAN RECLAMATION METHOD

Kenneth H. Dale, Powhatan, and Walter G. Ludwig, Chesterfield County, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Jan. 5, 1982, Ser. No. 337,109
Int. Cl.³ B03B *7/00*
U.S. Cl. 209—12 **10 Claims**



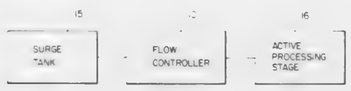
1. A method of reclaiming cans from waste material comprising screening said waste material to produce a large material fraction and a first remainder fraction, screening said first remainder fraction to produce a small material fraction and a second remainder fraction, magnetically classifying said second remainder fraction to produce a magnetic fraction and a third remainder fraction, gravitationally and frictionally classifying said third remainder fraction to produce a light material fraction and a fourth remainder fraction, air classifying said fourth remainder fraction to produce a heavy material fraction and a fifth remainder fraction and finally classifying said fifth remainder fraction to produce an aluminum can fraction and a final remainder fraction.

4,387,020

FLOW CONTROL APPARATUS

Robert C. Hill, Santa Clara, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 4, 1982, Ser. No. 336,661
Int. Cl.³ B01D *21/24*
U.S. Cl. 210—86 **8 Claims**



1. In a waste water treatment system utilizing a surge tank and an active processing stage, an intermediate flow control apparatus comprising:

(a) an inner tank having a flat rimmed side wall and an open top;

(b) an outer tank surrounding said inner tank so that overflow from said inner tank freely discharges therein, said outer tank having a closed top;

(c) a fluid inlet conduit for receiving waste water from said surge tank to be delivered to said inner tank;

(d) a flow distributor communicating with said inlet conduit comprising a plurality of interconnected ports opening into said inner tank and adapted to divide the liquid stream

from said inlet conduit into a like plurality of separate streams and introduce said streams into said inner tank in opposing directions;

(e) a first submerged orifice in said inner tank adapted to discharge into the air above a free water surface of said processing stage;

(f) vent means interconnecting the air space within said outer tank and the air space above said free water surface of said processing stage for equalizing the pressure therebetween;

(g) pump means for delivering waste water from said surge tank to said inner flow control tank at a rate sufficient to continuously overflow said sidewall; and

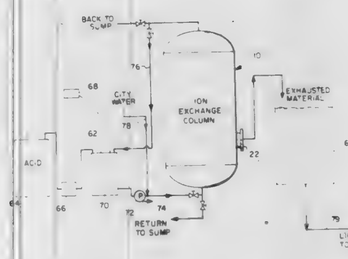
(h) a second orifice in said outer tank adapted to return said over flow through a trap to the input side of said pump means.

4,387,021

SYSTEM FOR HANDLING EXHAUSTED VERMICULITE CATION EXCHANGE MATERIALS

Stephen H. Davis, Dayton, Ohio; James E. Etzel, Lafayette, Ind., and Robert E. Wiegert, Middletown, Ohio, assignors to Water Refining Company, Inc., Middletown, Ohio

Filed Apr. 6, 1981, Ser. No. 251,459
Int. Cl.³ B01J *49/00*
U.S. Cl. 210—96.1 **8 Claims**



1. A system for the stabilization and removal of exhausted vermiculite particles from an ion exchange column, comprising:

(a) a column having a vermiculite particle containing area, means to support and retain said vermiculite particles and means for flowing waste effluent from a holding sump into and out of said column during the ion exchange treatment process conducted within said column, said column also having an exit port through which exhausted vermiculite particles are removed from the column and an entry port through which fresh vermiculite particles are introduced into the column,

(b) a mixing tank into which an acid solution is placed at an established pH,

(c) means to circulate and recirculate said acid solution through said ion exchange column and back to said mixing tank after said vermiculite particles have become exhausted and the ion exchange treatment process within said column has been discontinued,

(d) means to monitor the pH of the recirculated acid solution upon reentry into said mixing tank and to at that time add additional acid as needed to maintain the established pH,

(e) means to direct the recirculated acid solution to the waste effluent holding sump after said exhausted vermiculite particles have been partially regenerated and thereby stabilized,

(f) means to flush a volume of stabilized vermiculite particles out through said exit port,

(g) means to backwash with fresh water through said means to support and retain said vermiculite particles so that any remaining volume of stabilized vermiculite particles are removed from said column through said exit port, and

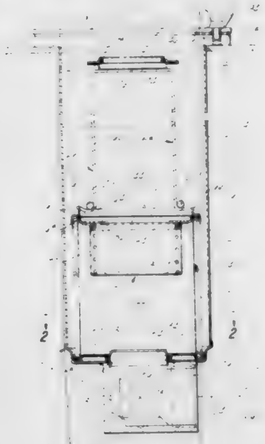
(h) means to dewater said stabilized and removed vermiculite particles for ready disposal.

4,387,022

FLUID FILTERING DEVICE

Borje O. Rosaen, 4031 Thornoaks Dr., Ann Arbor, Mich. 48104, and Dale P. Fosdick, 7000 Austin Rd., Saline, Mich. 48176

Filed Jun. 19, 1981, Ser. No. 275,250
Int. Cl.³ B01D *27/10*
U.S. Cl. 210—132 **12 Claims**



1. For use with a fluid system having a pump and a fluid reservoir at least partly filled with fluid to a fluid level, and a fluid filtering device comprising:

a housing having at least a portion submerged within the reservoir, said housing having a fluid port connected with said pump,

a filter assembly comprising a tubular filter element at one end and a holder assembly at its other end, said filter element being open at one end, and means for attaching the other end of the filter element to said holder assembly,

said one end of the filter assembly being insertable into said reservoir so that said filter element engages said housing portion and so that one side of said filter element is in fluid communication with the fluid in the fluid reservoir,

means for fluidly sealing said open end of said filter element to said housing portion,

fluid passage means formed through said housing for fluidly connecting said port to the other side of the filter element, and

closure means formed on the other end of said holder assembly,

wherein said other end of said filter assembly is insertable into said reservoir and against said housing portion whereupon said closure means prevents fluid flow through said fluid passage means to thereby block fluid flow through said port.

4,387,023

TRANSMISSION FILTER ADAPTER

Dwight Napier, Diamond Springs, Calif. 95619

Filed Nov. 5, 1979, Ser. No. 90,602
Int. Cl.³ F01M *11/03*
U.S. Cl. 210—168 **7 Claims**

1. In a fluid transmission having first and second sections wherein the first section includes wall means defining an open-ended cavity for fluid, bolt holes arranged in a predetermined pattern in the wall means, and fasteners in the bolt holes for at

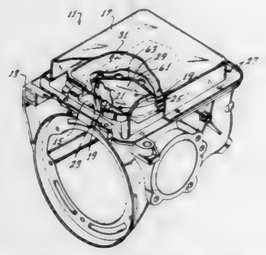
least assisting in attaching the first section to the second section, the improvement comprising:

an adapter plate covering the open end of the cavity;

said adapter plate having a series of attaching holes arranged such that at least some of the attaching holes can be in registry with at least some of said bolt holes in the wall means whereby said fasteners can also attach the adapter plate to the wall means;

sealing means for sealing the interface between the wall means and the adapter plate;

said adapter plate having a suction opening leading to said cavity;



a fluid filter having outer and inner filter surfaces and a suction opening in the inner filter surface, said inner filter surface being adapted to confront the adapter plate with the suction openings being in registry with each other;

spacer means between said adapter plate and said inner filter surface for spacing the inner filter surface from the adapter plate and for providing communication between the suction openings; and

means for attaching the filter to the adapter plate with said suction openings being in communication via the spacer means and with the inner filter surface facing the adapter plate and being in spaced relationship thereto.

4,387,024

HIGH PERFORMANCE SEMIPERMEABLE COMPOSITE MEMBRANE AND PROCESS FOR PRODUCING THE SAME

Masaru Kurihara, Ohtsu; Tadahiro Uemura, Kyoto, and Kiyoshi Okada, Kusatsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Dec. 13, 1979, Ser. No. 103,369

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—490 **29 Claims**



1. A high performance semipermeable composite membrane comprising a microporous substrate having a semipermeable membrane on the surface thereof, the semipermeable membrane being composed of a cross-linked polymer comprising the reaction product of a mixture of (a) a water soluble organic polymer having reactive amino groups in terminal and/or side chains of the organic polymer, (b) a monomeric polyamine, and (c) a cross-linking agent having a group capable of reacting with the reactive groups of the water soluble organic polymer and also of reacting with the polyamine, and of reacting said crosslinking agent with the amino groups of said organic polymer.

4,387,025

PURIFYING CONTAMINATED WATER

Christian G. Daughton, San Pablo, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 27, 1981, Ser. No. 315,378

Int. Cl.³ C02F *1/28*

U.S. Cl. 210—612 **18 Claims**

1. A process for removing biorefractory compounds from contaminated water comprising contacting said water with fragmented raw oil shale at ambient conditions which include a temperature above freezing.

9. A process of purifying wastewater from an oil shale retort and recovering shale oil therefrom comprising:

stripping the wastewater to remove gases such as ammonia,

subjecting the stripped wastewater to biodegradation to remove biodegradable compounds,

removing the cells following the biodegradation step,

contacting wastewater from an oil shale retort with fragmented raw oil shale at a temperature of above freezing, to remove the biorefractory compounds,

said process being further characterized in that said stripping step must precede the biodegradation step.

4,387,026

ION EXCHANGE REGENERATION PLANT

Charles F. Woolacott, Mississauga, Canada, assignor to Biolab Equipment Ltd., Montreal, Canada

Filed Jan. 26, 1981, Ser. No. 228,662

Int. Cl.³ B01J *49/00*

U.S. Cl. 210—669 **20 Claims**



20. A process for the regeneration of at least partially exhausted cation exchange material and at least partially exhausted anion exchange material obtained from a plurality of exhausted service demineralizers employing the mixed bed principle in which each service unit is filled with a bed of exhausted anion and cation exchange materials, which comprises:

contacting the mixed bed with sodium chloride solution to ensure that said ion-exchange material is completely exhausted;

contacting the mixed bed with a sanitizing fluid to kill any microorganisms in said bed;

contacting the mixed bed with hydrochloric acid to effect stripping of calcium salts from anion exchange material and organic materials from anion and cation exchange material in said mixed bed and thereby to cause said anion exchange material to be in chloride form;

effecting substantially complete hydraulic separation of said anion exchange material from said cation exchange material while simultaneously effecting backwashing of said ion exchange material to remove particulates therefrom,

separately feeding the hydraulically-separated at least partially exhausted cation exchange material to a first enclosed regeneration zone and the hydraulically-separated at least partially exhausted anion exchange material to a second enclosed regeneration zone physically separate from said first enclosed regeneration zone,

subjecting said exhausted cation exchange material to backwashing in said first enclosed regeneration zone to remove particulate matter therefrom,

subjecting said exhausted anion exchange material to backwashing in said second enclosed regeneration zone to remove particulate matter therefrom and contacting said exhausted anion exchange material in the chloride form with sodium hydroxide solution to convert said exhausted anion exchange material in chloride form to hydroxyl form,

forming a dilute aqueous hydrochloric acid solution by mixing concentrated hydrochloric acid and substantially deionized water in a first mixing zone located externally of said first enclosed regeneration zone;

feeding said dilute aqueous hydrochloric acid into said first enclosed regeneration zone to effect regeneration of said at least partially exhausted cation exchange material;

recovering regenerated cation exchange material from said first enclosed regeneration zone;

collecting partially spent aqueous hydrochloric acid solution from said first enclosed regeneration zone, passing at least part of said collected spent hydrochloric acid to said calcium and organic stripping step as the hydrochloric acid utilized therein, and forwarding the hydrochloric acid so used and any collected hydrochloric acid not so used to a neutralization zone;

forming a dilute aqueous sodium hydroxide solution by mixing concentrated sodium hydroxide solution and substantially deionized water in a second mixing zone and located externally of said second enclosed regeneration zone;

feeding said dilute sodium hydroxide solution into said second enclosed regeneration zone to effect regeneration of said at least partially exhausted anion exchange material to effect regeneration of said at least partially exhausted anion exchange material;

recovering regenerated anion exchange material from said second enclosed regeneration zone;

collecting partially spent aqueous sodium hyroxide solution from said anion exchange material regeneration, passing at least part of said collected spent sodium hydroxide to effect said chloride conversion step, and forwarding the sodium hydroxide solution so used and any collected sodium hydroxide solution not so used to said neutralization zone,

monitoring the pH of the solution resulting in said neutralization zone from said forwarding steps, and

adding neutralizing chemical as required to said resulting solution to effect substantial neutralization thereof for discharge.

4,387,027

CONTROL OF IRON INDUCED FOULING IN WATER SYSTEMS

Roger C. May, Glenside, and Frank C. Sessa, Wyncote, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Oct. 9, 1981, Ser. No. 310,163

Int. Cl.³ C02F *5/10*

U.S. Cl. 210—697 **10 Claims**

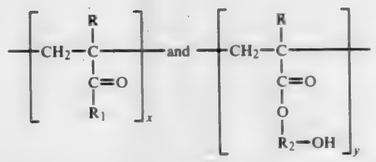
1. A method of inhibiting corrosion and controlling deposition in an aqueous medium contained in a cooling water system of the type comprising iron species present in said medium in a deposit forming amount and under deposit forming conditions, said iron species being admitted into said medium from a well-water makeup source, said method being capable of providing for the formation of a protective passive oxide film on metallic surfaces in contact with said aqueous medium, said medium being further characterized by the absence of an organo-phosphonic acid compound therein, wherein said method consists essentially of:

(i) assuring that the pH of said aqueous medium is 5.5 or above;

(ii) assuring that the aqueous medium contains a calcium or other appropriate ion concentration selected from the group consisting of zinc, nickel and chromium and mixtures thereof; and

(iii) adding to said aqueous medium

(a) a water-soluble polymer comprising moieties derived from an acrylic acid or water-soluble salt thereof and moieties of an hydroxylated lower alkyl acrylate, wherein the moieties of the polymer have the following formulas:



wherein R is hydrogen or a lower alkyl of from 1 to 3 carbon atoms; R_1 is OH, OM or NH_2 where M is a water-soluble cation; R_2 is a lower alkyl of from about 2 to 6 carbon atoms and the mole ratio of x:y is 34:1 to 1:4; and

(b) a water-soluble orthophosphate compound; said polymer, together with the orthophosphate compound, being effective to promote the formation of said metal oxide film with no attendant deposition of said iron, and the amount of (a) and (b) being added being sufficient to provide a substantially scale-free protective passive oxide film on the metallic surface.

4,387,028

USE OF QUATERNIZED POLYALKYLENE POLYAMINES AS DEMULSIFIERS

Basil S. Fee, Sarnia, Canada, assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 1, 1981, Ser. No. 326,238

Int. Cl.³ B01D *17/04*

U.S. Cl. 210—708 **9 Claims**

1. A demulsification method which comprises contacting an emulsion of oil and water with a demulsifying amount of a quaternized polyalkylene polyamine which is an adduct of a halohydroxyalkyl quaternary ammonium compound and a polyalkylene polyamine.

4,387,029

METHOD FOR THE REPROCESSING OF CONDENSATE FROM UREA PRODUCTION PLANTS

Adalbert Huber, Holzwickede; Dietrich Schirmer, Iserlohn-Hennen, and Heiko Hoffmann, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to UHDE GmbH, Dortmund, Fed. Rep. of Germany

Filed Nov. 27, 1981, Ser. No. 325,129

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1980, 3044602

Int. Cl.³ C02F *1/72*

U.S. Cl. 210—758 **1 Claim**

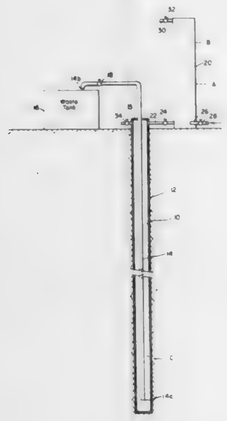
1. In a method for purifying by oxidation water condensed from steam in a urea production plant and having a urea content of approximately 50 mg/l and a biuret content of approximately 2 mg/l, the improvement which comprises performing the oxidation at a temperature greater than 60° C. and a pH value greater than 8.

4,387,030

FLUID SEPARATION SYSTEM

Larry D. Sauder, Rte. 2, Box 545, Lockport, La. 70374

Filed Jun. 19, 1981, Ser. No. 275,195
Int. Cl.³ B01C *2/10*
U.S. Cl. 210—774 **19 Claims**



1. A system for separating two immiscible fluids of different densities, comprising:

an outer conduit extending down from the earth's surface at least to a depth determined as a function of the average difference between the densities of the two fluids to be separated, said outer conduit being effectively sealed at the top and bottom to define a fluid space therewithin;

an intermediate conduit extending down from the earth's surface inside said outer conduit, the lower end of said intermediate conduit terminating above the bottom of said outer conduit and in open communication with the space defined within said outer conduit;

an inner conduit extending down from the earth's surface inside said intermediate conduit, said inner conduit opening into said intermediate conduit;

a mixture supply source coupled to said inner conduit for supplying a mixture of two immiscible fluids to said inner conduit;

storage tank means coupled to the surface end portion of said intermediate conduit;

heavy fluid outlet means connected to the surface end portion of said outer conduit for removing the heavier, more dense fluid separated out of said fluid mixture;

means for maintaining the system under sufficient pressure to maintain a lower end of a defined fluid separation region, below which occurs substantially only the heavier of said two immiscible fluids, within said intermediate conduit and above the lower end of said intermediate conduit;

wherein said pressure is further sufficient to supplement the weight of the lighter, less dense, fluid to overcome the weight of said heavier fluid and force said heavier fluid to flow out through said outer conduit to said heavy fluid outlet means; and

means for drawing off the lighter of said two fluids from above an upper limit of said fluid separation region, above which occurs substantially only the lighter of the two immiscible fluids, to and into said storage tank means.

4,387,031

COMPOSITIONS ABLE TO SEPARATE THE ERYTHROCYTES FROM THE SERUM OR PLASMA IN BLOOD ANALYSIS SAMPLES, AND THE METHOD WHICH USES THEM

Luigi Prandi, Piazza Sordello, 43, 46100 Mantova, Italy

Filed Jul. 20, 1981, Ser. No. 285,019
Claims priority, application Italy, Jul. 22, 1980, 23609 A/80
Int. Cl.³ B01D *23/00*
U.S. Cl. 210—787 **5 Claims**

1. Compositions which are able to separate the erythrocytes from the serum or plasma in a blood analysis sample by centrifuging, and having a specific gravity of between 1.010 and 1.100, characterised by comprising:

a—a polydimethylsiloxane of viscosity between 5000 and 60,000 cst and density between 0.965 and 0.980 g/cm³

b—a chemically and physically inert macromolecular substance of particle size between 0.200 and 450μ and specific gravity between 1.30 and 1.80, chosen from the group consisting of polyolefine resins, polyvinyl resins, fluorinated polyolefines and polyester resins.

4,387,032

CONCENTRATES FOR FIRE-FIGHTING FOAM

Peter J. Chiesa, Jr., South San Francisco, Calif., assignor to Enterra Corporation, Lionville, Pa.

Continuation-in-part of Ser. No. 17,858, Mar. 6, 1979, which is a continuation-in-part of Ser. No. 808,462, Jun. 21, 1977, Pat. No. 4,149,599, which is a continuation-in-part of Ser. No. 670,252, Mar. 25, 1976, Pat. No. 4,060,489, said Ser. No. 557,757, Mar. 12, 1975, Pat. No. 4,060,132, and Ser. No. 525,175, Nov. 19, 1974, Pat. No. 4,038,195, each is a continuation-in-part of Ser. No. 369,584, Jun. 13, 1973, Pat. No. 3,957,657, said Ser. No. 557,757, Ser. No. 525,175, and Ser. No. 369,584, each is a continuation-in-part of Ser. No. 307,479, Nov. 17, 1972, abandoned, said Ser. No. 525,175, Ser. No. 369,584, and Ser. No. 307,479, each is a continuation-in-part of Ser. No. 254,404, Nov. 18, 1972, Pat. No. 3,849,315, said Ser. No. 369,584, Ser. No. 307,479, and Ser. No. 254,404, each is a continuation-in-part of Ser. No. 131,763, Apr. 6, 1971, abandoned. This application Dec. 8, 1980, Ser. No. 214,260
The portion of the term of this patent subsequent to Nov. 29, 1994, has been disclaimed.
Int. Cl.³ A62D *1/00*
U.S. Cl. 252—3 **4 Claims**

1. In a pourable liquid fire-fighting concentrate containing (a) at least one foaming agent in a quantity that enables the formation of fire-fighting foam from the diluted concentrate, and (b) a colloidally dissolved thixotropic polysaccharide which causes the foam to form a gel mat when contacted with polar organic liquids, the improvement according to which the solvent for the concentrate is essentially water, the concentrate contains at least about 1.5% by weight of the colloidally-dissolved polysaccharide, and the polysaccharide is selected from the class consisting of heteropolysaccharide-7 and degraded forms of heteropolysaccharide-7.

4,387,033

CALCIUM SULPHONATE PROCESS

Alain L. Lenack, Le Mesnil Esnard, and Robert Tirtiaux, Mont Saint Aignan, both of France, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 18, 1981, Ser. No. 293,861
Claims priority, application United Kingdom, Aug. 29, 1980, 8028077
Int. Cl.³ C10M *1/40*
U.S. Cl. 252—18 **6 Claims**

1. A method for the production of an overbased calcium sulphonate having a total base number of about 390 to 410 of improved filterability and viscosity which comprises the steps of

(a) providing a reaction mixture of (i) $Ca(OH)_2$ (ii) an oil-soluble sulfonic acid or calcium sulfonate in an amount of from 40 wt.% to 220 wt.% based upon the total weight of calcium hydroxide, (iii) 70 wt.% to 120 wt.% of a C_1 to C_4 monohydric alkanol based on the total weight of calcium hydroxide, (iv) 150 to 200 wt.% of a volatile aromatic hydrocarbon solvent, based on the total weight of calcium hydroxide, and (v) 3 wt.% to 10 wt.% of water based upon the total weight of $Ca(OH)_2$, said total weight of $Ca(OH)_2$ being the amount added in steps (a) and (b); and

in a first carbonation step carbonating said reaction mixture with CO_2 at a temperature of about 25° C. to 30° C. with 0.5 to 0.8 moles of CO_2 relative to the moles of $Ca(OH)_2$ and adding aditional $Ca(OH)_2$ in an amount equal to 75 wt.% to 150 wt.% of that used in step (a); and

(c) increasing the temperature of the reaction mixture to between 45° C. and 100° C.; and

(d) in a second carbonation step carbonating the reaction mixture at said increased temperature with CO_2 removing volatiles from said reaction mixture.

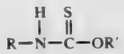
4,387,034

MIXED ALKYLTHIONOCARBAMATES FLOTATION COLLECTORS AND ORE DRESSING METHODS IN WHICH THE COLLECTORS ARE EMPLOYED

Kim N. Unger, and Dennis V. Smeltzer, both of Tucson, Ariz., assignors to Thiotech, Inc., Delaware, Md.

Filed Oct. 23, 1981, Ser. No. 314,375
Int. Cl.³ E22B *3/00, 15/12*
U.S. Cl. 252—61 **4 Claims**

1. A collector for use in concentrating metal values in ores by flotation, said collector comprising a synergistic mixture consisting essentially of at least two different thionocarbamates of the formula



wherein each of R and R′ is an alkyl radical of from 1 to 6 carbon atoms, said mixture consisting at least 20% by weight of a single one of said thionocarbamates.

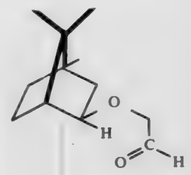
4,387,035

USE OF NORBORNYL OXYACETALDEHYDE IN AUGMENTING OR ENHANCING THE AROMA OF DETERGENTS

Robert P. Belko, Woodbridge; Richard M. Boden, Monmouth Beach, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 303,012, Sep. 17, 1981, Pat. No. 4,354,043. This application Mar. 11, 1982, Ser. No. 357,156
Int. Cl.³ C11D *3/50*
U.S. Cl. 252—174.11 **1 Claim**

1. A process for augmenting or enhancing the aroma of a perfumed article which is a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base an aroma augmenting or enhancing quantity of the norbornyl oxyacetaldehyde having the structure:



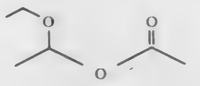
4,387,036

1-ETHOXY-1-ETHANOL ACETATE-ACETALDEHYDE MIXTURES FOR AUGMENTING OR ENHANCING THE AROMA OF DETERGENTS

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 287,935, Jul. 29, 1981, Pat. No. 4,348,416, which is a continuation-in-part of Ser. No. 176,111, Aug. 7, 1980, Pat. No. 4,296,137. This application Mar. 26, 1982, Ser. No. 362,238
Int. Cl.³ C11D *3/50*
U.S. Cl. 252—174.11 **1 Claim**

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base comprising the step of intimately admixing with a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base an aroma augmenting or enhancing quantity of a mixture of 1-ethoxy-1-ethanol acetate having the structure:



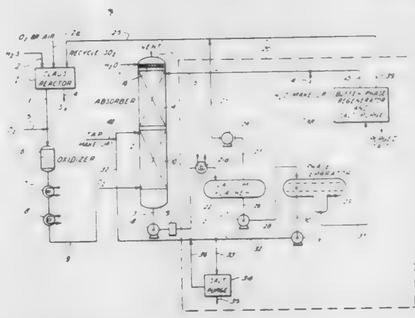
and acetaldehyde, the range of weight ratios of 1-ethoxy-1-ethanol acetate:acetaldehyde being from 50:50 down to 5:95.

4,387,037

REMOVAL OF SULFUR FROM WASTE GAS STREAMS

H. Lee Trentham, Galveston; John H. Crow, Houston, both of Tex., and Farwell C. Boston, Shreveport, La., assignors to Trentham Corporation, Houston, Tex.

Division of Ser. No. 209,719, Nov. 24, 1980, Pat. No. 4,320,101. This application Dec. 11, 1981, Ser. No. 329,766
Int. Cl.³ C01B *17/48;* **B01D** *53/34*
U.S. Cl. 252—184 **18 Claims**



1. A buffered degradation resistant sulfur dioxide absorption solvent, comprising:

a water soluble trialkyl phosphate containing at least about five (5) percent by weight water in admixture with a buffering agent selected from the group consisting of alkanolaminium carboxylates, alkali metal salts of carboxylic acids or benzoic acid, and ammonium salts of carboxylic acids or benzoic acid.

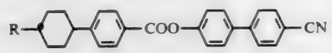
4,387,038

4-(TRANS-4'-ALKYLCYCLOHEXYL) BENZOIC ACID 4'''-CYANO-4''-BIPHENYLYL ESTERS

Masahiro Fukui; Hiromichi Inoue, and Yasuyuki Goto, all of Yokohamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jun. 26, 1981, Ser. No. 278,204
Claims priority, application Japan, Jul. 15, 1980, 55/96475
Int. Cl.³ C09K *3/34;* **G02F** *1/13;* **C07C** *121/60, 121/46, 69/773, 69/78*
U.S. Cl. 252—299.63 **7 Claims**

1. A 4-(trans-4'-alkylcyclohexyl)benzoic acid 4'''-cyano-4''-biphenylyl ester expressed by the formula



wherein R represents an alkyl group having 1 to 10 carbon atoms.

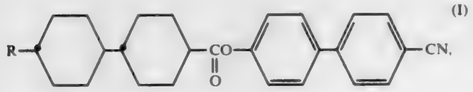
4,387,039

TRANS-4-(TRANS-4'-ALKYLCYCLOHEXYL)-CYCLOHEXANE CARBOXYLIC ACID 4'''-CYANOBIPHENYL ESTER

Shigeru Sugimori, and Hideo Sato, both of Yokohama, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jun. 26, 1981, Ser. No. 278,205
Claims priority, application Japan, Jun. 9, 1980, 55-77322
Int. Cl.³ C09K *3/34;* **G02F** *1/13;* **C07C** *61/22, 61/39, 121/48, 121/64*
U.S. Cl. 252—299.63 **5 Claims**

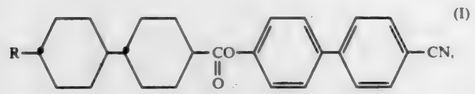
1. A trans-4-(trans-4'-alkylcyclohexyl)-cyclohexane carboxylic acid 4'''-cyanobiphenyl ester expressed by the formula



(I)

wherein R denotes a straight-chain or branched alkyl group of 1 to 10 carbon atoms.

4. A liquid crystal composition comprising a mixture of compounds at least one of which is a trans-4-(trans-4'-alkylcyclohexyl)-cyclohexane carboxylic acid 4'''-cyanobiphenyl ester expressed by the formula



(I)

wherein R denotes a straight-chain or branched alkyl group of 1 to 10 carbon atoms.

4,387,040

LIQUID TOILET SOAP

Alan Straw, Macclesfield, England, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Sep. 30, 1981, Ser. No. 307,270
Int. Cl.³ C11D *9/30*
U.S. Cl. 252—368 **6 Claims**

1. A stable aqueous liquid toilet soap solution containing from 7.5 to 20% of a potassium soap consisting essentially of a mixture of potassium soaps of lauric acid and myristic acid and from 6 to 9% of a viscosity controlling component consisting essentially of a mixture of coconut diethanolamide and sodium sulfate, such that the viscosity of the solution is between 1000 and 1500 cps.

4,387,041

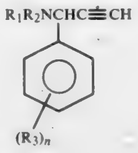
CORROSION INHIBITORS

Eugene V. Hort, Wayne; Lowell R. Anderson, Morristown, and Dru W. Alwani, Wayne, all of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Sep. 14, 1981, Ser. No. 301,667
Int. Cl.³ C23F *11/14, 11/04*
U.S. Cl. 252—392 **26 Claims**

1. An aqueous composition for inhibiting the corrosion of metals placed therein comrising:

(a) an effective amount of a corrosion-inhibiting compound having the formula:



where

R_1 and R_2 are independently alkyl C_1–C_8;

R_3 is independently halo, alkyl C_1–C_8, or alkoxy C_1–C_8; and

n is 1 or 2; and

(b) a non-oxidizing acid.

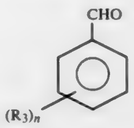
4,387,042

CORROSION INHIBITOR COMPRISING THE ETHYNYLATION REACTION PRODUCT OF A DIALKYLAMINE, A SUBSTITUTED BENZALDEHYDE AND ACETYLENE

Eugene V. Hort, Wayne; Lowell R. Anderson, Morristown, and Dru W. Alwani, Wayne, all of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Oct. 15, 1981, Ser. No. 311,706
Int. Cl.³ C23F *11/14*
U.S. Cl. 252—392 **19 Claims**

1. A corrosion inhibitor for aqueous solutions of mineral acids consisting essentially of the reaction product obtained by the catalytic ethynylation of a dialkylamine, R_1R_2NH, where R_1 and R_2 are independently alkyl C_1–C_8, and a substituted benzaldehyde having the formula:



where R_3 is independently halo, alkyl C_1–C_8, or alkoxy C_1–C_8, and n is 1 or 2, with acetylene.

4,387,043

FLUID CATALYST REGENERATION PROCESS AND APPARATUS

Anthony G. Vickers, Arlington Heights, and Michael J. Humbach, Chicago, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 30, 1981, Ser. No. 288,430
Int. Cl.³ B01J *21/20, 29/38;* **C10G** *11/18*
U.S. Cl. 252—417 **3 Claims**

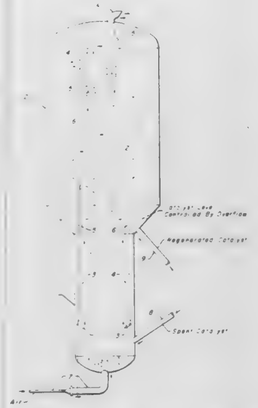
1. A process for regenerating a coke-contaminated fluid catalyst in a fluid catalyst cracking reaction-regeneration unit, said process including the steps of:

(a) introducing oxygen-containing regeneration gas, and coke-contaminated fluid catalyst, into a lower locus of a dilute phase combustion zone maintained at a temperature sufficient for coke oxidation and therein oxidizing coke to produde regenerated catalyst and flue gas;

(b) transporting said flue gas and said regenerated catalyst from an upper locus of said combustion zone into a regenerated catalyst disengaging zone, wherein said regenerated catalyst is separated from said flue gas and is maintained at a specific maximum quantity of catalyst inventory regardless of the catalyst inventory in said regeneration unit in a dense phase after passage of a portion of said regenerated catalyst to said reaction unit;

(c) transporting a required portion of said regenerated catalyst from said disengaging zone to a reaction zone; and

(d) recycling within said regeneration unit via at least one



internal recycle dipleg means substantially all of the remaining portion of said regenerated catalyst from said disengaging zone downwardly to said lower locus of said dilute phase combustion zone, and maintaining regenerated catalyst inventory in said disengagement zone to a specific maximum amount regardless of the catalyst inventory in said regeneration unit.

2. The process of claim **1** wherein the temperature at a selected locus of said combustion zone is controllably maintained by controlling the inventory of catalyst in said reaction-regeneration unit and thereby the quantity of regenerated catalyst recycled to said combustion zone.

3. The process of claim **2** wherein said selected locus is a lower locus of said combustion chamber.

4,387,044

SAFE, DRY, FREE-FLOWING SOLID PEROXIDE/UNSUBSTITUTED OR ALKYL SUBSTITUTED BENZOIC ACID COMPOSITIONS

Jose Sanchez, Grand Island, and Solomon C. Westbrook, Jr., Buffalo, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 66,150, Aug. 13, 1979, abandoned. This application Oct. 5, 1981, Ser. No. 308,220
Claims priority, application Canada, Jul. 9, 1980, 355772; Fed. Rep. of Germany, Aug. 13, 1980, 3030658
Int. Cl.³ C08F *4/34*
U.S. Cl. 252—426 **6 Claims**

1. A solid, dry, free-flowing peroxide/unsubstituted or alkyl substituted benzoic acid composition consisting essentially of:

40 to 85% by weight of a solid peroxide having a melting point above 30° C. and selected from the group consisting of substituted or unsubstituted diacyl peroxides, dialkyl peroxydicarbonates, dialkyl peroxides, and alkyl hydroperoxides,

15 to 60% by weight of a solid unsubstituted or substituted benzoic acid wherein the substituent is an alkyl of 1 to 4 carbons, and

0.0 to 2.0% by weight of a dust suppressant.

4,387,045

OLEFIN POLYMERIZATION CATALYST AND A PROCESS FOR PRODUCING POLYOLEFINS BY THE USE OF SAID CATALYST

Hisaya Sakurai, Kurashiki; Hideo Morita, Yokohama; Tadashi Ikegami, and Masayasu Furusato, both of Kurashiki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP79/00203, § 371 Date Apr. 1, 1981, § 102(e) Date Mar. 30, 1981
PCT Filed Aug. 1, 1979, Ser. No. 269,062
Int. Cl.³ C08F *4/04, 4/02*
U.S. Cl. 252—429 B **20 Claims**

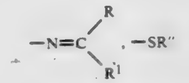
1. An olefin polymerization catalyst comprising solid catalyst (I) and organometallic compound (II), said solid catalyst being obtained by reacting an organomagnesium compound (a) soluble in hydrocarbon solvent and represented by the following formula:

$$MgR^1_pR^2_qX_r$$

wherein

R^1 and R^2 are identical or different and represent a secondary or tertiary alkyl group having 4–6 carbon atoms,

X represents a member selected from the group consisting of alkoxy groups, siloxy groups, aryloxy groups, amino groups, amido groups,



wherein R, R' and R'' are hydrocarbon groups and β-ketoacid residues,

p and q represent a number from 0 to 2,

$0 \leqq r \leqq 1$, and p, q and r satisfy the following equation:

$$p+q+r=2,$$

with a halogenide, oxyhalogenide or alkoxyhalogenide of titanium or vanadium (b).

4,387,046

ELECTRICALLY CONDUCTIVE ORGANOPOLYSILOXANE ELASTOMERS

Wilhelm Marsch, Burghausen, Fed. Rep. of Germany, and Dietrich Wolfer, Salzburg, Austria, assignors to Wacker-Chemie, Munich, Fed. Rep. of Germany

Filed Apr. 6, 1979, Ser. No. 27,548
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1978, 2816872
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—511 **9 Claims**

1. A composition which when cured provides an elastomer capable of conducting electrically comprising an organopolysiloxane having the formula

$$R_3SiO(SiR_2O)_nSiR_3$$

where R is selected from the group consisting of monovalent hydrocarbon radicals and substituted monovalent hydrocarbon radicals having up to 18 carbon atoms and n has a value of at least 10, which is capable of being cross-linked by the addition of Si-bonded hydrogen to an aliphatic multiple bond or by means of ionization radiation and as an electrically conductive lamp black from 15 to 60 percent by weight based on the weight of the organopolysiloxane of furnace black having a

surface area of from 40 to 100 m^2/g and from 5 to 25 percent by weight of acetylene black, based on the weight of the organopolysiloxane.

4,387,047

ESTERS OF 1,3-DIMETHYL-BUT-3-EN-1-YL, THEIR UTILIZATION AS PERFUMING AND FLAVORING INGREDIENTS AND COMPOSITIONS CONTAINING SAME

Erling Sundt, Vessy/Ge; Walter Schenk; Roger Chappaz, both of Geneva, and Michel Joyeux, Petit-Lancy/Ge, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Filed Jan. 6, 1981, Ser. No. 223,013

Claims priority, application Switzerland, Feb. 13, 1980, 1162/80

Int. Cl.³ A61K *7/46;* **A23L** *2/26*

U.S. Cl. 252—522 R **15 Claims**

1. 1,3-Dimethyl-but-3-en-1-yl formate.

4,387,048

METHYL SUBSTITUTED OXOBICYCLO-4,4,0-DECANE DERIVATIVES AND ORGANOLEPTIC USES THEREOF

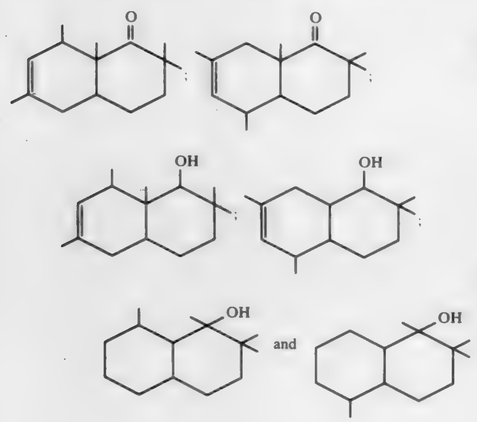
Takao Yoshida, West Long Branch, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 277,130, Jun. 25, 1981, Pat. No. 4,339,467, which is a continuation-in-part of Ser. No. 182,451, Aug. 28, 1980, Pat. No. 4,320,772. This application Apr. 26, 1982, Ser. No. 372,398

Int. Cl.³ A61K *7/46*

U.S. Cl. 252—522 R **4 Claims**

1. A process for augmenting or enhancing the aroma of a perfume composition or cologne comprising the step of adding to a perfume composition or a cologne base an aroma augmenting or enhancing quantity of at least one oxobicyclo compound having a structure selected from the group consisting of:



and

4,387,049

ADAMANTYL CONTAINING PEPTIDES

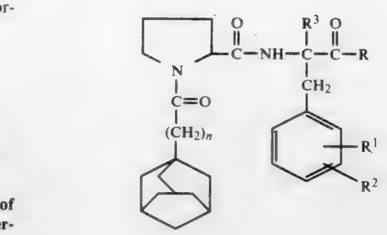
Francis R. Pfeiffer, Cinnaminson, N.J., assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Feb. 22, 1982, Ser. No. 350,975

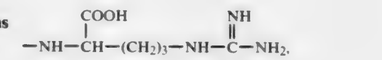
Int. Cl.³ C07C *103/52*

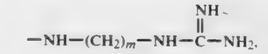
U.S. Cl. 260—112.5 R **8 Claims**

1. A chemical compound of the structural formula:



in which:
R is





—NH—$(CH_2)_m$—NH_2 or —NH—$(CH_2)_m$—CO_2H;
R^1 and R^2 are each hydrogen, hydroxy or methoxy;
R^3 is hydrogen or lower alkyl of 1-3 carbons;
n is an integer of 1-3; and
m is an integer of from 2-6; or pharmaceutically acceptable acid addition or alkali metal salts thereof.

4,387,050

POLYAZO DYESTUFFS, A PROCESS FOR THEIR PREPARATION AND THEIR USE FOR DYEING VEGETABLE FIBRE MATERIALS AND LEATHER

Horst Nickel, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

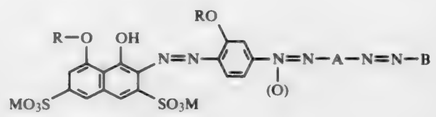
Filed Nov. 7, 1980, Ser. No. 204,985

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1979, 2948022

Int. Cl.³ C07C *105/00*

U.S. Cl. 260—143 **4 Claims**

1. Dyestuffs of the formula



wherein
R denotes optionally substituted C_1–C_4-alkyl,
M denotes hydrogen or a cation and
A and B denote a radical of the benzene or naphthalene series.

4,387,051

β-LACTAM ANTIBIOTICS, THEIR PREPARATION AND THEIR USE IN PHARMACEUTICAL COMPOSITIONS

David F. Corbett, Reigate; Robert Southgate, Warnham, and Alfred J. Eglington, Brockham. all of England, assignors to Beecham Group Limited, England

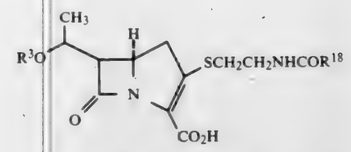
Filed Oct. 28, 1980, Ser. No. 201,576

Claims priority, application United Kingdom, Oct. 29, 1979, 7937458; Jan. 22, 1980, 8002105

Int. Cl.³ C07D *487/04*

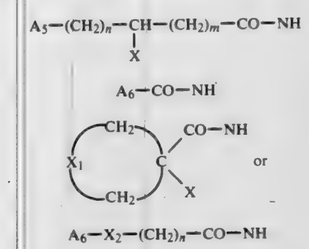
U.S. Cl. 260—245.2 T **12 Claims**

1. A process for the preparation of a compound of the formula (V):



(V)

or a pharmaceutically acceptable salt or ester thereof wherein R^3 is hydrogen, HO_3S— or R^5CO wherein R^5 is alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms, aryl, arylalkyl of 1 to 6 carbon atoms in the alkyl moiety or aryloxyalkyl of 1 to 6 carbon atoms in the alkyl moiety wherein the aryl moiety is phenyl unsubstituted or substituted by alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, chloro or fluoro and R^{18} is a group such that the R^{18} —CO—NH moiety is a group of the sub-formulae (a)–(d):



(a)

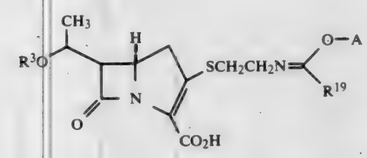
(b)

(c)

or

(d)

wherein n is 0, 1 or 2; m is 0, 1 or 2; A_5 is hydrogen, alkyl of 1–6 carbon atoms, cycloalkyl of 3–6 carbon atoms, cyclohexenyl, cyclohexadienyl, phenyl, hydroxyphenyl, thienyl or pyridyl; X is a hydrogen, fluorine, bromine or chlorine atom, carboxy, a carboxyl ester, azido, tetrazolyl, hydroxy, acyloxy, amino, ureido, guanidino or acylureido group; A_6 is phenyl, 2,6-dimethoxyphenyl, 2-alkyoxy-1-naphthyl, 3-arylisoxazolyl, isothiazolyl, thiazolyl or 3-aryl-5-methylisoxazolyl wherein aryl is as above defined; X_1 is CH_2OCH_2, CH_2SCH_2 or $(CH_2)n$ wherein n is as above defined; and X_2 is an oxygen or sulphur atom, which process comprises the reaction of a pharmaceutically acceptable ester or an ester convertible to a pharmaceutically acceptable ester by chemical or biological methods of a compound of the formula (VI):

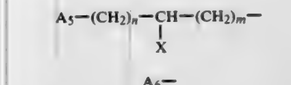


(VI)

wherein R^3 is as above defined except that any group capable of being acylated is optionally protected, A is a hydrocarbon of 1 to 8 carbon atoms, and R^{19} is a group of the sub-formulae (a)–(d) as above defined wherein the moiety —CO—NH is not present and wherein R^{19} is not the same as R^{18}; with a catalyst in the presence of an acid acceptor with an N-acylating derivative of a carboxylic acid of the formula (VII):

$$R^{18}CO_2H \qquad \text{(VII)}$$

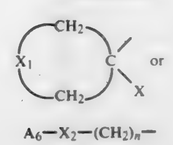
wherein R^{18} is a group of the sub-formulae (a)–(d):



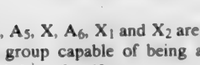
(a)

(b)

-continued



(c)



(d)

wherein n, m, A_5, X, A_6, X_1 and X_2 are as above defined and wherein any group capable of being acylated is optionally protected, and thereafter if necessary:
(i) converting any cleavable ester group into a free acid, a pharmaceutically acceptable salt or different ester,
(ii) removing any protecting groups.

4,387,052

ANTIBIOTIC PA-39504-X_3 AND PRODUCTION THEREOF

Kentaro Tanaka, Suita; Eiji Kondo, Ikeda; Kouichi Matsumoto, Toyonaka; Jun'ichi Shoji, Hirakata, and Naoki Tsuji, Ashiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Jul. 27, 1981, Ser. No. 286,757

Claims priority, application Japan, Aug. 25, 1980, 55-117182

Int. Cl.³ C07D *487/04;* **A61K** *31/40*

U.S. Cl. 260—245.2 T **2 Claims**

1. Antibiotic PA-39504-X_3 of the formula:

or a pharmaceutically acceptable salt thereof.

4,387,053

STABILIZATION OF OXIME CARBAMATES WITH GALLIC ACID, LOWER ALKYL ESTER DERIVATIVES THEREOF

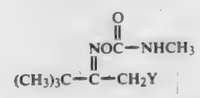
James P. Glatzhofer, Chardon, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Nov. 23, 1981, Ser. No. 323,825

Int. Cl.³ C07C *117/00, 131/00*

U.S. Cl. 260—349 **8 Claims**

1. A stabilized composition comprising an oxime carbamate of the formula:



wherein Y is —SCH_3 or —N_3, in combination with gallic acid or a lower alkyl esters thereof as stabilizer for said oxime carbamate.

4,387,054

PROCESS FOR THE PREPARATION OF QUINIZARIN

Reinold Schmitz, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 30, 1979, Ser. No. 43,805

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830554

Int. Cl.³ C07C *49/68;* **C09B** *1/02*

U.S. Cl. 260—383 **9 Claims**

1. In a process for the preparation of quinizarin by reaction of a mixture of phthalic anhydride, p-chlorophenol, sulphuric acid and boric acid or boric anhydride at an elevated tempera-

ture, the improvement wherein the reaction mixture there is sulphuric acid containing at least 10 percent by weight of free SO_3 and the weight ratio of p-chlorophenol to the total amount of $H_2SO_4 + SO_3$ is 1:1.5 to 4.0.

4,387,055

COPPER OXALATE COMPLEXES

Gerald Doyle, Whitehouse Station, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 13, 1981, Ser. No. 282,651
Int. Cl.³ C07F *1/08*
U.S. Cl. 260—438.1 **9 Claims**

1. A composition of matter comprising a cuprous oxalate complex of the formula $Cu_2(CO)_nL_mC_2O_4$ where L is an unsaturated hydrocarbon containing at least one non-aromatic unsaturation capable of forming a Cu-L bond and n and m are numbers from 0 to 2, provided that n and m cannot both be 0.

4,387,056

PROCESS FOR SEPARATING ZERO-VALENT NICKEL SPECIES FROM DIVALENT NICKEL SPECIES

Gerald T. Stowe, Orange, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 16, 1981, Ser. No. 254,780
Int. Cl.³ C07F *15/04*
U.S. Cl. 260—439 R **7 Claims**

1. A process for separating zero-valent nickel species from divalent nickel species each in a solution of predominantly an organic phosphorus compound along with minor amounts of mononitriles and less than 10% by weight of dinitriles based upon the weight of said solution which comprises contacting said solution with a solvent selected from the class consisting of hydrocarbons having 5–9 carbon atoms, halohydrocarbons having 1–3 carbon atoms, nitriles having 2–5 carbon atoms and mixtures of the foregoing in an amount sufficient to form a precipitate and a single liquid phase and thereafter separating the precipitate from the liquid.

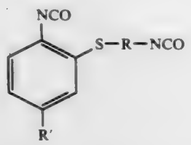
4,387,057

NEW DIISOCYANATES CONTAINING SULFUR AND A PROCESS FOR THEIR PREPARATION

Jürgen Schwindt; Gerhard Grögler; Otto Ganster, all of Leverkusen, and Johannes Koster, Steinau-Naustall, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 2, 1980, Ser. No. 136,624
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2916135
Int. Cl.³ C07C *119/048*
U.S. Cl. 260—453 AR **5 Claims**

1. Diisocyanates corresponding to the general formula:



wherein

R represents a saturated aliphatic hydrocarbon group having from 2 to 12 carbon atoms in which at least 2 carbon atoms are situated between the isocyanate group and the sulfur atom, or a paraphenylene group which optionally may have a bromine or chlorine substituent or a substituent selected from the group R″, O—R″, S—R″ or SO_2—R″ in at least one ortho-position to the isocyanate group on the paraphenylene group;

R′ represents hydrogen, bromine, chlorine, SO_2—R″, OR″ or SR″; and

R″ represents an alkyl group having from 1 to 4 carbon atoms.

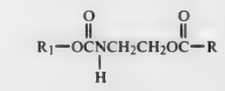
4,387,058

CARBAMIC ACID DERIVATIVES

Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 2, 1981, Ser. No. 307,962
Int. Cl.³ C07C *121/50, 121/62, 125/067*
U.S. Cl. 260—465 D **6 Claims**

1. A compound of the formula



wherein

R represents 1–8C alkyl, phenyl or naphthyl, said phenyl and naphthyl groups being optionally substituted with one or more halo, nitro, cyano, 1–8C alkoxy, 1–8C alkyl or 1–8C alkylthio groups; and

R_1 represents phenyl or naphthyl optionally substituted with one or more halo, nitro, 1–8C alkoxy, 1–8C alkyl, cyano, or 1–8C alkylthio groups.

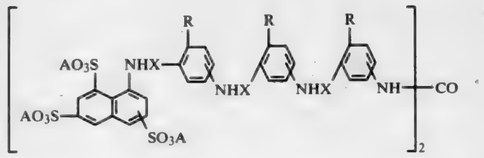
4,387,059

UREYLENEBIS SUBSTITUTED (OR UNSUBSTITUTED) PHENYLENE-CARBONYL (OR SULFONYL)-IMINO-1,3,5 OR 6-NAPHTHALENE-TRISULFONIC ACIDS AND SALTS

Ransom B. Conrow, Pearl River; John F. Poletto, Nanuet, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 25, 1981, Ser. No. 324,749
Int. Cl.³ C07C *143/30*; C07D *241/06, 213/20*
U.S. Cl. 260—506 **3 Claims**

1. A compound selected from those of the formula:



wherein X is selected from the group consisting of —CO— and —SO_2—; R is selected from the group consisting of hydrogen and —SO_3A; and A is selected from the group consisting of hydrogen and a nontoxic pharmaceutically acceptable salt cation, wherein the salt forming moiety is selected from the group consisting of alkali metal, alkaline earth metal, ammonia and substituted ammonia selected from the group consisting of trialkylamine (C_1–C_6), piperidine, pyrazine, alkanolamine (C_2–C_6) and cycloalkylamine (C_3–C_6).

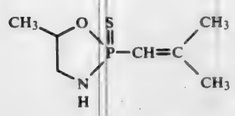
4,387,060

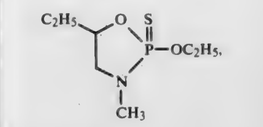
2-THI-1,3,2-OXAZAPHOSPHOLANES

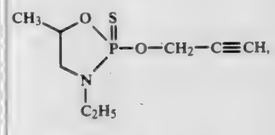
Hellmut Hoffmann; Bernd-Wieland Krüger, both of Wuppertal, and Wolfgang Behrenz, Overath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

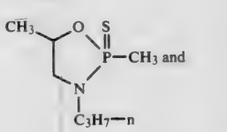
Filed Nov. 3, 1980, Ser. No. 202,906
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945036; Nov. 8, 1979, 2945101
Int. Cl.³ C07F *9/24*; A01N *57/26*
U.S. Cl. 260—936 **6 Claims**

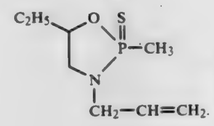
1. A compound selected from the group consisting of











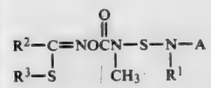
4,387,061

PROCESS FOR PREPARING PHOSPHINIC ACID DERIVATIVES OF AMINOTHIO METHYLCARBAMATES

Tetsumi Suzuki, Isehara; Naoshi Imaki, Atsugi, and Takemi Nakanome, Sagamihara, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Japan

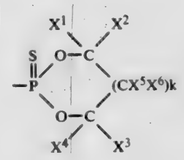
Filed Aug. 20, 1981, Ser. No. 294,634
Claims priority, application Japan, Sep. 2, 1980, 55-121656
Int. Cl.³ C07F *9/24*
U.S. Cl. 260—968 **11 Claims**

1. A process for preparing N-thio-methylcarbamates of the formula (III):



(III)

wherein A is of the formula (a) or (b):



(a)

wherein X^1, X^2, X^3, X^4, X^5 and X^6 are the same or different and are selected from the group consisting of hydrogen, methyl and ethyl and k is 0 or 1;



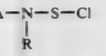
(b)

wherein

Y^1 and Y^2 are the same or different and are lower alkoxy of 1 to 10 carbon atoms;

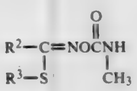
R^1 is a lower alkyl of 1 to 10 carbon atoms or cycloaklkyl of 3 to 10 carbon atoms and R^2 and R^3 are lower alkyl of 1 to 10 carbon atoms, said process comprising:

reacting N-(halothio)phosphinic acid amide of the formula (I)



(I)

wherein R and A are as defined above; with a carbamate compound of the formula (II):



(II)

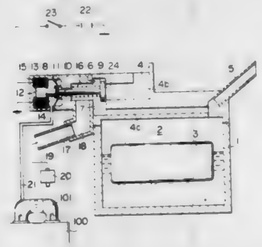
wherein R^2 and R^3 are as defined above; in the presence of an acid acceptor and a cupric halide selected from cupric bromide and cupric chloride.

4,387,062

CARBURETOR FLOAT CHAMBER VENTING SYSTEM

Yoshiyuki Tanaka, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jan. 21, 1982, Ser. No. 341,263
Claims priority, application Japan, Jun. 17, 1981, 56-94495
Int. Cl.³ F02M *5/08*
U.S. Cl. 261—23 A **3 Claims**



1. A carburetor float chamber venting system, for a double barreled carburetor having a primary throat, a secondary throat and a float chamber and adapted to supply fuel-air mixture to an internal combustion engine having an intake system, a fuel vapor absorption device, and an ignition switch, comprising:

a primary intake system float chamber venting passage which leads from an upper part of said float chamber to said primary throat;

a secondary intake system float chamber venting passage which leads from a first intermediate part of said primary intake system float chamber venting passage to said secondary throat;

a fuel vapor absorption device float chamber venting passage which leads from a second intermediate part of said primary intake system float chamber venting passage

located on the remote side of said first intermediate part thereof as viewed from said upper part of said float chamber to said fuel vapor absorption device; and

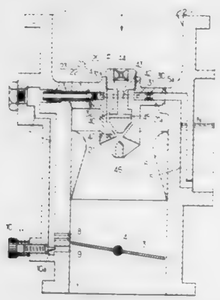
a control valve, provided at a part of said fuel vapor absorption device float chamber venting passage, whose operation controls the communication and interception between said second intermediate part of said primary intake system float chamber venting passage and said fuel vapor absorption device via said fuel vapor absorption device float chamber venting passage.

4,387,063

CARBURETTORS COMPRISING A MAIN FUEL CIRCUIT AND AN AUXILIARY CIRCUIT

Michael Pontoppidan, Chatou, France, assignor to Societe Industrielle de Brevets et d'Etudes S.I.B.E., Neuilly-sur-Seine, France

Filed May 12, 1981, Ser. No. 262,912
Int. Cl.³ F02M *3/08*
U.S. Cl. 261—41 D **9 Claims**



1. A carburettor for an internal combustion engine, comprising:

a carburettor body,

an induction passage formed in said body and provided with a venturi portion,

a distribution block arranged and dimensioned for insertion and removal through said induction passage to and from a service position in said fuel induction passage, in the vicinity of said venturi,

means for removably securing said distribution block in said service position,

a main fuel delivery circuit for normal running comprising passage means formed in said body and main fuel metering means, said main metering means being, entirely located in said distribution block and arranged for connection with said passage means when said block is at said service location, there being no main fuel metering means upstream of said main fuel metering means,

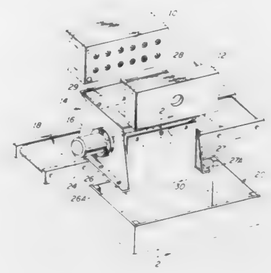
at least one auxiliary circuit for supplying to the engine a flow of fuel/air mixture for low speed and idle operation of the engine, comprising supplemental passage means formed in said body and supplemental fuel metering means, said supplemental metering means being entirely located in said distribution block and arranged for connection with said supplemental passage means when said block is at said service location, whereby said distribution block including all fuel metering means of said carburettor may be removed or replaced by another block without dismantling the carburettor.

4,387,064

METHOD AND APPARATUS FOR SORTING DEFECTIVE PARTS

Frank J. Werderitch, 120 Tamworth Pl., Schaumburg, Ill. 60172, and Frank A. Eltvedt, 5 Lake Dr., Lake In The Hills, Ill. 60102

Filed Aug. 3, 1981, Ser. No. 289,494
Int. Cl.³ B07C *5/02, 5/36;* B29F *1/14*
U.S. Cl. 264—40.1 **8 Claims**



1. A method of sorting acceptable parts from defective parts produced by a parts producing machine having at least one operating variable whose value is determinative of the acceptability of the parts being produced, comprising the steps of

sensing said variable during a part production cycle of said machine to provide a control signal when the value of said variable is within a predetermined range,

positioning a parts sorter mechanism responsive to said control signal in proximity to said machine to intercept parts produced by said machine,

causing said parts sorter to respond to said signal to separate the parts produced by said machine when the value of said variable is within said range from the parts produced by said machine when the value of said variable is outside of said range,

determining whether the value of said variable is above or below said range, and

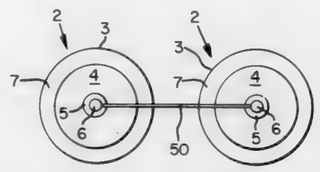
separating the parts produced when the value of said variable is above said range from the parts produced when the value of said variable is below said range.

4,387,065

SYSTEM AND METHOD FOR CONTINUOUSLY PREVENTING FILAMENT BRIDGING BETWEEN ADJACENT DRAW NOZZLES

Imants Reba, and Edward C. Wolthausen, both of Vancouver, Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Nov. 2, 1981, Ser. No. 317,361
Int. Cl.³ B28B *7/04*
U.S. Cl. 264—39 **10 Claims**



1. A method for continuously preventing filament bridging between adjacent draw nozzles which comprises:

(a) interposing a heating element between said adjacent draw nozzles and positioning same in the path of filaments attempting to bridge said adjacent draw nozzles; and

(b) adjustably maintaining the temperature of said heating element at a level high enough above the melting point of the filaments so that filaments contacting said heating element will be continuously and instantaneously melted.

4,387,066

METHOD OF MAKING A FOAMED RESIN SHEET

Wolfgang Pip, Darmstadt, Fed. Rep. of Germany, assignor to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jun. 3, 1980, Ser. No. 156,185
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1979, 2929165
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—55 **4 Claims**



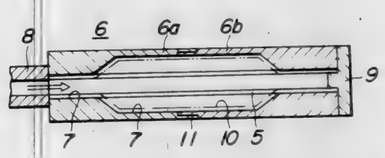
1. A method for making a foamed resin sheet from a solid body of foamable unfoamed synthetic resin containing a blowing agent, said foamable unfoamed body having a predetermined lateral shape and dimensions and a predetermined thickness, which method comprises foaming said foamable unfoamed body by heating it to a temperature which initiates foaming while said body is present within the closed cavity of a mold having rigid mold walls with sufficient mechanical strength to withstand without deformation the pressure of the foaming body and continuing foaming until said closed mold cavity is completely filled, said mold cavity having a lateral base the shape of which is geometrically similar to but larger than the lateral shape of said foamable unfoamed body and further having a depth which is greater than the thickness of said foamable unfoamed body, the ratio of the depth of said mold cavity to the thickness of said foamable unfoamed body being greater than the ratio of the dimensions of the lateral base of said mold cavity to the lateral dimensions of said foamable unfoamed body, whereby said foamable unfoamed body expands when foaming to fill said mold cavity laterally before filling said mold cavity to its entire depth; and then cooling the resultant foamed resin sheet below the foaming temperature while in the now-filled closed mold cavity.

4,387,067

CERAMIC ARC TUBE OF METAL VAPOR DISCHARGE LAMPS AND A METHOD OF PRODUCING THE SAME

Kazuo Kobayashi, Nagoya; Mamoru Furuta, Toyoake, and Yoshio Maeno, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jan. 29, 1981, Ser. No. 229,503
Claims priority, application Japan, Feb. 6, 1980, 55-12377; Feb. 28, 1980, 55-24207[U]; Feb. 28, 1980, 55-24208[U]; Mar. 4, 1980, 55-27790[U]; Mar. 11, 1980, 55-31354[U]; Mar. 27, 1980, 55-41230[U]
Int. Cl.³ C04B *35/64*
U.S. Cl. 264—63 **2 Claims**



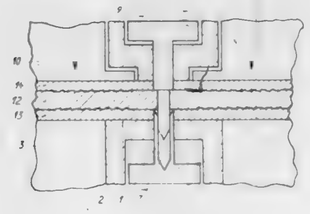
1. A method of producing a ceramic arc tube of metal vapour discharge lamps, comprising steps of forming a tubular green body by a mixture material containing fine alumina particles and plasticizer whose main ingredient is non-thermoplastic organic substance; shaping said tubular green body in a fusiform cavity of a die by applying fluid pressure to inside of said tubular green body so as to inflate a middle portion of the tubular green body more than end portions thereof; and firing the thus shaped green body after removal thereof from said die.

4,387,068

METHOD FOR THE MANUFACTURE OF FLEXIBLE DISKS

Raymond Llabrés; Robert Antoine; Jean-Pierre Lacotte, and Charles Marchi, all of Paris, France, assignors to Thomson-CSF, Paris, France

Division of Ser. No. 109,041, Jan. 2, 1980, Pat. No. 4,313,718. This application Dec. 22, 1981, Ser. No. 333,371
Claims priority, application France, Jan. 4, 1979, 79 00199
Int. Cl.³ B29D *17/00*
U.S. Cl. 264—107 **5 Claims**



1. In a method for the manufacture of flexible disks engraved on at least one side by means of a compression press having a fixed plate and a moving plate, a first engraved mold being carried by one of said plates and a second engraved mold or counter-mold being carried by the other of said plates, the improvement comprising the steps of:

bringing a strip of material between said plates of said compression press with said plates being open;

making a preliminary hole in the strip by means of a punch carried by the moving plate during the closing of said plates;

matching said punch to a second hollow punch carried by the other of said plates with said punches serving as centering means for the molds carried by said plates and one of said punches floating in the corresponding plate in such a way that the molds are centered with respect to one another at the end of the closing phase due to the engagement of said first punch in said second punch; and

cutting a central hole in the strip by means of said second punch with said second punch being maintained in the end of its travel position throughout the end of the pressing cycle.

4,387,069

METHOD OF MANUFACTURING POLYESTER FIBERS WITH GOOD ADHESION TO RUBBER

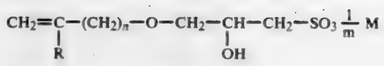
Shigemitsu Murase, Joyo, Japan, assignor to Unitika Limited, Kyoto, Japan

Filed Nov. 2, 1981, Ser. No. 317,668
Claims priority, application Japan, Nov. 19, 1980, 55/163714
Int. Cl.³ D01D *5/12;* D01F *11/00;* D06M *1/00;* C07C *143/02*
U.S. Cl. 264—210.3 **17 Claims**

1. A finish composition for polyester fiber to improve adhesion to rubber comprising a lubricant and

(a) about 5 to 50 weight percent of an epoxy compound, and

(b) about 5 to 30 weight percent of a compound expressed by the general formula



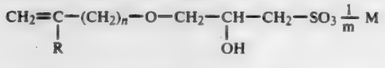
where R is hydrogen, an alkyl group, a cycloalkyl group, or an aryl group; M is an alkali metal or an alkaline earth metal; n is an integer from 0 to 10; m is 1 when M is an alkali metal and m is 2 when M is an alkaline earth metal.

11. A method of producing polyester fiber with improved adhesion to rubber comprising

(i) applying to the fiber a finish composition comprising a lubricant and

(a) about 5 to 50 weight percent of an epoxy compound, and

(b) about 5 to 30 weight percent of a compound expressed by the general formula



where R is hydrogen, an alkyl group, a cycloalkyl group, or an aryl group; M is an alkali metal or an alkaline earth metal; n is an integer from 0 to 10; m is 1 when M is an alkali metal and m is 2 when M is an alkaline earth metal,

followed by

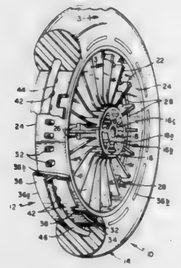
(ii) heating the fiber at a temperature of about 150° to 250° C. for up to several seconds.

4,387,070

METHOD FOR MAKING A WHEEL WITH AN INTEGRAL TIRE

Joel C. Cunard, and William H. Ziegler, Jr., both of Bedford, Pa., assignors to Brown Group Recreational Products, Inc., Bedford, Pa.

Filed Jan. 22, 1981, Ser. No. 227,158
Int. Cl.³ B29C *5/00*; B29D *3/00*; B29H *3/08*
U.S. Cl. 264—247 **7 Claims**



1. The method of making a wheel comprising the steps of

A. forming a rigid plastic wheel rim with an integral flange member spaced radially outward from the rim,

B. placing the rim in a generally toroidal mold cavity with the rim forming a radially inner wall of the cavity,

C. dimensioning the rim and cavity so that

(1) the opposite edges of the rim engage the cavity wall forming seals therewith, and

(2) engaging at least one side edge portion of the flange member with the cavity wall between radially inner and outer extents thereof, and

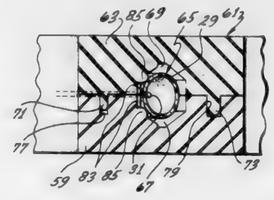
D. filling the cavity with hardenable plastic material and hardening said material to form a tire which encircles and is mechanically connected to the rim by way of its flange member with said on side edge portion of the flange member forming a side wall decoration on said tire.

4,387,071

NON-PNEUMATIC TIRE AND METHOD OF MAKING THE SAME

William J. Kirkhuff, Santa Ana, Calif., assignor to Engineering Products of America, Santa Ana, Calif.

Filed Oct. 26, 1981, Ser. No. 314,711
Int. Cl.³ B29D *3/02*; B29H *3/08*
U.S. Cl. 264—279.1 **16 Claims**



1. A method of making a non-pneumatic tire comprising:

providing a tube in a generally hoop-like configuration and having a circumferentially extending passage, an opening in the wall of the tube leading to the passage, and an elongated flexible element extending through said passage and having end portions;

attaching the end portions of the elongated flexible element together, utilizing said opening in the tube wall with said flexible element tightly circumferentially gripping the tube; and

molding a casing over the tube.

4,387,072

NOVEL PALLADIUM ALLOY AND DENTAL RESTORATIONS UTILIZING SAME

Stephen P. Schaffer, Bloomfield, Conn., assignor to The J. M. Ney Company, Bloomfield, Conn.

Filed Apr. 27, 1982, Ser. No. 371,801
Int. Cl.³ C22C *5/04*
U.S. Cl. 420—463 **11 Claims**

1. A dental alloy consisting essentially of:

a. 50–85 percent by weight palladium;

b. 5–40 percent by weight of at least one metal selected from the group of cobalt and copper;

c. 1-15 percent by weight gallium;

d. up to 5 percent by weight of a modifier selected from the group consisting of nickel, gold, indium, ruthenium, tin and mixtures thereof;

e. up to 1 percent by weight boron; and

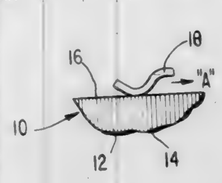
f. up to 0.5 percent by weight of a grain refiner selected from the group consisting of rhenium, iridium, and mixtures thereof, said alloy having a thermal expansion of about 0.66–0.72 percent at 500° C., a solidus temperature of at least 1100° C., a liquidus temperature of not more than 1400° C., Vickers hardness greater than 150, offset yield strength at 0.1 percent of greater than 40,000 p.s.i., and tensile elongation greater than 6 percent.

4,387,073

GOLD BASED ELECTRICAL CONTACT MATERIALS

Jack H. Westbrook, Ballston Spa, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 8, 1981, Ser. No. 299,750
Int. Cl.³ C22C *5/02*; H01H *1/02*
U.S. Cl. 420—507 **14 Claims**



13. A gold based electrical contact material comprising:

an eutectic structure comprising a matric metal consisting essentially of gold, a second phase rich in an alloying element consisting of one of the elements Ge, Si, and Mo, and the oxide of the alloying element, the eutectic structure having a contact boundary surface, the second phase rich in an alloying material being generally disposed in a plurality of elongated zones oriented generally parallel to each other with each zone having an elongated axis generally normal to the contact boundary surface, the elongated zones having been formed by directional solidification of the alloy, the oxide of the element having been formed by internal oxidation by subjecting the matrix metal to an oxidizing atmosphere containing oxygen at a temperature below the melting temperature of the matrix metal.

4,387,074

POLYOLS OF TETRAHYDROPYRIMIDINES AS CORROSION INHIBITORS

Bernardus A. Oude Alink, St. Louis, and Benjamin T. Outlaw, Webster Groves, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 81,748, Oct. 4, 1979, Pat. No. 4,343,941.
This application Dec. 31, 1981, Ser. No. 336,145
Int. Cl.³ C07D *239/06*; C23F *11/04, 11/12, 11/14*
U.S. Cl. 422—12 **7 Claims**

1. A process of inhibiting corrosion of metal in contact with a water-containing corrosive medium which comprises adding to said medium a corrosion-inhibiting amount of at least one methylol derivative of 2,3,4,5-tetrahydropyrimidines where there is a methylol substitution at two or more of the following positions:

(1) the ring-N at the 3 position;

(2) the ring carbon at the 5 position; and

(3) 1 or 2 hydrogens of the α-methyl group at the 6 position.

4,387,075

PREANALYTICAL PROCESSING APPARATUS FOR ION EXCHANGE RESIN

James R. Morgart, Stillman Valley, Ill., assignor to Illinois Water Treatment Company, Rockford, Ill.

Filed Jun. 8, 1981, Ser. No. 271,726
Int. Cl.³ G01N *31/04*
U.S. Cl. 422—50 **8 Claims**

1. Apparatus to provide an effluent, from which ion-exchange capacity of a sample of a selected type of ion-exchange resin can be determined analytically, said apparatus comprising

(a) a column, which has an inlet and an outlet, and which is adapted to contain the sample between the inlet and the outlet,

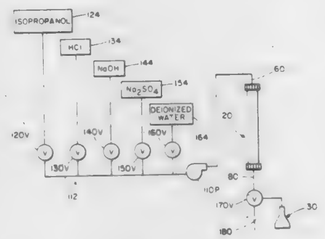
(b) a receiver, which is connected to the outlet,

(c) a solenoid means, which is connected to and between the outlet and the receiver, which is adapted to be connected to a drain, which is switchable between a first state wherein the solenoid means (c) allows an effluent to flow from the outlet to the receiver but not to the drain and a second state wherein the solenoid means (c) allows an effluent to flow from the outlet to the drain but not to the receiver, and which is switched normally to its second state,

(d) a solenoid valve, which is connected to the inlet, which is adapted to be connected to a source of a regenerating agent of a suitable type for regenerating the selected type of ion-exchange resin, so as to allow the regenerating agent to flow into the inlet when the solenoid valve (d) is opened, and so as not to allow the regenerating agent to flow into the inlet when the solenoid valve (d) is closed, and which is closed normally,

(e) a solenoid valve, which is connected to the inlet, which is adapted to be connected to a source of a rinsing agent of a suitable type for rinsing the selected type of ion-exchange resin in its regenerated form without reacting with the selected type of ion-exchange resin in its regenerated form, so as to allow the rinsing agent to flow into the inlet when the solenoid valve (e) is opened, and so as not to allow the rinsing agent to flow into the inlet when the solenoid valve (e) is closed, and which is closed normally,

(f) a solenoid valve, which is connected to the inlet, and which is adapted to be connected to a source of an exhausting agent of a suitable type for exhausting ion-exchange capacity of the selected type of ion-exchange resin in its regenerated form, so as to allow the exhausting agent to flow into the inlet when the solenoid valve (f) is



opened, and so as not to allow the exhausting agent to flow into the inlet when the solenoid valve (f) is closed, and which is closed normally, and

(g) electronic sequencing means, including a plurality of cascaded monostable multivibrators used as a plurality of sequencing timers, each of said monostable multivibrators having a preselected time constant, a first monostable multivibrator of said plurality being settable by manual switch means to initiate the timing sequences, at least one of said other monostable vibrators of said plurality being responsive to completion of a timing signal from said first monostable multivibrator, which operates sequentially

(1) for a regenerating function wherein the means (g) causes the solenoid valve (d) to be opened, while the solenoid means (c) is switched to its second state, and while the solenoid valve (e) and the solenoid valve (f) are closed, the regenerating function continuing for a timed period sufficient for the sample to be regenerated completely,

(2) for a rinsing function wherein the means (g) causes the solenoid valve (e) to be opened, while the solenoid means (c) is switched to its second state, and while the solenoid valve (d) and the solenoid valve (f) are closed, the rinsing function continuing for a timed period sufficient for any residue of the regenerating agent to be rinsed completely from the sample, and

(3) an exhausting function wherein the means (g) causes the solenoid means (c) to be switched to its first state, and the solenoid valve (f) to be opened, while the sole-

noid valve (d) and the solenoid valve (e) are closed, the exhausting function continuing for a timed period sufficient for ion-exchange capacity of the sample of the selected type of ion-exchange resin in its regenerated form to be exhausted completely,

whereby when the sample has been placed in the column between the inlet and the outlet, the solenoid means (c) has been connected to the drain, the solenoid valve (d) has been connected to the source of the regenerating agent, the solenoid valve (e) has been connected to the source of the rinsing agent, the solenoid valve (f) has been connected to the source of the exhausting agent, and the means (g) has operated sequentially through the exhausting function, the receiver contains an effluent, from which ion-exchange capacity of the sample can be determined analytically.

4,387,076

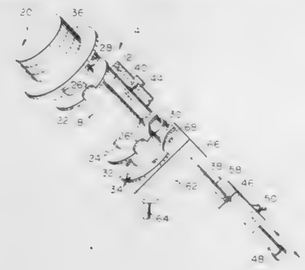
SAMPLE FEEDING ARRANGEMENT

Pedro P. Cabrera; Glenn D. Talbot, both of Miami, and Larry C. Carman, Hialeah, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 14, 1981, Ser. No. 311,221

Int. Cl.³ G01N *31/02*

U.S. Cl. 422—67 **10 Claims**



1. A sample feeding arrangement for operatively introducing a sealed sample container into a semiautomatic sample analyzer for thereupon enabling the analyzer automatically to obtain sample material and automatically to sequence through a full analyzer cycle, said feeding arrangement comprising: sample container holding means for receiving a sealed sample container and for positioning same into a sample drawing position, control means responsive to the sample container being properly positioned for sample drawing, said container holding means being coupled to sample drawing means for withdrawing sample from the sealed container, and said control means being operatively coupled to analyzer system programming means for automatically enabling said sample drawing means and other of the analyzer operations.

4,387,077

PROCESS FOR THE RECOVERY OF SUBSTANTIALLY RADIUM FREE CALCIUM SULPHATE, YTTRIUM AND LANTHANIDES, AS WELL AS CALCIUM SULPHATE, YTTRIUM AND LANTHANIDES OBTAINED BY THIS PROCESS

Cornelis A. M. Weterings, Stein; Louis H. M. Ramakers, Heel, and Johannes A. Janssen, Schinveld, all of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Dec. 14, 1981, Ser. No. 330,519

Claims priority, application Netherlands, Dec. 20, 1980, 8006946

Int. Cl.³ C01F *1/00, 17/00;* **C22B** *59/00;* **C01B** *25/16*

U.S. Cl. 423—21.1 **10 Claims**

1. Process for the recovery of substantially radium free calcium sulphate, yttrium and lanthanides in a phosphoric acid preparation process comprising the steps of,

(a) digesting phosphate rock with an excess of phosphoric acid required for the formation of monocalciumphosphate in the presence of more than about 5% by weight of sulphate ions calculated in respect of the quantity of phosphate rock to form a digestion liquor comprising an insoluble residue and a monocalcium phosphate solution,

(b) separating out said insoluble residue from said digestion liquor,

(c) precipitating calcium sulphate from the monocalcium phosphate solution with sulphuric acid forming a calcium sulphate precipitate and a phosphoric acid solution,

(d) separating said precipitated calcium sulphate from said phosphoric acid solution, and

(e) separating yttrium and lanthanides from said insoluble residue of step (b).

4,387,078

PROCESS FOR EFFECTING REMOVAL OF SULFUR OXIDE GASES FROM STACK GASES

Ping-Wha Lin, 506 S. Darling, Angola, Ind. 46703

Filed Jul. 22, 1981, Ser. No. 286,016

Int. Cl.³ B01J *8/00;* **C01B** *17/00*

U.S. Cl. 423—244 **7 Claims**

1. A process for effecting desulfurization comprising the steps of:

passing a flow of calcium oxide through a reactor containing sulfur trioxide gas,

withdrawing the reaction product of the calcium oxide and sulfur trioxide,

temperature quenching such reaction product to effect a porous core of unreacted calcium oxide and an outer shell of cracked calcium sulfate,

hydrating the quenched calcium oxide core and cracked outer coating of calcium sulfate to effect a hydrated calcium oxide core, and

continuously resupplying such hydrated product to the reactor for additional reaction with sulfur trioxide within the core region.

4,387,079

METHOD OF MANUFACTURING HIGH-PURITY SILICON NITRIDE POWDER

Kiyoshi Kasai; Kohji Tsukuma, and Takaaki Tsukidate, all of Kanagawa, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin Nanyo, Japan

Continuation of Ser. No. 188,587, Sep. 18, 1980, abandoned, which is a continuation of Ser. No. 111,093, Jan. 10, 1980, abandoned. This application Sep. 8, 1981, Ser. No. 299,939

Claims priority, application Japan, Jan. 10, 1979, 54-751

Int. Cl.³ C01B *21/068*

U.S. Cl. 423—344 **3 Claims**

1. A method of manufacturing highly purified silicon nitride including the steps of:

preparing a nitrogen-containing silane selected from the group consisting of tetra-amide-monosilane and silicon imide;

heat-treating the prepared nitrogen-containing silane in the presense of ammonia in an inert atmosphere at a temperature above 400° C. for a period of at least 2 hours to obtain silicon nitride, and cooling and collecting the silicon nitride thus formed;

wherein the step of preparing the nitrogen-containing silane comprises continuously reacting gaseous silicon tetrachloride with gaseous ammonia in an inert gas atmosphere at a temperature of from −30° to 70° C. to produce the nitrogen-containing silane as a product; and

collecting the product; the resultant silicon nitride so produced having a chlorine content of less than 0.05 weight percent and a nitrogen content of over 38 weight percent.

4,387,080

FLAKY β-SILICON CARBIDE AND CERAMICS HAVING LAMINAR STRUCTURE PRODUCED THEREFROM

Tokuaki Hatta; Haruyuki Ueno; Yuji Katsura; Kazushige Fukuda; Hiroshi Kubota, and Takashi Hamamatu, all of Kitakyushu, Japan, assignors to Kurosaki Refractories Co., Ltd., Fukuoka, Japan

Filed Jan. 30, 1981, Ser. No. 230,179

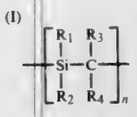
Claims priority, application Japan, Jan. 31, 1980, 55-11281

Int. Cl.³ B32B *5/16;* **C04B** *35/56*

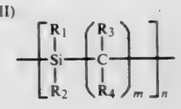
U.S. Cl. 423—345 **2 Claims**

1. Flaky β-SiC having a flaky shape with a thickness of 10 to 100μ and a width and length of 100μ to 10 mm., said flaky β-SiC being obtained from an organic silicon polymer or a mixture of organic silicon polymers containing the carbon and silicon atoms as the major skeletal components, each of said polymers including at least one of the following unit structures (I)–(IV):

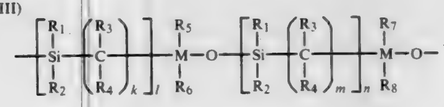
(I)



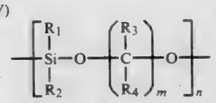
(II)



(III)



(IV)



wherein R_1 is $-CH_3$, and R_2, R_3 and R_4 are one or more members selected from the group consisting of hydrogen, alkyl, aryl, $(CH_3)_2CH-$, $(C_6H_5)_2SiH-$ and $(CH_3)_3Si-$;

k, l, m and n are the respective numbers of repetition of the unit structures defined by the immediately preceding parentheses or brackets and k=1–80, l=15–350, m=1–80, and n=15–350, the average molecular weight of the polymer being in the range of 800–20000;

M is a metallic or nonmetallic element comprising Si, B, Ti, Fe, Al, Zr or Cr; and

R_5, R_6, R_7 and R_8 are one or more members selected from the group consisting of hydrogen, alkyl, aryl, $(CH_3)_2CH-$, $(C_6H_5)_2SiH-$ and $(CH_3)_3Si-$, and any one or more of R_5, R_6, R_7 and R_8 may be absent depending on the valence of M and the unit structure.

4,387,081

PROCESS FOR THE PRODUCTION OF HYDROGEN CYANIDE

Carl Voigt, Rodenbach; Peter Kleinschmit; Gerd Schreyer, both of Hanau, and Gerhard Sperka, Alzenau, all of Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt, Fed. Rep. of Germany

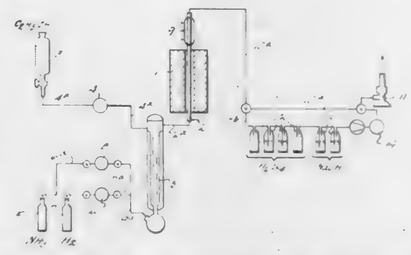
Filed Sep. 21, 1981, Ser. No. 304,049

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1980, 3036599

Int. Cl.³ C01C *3/02*

U.S. Cl. 423—376 **16 Claims**

1. In a process for obtaining hydrogen cyanide by reaction of a carbon containing compound with ammonia in the absence of oxygen in a ceramic tube coated internally with platinum metal or a platinum containing compound according to the conditions of the hydrocyanic acid-methane-ammonia process the improvement comprising employing in place of the methane as a reactant an aliphatic alcohol containing 2 to 4 carbon atoms and carrying out the reaction between the alcohol and ammonia employing an atomic ratio C:N of 0.8:1 to 2:1, removing



unreacted ammonia and separating the hydrogen cyanide formed from residual gas.

4,387,082

REMOVAL OF NITROUS OXIDE FROM EXIT GASES CONTAINING THIS COMPOUND DURING THE PRODUCTION OF HYDROXYLAMMONIUM SALTS

Alfred-Otto Grosskinsky; Elmar Frommer, both of Ludwigshafen, Fed. Rep. of Germany; Guenther Rapp, deceased, late of Ludwigshafen (by Ruth E. Rapp, Legal Representative); Erwin Thomas, Freinsheim, and Ruediger Schmitz, Lambsheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 1, 1982, Ser. No. 344,613

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1981, 3108075

Int. Cl.³ C01B *21/20, 21/00*

U.S. Cl. 423—387 **1 Claim**

1. In a process for producing hydroxylammonium salts by:

reacting nitric oxide with hydrogen in an aqueous solution of a mineral acid and in the presence of a suspended noble metal catalyst;

the improvement comprises washing the exit gases from the reaction vessel with from 80 to 300 l of water per m^3 of exit gases under a pressure of from 1.5 to 30 bar at a temperature of from 20° to 60° C. to remove nitrous oxide from the exit gases, and thereafter;

recycling the treated exit gases to the reaction vessel.

4,387,083

PROCESS FOR THE PREPARATION OF CALCIUM SULPHATE ANHYDRITE AND CALCIUM SULPHATE ANHYDRITE OBTAINED BY THIS PROCESS

Cornelis A. M. Weterings, Stein, and Johannes A. Janssen, Schinveld, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Continuation of Ser. No. 103,153, Dec. 13, 1979, abandoned. This application Apr. 24, 1981, Ser. No. 257,475

Claims priority, application Netherlands, Dec. 13, 1978, 7812109

Int. Cl.³ C01F *11/46;* **C01B** *25/16*

U.S. Cl. 423—555 **4 Claims**

1. Process for preparing calcium sulphate anhydrite crystals wherein calcium sulphate dihydrate is recrystallized at an elevating temperature in the presence of concentrated sulphuric acid comprising maintaining in the recrystallization zone a sulphuric acid concentration of 40–65% wt. calculated relative to the quantity of liquid phase in the recrystallization mixture and controlling the average particle size of the calcium sulphate anhydrite crystals by varying the temperature and residence time of the recrystallization mixture in the recrystallization zone so that the temperature is maintained between about 40° C. and about 90° C., and the residence time is from about 5 minutes to less than about 30 minutes,

thereby producing calcium sulphate anhydrite crystals

having an average particle size between about 0.5μ and about 3μ, and

wherein calcium sulphate anhydrite crystals of a given average particule size may be produced by varying the temperature in an inverse relationship to the acid concentration and wherein no anhydrite seed crystals are present in the reactor at the initiation of the recrystallization and wherein no anhydrite seed crystals are added to the recrystallization mixture.

4,387,084

PROCESS FOR TREATING THIOSULFATE CONTAINING LIQUORS

Bruce L. Brandenburg, Wausau, and Gerald L. Bauer, Rothschild, both of Wis., assignors to Sterling Drug Inc., New York, N.Y.

Filed Oct. 26, 1981, Ser. No. 314,859
Int. Cl.³ C01B *17/00*
U.S. Cl. 423—567 A **9 Claims**

1. A process for the treatment of thiosulfate containing liquors which also contain oxidizable components including one or more of thiocyanate, cyanide, elemental sulfur and organic compounds, comprising:

a. mixing said liquors with an acid to decompose thiosulfate to bisulfite and elemental sulfur;

b. separating and removing said elemental sulfur from said acidified liquors to produce liquors essentially free of elemental sulfur and thiosulfate; and

c. subjecting said sulfur free liquors to wet oxidation wherein remaining oxidizable substances including one or more of thiocyanate, cyanide and organic compounds are oxidized by air or oxygen at elevated temperatures and pressures.

4,387,085

PROCESS FOR PREPARING HIGH SURFACE AREA ALUMINA

Anthony J. Fanelli, Rockaway, and Arthur T. Walsh, Morris Plains, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 25, 1981, Ser. No. 324,722
Int. Cl.³ C01F *7/02*
U.S. Cl. 423—630 **4 Claims**

1. A process for preparing a high surface area alumina which comprises the steps:

(a) dissolving an aluminum trialkoxide in a secondary or tertiary alcohol solvent to form a water-free solution,

(b) heating the water-free solution to a first temperature at which the solvent decomposes to form an alkene or ether and water, and the water so formed hydrolyzes the aluminum trialkoxide to form alumina and alkanol; said first temperature being below the critical temperature of said solvent;

(c) cooling the solution to a temperature at which the decomposition of solvent stops; and

(d) recovering the alumina as a dry material of surface area at least about 500 m^2/g.

4,387,086

ORGANIC COMPOUNDS

Joachim Rosenthaler, Oberwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Sep. 8, 1980, Ser. No. 184,834
Claims priority, application Switzerland, Sep. 7, 1979, 8096/79
Int. Cl.³ G01N *33/54, 33/56, 33/58*
U.S. Cl. 436—541 **28 Claims**

1. A radioimmunoassay method for specifically determining thioidazine in a body fluid, comprising the steps of

(1) conjugating a thioridazine derivative with a protein to obtain a hapten-protein conjugate of thioridazine,

(2) administering said hapten-protein conjugate into an animal capable of developing antiserum to said conjugate,

(3) incubating said conjugate in said animal for a sufficient time to permit development of said antiserum,

(4) collecting said antiserum,

(5) tritiating thioridazine,

(6) incubating the antiserum, tritiated thioridazine and unknown plasma sample so as to permit binding in accordance with standard radioimmunoassay techniques, and

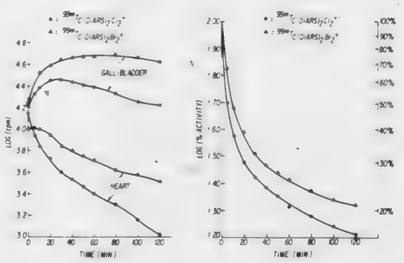
(7) measuring the radioactivity of the bound thioridazine and comparing it to a standard curve to ascertain thioridazine concentration.

4,387,087

CATIONIC LIPOPHILIC COMPLEXES OF ^{99m}TC AND THEIR USE FOR MYOCARDIAL AND HEPATOBILIARY IMAGING

Edward A. Deutsch, Cincinnati, and Kenneth A. Glavan, Poland, both of Ohio, assignors to Research Corporation, New York, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,618
Int. Cl.³ A61K *49/00, 43/00*
U.S. Cl. 424—1.5 **28 Claims**



1. A method of hepatobiliary imaging in a mammal which comprises:

administering to said mammal a hepatobiliary imaging amount of a cationic lipophilic complex of Tc-99m; and

detecting said Tc-99m complex in said mammal;

wherein said cationic lipophilic complex of Tc-99m has an n-octanol/saline partition coefficient greater than about 0.05.

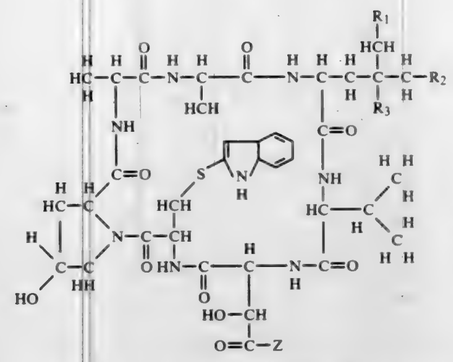
4,387,088

NBD-ACIDIC PHALLOTOXINS AND THEIR USE IN THE FLUORESCENCE STAINING OF F-ACTIN

Lawrence S. Barak, West Bloomfield, Mich.; Eugene A. Nothnagel, Litchfield, Minn.; Watt W. Webb, Ithaca, N.Y., and Robert R. Yocum, Cambridge, Mass., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Feb. 25, 1980, Ser. No. 124,208
Int. Cl.³ G01N *1/30, 21/64, 33/48;* C07C *103/52*
U.S. Cl. 424—3 **15 Claims**

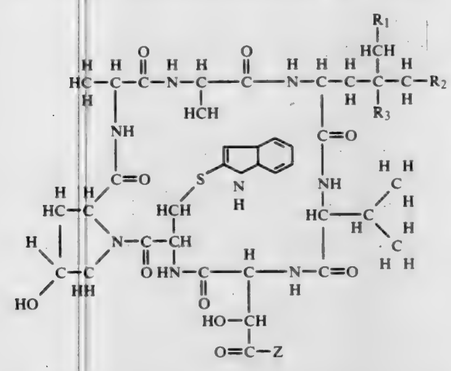
1. A compound corresponding to the formula:



wherein R_1, R_2, and R_3 are independently selected from the group consisting of H and OH and Z is an organic moiety which is a fluorophore derived from fluorescein, rhodamine B, tetramethyl rhodamine or eosin.

4. A process for the preparation of a compound as in claim 1 which comprises:

(a) reacting a compound corresponding to the formula:



wherein

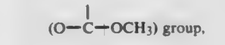
R_1, R_2, and R_3 are indepedently selected from the group consisting of H and OH, with

(B) diazomethane to form the methyl ester of the carobxyl group

(C) reacting the resultant methyl ester with ethylenediamine to form an

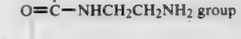


in place of the methyl ester

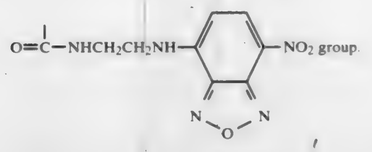


and

(D) reacting the resultant



with 4-chloro-7-nitrobenz-2-oxa-1,3-diazole to form the



7. A method of fluorescent staining F-actin and G-actin oligomers which comprises contacting said actin with a fluorescent stain comprising a compound as in claim 1 to bind said compound to said actin, thereby staining said actin.

4,387,089

4-(1,1-DIMETHYLETHYL)-4'-METHOXYDIBENZOYLMETHANE

Karl-Fred De Polo, Onex, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Continuation of Ser. No. 92,777, Nov. 8, 1979, abandoned. This application May 18, 1981, Ser. No. 264,774
Claims priority, application Switzerland, Nov. 13, 1978, 11639/78; Aug. 23, 1979, 7686/79
Int. Cl.³ C07C *49/245;* A61K *7/42*
U.S. Cl. 424—59 **17 Claims**

1. 4-(1,1-Dimethylethyl)-4'-methoxydibenzoylmethane.

2. A light-screen composition comprising an effective ultra violet absorbing amount of 4-(1,1-dimethylethyl)-4'-methoxydibenzoylmethane and at least one other organic material.

4,387,090

HAIR CONDITIONING COMPOSITIONS

Raymond E. Bolich, Jr., Maineville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 218,372, Dec. 22, 1980, abandoned, which is a continuation-in-part of Ser. No. 128,437, Mar. 10, 1980, abandoned. This application Feb. 13, 1981, Ser. No. 234,271
Int. Cl.³ A61K *7/06, 31/74, 31/745*
U.S. Cl. 424—70 **15 Claims**

1. A hair conditioning composition comprising:

(A) from about 1% to about 99% of a volatile liquid hair conditioning agent selected from the group consisting of hydrocarbons, silicones and mixtures thereof; and

(B) from about 0.005% to about 1% of a hydrophobic thickening agent having a mass average molecular weight of from about 50,000 to 5,000,000.

4,387,091

NON-ALLERGENIC PROTECTIVE ANTIGENS FROM MOLDS AND PROCESS FOR PREPARATION THEREOF

Hari M. Vijay; Noel M. Young, both of Ottawa, Canada, and I. Leonard Bernstein, Cincinnati, Ohio, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Mar. 5, 1981, Ser. No. 240,759
Int. Cl.³ A61K *39/00*
U.S. Cl. 424—88 **21 Claims**

1. A method of decreasing or preventing allergic reactions in animals allergic to molds comprising:

administering parenterally to an animal allergic to molds, in an amount sufficient to decrease or prevent susceptibility of said animal to mold allergens, a protein- and carbohydrate-containing antigenic fraction extracted from mold causing such allergic reactions,

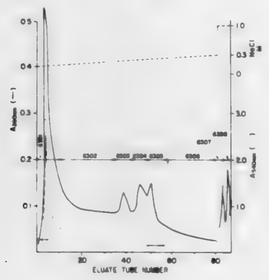
said fraction being characterized by being non-allergenic, and being obtained by steps comprising:

(a) defatting allergenic mold solids,

(b) extracting the defatted solids with an aqueous solution of pH about 7–8,

(c) dialyzing the extract solution to remove solute of less than about 10,000 MW,

(d) fractionating the extract by the equivalent of gel filtration on a medium operative to fractionate in the MW range about 10,000–100,000, and



(e) recovering the fraction showing RAST potency and lacking allergenicity, and capable of inducing IgG antibodies with the proviso that when the mold used to derive said antigenic fraction is *Alternaria tenuis* said fraction is equivalent to the narrow subfraction G3D5 in FIG. 2C.

4,387,092

PROCESS FOR THE PREPARATION OF FACTOR VIII CONCENTRATE

Jacques Liautaud, Limonest, France, and Edward Shanbrom, Santa Ana, Calif., assignors to Societe Anonyme dite: L'Oreal, Paris, France

PCT No. PCT/FR80/00102, § 371 Date Feb. 11, 1981, § 102(e) Date Feb. 11, 1981

PCT Filed Jun. 30, 1980, Ser. No. 237,135

Claims priority, application France, Jun. 29, 1979, 79 16966

Int. Cl.³ A61K *35/14*

U.S. Cl. 424—101 **7 Claims**

1. In a process for preparing Factor VIII concentrate where in a first stage fibrinogen is precipitated from a solution of plasma or plasma cryoprecipitate from a buffered solution having a pH ranging between 6 and 7 by the addition of a polyol and the precipitate comprising fibrinogen is removed to provide a supernatant comprising Factor VIII and in a second stage said Factor VIII is precipitated from said supernatant by increasing the polyol concentration to at least about 6% and holding the solution containing said increased amounts of polyol at from about 0° to about 5° until precipitation of said Factor VIII occurs, the improvement comprising the steps of in said first stage of precipitating fibrinogen from a solution of plasma or plasma cryoprecipitate from said buffered solution by the addition of a polyol in an amount of about 1 to 3% while cooling said solution to a temperature between about 2° and 4° C.

4,387,093

ARTHRITIS TREATMENT

Wallace Lysaght, 9 Coniston Ave., Te Atatu South, Auckland, New Zealand

Filed Dec. 18, 1981, Ser. No. 332,342

Claims priority, application New Zealand, Dec. 19, 1981, 195881

Int. Cl.³ A61K *33/24*

U.S. Cl. 424—131 **40 Claims**

1. A method for treating arthritis, comprising orally administering to the affected subject a non-lethal, therapeutic dosage of a preparation consisting essentially of a cobalt compound.

4,387,094

CONTRACEPTIVE METHOD AND COMPOSITION CONTAINING TANNIC ACID

Michel Bagros, Paris, France, assignor to Laboratories Human-Pharm S.A., Perret, France

Continuation of Ser. No. 48,085, Jun. 13, 1979, abandoned, which is a continuation of Ser. No. 878,262, Feb. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 680,057, Apr. 26, 1976, abandoned. This application Feb. 18, 1981, Ser. No. 236,281

Int. Cl.³ A61K *31/70*

U.S. Cl. 424—180 **2 Claims**

1. A contraceptive method which essentially comprises administering vaginally prior to sexual intercourse an amount of a composition comprising as essential constituents tannic acid and as an adjuvant carboxymethylcysteine in amounts effective to prevent the passage of spermatozoa along the cervical canal to the uterine cavity by coagulation of the cervical mucus for rendering the mucus impassable to spermatozoa, said composition comprising on the basis of weight:

about 30 parts to about 80 parts tannic acid; and

about 0.5 parts to about 10 parts carboxymethylcysteine.

4,387,095

COMBATING PESTS WITH O-ALKYL-S-ALKYL-S-ACYLOXYETHYL-PHOSPHORODITHIOLATES

Junichi Saito; Akio Kudamatsu; Kozo Shiokawa, and Shinichi Tsuboi, all of Tokyo, Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

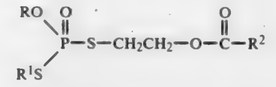
Filed Aug. 25, 1981, Ser. No. 295,983

Claims priority, application Japan, Sep. 1, 1980, 55-119854

Int. Cl.³ C07F *9/165;* **A01N** *57/12*

U.S. Cl. 424—211 **9 Claims**

1. An O-alkyl-S-alkyl-S-acyloxyethyl-phorphorodithiolate of the formula



wherein

R is an alkyl group having 1 to 6 carbon atoms,

R^1 is an alkyl group having 1 to 6 carbon atoms or an alkoxyethyl group having 1 to 6 carbon atoms in the alkyl part, and

R^2 is an alkoxy group having 1 to 6 carbon atoms, an amino group mono- or di-substituted by an alkyl group having 1 to 6 carbon atoms, an unsubstituted anilino group, or an anilino group substituted at the N-position by an alkyl group having 1 to 6 carbon atoms.

2. A method of combating pests which comprises applying to the pests, or to a habitat thereof, a pesticidally effective amount of a compound according to claim 1.

4,387,096

CEPHALOSPORINE COMPOUNDS WITH ANTIBIOTIC ACTIVITY

Michele di Schiena, and Vittoria Orru, both of Trezzano sul Naviglio (Milan), Italy, assignors to Ausonia Farmaceutici s.r.l., Rome, Italy

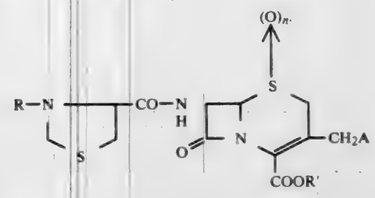
Filed Jul. 1, 1981, Ser. No. 279,456

Claims priority, application Italy, Jul. 15, 1980, 23455 A/80

Int. Cl.³ C07D *501/38;* **A61K** *31/545*

U.S. Cl. 424—246 **12 Claims**

1. A compound with antibiotic activity of formula I



(I)

wherein:

R is hydrogen or pivaloyl;

A is selected from the group consisting of hydrogen, acetoxy, 5-methyl-1,3,4-thiadiazol-2-yl thio-, 5-methyl-1,3,4-thiadiazol-5-yl thio- and the pyridinium cation;

R′ is hydrogen, or an inorganic or organic cation which is the cation from sodium, potassium, calcium, magnesium, aluminum, zinc, silver or a cation deriving from an organic base, which is dibenzylamine, N,N-dibenzylethylenediamine, glucamine, N-methylglucamine, hexamethylenetetramine, 2-amino-2-hydroxymethyl-1,3-propanediol, arginine, lysine, proline or carnitine;

or when A is the pyridinium cation, R′ is a negative charge;

—n is 0 or 1;

the carbon atom of the thiazolidine ring marked with an asterisk has the D- or L- or racemic configuration;

and salts thereof with a pharmaceutically acceptable acid, which is citric, ascorbic, maleic, acetic, hydrochloric, nitric, hydrobromic or sulfuric acid.

4,387,097

MORPHOLINES

Alan C. White, Windsor, and Gerald Bradley, Weybridge, both of England, assignors to John Wyeth and Brother Limited, Maidenhead, England

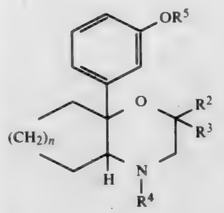
Filed Mar. 11, 1982, Ser. No. 357,023

Claims priority, application United Kingdom, Mar. 27, 1981, 8109713

Int. Cl.³ A61K *31/535;* **C07D** *265/36*

U.S. Cl. 424—248.55 **11 Claims**

1. A compound selected from the group consisting of a morpholine derivative of formula (I)



(I)

and a pharmaceutically acceptable acid addition salt thereof, wherein n represents 1,2 or 3, R^2 and R^3 are each hydrogen or alkyl of 1 to 10 carbon atoms, R^4 is hydrogen, lower alkyl, lower alkenyl, lower alkynyl, aryl(lower)alkyl, 2-tetrahydrofurylmethyl or cyclo(lower)alkylmethyl and OR^5 is hydroxy, acyloxy or lower alkoxy.

11. A method of treating a mammal in need of an analgesic or opiate antagonist which comprises administering to said mammal an analgesically or opiate antagonistically effective amount of a compound selected from the group consisting of a morpholine derivative of formula (I)

and a pharmaceutically acceptable acid addition salt thereof, wherein n represents 1, 2 or 3, R^2 and R^3 are each hydrogen or alkyl of 1 to 10 carbon atoms, R^4 is hydrogen, lower alkyl, lower alkenyl, lower alkynyl, aryl(lower)alkyl, 2-tetrahydrofurylmethyl or cyclo(lower)alkylmethyl and OR^5 is hydroxy or acyloxy.

4,387,098

IMIDAZO[1,2-a]QUINOLINE DERIVATIVES USEFUL AS ANXIOLYTICS

Alan C. Barnes, Cirencester, and Peter A. Robson, Upper Stratton, both of England, assignors to Roussel Uclaf, Paris, France

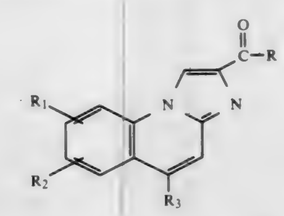
Filed Mar. 25, 1982, Ser. No. 361,779

Claims priority, application United Kingdom, Apr. 3, 1981, 81-10586

Int. Cl.³ A61K *31/47;* **C07D** *471/14*

U.S. Cl. 424—256 **21 Claims**

1. A compound selected from the group consisting of imidazo[1,2-a]quinolines of the formula



I

wherein R is selected from the group consisting of alkyl of 1 to 8 carbon atoms, thienyl, pyridyl and phenyl optionally substituted with at least one member of the group consisting of halogen, alkyl of 1 to 5 carbon atoms and alkoxy of 1 to 5 carbon atoms, R_1 and R_2 are individually selected from the group consisting of hydrogen, halogen, alkyl and alkoxy of 1 to 8 carbon atoms, cyclohexyl, $—NO_2$ and phenoxy, R_3 is selected from the group consisting of alkoxy and alkylthio of 1 to 8 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts.

15. A method of inducing anxiolytic activity in warm-blooded animals comprising administering to warm-blooded animals an anxiolytically effective amount of at least one compound of claim 1.

4,387,099

ALKANOLAMINE DERIVATIVES

Leslie H. Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 215,873, Dec. 12, 1980, Pat. No. 4,327,113, which is a division of Ser. No. 123,926, Feb. 22, 1980, Pat. No. 4,260,632, which is a division of Ser. No. 15,411, Feb. 26, 1979, Pat. No. 4,221,807, which is a division of Ser. No. 787,375, Apr. 14, 1977, Pat. No. 4,141,987, which is a division of Ser. No. 582,883, Jun. 2, 1975, Pat. No. 4,034,106. This application Feb. 12, 1982, Ser. No. 348,297

Claims priority, application United Kingdom, Jun. 5, 1974, 24837/74

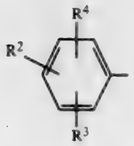
Int. Cl.[3] **A61K** *31/455;* **C07D** *213/56;* **A61K** *31/44*

U.S. Cl. 424—263 **10 Claims**

1. An alkanolamine derivative selected from a compound of the formula:

$$R.OCH_2.CHOH.CH_2NH—A—NH—X—Y—R^1$$

wherein A is alkylene of from 2 to 12 carbon atoms; wherein X is carbonyl (—CO—) or sulphonyl ($—SO_2—$); wherein Y is a direct link, or is alkylene, oxyalkylene or alkyleneoxy each of up to 6 carbon atoms, or imino (—NH—), or alkylimino, iminoalkylene, iminoalkyleneoxy or iminoalkylenecarbonyloxy each of up to 6 carbon atoms, or is oxygen; wherein R^1 is pyridyl and wherein R is aryl of the formula:



wherein R^2 and R^3, which may be the same or different, each is hydrogen, halogen, hydroxy, amino, nitro or cyano, or alkyl, hydroxyalkyl, cycloalkyl, alkenyl, alkynyl, alkoxy, alkylthio, cycloalkoxy, alkenyloxy, alkynyloxy or alkanoyl each of up to 6 carbon atoms or aryl, aryloxy or dialkylamino each of up to 12 carbon atoms; or wherein R^2 and R^3 together form trimethylene, tetramethylene, 1-oxotetramethylene, propenylene, but-2-enylene or buta-1,3-dienylene such that together with the adjacent benzene ring they form respectively indanyl, 5,6,7,8-tetrahydronaphthyl, 5-oxo-5,6,7,8-tetrahydronaphthyl, indenyl, 5,8-dihydronaphthyl or naphthyl; and wherein R^4 is hydrogen or amidic of the formula:

$$R^{15}R^{16}N—CO—Q—$$

$$R^{15}R^{16}N—CO—NH—Q—$$

$$R^{15}R^{16}N—CO—Q^1—O—$$

or

$$R^{16}—X—NR^{15}—Q—$$

wherein Q is a direct link or is alkylene or alkenylene each of up to 6 carbon atoms; wherein Q^1 is alkylene of up to 6 carbon atoms; wherein R^{15} is hydrogen or alkyl of up to 6 carbon atoms; and wherein R^{16} is hydrogen or alkenyl, cycloalkyl, hydroxyalkyl or alkoxyalkyl each of up to 6 carbon atoms, or alkyl, aryl, aralkyl or aralkenyl each of up to 10 carbon atoms; and an acid-addition salt thereof.

10. A method for producing coronary β-adrenergic blockade in a warm-blooded animal in need of such blockade which comprises administering to said animal an effective amount of at least one compound claimed in claim **1**.

4,387,100

SUBSTITUTED PHENOXY-AMINOPROPANOL DERIVATIVES

Peter J. Machin, London, England, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

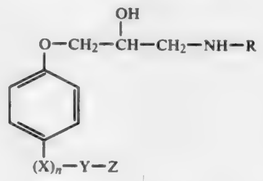
Filed Feb. 24, 1981, Ser. No. 237,612

Claims priority, application United Kingdom, Feb. 25, 1980, 8006261; Nov. 10, 1980, 8035997

Int. Cl.[3] **A61K** *31/41, 31/415;* **C07D** *233/61, 249/08*

U.S. Cl. 424—269 **10 Claims**

1. A compound of the formula



I

wherein R is lower alkyl, X is oxygen or sulfur, n is the integer zero or 1, Y is methylene, ethylene or propylene, or, when n is zero, Y can also be a group of the formula

$$—CH=CH—C^*H_2—$$ (a)

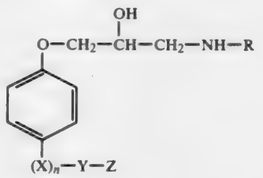
wherein the double-bond is trans and the carbon atom marked with an asterisk is linked to Z, and Z is a 5-membered aromatic heterocyclic ring selected from the group consisting of 1-imidazolyl, 1H-1,2,4-triazol-1-yl, 1H-1,3,4-triazol-1-yl, 1H-1,2,3-triazol-1-yl, 2H-1,2,3-triazol-2-yl, 1-pyrazolyl, 4-halo-1-pyrazolyl, 4-phenyl-1-pyrazolyl, 1-benzimidazolyl, 2H-benzotriazol-2-yl, 4,5,6,7-tetrahydro-2H-benzotriazol-2-yl, and 1H-indazol-1-yl, the heterocyclic ring is linked to Y via a nitrogen atom and may be substituted by halogen, lower alkyl, lower alkoxy, phenyl, cyano or carboxamido or on adjacent carbon atoms by a group of the formula

$—(CH_2)_4—$ or $—CH=CH—CH=CH—$

(b) (c)

or a pharmaceutically acceptable acid addition salt thereof.

10. A method for the treatment of heart diseases which comprises administration of a therapeutically effective amount of a compound of the formula



I

wherein R is lower alkyl, X is oxygen or sulfur, n is the integer zero or 1, Y is methylene, ethylene or propylene, or, when n is zero, Y can also be a group of the formula

$$—CH=CH—C^*H_2—$$ (a)

wherein the double-bond is trans and the carbon atom marked with an asterisk is linked to Z, and Z is a 5-membered aromatic heterocyclic ring selected from the group consisting of 1-imidazolyl, 1H-1,2,4-triazol-1-yl, 1H-1,2,3-triazol-1-yl, 2H-1,2,3-triazol-2-yl, 1-pyrazolyl, 4-halo-1-pyrazolyl, 4-phenyl-1-pyrazolyl, 1-benzimidazolyl, 2H-benzotriazol-2-yl, 4,5,6,7-tetrahydro-2H-benzotriazol-2-yl, and 1H-indazol-1-yl, the heterocyclic ring is linked to Y via a nitrogen atom and may be substituted by halogen, lower alkyl, lower alkoxy, phenyl, cyano or carboxamido or on adjacent carbon atoms by a group of the formula

$—(CH_2)_4—$ or $—CH=CH—CH=CH—$

(b) (c)

or a pharmaceutically acceptable acid addition salt thereof.

4,387,101

THIAZOLIDINE DERIVATIVES AND THEIR USE

Yutaka Kawamatsu, Kyoto, and Yujiro Yamamoto, Suita, both of Japan, assignors to Takeda Chemical Industries, Ltd. and Senju Pharmaceutical Co., Ltd., both of Osaka, Japan

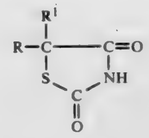
Filed Jan. 21, 1981, Ser. No. 227,786

Claims priority, application Japan, Jan. 24, 1980, 55-7558; Jul. 29, 1980, 55-104718

Int. Cl.[3] **C07D** *277/04;* **A61K** *31/425*

U.S. Cl. 424—270 **7 Claims**

1. A thiazolidine compound of the formula:



wherein R is phenyl having 2 nuclear subsituents selected from the group consisting of alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 7 carbon atoms, hydroxyl and carboxylic acyloxy having 1 to 4 carbon atoms, or R is phenyl having a methylenedioxy group in adjacent positions on its ring, and

R^1 is hydrogen or alkyl having 1 to 6 carbon atoms,

or a physiologically acceptable salt thereof.

4,387,102

4-(N-(3',4'-METHYLENEDIOXYBENZYLIDENE)-AMINOMETHYL)CYCLOHEXANE-1-CARBOXYLIC ACID AND DERIVATIVES THEREOF AND PHARMACEUTICAL COMPOSITION THEREOF

Hitoshi Takita; Sakuo Noda; Yutaka Mukaida, and Hidetoshi Kobayashi, all of Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

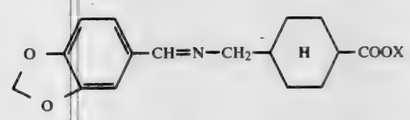
Filed Dec. 17, 1981, Ser. No. 331,773

Claims priority, application Japan, Dec. 22, 1980, 55-181707

Int. Cl.[3] **A61K** *31/36;* **C07D** *317/60*

U.S. Cl. 424—282 **5 Claims**

1. A compound represented by the formula (I)



(I)

wherein X is hydrogen, alkyl group having 1 to 4 carbon atoms or a pharmaceutically acceptable salt thereof.

5. A pharmaceutical composition in dosage unit form having an inhibitory effect on platelet aggregation and polynuclear leukocyte migration, comprising an amount of a compound of claim **1** effective for inhibition of platelet aggregation and polynuclear leukocyte migration and a pharmaceutically acceptable carrier therefore.

4,387,103

METHOD FOR TREATMENT OR PROPHYLAXIS OF CARDIAC DISORDERS

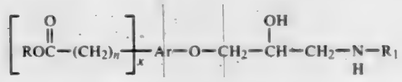
Paul W. Erhardt; Robert J. Borgman, both of Mundelein, Ill., and John P. O'Donnell, Morgantown, W. Va., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Nov. 28, 1980, Ser. No. 211,345

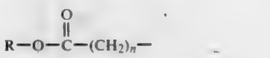
Int. Cl.[3] **A61K** *31/24, 31/275*

U.S. Cl. 424—309 **21 Claims**

1. A method for the treatment or prophylaxis of cardiac disorders in a mammal, comprising administering by intravenous infusion into a mammal having a critical cardiac illness a β-blocking ester compound of the formula



wherein R is lower alkyl or alkenyl of from 1 to about 5 carbon atoms; n is an integer of from 0 to about 3; x is 1 or 2, provided that when x is 2, different occurrences of the



group may be the same or different; R_1 is lower alkyl or aralkyl; and Ar is phenyl or naphthyl optionally additionally substituted with lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, halogen, acetamido, amino, nitro, alkylamino, hydroxy, lower hydroxyalkyl, or cyano; or a pharmaceutically acceptable salt thereof; which β-blocking ester compound is rapidly inactivated in vivo; wherein said β-blocking ester compound is intravenously infused at a rate sufficient to establish an effective β-blockade in said mammal, and said infusion is then terminated to effect a rapid recovery of said mammal from the β-blocking effects of said compound.

4,387,104

N-SUBSTITUTED PYRUVIC ACID HYDRAZONES, PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Ruth Heerdt, Mannheim; Hans P. Wolff, Hirschberg-Grossachsen; Fritz Kaiser, Lampertheim; Wolfgang Schaumann, Heidelberg, and Hans Kühnle, Weinheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

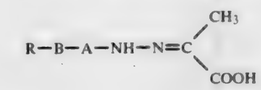
Filed Aug. 14, 1981, Ser. No. 292,869

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1980, 3031842

Int. Cl.[3] **A61K** *31/195;* **C07C** *109/12*

U.S. Cl. 424—319 **10 Claims**

1. A pyruvic acid hydrazone derivative of the formula:



wherein

R is an aromatic hydrocarbon radical containing 6 to 14 carbon atoms optionally substituted by lower alkyl or an aliphatic hydrocarbon radical which can be substituted by a lower alkoxy, by a cycloalkyl or by an aromatic hydrocarbon radical containing 6 to 14 carbon atoms and optionally substituted by halogen or by lower alkyl or lower alkoxy,

A is an alkylene radical containing 2 to 8 carbon atoms, with at least 2 carbon atoms between B and the nitrogen atom, and

B is an oxygen or sulphur atom;

or a physiologically acceptable salt, ester or amide thereof.

9. A method of lowering the blood sugar level of a patient comprising administering to such patient a hypoglycaemically active amount of a compound according to claim **1** or a salt, lower alkyl ester or amide thereof.

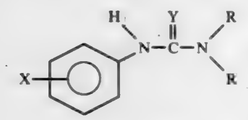
4,387,105

METHODS OF TREATING ATHEROSCLEROSIS WITH DIALKYLUREAS AND DIALKYLTHIOUREAS

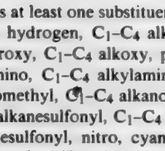
Vern G. DeVries, Ridgewood, N.J., and Elwood E. Largis, Nanuet, N.Y., assignors to American Cyanamid Company

Filed Jan. 26, 1982, Ser. No. 342,698
Int. Cl.³ A61K *31/17*
U.S. Cl. 424—322 **31 Claims**

1. A method of treating atherosclerosis, reducing the cholesterol ester content of the arterial wall, inhibiting atherosclerotic lesion development and/or treating hyperlipidemia in a mammal in need of such treatment which comprises administering to said mammal an effective amount of a compound of the formula:



wherein X represents at least one substituent selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_1–C_4 alkenyl, C_1–C_4 alkynyl, hydroxy, C_1–C_4 alkoxy, phenoxy, mercapto, C_1–C_4 alkylthio, amino, C_1–C_4 alkylamino, di(C_1–C_4 alkyl-)amino, halo, trihalomethyl, C_1–C_4 alkanoyl, benzoyl, C_1–C_4 alkanamido, C_1–C_4 alkanesulfonyl, C_1–C_4 alkanesulfinyl, benzenesulfonyl, toluenesulfonyl, nitro, cyano, carboxy, C_1–C_4 carboalkoxy, carbamoyl, sulfamyl, methylenedioxy, phenyl, ortho-phenylene, tolyl, benzyl, halobenzyl, methylbenzyl and the group



Y is selected from the group consisting of oxygen and sulfur, with the proviso that when X is hydrogen Y must be sulfur; and R is selected from the group consisting of C_4–C_{12} alkyl, C_4–C_{12} alkenyl, C_4–C_{12} alkynyl, C_4–C_{12} cycloalkyl and C_4–C_{12} cycloalkylalkyl.

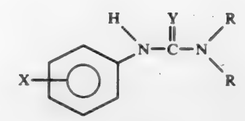
4,387,106

METHOD OF TREATING ATHEROSCLEROSIS WITH DI(ARALKYL)UREAS AND DI(ARALKYL)THIOUREAS

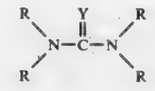
Vern G. De Vries, Ridgewood, N.J., and Elwood E. Largis, Nanuet, N.Y., assignors to American Cyanamid Company, Me.

Filed Jan. 26, 1982, Ser. No. 342,694
Int. Cl.³ A61K *31/17*
U.S. Cl. 424—322 **24 Claims**

1. A method of treating atherosclerosis, reducing the cholesterol ester content of the arterial wall, inhibiting atherosclerotic lesion development and/or treating hyperlipidemia in a mammal in need of such treatment which comprises administering to said mammal an effective amount of a compound of the formula:



wherein X represents at least one substituent selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_1–C_4 alkenyl, C_1–C_4 alkynyl, hydroxy, C_1–C_4 alkoxy, phenoxy, mercapto, C_1–C_4 alkylthio, amino, C_1–C_4 alkylamino, di-(C_2–C_4 alkyl-)amino, halo, trihalomethyl, C_1–C_4 alkanoyl, benzoyl, C_1–C_4 alkanamido, C_1–C_4 alkanesulfonyl, C_1–C_4 alkanesulfinyl, benzenesulfonyl, toluenesulfonyl, nitro, cyano, carboxy, C_1–C_4 carboalkoxy, carbamoyl, sulfamyl, methylenedioxy, phenyl, ortho-phenylene tolyl, benzyl, halobenzyl, methylbenzyl and the group



Y is selected from the group consisting of oxygen and sulfur, and R is selected from the group consisting of C_7–C_{14} aralkyl, and C_7–C_{14} aralkyl in which an aromatic ring bears at least one substituent selected from the group consisting of C_1–C_{10} alkyl, C_1–C_{10} alkoxy, phenoxy, benzyloxy, methylenedioxy, C_1–C_4 alkylthio, phenyl, halo, trihalomethyl, adamantyl, C_1–C_4 carboalkoxy and nitro.

4,387,107

STABLE BENZOYL PEROXIDE COMPOSITION

Robert W. Klein, Blue Bell, Pa., and Mary E. Foxx, Plainsboro, N.J., assignors to Dermik Laboratories, Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 60,392, Jul. 25, 1979, abandoned. This application Dec. 16, 1980, Ser. No. 216,972
Int. Cl.³ A61K *31/075*
U.S. Cl. 424—338 **2 Claims**

1. A therapeutic aqueous benzoyl peroxide gel composition comprising from about 2.5 to about 15% by weight of micronized benzoyl peroxide having a particle size of less than 150 microns with a mean average particle size in said composition of less than 35 microns and a stabilizing agent which comprises 0.1 to 4% by weight of dioctyl sodium sulfosuccinate.

4,387,108

NON-STICK CHEWING GUM COMPOSITION AND METHOD OF PREPARATION

Edwin R. Koch, Garden City, and Michael Glass, Flushing, both of N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 12, 1981, Ser. No. 273,157
Int. Cl.³ A23G *3/30*
U.S. Cl. 426—4 **21 Claims**

1. A non-adhesive chewing gum base composition, comprising, in weight percent:

(a) Elastomer in the amount of about 8 to about 30%, said elastomer selected from the group consisting of synthetic gums, synthetic elastomers, natural gums and natural elastomers,

(b) Oleaginous plasticizer in the amount of about 9 to about 40%,

(c) Mineral adjuvants in the amount of about 10 to about 15%, said mineral adjuvants selected from a group consisting of calcium carbonate, magnesium carbonate, alumina, talc, tricalcium phosphate and mixtures thereof,

(d) Non-toxic vinyl polymers in the amount of about 16 to about 32%,

(e) Emulsifier in the amount of about 0.5 to about 10%,

(f) Elastomer solvent in the amount of about 2.50 to about 8%, said solvent selected from the group consisting of terpene resins, hydrogenated rosin derivatives, partially hydrogenated rosin derivatives, alcohol esters of rosin and mixtures thereof.

4,387,109

INTERMEDIATE-MOISTURE FROZEN OIL-IN-WATER EMULSION FOODS

Marvin L. Kahn, Williamsville, and Kuttikandathil E. Eapen, Kenmore, both of N.Y., assignors to Rich Products Corporation, Buffalo, N.Y.

Division of Ser. No. 125,516, Mar. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 23,931, Mar. 26, 1979, Pat. No. 4,244,976, Ser. No. 23,973, Mar. 26, 1979, Pat. No. 4,244,977, Ser. No. 23,974, Mar. 26, 1979, Pat. No. 4,308,287, Ser. No. 24,127, Mar. 26, 1979, Pat. No. 4,235,936, Ser. No. 24,128, Mar. 26, 1979, Pat. No. 4,234,611, Ser. No. 24,129, Mar. 26, 1979, Pat. No. 4,220,671, Ser. No. 24,130, Mar. 26, 1979, Pat. No. 4,237,146, and Ser. No. 21,937, Apr. 19, 1979, Pat. No. 4,248,902, each is a continuation-in-part of Ser. No. 917,379, Jun. 20, 1978, Pat. No. 4,199,604, Ser. No. 871,995, Jan. 24, 1978, Pat. No. 4,154,863, and Ser. No. 763,613, Jan. 28, 1977, Pat. No. 4,146,652, said Ser. No. 125,516, is a continuation-in-part of Ser. No. 920,953, Jun. 30, 1978, Pat. No. 4,199,605, and Ser. No. 917,379,. This application Sep. 21, 1981, Ser. No. 304,022
Int. Cl.³ A23G *9/02*
U.S. Cl. 426—321 **25 Claims**

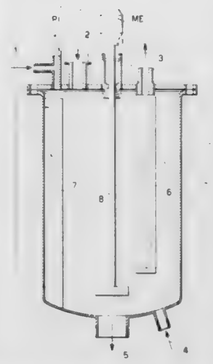
1. A microbiologically stable food product comprising water, sugar and flavoring which is characterized by a water activity of about 0.75 to about 0.93, and by being substantially non-crystalline at freezer temperatures, provided that in said sugar the amount of dextrose plus fructose is at least about 50% based upon the total sugar content, said ingredients being adapted to provide a product which will flow at about 10° F.

4,387,110

METHOD AND APPARATUS FOR SOLID-LIQUID EXTRACTION STEPS

Egidio Emmi, and Giancarlo Sodini, both of Rome, Italy, assignors to E.N.I. Ente Nazionale Idrocarburi, Rome, Italy

Continuation of Ser. No. 38,231, May 11, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 280,299
Claims priority, application Italy, May 24, 1979, 23720 A/78
Int. Cl.³ A23L *1/36*
U.S. Cl. 426—430 **6 Claims**



1. In a solid-liquid extraction process wherein undesirable solvent-soluble substances are extracted from an oily seed mixture containing same by treating the oily seed mixture with a solvent or mixture of solvents in a number of interconnected reactors, the improvement which comprises providing a plurality of interconnecting reactors, each having filter means and stirring means therein, and carrying out the following steps:

feeding the oily seed mixture to be extracted into each of the reactors at the initiation of the process and periodically and in rotational sequence as the exhausted oily seed mixture is discharged from a reactor;

continuously and serially circulating solvent through the interconnected reactors for extraction from the oily seed mixture in each reactor;

periodically and separately feeding fresh solvent into the reactor containing the most exhausted oily seed mixture and discharging said solvent from the reactor containing the least exhausted oily seed mixture;

filtering the solids from the solvent in the midst of solid-liquid extraction process taking place within each reactor by filtering means extending thereinto which prevent solids from passing through the filtering member so that filtered solids remain in the reactor as the solvent containing any remaining solids is being discharged through the filter means and from one reactor and circulated to the next reactor;

stirring the solvent and oily seed mixture by contacting same with stirring means present in each reactor to keep the filtering means essentially clean of filtered solids as a result of whirling motion of the oily seed mixture and solvent induced by the stirring action; and

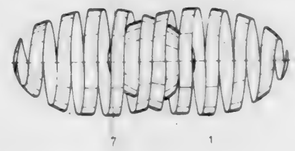
periodically discharging the exhausted oily seed mixtures in rotational sequence from the reactors.

4,387,111

HELICAL OR SPIRAL-SHAPED BULBOUS FOOD PRODUCT

Gernot Müllender, Renning Weg 213, 6973 Boxberg-Schweigern, Fed. Rep. of Germany

Filed Jun. 30, 1981, Ser. No. 279,029
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1980, 3025093
Int. Cl.³ A23L *1/212;* **A23P** *1/00*
U.S. Cl. 426—615 **2 Claims**



1. A helical-shaped food which is produced by means of being cut from bulbous growths, such as potatoes, beets and apples, comprising a helical ribbon having a series of loops around a center, said loops defining a space from each other, which space corresponds to the shape of the loops and which space is filled with at least one similar removable helical ribbon.

4,387,112

ARTICLE IDENTIFICATION PROCESS AND ARTICLES FOR PRACTICE THEREOF

Rodney J. Blach, P.O. Box 7911, Mountain View, Calif. 94039

Filed Oct. 23, 1980, Ser. No. 199,964
Int. Cl.³ B44F *1/12*
U.S. Cl. 427—7 **25 Claims**

1. A process for identifying an article, which comprises:

(a) applying a finely divided inorganic phosphor to said article,

(b) exciting said phosphor to store energy therein by means of light free of infrared wavelengths,

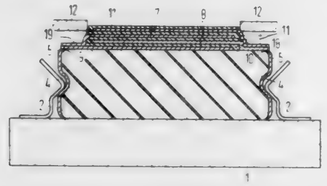
(c) observing any spontaneous decay phosphorescence of said phosphor in a darkened ambient,
(d) stimulating said phosphor with infrared radiation, said stimulating producing an observable change in release of the previously stored energy,
(e) observing the change in release of the previously stored energy as a change in luminescence of said phosphor as a result of said infrared stimulation.

4,387,113

METHOD OF PRODUCING ELECTRICAL LAYER CAPACITORS WITH GLOW-POLYMERIZATE LAYERS AS DIELECTRICS

Reinhard Behn, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 2, 1982, Ser. No. 353,880
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1981, 3110351
Int. Cl.³ B05D *5/12*; H01G *4/00*
U.S. Cl. 427—40 **8 Claims**



1. Method of producing electrical layer capacitors with glow-polymerizate layers as dielectrics, including a support surface, which includes initially forming a synthetic carrier strip having a substantially rectangular cross-section as well as given parts not to be coated with glow-polymerizate and a surface to be covered with glow-polymerizate, applying metal coating layers and glow-polymerizate layers offset from each other on the carrier strip forming contact strips on two mutually opposing edges of the carrier strip, the contact strips having within the extent thereof at least two metal layers lying directly on each other, and covering the given parts of the carrier strip not to be coated with at least one screen during the manufacture of the glow-polymerizate layers, wherein the improvement comprises forming recesses on areas of the carrier strip bordering the contact strips and not coated with glow-polymerizate, pressing the carrier strip against the support surface with holding devices contacting the carrier strip at the recesses before applying the glow-polymerizate layers, and then placing the screen on the surface of the carrier strip to be covered with glow-polymerizate at least during the glow-polymerization.

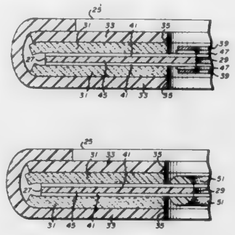
4,387,114

SPINDLE APERTURE REINFORCEMENT FOR A FLOPPY DISK

Alfred W. Conner, Palo Alto, and J. Reid Anderson, Los Altos Hills, both of Calif., assignors to Verbatim Corporation, Sunnyvale, Calif.

Filed Nov. 20, 1980, Ser. No. 208,516
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—54.1 **9 Claims**

1. A method of forming a reinforcement about a central aperture of a flexible recording disk as may be incorporated into a floppy disk assembly comprising the steps of:
a. placing a first annular-shaped side surface of said flexible recording disk into contact with a planar surface having a registration member so that said central aperture of said disk surrounds said registration member;
b. filling an open metering reservoir, of a shape approximately the desired shape of said reinforcement and recessed into a surface of a plate, with a quantity of a solidifiable liquid having characteristics making it suitable for utilization as a reinforcement when solidified;
c. contacting said surface of said plate about said reservoir with a terminal end surface of a compliant tampon whereby said liquid transfers from said reservoir to said terminal end surface of said tampon;



d. contacting a second annular-shaped side surface of said flexible recording disk with said liquid coated terminal end surface of said tampon so that said liquid is transferred to and adheres to said surface of said flexible recording disk about said central aperture thereof; and
e. causing said liquid to form a structural reinforcement of an annular region around said central aperture of said flexible recording disk by causing said liquid to solidify into said surface of said flexible recording disk to which it adheres.

4,387,115

COMPOSITION FOR CONDUCTIVE CURED PRODUCT

Tadashi Kitamura, Hiratsuka, and Sumio Hirose, Yokohama, both of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Aug. 4, 1981, Ser. No. 289,887
Claims priority, application Japan, Aug. 8, 1980, 55-109737; Mar. 25, 1981, 56-042510
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—58 **23 Claims**

16. A process for producing a conductive cured product which comprises reacting a copper compound which is in the cuprous and/or cupric state with a reducing agent which contains a substituted or unsubstituted ortho or para dihydroxy benzene ring, in the presence of both a metallic copper powder and a resinous curable component, the amount of said reducing agent being sufficient to reduce a substantial amount of the copper in said copper compound to metallic copper, to reduce said copper compound to metallic copper and to cure said resinous curable component during the reduction of said copper compound to integrate precipitated metallic copper and said resinous curable component into said conductive cured product.

22. A process as claimed in claim **16** further comprising plating or coating the conductive cured product with a protective coating.

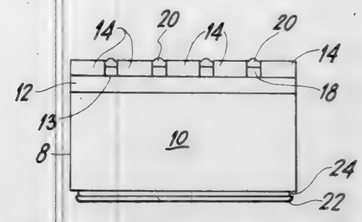
4,387,116

CONDITIONER FOR ADHERENCE OF NICKEL TO A TIN OXIDE SURFACE

Edward R. Bucker, Cranford, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 28, 1981, Ser. No. 335,229
Int. Cl.³ B23C *3/02*
U.S. Cl. 427—75 **5 Claims**

1. A method for electrolessly plating a layer of nickel onto a conditioned tin oxide surface, comprising:
(a) immersing said surface into a solution including tin chloride.$2H_2O$ from 30 to 100 gms per liter, hydrochloric acid in an amount of 200 to 400 ml per liter, hydrofluoric acid in an amount of 25 to 100 ml per liter, water in an amount to make one liter;
(b) sensitizing said tin oxide surface; and



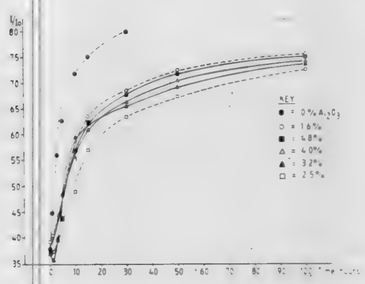
(c) plating, electrolessly a layer including nickel onto said conditioned and sensitized tin oxide surface.

4,387,117

RECORD MATERIAL CARRYING A COLOR DEVELOPER COMPOSITION

Kenneth J. Shanton, Beaconsfield, England, assignor to The Wiggins Teape Group Limited, England

Filed Jun. 11, 1981, Ser. No. 272,733
Claims priority, application United Kingdom, Jun. 12, 1980, 8019284
Int. Cl.³ B41M *5/16, 5/18, 5/22*
U.S. Cl. 427—150 **10 Claims**



1. A process for the production of record material carrying a particulate amorphous hydrated silica/hydrated alumina composite comprising:
(a) reacting hydrated silica and hydrated alumina in an aqueous medium thereby yielding an amorphous hydrated silica/hydrated alumina composite having a mean alumina content of from 1.5 to 5.0% based on the total dry weight of silica and alumina;
(b) applying a coating composition incorporating said composite to a substrate; and
(c) drying the coated substrate to produce record material.

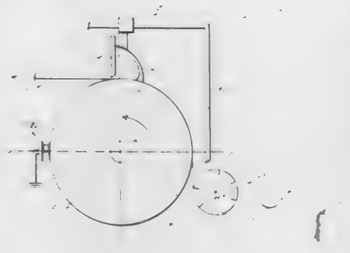
4,387,118

MINIMIZING VOIDS IN FOAM COATING

John H. Shelton, Rocky Mount, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Oct. 29, 1981, Ser. No. 316,538
Int. Cl.³ B05D *3/12*; B05C *3/18*
U.S. Cl. 427—176 **27 Claims**

1. A method of foam coating a web utilizing a roller rotatable about a substantially horizontal axis of rotation, and a doctor blade positioned slightly vertically above the top periphery of the roller and slightly in front of the roller, comprising the steps of:
(a) continuously rotating the roller about its axis;
(b) establishing and maintaining a foam pillow on top of the roller with the doctor blade providing the front barrier of the foam pillow and the web the bottom barrier thereof; and
(c) continuously feeding the web to be coated into contact with the roller periphery so that it passes between the top of the roller and the doctor blade through the foam pillow, the blade establishing the thickness of the foam coat.



3. A method as recited in claim **1** comprising the further steps of:
(d) tensioning the web in the width dimension just prior to the area where it is brought into contact with the roller periphery; and
(e) maintaining the web taut during coating thereof.

4,387,119

PROCESS FOR GENERATING A SLIDING LAYER ON THE SURFACE OF AN ALUMINUM-COATED RECORD CARRIER

Dietrich J. Bahr, Herrenberg, and Marian Briska, Böblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 21, 1981, Ser. No. 304,279
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1980, 3040513
Int. Cl.³ B05D *1/00*
U.S. Cl. 427—209 **8 Claims**

1. A process for generating a sliding layer on the top surface of an aluminum layer of a record carrier, said record carrier comprising, from top to bottom, an aluminum layer, a first lacquer layer, a substrate, and a second lacquer layer, said process being characterized in that a metal azide in an amount from about 0.1 to about 2% by weight of the lacquer is added to at least one of the lacquer layers, and that a fatty acid or a mixture of fatty acids is added to at least one of the two lacquer layers, and that the finished record carrier material is subjected to a heat treatment at about 70° C. for about 12 hours.

4,387,120

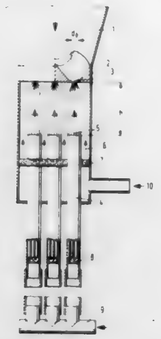
GAS INJECTOR FOR FLUIDIZED BED FURNACE

Eike Barnert, Julich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Julich GmbH, Julich, Fed. Rep. of Germany

Filed Mar. 2, 1981, Ser. No. 239,592
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007711
Int. Cl.³ F27B *15/10*
U.S. Cl. 427—213 **5 Claims**

1. A fluidized bed furnace, comprising:
a. a furnace cone;
b. a gas injector;
c. said gas injector comprising a duct for conveying a dilution gas to said fluidized bed;
d. at least three parallel coating gas supply pipes within said duct, said pipes having ends and said pipes being substantially symmetrically spaced in said duct;
e. an aperture insert plate closing the furnace end of said duct;

f. said aperture insert plate being spaced from the ends of said pipes;
g. said insert plate having at least three supply pipes corresponding conical orifices opening into said furnace cone.
h. each supply pipe being axially aligned with and axially spaced from the corresponding one of said orifices in said insert plate;



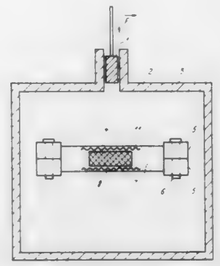
i. pressure regulating means for conveying said dilution gas laminarly about said pipes and beyond said pipe ends; and,
j. pressure regulating means for conveying said coating gas through said pipes and beyond said pipe ends, whereby said coating gas is laminarly surrounded by said dilution gas when exiting from said pipe ends and prior to entering said apertures.

4,387,121
METHOD OF MANUFACTURE OF A WATER-PERMEABLE-HYDROPHOBIC MEMBRANE
Philip A. Cautilli, Feasterville, Pa., and Edward Wotier, Wayne, N.J., assignors to GAF Corporation, New York, N.Y.
Continuation of Ser. No. 162,359, Jun. 24, 1980, abandoned. This application Sep. 10, 1981, Ser. No. 300,840
Int. Cl.³ B05D *3/02, 5/00*
U.S. Cl. 427—243 **9 Claims**

1. The method of making a hydrophobic membrane, comprising the steps of:
(a) providing a latex which comprises water and a hydrophobic binder;
(b) stabilizing the latex with a sufficient quantity of a heat decomposable hydrophilic fugitive surfactant to preclude coagulation of the binder, said surfactant capable of decomposing under heat to yield a hydrophobic residue of the surfactant;
(c) coating a non-woven mat with the stabilized latex and;
(d) heating to dry the non-woven mat which has been coated with the stabilized latex while simultaneously decomposing the fugitive surfactant to form a hydrophobic membrane containing the hydrophobic residue of the surfactant.

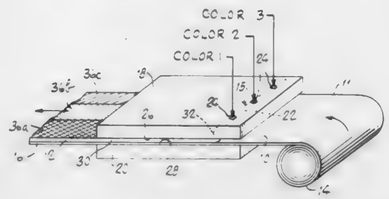
4,387,122
METHOD FOR THE MANUFACTURE OF MATERIAL ABSORBING ULTRA-HIGH FREQUENCY WAVES
Jean Rannou; Michel Grozellier, and Marcel Godet, all of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Nov. 4, 1980, Ser. No. 204,040
Claims priority, application France, Nov. 9, 1979, 79 27709
Int. Cl.³ B05D *3/02, 3/12*
U.S. Cl. 427—244 **8 Claims**

1. A method of producing a material for absorbing ultra-high frequency waves from a starting porous material having closed cells, the method comprising the steps of:
(a) immersing the porous material into a fluid comprising a liquid component, suspended carbon, and a dissolved polymerizable binder;
(b) applying sufficient pressure to the fluid to open the closed cells of the porous material immersed in the fluid according to step (a);
(c) allowing the fluid comprising the liquid component, the suspended carbon, and the dissolved binder to disperse



into the cells of the porous material opened according to step (b);
(d) removing the porous material from the fluid;
(e) drying the porous material removed according to step (d) at elevated temperatures so as to remove said liquid component; and
(f) closing the cells of the porous material by polymerizing the binder dispersed into the cells according to step (c).

4,387,123
COATING PROCESS AND APPARATUS
Carl A. Wollam, Cortland, and J. Lynn Gailey, Newton Falls, both of Ohio, assignors to Alcan Aluminum Corporation, Cleveland, Ohio
Filed Jan. 21, 1981, Ser. No. 226,699
Int. Cl.³ B05C *3/132;* **B05D** *3/02, 3/12, 5/00*
U.S. Cl. 427—286 **18 Claims**



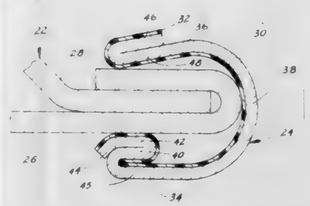
1. A process for coating a major surface of a strip article of indeterminate length, including the steps of
(a) continuously advancing the article longitudinally past a coating head including a dam extending transversely of said major surface in adjacent spaced relation thereto while
(b) supplying a wet flowable coating material through said coating head to said major surface immediately ahead of said dam such that said flowable coating material forms a continuous layer between said dam and said article,
wherein the improvement comprises
(c) immediately beyond said dam, advancing said article longitudinally past a wall of said coating head, said wall being of extended length in the direction of strip advance and facing said major surface, while
(d) uniformly restraining the strip against movement of said major surface away from said wall beyond a predetermined distance equal to a desired wet thickness of said layer of coating material on said major surface, said layer of coating material being the sole means located between said wall and said major surface for restraining said strip from movement of said major surface toward said wall, and while
(e) maintaining said strip major surface, ahead of said dam, spaced away from said coating head.

4,387,124
COATING APPARATUS AND METHOD
David J. Pipkin, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 29, 1981, Ser. No. 316,367
Int. Cl.³ B05D *3/12, 5/12;* **C05C** *3/12, 3/18*
U.S. Cl. 427—356 **3 Claims**



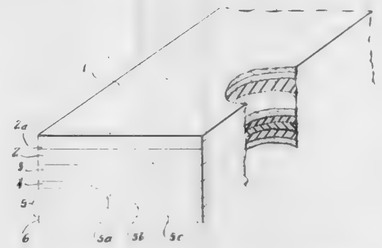
1. A method of feeding a non-Newtonian fluid from a fluid source to an elongated fluid pool which is associated with an elongated web coating nip, whereby said fluid is coated onto a web from a fluid pool as the web passes through said nip, such that the fluid arriving at said pool has experienced substantially identical flow rheology; comprising the steps of:
supplying said fluid to an inlet conduit, and
connecting said inlet conduit to said pool by way of a like number of individual branching conduits which operate to connect said inlet conduit to spaced portions of said pool, said branching conduits being of substantially equal length, and each of said conduits being of substantially equal fluid shear characteristic.

4,387,125
DOOR EDGE GUARD
Robert Adell, Novi, Mich., assignor to U.S. Product Development Company, Novi, Mich.
Filed Dec. 16, 1980, Ser. No. 216,860
Int. Cl.³ B60R *13/02, 13/04*
U.S. Cl. 428—31 **17 Claims**



1. An insulated metal, protective and ornamental edge guard of generally U-shaped cross section comprising inner and outer legs via which the edge guard is self-retaining on the edge of a sheet metal panel of a vehicle body when the edge guard is installed thereon comprising:
a metal strip having a generally U-shaped cross section with the sides of the U corresponding to the legs of the edge guard;
an insulating layer adhered to and covering the interior of the U of the metal strip;
and an insulated metal bead at the distal portion of one leg formed by the insulating layer overlying and being adhered in surface-to-surface contact with the strip at the extreme distal margin of the strip forming that side of the U corresponding to said one leg and by both said extreme distal margin of the strip and the portion of the insulating layer overlying and adhered thereto being doubly reversed such that at one reversal there is metal-to-metal confrontation and at the other reversal there is insulating layer-to-insulating layer confrontation and the insulating layer covers that surface portion of the underlying metal bead which faces toward, and but for the insulating layer would be in contact with, the sheet metal panel when the edge guard is installed thereon.
6. In an ornamental and protective edge guard of generally U-shaped cross section comprising inner and outer legs via which the edge guard is self-retaining on the edge of a sheet metal panel of a vehicle body when the edge guard is installed thereon, the edge guard comprising a metal strip of generally U-shaped cross section with the sides of the U corresponding to the legs of the edge guard and an insulating layer secured to the interior surface of the metal strip, the improvement comprising a bead at the distal portion of one leg and comprising a single double reversal fold of three thicknesses of the metal strip and of three thicknesses of an insulating layer disposed such that a thickness of said insulating layer is on the exterior of the bead toward the interior of the U-shaped cross section.

4,387,126
LAMINATED PACKAGING MATERIAL
James H. Rebholz, Burnsville, Minn., assignor to Champion International Corporation, Stamford, Conn.
Filed Feb. 10, 1982, Ser. No. 347,582
Int. Cl.³ B65D *35/08;* **B32B** *15/08, 3/02*
U.S. Cl. 428—35 **12 Claims**



1. A laminated packaging material adapted to contain substances having a detrimental effect on metallic packaging materials, said laminated packaging material comprising:
a substrate of paper, cellulosic, or polymeric film as an outer layer;
a bonding layer affixed to said substrate;
a metallic foil affixed to said bonding layer; and
a coextended inner layer of ethylene-methyl acrylate copolymer and polyester, said co-extruded inner layer adapted to be disposed between said metallic foil and said substances, thus protecting said metallic foil from said substances.

4,387,127
MEMBRANE SWITCH CONTROL PANEL ARRANGEMENT AND LABEL ASSEMBLY FOR LABELING SAME
Ralph Ogden, 1304 Fisher St., Munster, Ind. 46321
Division of Ser. No. 148,907, May 12, 1980, Pat. No. 4,347,416. This application Nov. 2, 1981, Ser. No. 317,594
Int. Cl.³ B44C *1/00;* **E04F** *15/16;* **B32B** *4/00;* **H01H** *9/16*
U.S. Cl. 428—42 **7 Claims**

1. For application to a legend sheet for use in a membrane switch control panel arrangement wherein the legend sheet comprises a length of plastic sheeting of film thickness propor-

tions having quadrilateral marginal delineation thereabout and spaced parallel and consecutive rows of switch location indicia paralleling two opposed sides of the marginal delineation, of which the respective rows are separated by blank areas of substantially equal size, and the other two opposed sides are defined by rectilinear lines that mark the ends of said blank areas,

a label assembly comprising:

a label carrier sheet having a release facing,

and an adhesive backed label forming sheet removably adhered to said carrier sheet facing,

said label forming sheet being segmented to define:

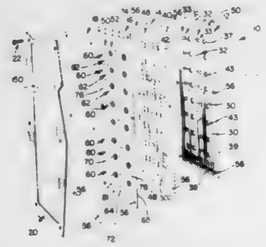
a plurality of quadrilateral labels each proportioned to have an outwardly facing blank facing having an area approximating the legend sheet blank areas,

with each label having at either end of same a terminal end portion,

a tab section severed from each label terminal end portion and having a width approximating that of the respective labels,

said labels each having the same length dimension that is less than but approximates the distance between the legend sheet rectilinear lines,

said tab sections for the respective labels each bearing a rectilinear centering line extending transversely thereof and with such centering lines of the tab sections for the respective labels being spaced apart a distance that is equivalent to said distance between the legend sheet rectilinear lines,



and a label spacing section disposed between the respective labels and having a length approximating the length of said labels,

said tab sections of each label bearing guide means for applying the switch identification indicia to the label,

said label spacing sections bearing guide means for indicating the location on the label facing the switch identification indicia to be applied thereto is to have,

said label carrier sheet being segmented to define:

a joiner section at each of the respective label ends proportioned to underlie, at each label end, the tab section thereof and the label terminal end portion associated therewith,

with said joiner sections of each label extending short of the mid portion of the label,

whereby the blank facings of the respective labels of said label assembly may be marked to bear the switch identification indicia of the respective switch location rows prior to removal of the individual labels from said carrier sheet,

and the respective labels may be each manually removed from said carrier sheet and adhered to the legend sheet blank space that is to receive the label by:

separating the label tab sections from the carrier sheet and drawing them outwardly of the carrier sheet to bring with them the label joiner sections from the carrier sheet and fully separate the label from the carrier sheet,

with a user then holding each label tab section, centering the label in the legend sheet blank area that is to receive the label by aligning the respective centering lines of the label respective tab sections with the legend sheet rectilinear lines,

finger pressing the midportion of the label into centered adherence with the legend sheet blank area that is to receive the label,

then separating the label joiner sections from either terminal end portion of same to separate the label tab segments therefrom,

and finger pressing the remainder of the label into centered adherence with the legend sheet.

4,387,128

FOLDABLE STRUCTURE

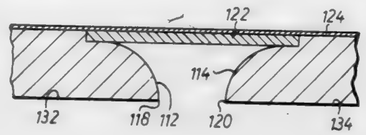
Roy O. Emms, Paddock Wood; William Rae, Southborough, and John Wilson, Rochester, all of England, assignors to Brymitre Limited, Sevenoaks, England

Filed Jul. 8, 1980, Ser. No. 166,848

Claims priority, application United Kingdom, Jul. 12, 1979, 7924390

Int. Cl.[3] **B32B** *3/02;* **E04C** *2/24, 2/40;* **B32B** *3/10*

U.S. Cl. 428—60 **9 Claims**



1. A foldable planar structure for use in forming a curved edge or corner by bending the initially planar structure, the planar structure comprising two chipboard panel members, a flexible lamina formed of PVC material and a flexible strip-like cork insert member, the two panel members being disposed in side by side relation with a respective edge of each panel arranged in adjacent relation, and each panel member having an arcuate surface extending from said edge towards one face of the panel, the flexible insert member bridging said edges and backing up said flexible lamina, said flexible lamina overlying and being adhered to said one face of each panel member and to said cork insert member whereby, on bending the structure from its initially planar form, the flexible cork insert member contacts the said arcuate surfaces which define the shape of the curved edge or corner so formed.

4,387,129

LAMINATES HAVING OPTICALLY CLEAR LAMINATES HAVING HIGH MOLECULAR WEIGHT PHENOXY-HIGH CRYSTALLINITY POLYURETHANE ADHESIVE

Kent D. Vincent, Cupertino, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 151,215, May 19, 1980, abandoned, which is a division of Ser. No. 61,581, Jul. 30, 1979, abandoned. This application Feb. 2, 1982, Ser. No. 345,262

Int. Cl.[3] **B32B** *3/10, 27/08, 27/28*

U.S. Cl. 428—195 **9 Claims**



1. A printed label for laminating substrates comprising:

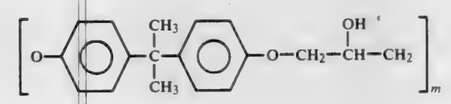
a substrate having a first surface and a second surface;

a first printed layer of graphical information printed on the first surface of the substrate; and

an optically clear adhesive layer applied to the second surface of the substrate, the adhesive comprising a polyurethane resin and up to 50% phenoxy resin by weight, wherein said polyurethane resin is represented by the following formula:



where R' is a long chain predominantly linear diol, R is any chemical structure which ties two isocyanate groups together and m is an integer greater than one, and wherein said phenoxy resin is represented by the following formula:



where m is an integer greater than one.

4,387,130

TILES FOR FORMING SPORTS GROUND COVERINGS AND IN PARTICULAR SKI RUNS

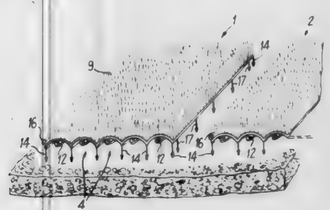
Jacques L. A. See, 16A rue Jean Mermoz, 14800 Deauville, Calvados, France

Filed Apr. 23, 1982, Ser. No. 371,313

Claims priority, application France, Apr. 23, 1981, 81 08087

Int. Cl.[3] **A01N** *3/00*

U.S. Cl. 428—17 **11 Claims**



1. In tiles for forming sports ground covering and in particular ski runs, said tiles being made of a succession of adjacent apertured vaults with fingers or piles protruding above the vaults and support fingers protruding below said vaults, said support fingers being directly engageable into the ground or into an intermediate ground sheet, each of said tiles comprising two opposite lateral sides and two opposite end edges, the improvement wherein one of the lateral sides of each of said tiles is covered with eyelets on top of at least some of the vaults while the opposite lateral side of each of said tiles comprises lugs slidably engageable under the vaults of an adjacent tile extending transversely relative to a first tile for a transverse connection of contiguous tiles, and wherein one of the end edges of each of said tiles is provided with protruding rings and the opposite end edge of each of said tiles is provided with tongues engageable into said protruding rings for longitudinal connection of successive tiles.

4,387,131

CERAMIC DIELECTRICS

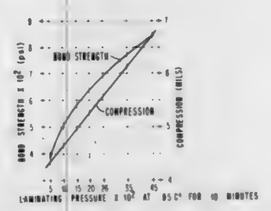
Leslie C. Anderson, Poughkeepsie; Robert W. Nufer, Hopewell Junction, and Frank G. Pugliese, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 902,618, May 4, 1978, abandoned, which is a division of Ser. No. 776,815, Mar. 11, 1977, Pat. No. 4,104,345, which is a division of Ser. No. 589,305, Jun. 23, 1975, Pat. No. 4,080,414, which is a continuation-in-part of Ser. No. 158,387, Jun. 30, 1971, abandoned. This application Apr. 5, 1982, Ser. No. 365,732

The portion of the term of this patent subsequent to Mar. 21, 1995, has been disclaimed.

Int. Cl.[3] **B32B** *3/00, 5/16, 7/00*

U.S. Cl. 428—201 **3 Claims**



1. A ceramic green sheet structure comprising at least two laminated green sheets comprised of a uniform dispersion of ceramic particles in a microporous thermoplastic binder, and a conductor pattern extending in said structure between said laminated sheets.

4,387,132

HEAT TRANSFER PAPER

Paul Hain, Hamilton, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 29, 1980, Ser. No. 220,469

Int. Cl.[3] **B32B** *3/10;* **D06P** *5/15*

U.S. Cl. 428—211 **2 Claims**

1. A heat transfer paper for the enhancement of clear, sharp, precise images in printing processes employing a water based ink containing a sublimable dyestuff, said paper being coated on at least one surface thereof with a high volume liquid material in an approximate weight of from 0.4 pounds to 0.8 pounds per ream and selected from a group consisting of starch-acrylonitrile graft copolymers which very quickly absorb many times their original dry weight of water and montmorillonite clays, said high volume liquid swellable material being applied on conventional paper processing machinery from an aqueous sizing solution consisting of from about 0.3% to about 10% by weight of said liquid swellable material and about 0.5% to about 5% by weight of a conventional sizing material, said coated paper having images printed thereon using a water based ink containing at least one sublimable dyestuff, said liquid swellable material swelling upon contact with the water based ink trapping the dyestuff at the surface of said heat transfer paper in a uniform manner.

4,387,133

LAMINATED LIGHT-POLARIZING SHEET

Rinjiro Ichikawa, and Chiyoji Hitomi, both of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Jul. 6, 1981, Ser. No. 280,491

Claims priority, application Japan, Jul. 11, 1980, 55-95380

Int. Cl.[3] **B32B** *15/08;* **G02B** *5/30;* **B32B** *27/38*

U.S. Cl. 428—215 **17 Claims**

1. A laminated light-polarizing sheet comprising a light-polarizing film, a polymeric supporting film or sheet having a thickness in the range of 5 to 1000 microns formed to at least one surface of said light-polarizing film, and a transparent

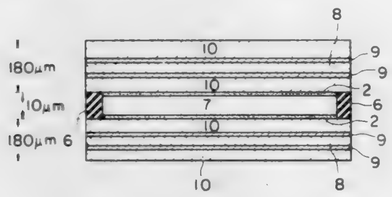
conductive layer comprising a metal oxide or a mixture of metal oxides or a metal formed on the surface of said polymeric supporting film or sheet opposite to said light-polarizing film wherein said polymeric supporting film or sheet has the following physical properties:

Retardation value: not more than 30 millimicrons;

Heat distortion temperature: not lower than 80° C.;

Average visible light transmittance: not less than 75%;

Water vapor permeability: not higher than 30 $g/m^2 \cdot 24$ hr.;



Izod impact strength: not less than 1.5 kg-cm/cm;

Degree of swelling on a surface in a solvent: not more than 0.5%.

3. A laminated light-polarizing sheet according to claim **1** or **2**, wherein said surface of said polymeric supporting film or sheet on the opposite side with respect to said light-polarizing film is cured after it is coated or impregnated with a monomer and/or curable polymer, the so-formed cured layer having a thickness of from 1 to 10 microns.

4,387,134

ELECTRICALLY CONDUCTING LAMINAR ARTICLE

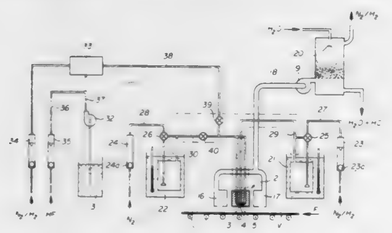
Reinhard Kalbskopf, Onex, and Otto Baumberger, Carouge, both of Switzerland, assignors to Societa Italiana Vetro - SIV - SpA, San Salvo, Italy

Continuation of Ser. No. 173,806, Jul. 30, 1980, abandoned. This application Apr. 7, 1982, Ser. No. 366,334

Claims priority, application Switzerland, Jul. 31, 1979, 7033/79

Int. Cl.³ B32B *7/02*

U.S. Cl. 428—215 **10 Claims**



1. An electrically conducting laminar article consisting of a substrate of mineral material covered with an adherent coating of stannic oxide having a resistivity below 10^{-2} ohm-cm, a thickness of a 0.5 to 3 μm, a surface resistance $R_{\square}$=1–10Ω, a transparency of 60–95%, and an IR reflectivity of not less than 50%, said coating being produced by vapor deposition by heating the substrate to a temperature of at least 500° C. and reacting on the heated substrate's surface a gaseous reaction mixture comprising a volatile tin compound selected from the group consisting of $SnCl_4$, compounds of the general formula $Sn(Alk)_4$, wherein Alk is a lower alkyl radical, and dibutyldiacetyl tin and water vapor diluted in a carrier gas containing at least 30% hydrogen to deposit said stannic oxide coating on the substrate.

4,387,135

METALIZED BONDED SHEETS COMPRISING A POLYOLEFINIC FILM AND A POLYCHLOROVINYL FILM

Fosco Bordini, and Luigi Mauri, both of Terni, Italy, assignors to Moplefan S.p.A., Milan, Italy

Filed Mar. 7, 1980, Ser. No. 128,089

Claims priority, application Italy, Mar. 9, 1979, 20852 A/79

The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.

Int. Cl.³ B32B *15/08*

U.S. Cl. 428—220 **3 Claims**

1. A bonded sheet for packaging having a thickness of from 20 to 200 microns and consisting essentially of two films, one of which is obtained from chlorovinyl polymers and the other from olefinic polymers, and characterized in that one of the two films has, on its surface in contact with the other film, a metallized coating with a resistivity of from 1 to 5 Ohms, said chlorovinyl polymer film being a film, optionally stretched, prepared from polymers or copolymers of vinyl chloride, having a Fikentscher value K of from 40 to 80, and said polyolefinic film being a film, optionally oriented by stretching, prepared from a polymer selected from the class consisting of a polyethylene with a melt index of from 0.5 to 15, a polypropylene with a melt index of from 1 to 20, a crystalline propylene/ethylene copolymer containing from 0.1 to 15% by weight of ethylene and with a melt index of from 1 to 20, or mixtures thereof.

4,387,136

MAGNETIC RECORDING MEDIUM AND APPARATUS FOR PREPARING THE SAME

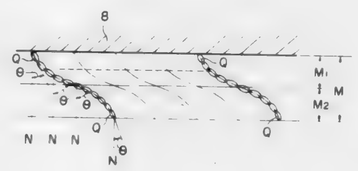
Seitoku Saito; Fumio Maruta; Toshiaki Izumi, and Hiroshi Sugihara, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,672

Claims priority, application Japan, Apr. 8, 1980, 55/46083

Int. Cl.³ G11B *5/66*

U.S. Cl. 428—328 **1 Claim**



1. A magnetic recording medium comprising binderless thin metallic layers formed on a substrate in which tilt angle of metallic particles relative to the normal line to said substrate gradually increases in one layer and tilt angle of metallic particles relative to the normal line to said substrate in another layer gradually decreases depending upon an increase in distance from said substrate.

4,387,137

CAPACITOR MATERIAL

James M. Rice, Sepulveda, Calif., assignor to The Mica Corporation, Culver City, Calif.

Filed Dec. 1, 1980, Ser. No. 211,645

Int. Cl.³ B32B *15/04*

U.S. Cl. 428—332 **5 Claims**

1. A laminate adapted for use in the manufacture of capacitors comprising layers of microthin pin-hole and stain free electroformed copper bonded together by a thin layer of hardened dielectric material, said bonded surfaces of said microthin copper having first been treated to form thereon a superficial coating of cupric oxide, bonded to the outer surfaces of said microthin copper, layers of self-sustaining copper foil, the bonded surfaces of said copper foil having been passivated under cathodic or reducing conditions in an aqueous solution of chromic oxide to passivate the surface thereof and to render



said copper foil peelably removable from said microthin copper.

3. The laminate of claim **1** wherein the microthin copper is from about 25 to 100 microinches in thickness.

4,387,138

ACRYLATE MATERIAL COMPRISING SEQUENTIALLY POLYMERIZED FOUR COMPOSITION PARTICLE HAVING RADIALLY GRADUATED TRANSITIONAL PROPERTIES

Warren H. Gift, Morrisville, Pa., assignor to Plaskolite, Inc., Columbus, Ohio

Division of Ser. No. 201,820, Oct. 29, 1980, Pat. No. 4,341,883. This application Apr. 2, 1982, Ser. No. 364,757

Int. Cl.³ B32B *27/02;* **C08L** *33/12*

U.S. Cl. 428—407 **8 Claims**



1. A particle consisting of successively emulsion polymerized:

(a) initial central elastomeric core, being from 5 to 15 weight percent of the particle, which is polymerized from a mixture including a principal portion of over 50 weight percent of a lower alkyl acrylate monomer and a portion of up to 5 weight percent of a compatible principally cross-linking functional co-monomer;

(b) a next principal elastomer, being from 45 to 65 weight percent of the particle, surrounding the core, which is polymerized from a mixture including a principal portion of over 50 weight percent of a lower alkyl acrylate monomer; a portion of up to 5 weight percent of a compatible cross-linking functional co-monomer; and a further portion of up to 5 weight percent of a compatible principally graft-linking functional co-monomer which is capable of chemically bonding to the succeeding encapsulation shell;

(c) a next encapsulation shell, being from 15 to 25 weight percent of the particle, which is polymerized from a mixture including a principal portion of over 85 weight percent of a lower alkyl methacrylate and includes a lesser portion of up to 5 weight percent of a compatible principally graft-linking functional co-monomer which is capable of chemically bonding to the succeeding coating; and

(d) final coating, being from 10 to 20 weight percent of the particle, surrounding the encapsulation shell, which consists of a composition which is polymerized from a mixture including a principal portion of over 85 weight percent of a lower alkyl methacrylate.

4,387,139

ELASTOMERIC, ETHYLENICALLY UNSATURATED POLYURETHANES AND RADIATION POLYMERIZABLE MIXTURES CONTAINING SUCH POLYURETHANES

Walter Herwig, Bad Soden; Kurt Erbes, Flörsheim; Rudolf Decker, Bodenheim, and Helga Sikora, Wiesbaden, all of Fed. Rep. of Germany, assignors to KALLE, Niederlassung der Hoechst AG, Wiesbaden, Fed. Rep. of Germany

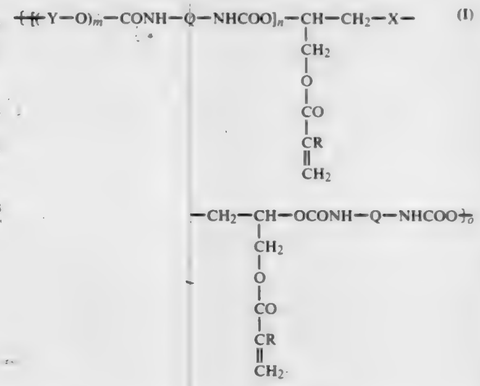
Filed Sep. 15, 1981, Ser. No. 302,687

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036694

Int. Cl.³ C08G *18/32;* **C08L** *29/04;* **B32B** *37/40;* **C08G** *69/00*

U.S. Cl. 428—423.7 **23 Claims**

1. A photopolymerizable composition comprising an effective polymerization-initiating amount of a radiation activatable polymerization initiator and a polymerizable polyurethane acrylate ester compound corresponding to the formula:



(I)

wherein

Q is a divalent, mononuclear or dinuclear aromatic radical which is unsubstituted or is substituted by lower alkyl groups and which can contain, as a linking member, a lower alkylene group,

X is one of the groups —O—Ph—Z—Ph—O— and —OO-C—$(CH_2)_y$—COO—,

Ph being an optionally substituted phenylene group,

Z being an alkylene group having 1–4 carbon atoms, and

y being an integer from 2 to 12,

R is a hydrogen atom or a methyl group,

Y is an alkylene radical having 2–6 carbon atoms,

m is an integer from 4 to 50,

n is an integer from 1 to 6, and

o is an integer from 4 to 20.

4,387,140

SLIDE MEMBER

Katsumi Kondo; Yoshio Fuwa, and Shoji Miyazaki, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

PCT No. PCT/JP80/00148, § 371 Date Dec. 15, 1980, § 102(e) Date Dec. 15, 1980, PCT Pub. No. WO81/00117, PCT Pub. Date Jan. 22, 1981

PCT Filed Jun. 28, 1980, Ser. No. 220,053

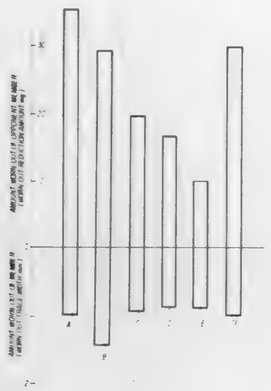
Claims priority, application Japan, Jun. 28, 1979, 54-081816

Int. Cl.³ B22F *5/04*

U.S. Cl. 428—553 **6 Claims**

1. A slide member, comprising: a spray-coated layer on a base material, said spray-coated layer being provided by the

plasma spray coating of a mixture consisting of from 5 to 80% by weight of a first powder of Fe/Ni alloy and from 95 to 20%



by weight of a second powder of an iron-chromium alloy consisting of 55 to 70% Cr and 3 to 9% C with the balance Fe.

4,387,141

X-RAY SCREENS BASED ON PHOSPHOR MIXTURES OF $CaWO_4$ AND RARE EARTH TANTALATES

Stanley H. Patten, Towanda, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 12, 1982, Ser. No. 377,374
Int. Cl.³ C09K *11/475;* **G01T** *1/00*
U.S. Cl. 428—690 **3 Claims**

1. An X-ray intensifying screen comprising a support, a phosphor mixture on said support, and a binder for said phosphor mixture, characterized in that said phosphor mixture consists essentially of calcium tungstate and a rare earth tantalate having the monoclinic M′ structure and selected from the group consisting of:

(a) $YNb_xTaO_{1-x}O_4$, where x is 0 to about 0.15;
(b) $LuNb_xTa_{1-x}O_4$, where x is 0 to about 0.20;
(c) $Y_{1-y}Tm_yTaO_4$, where y is 0 to about 0.30;
(d) a solid solution of (a) and (b); and,
(e) a solid solution of (a) and (c) wherein the rare earth tantalate is present in an amount of 5% to 75% by weight.

4,387,142

GRANULAR MATERIAL CONSISTING OF MICROPOROUS HOLLOW GRANULES OF LEAD POWDER

Alfons S. M. Lindholm, Herserudsvagen 2C, S-181 34 Lidingo, and Rolf C. G. Magnusson, Matrosvagen 5, S-133 00 Saltsjobaden, both of Sweden

PCT No. PCT/SE80/00028, § 371 Date Sep. 30, 1980, § 102(e) Date Sep. 26, 1980, PCT Pub. No. WO80/01625, PCT Pub. Date Aug. 7, 1980
PCT Filed Jan. 30, 1980, Ser. No. 204,404
Claims priority, application Sweden, Jan. 30, 1979, 7900812
Int. Cl.³ H01M *4/14*
U.S. Cl. 429—50 **9 Claims**

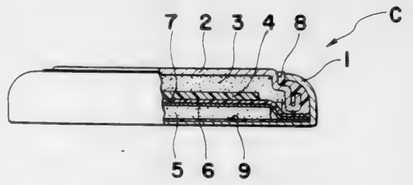
1. Method for production of a granular material consisting of microporous, substantial hollow granules of lead powder wherein the lead powder is suspended in water and a binder is added whereupon said suspension is transferred into granules, characterized in that the binder is added in an amount of 0.5–2.0% by weight calculated on the dry substance, the suspension is heated to 100°–150° C. and thereafter spray-dried to granules present in substantially two fractions with a particle diameter of 40–60 μm and 110–150 μm, respectively, by forcing through a nozzle under pressure into a drying chamber of an elevated temperature.

4,387,143

SILVER OXIDE PRIMARY CELL

Tomohiko Arita; Kaoru Murakami, both of Hirakata; Mitsugu Okahisa, Kyoto, and Hiroshi Kumano, Daito, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 974,111, Dec. 27, 1978, abandoned. This application Mar. 5, 1980, Ser. No. 127,518
Claims priority, application Japan, Dec. 29, 1977, 52-157706
Int. Cl.³ H01M *2/26*
U.S. Cl. 429—174 **4 Claims**



1. A silver oxide primary cell for use in electrical and electronic equipment which comprises:

a casing composed of a positive electrode container and a negative electrode container electrically insulated from and received in said positive electrode container to define a sealed chamber between said positive electrode container and negative electrode container;
a positive electrode mainly composed of divalent silver oxide and disposed at approximately the central portion of said positive electrode container;
an electrically insulating layer for separating the inner bottom surface from said positive electrode;
a negative electrode housed in said negative electrode container;
a separator member for separating said positive electrode from said negative electrode;
an electrically conductive member composed of nickel porous member covering the surface of the positive electrode confronting the negative electrode, and at least contacting the positive electrode active substance through a silver layer provided on the surface of said positive electrode confronting said negative electrode; and
an electrically insulating gasket disposed between said positive electrode container and said negative electrode container
a peripheral portion protruding from the positive electrode peripheral edge portion of said electrically conductive member and extending into the gap between the positive electrode and the positive electrode container being pressed, against the bottom face of said positive electrode container by said electrically insulating gasket, and simultaneously being electrically connected to the bottom face or side wall of said positive electrode container.

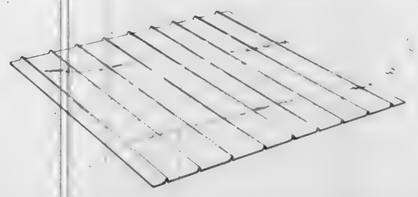
4,387,144

BATTERY SEPARATOR MATERIAL

David J. M. McCallum, Kirkcaldy, and Alexander R. Clifford, Glenrothes, both of Scotland, assignors to Tullis Russell & Company Limited, Glenrothes, Scotland

Filed May 1, 1979, Ser. No. 34,911
Claims priority, application United Kingdom, May 11, 1977, 19763/77
Int. Cl.³ H01M *2/16;* **B32B** *27/20, 27/28;* **D21F** *11/00*
U.S. Cl. 429—251 **1 Claim**

1. A battery separator made from a paper web formed from a furnish containing a pulp mixture of which between 60 and 80% by dry weight comprises a synthetic polypropylene wood pulp with a barium sulphate filler, and of which the balance of said pulp mixture is a bleached sulphate natural wood pulp, said furnish also containing polyester staple fibres at a level of between 5 and 20% by dry weight of said pulp mixture; and said web having a phenol ethoxylate wetting agent incorporated therein whereby said web has improved electrical resistance, even after accelereted ageing, so that the electrical resistance of said web after immersion for 20 minutes in battery acid is no more than 300 m.ohms cm^2, and the wetting agent is retained in said web to such an extent that after accelerated ageing the electrical resistance of said web after immersion for 20 minutes in battery acid is no greater than 300 m.ohms cm^2.

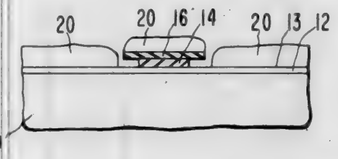


4,387,145

LIFT-OFF SHADOW MASK

William I. Lehrer, Los Altos, and John H. Vincak, Mountain View, both of Calif., assignors to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Sep. 28, 1981, Ser. No. 306,116
Int. Cl.³ G03C *5/00;* **G03F** *5/00;* **B44C** *1/22*
U.S. Cl. 430—5 **8 Claims**



5. A method for forming a predetermined configuration of a film material comprising:

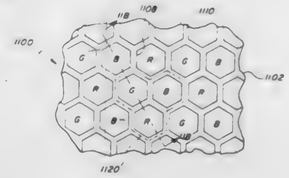
(a) forming a layer of a water-soluble material on a surface;
(b) forming a layer of a water-insoluble material on said layer of water-soluble material, said water-soluble material having an etch rate greater than that of said water-insoluble material when said materials are exposed to a common etchant;
(c) covering said layer of water-insoluble material with photoresist and patterning said photoresist to expose portions of said layer of water-insoluble material;
(d) plasma etching said exposed portions of said layer of water-insoluble material and underlying portions of said layer of water-soluble material utilizing a common etchant to expose portions of said surface;
(e) forming a layer of film material on said exposed portions of said surface and on remaining portions of said layer of water-insoluble material;
(f) immersing remaining portions of said water-soluble layer in water to dissolve said remaining portions of said water-soluble layer such that said overlying remaining portions of said water-insoluble layer and film material thereon are removed.

4,387,146

MULTICOLOR FILTERS WITH NONPLANAR SUPPORT ELEMENTS

Keith E. Whitmore, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 184,714, Sep. 8, 1980, Pat. No. 4,362,806, which is a continuation-in-part of Ser. No. 8,819, Feb. 2, 1979, abandoned. This application Jun. 1, 1982, Ser. No. 383,847
Int. Cl.³ G03F *5/00*
U.S. Cl. 430—7 **19 Claims**



1. In an element comprising a support means having first and second major surfaces and, on said support means, at least three laterally offset filters,

the improvement comprising:

said support means defining microvessels which individually open toward one of said first and second major surfaces,
a plurality of the microvessels opening toward said first major surface of said support means to form a predetermined, ordered array,
a plurality of said filters being located in separate interlaid sets of microvessels forming said planar array to form an interlaid pattern, and
said support means providing a lateral barrier between adjacent microvessels.

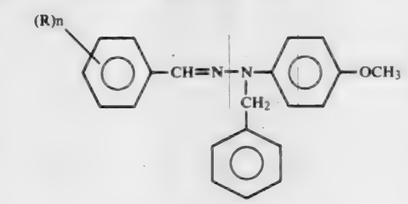
4,387,147

ELECTROPHOTOGRAPHIC ELEMENT CONTAINING HYDRAZONE COMPOUNDS IN CHARGE TRANSPORT LAYERS

Kiyoshi Sakai, Numazu, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,306
Claims priority, application Japan, Dec. 8, 1979, 54-158725
Int. Cl.³ G03G *5/14*
U.S. Cl. 430—58 **14 Claims**

1. In an electrophotographic element comprising a charge generation layer and a charge transport layer superposed on an electrically conductive substrate, the improvement which comprises: said charge transport layer contains at least one hydrazone compound having the formula:



wherein R is hydrogen, alkyl having from one to six carbon atoms, alkoxy having from one to six carbon atoms, halogen, nitro or hydroxyl, n is an integer of 1–5, and when n is 2 or more, R is the same or different; and
a binder.

4,387,148

ELECTROPHOTOGRAPHIC RECORDING MATERIAL AND PROCESS FOR ITS PRODUCTION

Werner Franke, Wiesbaden; Markus Seibel, Mainz; Richard Brahm, Ingelheim, and Hans Trittler, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 17, 1981, Ser. No. 293,127

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1980, 3032773

Int. Cl.³ G03G *5/14*

U.S. Cl. 430—66 **17 Claims**

1. An electrophotographic recording material comprising an electrically conductive support, a photoconductor layer, and a protective layer comprising a radiation-hardened, crosslinked polyester which is formed from trimethylol propane, adipic acid and acrylic acid and which has a surface resistance ranging from about $5.5 \cdot 10^{12}$ to about $2.5 \cdot 10^{13}$ ohm and a volume resistivity ranging from about $7 \cdot 10^{10}$ to about $5 \cdot 10^{13}$ ohm cm measured at 23° C. and 50 percent relative humidity.

4,387,149

ELECTROPHOTOGRAPHIC SENSITIVE MATERIAL HAVING A DYE SENSITIZER CONTAINING A CARBONIUM ATOM

Kazuhiro Emoto, and Kiyoshi Futaki, both of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

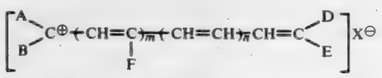
Continuation of Ser. No. 84,298, Oct. 12, 1979, abandoned. This application Mar. 4, 1982, Ser. No. 354,609

Claims priority, application Japan, Oct. 13, 1978, 53/125965; Dec. 12, 1978, 53/153859; Dec. 27, 1978, 53/163094

Int. Cl.³ G03G *5/06*

U.S. Cl. 430—83 **8 Claims**

1. An electrophotographic photosensitive material comprising a support and thereon a layer of an organic photoconductor and a layer of sensitizing compound or a layer of a mixture thereof, the organic photoconductor selected from the group consisting of aromatic tertiary amino compound, aromatic tertiary diamino compound, a condensation product, metal-containing compound, heterocyclic compound and mixtures thereof, and the sensitizing compound having the following formula;



wherein A, B, D and E represent independently a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, a phenyl group or a 5- or 6-membered heterocyclic ring residue, and at least two of them represent a phenyl group; F is an alkyl, phenyl or styryl group; m is a number of 0 or 1, and n is a number of zero 1 or 2, provided that when m is 1, n is 0; and X^- represents an anion residue.

4,387,150

FIXABLE THERMOSENSITIVE RECORDING SHEET

Kenji Yabuta, Funabashi; Senji Tosa, Tokyo, and Akira Tanaka, Chudojikitamachi, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

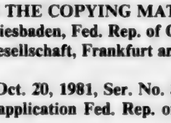
Filed Aug. 20, 1981, Ser. No. 294,553

Claims priority, application Japan, Sep. 1, 1980, 55-120891

Int. Cl.³ G03C *1/60*

U.S. Cl. 430—162 **8 Claims**

1. A fixable thermosensitive recording sheet consisting of a substrate, a photo- and thermo-sensitive layer composed of an acid stabilized diazonium salt capable of forming a dye by reacting with a coupler compound, and a heat-softening binder material, said layer being formed on said substrate, and a developer layer composed of a heat-softening binder material and a particulate dispersion of a heat-fusible developer capable of supplying a necessary amount of base for allowing said acid stabilized diazonium salt to react sufficiently with the coupler compound, said developer layer being formed on said photo- and thermo-sensitive layer, wherein the coupler compound is contained in at least one of said two layers and the heat-fusible developer is a hydrophobic guanidine derivative represented by the general formula:



wherein one or both of R_1 and R_2 is/are selected from the group consisting of alkyl, cycloalkyl, aryl and aralkyl groups, and when only one of R_1 and R_2 is selected from said groups, the remaining R_1 or R_2 is hydrogen; one or both of R_3 and R_4 is/are selected from the group consisting of alkyl, cycloalkyl, aryl and aralkyl groups, and when only one of R_3 and R_4 is selected from said groups, the remaining R_3 or R_4 is hydrogen; and R_5 is selected from the group consisting of alkyl, cycloalkyl, aryl and aralkyl groups, wherein said cycloalkyl group may have a halogen substituent and said aryl group may have a substituent selected from the group consisting of alkyl, alkoxy, nitro and halogen.

4,387,151

LIGHT-CURABLE MIXTURE AND LIGHT-SENSITIVE COPYING MATERIAL MADE THEREWITH

Dieter Bosse, Hofheim, and Werner Frass, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 22, 1981, Ser. No. 304,686

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1980, 3036077

Int. Cl.³ G03C *1/52*

U.S. Cl. 430—175 **10 Claims**

1. A light-curable mixture, comprising:
   a light-sensitive compound comprising a diazonium salt polycondensation product or an organic azido compound; and
   a binder comprising a polymer at least swellable in an aqueous-alkaline solution and which comprises alkenylsulfonylurethane or cycloalkenylsulfonylurethane side groups.

4,387,152

LIGHT-SENSITIVE MIXTURE AND COPYING MATERIAL PREPARED THEREFROM, AND PROCESS FOR THE PREPARATION OF A PRINTING FORM FROM THE COPYING MATERIAL

Paul Stahlhofen, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 20, 1981, Ser. No. 313,354

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039926

Int. Cl.³ G03C *1/52, 1/58*

U.S. Cl. 430—191 **20 Claims**

1. A light-sensitive mixture, comprising:
   a water-insoluble binder which is soluble in aqueous-alkaline solutions;
   a light-sensitive component selected from o- or p-quinonediazides or a mixture of
      (a) a compound which generates or splits off an acid on exposure to light and
      (b) a compound having at least one C—O—C group which can be cleaved by acid; and
   a phenol derivative comprising a compound having from 1 to 3 benzene nuclei which are mutually linked by single bonds, carbonyl groups, ether groups, thioether groups or unsubstitutd or substituted methylene groups, and having at least one phenolic hydroxyl group and at least two substituents of the formula $—CH_2OR$, in which R denotes hydrogen or a lower alkyl or acyl group.

4,387,153

DRY TRANSFER PROCESS WHICH EMPLOYS ULTRAVIOLET LIGHT AND PHOTOSENSITIVE MATERIALS

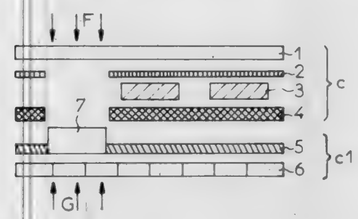
Mark P. Bonneron, Amsterdam, Netherlands, assignor to Mecanorma S.A., Paris, France

Filed Oct. 15, 1981, Ser. No. 311,862

Claims priority, application France, Apr. 13, 1981, 81 07333

Int. Cl.³ G03C *1/48, 5/54*

U.S. Cl. 430—200 **11 Claims**



1. A dry transfer material for the production of a coloured image which comprises (a) a first inert carrier having a colour-producing coating containing a chromogenic substance upon one side thereof, and (b) a second inert carrier having a coating comprising a colour developer upon one side thereof, said chromogenic substance being adapted to emit electrons and said colour developer is an electron-accepting compound, said transfer material being characterised (i) in that said colour-producing coating is a discontinuous coating which is present in the form of the images which are to be transferred, which discontinuous coating is coated upon its outer side with a barrier layer of a material which is degradable by the action thereon of ultraviolet light of predetermined wavelength and comprises a mixture of photoactivators dispersed in a system of acrylic oligomers and copolymers and and (ii) in that a priming layer which is interposed between said first inert carrier and said discontinuous colour-producing coating and comprises a mixture of copolymers of polyvinyl-pyrrolidone, maleic anhydryde and of a polyvinyl alcohol in which is dispersed a photoinitiator or a mixture of such materials and (iii) in that at least one of said first and second inert carriers is transparent to ultraviolet light of said predetermined wavelength under action of ultraviolet light of specific wavelength said photoinitiators bringing about a photopolymerisation with the acrylic oligomers or copolymers of the barrier layer and releasing free radicals what leads in presence of hydrogen donor to the liberation of hydrochloric acid permitting following action:
   (a) to initiate the exothermic photo-degradative polymerisation of said barrier layer,
   (b) to bring about a specific intimate contact between said colour-producing creating and said colour developer,
   (c) to activate the electron exchange process consequent upon the pH drop resulting from the release of acid, and
   (d) to introduce said colour developer into a liquid phase consequent upon the resulting exothermic reaction thus allowing absorption of and penetration in depth of the ingredients of said colour-producing composition within said colour developer.

4,387,154

RECEIVERS WITH NONPLANAR SUPPORT ELEMENTS

Keith E. Whitmore, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 184,714, Sep. 8, 1980, Pat. No. 4,362,806, which is a continuation-in-part of Ser. No. 8,819, Feb. 2, 1979, abandoned. This application Jun. 1, 1982, Ser. No. 383,884

Int. Cl.³ G03C *5/54, 1/48*; B32B *3/12*

U.S. Cl. 430—202 **20 Claims**

1. In an element comprising a support means having first and second major surfaces and, on said support means, a material capable of reducing the mobility of a diffusible imaging material,
   the improvement comprising individually open toward one of said first and second major surfaces,
      a plurality of the microvessels opening toward said first major surface of said support means to form a planar array,
      next adjacent of the microvessels forming the planar array being laterally spaced by less than the width of adjacent microvessels opening toward either of said first and second major surfaces, and
      said mobility reducing material being present at least in part in a plurality of the microvessels of said planar array to form a recurring pattern.

4,387,155

SPECTRALLY SENSITIZED PHOTOSENSITIVE SILVER HALIDE EMULSION

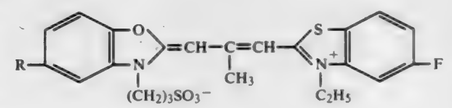
Ruth L. Hill, Dover, and Roger E. Jerry, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 26, 1981, Ser. No. 267,363

Int. Cl.³ G03C *1/18, 1/19, 1/14*

U.S. Cl. 430—217 **20 Claims**

1. A photosensitive silver halide emulsion containing as a green sensitiver a dye of the formula



wherein R is hydrogen or chlorine.

4,387,156

IMAGEABLE FILM CONTAINING A METAL OXIDE OPACIFYING LAYER

George H. Crawford, White Bear Lake, and Richard S. Fisch, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 4, 1981, Ser. No. 231,031

Int. Cl.³ G03C *1/78*

U.S. Cl. 430—271 **9 Claims**

1. An imageable article comprising
   (a) a substrate,
   (b) on at least one surface of said substrate a first opacifying layer comprising a dispersion of (i) metal and (ii) metal oxide with an optical density of at least 0.2 derived from the dispersion, and
   (c) a photoresist layer on said first layer, wherein said opacifying layer is at least 15 Angstroms in thickness and comprises a mixture of (a) metal and (b) metal oxide, said opacifying layer characterized by having a region of higher concentration of metal on one surface than on a second surface, and having said one surface of the said opacifying layer bonded to said substrate, having said second surface facing away from said substrate, and having a zone of continuous transition of the concentration of metal from said region of higher concentration of metal to said second surface.

4,387,157

PHOTOSENSITIVE MULTI-LAYER MATERIAL AND PREPARATION OF ADHESIVE LAYERS EMPLOYED THEREIN

Bernd Bronstert, Frankenthal; Herbert Hahn, Ludwigshafen; Gerhard Hoffmann, Otterstadt, and Werner Lenz, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 23, 1981, Ser. No. 324,278

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1980, 3045516

Int. Cl.³ G03C *1/78*

U.S. Cl. 430—271 **6 Claims**

1. A photosensitive multi-layer material which comprises the following layers, in the stated sequence:

(a) a base B,

(b) a pigmented adhesion-promoting layer APL prepared by baking a solution of reactive adhesive-forming compounds which contains, as solids:

(A1) from 20 to 60% by weight, based on the amount of solids (A1)–(A4), of an epoxy resin binder having a mean molecular weight of from 900 to 25,000 and a hydroxyl content of from 4 to 8% by weight,

(A2) from 0.8 to 2 equivalents, per equivalent of hydroxyl groups of (A1), of a polyisocyanate,

(A3) from 15 to 35% by weight, based on the amount of solids (A1)–(A4), of a pigment combination of

(A3.1) a white zinc sulfide pigment of which up to 50% by weight can be replaced by magnesium oxide,

(A3.2) from 0.05 to 10% by weight, based on the pigment combination (A3), of a white titanium dioxide pigment and

(A3.3) from 0 to 10% by weight, based on the pigment combination (A3), of a chrome oxide green pigment, and

(A4) from 0 to 25% by weight, based on the amount of solids (A1)–(A4), of at least one extender;

(c) an adhesive layer AL consisting essentially of a baked mixture of

(B1) from 65 to 98% by weight of an alcohol-soluble copolyamide which is compatible with the polyamide binder of the subsequent photosensitive layer R and

(B2) from 2 to 35% by weight of a hardenable, alcohol-etherified melamine-formaldehyde condensate having a mean molecular weight of from 300 to 1,800; and

(d) a photosensitive layer R consisting of a mixture which contains at least one polyamide binder, at least one photopolymerizable ethylenically unsaturated low molecular weight compound compatible therewith and at least one photoinitiator, the mixture being soluble or dispersible in an alcoholic solvent.

4,387,158

PHOTOGRAPHIC MATERIALS

Stephen R. Postle, Brentwood, England, assignor to Ciba-Geigy AG, Basel, Switzerland

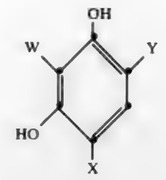
Filed Jun. 18, 1982, Ser. No. 389,728

Claims priority, application United Kingdom, Jun. 19, 1981, 8119059

Int. Cl.³ G03C *1/40*

U.S. Cl. 430—364 **13 Claims**

1. A photographic silver halide material which comprises at least one silver halide emulsion layer coated on a support, there being present in the silver halide emulsion layer(s), or in a layer in operative contact with at least one silver halide emulsion layer, a compound of the formula



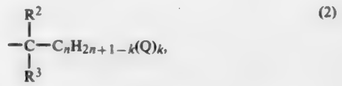
(I)

wherein

W is hydrogen, n-alkyl having 1 to 5 carbon atoms, —NHCOR[1] or —COR[1], wherein R[1] is alkyl having 1 to 12 carbon atoms or alkenyl having 2 to 12 carbon atoms, cycloalkyl having 3 to 8 carbon atoms, aralkyl having 7 to 13 carbon atoms or aryl having 6 to 10 carbon atoms optionally substituted by one or two alkyl groups each having 1 to 4 carbon atoms, a phenoxymethylamino group optionally substituted with one or more alkyl groups, or halogen;

X is hydrogen, chlorine, bromine, a group of formula —SR[11], wherein R[11] is alkyl having 1 to 20 carbon atoms, aryl having 6 to 10 carbon atoms optionally substituted by one or two alkyl groups each having 1 to 4 carbon atoms, or a heterocyclic group, or X is a nitrogen-containing heterocyclic residue attached at a ring nitrogen atom;

Y is a group having the formula



(2)

wherein Q is selected from the residues:

(a) —COOR[4] or —CONR[4]R[5], where R[4] is hydrogen, alkyl having 1 to 20 carbon atoms optionally interrupted by 1 or more oxygen atoms, alkenyl having 3 to 20 carbon atoms, cycloalkyl having 3 to 12 carbon atoms, aralkyl having 7 to 13 carbon atoms or optionally substituted aryl having 6 to 10 carbon atoms and R[5] is hydrogen or alkyl having 1 to 20 carbon atoms or R[4] and R[5], together with the nitrogen atom to which they are each bonded, form a 5- or 6-membered heterocyclic ring optionally substituted by alkyl having 1 to 4 carbon atoms,

(b) —OM wherein M is R[5] or —COR[6] wherein R[5] is as defined above and R[6] is hydrogen, alkyl having 1 to 20 carbon atoms, alkenyl having 3 to 20 carbon atoms, cycloalkyl having 3 to 12 carbon atoms, aralkyl having 7 to 13 carbon atoms or optionally substituted aryl having 6 to 10 carbon atoms,

(c) —NR[7]R[8] wherein R[7] is hydrogen or alkyl having 1 to 4 carbon atoms and R[8] is hydrogen, alkyl having 1 to 4 carbon atoms or acyl of the formula —COR[4], wherein R[4] is as defined above or R[7] and R[8], together with the nitrogen atom to which they are bonded, form a 5- or 6-membered heterocyclic ring optionally substituted by alkyl having 1 to 4 carbon atoms,

(d) —P(O)(OR[9])(O)$_x$R[10] wherein x is 0 or 1, R[9] is hydrogen or alkyl having 1 to 20 carbon atoms, R[10] is hydrogen or alkyl having 1 to 20 carbon atoms if x is 1, and R[10] is alkyl containing 1 to 5 carbon atoms if x is 0 or R[9] and R[10] may be linked together fo form an alkylene chain having 2 or 3 carbon atoms optionally substituted by one or more alkyl groups each having 1 to 20 carbon atoms,

(e) —SO$_2$T where T is —OH or —NR[4]R[5] wherein R[4] and R[5] are as defined above and

(f) —CN,

n is an integer from 1 to 20; k is 1 or 2; R[2] and R[3] independently are alkyl having 1 to 5 carbon atoms and, if Q is —CO$_2$R[4], either R[2] or R[3] is optionally substituted by one or two —CO$_2$R[4] groups, or at least one of R[2] and R[3] is so linked to the residue —C$_n$H$_{2n+1-k}$— that there is formed a cycloalkylene residue having 5 to 12 carbon atoms substituted by —(CO$_2$R[4])$_k$ in which the groups R[4] are the same or different and wherein R[4] and k are as defined above, or salts thereof with acids or bases.

9. A process for the production of a photographic black dye image which comprises exposing imagewise the photographic material according to claim 1, colour developing the material so exposed using a colour developing solution which comprises an aqueous alkaline solution of a primary aromatic amine colour developing agent, to form simultaneously a silver image and a black dye image, optionally bleaching the silver image, and then fixing out all the silver halide in the material using an aqueous solution of a silver halide solvent.

4,387,159

LIGHT SENSITIVE, COLOR PHOTOGRAPHIC SILVER HALIDE COMPOSITIONS WITH DIR-COUPLERS

Horst Engelmann, Wolfen; Rainer Redmann; Monika Bethke, both of Dessau; Christa Melz, Delitzsch; Gerd West; Jürgen Mistol, both of Dessau, and Udo Sydow, Leipzig, all of German Democratic Rep., assignors to VEB Filmfabrik Wolfen, Wolfen, German Democratic Rep.

Continuation-in-part of Ser. No. 154,245, May 29, 1980, Pat. No. 4,286,054. This application May 8, 1981, Ser. No. 262,259

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.³ G03C *1/40*

U.S. Cl. 430—544 **10 Claims**

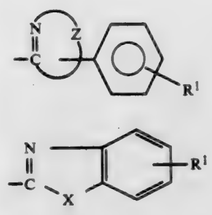
1. A light-sensitive, color photographic material including at least one silver halide emulsion layer containing a DIR-coupler, the DIR-coupler being a compound of the formula

K-S-Y

wherein

K is a color-forming group containing a diffusion preventing moiety, for reaction with an oxidation product of a color developer to yield purple, yellow, and blue-green dyes, simultaneously liberating a hydrophilically substituted development inhibitor, wherein the blue-green color coupler has a 1-naphthol- or phenol-structure, the purple color coupler has a 1-aryl-pyrazolone-5-structure and the yellow color coupler has an acylacetanilide structure; and

Y is an aryl-substituted azole, azine or benzazole of the general formulae I or II:



(II)

wherein

Z represents atoms or atom groups completing the azole- or azine-tetrazole-, triazole, imidazole-, or pyrimidine ring,

X is O, S, or NR[2],

R[1] is OR[3], COOR[3], SO$_2$NHR[3], SO$_3$R[3],

R[2] is H, or an alkyl moiety of one to five carbon atoms, and

R[3] is H, an ammonium ion, or a metal ion.

4,387,160

IMMUNOCHEMICAL ASSAY FOR CREATINE KINASE-MB ISOENZYME

Magdalena U. Gomez, Wayne; Marvin L. Miller, West Orange, and Richard W. Wicks, Belleville, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 17, 1981, Ser. No. 235,078

Int. Cl.³ G01N *33/54*; C12Q *1/50*

U.S. Cl. 435—7 **7 Claims**

1. A process for quantitatively determining in a biological fluid sample the presence of creatine kinase-MB isoenzyme where the creatine kinase can occur in biological fluids in a plurality of isoenzyme forms containing the subunit M or B or both, the process comprising:

a. incubating in a first reaction vessel a first of two portions of the biological fluid sample with a first antibody which selectively binds immunologically with the creatine kinase isoenzymes containing the M subunit by selective immunoinhibition of the M subunit in the first portion of the sample and thereafter quantitatively measuring the B isoenzyme activity of the first portion of the sample,

b. incubating in a separate reaction vessel the second of two portions of the biological fluid sample with:

(i) an antibody which selectively binds immunologically with the creatine kinase isoenzymes containing the M subunit in the second portion sample; and

(ii) a second antibody which selectively binds immunologically to form a solid phase with the antibody binding the creatine kinase isoenzymes containing the M subunit,

to produce as a precipitate the reaction product of said second antibody with said other antibody and said creatine kinase isoenzymes containing the M subunit and thereafter quantitatively measuring the B isoenzyme activity of the supernatant in said second portion; and

c. determining the CK-MB activity in said sample from said measurements through the substraction of the measurement obtained in the second portion, from the measurement obtained in the first portion.

4,387,161

DETECTION OF MYCOPLASMA INFECTION IN CELL CULTURES

Gerard J. McGarrity, Wenonah, N.J., and Dennis A. Carson, Del Mar, Calif., assignors to Institute for Medical Research, Camden, N.J.

Filed Jul. 16, 1981, Ser. No. 283,934

Int. Cl.³ C12Q *1/04, 1/22*; C12N *5/00*; C12R *1/35*

U.S. Cl. 435—34 **6 Claims**

1. A method of detecting mycoplasma infection in an animal cell culture which comprises growing a specimen of animal cells from such culture in a growth medium in the presence of 6-methylpurine deoxyriboside and determining whether animal cells are killed.

4,387,162

HYBRID PLASMIDS AND MICROORGANISMS CONTAINING THEM

Michel Aigle, Illkirch-Graffemstaden; Hughes Blanc, Boulogne Billancourt; Philippe Fournier, Versailles; Claude Gerbaud, Gagny; Michel Guerineau; Henri Heslot, both of Paris, and Francois Lacroute, Strasbourg, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Filed Nov. 14, 1979, Ser. No. 94,093

Claims priority, application France, Nov. 14, 1978, 78 32100

Int. Cl.³ C12N *1/16, 1/18, 1/20, 15/00*

U.S. Cl. 435—172 **10 Claims**

1. A hybrid plasmid comprising a DNA of a bacterial plasmid, all or part of the DNA of a 2μ plasmid of yeast, and a DNA segment of about 1.1 kb including the gene URA$_3^+$ of yeast which is limited by two Hind III restriction sites.

4,387,163

PROCESS FOR PRODUCING THE ENZYME CHOLESTEROL ESTERASE AND FOR HYDROLYZING CHOLESTEROL ESTERS OF FATTY ACIDS BY USING THE ENZYME ITSELF

Pasquale Sacceddu, Monterotondo; Vincenza Vitobello, Rome; Paolo Braduzzi, Rome; Nadia Cimini, Rome, and Ludwig Degen, Rome, all of Italy, assignors to E.N.I. Ente Nazionale Idrocarburi, Rome, Italy

Filed Jul. 13, 1981, Ser. No. 282,744

Claims priority, application Italy, Jul. 24, 1980, 23656 A/80

Int. Cl.³ C12N *9/16;* **C12Q** *1/60;* **C12R** *1/025*

U.S. Cl. 435—197 **6 Claims**

1. A process for producing the enzyme cholesterol esterase characterised in that the enzyme is produced by cultivating a micro-organism of the *Achromobacter delicatulus* genus identified by the number NRRL B-12115.

4,387,164

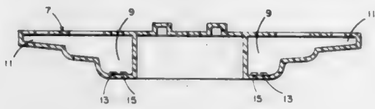
METHOD AND APPARATUS FOR CHEMICAL ANALYSIS USING REACTIVE REAGENTS DISPERSED IN SOLUBLE FILM

Richard C. Hevey, Rockport, and Ronald D. Forget, Owls Head, both of Me., assignors to FMC Corporation, Philadelphia, Pa.

Filed Nov. 5, 1980, Ser. No. 204,112

Int. Cl.³ G01N *33/52, 33/68, 33/84, 35/00*

U.S. Cl. 436—45 **4 Claims**



1. In a method of chemically analyzing an assay medium in which at least one solid or liquid reagent is supplied to a well and subsequently and automatically the reagent and an assay medium are mixed for reaction, the reaction detected, and the reaction data presented, the improvement comprising supplying reagents to such one well by combining therein an aqueous medium and at least one element consisting essentially of carrier solid organic binder which is soluble or dispersible in water and in which is dispersed at separate locations thereof a precise, measured quantity of each of at least two water-soluble or dispersible reagents which are reactive with each other whereby the protected, measured quantities of reagents dispersed within the solid organic binder are completely dissolved or dispersed concomitantly as the binder is dissolved or dispersed by the aqueous medium, mixed with each other, and reacted prior to mixing with the assay medium.

4,387,165

H_2S DETECTOR HAVING SEMICONDUCTOR AND NONCONTINUOUS INERT FILM DEPOSITED THEREON

James L. Youngblood, P.O. Box 58746, Houston, Tex. 77058

Filed Apr. 22, 1982, Ser. No. 370,790

Int. Cl.³ G01N *27/04, 27/12, 27/16*

U.S. Cl. 436—121 **27 Claims**

1. A sensor for detecting gaseous constituents such as hydrogen sulfide which materially affect the conductance of a semiconductor comprising:

an inert substrate;

a semiconductor attached to the substrate and comprised of indium oxide;

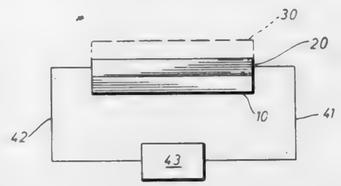
a noncontinuous film of an inert conductor deposited on the semiconductor; and

means for measuring a change in conductance of the semiconductor.

16. A method of detecting gaseous constituents such as hydrogen sulfide which materially affect the conductance of a semiconductor comprising the steps of:

coating a semiconductor comprising indium oxide with a noncontinuous film of an inert conductor;

maintaining the temperature of the semiconductor substantially constant at a temperature sufficient to ensure proper



response and recovery actions of the semiconductor when the coated semiconductor is exposed to hydrogen sulfide; and

exposing the coated semiconductor while the semiconductor is on an inert substrate to a gas containing hydrogen sulfide while measuring the change in conductance of the semiconductor.

4,387,166

IMMUNOASSAY WHEREIN IMMUNE COMPLEX FORMS AND AGES FOR AT LEAST ONE HOUR

Roland F. Maes, Strasbourg, France, assignor to Anda Biologicals, Strasbourg, France

Filed Sep. 15, 1981, Ser. No. 302,589

Int. Cl.³ G01N *33/54*

U.S. Cl. 436—541 **7 Claims**

1. A process for detecting the presence in a body fluid to be tested of an antigen or an antibody by means of an immunological antigen-antibody binding reaction characterized by the steps of:

(a) contacting the test fluid with a soluble specific antigen or specific antibody for the antibody or antigen to be detected under conditions conducive to a binding reaction therebetween and

(b) after passage of a determined time interval of at least about one hour following step (a) adding to the mixture of step (a) a sensitized solid indicator phase capable of a binding reaction with the antibody or antigen respectively to be detected.

4,387,167

SULFUR-BASED ADDUCTS AND COMPOSITIONS

Louis E. Kidwell, Jr., and Dysart E. Holcomb, both of Shreveport, La., assignors to Pennzoil Company, Houston, Tex.

Continuation-in-part of Ser. No. 116,863, Jan. 30, 1980, Pat. No. 4,302,255. This application Aug. 25, 1981, Ser. No. 296,176

The portion of the term of this patent subsequent to Nov. 24, 1998, has been disclaimed.

Int. Cl.³ C04B *33/04*

U.S. Cl. 501—140 **29 Claims**

1. A sulfur-based adduct produced by (a) reacting at a temperature of about 100°–150° C., a composition comprising (1) about 5–95 wt.% of sulfur and (2) about 95–5 wt.% of a by-product hydrocarbon mixture comprising about 45–98 wt.% of aromatic, non-pseudodiene compounds, about 1–40 wt.% of diene and pseudodiene compounds, about 0–15 wt.% of other organic compounds that are substantially unreacted with sulfur and up to about 54 wt.% of unidentified compounds; whereby the sulfur reacts with each of the diene and pseudodiene compounds in said mixture; and (b) removing unreacted material from the reaction product.

4,387,168

ADHESIVE COMPOSITION COMPRISING A FLUORINE CONTAINING ELASTOMER AND FIBRATED PTFE

Shigeru Morita, Osaka, Japan, assignor to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Sep. 25, 1981, Ser. No. 305,686

Claims priority, application Japan, Sep. 26, 1980, 55-134834

Int. Cl.³ C08L *27/16, 27/18, 27/20, 27/10*

U.S. Cl. 521—54 **4 Claims**

1. An adhesive composition comprising a fluorine-containing eslatomer having a number average molecular weight of 3,000 to 10,000 and fibrillated polytetrafluoroethylene, the weight ratio of said elastomer and said polytetrafluoroethylene being from 50:1 to 1:1.

4,387,169

LOW DENSITY, EXTRUDED ETHYLENIC POLYMER FOAMS

Vincent S. Zabrocki, Newark, and Marlin G. Bussey, Thornville, both of Ohio, assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 307,567, Oct. 1, 1981, which is a continuation of Ser. No. 158,856, Jun. 12, 1980, abandoned, which is a continuation-in-part of Ser. No. 20,681, Mar. 15, 1979, abandoned. This application Sep. 7, 1982, Ser. No. 415,078

Int. Cl.³ C08J *9/00*

U.S. Cl. 521—79 **7 Claims**

1. A method for making foam planks from a non-crosslinked, ethylenic polymer resin, said planks having a density of from about 0.8 to about 1.9 pounds per cubic foot, dimensional stability, substantially closed-cell structure, a cross-sectional area of at least 6 square inches and a minimal cross-sectional dimension of at least 0.5 inch and said method comprising the steps of forming under heat and pressure a flowable gel composition comprising (1) a non-crosslinked polyethylene resin composition consisting essentially of low density polyethylene or a blend of a major proportion of low density polyethylene with one or more other ethylenic polymer resins and (2) at least one fluorocarbon blowing agent selected from fluorocarbons having normal boiling point between −30° and 30° C., from 2 to 4 carbon atoms in its molecular structure, and a value for the critical quantity $T_b - 0.5V_c$ of between 110 to 145 where T_b is the normal boiling point temperature of the fluorocarbons in degrees Kelvin and V_c is its critical volume in cubic centimeters per gram-mole, and extruding the resulting flowable gel to ambient air atmosphere whereby the blowing agent separates from the gel and forms gas cells in the ethylenic polymer resin, particularly characterized in that the flowable gel is mixed sufficiently to disperse the fluorocarbon blowing agent in the gel to an amount from 13.5 to about 35×10^{-4} moles per gram of the ethylenic polymer resin.

4,387,170

PROCESS FOR THE PRODUCTION OF FOAMED MATERIALS FROM POLYOLEFINS

Werner Kühnel, Neunkirchen-Schöneshof, and Paul Spielau, Troisdorf-Eschmar, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Kroisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 87,845, Oct. 20, 1979, abandoned. This application Jun. 15, 1981, Ser. No. 273,710

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846646

Int. Cl.³ C08J *9/06*

U.S. Cl. 521—85 **6 Claims**

1. In a process for the production of a foamed material from polyolefin by organic peroxide crosslinking and foaming by means of a chemical foaming agent with a decomposition point or range starting at about 190° C. and an auxiliary foaming agent, the improvement wherein said polyolefin is foamed employing as said auxiliary foaming agent a sterically hindered phenol or an organic phosphorus compound.

4,387,171

UNSATURATED POLYESTER RESINS

Robert F. Russell, Wellingborough, England, assignor to Scott Baker Company Limited, England

Filed Aug. 21, 1981, Ser. No. 294,928

Claims priority, application United Kingdom, Apr. 23, 1981, 8112652

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.³ C08L *67/06*

U.S. Cl. 523—518 **12 Claims**

1. An unsaturated polyester resin composition for ambient temperature open lay-up moulding which contains

an unsaturated polyester resin selected from halogenated and non-halogenated said resins,

styrene as an agent for cross-linking during curing and a small quantity of at least one compound which is theoretically capable of taking part in the cross-linking reaction, which compound is a C_{18-14} α-olefine.

4,387,172

EMULSION TYPE ADHESIVE COMPOSITIONS

Pawan K. Agarwal, Westfield; S. Richard Turner; Robert D. Lundberg, both of Bridgewater, all of N.J., and Morris L. Evans, Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

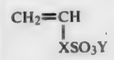
Filed Nov. 12, 1981, Ser. No. 320,209

Int. Cl.³ C08K *3/20*

U.S. Cl. 524—60 **5 Claims**

1. An adhesive composition which comprises an emulsion of:

(a) a metal neutralized sulfonated elastomeric co- or terpolymer, said neutralized sulfonated co- or terpolymer having about 5 to about 250 meq. of neutralized sulfonated groups per 100 grams of said metal neutralized sulfonated co- or terpolymer, wherein said metal neutralized sulfonated elastomeric co- or terpolymer comprises at least 80% by weight of at least one conjugated diene having from 4 to 12 carbon atoms or a combination of at least 80% by weight of at least one conjugated diene and styrene, wherein the combination contains less than 50 weight percent styrene of the total 80 weight percent and a minor proportion of a metal or amine neutralized sulfonate monomer characterized by the formula:



where X is aromatic, and Y is a cation selected from Groups IA, IIA, IB and IIB of the Periodic Table or an amine of the formula:



where R_1 and R_2 can be aliphatic groups of C_1 to C_{12} or hydrogen, said co- or terpolymer being water insoluble, substantially gel-free, thermally stable and oxidatively stable having at least 0.5 weight percent chemically combined to less than 5 weight percent chemically combined sulfur, with a reduced viscosity as measured in a solvent at a concentration of 10 gm/liter of greater than 0.2 and less than 5.0; and

(b) about 25 to about 700 parts by weight of a hydrocarbon tackifying resin based on a petroleum or coal tar distillate per 100 parts by weight of said metal neutralized sulfonated elastomeric co- or terpolymer.

4,387,173

USE OF RESORCINAL POLYMER BLEND AS A BINDER FOR CARBON-CONTAINING REFRACTORY BRICK AND SHAPE

Francis W. Henry, Jr., Glen Burnie; Merrill Wood, Jr., Baltimore, and Ljubisa Rankovic, Glen Burnie, all of Md., assignors to General Refractories Company, Bala Cynwyd, Pa.

Filed Apr. 16, 1981, Ser. No. 254,980
Int. Cl.³ C08K *5/06, 3/04*
U.S. Cl. 524—63 **20 Claims**

1. A composition for forming a carbon-containing refractory brick or shape comprising a refractory filler, a binder for said filler, and a hardening agent for said binder, said binder comprising a mixture of polymers formed by the homopolymerization of resorcinol.

2. A composition for forming a carbon-containing refractory brick or shape comprising a basic refractory filler and a binder for said filler, said binder comprising a mixture of polymers formed by the homopolymerization of resorcinol, said filler being selected from the group consisting of magnesite, magnesia, periclase, dolomite, chrome ore, and mixture thereof.

4,387,174

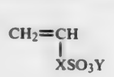
ADHESIVE COMPOSITIONS

Robert D. Lundberg, Bridgewater; Pawan K. Agarwal, Westfield, and Robert A. Weiss, Summit, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 196,213, Oct. 14, 1980, abandoned. This application Sep. 28, 1981, Ser. No. 305,921
Int. Cl.³ C08K *5/01, 3/04, 3/36*
U.S. Cl. 524—66 **12 Claims**

1. An adhesive composition which comprises:

(a) a neutralized sulfonate containing polymer having about 0.2 to 3 weight percent of chemically combined sulfur wherein said neutralized sulfonated co- or terpolymer comprises at least 80% by weight of at least one conjugated diene having from 4 to 12 carbon atoms and a minor proportion of a metal or amine neutralized sulfonate monomer characterized by the formula:



where X is $(CH_2)_n$, or aromatic, wherein n=0, 1, 2, 3, 4, and Y is a cation selected from Groups IA, IIA, IB and IIB of the periodic table or an amine of the formula:



where R_1 and R_2 can be aliphatic groups of C_1 to C_{12} or hydrogen, said co- or terpolymer being water insoluble; and

(b) about 25 to about 200 parts by weight of a hydrocarbon tackifying resin based on a petroleum or coal tar distillate per 100 parts by weight of said sulfonate containing polymer.

4,387,175

THERMOPLASTIC ELASTOMER BLENDS WITH BITUMEN

Georg G. A. Böhm; Lee E. Vescelius, and Gary R. Hamed, all of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 140,905, Apr. 16, 1980, which is a continuation-in-part of Ser. No. 1,623, Jan. 8, 1979, Pat. No. 4,250,273, which is a continuation-in-part of Ser. No. 879,308, Feb. 21, 1978, abandoned, which is a division of Ser. No. 806,036, Jun. 13, 1977, abandoned. This application Sep. 17, 1981, Ser. No. 303,271
Int. Cl.³ C03L *95/00*
U.S. Cl. 524—68 **4 Claims**

1. A process for making a thermoplastic elastomer composition, comprising the steps of

providing a blend of a 1-olefin polymer, a styrene-butadiene rubber and a bitumen,

the amount of said 1-olefin polymer ranging from about 10 to about 50 parts by weight, the amount of said styrene-butadiene rubber ranging from about 80 to about 15 parts by weight, the amount of said bitumen ranging from about 5 to about 50 parts by weight,

said 1-olefin polymer selected from the group consisting of a hompolymer and a copolymer made from 1-olefin monomers having from 2 to about 20 carbon atoms, said homopolymer or said copolymer having a melting point of at least 90° C.,

mixing said blend at a temperature at or above the melting point of said 1-olefin polymer, and

partially curing said blend to less than full cure to have a melt flow index of at least 1.0 so that a reprocessable thermoplastic elastomer is produced.

4,387,176

SILICONE FLAME RETARDANTS FOR PLASTICS

Robert B. Frye, Albany, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Feb. 4, 1982, Ser. No. 345,941
Int. Cl.³ B32B *25/20;* **C08L** *83/04;* **D02G** *3/00*
U.S. Cl. 524—268 **89 Claims**

1. A flame retardant composition comprised of:

a. 50 to 97 percent by weight of thermoplastic;

b. 1 to 40 percent by weight of silicone;

c. 1 to 20 percent by weight of Group IIA metal organic salt; and,

d. 1 to 20 percent by weight of a silicone resin soluble in silicone (b.) and effective for imparting flame retardancy to said thermoplastic.

4,387,177

ROOM TEMPERATURE CURABLE ORGANOPOLYSILOXANE COMPOSITIONS AND METHODS FOR THEIR PREPARATION

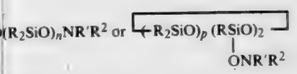
Katsutoshi Mine, Ichihara, and Tadao Tamaki, Kisarazu, both of Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 237,179, Feb. 23, 1981, abandoned. This application Feb. 2, 1982, Ser. No. 344,913
Claims priority, application Japan, Mar. 4, 1980, 55/27114; Argentina, Feb. 24, 1981, 284415
Int. Cl.³ C08L *83/06*
U.S. Cl. 524—425 **25 Claims**

1. A room temperature curable organopolysiloxane composition comprising the product obtained by mixing

(A) 100 parts by weight of a hydroxyl endblocked polydiorganosiloxane having a viscosity at 25° C. in the range 0.00005 to 0.5 m^2/s inclusive and in which the organic radicals are monovalent radicals selected from the group consisting of hydrocarbon radicals and halogenated hydrocarbon radicals,

(B) an amount of an aminoxy organosilicon compound sufficient to provide at least one mol aminoxy group per one mol hydroxyl group in (A), the aminoxy organosilicon compound having a general formula



in which each R, R′, and R^2 is a monovalent radical selected from the group consisting of hydrocarbon radicals and halogenated hydrocarbon radicals, n has a value of from 1 to 50 inclusive, and p has a value of from 1 to 5 inclusive,

(C) from 0.5 to 20 parts by weight of a hydrolyzable organosilicon compound containing at least three silicon-bonded hydrolyzable groups per molecule, said hydrolyzable groups being selected from the group consisting of oxime groups, alkoxy groups, amino groups, vinyloxy groups, amide groups, imide groups, and lactam groups.

4,387,178

COMPRESSIBLE SOFT ASBESTOS FREE GASKET MATERIAL

Douglas H. Tracy, Putnam; Jeffrey B. Otto, Brooklyn; Bruce M. Arnio, and Elizabeth L. Callan, both of Danielson, all of Conn., assignors to Rogers Corporation, Rogers, Conn.

Filed Nov. 2, 1981, Ser. No. 317,196
Int. Cl.³ C08K *7/02, 7/18;* **B32B** *27/34*
U.S. Cl. 524—448 **6 Claims**

1. A compressible soft asbestos free gasket material comprising:

5-40% of the total solids being fibrillated aramid fibers;

25-85% of the total solids being diatomaceous earth;

0.5-10% of the total solids being phenolic resin;

5-25% of the total solids being a polyacrylic latex selected from the group consisting of ethylacrylates, butylacrylates and combinations thereof; and

1-10% of the total solids being selected from the group including crosslinker, antioxident, and pigments.

4,387,179

METHOD FOR THE PREPARATION OF ALKENYL AROMATIC MONOMER NITRILE COPOLYMER REINFORCED WITH RUBBERY COPOLYMER

Yun-Chung Sun, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 14, 1981, Ser. No. 263,636
Int. Cl.³ C08F *2/16*
U.S. Cl. 524—458 **12 Claims**

1. In a process for the preparation of a rubber reinforced alkenyl aromatic monomer, monoolefinically unsaturated nitrile copolymer wherein a polymerizable mixture of an alkenyl aromatic monomer and a monoolefinically unsaturated nitrile is provided, a diene rubber dissolved in the alkenyl aromatic monomer-mono olefinically unsaturated nitrile monomer to form a rubber containing polymerizable solution, heating the solution to initiate free radical polymerization, agitating the solution during at least the initial portion of the heating and polymerization until the rubber separates and forms a plurality of particles dispersed within a solution of alkenyl aromatic monomer-nitrile polymer dissolved in alkenyl aromatic monomer-olefinically unsaturated nitrile mixture, continuing the polymerization of the alkenyl aromatic monomer and olefinically unsaturated nitrile to at least about 50 weight percent conversion of the alkenyl aromatic monomer and olefinically unsaturated nitrile polymer to thereby form at least a partially polymerized reaction stream, removing volatile materials from the reaction stream, and recovering therefrom a copolymer of alkenyl aromatic monomer monoolefinically unsaturated nitrile copolymer reinforced by a plurality of rubber particles dispersed in the polymer, the particles having incorporated therein occlusions of the polymer of the alkenyl aromatic monomer and olefinically unsaturated nitrile,

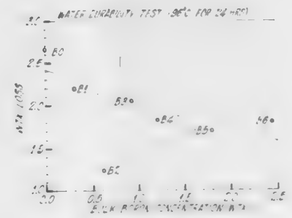
the improvement which comprises including within the polymerizable stream a minor proportion of water prior to the formation of the rubber particles and maintaining the polymerizable stream under a pressure sufficient to prevent vaporization of the water whereby a polymer of alkenyl aromatic monomer and olefinically unsaturated nitrile reinforced with rubber is obtained which has improved properties over polymer which is obtained in the absence of water.

4,387,180

GLASS COMPOSITIONS

James S. Jen, Reynoldsburg, and Marie R. P. Kalinowski, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 213,988, Dec. 8, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 427,108
Int. Cl.³ C03C *3/08, 13/00;* **C04B** *43/02;* **C08L** *61/06*
U.S. Cl. 524—594 **9 Claims**



1. A glass composition consisting essentially by weight percent of:

SiO_2:53.2 to 65.8
Fe_2O_3:0.30 to 0.32
TiO_2:0.075 to 0.085
Al_2O_3:4.7 to 6.4
CaO:6.4 to 13.1
SrO:0.075 to 0.125
MgO:3.3 to 3.4
Na_2O:15.0 to 20.0
K_2O:0.91 to 0.93
B_2O_3:1.25 to 2.55

4,387,181

POLYMER COMPOSITIONS AND MANUFACTURE

Robert A. Brown, Williamsville; Jesus L. Caamano, Amherst, and Henry A. Kasprzak, Luchawanna, all of N.Y., assignors to Textron, Inc., Providence, R.I.

Filed Apr. 9, 1980, Ser. No. 138,750
Int. Cl.³ C08J *3/02;* **C08L** *75/02, 75/04*
U.S. Cl. 524—714 **57 Claims**

1. A stable, aqueous dispersion of carboxylic acid salt of polymer prepared by reaction of carboxylic group-containing oxime-blocked, isocyanate-terminated prepolymer and polyamine, said prepolymer being the reaction product of aromatic polyisocyanate and reactant having at least two isocyanate-reactive, active hydrogen-containing groups per molecule, said prepolymer having a carboxylic group which is relatively non-reactive with isocyanate groups, and said oxime-blocked isocyanate groups being capable of reacting with said polyamine at a temperature of less than about 95° C. within a time period of up to about 18 hours, and said polymer salt having sufficient carboxylic groups in salt form to provide stable, aqueous dispersion.

22. A method for making a stable, aqueous dispersion of polyamine-extended polymer salt which comprises adding salt-forming base and water to a carboxylic acid group-containing oxime-blocked, isocyanate-terminated prepolymer of aromatic polyisocyanate and reactant having at least two isocyanate-reactive, active hydrogen-containing groups per molecule, said prepolymer having a carboxylic group which is relatively non-reactive with isocyanate groups, to form an aqueous dispersion of prepolymer salt in water, reacting the prepolymer salt dispersion with polyamine at an elevated temperature of less than about 95° C. for a time period of up to about 18 hours to form said polyamine-extended polymer salt dispersion.

4,387,182

CYCLOALIPHATIC ACRYLATE COMPOSITIONS

Hans R. Friedli; Donald L. Nelson, and John L. Massingill, Jr., all of Lake Jackson, Tex., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 951,416, Oct. 13, 1978, Pat. No. 4,319,009, which is a continuation of Ser. No. 866,679, Jan. 3, 1978, abandoned. This application May 29, 1981, Ser. No. 268,445

Int. Cl.[3] **C08L** *63/00;* **C08G** *63/76;* **C08F** *232/00;* **C08L** *67/00*

U.S. Cl. 525—44 **2 Claims**

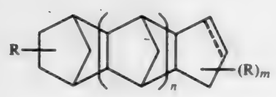
1 A thermosetting resin composition which comprises:

(1) an unsaturated polyester resin, and

(2) an unsaturated monomer mixture of a vinyl aromatic monomer and a cycloaliphatic acrylate composition comprising

(A) about 60 to 95 percent by weight of dicyclopentadiene acrylate, methacrylate, or mixtures thereof

(B) about 2 to 15 percent by weight of a mixture of polycyclopentadienyl acrylates of the formula



where

R is $CH_2{=}CZ{-}C(O){-}O{-}$

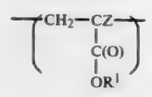
Z is H, or methyl

n is 1, or 2

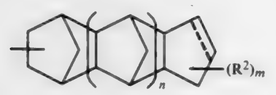
m is 0 or 1 and when m is 0 there is a double bond present

(C) about 1 to about 21 percent by weight of a mixture of the copolymers of methacrylic acid or acrylic acid with adducts of cyclopentadiene with isoprene, piperylene, or mixtures thereof,

(D) about 0.05 to about 10 percent by weight of a mixture of poly acrylates having the repeating unit



where R^1 is hydrogen or



R^2 is $CH_2{=}CZ{-}C(O){-}O{-}$

Z is H or methyl

n is 0, 1 or 2, and

m is 0 or 1 and when m is 0 there is a double bond present.

4,387,183

THROMBORESISTANT MOLDED ARTICLE AND METHOD FOR ITS PRODUCTION

Peter S. Francis, Rose Valley, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 16, 1981, Ser. No. 311,841

Int. Cl.[3] **C08F** *8/12*

U.S. Cl. 525—54.23 **1 Claim**

1. A method of treating the surface of a molded article, produced from a molding composition comprising a copolymer of a monovinyl aromatic monomer and an alpha, beta-unsaturated cyclic anhydride, to render the surface thromboresistant, which method comprises: (a) grafting hydrophilic polymer chains on at least a portion of the anhydride groups on the copolymer at the surface of the molded article, the amount of grafting being sufficient to render the surface of the molded article thromboresistant upon subsequent contact with water, and (b) contacting the hydrophilic polymer with water for a period sufficient to swell the polymer and render the surface of the molded article thromboresistant.

4,387,184

HEAT STABLE POLYPHASE POLYAMIDE COMPOSITIONS AND PREPARATION THEREOF

Jean Coquard, Grezieu la Varenne, and Jean Goletto, Ecully, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Dec. 5, 1980, Ser. No. 213,666

Claims priority, application France, Dec. 10, 1979, 79 30648; Mar. 5, 1980, 80 05272

Int. Cl.[3] **C08L** *77/00*

U.S. Cl. 525—183 **22 Claims**

1. A heat-stable polyphase polyamido composition of matter having enhanced mechanical properties, comprising (i) from 55 to 99% by weight of a nylon polyamide resin matrix, the polyamide resin matrix having a number-average molecular weight of at least 5,000, and (ii) from 1 to 45% by weight of a particulate disperse phase comprising a polyamide sufficiently incompatible with the polyamide resin matrix to provide a polyphase composition, the particulates having a particle size ranging from 0.01 to 10 microns, and the disperse phase comprising a polyamide having a content in amide groups of less than 40% of the amide groups comprising said polyamide matrix resin and the disperse phase having a glass transition temperature of less than 5° C.

4,387,185

CRACKED BLEND OF PROPYLENE COPOLYMER AND E/VA

Carl W. Schroeder, and Joseph R. Webster, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 237,830, Feb. 25, 1981, Pat. No. 4,359,495. This application Jun. 24, 1982, Ser. No. 391,736

Int. Cl.[3] **C08L** *23/16, 23/26, 31/04*

U.S. Cl. 525—194 **6 Claims**

1. A composition having improved flow properties comprising the cracked product of a blend of a polypropylene copolymer and an ethylene-vinyl acetate copolymer wherein:

(a) the melt flow of said cracked product is between about 15 and about 65 grams per 10 minutes, condition L;

(b) said polypropylene copolymer is a propylene-ethylene copolymer comprising between about 1 and about 10 percent by weight ethylene and has a melt of between about 0.5 and about 15 grams per 10 minutes, condition L; and

(c) said ethylene-vinyl acetate copolymer has a vinyl acetate content of between about 15 and about 30 percent by weight, and has a melt flow of between about 1 and about 30 grams per 10 minutes, condition E.

4,387,186

WATER SWELLABLE POLYMERS

Earl P. Williams, Pen Argyl, Pa., and Donald H. Lorenz, Basking Ridge, N.J., assignors to GAF Corporation, New York, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,278

Int. Cl.[3] **C08F** *8/44*

U.S. Cl. 525—327.8 **9 Claims**

1. A water swellable but not water soluble composition consisting essentially of monovalent alkali metal salt of a crosslinked interpolymer consisting essentially of substantially equimolar quantities of maleic anhydride and a monovinyl alkyl ether wherein the alkyl group contains from 1 to 4 carbon atoms and from about 1 to about 5 mole percent, based on the monovinyl alkyl ether, of a crosslinking agent having a formula selected from the class consisting of:

$$H_2C{=}CH{-}O{-}X_1{-}OCH{=}CH_2$$

and

$$H_2C{=}CH_2{-}(OX_2)_n{-}OCH{=}CH_2$$

where X_1 represents an alkylene group of two to twelve carbon atoms and X_2 represents an alkylene group of two to four carbon atoms and n represents an integer of 2 to 100.

4,387,187

COMPATIBLE POLYMER BLEND COMPOSITIONS

Alan B. Newton, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 10, 1981, Ser. No. 242,403

Claims priority, application United Kingdom, Mar. 25, 1980, 8010073

Int. Cl.[3] **C08L** *71/02, 81/06*

U.S. Cl. 525—409 **10 Claims**

1. A polymer composition in the form of a film which composition comprises a compatible blend of an alkyl oxide polymer not containing units derived from a cyclic ester and an aromatic polyethersulphone, wherein said alkylene oxide polymer is an ethylene oxide homopolymer or copolymer containing only ethylene oxide and one or more different alkylene oxide units, has a molecular weight of at least 100,000, and is water-soluble.

4,387,188

MOLDING RESINS BASED ON BLENDS OF ACID COPOLYMER/LINEAR POLYOLEFIN/REINFORCING FIBER

Robert J. Statz, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 23, 1981, Ser. No. 236,718

Int. Cl.[3] **C08K** *3/40, 3/20, 3/04;* **C08F** *220/06*

U.S. Cl. 524—494 **10 Claims**

1. A composition consisting essentially of

(a) from about 40 to about 75 percent by weight of acid copolymer selected from the group consisting of direct copolymers and graft copolymers wherein,

(A) said direct copolymer is the copolymer of α-olefin having the formula $R{-}CH{=}CH_2$, where R is a radical selected from the class consisting of hydrogen and alkyl radicals having from 1 to 8 carbon atoms and α,β-ethylenically unsaturated carboxylic acid having from 3 to 8 carbon atoms, the acid moieties being randomly or nonrandomly distributed in the polymer chain, (1) the α-olefin content of the copolymer being at least 50 mole percent, based on the α-olefin-acid copolymer, (2) the unsaturated carboxylic acid content of the copolymer being from about 0.2 to about 25 mole percent, based on the α-olefin-acid copolymer, and (3) any other monomer component optionally copolymerized in said copolymer being monoethylenically unsaturated, and

(B) said graft copolymer being obtained by grafting 0.1 to 5 percent by weight of α,β-unsaturated carboxylic acid having 3 to 8 carbon atoms or an unsaturated carboxylic acid anhydride onto a preformed polyolefin backbone derived from ethylene or ethylene and C_3 to C_8 α-olefin, in which polyolefin backbone any other optionally copolymerized monomer component is monethylenically unsaturated,

said direct or graft acid copolymers having from 0 to about 90 percent of the carboxylic acid groups ionized by neutralization with metal ions, said ionic copolymers having solid state properties characteristic of crosslinked polymers and melt-fabricability properties characteristic of uncrosslinked thermoplastic polymers,

(b) from about 5 to about 60 percent by weight of linear polymer of α-olefin having the formula $R{-}CH{=}CH_2$, where R is a radical selected from the class consisting of hydrogen and alkyl radicals having from 1 to 8 carbon atoms,

(c) from about 2 to about 50 percent by weight of at least one reinforcing fiber selected from the group consisting of glass fiber, natural mineral fiber, man made mineral fiber and high modulus organic fiber.

4,387,189

THERMOPLASTIC MOLDING MATERIALS CONTAINING POLYMERS WITH POLYPHENYLENE ETHER GROUPS AND STYRENE POLYMERS

Franz Brandstetter, Neustadt; Juergen Hambrecht, Neckargemuend; Herbert Naarmann, Wattenheim, and Hans Schuster, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 297,948

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1980, 3035587

Int. Cl.[3] **C08F** *8/00;* **C08L** *71/04*

U.S. Cl. 525—68 **4 Claims**

1. A thermoplastic molding material containing a styrene polymer and a polyphenylene ether, wherein the polyphenylene ether is a polymer in which the phenolic hydroxyl end groups have been reacted with the anhydride groups of a copolymer of styrene and maleic anhydride, the molecular weight of which copolymer is from 500 to 7,000, measured by osmometry on a 1–5% strength by weight solution in acetone.

4,387,190

AUTOXIDIZABLE COMPOSITIONS CONTAINING LOW MOLECULAR WEIGHT POLYMERS OF DICYCLOPENTENYL METHACRYLATE OR DICYCLOPENTENYLOXYALKYL METHACRYLATE

Wayne E. Feely, Rydal, Pa., assignor to Rohm & Haas Company, Philadelphia, Pa.

Filed Aug. 3, 1981, Ser. No. 289,638

Int. Cl.[3] **C09D** *3/66, 3/81*

U.S. Cl. 525—175 **24 Claims**

1. A composition for coating and/or impregnating purposes, adapted for curing by autoxidation at ambient temperature, consisting essentially of:

(1) from about 35% to about 80% by weight, based on the total weight of components (1), (2), and (3), of a film-forming component selected from the group consisting of drying oils, alkyd resins, and mixtures of drying oils and alkyd resins;

(2) from about 10% to about 50% by weight, based on the total weight of components (1), (2), and (3), of a polymer of a number average molecular weight (Mn) in the range of 1,000–50,000 polymerized from a monomer system comprising:

(a) from about 40% to 99.5% by weight of at least one monomer selected from the group consisting of dicyclopentenyl methacrylate and dicyclopentenyloxyalkyl methacrylate, and

(b) from about 60% to about 0.5% by weight of at least

one of t-butylaminoethylmethacrylate and dimethylaminoethyl methacrylate;

(3) from about 5% to about 25% by weight, based on the total weight of components (1), (2), and (3), of a reactive non-volatile diluent monomer; and

(4) an effective amount of at least one polyvalent metal salt or complex that catalyzes the oxidative curing of components (1), (2), and (3); wherein the total of the percents of components (1), (2), and (3) is 100.

4,387,191

HEAT STABILIZED POLYMERS

Daniel L. Dufour, Longmeadow, and Alva F. Harris, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 25, 1982, Ser. No. 361,325

Int. Cl.³ C08K *5/52;* **C08L** *35/04, 35/06*

U.S. Cl. 525—207 **8 Claims**

1. A polymer composition having a reduced tendency to generate crosslinks during fabrication, which composition comprises polymer units derived from an unsaturated nitrile and from an unsaturated dicarboxylic acid anhydride and which also comprises an effective amount from about 0.5 to 5 parts by weight of an acid ester of a polybasic acid of phosphorus per 100 parts by weight of the polymer composition.

4,387,192

HEAT RESISTANT POLYAMIDE-IMIDE RESIN FROM POLYCARBOXYLIC ACID-POLYISOCYANATE MODIFIED WITH UNSATURATED MONOMER

Kazuya Yonezawa; Kazuaki Kira; Hiroshi Wakabayashi, and Hirosaku Nagano, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 9, 1980, Ser. No. 167,335

Claims priority, application Japan, Jul. 13, 1979, 54/89626

Int. Cl.³ C08G *69/48*

U.S. Cl. 525—426 **2 Claims**

1. A heat resistant resin composition comprising the reaction product of (1) a polyamide imide resin having carboxyl groups produced from at least one aromatic polycarboxylic acid anhydride having at least three functional carboxyl groups and at least one organic diisocyanate and (2) a compound selected from the group consisting of N-methylolated acryalamide, N-methoxymethylacrylamide, N-butoxymethylacrylamide, N-methylolated methacrylamide and N-butoxymethylmethacrylamide, said compound (2) being used in an amount of 1.0 to 5.0 mole equivalent weights per mole equivalent weight of the carboxyl groups in the polyamide imide resin.

4,387,193

BLENDS OF POLYETHERIMIDES AND ORGANOPOLYSILOXANE-POLYCARBONATE BLOCK COPOLYMERS

Harold F. Giles, Jr., Cheshire, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Mar. 18, 1982, Ser. No. 359,259

Int. Cl.³ C08L *79/08, 83/10*

U.S. Cl. 525—431 **8 Claims**

1. A composition comprising a blend proportion of (a) a polyetherimide and (b) a organopolysiloxane-polycarbonate copolymer.

4,387,194

HIGH SOLIDS INTERNALLY U.V. STABILIZED MELAMINE CURED URETHANE PAINT

Robert A. Ottaviani, Washington, and William T. Short, Southfield, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 22, 1982, Ser. No. 400,730

Int. Cl.³ C08G *18/38*

U.S. Cl. 525—454 **7 Claims**

1. A sprayable high solids coating composition which produces a durable, high gloss surface finish when applied to and cured over a suitable substrate, said composition comprising a urethane binder resin which is the reaction product of (1) aliphatic polyisocyanate, a portion of said isocyanate having hindered piperidine end groups and (2) a stoichiometric excess with respect to the polyisocyanate of polyether polyols, said coating being cured by crosslinking said urethane binder resin by means of an acid catalyzed melamine crosslinking agent, the cured coating having hindered piperidine groups chemically incorporated therein to inhibit loss of coating gloss by exposure to ultraviolet radiation.

4,387,195

HYDROPHOBIC CERAMIC WARES

Paul R. Tully, 42 Windward Rd., Lowell, Mass. 01852, and Thomas N. Kell, 70 Yale St., Winchester, Mass. 01890

Filed Jul. 20, 1981, Ser. No. 285,364

Int. Cl.³ C04B *33/00*

U.S. Cl. 525—475 **15 Claims**

1. A fired ceramic ware comprising a formed and fired ceramic body composition having dispersed therein a substantially unsintered finely-divided particulate amorphous oxide component selected from the group consisting of silica, alumina and mixtures thereof, said particulate amorphous oxide component having an average ultimate particle diameter of not greater than about one micron and a BET-N_2 surface area of at least about 20 m^2/g, said particulate amorphous oxide component having chemisorbed to the surface thereof organosilicon groups produced by reaction in situ between said oxide component dispersed throughout said formed and fired body and at least one reactive organosilicon compound, the quantity of said amorphous oxide component and the concentration of said chemisorbed organosilicon groups thereon being effective to render the body hydrophobic and water repellent.

4,387,196

PROCESS FOR THE PRODUCTION OF SILICONE RESINS

Jean-Claude Bonnet, Mt Saint Aignan, France, and Kenneth B. Pithouse, Swindon, England, assignors to Raychem Limited, London, England

Continuation of Ser. No. 126,674, Mar. 3, 1980, abandoned, which is a continuation of Ser. No. 927,770, Jul. 25, 1978, abandoned. This application Feb. 18, 1982, Ser. No. 350,067

Claims priority, application United Kingdom, Jul. 27, 1977, 31535/77

Int. Cl.³ C08L *83/04*

U.S. Cl. 525—477 **33 Claims**

1. A process for the production of a thermoplastic, high softening point polysiloxane resin which comprises the steps of:

(a) reacting a solvent-soluble partially condensed organosiloxane having the unit formula:

$$(RSiO_{1.5})_a(R'R''SiO)_b$$

wherein R and R′ are each independently hydrogen or an organic group, at least 85% of the R groups in the $RSiO_{1.5}$ units being organic groups, R″ is an organic group,

a is from 0.6 to 1,

b is 0 to 0.4, and a+b=1,

and wherein the organosiloxane comprises Si-OH groups capable of further condensation, the percentage by weight, based on the weight of the resin, of said hydroxyl groups being from 1 to 10, with a silane capping agent so as to cap some of the Si—OH groups, and

(b) equilibrating the product of step (a) to produce a product having a softening point in excess of 50° C.

4,387,197

PRODUCTION OF WATER SOLUBLE AMINE RESINS

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Mar. 8, 1982, Ser. No. 355,381

Int. Cl.³ C08G *59/62, 59/28, 59/14*

U.S. Cl. 525—481 **17 Claims**

1. A method for the production of amine resins having Mannich base groups which dissolve in water with the aid of a solubilizing acid comprising, reacting a dihydric phenolic organic compound in organic solvent medium with formaldehyde in an amount of at least 3 moles per mol of dihydric phenolic compound to at least partially methylolate said dihydric phenolic compound, reacting the at least partially methylolated product with a stoichiometric deficiency of organic diepoxide, then reacting the product so-provided wth monosecondary amine to provide Mannich base groups, and then reacting the product with its Mannich base groups with additional epoxide-functional material.

4,387,198

PROCESS FOR PRODUCING α-OLEFIN POLYMERS

Akihiro Sato, Chibaken; Masami Tachibana, Ichiharashi; Kazutsune Kikuta, Ichiharashi; Yoshiharu Higuchi, Ichiharashi, and Masazumi Miyajima, Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Mar. 12, 1980, Ser. No. 242,971

Claims priority, application Japan, Mar. 14, 1980, 55-32392

The portion of the term of this patent subsequent to Dec. 8, 1998, has been disclaimed.

Int. Cl.³ C08F *4/02, 10/06*

U.S. Cl. 526—97 **18 Claims**

1. A process for producing propylene polymers which comprises:

(1) milling (A-1) a trivalent metal halide selected from the group consisting of aluminum trichloride (anhydrous), ferric chloride (anhydrous) and aluminum tribromide (anhydrous), together with

(A-2) a divalent metal compound selected from the group consisting of

$Mg(OH)_2$, $Ca(OH)_2$, $Zn(OH)_2$, $Mn(OH)_2$, MgO, CaO, ZnO, MnO, $MgAl_2O_4$, Mg_2SiO_4, Mg_6MnO_8, $MgCO_3$, $MnCO_3$, $MgCO_3.CaCO_3$, $SnCl_2.2H_2O$, $MgCl_2.nH_2O$ (n=1~6), $NiCl_2.6H_2O$, $MnCl_2.4H_2O$ $KMgCl_3.6H_2O$, $MgCl_2.nMg(OH)_2.mH_2O$ (n=1~3, m=1~6), $3MgO.2SiO_2.2H_2O$, $3MgCO_3.Mg(OH)_2.3H_2O$ and $Mg_6Al_2(OH)_{14}CO_3.4H_2O$,

in a proportion of 0.1 to 20 mols of (A-2) to one mol of (A-1), and

(2) reacting the resulting mixture of (A-1) with (A-2) at a temperature of room temperature (20° C.) to 500° C., to obtain a solid product (I);

(3) reacting with this solid product (I),

(OMg) an organomagnesium compound expressed by the general formula $(MgR_2)_a.(R'MgX)_b$ (wherein R and R′ each represent an alkyl group of 1 to 20 carbon atoms or an alkyl-substituted or non-substituted phenyl group of 1 to 10 carbon atoms; X represents Cl, Br or I; and a and b each represent a number of 0 to 1, the total of a and b being 1),

(ED) an electron donor selected from the group consisting of alcohols, ethers, esters, aldehydes, fatty acids, ketones, nitriles, amines, amides, ureas, thioureas, isocyanates, azo compounds, phosphines, phosphites, phosphinites, thioethers, thioalcohols and polysiloxanes, and

(EA) an electron acceptor selected from the group consisting of $AlCl_3$ (anhydrous), $SiCl_4$, $SnCl_2$, $SnCl_4$, $TiCl_4$, $ZrCl_4$, PCl_3, PCl_5, VCl_4, $SbCl_5$, SCl_2, $MnCl_2$, $FeCl_2$ and $NiCl_2$,

at a reaction temperature of 0° to 500° C., preferably 20° to 200° C.,

(OMg), (ED) and (EA) being respectively reacted one to 10 times,

$TiCl_4$ being employed as said electron acceptor at least once, and

(OMg), (ED) and (EA) being respectively employed in an amount of 5 to 50 parts by weight each time, based on 100 parts by weight of said solid product (I),

to obtain a solid product (II);

(4) combining with one part by weight of this solid product (II),

0.1 to 500 parts by weight of (OAl) an organoaluminum compound, and

0.05 to 20 parts by weight of (ED) an electron donor, and

at the time of this combination, subjecting (a) a combination of the solid product (II) with (OAl) or (b) a combination of the solid product (II), (OAl) and (ED) to polymerization treatment with 0.01 to 500 parts by weight based on one part of the solid product (II), of (α-0) an α-olefin, at a temperature of 0° to 100° C. for one minute to 20 hours, and when said combination (a) is subjected to polymerization treatment, further adding (ED),

to obtain a preactivated catalyst; and

(5) polymerization propylene or propylene and at least one α-olefin in the presence of this catalyst.

4,387,199

TETRAVALENT VANADIUM COMPOUNDS WHICH ARE SOLUBLE IN ORGANIC SOLVENTS

Walter Josten, Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Cologne, Fed. Rep. of Germany

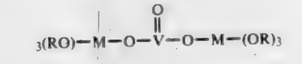
Division of Ser. No. 179,586, Aug. 21, 1980, Pat. No. 4,324,736. This application Oct. 9, 1981, Ser. No. 310,161

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934277

Int. Cl.³ C08F *4/68*

U.S. Cl. 526—113 **8 Claims**

1. In a process for the formation of a polymer of a monomer of the group consisting of olefins, dienes, styrene, vinyl chloride, acrylic acid esters and epoxides, wherein the monomer is subjected to polymerization conditions in the presence of a polymerization catalyst therefor, the improvement wherein said polymerization catalyst comprises a compound of tetravalent vanadium of the general formula



wherein

M represents a metal of the fourth group of the Periodic Table of the Elements and

R represents an alkyl, cycloalkyl or aryl moiety of 1 to 20 carbon atoms.

4,387,200

PROCESS FOR POLYMERIZING OLEFINS EMPLOYING A CATALYST PREPARED FROM ORGANOMAGNESIUM COMPOUND; OXYGEN- OR NITROGEN- CONTAINING COMPOUND; HALIDE SOURCE; TRANSITION METAL COMPOUND AND REDUCING AGENT

Donald E. Gessell, Ponca City, Okla.; Ronald L. Gibbs, Midland, Mich., and Ricardo Fuentes, Jr., Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 192,960, Oct. 1, 1980, abandoned. This application Mar. 22, 1982, Ser. No. 360,865

Int. Cl.³ C08F *4/50*

U.S. Cl. 526—122 **68 Claims**

1. In a process for the polymerization of one or more polymerizable ethylenically unsaturated monomers containing one

or more polymerizable α-olefins under Ziegler polymerization conditions wherein the polymerization is conducted in the presence of a transition metal-containing catalyst and at least one cocatalyst represented by the formulas $Al(R^3)_{3-a}X_a$, $B(R^3)_{3-a}X_a$, $MgR^3{}_2$, MgR^3X, $ZnR^3{}_2$ wherein each R^3 is independently hydrogen or a hydrocarbyl group having from 1 to about 20 carbon atoms and X is halogen; the improvement which comprises employing as the transition metal-containing catalyst the inert diluent washed hydrocarbon insoluble product resulting from the admixture of:

(I) the reaction product of

(A) the reaction product of

(1) an organomagnesium component or a mixture or complex thereof such components represented by the formula $MgR_2.xMeR'_{x'}$, wherein each R is independently a hydrocarbyl group having from 1 to about 20 carbon atoms, each R^1 is independently hydrogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to about 20 carbon atoms Me is Al, Zn or B, x has a value of from zero to 10 and x' has a value equal to the valence of Me; and

(2) a transition metal free oxygen-containing compound, a transition metal free nitrogen-containing compound or mixture of such compounds in a quantity sufficient to lower the amount of hydrocarbyl groups present in component (A-1) such that the resultant product does not substantially reduce $TiCl_4$ at a temperature of about 25° C.; and

(B) a suitable halide source or mixture thereof represented by the formulas $AlR_{3-a}X_a$, $SiR_{4-b}X_b$, $SnR_{4-b}X_b$, POX_3, PX_3, PX_5, SO_2X_2, GeX_4, $R^4(CO)X$, TmY_nX_{z-n} and R^4X wherein each R is independently a hydrogen, a hydrocarbyl or a hydrocarbyloxy group having from 1 to about 20 carbon atoms; each R^4 is independently hydrogen or a hydrocarbyl group having from 1 to about 20 carbon atoms; each X is a halogen atom; a has a value of from 1 to 3; b has a value of from 1 to 4, Tm is a metal selected from groups IV-B, V-B and VI-B of the Periodic Table of Elements; Y is oxygen, OR'' or NR''_2; each R'' is independently hydrogen or a hydrocarbyl group having from 1 to about 20 carbon atoms, z has a value equal to the valence of said transition metal, n has a value of from zero to 5 with the value of z−n being from at least 1 up to a value equal to the valence of the transition metal; said halide source being present in a quantity sufficient to convert essentially all of the groups attached to a magnesium atom in component (A) to a halide group;

(II) a transition metal compound represented by the formula TmY_nX_{z-n} wherein Tm, Y, X, z and n are as defined above; z−n has a value from zero up to the valence of Tm in a quantity so as to provide a Mg:Tm atomic ratio of from about 0.05:1 to about 50:1; and

(III) a suitable reducing agent or mixture of reducing agents represented by the formulas $B(R^3)_{3-m}X_m$, $Al(R^3)_{3-m}X_m$, ZnR^3X, $ZnR^3{}_2$, MgR^3X or $MgR^3{}_2$ wherein each X is independently a halogen, a hydrocarbyloxy group having from 1 to about 20 carbon atoms or an $NR^3{}_2$ group; each R^3 is independently hydrogen or a hydrocarbyl group having from 1 to about 20 carbon atoms each; m has a value from zero to 2; said reducing agent being employed in a quantity so as to provide an R^3:Tm ratio of from about 1:1 to about 50:1;

with the proviso that when component (I-B), the halide source, contains a sufficient quantity of transition metal to satisfy the Mg:Tm ratio, then component (II) may be omitted.

4,387,201

PROCESS FOR THE HOMO- AND COPOLYMERIZATION OF α-OLEFINS

Mufit Bahadir, Dinslaken, and Wolfgang Payer, Wesel, both of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Apr. 1, 1981, Ser. No. 249,797

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 3032224

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—125 **10 Claims**

1. In a process for the homo- and copolymerization of α-olefins by the use of a catalyst comprising a microcrystalline titanium (III) compound prepared by reaction of a titanium (IV) compound with a magnesium containing carrier substance selected from the group consisting of a magnesium alcoholate and magnesium hydroxychloride followed by reduction of the reaction product with an organo-aluminium compound in an inert organic solvent, and activation with an organoaluminum compound, the improvement wherein the reaction of the titanium (IV) with said carrier substance is carried out in the presence of a solution of at least about 0.1 weight percent atactic poly-α-olefin of a C_4–C_{20} monoolefin based on the solvent of said solution.

4,387,202

POLYMERIZATION USING MIXED ALUMINUM COMPOUNDS

Jürgen Falbe; Boy Cornils; Güunter Hetkamp, all of Dinslaken, Fed. Rep. of Germany; Karl Otterbein, deceased, late of Oberhausen, Fed. Rep. of Germany (by Maria Otterbein, heiress); Wolfgang Payer, Wesel, and Peter Schneller, Oberhausen, both of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Continuation of Ser. No. 69,489, Aug. 24, 1979, abandoned. This application Dec. 15, 1981, Ser. No. 331,099

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837481

Int. Cl.³ C08F *4/30*

U.S. Cl. 526—138 **4 Claims**

1. In a process for the polymerization of ethylene or copolymerization of ethylene with a C_3 to C_{15} alpha olefin in solution, suspension or in the gas phase at 20° to 250° C. and 1 to 100 bars in the presence of a mixed catalyst containing separately produced titanium trichloride (III) and an organoaluminum compound while controlling molecular weight with oxygen, the improvement wherein:

(a) a mixture of organoaluminum compounds is employed comprising ethyl aluminum dichloride and triethyl aluminum in a molar ratio of 1:0.05 to 1:20;

(b) the combined amount of said organoaluminum compounds present being 0.1 to 20 mols per mol of titanium trichloride (III) compound; and

(c) hydrogen is added to the polymerization reaction mixture during polymerization to control molecular weight.

4,387,203

MULTI-COMPONENT POLYMER RUBBER

Isao Furuta; Yasuhiko Takemura; Toshio Miyabayashi; Shinichiro Zen, all of Yokkaichi, and Masato Sakai, Suzuka, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1981, Ser. No. 334,817

Claims priority, application Japan, Dec. 26, 1980, 55-183847; Dec. 26, 1980, 55-183848

Int. Cl.³ C08F *14/18, 12/20, 20/22*

U.S. Cl. 526—245 **8 Claims**

1. A multi-component polymer rubber useful as gasoline fuel line hose consisting essentially of (A) 15–60 mole % of an α,β-unsaturated nitrile selected from the group consisting of acrylonitrile, α-chloroacrylonitrile, α-fluoroacrylonitrile, methacrylonitrile and ethacrylonitrile, (B) 10–75% mole % of a conjugated diene selected from the group consisting of 1,3-butadiene, 2-chloro-1,3-butadiene, 2-fluoro-1,3-butadiene and 2-methyl-1,3-butadiene, and (C) 2–55 mole % of a fluorine-containing compound selected from a fluoroalkyl acrylate or methacrylate, a fluorine-containing α-olefin, or mixtures of same, said fluoroalkyl acrylate or methacrylate having 1–20 carbon atoms in the alkyl group, said polymer rubber having a glass transistion temperature (T_g) of −50° C. to −20° C., the percentages of the component (A), (B) and (C) being based on the total sum of the moles of the components (A), (B) and (C).

4,387,204

SELF-CROSSLINKABLE MONOMER COMPOSITION CONTAINING ALKENYLPHENYL SUBSTITUTED ACRYLATES OR METHACRYLATES

Abdul-Cader Zahir, Oberwil, and Sameer H. Eldin, Birsfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 30, 1981, Ser. No. 248,755

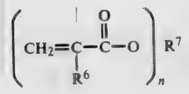
Claims priority, application Switzerland, Apr. 11, 1980, 2787/80

Int. Cl.³ C08F *12/24, 16/12*

U.S. Cl. 526—249 **10 Claims**

1. A polymerizable and self-crosslinkable composition of monomers, having olefinic unsaturation, which comprises

(a) 1 to 99.9% by weight of at least one monomer which is selected from the group consisting of styrene, divinylbenzene, vinyl toluene, chlorostyrene, α-methylstyrene, vinyl chloride, vinylidene chloride, vinylidene fluoride, tetrafluoroethylene, trifluorochloroethylene, vinyl fluoride, vinyl esters, vinyl ethers, acrylonitrile, methacrylonitrile, vinylidene cyanide and acrylates or methacrylates of the formula



wherein

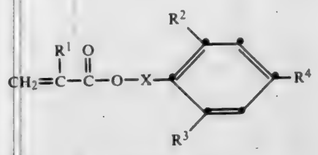
R^6 is a hydrogen atom or methyl, n is an integer from 1 to 4, and R^7 is,

where n is 1, alkyl of 1 to 12 carbon atoms, hydroxyalkyl of 1 to 12 carbon atoms, cyclohexyl, phenyl or benzyl,

when n is 2, alkylene of 2 to 6 carbon atoms, cyclohexylene, phenylene or $—(C_mH_{2m}O)_xC_mH_{2m}—$ where m is 2 or 3 and x is 1 to 5,

when n is 3, glyceryl or 2,2-dimethylbutane-1,2,2-triyl, or when n is 4, pentaerythrityl, and

(b) 99 to 0.1% by weight of an acrylate or methacrylate ester of formula I

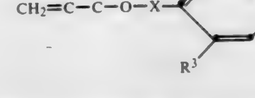


(I)

wherein R^1 is a hydrogen atom or methyl, X is CH_2—$CHOH$—CH_2—O, and R^2 is allyl, methallyl or 1-propenyl, R^3 is a hydrogen atom or methyl or has the meaning of R^2, and R^4 is a hydrogen atom, methyl, allyl, methallyl or 1-propenyl.

6. A polymerizable and self-crosslinkable composition of monomers, having olefinic unsaturation, which comprises

(a) 1 to 99.9% by weight of at least one monomer which is selected from the group consisting of styrene, divinylbenzene, vinyl toluene, chlorostyrene, α-methylstyrene, vinyl chloride, vinylidene chloride, vinylidene fluoride, tetrafluoroethylene, trifluorochloroethylene, vinyl fluoride, vinyl esters, vinyl ethers, acrylonitrile, methacrylonitrile, vinylidene cyanide and acrylates or methacrylates of the formula



wherein

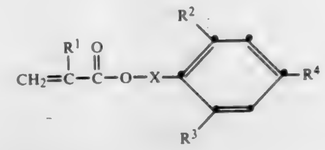
R^6 is a hydrogen atom or methyl, n is an integer from 1 to 4, and R^7 is,

where n is 1, alkyl of 1 to 12 carbon atoms, hydroxyalkyl of 1 to 12 carbon atoms, cyclohexyl, phenyl or benzyl,

when n is 2, alkylene of 2 to 6 carbon atoms, cyclohexylene, phenylene or $—(C_mH_{2m}O)_xC_mH_{2m}—$ where m is 2 or 3 and x is 1 to 5,

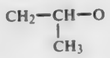
when n is 3, glyceryl or 2,2-dimethylbutane-1,2,2-triyl, or when n is 4, pentaerythrityl, and

(b) 99 to 0.1% by weight of an acrylate or methacrylate ester of formula I

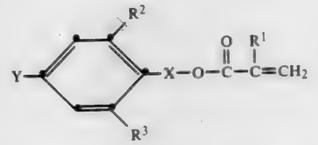


(I)

wherein R^1 is a hydrogen atom or methyl, X is an oxygen-carbon bond, CH_2—CH_2—O,



or CH_2—$CHOH$—CH_2—O, and R^2 is allyl, methallyl or 1-propenyl, R^3 is a hydrogen atom or methyl or has the meaning of R^2, and R^4 is a radical of the formula



wherein X, R^1, R^2 and R^3 have the meanings assigned to them above, and Y is a carbon-carbon bond, alkylene of 1 to 6 carbon atoms, alkylidene of 2 to 6 carbon atoms, cycloalkylidene containing 5 or 6 ring carbon atoms, an oxygen atom, a sulfur atom or a group of the formula CO, SO or SO_2.

4,387,205

METHOD FOR STABILIZATION OF SOIL AGGREGATES

Dan Zaslavsky, and Leib V. Rozenberg, both of Haifa, Israel, assignors to Technion Research & Development Foundation, Ltd., Haifa, Israel

Division of Ser. No. 953,799, Oct. 23, 1978, Pat. No. 4,303,438, which is a continuation-in-part of Ser. No. 748,367, Dec. 7, 1976, abandoned. This application Sep. 17, 1981, Ser. No. 303,153
Claims priority, application Israel, Dec. 18, 1975, 48686
Int. Cl.³ C08H *5/02*
U.S. Cl. 527—400 **9 Claims**

1. Graft polymers obtained by the exothermic reaction of lignosulfonate with a member selected from the group consisting of acrylic acid, methacrylic acid and mixtures thereof at a pH between 1.5 to 4 in the presence of an initiator, said polymers being substantially free of monomer and having an intrinsic viscosity below 1 dg/l and molecular weight lower than 100,000.

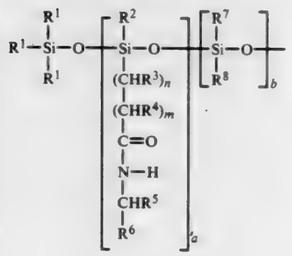
4,387,206

CHIRAL POLYSILOXANES, PROCESS FOR THEIR PREPARATION AND USE

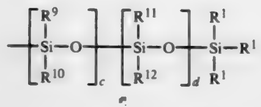
Ernst Bayer, Bei der Ochsenweide, 7400 Tubingen 1, and Hartmut Frank, Karlstr. 30, 7410 Reutlingen 1, both of Fed. Rep. of Germany

Filed Feb. 11, 1981, Ser. No. 233,649
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1980, 3005024
Int. Cl.³ C08G *77/04*
U.S. Cl. 528—28 **3 Claims**

1. Chiral polysiloxanes of Formula I:



(I)



wherein

R^1 and R^2, which may be the same or different, are C_{1-20} alkyl,

R^3 and R^4, which may be the same or different, are H or C_{1-20} alkyl,

R^5 is C_{1-20} alkyl, imidazolylmethyl, indolylmethyl, benzyl, acylaminopropyl, acylaminobutyl, and when R^6 is phenyl or naphthyl, R^5 is C_{1-20} alkyl,

R^6 is an C_{1-20} alkylaminocarbonyl, C_{3-8} cycloalkylaminocarbonyl, ar C_{1-20} alkylaminocarbonyl, where ar is phenyl or naphthyl, arylaminocarbonyl where aryl is phenyl or naphthyl; C_{7-9} bicycloalkylaminocarbonyl, naphthyl or phenyl,

R^7, R^8, R^9, R^{10} and R^{11} which may be the same or different and are C_{1-20} alkyl, naphthyl or phenyl;

R^{12} is C_{1-20} alkylaminocarbonyl C_{1-20} alkyl, cyano C_{1-20} alkyl, carboxy C_{1-20} alkyl, C_{1-20} alkoxycarbonyl C_{1-20} alkyl, naphthylaminocarbonyl C_{1-20} alkyl, phenylaminocarbonyl C_{1-20} alkyl, C_{1-20} alkylhalide, naphthylhalide, phenylhalide, nitronaphthyl, nitrophenyl or a vinyl group,

m and n are between 0 and 12,

a may vary between 5 and 20,

d is at least 1,

and a+b+c+d varies between 30 and 100.

4,387,207

RESORCINOL COMPOSITION AND METHOD OF MAKING SAME

Bill R. Edwards, Wichita, Kans., assignor to Paratech, Inc., Wichita, Kans.

Filed Jul. 14, 1982, Ser. No. 398,213
Int. Cl.³ C08G *65/48*
U.S. Cl. 528—86 **22 Claims**

1. A resorcinol polymer prepared by the process of thoroughly mixing an aqueous phenol-resorcinol resin with a minor amount of acid or base, permitting said phenol-resorcinol mixture to stand for a period of at least 48 hours, forming an aqueous by-product, and separating said aqueous by-product from the resulting phenol-resorcinol polymer.

4,387,208

PHOSPHOROUS CONTAINING POLYMERS AS CARRIERS FOR TRANSITION METALS

Harry R. Allcock, State College; Timothy J. Fuller, Pittsburgh, both of Pa., and Thomas L. Evans, Schenectady, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 21, 1981, Ser. No. 332,701
Int. Cl.³ C08G *79/04*
U.S. Cl. 528—166 **11 Claims**

1. A process for synthesizing new high polymers using poly(dichlorophosphazene) as the starting material comprising the steps of:

preparing high molecular weight poly-phosphazenes by reacting a solution containing 4.0 g (0.035 mol) of poly(dichlorophosphazene) in 200 mL of dioxane at 25° C. with sodium para-bromophenoxide obtained by adding dropwise bromophenol solution containing 33 g (0.35 mol) bromophenol in 100 mL of dioxane to stirred suspension of 17 g of sodium hydride in 100 mL of dioxane and sodium phenoxide;

replacing bromine atoms of said high molecular weight polyphosphazenes by reaction thereof with excess amount of n-butyllithium solution in dioxane to obtain (lithiophenoxy)phosphazenes at temperature between −40° to −60° C.; and

reacting said lithiophenoxy phosphazenes with an electrophile to obtain said new high polymer.

4,387,209

NOVEL POLYESTER

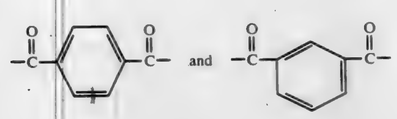
Werner Rieder, Vienna, Austria, and Martin Fehrle, Bietigheim-Bissingen, Fed. Rep. of Germany, assignors to Isovolta Osterreichische Isolierstoffwerke, Wiener Neudorf, Austria

Filed May 5, 1982, Ser. No. 375,204
Claims priority, application Austria, Dec. 9, 1981, 5278/81; European Pat. Off., May 7, 1981, 81-890076.3
Int. Cl.³ C08G *63/02*
U.S. Cl. 528—176 **20 Claims**

1. An organic, high-molecular weight polyester containing substantially chain members of the formula

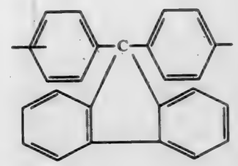
$$-(O-X-O-Y)-$$

wherein X is at least one member of the group consisting of



and

and Y has the formula



having an inherent viscosity of at least 1.0 dl/g measured at 30° C. in a solution of 0.5 g of the polyester in 100 ml of a mixture of 60% by weight of phenol and 40% by weight of 1,1,2,2-tetrachloroethane and whose films cast from a chlorinated organic solution have an elongation at break of at least 10% measured according to ASTM D-882-75 b with the proviso that if the inherent viscosity is between 1.0 and 1.5 dl/g, Y is a mixture of 70 to 30% of terephthalic acid and 30 to 70% of isophthalic.

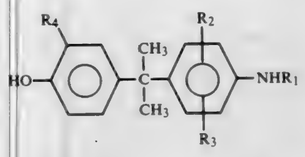
4,387,210

PROCESS FOR PRODUCING AROMATIC POLYESTER AMIDE

Nobukatsu Katoh; Yoshio Morimoto, both of Tokai; Takashi Kataoka, Bisai, and Teruo Yuasa, Nagoya, all of Japan, assignors to Mitsui Toatsu Chemical, Inc., Tokyo, Japan

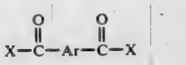
Filed Dec. 22, 1981, Ser. No. 333,358
Claims priority, application Japan, Dec. 24, 1980, 55-182076; Dec. 24, 1980, 55-182077; Dec. 24, 1980, 55-182078
Int. Cl.³ C08G *69/44*
U.S. Cl. 528—179 **11 Claims**

1. A process for producing an aromatic polyester amide polymer which comprises reacting hydroxyphenyl-amino-phenyl-propane represented by the formula I:



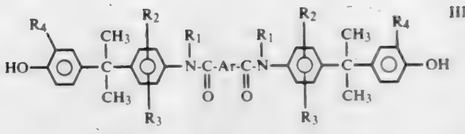
I

(where R_1 denotes a hydrogen atom or an alkyl group of 1 to 3 carbon atoms; R_2 and R_3 denote a hydrogen atom, an alkyl group of 1 to 3 carbon atoms, a chlorine or a bromine atom; and R_4 denotes a hydrogen atom or an alkyl group of 1 to 3 carbon atoms) with an aromatic dicarboxylic acid dihalide represented by the formula II:

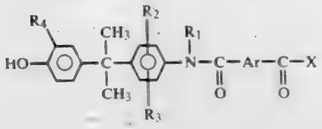


II

(where Ar denotes m- or p-phenylene, naphthalene, diphenylene, diphenylalkylene, diphenylether, or diphenylsulfide group and X denotes a chlorine or a bromine atom) in substantially equimolar amounts at a temperature of 5° to 80° C. in the presence of an inert organic solvent to give the compounds represented by formulas III and IV:



III



IV

(where R_1, R_2, R_3, R_4, Ar, and X are as defined above) and subsequently bringing the organic solvent phase into contact with an aqueous phase containing an acid acceptor at a temperature of −10° to 40° C., whereby completing the polycondensation reaction, wherein the ratio of organic solvent to water in the aqueous phase is approximately 4:1 to 1:1.

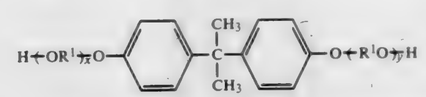
4,387,211

PROCESS FOR PRODUCING NEW POLYESTER RESIN AND PRODUCT THEREOF

Shinichiro Yasuda; Eiji Morimoto, and Atsushi Sonobe, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

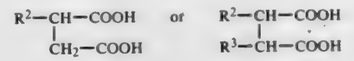
Filed Dec. 21, 1981, Ser. No. 332,891
Claims priority, application Japan, Dec. 26, 1980, 55-187193
Int. Cl.³ C08G *63/18, 63/32, 63/34*
U.S. Cl. 528—179 **12 Claims**

1. In a process for producing a polyester resin by condensation polymerization of (a) a diol component having the formula:



(I)

wherein R^1 is an alkylene group of 2 to 4 carbon atoms, and x and y are positive integers, the sum of x and y being 2 to 16, and (b) an acid component selected from the group consisting of polybasic carboxylic acids, anhydrides thereof, and lower alkyl esters thereof, the improvement which comprises: said acid component (b) contains (1) 1 to 50 mol % of a dibasic carboxylic acid or anhydride thereof having the formula:



(II) (III)

wherein R^2 and R^3 are saturated or unsaturated hydrocarbon groups of 4 to 20 carbon atoms, and (2) 10 to 30 mol % of trimellitic acid or anhydride thereof.

4,387,212
PREPARATION OF AMINOPLAST RESINS

Rainer Hummerich; Herbert Hahn, both of Ludwigshafen; Wolfram Weiss, Mutterstadt; Güenther Immel, Weinheim; Hans-Joachim Krause, Ludwigshafen, and Karl-Clemens Peters, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

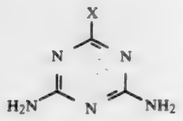
Filed Sep. 20, 1982, Ser. No. 420,318

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1981, 3138548

Int. Cl.³ C08G *4/00, 12/00*

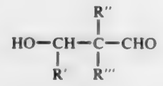
U.S. Cl. 528—232 **6 Claims**

1. A process for the preparation of etherified or non-etherified aminoplast resins which are based on reaction products of aminotriazines and aldehydes and can be used as surface-coatings raw materials, wherein an aminotriazine of the general formula (I)



(I)

where X is hydrogen, alkyl of 1 to 15 carbon atoms, phenyl, alkylphenyl, where alkyl is of 1 to 4 carbon atoms, or $—NH_2$, is reacted with from 0.1 to 3 moles, per mole of acidic hydrogen on the aminotriazine, of a β-hydroxyaldehyde of the general formula (II)



(II)

where R′, R″ and R‴ are identical or different and each is hydrogen or alkyl of 1 to 5 carbon atoms, or R″ and R‴, together with the α-carbon atom, are a cyclopentane or cyclohexane ring, and R″ and/or R‴ can also be hydroxyalkyl of 1 to 4 carbon atoms and R″ can be phenyl, at from 60° to 200° C. and some or all of the water thereby formed is removed, the reaction being carried out in the presence of not less than one alcohol and an acid catalyst for the preparation of etherified aminoplast resins and in the presence or absence of an acid catalyst for the preparation of non-etherified aminoplast resins.

5. An aminoplast resin based on reaction products of aminotriazines and aldehydes and prepared by the process as claimed in claim 1.

4,387,213
PROCESS FOR THE CONDENSATION OF LINEAR POLYALKYLENE TEREPHTHALATES

Gernot Horlbeck; Horst Heuer, both of Haltern; Hanns-Jörg Bax, and Hans Jadamus, both of Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Huels AG, Marl, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 219,133

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951609

The portion of the term of this patent subsequent to Nov. 23, 1999, has been disclaimed.

Int. Cl.³ C08G *63/26*

U.S. Cl. 525—437 **11 Claims**

1. A process for recondensing a linear polyalkylene terephthalate in two stages, at an elevated temperature, in the solid phase, and in the presence of an alkanediol, and the polyalkylene terephthalate having a viscosity number of at least 60 cc/g as measured in a solution of 0.23 g of polyalkylene terephthalate in 100 ml of phenol/1,1,2,2-tetrachloroethane (weight ratio 60:40) at 25° C., comprising,

in a first stage, treating the polyalkylene terephthalate in an inert gas stream at a reaction temperature 30°–80° C. below its melting point, with 0.2–3.5% by weight, based on the weight of the polyalkylene terephthalate, of an alkanediol whose boiling point under normal pressure is 20–70° C. above the reaction temperature, wherein the amount of inert gas passed through per hour, measured under standard conditions, corresponds to 0.3 to 2 times the gross reactor volume, and wherein the first stage is conducted until the polyalkylene terephthalate has achieved essentially its minimum carboxy end group concentration; and, in a second stage, condensing the polyalkylene terephthalate in an inert gas stream at a temperature 5°–25° C. below its melting point, wherein the amount of inert gas passed through per hour, measured under standard conditions, corresponds to 2.5 to 10 times the gross reactor volume.

4,387,214
THERMOSETTING POWDER COATING COMPOSITIONS

David T. Passmore, Golborne, England; Willis C. Wooten, Kingsport, Tenn., and Paul McBride, Aughten, England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,228

Int. Cl.³ C08G *63/12, 63/18*

U.S. Cl. 528—296 **11 Claims**

1. A linear saturated crystalline polyester of an acid moiety and a moiety of a dihydric alcohol, at least 40 mole percent of the acid moiety being a terephthalic or isophthalic acid moiety, said polyester containing as moieties of the dihydric alcohol at least 40 mole percent 1,6-hexanediol, said polyester being further characterized as having a molecular weight of about 700–3000, a melt viscosity of about 50–3000 cps at 160° C. and a hydroxyl number of about 30–160.

4,387,215
POLYCYCLIC RING-OPENED POLYMERS

William J. Bailey, 6905 Pineway, University Park, Md. 20782

Continuation of Ser. No. 346,374, Mar. 30, 1973, abandoned. This application Sep. 15, 1980, Ser. No. 187,249

Int. Cl.³ C08G *67/00*

U.S. Cl. 528—354 **20 Claims**

1. A method of preparing a polymerizate from a monomer which undergoes essentially zero shrinkage or expansion during the formation of said polymerizate which comprises reacting a monomer characterized by two ring nuclei both of which open to form only one new polymer bond, said nuclei being composed solely of carbon and oxygen atoms, in the presence of a polymerization catalyst under polymerization conditions for a period of time sufficient to produce said polymerizate.

4,387,216
HEAT-POLYMERIZABLE COMPOSITIONS COMPRISING EPOXIDE RESINS, AROMATIC SULFOXONIUM SALTS, AND ORGANIC OXIDANTS

Edward Irving, Burwell, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 29, 1982, Ser. No. 372,892

Claims priority, application United Kingdom, May 6, 1981, 8113774

Int. Cl.³ C08G *59/68, 65/04*

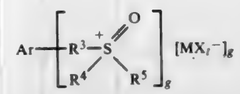
U.S. Cl. 528—408 **15 Claims**

1. Heat-polymerisable compositions comprising

(a) a compound containing at least one 2,3-epoxypropyl group directly attached to an oxygen atom,

(b) a heat-polymerising amount of a mixture of

(i) an aromatic sulfoxonium salt of formula



III

(ii) an organic oxidant selected from quinones, peroxides, and iodoso aromatic compounds, where

Ar denotes a g-valent aromatic group of 4 to 25 carbon atoms,

R^3 denotes a group of formula $—COCH_2—$, $—NHCOCH_2—$, or $—CONHCOCH_2—$,

R^4 denotes an alkyl group of 1 to 18 carbon atoms, an alkenyl group of 2 to 6 carbon atoms, a cycloalkyl group of 3 to 8 carbon atoms, a cycloalkylalkyl group of 4 to 10 carbon atoms, an aryl group of 4 to 25 carbon atoms, or an aralkyl group of 5 to 16 carbon atoms,

R^5 denotes an alkyl group of 1 to 18 carbon atoms, an alkenyl group of 2 to 6 carbon atoms, a cycloalkyl group of 3 to 8 carbon atoms, a cycloalkylalkyl group of 4 to 10 carbon atoms, an aryl group of 4 to 25 carbon atoms, an aralkyl group of 5 to 16 carbon atoms, or a dialkylamino group of 2 to 8 carbon atoms, with the proviso that if R^4 denotes an alkyl group of 1 to 18 carbon atoms then R^5 may alternatively denote an arylamino group of 4 to 8 carbon atoms,

M denotes an atom of a metal or of a metalloid,

t is 4, 5, or 6 and is one more than the valence of M,

X denotes a halogen atom, with the proviso that one X may denote a hydroxo group if M denotes antimony, t is 6, and the remaining five X each denote a fluorine atom, and

g is 1 or 2.

14. A process for the polymerisation of a compound containing at least one 2,3-epoxypropyl group directly attached to an oxygen atom, comprising heating a composition as claimed in claim 1.

4,387,217
HIGH FOAMING IODOPHORS

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Apr. 7, 1982, Ser. No. 366,454

Int. Cl.³ C08L *71/02;* **C08G** *65/32*

U.S. Cl. 528—417 **3 Claims**

1. An iodophor comprising 0.01 to 10.0 percent by weight of bonded iodine, and a nonionic block copolymer being a cogeneric mixture of conjugated polyoxybutylene-polyoxyethylene compounds containing in their structure oxybutylene groups, oxyethylene groups and an organic radical derived from a water-soluble organic compound containing a plurality of reactive hydrogen atoms and 2 to 12 carbon atoms; the compounds being characterized in that all of the oxybutylene groups are present in polyoxybutylene chains that are attached to the organic radical at the site of a reactive hydrogen atom thereby constituting a polyoxybutylene polymer; the oxyethylene groups being attached to the polyoxybutylene polymer in polyoxyethylene chains; the average molecular weight of the polyoxybutylene polymers in the mixture being at least 500, as determined by hydroxyl number, and the oxyethylene groups present constituting 65 to 80 percent by weight of the mixture.

4,387,218
ANTHRACYCLINE ANTIBIOTICS FA-1180 B AND B_1, OR SALTS THEREOF

Hiroyuki Mori; Yasuo Ogawa; Hideo Sugi; Noboru Fujikawa, all of Moriyama, and Kiyoshi Tamai, Hikone, all of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

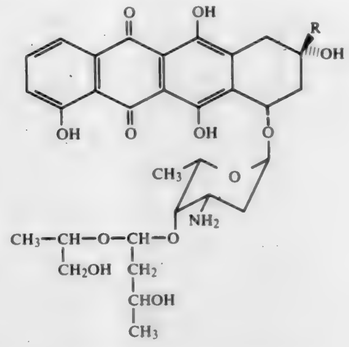
Continuation of Ser. No. 187,031, Sep. 15, 1980, abandoned. This application Sep. 3, 1981, Ser. No. 299,259

Claims priority, application Japan, Sep. 14, 1979, 54-118044

Int. Cl.³ C07H *15/24*

U.S. Cl. 536—6.4 **1 Claim**

1. An anthracycline antibiotic selected from the group consisting of FA-1180 B and FA-1180 B_1, or a pharmaceutically acceptable salt thereof, said antibiotic having the formula (I):



(I)

wherein R represents a 1-hydroxyethyl group.

4,387,219
2-HYDROXY GENTAMICIN COMPOUNDS

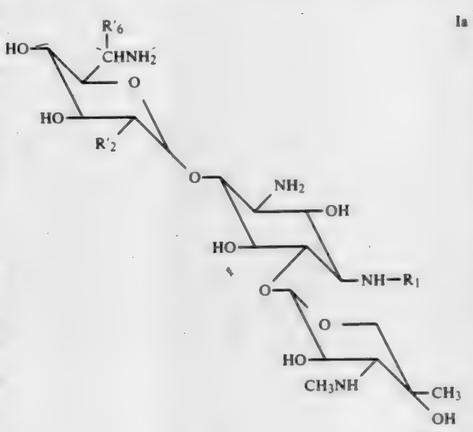
Haruo Yamamoto, Chigasaki, Japan, and Sol J. Daum, Albany, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 93,062, Nov. 13, 1979, Pat. No. 4,288,547. This application Nov. 24, 1980, Ser. No. 209,412

Int. Cl.³ C07H *15/22*

U.S. Cl. 536—13.6 **6 Claims**

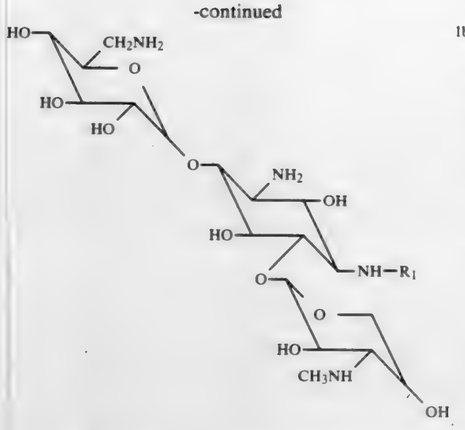
1. A member of the group consisting of (A) a compound having one of the formulas:



Ia

or

-continued



where R_1 is hydrogen or an ω-amino-α-hydroxy-lower-alkanoyl group, $H_2N(CH_2)_nCHOHCO$-, where n is one of the integers 1 or 2; and where, in formula Ia, R_2' is hydroxy or amino and R_6' is hydrogen or methyl; and (B) acid-addition salts thereof.

6. 2-Hydroxygentamicin A_3 according to claim 1.

4,387,220

NITROSOUREA DERIVATIVES OF SUCROSE

Tetsuo Suami, 3-5-8, Nakamachi, Musashino-shi, Tokyo, Japan; Yushi Itoh, Higashikurume, and Shuichi Oki, Tokyo, both of Japan, assignors to The Nissin Sugar Manufacturing Co., Ltd. and Tetsuo Suami, both of Tokyo, Japan

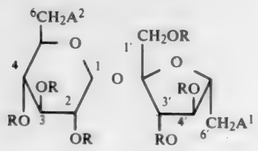
Filed Oct. 20, 1981, Ser. No. 313,360

Claims priority, application Japan, Nov. 5, 1980, 55-155443; Jun. 23, 1981, 56-96863

Int. Cl.³ C08B *37/00;* **A61K** *31/70*

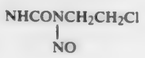
U.S. Cl. 536—53 **5 Claims**

1. Nitrosourea derivatives of sucrose whose structure is expressed by the general formula:



(I)

wherein one of A^1 and A^2 is



and the other is OR, and R is a hydrogen atom or an acyl group.

4,387,221

ALKYL- AND ALKENYL-SULFOSUCCINATE STARCHHALF-ESTERS, A METHOD FOR THE PREPARATION THEREOF

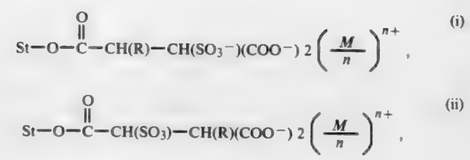
Martin M. Tessler, Edison; Otto B. Wurzburg, Whitehouse Station, and Teresa A. Dirscherl, Netcong, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Apr. 1, 1982, Ser. No. 364,300

Int. Cl.³ C08B *31/02, 31/04*

U.S. Cl. 536—107 **13 Claims**

1. A starch derivative, comprising a starch ester of the general structure:



(i)

(ii)

or mixtures of (i) and (ii); wherein St—O— represents a starch molecule or modified starch molecule; R is a C_1–C_{22} straight or branched chain alkyl group or mixtures thereof, a C_3–C_{22} straight or branched chain alkenyl group or mixtures thereof, or a mixture of said alkyl and alkenyl groups; M is a cation; and n is the valence number of M.

4,387,222

CYCLIC PERFLUOROALIPHATICDISULFONIMIDES

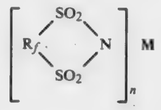
Robert J. Koshar, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 30, 1981, Ser. No. 229,870

Int. Cl.³ C07D *285/00, 285/36*

U.S. Cl. 544—4 **11 Claims**

1. Acidic cyclic perfluoroaliphaticdisulfonimides and their salts comprising compounds of the formula:



wherein R_f is perfluoroalkylene having 2 to 4 catenary carbon atoms or perfluorocycloalkylene having 4 to 7 ring atoms, R_f optionally being substituted by one or more straight chain, branched, or cyclic perfluoroalkyl groups of 1 to 12 carbon atoms, with R_f having a total of up to 14 carbon atoms; M is a cation with a valence equal to n; and n is an integer with a value of 1 to 5.

4,387,223

PROCESS FOR PREPARING 2(1H)-QUINAZOLINONE DERIVATIVES

Michihiro Yamamoto, Nishinomiya; Shigenari Katayama, Takarazuka; Masao Koshiba, Nishinomiya, and Hisao Yamamoto, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited Osaka, Japan

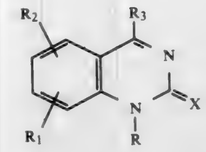
Filed Dec. 6, 1976, Ser. No. 748,145

Claims priority, application Japan, Dec. 11, 1975, 50-148279

Int. Cl.³ C07D *413/04, 413/06, 401/04, 405/04*

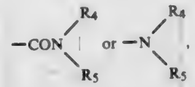
U.S. Cl. 544—116 **2 Claims**

1. A process for producing a 2(1H)-quinazolinone derivative of the formula,

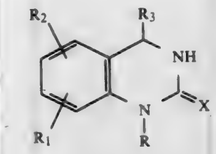


(I)

wherein R_1 and R_2 are each independently hydrogen, halogen, lower alkyl, lower alkoxyl, lower alkylthio, lower alkylsulfonyl, nitro, trifluoromethyl, lower alkanoyl,



in which R_4 and R_5 are each lower alkyl or, when taken together, R_4 and R_5 may from morpholino or piperidino together with the adjacent nitrogen atom, or when taken together, R_1 and R_2 may form methylene dioxy; R_3 is phenyl, monohalophenyl, mono-nitrophenyl, mono lower alkylphenyl, mono lower alkoxyphenyl, pyridyl, furyl or thienyl; R is lower alkyl, lower alkenyl, lower cycloalkyl, lower cycloalkyl-lower alkyl, benzyl, halobenzyl, lower alkyl benzyl, lower alkoxy-lower alkyl, lower haloalkyl, lower hydroxyalkyl or lower alkanoyloxy-lower alkyl; and X is sulfur, which comprises heating a compound of the formula,



(II)

wherein R_1, R_2, R_3, R and X are as defined above, together with a molar excess of sulfur in an inert solvent at a temperature in the range of about 100° to 200° C.

4,387,224

MELAMINE QUALITY BY REACTIVATION OF THE MELAMINE SYNTHESIS CATALYST

Dieter Fromm, Gruenstadt; Ernst-Juergen Schier, Altleiningen; Hans H. Schneehage, Weisenheim, and Wolfgang Vodrazka, Freinsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 20, 1982, Ser. No. 420,484

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1981, 3138419

Int. Cl.³ C07D *251/60*

U.S. Cl. 544—201 **3 Claims**

1. A process for improving the quality of melamine by reactivating the catalysts, which have been employed in the synthesis of melamine by thermal conversion of urea in a fluidized catalyst bed, through treatment with gases containing steam, wherein the catalyst in the fluidized bed is treated with steam-containing gases in the absence of oxygen at from 250° to 450° C.

4,387,225

HETEROCYCLIC ALKYLENE TRIAZINONES

George H. Douglas, Malvern; William L. Studt, Harleysville; Chong M. Won, Warrington; Stuart A. Dodson, Lansdale, and Jerome J. Zalipsky, Melrose Park, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

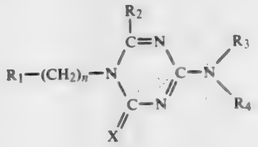
Continuation-in-part of Ser. No. 225,198, Jan. 15, 1981, Pat. No. 4,338,441, which is a division of Ser. No. 959,611, Nov. 13, 1978, Pat. No. 4,246,409. This application May 12, 1981, Ser. No. 262,809

The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.

Int. Cl.³ C07D *401/06, 401/14, 417/14, 413/14*

U.S. Cl. 544—212 **23 Claims**

1. A compound of the formula



wherein:

n is 1 to 3;

X is oxygen or sulfur;

R_1 is a 5 or 6 membered heterocycle or a 5 or 6 membered heterocycle in which one or more of the hydrogens on the ring is replaced by the same or different substituents including halo, lower alkyl, halo lower alkyl, nitro, amino, acylamino, hydroxy, lower alkoxy, aryl-lower alkoxy, acyloxy, cyano, halo-lower alkoxy, or lower alkyl sulfonyl;

R_2 is hydrogen or lower alkyl; and

R_3 and R_4 are each independently selected from the group consisting of hydrogen, hydroxyl, lower alkanoyl, lower alkyl, cyclo-lower alkyl, lower alkenyl, lower alkynyl, halo-lower alkyl, lower alkoxy-lower alkyl, hydroxy-lower alkyl, phenoxy-lower alkyl, diloweralkyl amino, aryl or aryl-lower alkyl, lower alkoxy, phenoxy, a 5 or 6 membered heterocycle or a lower alkyl substituted 5 or 6 membered heterocycle or R_3 and R_4 together with the nitrogen to which they are attached form a 3 to 7 membered heterocyclic ring, selected from the group consisting of oxazolidinyl, thiazolidinyl, pyrazolidinyl, imidazolidinyl, piperidyl, azepinyl, piperazinyl, thiamorpholinyl, trimethylenetriaminyl, ethyleneiminyl, and morpholinyl;

and wherein:

aryl means phenyl or phenyl in which one or more of the phenyl hydrogens has been replaced by the same or different substituents selected from the group consisting of halo, lower alkyl, halo-lower alkyl, nitro, amino, lower alkyl acylamino, lower alkyl acyloxy, hydroxy, lower alkoxy, phenyl-lower alkoxy, lower alkanoyl, cyano, halo-lower alkoxy and lower alkyl sulfonyl; and

5 or 6 membered heterocycle means a heterocyclic substituent selected from the group consisting of pyridyl, pyrimidyl, pyrazolyl, imidazolyl, furyl, thienyl, oxazolyl, thiazolyl, piperidyl, and morpholinyl; and the nontoxic pharmaceutically acceptable salts thereof.

4,387,226

PURINE-DIHYDROTHIAZOLES

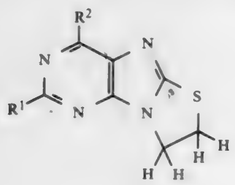
John W. Hadden, New York, N.Y.; Lionel N. Simon, Santa Ana, Calif., and Alfredo Giner-Sorolla, Riverside, Conn., assignors to Newport Pharmaceuticals International, Inc., Newport Beach, Calif. and Sloan-Kettering Institute For Cancer Research, New York, N.Y.

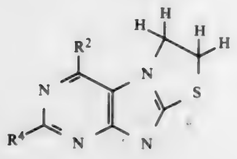
Filed Aug. 26, 1981, Ser. No. 296,557

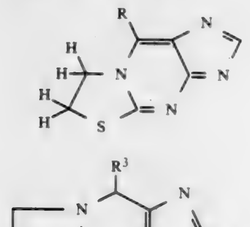
Int. Cl.³ C07D *473/22, 473/30, 473/38;* **A61K** *31/52*

U.S. Cl. 544—247 **27 Claims**

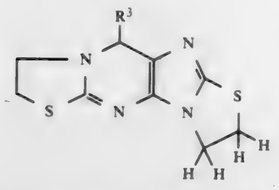
1. A compound having one of the formulae







IV



where R^1 is hydrogen, lower alkylthio, lower alkylsulfinyl, amino or halogen, R^2 is hydroxy, lower alkylthio, halogen, or mercapto, R is hydroxy, mercapto, lower alkylthio or halogen, R^3 is hydroxy, mercapto, lower alkylthio, halogen, or amino, R^4 is lower alkylthio, lower alkylsulfinyl, amino, halogen or hydrogen.

4,387,227

ZINC N,N'-ALKENYLSUCCINOYL DIPYRIDYL SUCCINATE AS ANTIOXIDANT

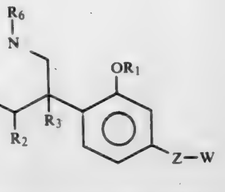
Richard J. Lee, Downers Grove, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 16, 1981, Ser. No. 311,933

Int. Cl.³ C07D *401/04;* **C09K** *15/32*

U.S. Cl. 546—5 **3 Claims**

1. A zinc N,N'-alkenylsuccinoyl dipyridyl succinate having the formula:



I

wherein each of R_1 and R_2 are alkenyl hydrocarbon groups.

4,387,228

PROCESS FOR THE PRODUCTION OF (±)3-DEAZAARISTEROMYCIN

John A. Montgomery, and Sarah D. Clayton, both of Birmingham, Ala., assignors to Southern Research Institute, Birmingham, Ala.

Filed Sep. 16, 1981, Ser. No. 302,845

Int. Cl.³ C07D *471/04*

U.S. Cl. 546—118 **1 Claim**

1. A process for the production of (±)3-deazaaristeromycin, which comprises:

(1) reacting 2,4-dichloro-3-nitropyridine with (±)(1,4/2,3)-4-amino-2,3-dihydroxy-1-cyclopentanemethanol to give (±)-(1,4/2,3)-4-(3-nitro-2-chloro-4-pyridylamino)-2,3-dihydroxy-1-cyclopentanemethanol (compound II) in an equimolar reaction in the presence of triethanolamine;

(2) subsequently reducing compound II to (±)-(1,4/2,3)-4(3-amino-2-chloro-4-pyridylamino)-2,3-dihydroxy-1-cyclopentanemethanol (compound III) by hydrogen and Raney nickel catalyst;

(3) acid catalyzed cyclization of compound III to (±)-4-chloro-1-(1α,2β,3β,4α)-2,3-dihydroxy-4-(hydroxymethyl)cyclopentyl)imidazo[4,5-c]pyridine (compound IV) with triethylorthoformate in N,N-dimethylacetamide with an acid catalyst;

(4) displacing the chloro group of compound IV with hydrazine to produce (±)-4-hydrazino-1-(1α,2β,3β,4α)-2,3-dihydroxy-4-(hydroxymethyl)cyclopentyl)imidazo[4,5-c]pyridine (compound V);

(5) cleaving said hydrazino compound V to produce (±)-4-amino-1[1α,2β,3β,4α)-2,3-dihydroxy-4-(hydroxymethyl)-cyclopentyl]imidazo[4,5-c]pyridine (compound VI) under a nitrogen blanket with Raney nickel under a reflux.

4,387,229

3-[2-HYDROXY-4-(SUBSTITUTED)PHENYL]AZACYCLOALKANOLS AND DERIVATIVES THEREOF

Thomas H. Althuis, Groton; Charles A. Harbert, Waterford; Michael R. Johnson, Gales Ferry, and Lawrence S. Melvin, Jr., Ledyard, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 198,472, Oct. 20, 1980, Pat. No. 4,332,942, which is a division of Ser. No. 419, Jan. 2, 1979, Pat. No. 4,263,438, which is a division of Ser. No. 832,869, Sep. 13, 1977, Pat. No. 4,147,872. This application Feb. 26, 1982, Ser. No. 353,113

Int. Cl.³ C07D *211/44, 207/12, 223/02, 225/00*

U.S. Cl. 546—216 **3 Claims**

1. A compound having the formula

wherein R_1 is selected from the group consisting of hydrogen, benzyl and alkanoyl having from one to five carbon atoms;

R_2 is hydroxy;

R_3 is hydrogen;

R_6 is alkynyl having from two to six carbon atoms;

x is 0 or an integer from 1 to 3;

Z is selected from the group consisting of

(a) alkylene having from one to thirteen carbon atoms;

(b) $-(alk_1)_m-O-(alk_2)_n-$ wherein each of (alk_1) and (alk_2) is alkylene having from one to thirteen carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than thirteen; each of m and n is 0 or 1;

and W is hydrogen;

or a pharmaceutically acceptable acid addition salt thereof.

4,387,230

PROCESS FOR PREPARING A DIHYDROPYRIDINE DERIVATIVE

Alan C. White, Windsor, and Robin G. Shepherd, Burnham, both of England, assignors to John Wyeth and Brother Limited, Maidenhead, England

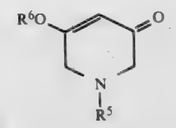
Continuation of Ser. No. 183,790, Sep. 3, 1980, abandoned. This application Aug. 20, 1981, Ser. No. 294,678

Claims priority, application United Kingdom, Sep. 6, 1979, 7930907

Int. Cl.³ C07D *211/02, 211/86*

U.S. Cl. 546—249 **1 Claim**

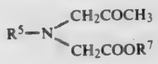
1. A process for preparing a dihydropyridine derivative of formula



(II)

where R^5 is lower alkyl or aryl(lower)alkyl and R^6 is lower alkyl which comprises

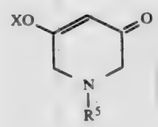
(a) cyclising an ester of formula (IV)



(IV)

where R^5 is as defined above and R^7 is alkyl, aryl or aralkyl, by reaction with sodium or potassium hydride in an inert solvent;

(b) isolating the resulting sodium or potassium salt of formula



(III)

where R^5 is as defined above and X is sodium or potassium, and

(c) reacting sodium or potassium salt of formula (III) with an alkylating agent in a polar aprotic solvent.

4,387,231

3-AMINO-2-CYANO-3-(5-AMINO-3-PHENYL-ISOXAZOLE-4-YL)-ACRYLONITRILE

Hans Junek, and Burkhard Thierrichter, both of Graz, Austria, assignors to Lonza Ltd., Gampel, Switzerland

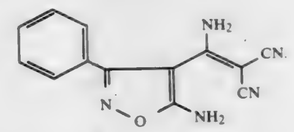
Division of Ser. No. 209,150, Nov. 21, 1980. This application Nov. 18, 1981, Ser. No. 322,554

Claims priority, application Switzerland, Nov. 22, 1979, 10408/79

Int. Cl.³ C07D *498/04*

U.S. Cl. 548—245 **2 Claims**

1. 3-Amino-2-cyano-3-(5-amino-3-phenyl-isoxazole-4-yl)-acrylonitrile having the formula:



4,387,232

PROCESS FOR PREPARING N-ACYLCARNOSINE

Chikahiko Eguchi, Yokohama; Fusayoshi Kakizaki, and Hirozumi Eto, both of Kawasaki, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Dec. 9, 1981, Ser. No. 329,071

Claims priority, application Japan, Dec. 18, 1980, 55-179287

Int. Cl.³ C07D *233/64*

U.S. Cl. 548—344 **7 Claims**

1. A process for preparing N-acetyl-L-carnosine which comprises reacting L-histidine with a 3-acetylaminopropionic acid reactive derivative at a pH range between 9.0 and 12.0 at a temperature below 30° C., said 3-acetylaminopropionic acid reactive derivative being 3-acetylaminopropionic chloride, tertiary amine salt of 3-acetylaminopropionic acid and sulfuric acid mixed anhydride, mixed acid anhydride of 3-acetylaminopropionic acid and monoalkyl carbonate wherein the alkyl radical has 1 to 5 carbon atoms, or mixed acid anhydride of 3-acetylaminopropionic acid and phosphoric acid derivative.

4,387,233

DERIVATIVES OF 2H-PYRAN-2-ONE

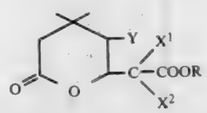
Kiyoshi Kondo; Toshiyuki Takashima, and Minoru Suda, all of Kanagawa, Japan, assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 164,624, Jun. 30, 1980, Pat. No. 4,344,884, which is a division of Ser. No. 90,218, Nov. 1, 1979, Pat. No. 4,237,058. This application Mar. 1, 1982, Ser. No. 353,663

Int. Cl.³ C07D *309/30*

U.S. Cl. 549—273 **1 Claim**

1. A compound of the formula



wherein Y is a bromine or chlorine atom, X^1 and X^2 are the same or different and each is a halogen atom, a trichloromethyl group, or a trifluoromethyl group, and R is an alkyl group of

1 to 4 carbon atoms, with the proviso that Y is a bromine atom when at least one of X^1 and X^2 is a bromine atom.

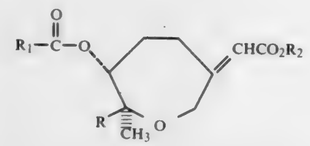
4,387,234

SYNTHESIS OF DIOXABICYCLO[3.2.1]OCTANES AND OXEPANES

Zoltan G. Hajos, Princeton, and Michael P. Wachter, Bloomsbury, both of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 141,524, Apr. 18, 1980, Pat. No. 4,322,353. This application Sep. 24, 1981, Ser. No. 305,019
Int. Cl.³ C07D *313/04*
U.S. Cl. 549—346 **3 Claims**

1. A compound of the formula



wherein R is a straight or branched chain alkyl group having 1–12 carbon atoms; R_1 is a lower alkyl group having 1–6 carbon atoms; and R_2 is hydrogen or a lower alkyl group having 1–6 carbon atoms.

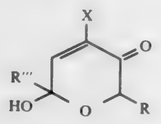
4,387,235

INTERMEDIATES FOR THE PREPARATION OF GAMMA-PYRONES

Thomas M. Brennan, Old Lyme; Daniel P. Brannegan, Pawcatuck; Paul D. Weeks, and Donald E. Kuhla, both of Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 72,057, Sep. 4, 1979, Pat. No. 4,323,506, which is a division of Ser. No. 971,897, Dec. 21, 1978, abandoned, which is a division of Ser. No. 869,493, Jan. 16, 1978, Pat. No. 4,147,705, which is a division of Ser. No. 721,885, Sep. 9, 1976, Pat. No. 4,082,717, which is a continuation-in-part of Ser. No. 710,901, Aug. 2, 1976, abandoned. This application Oct. 14, 1981, Ser. No. 311,252
Int. Cl.³ C07D *309/22*
U.S. Cl. 549—417 **10 Claims**

1. A compound of the formula



wherein R is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl or benzyl; R‴ is hydrogen or alkyl of 1 to 4 carbon atoms; and X is chlorine or bromine.

4,387,236

LIQUID PHASE OXIDATION

Robert B. Pinkerton, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 3, 1982, Ser. No. 354,195
Int. Cl.³ C07D *307/36*
U.S. Cl. 549—505 **12 Claims**

1. A process of removing by-product solids formed in the preparation of furan compounds using an aqueous reaction medium comprising
(a) elemental iodine or iodine from an alkali metal iodide,
(b) copper having an average oxidation state greater than 1,
(c) a solubilizing agent for cuprous ion which is soluble in water and forms a water-soluble complex with cuprous ion, and
(d) at least 20 moles per liter of water, the medium having a pH value of less than about 2, wherein said aqueous reaction medium is heated at 180° to 280° C., while maintaining said aqueous reaction medium in the liquid phase, to oxidize at least 97 percent by weight of the solids present.

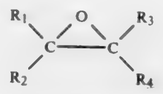
4,387,237

PROCESS FOR MAKING VICINAL EPOXIDES

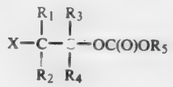
James M. Renga, Midland, and Gerald C. Kolb, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 12, 1982, Ser. No. 367,720
Int. Cl.³ C07D *301/02*
U.S. Cl. 549—518 **9 Claims**

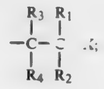
1. A process for making vicinal epoxide corresponding to the formula



or a mixture thereof comprising contacting a carbonate reactant of the formula



wherein
R_1, R_2, R_3 and R_4 independently each occurrence are hydrogen, hydrocarbyl, CH_2X or CH_2Y, and the adjacent pair R_1, R_3 may additionally form an alkylene group of 3–6 carbons;
R_5 is a C_{1-10} alkyl group or



X is chloro or bromo; and
Y is alkoxy or aroxy,
with a catalyst comprising a soluble complex of an alkali metal halide and a monomeric or polymeric chelating agent comprising an element of group V of the Periodic Table at a temperature of about 25° C. to about 250° C.

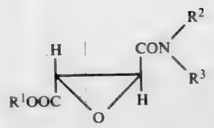
4,387,238

EPOXYSUCCINAMIC ACID COMPOUNDS

Masami Goi, Ageo; Kazuya Kameo, Abiko; Jiro Sawada, Kodaira; Kazunori Hanada; Masaharu Tamai, both of Ageo, and Kiyoshi Oguma, Kitamoto, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 80,211, Oct. 1, 1979, abandoned. This application May 14, 1981, Ser. No. 263,586
Claims priority, application Japan, Sep. 30, 1978, 53-121026
Int. Cl.³ C07D *303/48, 407/12, 409/12, 405/12, 405/10, 413/06, 405/06*
U.S. Cl. 549—549 **3 Claims**

1. Trans-epoxysuccinamic acid derivatives of the formula:



wherein R^1 is hydrogen, alkali metal, alkyl having 1–5 carbon atoms, alkenyl having 2–4 carbon atoms, alkynyl having 2–4 carbon atoms, phenyl, benzyl, cycloalkyl having 5–6 carbon atoms, cycloalkenyl having 5–6 carbon atoms, cycloalkenemethyl having 6–7 carbon atoms, or alkyl having 1–3 carbon atoms substituted with cycloalkyl having 5–6 carbon atoms, R^2 is hydrogen or alkyl having 1–5 carbon atoms and R^3 is phenyl, benzyl, furfuryl, thenyl, pyridyl, quinolinyl, cycloalkanemethyl having 4–7 carbon atoms, or phenyl substituted with 1–3 members selected from the group consisting of halogen, methyl, trifluoromethyl, methoxy, acetyl, hydroxy and nitro, or R^2 and R^3 ken together with the nitrogen atom to which they are attached form a 5–6 membered heterocyclic ring selected from the group consisting of pyrrolidino, piperidino, piperazino, morpholino and thiamorpholino, or said 5–6 membered heterocyclic ring substituted with methyl.

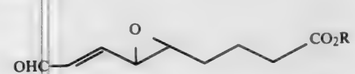
4,387,239

PROCESS FOR THE PREPARATION OF ESTERS OF LEUKOTRIENE A

John G. Gleason, Delran, N.J.; Charles M. Kinzig, Merion Station, and Deborah L. Bryan, West Chester, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Division of Ser. No. 230,915, Feb. 2, 1981, Pat. No. 4,352,757. This application Dec. 22, 1981, Ser. No. 333,850
Int. Cl.³ C07D *303/42*
U.S. Cl. 549—562 **2 Claims**

1. A compound represented by the following structural formula (II):



(II)

wherein R is alkyl of 1 to 4 carbon atoms, benzyl or 1,1,1-trichloroethyl.

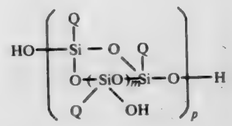
4,387,240

OLIGOMERIC METHACRYL SUBSTITUTED ALKYLSILOXANES

Eric P. Berg, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jun. 2, 1978, Ser. No. 911,892
Int. Cl.³ C07F *7/18*
U.S. Cl. 556—440 **4 Claims**

1. An oligomeric prepolymer of the structure



wherein
each m is independently 1, 2 or 3,
p is 2 to about 10,
Q is $CH_2{=}C(CH_3)CO{-}X(CR_2)_n{-}$,
X is O, S or NR,
each R is independently hydrogen or lower alkyl of 1 to 2 carbon atoms and no more than two are lower alkyl and n is 3 to 12.

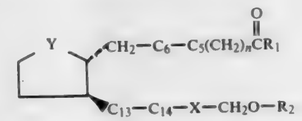
4,387,241

NOVEL 16-ARYLOXY-17,18,19,20-TETRANORPROSTANOIC ACIDS AND DERIVATIVES

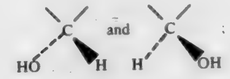
Charles V. Grudzinskas, Garnerville, N.Y., and Martin J. Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 1, 1974, Ser. No. 520,064
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—55 **23 Claims**

1. A compound of the formula:



wherein R_1 is hydroxy or alkoxy having from 1 to 12 carbon atoms; R_2 is phenyl, benzyl, napthyl, or 5, 6, 7, 8-tetrahydronapthyl optionally substituted with one or two members selected from the group halogen, lower alkyl, lower alkoxy or dimethylamino; n is an integer of from 2 to 4 inclusive, C_6–C_5 is ethylene or cis-vinylene; C_{13}–C_{14} is ethylene or trans-vinylene, with the proviso that when C_6–C_5 is cis-vinylene, then C_{13}–C_{14} must be trans-vinylene; X is a divalent moiety selected from the group



Y is a divalent moiety selected from the group



and the non-toxic cationic salts thereof where R_1 is hydroxy.

4,387,242

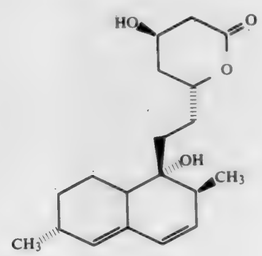
HYPOCHOLESTEROLEMIC FERMENTATION PRODUCTS AND PROCESS OF PREPARATION

Tony Y. K. Lam, Edison, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

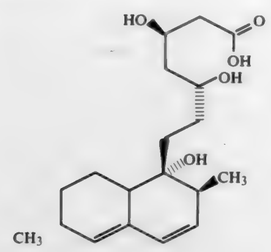
Filed Aug. 21, 1981, Ser. No. 295,189
Int. Cl.³ C07D *309/30*; C07C *69/732, 59/46*
U.S. Cl. 560—119 **3 Claims**

1. A compound of structural formula:

III



in substantially pure form or the corresponding hydroxy acid II in substantially pure form



II

or a pharmaceutically acceptable salt of compound II or a C_{1-3}alkyl ester of II, or a substituted C_{1-3}alkyl ester of II wherein the substituent is phenyl, dimethylamino, or acetylamino, wherein the salts and esters of II are in substantially pure form.

4,387,243

CONTINUOUS PRODUCTION OF ORTHO-PHTHALIC ACID PRODUCT BY TWO-STEP CATALYTIC NEAT OXIDATION OF LIQUID ORTHO-XYLENE WITH AIR

Houssam M. Naim; Nicholas C. Huie, and George E. Kuhlmann, all of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 20, 1979, Ser. No. 50,159
Int. Cl.³ C07C *51/16*
U.S. Cl. 562—413 **10 Claims**

1. The continuous production of o-phthalic acid by the neat oxidation of liquid o-xylene with air in the presence of catalysis provided by a source of bromine and a source of cobalt and manganese as metal oxidation catalysts conducted in two consecutive steps wherein liquid xylene is charged to the first step; improved by the continuous addition of air, o-xylene, and said components of catalysis to a first stirred oxidation zone operated at a temperature from 160° C. up to 205° C. at a gauge pressure to maintain a liquid phase of the reaction mixture and to maintain therein a water content of from about 0.5 and up to 8 weight percent at said temperature, at a concentration of components of catalysis consisting essentially of from 1.0 up to 10 milligram atoms of cobalt per gram mole of o-xylene and for each gram atom of cobalt from 0.5 up to 3 gram atoms of manganese and from 1 up to 10 gram atoms of bromine, and at a residence time such that the total of carbon oxides produced in the first zone is less than 5 mole percent of the xylene charged and the liquid reaction mixture contains o-xylene in the concentration of from 6 up to 30 weight percent and from 8 up to 40 weight percent o-phthalic acid; and directly adding such liquid reaction mixture together with air continuously to a second stirred reaction zone operated at a temperature from 210° C. up to 227° C. at a guage pressure to maintain in the liquid phase o-phthalic acid having a water content of from 2.5 up to 7 weight percent, at a concentration of components of catalysis based on each gram mole of o-xylene charged to the first oxidation zone consisting essentially of a total of from 1.18 up to 8 milligram atoms of cobalt and for each gram atom of cobalt from 0.5 up to 4 gram atoms of manganese and from 2 up to 10 gram atoms of bromine, and at a residence time such that liquid reaction mixture has a phthalide concentration not exceeding 0.1 weight percent of the o-phthalic acid and the total of carbon oxides produced in the second zone is less than 5 mole percent of the o-xylene charged to the first oxidation zone, wherein the source of bromine in each of the two oxidation zones is elemental bromine, hydrogen bromide, ammonium bromide or a bromide of cobalt or manganese.

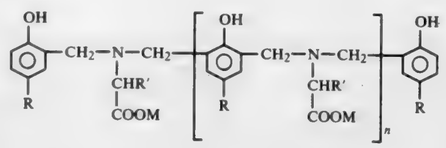
4,387,244

CHELATING AGENTS FOR NON-AQUEOUS SYSTEMS

Patricia M. Scanlon, Arlington, Mass., and E. Richard Young, Nashua, N.H., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 193,292, Oct. 2, 1980, abandoned. This application Oct. 23, 1981, Ser. No. 367,973
Int. Cl.³ C07C *101/30*
U.S. Cl. 562—448 **20 Claims**

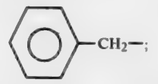
1. A compound having the formula



wherein

R is an alkyl group having from 1 to 15 carbon atoms;

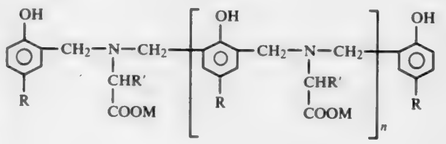
R′ is selected from the group H—, a lower alkyl group, HO—CH_2—, $CH_3CH(OH)$—, $HSCH_2$—, CH_3—SCH_2CH_2—, H_2NCOCH_2—, $H_2NCOCH_2CH_2$—, $HOOCCH_2$—, $HOOCCH_2CH_2$—, and



M is selected from the group consisting of H+, an alkali metal ion, NH_4+, and an aminium ion; and

n is an integer from 1 to 6.

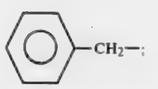
11. A process for preparing a compound having the formula:



wherein

R is an alkyl group having from 1 to 15 carbon atoms;

R′ is selected from the group H—, a lower alkyl group, HO—CH_2—, $CH_3CH(OH)$—, $HSCH_2$—, CH_3—SCH_2CH_2—, H_2NCOCH_2—, $H_2NCOCH_2CH_2$—, $HOOCCH_2$—, $HOOCCH_2CH_2$—, and



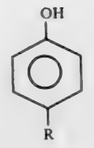
M is selected from the group consisting of H+, an alkali metal ion, NH_4+, and an aminium ion; and

n is an integer from 1 to 6;

said process comprising

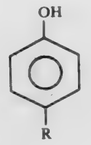
(i) forming a first mixture by adding about 2 molar equivalents of an aqueous solution of formaldehyde to about 1 molar equivalent of an aqueous solution of an amino acid having the general formula $NH_2CHR'COOM$ over a time period of 0.5–2 hours and at a temperature of 20°–50° C. while maintaining the mixture at a pH of 7.5–8;

(ii) forming a second mixture by admixing the first mixture with a sufficient amount of methanol to permit dissolution of a phenol of the general formula



while maintaining the pH of the second mixture at 7.5–8.0

(iii) forming a third mixture by adding to the second mixture 1.1 to 1.5 molar equivalents of a methanol solution of a phenol of the general formula



over a period of 0.5–2 hours at a temperature of 30°–80° C. while maintaining the pH at 7.5–8.0;

(iv) heating the third mixture at reflux for a period of 5–7 hours; and

(v) allowing the third mixture to cool, followed by separation and recovery of said compound.

4,387,245

PREPARATION OF DIACETONEKETOGULONIC ACID BY OXIDATION OF DIACETONESORBOSE

Rolf Wittmann, Mühltal-Traisa; Willi Wintermeyer, Seeheim-Jugenheim, and Jürgen Butzke, Dieburg, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,490
Claims priority, application Fed. Rep. of Germany, May 21, 1980, 3019321
Int. Cl.³ C07C *59/10*
U.S. Cl. 562—587 **5 Claims**

1. A process for preparing diacetoneketogulonic acid comprising oxidizing diacetonesorbose in two steps, first oxidizing electrochemically to a degree of conversion of about 40–95% or first oxidizing with oxygen to a degree of conversion of about 20–95%, and then substantially completely oxidizing the remainder with hypochlorite.

4,387,246

METHOD OF PREPARING ORTHOTRIFLUOROMETHYL ANILINE

Camille Disdier, Villeurbanne; Jacques-Pierre Martinaud, Lyons, both of France, and John W. Sullivan, Jr., Neshanic Station, N.J., assignors to Rhone-Poulenc Industries, Paris, France

Filed Dec. 7, 1981, Ser. No. 328,067
Claims priority, application France, Dec. 12, 1980, 80 26367
Int. Cl.³ C07C *87/48*
U.S. Cl. 564—417 **15 Claims**

1. A method of preparing orthotrifluoromethyl aniline from trifluoromethylbenzene, comprising the steps:

(a) reacting the trifluoromethyl benzene with gaseous chlorine in the presence of a chlorination catalyst until at least 90% of the trifluoromethyl benzene is consumed, thereby forming a crude mixture containing chlorotrifluoromethyl benzenes;

(b) nitrating the crude mixture from step (a) with a mixture of sulfuric and nitric acids until the chlorotrifluoromethyl benzenes are essentially completely consumed, thereby forming an organic phase containing chloronitrotrifluoromethyl benzenes;

(c) decanting and washing the organic phase;

(d) hydrogenating the organic phase from step (c) with a hydrogenation catalyst selected from the group consisting of Raney nickel and Raney nickel doped with chromium, in an organic solvent until the chloronitrotrifluoromethyl benzenes are essentially completely consumed;

(e) hydrogenating the mixture from step (d) in the presence of an additional amount of hydrogenation catalyst and in the presence of alkali base, thereby forming a crude mixture containing orthotrifluoromethyl aniline; and

(f) separating the orthotrifluoromethyl aniline from the crude mixture formed in step (e).

4,387,247

CATALYTIC REDUCTION OF NITRO AROMATIC COMPOUNDS WITH HYDROGEN SULFIDE AND CARBON MONOXIDE

Charles T. Ratcliffe, and Geza Pap, both of Morristown, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 11, 1980, Ser. No. 158,552
Int. Cl.³ C07C *85/11*
U.S. Cl. 564—420 **20 Claims**

1. In a process for the heterogeneous catalytic reduction of di- or polynitro aromatic compounds by gaseous hydrogen sulfide over a solid catalyst, the improvement which comprises adding to the hydrogen sulfide gas an amount of carbon monoxide effective to prolong the life of the catalyst for catalytic reduction of at least two nitro groups to amino groups.

4,387,248

α,β-UNSATURATED ALDEHYDES AND USE OF SAME AS FLAVORING INGREDIENTS

Wilhelm Pickenhagen, Chavannes-des-Bois, Switzerland, and Alain Velluz, Reignier, France, assignors to Firmenich SA, Geneva, Switzerland

Division of Ser. No. 51,506, Jun. 25, 1979, Pat. No. 4,324,809. This application Oct. 23, 1981, Ser. No. 314,446
Claims priority, application Switzerland, Jul. 6, 1978, 7360/78
Int. Cl.³ C07C *47/21*
U.S. Cl. 568—448 **1 Claim**

1. An α-β-unsaturated aldehyde selected from the group consisting of:

2-butyl-hept-2-enal

2-propyl-oct-2-enal

2-pentyl-oct-2-enal and

2-butyl-non-2-enal.

4,387,249

PROCESS FOR THE MANUFACTURE OF DIETHYLENETRIAMINE

Robert M. Harnden, Russellville, Ark., and Donald W. Calvin, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 18, 1981, Ser. No. 332,288
Int. Cl.³ C07E *85/20*
U.S. Cl. 564—488 **9 Claims**

1. A process for the manufacture of diethylenetriamine, comprising the steps of:

(a) reacting ethylenediamine, ethanolamine, and urea to form aminoethylethyleneurea, ethyleneurea, and ammonia; and

(b) hydrolyzing the aminoethylethyleneurea and ethyleneurea formed in step (a) to diethylenetriamine and ethylenediamine, respectively.

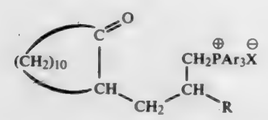
4,387,250

PHOSPHONIUM SALTS, PROCESS FOR THEIR PREPARATION AND USE OF SAME AS STARTING MATERIALS FOR PREPARING UNSATURATED BICYCLIC COMPOUNDS

Arnoldus Uijttewaal, Geneva, and Roger Snowden, Grand-Lancy, both of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Filed Dec. 22, 1980, Ser. No. 219,814
Claims priority, application Switzerland, Jan. 16, 1980, 332/80
Int. Cl.³ C07F 9/54
U.S. Cl. 568—2 1 Claim

1. Compounds of formula



(I)

wherein symbol R represents a hydrogen atom or a methyl radical, Ar represents an aryl radical and X a halogen atom or a BF_4 or ClO_4 group.

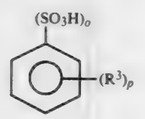
4,387,251

PROCESS FOR THE PREPARATION OF PURE 4,4'-DIHYDROXYPHENYL ALKANES OR 4,4'-DIHYDROXYDIPHENYL CYCLOALKANES

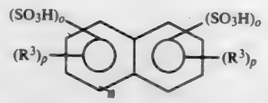
Karl-Heinrich Meyer; Ludwig Bottenbruch, both of Krefeld, and Wolfgang Jakob, Moers, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 182,106, Aug. 28, 1980, abandoned. This application Jul. 20, 1981, Ser. No. 285,046
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1979, 2935316
Int. Cl.³ C07C 39/16
U.S. Cl. 568—727 4 Claims

1. A process for the preparation of bisphenols which comprises condensing an aliphatic or cycloaliphatic ketone with a phenol having a free p-position at a temperature of 45° C., the molar ratio of phenol to ketone during said condensation being between 3 and 15 moles of phenol per mol of ketone, in the presence, as a condensing agent, of from 0.3 to 3 moles, per mol of ketone, of an aromatic sulphonic acid of the formula



or of the formula



wherein R^3 is an inert organic radical, o is an integer of from 1 to 4 and p is 0 or an integer of from 1 to 4, and in the presence of an organic solvent in which the aromatic sulphonic acid is effectively soluble and in which the bisphenol or the phenol adduct which is produced is as slightly soluble as possible, isolating the crystalline separated bisphenol or its adduct, and removing the adhering phenol or solvent.

4,387,252

PROCESS FOR THE PREPARATION OF POLYHYDRIC PHENOLS

Christoph Jupe, Cologne; Helmut Waldmann, Leverkusen, and Hermann Seifert, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 3, 1980, Ser. No. 193,572
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 2942366
Int. Cl.³ C07C 39/10, 37/60
U.S. Cl. 568—771 3 Claims

1. A process for the preparation of a polyhydric phenol by hydroxylation of a phenol with an essentially anhydrous and hydrogen peroxide-free solution of a percarboxylic acid in an organic solvent, characterised in that the hydroxylation is carried out with the addition of 0.00005 to 0.03% by weight (relative to the phenol employed) of one or more compounds from the group consisting of iminodiacetic acid, nitrilotriacetic acid, nitrilotripropionic acid, ethylenediaminotetraacetic acid, o-phenylenediaminodiacetic acid, o-phenylenediaminotetraacetic acid, 1,2- cyclohexanediaminotetraacetic acid, dipicolinic acid and diethylenetriaminopentaacetic acid, salts thereof and esters thereof, sodium pyrophosphate, phosphoric acid derivatives having the composition $Na_5R_5(P_3O_{10})_2$ (in which R = 2-ethylhexyl) and oxyethanediphosphonic acid and salts thereof and esters thereof.

4,387,253

PREPARATION OF DICHLOROBENZYL ALCOHOL

Christopher J. Gower, West Bridgford, England, assignor to The Boots Company Limited, Nottingham, England

Filed Aug. 12, 1981, Ser. No. 292,110
Claims priority, application United Kingdom, Sep. 3, 1981, 8028664
Int. Cl.³ C07C 33/46
U.S. Cl. 568—812 4 Claims

1. A two stage process for preparing 2,4-dichlorobenzyl alcohol from 2,4-dichlorobenzyl chloride in which

(a) the first stage comprises heating 2,4-dichlorobenzyl chloride and an aqueous solution of a water soluble salt of an organic acid selected from the group consisting of sodium acetate, potassium acetate and ammonium acetate under reflux in the presence of a phase transfer catalyst selected from the group consisting of alkylammonium salts, long chain alkylammonium halides, arylalkylammonium compounds and alkylphosphonium halides and in the absence of any organic solvent to form the 2,4-dichlorobenzyl ester of the organic acid; and

(b) the second stage comprises heating the 2,4-dichlorobenzyl ester with a strong base to hydrolyse the ester to give 2,4-dichlorobenzyl alcohol.

4,387,254

PROCESS FOR THE PREPARATION OF IODOALCOHOLS HAVING A PERFLUOROALKYL CHAIN

Auguste Commeyras, Clapiers; Rene Sagnes, and Claudine Guery, both of Montpellier, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Jun. 29, 1981, Ser. No. 278,703
Claims priority, application France, Jul. 8, 1981, 80 15122
Int. Cl.³ C07C 31/34
U.S. Cl. 568—842 4 Claims

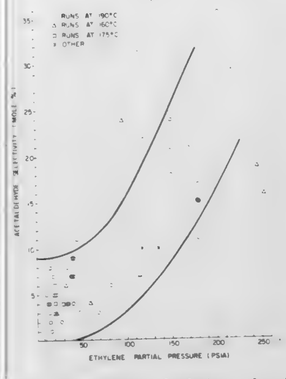
1. A process for the preparation of an iodoalcohol having a perfluoroalkyl chain comprising reacting an iodoperfluoroalkane with an ethylenic alcohol in the presence of a catalyst pair selected from mercurous iodide/mercuric iodide, mercurous acetate/mercuric iodide, or manganous acetylacetonate/manganic acetylacetonate.

4,387,255

PROCESS FOR PRODUCTION OF ETHYLENE GLYCOL

George R. Wood, Wheaton, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 25, 1981, Ser. No. 305,548
Int. Cl.³ C07C 29/50, 31/20
U.S. Cl. 568—860 5 Claims



1. A process for production of ethylene glycol comprising contacting a feed comprising reactants consisting essentially of ethylene, molecular oxygen and water with a catalyst comprising iodine at a temperature ranging from about 100° to about 250° C. and overall pressure of 50 to about 800 psia in a reaction zone in which the ethylene partial pressure ranges from about 30 to about 40 psia (about 2.1 to about 2.8 kg/cm²), oxygen partial pressure ranges from about 5 to about 50 psia (about 0.35 to about 3.5 kg/cm²) and ethane partial pressure ranges from about 15 to about 700 psia.

4,387,256

TRACTION FLUID LUBRICANTS DERIVED FROM COAL TAR

Harry E. Henderson, Sarnia; Clinton R. Smith, Camlachie, and A. Gordon Alexander, Sarnia, all of Canada, assignors to Imperial Oil Limited, Toronto, Canada

Filed Sep. 2, 1980, Ser. No. 183,361
Int. Cl.³ C07C 15/12
U.S. Cl. 585—1 11 Claims

1. In the method of operating a traction drive the improvement comprising using as the traction lubricant a traction fluid having a lubricant basestock comprising hydrogenated coal tar which contains a saturate fraction and an aromatic fraction which comprises at least about 12% by weight of said fluid, said saturate fraction having a volume ratio of at least about 1:1 multiring components of at least three rings to 1–2 ring components, and said aromatic fraction containing at least about 50% by volume of multiring components having two or more rings at least one of which is an aromatic ring.

4,387,257

MOTOR FUEL

Lyle D. Burns, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 29, 1982, Ser. No. 303,237
Int. Cl.³ C10L 1/18
U.S. Cl. 585—14 12 Claims

1. A fuel composition comprising a hydrocarbon suitable as a fuel for an internal combustion engine and an antiknock improving amount of a bicyclic diolefin.

4,387,258

SELECTIVE HYDROGENATION USING PALLADIUM/PLATINUM ON CRYSTALLINE SILICA POLYMORPH/SILICALITE/HIGH SILICA ZEOLITE

Mohan Vadekar, Wassenaar, Netherlands, and Harry E. Robson, Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 25, 1982, Ser. No. 342,719
Claims priority, application United Kingdom, Jan. 28, 1981, 8102514
Int. Cl.³ C07C 5/14, 5/06, 5/16, 5/08
U.S. Cl. 585—259 20 Claims

1. A method of selectively hydrogenating a hydrocarbon feed to convert alkynes and dienes to alkenes containing a single olefinic double bond, which method comprises contacting the feed with hydrogen over a catalyst comprising palladium or platinum supported on a crystalline silica polymorph, said silica polymorph having, after calcination in air for at least one hour at 600° C., a mean refractive index of 1.39±0.01 and a specific gravity of 1.70±0.05, and said silica polymorph having a total acidity of not greater than 40μ moles/g as measured by pyridine adsorption at 300° C.

3. A method as claimed in claim 1, in which the silica polymorph has, following calcination in air for at least an hour at 600° C. an adsorptive capacity for water vapour at 23° C. and a water vapour pressure of 4.6 mm Hg of less than 1 wt.%, an infra-red spectrum which exhibits a substantial absence of absorption in the region 3700–3100 cm^{-1} and an X-ray powder diffraction pattern containing at least the following d-values:

11.10±0.2
10.00±0.2
9.75±0.1
3.85±0.04
3.82±0.04
3.71±0.02
3.62±0.02

and an absence of reflections intermediate the reflections corresponding to d-spacings of 3.82±0.04 A and 3.71±0.02 A.

4,387,259

SELECTIVE ALKYLATION OF AROMATIC HYDROCARBONS USING A MIXED ETHYLENE/PROPYLENE ALKYLATION AGENT

George C. Barile, South Somerville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 16, 1981, Ser. No. 283,863
Int. Cl.³ C07C 3/52
U.S. Cl. 585—467 6 Claims

1. A process for selectively alkylating benzene with an olefin-containing alkylation mixture comprising ethylene and propylene, said process comprising contacting benzene with an alkylation mixture comprising from about 5 to 95 mole % ethylene, and from about 5 to 95 mole % propylene, in the presence of a ZSM-12 based alkylation catalyst composition under alkylation conditions, to thereby produce an alkylbenzene product enriched in propylated benzene to the extent of at least 98% selectivity based on moles of propylated benzene per mole of propylated benzene plus ethylated benzene, and an olefin-containing product enriched in ethylene and free of reactive propylene.

4,387,260

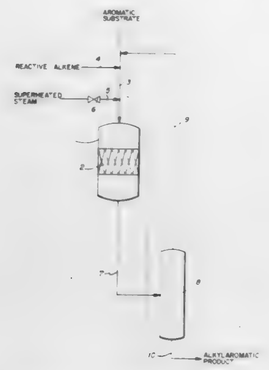
ALKYLATION OF AROMATIC COMPOUNDS WITH SILICALITE CATALYSTS IN THE PRESENCE OF STEAM

James M. Watson; James R. Butler, and Cleve H. Forward, all of Big Springs, Tex., assignors to Coaden Technology, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 255,882, Apr. 20, 1981, abandoned. This application Dec. 7, 1981, Ser. No. 327,860
Int. Cl.³ C07C 3/52
U.S. Cl. 585—467 21 Claims

1. A process for producing alkylaromatic compounds com-

prising passing an aromatic compound, a reactive alkene and an effective amount of water through a bed of a silicalite alkylation catalyst at alkylation conditions and recovering the



resulting alkylaromatic compound, the presence of said water effecting enhanced catalytic conversion to the desired alkylaromatic compound.

4,387,261

TREATMENT OF EFFLUENT RESULTING FROM CONVERSION OF METHANOL TO GASOLINE IN ORDER TO DECREASE DURENE AND PRODUCE DISTILLATE

Arthur W. Chester, and Yung F. Chu, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 9, 1982, Ser. No. 366,949

Int. Cl.³ C07C *3/58, 1/04, 1/16, 1/22*

U.S. Cl. 585—489 **5 Claims**

1. In the process for the conversion of methanol to gasoline over a ZSM-5 type zeolite wherein methanol is contacted with said zeolite at elevated temperatures and pressures in order to effect conversion to liquid products including gasoline with a concurrent formation of durene and a portion of said liquid is contacted over a solid acidic catalyst, the improvement which comprises carrying out contact of a durene-containing fraction consisting essentially of C_9+ aromatics with zeolite ZSM-12 at a temperature within the range of 800° F. to 1050° F., a pressure wimin the range of 250 psig to 1000 psig, a hydrogen to hydrocarbon mol ratio greater than 1, and a space velocity of from 0.5 to 10 WHSV in order to dealkylate a substantial portion of the durene and enhance the yield of benzene, toluene and xylenes.

4,387,262

PROCESS FOR OLIGOMERIZING OLEFINS

Yves Chauvin, Le Pecq; Domonique Commereuc, Meudon; Jean Gaillard, Lyons; Gerard Leger, Saint Genis les Ollieres, and Nhu H. Phung, Antony, all of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Division of Ser. No. 102,488, Dec. 11, 1979, Pat. No. 4,283,305. This application Jan. 22, 1981, Ser. No. 228,309

Claims priority, application France, Dec. 11, 1978, 78 35011

Int. Cl.³ C07C *2/02*

U.S. Cl. 585—523 **10 Claims**

1. A process for converting at least one monoolefin to dimers, trimers and/or oligomers, which comprises contacting said monoolefin with a catalyst composition obtained by contacting, in any order, at least one bivalent nickel compound with at least one hydrocarbylaluminum halide of the formula AlR_xX_y wherein R is a monovalent hydrocarbon group, X is a chlorine or bromine atom, x has a value from 1 to 1.5 and y a value from 1.5 to 2, with $x+y=3$, and at least one organic Bronsted acid whose pK_2 at 20° C. is at most equal to 3.

4,387,263

PROCESS FOR MIXING OLEFINS

Wilhelm Vogt, Hürth; Hermann Glaser, Erftstadt, and Jürgen Koch, Brühl, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed May 14, 1982, Ser. No. 378,425

Int. Cl.³ C07C *1/24*

U.S. Cl. 585—640 **11 Claims**

1. A process for making C_2 to C_4-olefins from gas mixtures containing methanol, dimethylether and optionally steam in the presence of catalysts at temperatures of 250° to 500° C. under pressure of 0.1 to 6 bars, unreacted feed material being recycled, which comprises: evaporating a mixture containing methanol and water in a ratio by volume of 1:(0 up to 2) and reacting it in a reaction zone having the catalyst placed therein; partially condensing the reaction gases by cooling them and separating them, in a separating zone, into three phases; removing the oil phase consisting of higher aliphatic and aromatic hydrocarbons and water-scrubbing the remaining aqueous phase and gas phase in a scrubbing zone under pressures of 1 to 40 bars; removing overhead a gaseous hydrocarbon mixture containing predominantly C_2 to C_4-olefins and separating it into its components; removing, from the base portion of the scrubbing zone, an aqueous phase containing unreacted methanol and intermediarily formed dimethylether; distilling off therefrom in a stripping zone, the methanol and dimethylether and recycling them into the reaction zone; and removing the water from the base portion of the stripping zone.

4,387,264

DIOLEFIN MONOMER PURIFICATION PROCESS FOR ANIONIC POLYMERIZATION

Le-Khac Bi, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 4, 1981, Ser. No. 259,794

Int. Cl.³ B01D *15/00*

U.S. Cl. 585—822 **1 Claim**

1. In a method of purifying rubber grade diene monomers for anionic polymerization of the type wherein a rubber grade diene monomer is sequentially passed through molecular sieves and then adsorption alumina just prior to being introduced into the polymerization reaction vessel, the improvement comprising: purifying the rubber grade diene monomer by sequentially passing it through molecular sieves, then through adsorption alumina, and then through molecular sieves before introducing the purified rubber grade diene into the polymerization reaction vessel, said molecular sieves being selected from the group consisting of 3A and 4A type molecular sieves.

4,387,265

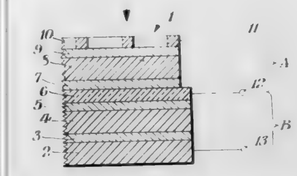
TANDEM JUNCTION AMORPHOUS SEMICONDUCTOR PHOTOVOLTAIC CELL

Vikram L. Dalal, Newark, Del., assignor to University of Delaware, Newark, Del.

Filed Jul. 17, 1981, Ser. No. 284,355

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—249 **24 Claims**



1. A photovoltaic stack comprising, from bottom to top:
a first cell comprising:
(a) an electrically conducting substrate;
(b) a first doped amorphous semiconductor layer of a first conductivity type overlying and in ohmic contact with said substrate;
(c) a first intrinsic amorphous semiconductor layer overlying said first doped layer;
(d) a second doped amorphous semiconductor layer of a second condutivity type overlying said first intrinsic layer;
(e) a transparent or semitransparent third, heavily doped, high conductivity amorphous semiconductor layer of said second conductivity type overlying and in ohmic contact with said second doped amorphous semiconductor layer;
a second cell overlying and in ohmic contact with said third doped amorphous semiconductor layer, comprising:
(f) a fourth doped amorphous semiconductor layer of said second conductivity type overlying and in ohmic contact with said third doped amorphous semiconductor layer;
(g) a second intrinsic amorphous semiconductor layer overlying said fourth doped layer;
(h) a fifth doped amorphous semiconductor layer of said first conductivity type overlying said second intrinsic layer;
(i) an electrical contact layer overlying and in ohmic contact with said fifth doped layer;
means for collecting current comprising:
(j) a first ohmic electrical contact to said substrate;
(k) a second ohmic electrical contact to said third doped layer;
(l) a third ohmic electrical contact to said electrical contact layer.

4,387,266

FOIL-INSULATED HIGH VOLTAGE BUSHING WITH EMBOSSED POTENTIAL CONTROL INSERTS

Günther Matthäus, Spardorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

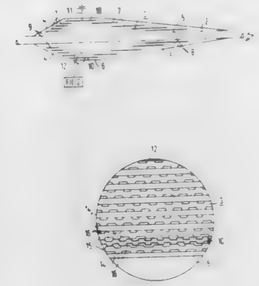
Filed Dec. 30, 1980, Ser. No. 221,253

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1980, 3001810

Int. Cl.³ H01B *17/28*; H01G *1/015, 4/22, 4/32*

U.S. Cl. 174—31 R **4 Claims**

1. A high voltage insulator bushing comprising:
a first conductor part;
a second conductor part;
an insulator body containing electrically conductive potential control means disposed between said first conductor part and said second conductor part, the insulator body containing the electrically conductive potential control means being formed of electrically conductive foil means embossed with between 300 and 700 dimpled depressions per square centimeter, said electrically conductive foil means having a predetermined smooth thickness prior to embossing and an overall predetermined embossed thickness after embossing which is at least 50% greater than said predetermined smooth thickness, and electrically insulating foil means formed of an embossed plastic foil, said electrically insulating foil means being arranged to be adjacent to said electrically conductive foil means; and
a gaseous insulating medium impregnating the insulator body containing the electrically conductive potential control means, said gaseous insulating medium being formed of SF_6.



4,387,267

DEVICE FOR THE FLUID-TIGHT ANCHORAGE OF AN ELECTRIC CONDUCTING CABLE INLET

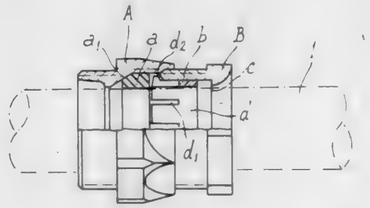
Gerard Becker, Roupeldange, France, assignor to Societe Industrielle de Boulay, Boulay, France

Filed Apr. 2, 1981, Ser. No. 250,301

Claims priority, application France, Apr. 8, 1980, 80 07831

Int. Cl.³ F16L *21/02*; H02G *15/013*

U.S. Cl. 174—65 SS **5 Claims**



1. A device for the simultaneous sealing and anchoring of an electric conducting cable in an inlet of a structure, said device comprising:
a tubular body through which an electric cable is to be passed, said body including first and second sections having mutually engageable threads so that said sections may be moved relatively axially of each other;
said first section having positioned inwardly thereof flexible, sealing ring means for, upon axial movement of said sections toward each other, sealing radially inwardly against the electric cable;
said second section having positioned inwardly thereof anchor means for, upon axial movement of said sections toward each other, clamping radially inwardly against the electric cable, said anchor means comprising a socket formed of flexible material and having therein a plurality of circumferentially spaced, radially and axially extending slots;
said sealing ring means and said socket being in axial end-to-

end relationship to each other such that, upon axial movement of said sections toward each other, said sealing ring means and said socket are moved into direct end-to-end engagement with each other; and

said second section and said socket having means for, upon axial movement of said sections toward each other, simultaneously reinforcing the sealing action on said sealing ring means and the clamping action on said socket by the interaction between said sealing ring means and said socket due to end-to-end engagement therebetween, said reinforcing means comprising a bevelled end face on said second section, a bead extending outwardly from said socket, and a first bevelled surface on said bead, said first bevelled surface facing said bevelled end face and being contacted thereby upon axial movement of said sections toward each other, and the tapers of said first bevelled surface and said bevelled end face being different when out of mutual engagement with each other.

4,387,268

SLEEVE FOR PROTECTING SPLICES IN ELECTRIC OR TELEPHONE CABLES

Andre Morel, and Jacques Morel, both of Chateauneuf-en-Thymerais, France, assignors to Etablissements Morel, Ateliers Electromecaniques de Favieres, Chateauneuf-en-Thymerais, France

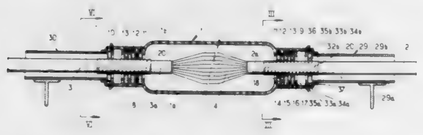
PCT No. PCT/FR80/00160, § 371 Date Jul. 7, 1981, § 102(e) Date Jul. 7, 1981, PCT Pub. No. WO81/01487, PCT Pub. Date May 28, 1981

PCT Filed Nov. 7, 1980, Ser. No. 279,997

Claims priority, application France, Nov. 15, 1979, 7928178; Mar. 26, 1980, 8006660

Int. Cl.³ H02G *15/18, 15/113*

U.S. Cl. 174—92 **19 Claims**



1. Sleeve for protecting the splice (**4**) of electric of telephone cables (**2, 3**) made up of two half-shells (**1***a, 1b*) joined by their adjacent edges, around the splice, these adjacent edges being provided with a groove (**7**) which, when the edges are joined defines a duct (**8**), devices (**40**) being provided for injecting into this duct a pasty material creating waterproofing between the said adjacent edges, the opposite ends (**9,10**) of the sleeve being provided with jaws (**11, 12, 13**) for fastening the ends of the cables axially to the sleeve and devices for creating watertightness between these cables and these ends of the sleeve, characterised in that each of the ends (**9,10**) of the sleeve bears at least two detachable jaws (**11,12**) defining between them a chamber (**18**) connected with the duct (**8**).

4,387,269

ELECTRONIC APPARATUS WITH SPEECH SYNTHESIZER

Shintaro Hashimoto, Ikoma; Akitaka Morita, Nara, and Hiroshi Tsuda, Uji, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 2, 1981, Ser. No. 239,545

Claims priority, application Japan, Mar. 3, 1980, 55-27174

Int. Cl.³ G10L *1/00*

U.S. Cl. 179—1 SM **5 Claims**

1. An electronic apparatus comprising:

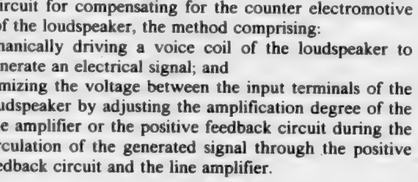
a voltage source;

a speech synthesis controller operatively connected to said voltage source;

said controller comprising means for generating a first signal for facilitating transfer of data to said controller when said controller receives power from said source at at least a threshold voltage level;

data processing means connected to said controller;

said data processing means including means for providing data to said controller in response to receipt of said first signal from said controller;



said data processing means further comprising means for providing a second signal to said controller for determining the state of said first signal, whereby it is determined whether said voltage source is providing power to said controller at at least said threshold voltage level.

4,387,270

METHOD OF HARMONIZING THE IMPEDANCES OF AN AUDIO AMPLIFIER AND LOUDSPEAKER INTERCONNECTED THEREWITH

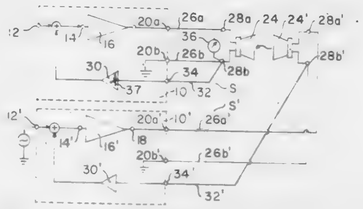
Hideki Sakano, Iwafunemachi, and Shigeru Todokoro, Fujisawashi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasakishi, Japan

Filed Nov. 28, 1980, Ser. No. 211,187

Claims priority, application Japan, Mar. 24, 1980, 55-37198

Int. Cl.³ H04R *3/00*

U.S. Cl. 179—1 F **8 Claims**



1. The method of harmonizing the impedances of an audio amplifier and a loudspeaker interconnected therewith, the audio amplifier including a line amplifier and a positive feedback circuit for compensating for the counter electromotive force of the loudspeaker, the method comprising:

mechanically driving a voice coil of the loudspeaker to generate an electrical signal; and

minimizing the voltage between the input terminals of the loudspeaker by adjusting the amplification degree of the line amplifier or the positive feedback circuit during the circulation of the generated signal through the positive feedback circuit and the line amplifier.

4,387,271

COMBINED TELEPHONE AND DATA-TRANSFER SYSTEM

Auro Artom, Turin, Italy, assignor to CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Nov. 18, 1980, Ser. No. 207,984

Claims priority, application Italy, Nov. 19, 1979, 69232 A/79

Int. Cl.³ H04M *11/00, 15/00;* **H04N** *7/14*

U.S. Cl. 179—2 DP **7 Claims**

1. In a telephone system wherein a multiplicity of subscriber stations communicate with a central office via respective local lines,

the combination therewith of:

a generator of data bits continuously emitted at a location remote from said subscriber stations over a bus common to all said local lines at a high speed exceeding the transmission capacity of said local lines, said data bits being divided into groups each accompanied by an assigned address code;

a multiplicity of retrieval units each connected at said remote location between said bus and a respective local line,



each retrieval unit including register means for temporarily storing the bits of any of said groups and reading same out over the associated local line, in response to a request signal from the respective subscriber station identifying such group, at a reduced speed compatible with the transmission capacity of the associated local line; and

display means at each subscriber station connectable to the local line thereof for visualizing the data groups received from the associated retrieval unit.

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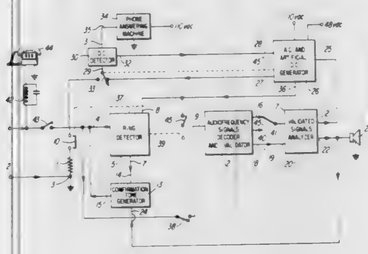
METHOD AND APPARATUS FOR CONTROLLING A SUBSCRIBER PHONE SYSTEM INCLUDING AT LEAST ONE AUTOMATIC PHONE-ANSWERING MACHINE

Marcelo Castro, and Horacio Castro, both of Carlos Pellegrini 885, Buenos Aires, Argentina

Filed Jul. 31, 1981, Ser. No. 288,812

Int. Cl.³ H04M *1/65*

U.S. Cl. 179—6.11 **6 Claims**



1. A method for controlling a subscriber phone system connected to a telephone network which has a calling end and a called end, said subscriber phone system being connected to said called end and including an automatic phone-answering machine for recording messages, said method comprising the steps of:

(A) transmitting from the calling end call signals identifying the subscriber;

(B) detecting at the called end the presence of a ringing signal alternating current produced by the network in response to said call signals;

(C) electrically closing, at the called end, a direct current loop by connecting to the network an electrical impedance element that is substantially equivalent to the impedance offered to the network by a conventional subscriber phone system which has been unhooked;

(D) in response to the closing of the direct current loop, transmitting a confirmation signal from the called end to the calling end;

(E) transmitting from the calling end to the called end at least one pre-established code signal associated with said subscriber phone system,

(F) if after a predetermined time period from the closing of the direct current loop, an incomplete or undefined coded signal is received from the calling end, activating at the called end the automatic phone-answering machine and connecting it to the network, and, if a pre-established code signal has been received from the calling end within said predetermined period of time, registering said pre-established code signal and emitting an audible signal;

(G) if, after a second predetermined period of time has elapsed, the subscriber phone system has not been attended, activating automatically the automatic phone-answering machine and connecting it to the network thereby to record messages, and when another predetermined period of time has elapsed, the called party having not answered the call, opening automatically the direct current loop of the network thereby to free the called end to receive subsequent calls.

4,387,273

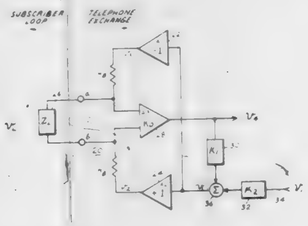
SUBSCRIBER LINE INTERFACE CIRCUIT WITH IMPEDANCE SYNTHESIZER

Ramon C. W. Chea, Jr., Monroe, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,751

Int. Cl.³ H04M *19/00*

U.S. Cl. 179—16 F **20 Claims**



1. A line circuit for supplying a controlled loop current to a two-wire telecommunications line having a variable impedance, comprising:

first and second line feed resistance means coupled to said two-wire line;

drive means for coupling loop current through said feed resistance means to said telecommunications line;

means for sensing the voltage across each of said first and second line feed resistance means and for deriving output analog signals directly related to said loop current;

first summation circuit means having said output analog signals from said sensing means coupled thereto for cancelling longitudinal signals such that a single analog output signal representative of said loop current responsive to transversal signals is derived;

second summation circuit means for deriving a feedback control signal having coupled thereto said single analog output signal and input analog signals to couple said feedback control signal to said drive means; such that the output of said second summation circuit means is responsive to transversal signals; and whereby the ac transverse termination impedence provided by said line circuit is related to the transfer function of said feedback control

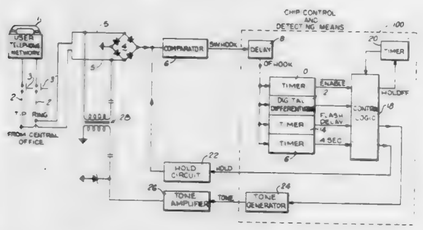
signal to synthesize the impedance provided to said telecommunications line from a lower resistance value.

4,387,274

HOOK FLASH SIGNAL ACTUATED TELEPHONE CONTROL DEVICE

Jeffrey D. Stein, Cardiff by the Sea, and John M. McCool, El Cajon, both of Calif., assignors to GTI Corporation, San Diego, Calif.

Filed Jun. 15, 1981, Ser. No. 273,807
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—99 H **18 Claims**



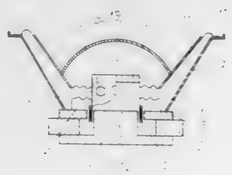
17. A telephone control device including hold circuit means adapted to be selectively activated by a particular sequence of user actuated hook flash telephone signals for placing an associated telephone on hold, so that the telephone handset can be returned to its cradle without disconnecting an existing call, said telephone having TIP and RING transmission lines connected to a central telephone office and hook switch means respectively connected within said transmission lines for generating hook flash signals thereover, said control device connected to the telephone at said TIP and RING transmission lines and comprising detecting means being responsive to both the number of hook flash signals generated within a predetermined time and the length of each of said hook flash signals, said detecting means providing an output signal to selectively activate said hold circuit means and thereby place said telephone on hold when the length and number of hook flash signals generated corresponds with the particular sequence thereof.

4,387,275

SPEAKER AND SPEAKER SYSTEM

Yasuomi Shimada, Hirakata; Tatsuo Fukuyama, Kyoto, and Toshiyuki Mizutani, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP80/00275, § 371 Date Jul. 9, 1981, § 102(e) Date Jul. 9, 1981, PCT Pub. No. WO81/01492, PCT Pub. Date May 28, 1981
PCT Filed Nov. 6, 1980, Ser. No. 285,110
Claims priority, application Japan, Nov. 9, 1979, 54-145870; Nov. 9, 1979, 54-145871; Jan. 18, 1980, 55-4902; Jun. 2, 1980, 55-74817
Int. Cl.³ H04R *7/16*
U.S. Cl. 179—115.5 R **10 Claims**



1. A speaker of the type comprising a first plate with a center pole, a magnet mounted on said first plate, a second plate mounted on said magnet, a voice coil bobbin disposed in such a way that a voice coil mounted on the peripheral cylindrical wall of said bobbin is placed in the magnetic gap defined between said center pole of said first plate and said second plate and a diaphragm supported between said voice coil and a frame so as to be driven in response to the vibrations of said voice coil bobbin,

characterized in that

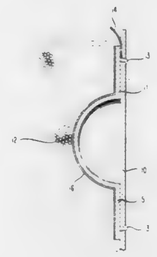
said voice coil bobbin and said diaphragm are interconnected through an air-tight space which is used as a mechanical filter, whereby the reproduced acoustic frequencies are limited within a predetermined range.

4,387,276

CARBON TRANSDUCER WITH ELECTRICAL CONTACT

John T. Plewes, Berkeley Heights, N.J.; Nathaniel R. Quick, Indianapolis, Ind., and Murray Robbins, Berkeley Heights, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 11, 1981, Ser. No. 301,816
Int. Cl.³ H04R *21/02*
U.S. Cl. 179—125 **6 Claims**



1. Carbon transducer for converting sound waves into electrical impulses comprising a first electrode making physical contact with packed carbon granules, said electrode comprising

a metallic substrate having a surface in contact with and supporting a conducting layer

CHARACTERIZED IN THAT

the said substrate consists essentially of two phase copper cobalt alloy at the said surface, in that the said conducting layer consists essentially of at least 95 percent by weight copper sulfide of the nominal composition CuS and in which the said layer is produced by in situ reaction of substrate copper with sulfur.

4,387,277

FOUR WIRE TO TWO WIRE CONVERTER

Bernard Gilles; Jose A. Paulet, and Raphaël J. S. Roux, all of Colombes, France, assignors to Thomson-CSF Telephone, Colombes, France

Filed Mar. 20, 1981, Ser. No. 245,976
Claims priority, application France, Mar. 21, 1980, 80 06401
Int. Cl.³ H04B *1/58*
U.S. Cl. 179—170 NC **2 Claims**

1. A two wire to four wire converter for connecting a private telephone network having a transmission and reception channel to a public telephone network and isolating the networks with low value capacitors comprising:

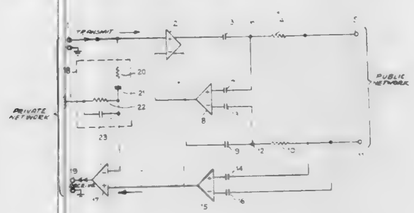
a first operational amplifier having first and second inputs with one input connected to said reception channel and first and second symmetrical outputs;

two circuit branches each comprising a serially connected isolating sigular and a singular each branch respectively connecting one of said outputs of said first amplifier to said public network;

a second operational amplifier having first and second inputs and an output;

two isolating capacitors each respectively connecting one of said inputs of said second amplifier to said public network;

a third operational amplifier having first and second inputs and an output connected to the other input to said first amplifier said third amplifier having a gain of ½ when the sum of the series resistances is equal to the resistance of the public network with respect to the converter;



two isolating capacitors respectively connecting the common points of the series connected resistors and capacitors to said first and second inputs of said third amplifier;

a fourth operational amplifier having first and second inputs with a first input connected to the output of said second amplifier and an output connected to said transmission channel; and

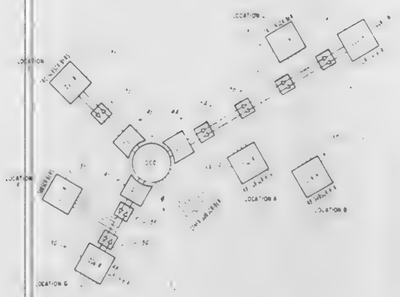
a phase shifting network connected between said reception channel and said second input of said fourth amplifier.

4,387,278

MAINTENANCE FACILITY FOR TELEPHONY SYSTEM WITH REMOTE PORT GROUPS

Robert D. Hayes, Winter Springs, and Glenn L. Richards, Longwood, both of Fla., assignors to Stromberg-Carlson Corporation, Tampa, Fla.

Continuation of Ser. No. 204,686, Nov. 5, 1980, abandoned. This application Oct. 13, 1981, Ser. No. 310,990
Int. Cl.³ G06F *15/16*; H04M *3/22*; H04Q *11/04*
U.S. Cl. 179—175.2 C **1 Claim**



1. In a telephony system for selectively interconnecting telephone calls among a plurality of telephone lines that includes, at a first location, a plurality of port group highway means for receiving and transmitting signals in a first format that represent voice data and supervisory data and call processing means, including a digital data call processor and a call processor input/output bus means, for selectively interconnecting the plurality of port group highway means in response to certain of a plurality of commands interpreted by the digital data processor, and maintenance processing means, including a digital data maintenance processor and a maintenance processor input/output bus means, for monitoring the operations of said telephony system, said telephony system including, at a second location that is physically remote from the first location, port means for transmitting onto and receiving from certain of the telephone lines first port signals representing voice data and for transmitting and receiving second port signals representing voice data and supervisory data and that includes communication linkage means connected to the port means for conveying the second port signals in a predetermined format, the improvement of interfacing means comprising:

A. encoding means connected to the call processor intput-/output bus for encoding signals representing supervisory data in response to others of the commands processed by the call processing means,

B. transfer means connected to a selected port group highway means, the communications linkage means and said encoding means for converting signals between the formats of the signals at the port group highway means and said encoding means and the format of the signals on the communications linkage means.

c. first message generating means connected to said transfer means and to the call processor input/output bus means for transmitting messages to the call processing means in response to certain signals representing supervisory data received in said transfer means from the communications linkage means,

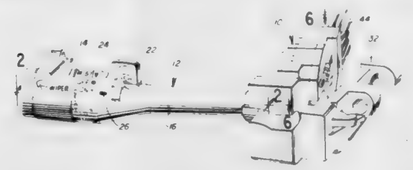
D. second message generating means connected to the maintenance processor input/output bus means for transmitting messages to and receiving messages from the maintenance processing means.

4,387,279

COLUMN MOUNTED SWITCH FOR VEHICLES AND THE LIKE

Arnold A. Brevick, Hamilton, Ill., assignor to Methode Electronics, Inc., Chicago, Ill.

Filed Oct. 19, 1981, Ser. No. 312,733
Int. Cl.³ H01H *9/00*
U.S. Cl. 200—61.54 **16 Claims**



1. A switch mountable on the steering column of a vehicle, which switch comprises:

a base of nonconductive material having a plurality of electrical conductors in said base;

a rotatable main carrier positioned against the electrical conductors of said base, said main carrier having first conductive member means that face and enter into electric current-conducting relation with the electrical conductors of said base in some rotating positions of the main carrier, but that are out of said current conducting relation in other rotating positions of the main carrier, said first conductive member means communicating through said main carrier with a conductive ring on the side of said main carrier opposed to said base;

a base cover enclosing said main carrier between the base cover and base, said base cover carrying second conductive member means in contact with said conductive ring, said second conductive means being conductive through said base cover to a side of the base cover opposed to said main carrier;

a rotatable wash carrier positioned against said side of the base cover opposed to the main carrier, and electrical contact member means positioned on said rotatable wash carrier for contact with the second conductive member

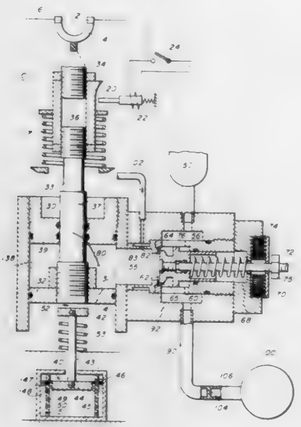
means in one rotating position and to be out of said contact in another rotating position;
a wash cover enclosing said wash carrier between the wash cover and base cover; and
an aperture extending through the switch from at least the wash cover to the main carrier to receive a control handle adapted to rotate said main carrier and wash carrier;
said main carrier and base having means cooperatively defining a variable resistor path whereby the resistance therethrough varies with the rotational position of the main carrier.

4,387,280

HIGH SPEED HYDRAULICALLY-ACTUATED OPERATING SYSTEM FOR AN ELECTRIC CIRCUIT BREAKER

Imdad Iman, Colonie, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 154,232, May 29, 1978, abandoned. This application Nov. 23, 1981, Ser. No. 323,849
Int. Cl.³ H01H *35/38*
U.S. Cl. 200—82 R **12 Claims**



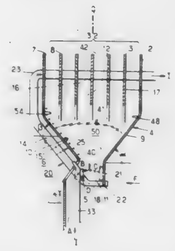
1. An hydraulically-actuated operating system for an electric circuit breaker comprising:
a fluid motor comprising a cylinder, a piston rod and a movable piston mounted on said piston rod and adapted to move in an opening direction within said cylinder to open an electric circuit breaker and in a reverse direction within said cylinder during closing of the circuit breaker;
an accumulator for supplying pressurized liquid to a piston-actuating space within said cylinder;
a normally-closed valve located hydraulically between said accumulator and said actuating space and openable to establish communication between said accumulator and said actuating space so that pressurized liquid from said accumulator can flow through said valve to said actuating space to drive said piston in an opening direction, said valve comprising a movable valve member that is movable from a valve-closed to a valve-open position to open said valve and is returnable to said valve-closed position to close said valve;
a vent located hydraulically downstream of said valve with respect to said accumulator for affording communication between said actuating space and a low pressure region;
flow control means for restricting leakage through said vent to a rate that prevents said leakage from substantially detracting from the development of pressure within said actuating space during the period from initial opening of said valve to the time when said piston has moved through a substantial portion of its opening stroke, said flow control means acting following such period and while said valve is still open to allow effective leakage through said vent;
said accumulator having a limited capacity that results in the pressure within said actuating space decaying promptly to a low value as a result of effective leakage through a circuit-breaker opening stroke and while said movable valve member is in its valve-open position;
means for restoring said movable valve member to its closed position in response to said pressure decay in said actuating space; and
dashpotting means comprising a shaft separate from said piston rod and disposed in axial alignment with said piston and opposite said actuating space, an abutment disposed at one end of said shaft and adapted to engage an end of said piston, and means for retarding motion of said shaft connected to the other end of said shaft, said abutment being axially spaced from said piston such that said piston contacts said dashpotting means abutment after travelling through said substantial portion of its opening stroke; said dashpotting means comprising the sole motion-retarding means for substantially retarding motion of said piston in said opening direction.

4,387,281

ARC BLOWING CHAMBER

Andre Haury, Le Raincy, and Lucien Siffroi, Versailles, both of France, assignors to La Telemecanique Electrique, France

Continuation of Ser. No. 27,587, Apr. 6, 1979, abandoned. This application Sep. 22, 1981, Ser. No. 304,478
Int. Cl.³ H01H *33/18*
U.S. Cl. 200—147 R **7 Claims**



1. An electric circuit breaker comprising:
a fixed contact;
a conductive contact carrier and a movable contact secured to said contact carrier, said contact carrier being movable along a predetermined direction contained in a predetermined plane, from a first position wherein the movable contact engages the fixed contact, to a second position wherein the movable contact is separated from the fixed contact;
a breaking zone defined between the fixed contact and the second position of the movable contact;
a plurality of arc plates arranged at right angles to the said plane and substantially directed towards the breaking zone, the said plurality comprising first and second outer arc plates and a plurality of inner arc plates located between the first and second outer arc plates, each of said outer and inner arc plates having a non forked part and a forked part which is nearest the breaking zone;
a first elongated arc deflector having a first portion facing the first outer arc plate a second portion to which the said fixed contact is secured and an intermediate portion connecting the first and second portions;
a second elongated arc deflector a first portion having an inner surface which faces the second outer arc plate, said first portion further having an outer surface a second portion

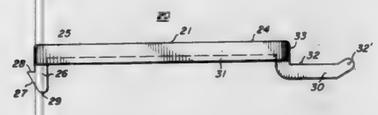
located in the vicinity of the second position of the movable contact and electrically connected to the said contact carrier and an intermediate portion connecting the said first and second portions of the second deflector, the said intermediate region of the second deflector having an inner surface portion opposite to the intermediate region of the first deflector and an outer surface, at least the intermediate regions of the said first and second deflectors both converging towards the breaking zone and respectively making first and second angles with respect to the said predetermined direction;
a blowout loop which has at least one conductor part located in at least one further plane which is parallel to the said predetermined plane, and located externally of the arc plates, said conductor part having a second portion connected at the extremity of the second portion of the first deflector and being parallel to the breaking zone, a first portion, which is located in the vicinity of the said non forked parts of the arc plates, and an intermediate portion connecting the said first and second portions, said intermediate portion being parallel to the intermediate and first portions of the second deflector and located opposite to the outer surfaces of the said intermediate and first portions of the second deflector.

4,387,282

ELECTRICAL SWITCH ASSEMBLY

Leonard Latasiewicz, Hoffman Estates, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Mar. 6, 1981, Ser. No. 241,266
Int. Cl.³ H01H *13/44*
U.S. Cl. 200—340 **19 Claims**



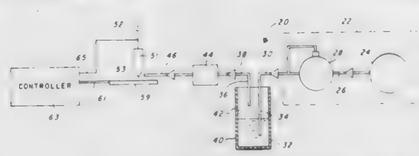
1. An electrical switch assembly comprising:
housing means for housing the electrical contacts of a switch, said housing means having a housing wall with at least one through hole opening therein;
at least one switch actuator means mounted in said housing wall opening;
retaining means fixed to at least one of said actuator means and said housing wall for mounting said actuator means to said housing wall and forming a hand insertable snap-in subassembly comprising said actuator means and said housing wall;
bias means for applying a mechanical biasing force to said actuator means to maintain it in a first predetermined position and permitting said actuator means to move, in response to force applied to said actuator means which generally opposes said mechanical biasing force, into a second predetermined position; and
electrical contact means mounted inside said housing means and adjacent said actuator means, said actuator means altering the electrical characteristics produced by said contact means in response tc said actuator means moving from said first to second predetermined positions to thereby transmit force to said contact means,
said assembly being characterized by,
said actuator means substantially comprising a substantially planar oblong plate with major longitudinal and minor width axes and first and second longitudinal opposite end portions, and
said biasing means comprising at least one flexible means contacting said first longitudinal end portion of said actuator means and providing said mechanical bias force thereto, said second longitudinal end portion having a contact projection affixed thereto, said biasing means readily permitting substantially pivotal movement of said actuator second longitudinal end portion about an axis disposed opposite said second longitudinal end portion of said actuator means and parallel to said minor width axis in response to the application of force, generally opposing said biasing force, to said second longitudinal end portion to thereby pivotally move said actuator means from said first to second positions wherein in said second position said contact projection contacts and alters the electrical characteristics of said electrical contact means,
wherein said retaining means comprises an extending projection fixed to said first longitudinal end portion of said actuator means which contacts said housing wall and aids in retaining said actuator means attached to said housing means and wherein said flexible means comprises a pair of projecting tangs fixed to said housing wall and located adjacent said first longitudinal end portion of said actuator means for contacting said first longitudinal end portion and providing said mechanical biasing force thereto, and wherein said retaining means extending projection which is fixed to said first longitudinal end portion of said actuator means is disposed between the pair of said biasing means projecting tangs.

4,387,283

APPARATUS AND METHOD OF FORMING ALUMINUM BALLS FOR BALL BONDING

James R. Peterson, Garland, and Edward M. Majors, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 3, 1981, Ser. No. 289,659
Int. Cl.³ B23K *31/00*
U.S. Cl. 219—56.21 **11 Claims**



1. An apparatus for forming an aluminum ball on an end of an aluminum wire comprising:
(a) an electrode located closely adjacent said end of said aluminum wire and spaced therefrom for providing a spark gap when electrical potential is applied between said aluminum wire and said electrode to heat said end of said aluminum wire to form said aluminum ball;
(b) a supply of argon gas;
(c) a humidifier connected to said supply to produce a flow of moist argon gas; and
(d) a nozzle connected to said humidifier for providing moist argon gas at said end of said aluminum wire.

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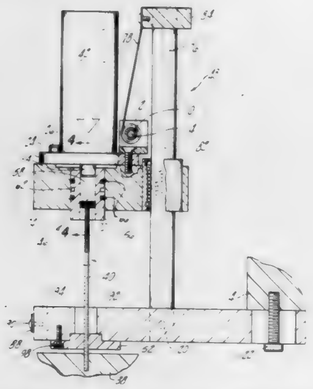
ELECTRICAL DISCHARGE MACHINING APPARATUS

Leo P. Nicholas, 2290 Nixon, Howell, Mich. 48843, and Robert J. Nicholas, 32242 Barkley, Livonia, Mich. 48154, assignors to Leo P. Nicholas, Howell and Robert J. Nicholas, Livonia, both of, Mich.

Filed Dec. 15, 1980, Ser. No. 216,051
Int. Cl.³ B23P *1/14*
U.S. Cl. 219—69 R **14 Claims**

1. For use with electrical discharge machining apparatus of the type having an electrical power source, a source of dielectric fluid, a shiftable head upon which a tool may be mounted, and a fluid control system for controlling the displacement of said head relative to a workpiece to be machined, a device for producing a threaded hole at a preselected location in said workpiece, comprising:
an electrically conductive, elongate tool having a thread

form defined thereon, said tool including a longitudinally extending bore therein terminating in openings at opposite ends of said tool;
motor means for rotating said tool;
means for releasably connecting said tool with said output shaft, said connecting means including a generally cylindrical connecting member,
said connecting member including
(1) a first dielectric fluid passageway therein generally aligned with said bore,



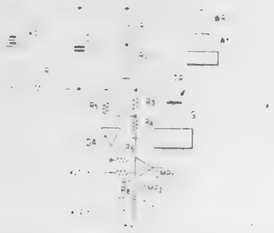
(2) a second dielectric fluid passagway communicating with said first dielectric fluid passageway, said second fluid passageway extending transverse to said first dielectric fluid passageway and defining an inlet in the side of said connecting member into which dielectric fluid from said source thereof may enter,
(3) a circumferentially extending dielectric fluid groove in the circumferential exterior surface thereof communicating with said dielectric fluid inlet; and
means for mounting said motor means and said tool on said shiftable head.

4,387,285

POWER SOURCE FOR WIRE-CUT ELECTRIC DISCHARGE MACHINES

Haruki Obara, Sagamihara, Japan, assignor to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Dec. 18, 1980, Ser. No. 217,804
Claims priority, application Japan, Dec. 22, 1979, 54-167924
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 P **2 Claims**



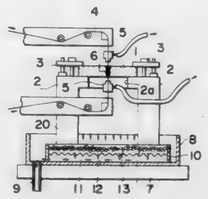
1. A power source for a wire-cut electric discharge machine for machining a workpiece using a wire electrode separated from the workpiece by a gap, comprising:
a capacitor;
means for continuously charging the capacitor to supply energy for discharge across the gap;
a switching element inserted between the capacitor and the gap; and
control means for producing a single arc discharge across the gap every time the capacitor is charged to a first predetermined level, by turning the switching element ON to initiate the discharge when the voltage across the capacitor reaches the first predetermined level and by turning the switching element OFF to terminate the discharge when the voltage across the capacitor falls to a second predetermined level that is lower in magnitude than the first predetermined level but that has the same polarity, wherein said control means includes differential amplifier means for detecting the voltage across the capacitor, first comparator means for comparing the output from the differential amplifier means and the first reference voltage to detect when the voltage across the capacitor reaches the first predetermined level, second comparator means for comparing the output from the differential amplifier means and the second reference voltage to detect when the voltage across the capacitor has reached the second predetermined level, and gate circuit means, which is supplied with the outputs from the first and second comparator means, for generating a drive signal for the switching element.

4,387,286

APPARATUS FOR CONTROLLING SPLASHES AND PURIFICATION OF A MACHINING LIQUID

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Mar. 19, 1981, Ser. No. 245,596
Claims priority, application Japan, Mar. 26, 1980, 55-38835[U]; Mar. 26, 1980, 55-38836[U]; Apr. 2, 1980, 55-43191[U]
Int. Cl.³ B23K *9/16;* **B01D** *35/06;* **B03C** *1/30*
U.S. Cl. 219—69 D **42 Claims**



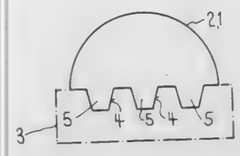
1. A machine tool wherein a machining liquid is supplied to a machining zone defined between a tool and a workpiece and thence, while entraining ferromagnetic machining products therein, is allowed to fall freely from said machining zone at least in part by gravity, said machine tool comprising:
a receptacle disposed at least in major part below said machining zone directly across an air space for temporarily impounding in said receptacle said machining liquid falling freely from said machining zone across said air space; and
a liquid collecting member disposed in said receptacle and comprising a rugged layer of magnetic material which is disposed below said machining zone so as to be impinged upon by said freely falling machining liquid whereby the tendency thereof to splash is dissipated by energy absorption while said ferromagnetic machining products therein are captured on said layer.

4,387,287

METHOD FOR A SHAPING OF POLYCRYSTALLINE SYNTHETIC DIAMOND

Silvio Marazzi, Cavigliano, Switzerland, assignor to Diamond S.A., Losone-Locarno, Switzerland

Continuation of Ser. No. 50,146, Jun. 19, 1979, abandoned. This application Nov. 5, 1981, Ser. No. 318,590
Claims priority, application Switzerland, Jun. 29, 1978, 77/78
Int. Cl.³ B23P *1/00*
U.S. Cl. 219—69 M **3 Claims**



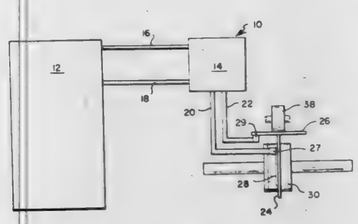
1. A method for shaping processing of polycrystalline synthetic diamond by spark erosion, comprising the steps of:
providing a shaping electrode having a shaping surface;
providing a workpiece of polycrystalline synthetic diamond consisting essentially of diamond particles in a conductive binding material;
applying said shaping electrode against said workpiece; and
setting up a current having an equal average current density on the whole shaping surface flowing between said electrode and the conductive binding material of said workpiece, so as to uniformly erode the binding of material of said synthetic diamond and thereby accurately shape said workpiece in accordance with said shaping surface of said electrode.

4,387,288

METHOD FOR WELDING AUTOMATIC BRAKE SHOES

Lawrence A. Boros, Ashtabula, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 182,050, Aug. 28, 1980, Pat. No. 4,323,754. This application Jan. 18, 1982, Ser. No. 340,581
The portion of the term of this patent subsequent to Apr. 6, 1999, has been disclaimed.
Int. Cl.³ B23K *11/32*
U.S. Cl. 219—107 **1 Claim**



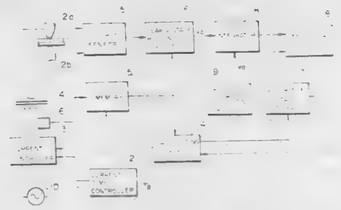
1. A method of welding an edge surface of a curved metal brake shoe web to a substantially flat metal brake shoe table surface comprising:
positioning said brake shoe table in longitudinal alignment with said brake shoe web with one end portion of said table surface abutting said brake shoe web surface over a predetermined distance and with said table surface diverging away from said brake shoe web edge surface and forming a vertex where said surfaces abut;
pressing said abutting surfaces together at said vertex;
providing a high frequency alternating potential to said brake shoe table and said brake shoe web to induce current to flow therebetween and thereby heat the interfacing surfaces in the area of said vertex; and
rotating said brake shoe table and said brake shoe web together along a curvilinear path while maintaining said pressure and said high frequency alternating potential to melt said interfacing surfaces together and maintaining said pressing of said abutting surfaces together after said melting as said brake shoe table and brake shoe web move away from said vertex for a sufficient distance so as to allow said interfacing surfaces to bond together and to maintain an initial deflection in said brake shoe table corresponding to the curvature of said brake shoe web after said pressure applied to said abutting surfaces is removed.

4,387,289

CONTROL SYSTEM FOR RESISTANCE WELDING

Shuji Nakata, Toyonaka; Masahiro Nishikawa, Sakai, and Yoshio Kawaguchi, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Division of Ser. No. 177,363, Aug. 11, 1980, abandoned. This application Jul. 27, 1981, Ser. No. 287,178
Int. Cl.³ B23K *11/24*
U.S. Cl. 219—110 **4 Claims**



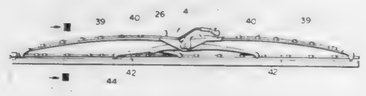
1. A control system for welding, which comprises:
(a) a voltage sensor for detecting the voltage V_c between a pair of welding electrodes between which members to be welded are pinched while a welding current is flowing;
(b) a base voltage presetting circuit for previously setting a desired base voltage V_o;
(c) an integrator for integrating the difference between the voltage V_c detected by said voltage sensor and the base voltage V_o preset in said base voltage presetting circuit with respect to welding time only when each half-wave peak valve of the detected voltage V_c exceeds the base voltage V_o;
(d) a reference voltage generator for generating a series of predetermined reference welding voltages based on a reference voltage integration curve with respect to welding time;
(e) a differential amplifier which compares the voltage V_c detected by said voltage sensor with the voltage based on the reference voltage integration curve and outputs a control signal V_d in response to the difference between the two voltages;
(f) a current controller for controlling the welding current in the manner of firing phase angle;
(g) a current sensor for detecting the welding current from said current controller;
(h) a memory for storing initial firing phase angle values and for storing the preceding firing phase angle of the welding current detected by said current sensor; and
(i) a calculating unit for calculating an appropriate firing phase angle depending on an output signal V_d from the differential amplifier and a signal from said memory and for outputting the calculated result to said current controller;
whereby the welding voltage between the electrodes is controlled by changing the firing phase angle of the welding current, in accordance with the predetermined reference voltage integration curve, so as to obtain a stable welding quality.

4,387,290

ANTI-FREEZING SYSTEM FOR A WINDSHIELD-WIPER

Akira Yasuda, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 21, 1980, Ser. No. 209,029
Claims priority, application Japan, Dec. 3, 1979, 54-166221
Int. Cl.³ H05B *1/02*; **B60S** *1/02*; **B60H** *1/02*
U.S. Cl. 219—202 **6 Claims**



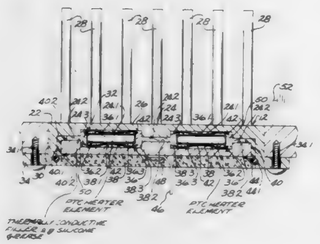
1. An anti-freezing system for a windshield-wiper of an engined vehicle, comprising:
(a) a heater adapted to heat said windshield-wiper;
(b) a first relay switch for supplying heating electric power to said heater when energized with a current value greater than a predetermined value;
(c) an electric generator driven by the engine to produce electric power;
(d) a second relay switch connected to said electric generator for supplying electric power when energized; and
(e) a temperature sensitive means including a resistance changing with the ambient temperature for sensing the ambient temperature, said temperature sensitive means being connected between said second relay switch and said first relay switch so as to supply a current greater than the predetermined value from said second relay switch to said first relay switch for energization when the ambient temperature as sensed by said temperature sensitive means is below a predetermined value.

4,387,291

FUEL HEATER SYSTEM AND SELF-REGULATING HEATER THEREFOR

Theo Keppel, Plainville, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 28, 1980, Ser. No. 210,955
Int. Cl.³ F02M *31/12*; **H05B** *3/12*; **H01C** *7/02*
U.S. Cl. 219—206 **6 Claims**



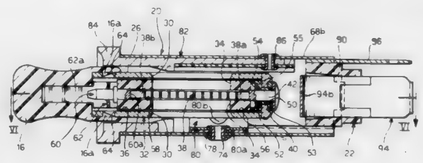
1. A self-regulating heater device for a system for supplying an air-fuel mixture to an internal combustion engine comprising;
a thermally conducting metal radiator member having a first heat-receiving side and having a second, opposite side for transferring heat to at least one component of the air-fuel mixture,
means for mounting the radiator member in the fuel supply system to dispose the second, heat-transferring side of the member to heat at least said one component of the air-fuel mixture, and
at least one self-regulating electrical resistance heater element of a ceramic material of a positive temperature coefficient of resistivity having oppositely facing first and second sides, the element being disposed with the first side in facing relation to a first portion of the heat-receiving side of the radiator member for transferring heat from the first side of the heater element to the radiator member, characterized in that:
a plurality of said ceramic heater elements are disposed with said first sides thereof in facing relation to respective first portions of the heat-receiving side of the metal radiator member;
a thermally conducting metal heat-transfer member has a plurality of first portions mounted in facing relation to the second sides of the respective heater elements receiving heat from the second element sides and has second portions disposed in spaced facing relation to corresponding second portions of the heat-receiving side of the radiator member transferring heat received from the second sides of the heater elements to the radiator member;
resilient conductive means are disposed between each of the heater element sides and a respective one of the metal members and the metal members are secured together in electrically insulated relation to each other holding the resilient conductive means in resilient electrical engagement with the respective heater element sides;
a thermally conducting filler is disposed in the space between said facing second portions of the metal members to facilitate transfer of heat from the heat-transfer member to the radiator member, the filler comprising a silicone based electrically insulating material; and
said first portions of the metal radiator and heat-transfer members are recessed, and said resilient conductive means comprise wave springs which are disposed in the respective recessed portions of the metal members positioning the springs in resilient electrical engagement with the heater sides and with the metal members to electrically connect the heater element sides to the respective members, the thermally conducting electrically insulating filler means being disposed in the recessed portions of the metal members to facilitate heat transfer from the heater elements to the metal members.

4,387,292

ELECTRIC LIGHTER FOR MOTOR VEHICLES AND THE LIKE

Alberto Vitaloni, Turin, Italy, assignor to Squirrel S.p.A., Cambiano, Italy

Filed Dec. 10, 1981, Ser. No. 329,474
Claims priority, application Italy, Dec. 15, 1980, 68907 A/80; Jul. 31, 1981, 53514 B/81[U]
Int. Cl.³ F23Q *7/22*
U.S. Cl. 219—267 **14 Claims**



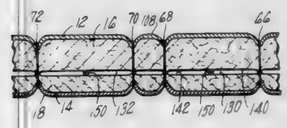
1. An electric lighter of the type including: a receiving sleeve; a plug housed in the sleeve and comprising an elongate tubular body with a handle at one end to allow its removal from the sleeve, and hot-plate means incorporated in the plug, said hot-plate means comprising a holder with an open side and a heating element housed in said holder, said heating element comprising an electrically-resistive metal strip shaped so as to have consecutive turns which together define respective flat faces at the two opposing edges of the strip, said strip being an accordion-pleat folded strip one of said faces being an active face located in correspondence with the open side of the holder to receive the tip of a cigarette, wherein the improvement consists in the consecutive turns of said strip being spaced apart so as to define a plurality of interstices, and the holder having at least one opening opposite its open side to expose a greater part of the corresponding flat face of the heating element and allow a flow of air from one face of the element to the other.

4,387,293

ELECTRIC HEATING APPLIANCE

Karl R. Grice, Abbeville; Jimmy L. Bannister; Leland M. Gregory, both of Belton, and Frank J. Whitfield, Honea Path, all of S.C., assignors to The Belton Corporation, Belton, S.C.

Filed Mar. 30, 1981, Ser. No. 248,917
Int. Cl.³ H05B *3/36*
U.S. Cl. 219—529 **8 Claims**



1. In an electric heating appliance of the type having a flexible fabric shell formed with a series of laterally spaced channels therein and having a heating wire disposed in at least some of said channels, an improved shell construction comprising:
two inner thermal insulation layers of resilient non-woven fiber fill material; one of said inner layers being at most one-half the thickness of the other of said inner layers so as to have substantially greater thermal conductivity;
two outer layers of textile fabric material covering respectively the outer surfaces of said inner layers;
elongated rows of stitching passing through said layers and connecting said inner layers together and to said outer layers along spaced substantially parallel lines to form a shell; said rows of stitching extending throughout a major portion of said shell being arranged in pairs of rows to form a series of parallel dividers between said inner layers with adjacent dividers defining parallel channels therebetween separated from adjoining channels by two rows of stitching; said channels being open at their ends to receive a heating wire; and
facing means at the inner surfaces of each of said inner layers to facilitate insertion of a heating wire into said channels and to resist penetration of a heating wire into either of said inner layers.

4,387,294

SHIFT REGISTER-LATCH CIRCUIT DRIVEN BY CLOCKS WITH HALF CYCLE PHASE DEVIATION AND USABLE WITH A SERIAL ALU

Hideo Nakamura, Hinode, and Tsuneo Funabashi, Hachiouji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 7, 1980, Ser. No. 147,078
Claims priority, application Japan, May 14, 1979, 54/58140
Int. Cl.³ G06F *7/48*
U.S. Cl. 377—78 **9 Claims**

1. A shift register with a latch circuit comprising:
a shift register which is constructed of a plurality of bit stages connected in cascade, each bit stage being formed of a series circuit consisting of a first static inverter, a first switching element and a first dynamic inverter;
a plurality of latch circuit portions which constitute the latch circuit, which correspond to the bit stages of said shift register respectively, and each of which is formed of a closed loop consisting of a second static inverter, a second switching element and a second dynamic inverter;
a plurality of third switching elements, each connected between a respective one of said bit stages of said shift register and a latch circuit portion corresponding thereto, so as to control data transfers between said shift register and said latch circuit; and



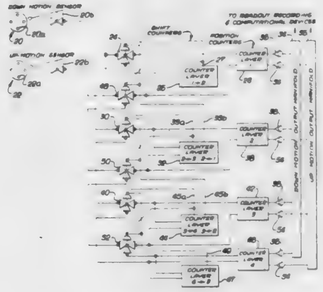
clock means connected to said shift register and said latch circuit for generating clock pulses to drive said shift register and said latch circuit so that they may shift data with a phase deviation of a half cycle therebetween.

4,387,295

PNEUMATIC PENETRATION SENSOR FOR OIL DRILLING

George M. Minichiello, Fountain Valley, Calif., assignor to Cooper Industries, Houston, Tex.

Filed Jan. 19, 1982, Ser. No. 340,824
Int. Cl.³ G06D *7/00*
U.S. Cl. 235—201 R **6 Claims**



1. Apparatus for accurately determining the amount of wire paid out from a drum, comprising:
a pneumatic motion sensor coupled to the drum for providing a predetermined number of pneumatic output pulses for each revolution of the drum;
a first pneumatic counter for counting pulses from the sensor during the paying out of a first layer of wire from the drum and providing a pneumatic output pulse upon receipt of a predetermined number of pulses from the sensor, wherein each output pulse from the first counter corresponds to the paying out of an incremental amount of wire from the drum;
at least one additional pneumatic counter for counting pulses from the sensor during the paying out of second and additional layers of wire from the drum, each of said counters providing a pneumatic output pulse upon receipt of different predetermined numbers of pulses from the sensor, wherein each output pulse from the additional counter(s) corresponds to the paying out of said incremental amount of wire from the drum; and
pneumatic switching means for connecting the output of the sensor to the appropriate pneumatic counter as the wire is paid out from the drum.

4,387,296

PORTABLE UTILITY BILLING APPARATUS

William C. Newell, Post Falls, and Lary A. Cross, Coeur d'Alene, both of Id., assignors to I-Tron, Inc., Spokane, Wash.

Filed May 14, 1979, Ser. No. 38,678
Int. Cl.[3] G06F *15/24, 15/46;* G11B *5/00;* G06G *7/48*
U.S. Cl. 235—376 21 Claims



1. A portable utility billing apparatus for enabling a utility meter reader to: (1) read utility meters of a plurality of utility customers on a selected route and obtain current meter value information concerning such customers: (2) record the current meter value information; (3) calculate customer utility charges; (4) print customer bills contained in an enclosed envelope with the calculated customer charges thereon; and (5) deliver the enclosed bills to the selected route customers; said apparatus comprising:

a portable support to be carried by the meter reader;

a mass data storage receiving means mounted on the support for receiving a mass data storage device containing previous meter value information and general customer/meter information;

a numeric display means for visually displaying information to the utility meter reader;

a memory means containing utility rate tables and an instructional control program;

a data entry means for enabling the utility meter reader to enter the current meter value information;

an arithmetic calculating means for receiving the previous meter value information, the utility rate tables and the current meter value information and calculating the customer charges;

a bill printing means mounted on the support for processing the enclosed envelope and printing the customer charges onto the customer bill through the envelope while enclosed in the envelope;

an electrical battery means mounted on the support as a source of electrical energy;

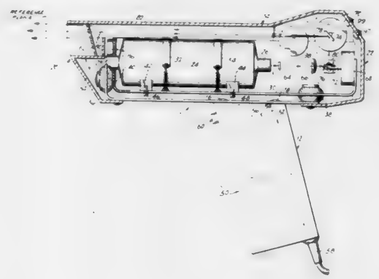
control means responsive to the instructional control program and operatively connected to various other means to utilize electrical energy from the electrical battery means for: (1) reading the general customer/meter information from the mass storage device and displaying such general customer/meter information on the numeric display means to assist the meter reader in reading the meters; (2) entering the current meter value information from the data entry means and displaying the current meter value information on the numeric display; (3) writing the current meter value information into the mass data storage device to record the same; (4) operating the arithmetic calculating means to calculate the customer charges based upon the utility rate tables, current meter value information and previous meter value information; (5) writing the calculated customer charges into the mass data storage means; and (6) operating the bill printing means to process the enclosed envelope and print the customer charges on the enclosed customer bill while in the envelope to enable the meter reader to deliver the enclosed envelope containing the printed customer bills to the customers without the meter reader physically touching the bills.

4,387,297

PORTABLE LASER SCANNING SYSTEM AND SCANNING METHODS

Jerome Swartz, Stonybrook; Edward Barkan, South Setauket, and Shelley A. Harrison, Dix Hills, all of N.Y., assignors to Symbol Technologies, Inc., Hauppauge, N.Y.

Filed Feb. 29, 1980, Ser. No. 125,768
Int. Cl.[3] G06K *9/24*
U.S. Cl. 235—462 46 Claims



1. In a laser scanning system for reading bar code symbols, a light-weight easy-to-manipulate laser scanning head normally supportable only by a user throughout the reading of the symbols, comprising:

(a) a housing having wall portions bounding an outlet port and bounding an interior space whose volume measures less than a value which is on the order of 100 cubic inches;

(b) a light source mounted in the interior space of the housing for generating a laser light beam;

(c) miniature optic means mounted in the interior space of the housing for directing the laser light beam along a light path through the outlet port and towards a bar code symbol which is located exteriorly of the housing by a distance sufficient to permit the user to conveniently register the laser light beam on the symbol by sighting the symbol along a direct line of sight which does not pass through the housing;

(d) miniature scanning means mounted in the light path and in the interior space of the housing for cyclically sweeping the laser light beam across the bar code symbol for reflection therefrom;

(e) miniature sensor means mounted in the interior space of the housing for detecting the intensity of light reflected from the bar code symbol, and for generating an electrical signal indicative of the detected intensity of the reflected light;

(f) miniature signal processing means mounted in the interior space of the housing for processing the electrical signal to generate therefrom data descriptive of the bar code symbol;

(g) all of said light source, optic means, sensor means and signal processing means together with said housing comprising the light-weight laser scanning head whose total weight measures less than a value which is on the order of two pounds;

(h) handle means for normally supporting the light-weight laser scanning head in non-contacting relationship with the symbol during reading thereof; and

(i) manually actuatable trigger means on the housing for initiating reading of the symbol each time the trigger means is manually actuated by the user.

4,387,298

RECOGNITION LOGIC CIRCUIT FOR BAR CODE READER SYSTEMS

David J. Petersen, Hatboro; Paul E. Tartar, Chester, and Robert S. Bradshaw, Broomall, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 27, 1981, Ser. No. 325,546
Int. Cl.[3] G06K *7/10*
U.S. Cl. 235—462 11 Claims

1. In an optical reader system employing a bar/half-bar code, a recognition logic circuit for analyzing the serial pulse streams derived from a scanning sensor disposed within said system for detecting the dark and light areas of the bar indicia, said recognition logic circuit comprising:

timing means including a counter synchronized with the start of a scan of said bar indicia for continually generating output signals indicative of the instantaneous position of said scan relative to its scan length,

storage means comprised of a plurality of serially coupled stages having a total storage capacity in excess of that required to store the pulse stream from a single scan, such that predetermined outputs from the first and the last of said stages represent scan data from the present and immediately preceding scans respectively,

digital integrator means for providing a bar dark area correlation detection and including gating means and an up-down counter, said gating means being coupled to said predetermined outputs of said first and last stages of said storage means and providing in response thereto input signals to said up-down counter for causing the latter to assume a value which represents the total number of scan pulses present in both said last mentioned stages, said value providing the autocorrelation coefficient of said stream of pulses,

integrator comparator means coupled to said up-down counter and having predetermined thresholds set therein, said integrator comparator means generating output signals indicative respectively of the start and end of the detection of a black area of said bar indicia,

a pair of storage elements coupled in common to said counter in said timing means and coupled individually to the respective outputs of said integrator comparator means for storing in response to said output signals from the latter, the scan positions corresponding to said start and end of said detection of a black area,

means coupled to said pair of storage elements for causing the latter to update the scan position data stored therein whenever the start of the black detection occurs earlier and the end of the black detection occurs later relative to the start of the scan,

bar length calculator means coupled to said pair of storage elements for subtracting the scan position data for the start of black detection from that at the end of black detection to obtain a value representative of the absolute length of the bar black area, and

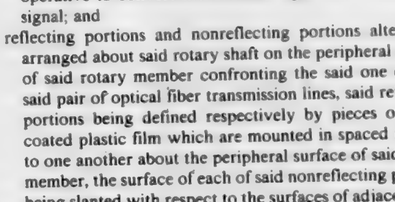
means coupled to said bar length calculator for determining, in relation to a set threshold, whether the value of the bar length corresponds to the detection of a bar or half-bar in accordance with the code utilized in the system.

4,387,299

TRAVEL-DISTANCE SIGNAL GENERATOR FOR VEHICLES

Isao Akiyama, Shimada, Japan, assignor to Yazaki Sogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1980, Ser. No. 156,235
Claims priority, application Japan, Jun. 25, 1979, 54/87204[U]; Aug. 10, 1979, 54/111004[U]; Aug. 24, 1979, 54/115685[U]
Int. Cl.[3] G01D *5/34*
U.S. Cl. 250—231 SE 8 Claims



1. A signal generator for a vehicle adapted to produce a signal, having a high signal to noise ratio, which is indicative of the travel of the vehicle, said signal generator comprising:

a casing located near the engine compartment of the vehicle;

a rotary shaft rotatably supported in said casing and driven at a rate of rotation which is proportional to the speed of travel of the vehicle, and through a number of revolutions which is proportional to the distance of travel of the vehicle;

a rotary member mounted on said rotary shaft within said casing, said rotary member being formed of a black-colored synthetic resinous material having a small light reflection factor;

a pair of optical fiber transmission lines for light irradiation use and for photo detection use, each of said optical fiber lines having one end thereof disposed adjacent the engine compartment of the vehicle in facing relation to said rotary member and the other end led out of said casing and connected to a meter located in the passenger compartment of the vehicle;

a light emitting element disposed adjacent the passenger compartment of the vehicle at the other end of the optical fiber transmission line used for light irradiation for effecting the transmission of light toward said casing and the rotary member therein;

a photo detector disposed adjacent the passenger compartment of the vehicle at the other end of the optical fiber transmission line used for receiving light therefrom and operative to convert the received light into an electrical signal; and

reflecting portions and nonreflecting portions alternately arranged about said rotary shaft on the peripheral surface of said rotary member confronting the said one ends of said pair of optical fiber transmission lines, said reflecting portions being defined respectively by pieces of metal coated plastic film which are mounted in spaced relation to one another about the peripheral surface of said rotary member, the surface of each of said nonreflecting portions being slanted with respect to the surfaces of adjacent ones of said reflecting portions so that any reflection by said nonreflecting portions of incident light from the optical transmission line used for light irradiation is reflected into a direction different from the direction of light reflection of said reflecting portions and away from said one end of the optical fiber line used for photo detection.

4,387,300

OPTICAL TRANSDUCER

Carl S. Dudash, and Kenneth P. Hansen, both of Enfield, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 14, 1981, Ser. No. 225,085
Int. Cl.³ H01J 3/14
U.S. Cl. 250—239 17 Claims



1. An optical transducer comprising an optical transmitter, an optical receiver and an encoder plate disposed therebetween, said encoder plate having light transmissive portions therein for establishing an optical signal from light provided by said transmitter and passing said signal to said receiver, said signal being indicative of the position of said encoder plate with respect to said transmitter and receiver, said optical transducer being characterized by

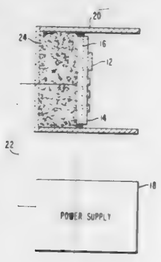
a housing accommodating and providing a mount for said transmitter, receiver and encoder plate, said housing further accommodating an optical fluid having an index of refraction similar to those of said transmitter, receiver and light transmissive portions of said encoder plate, said optical fluid being flowable between said encoder plate and said transmitter and receiver for minimization of refraction of light transmitted to and from said encoder plate, for absorbing mechanical shock and vibration and for lubrication of movement of said encoder plate within said housing.

4,387,301

TARGET FOR CALIBRATING AND TESTING INFRARED DETECTION DEVICES

Michael P. Wirick, Los Angeles, and James P. Wright, Redondo Beach, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Apr. 20, 1981, Ser. No. 255,966
Int. Cl.³ G01D 18/00
U.S. Cl. 250—252.1 24 Claims



1. Apparatus for calibrating and testing IR detection devices comprising

(a) a substrate having a front surface and a back surface;

(b) a target pattern comprising dielectric material formed on at least one region of said front surface of said substrate, said dielectric material being at least partially absorbing to infrared radiation; and

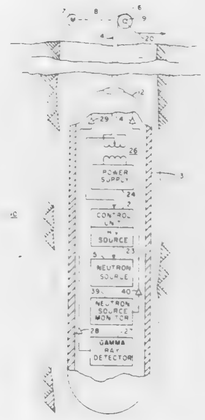
(c) means for providing heat to said back surface of said substrate sufficient to provide at least one apparent differential temperature contrast between said target pattern and said substrate.

4,387,302

MEASURING OF GAMMA-RAY ENERGY DUE TO INELASTIC NEUTRON SCATTERING

Wyatt W. Givens, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,480
Int. Cl.³ G01V 5/00
U.S. Cl. 250—270 6 Claims



1. The method of identifying copper material in formations adjacent a borehole which comprises:

(a) pulsing a source of fast neutrons to irradiate the formations surrounding the borehole with neutrons having energies sufficient to excite inelastic neutron scattering in copper materials within said formations,

(b) detecting gamma-rays emitted from the formations in response to the inelastic neutron scattering from said copper materials simultaneously with the occurence of said fast neutrons, and

(c) recording said detected gamma-rays that lie within an energy band of from about 0.9 MEV to 1.2 MEV as a function of borehole depth to produce a record primarily dependent upon the concentration of copper in said formation.

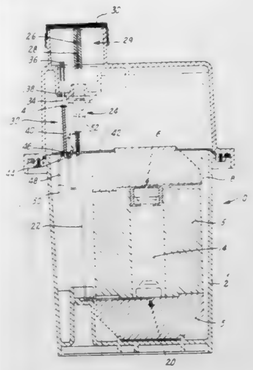
4,387,303

RADIOISOTOPE GENERATOR

Harm M. Benjamins, Den Helder, Netherlands, assignor to Byk-Mallinckrodt CIL B.V., Petten, Netherlands

PCT No. PCT/NL80/00009, § 371 Date Nov. 24, 1980, § 102(e) Date Nov. 24, 1980, PCT Pub. No. WO80/02082, PCT Pub. Date Oct. 2, 1980
PCT Filed Mar. 25, 1980, Ser. No. 209,980
Claims priority, application Netherlands, Mar. 26, 1979, 7902342
Int. Cl.³ G21G 1/04
U.S. Cl. 250—432 PD 11 Claims

1. A radioisotope generator comprising a column containing carrier material adapted to adsorb a parent isotope, said column including an inlet opening and outlet opening, the outlet opening connected to a tapping point by an eluate conduit, the tapping point adapted to receive an evacuated elution vial so that a liquid eluate containing a daughter radioisotope can be obtained from the generator under vacuum, characterized in that the generator includes means for interrupting the elution process before the elution vial is entirely filled, said interrupting means simultaneously exposing the generator to sterile air both in the direction of the generator column and of the elution vial.

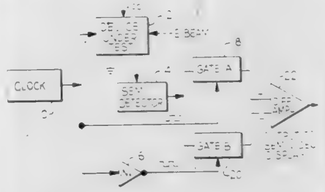


4,387,304

PHASE DEPENDENT SEM IC CHIP TESTING WITH VOLTAGE CONTRAST

Douglas R. Younkin, Union, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Apr. 6, 1981, Ser. No. 250,919
Int. Cl.³ G21K 5/10; G01N 23/225; G01R 15/12
U.S. Cl. 250—492.2 3 Claims



1. A method of examining timing delays in a dynamically operating integrated circuit (IC) utilizing a scanning electron microscope (SEM) comprising:

dynamically operating the IC between two operating states with a clock means providing a first logic level and a second logic level,

continuously scanning the IC with the SEM,

continuously collecting the electrons emitted from the surface of the IC by a detector means in the SEM,

presenting the output of the detector to one input of a first gate and to one input of a second gate,

enabling the first gate by one logic level from the output of the clock means,

enabling the second gate by the same logic level from an inverted output of the clock means,

presenting the output of the first gate to one input of a differential amplifier means and the output of the second gate to the second input of the differential amplifier means,

presenting the output of the differential amplifier to the SEM display means wherein the timing delay of a change in logic level of an observed area of the IC from a change in logic level of the clock means is determined by examination of the brightness of the observed area relative to unoperated areas of the IC such that maximum brightness contrast occurs at 2nT/4 and minimum contrast occurs at (2n + 1)T/4, where T is the clock period and n is an integer.

4,387,305

EMERGENCY POWER SYSTEM FOR ELECTROMAGNETS

Terrence E. DeViney, Seven Hills, and Richard W. Ochendowski, Maple Heights, both of Ohio, assignors to Control Specialties, Inc., Valley View, Ohio

Filed Jun. 11, 1981, Ser. No. 273,099
Int. Cl.³ H02J 9/06
U.S. Cl. 307—66 10 Claims

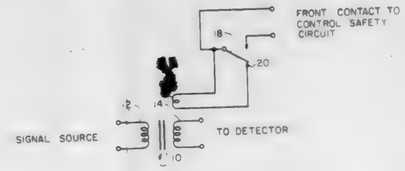
1. A system for supplying electrical power to a load in the event of a failure in the main power source comprising a first bank of batteries, a second bank of batteries connected to said first bank of batteries, said first battery bank having an output voltage less than the output voltage of said main power source and greater than the output voltage of said second battery bank, means for sensing a failure in said main power source, said sensing means comparing the output voltage of said main power source with the output voltage of said first battery bank to determine if a failure in said main power source has occurred, and means responsive to said sensing means to instantaneously connect said first and second battery banks to said load upon the occurrence of a failure in said main power source.

4,387,306

VITAL CONTACT CHECKING CIRCUIT

Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Jun. 22, 1981, Ser. No. 276,092
Int. Cl.³ H01H 47/00
U.S. Cl. 307—125 8 Claims



1. A relay contact checking circuit comprising:

(a) a relay having

(1) a pair of front contacts operable to control a safety circuit,

(2) a pair of back contacts whose state is to be sensed so as to determine the state of said front contacts;

(3) said front and back contacts including a single common movable contact such that complete isolation is provided between the respective pairs of front and back contacts;

(b) a signal source;

(c) a detector;

(d) means including at least one winding for coupling the signal from said source to said detector; control means for controlling the coupling of the signal from said source to said detector responsive to the state of said back contacts, including a sense winding connected in a closed circuit when said back contacts are closed, thereby to provide an

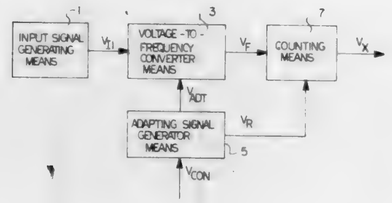
indication of the state or position of the movable contact and hence the state of the front contacts.

4,387,307

ELECTRONIC SAFETY SKI BINDING RELEASE

Nicholas D. D'Antonio, 7695 Admiral Dr., Liverpool, N.Y. 13088

Filed Jul. 29, 1980, Ser. No. 173,493
Int. Cl.³ G06G *7/18*; A63C *9/08*
U.S. Cl. 307—119 **12 Claims**



1. In an electronic safety ski binding having a release means actuable in response to a trigger signal for placing the binding in releasing condition from a locking condition, a system for actuating said release means, said system comprising:

transducing means for generating electrical input steering signals corresponding to forces and moments applied to different portions of the ski binding;

adapting signal generator means for generating adapting signals in response to preselected characteristics of the input steering signals;

voltage-to-frequency converter means for converting, in response to the adapting signals, the transmitted input steering signal from each of said transducing means into an output signal having a frequency which is a function of a preselected characteristic of the adapting signal;

counting means associated with each of said transducing means for counting the number of cycles of the output signal generated by the converter means in response to the input steering signals; and

trigger means having means for establishing a trigger threshold, said trigger means generating a trigger signal whenever the number of cycles counted by any of the counting means exceeds the predetermined trigger threshold.

4,387,308

SEMICONDUCTOR CIRCUIT

Akira Nagami, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1980, Ser. No. 175,796
Claims priority, application Japan, Aug. 7, 1979, 54-100894
Int. Cl.³ H03K *5/01*
U.S. Cl. 307—264 **16 Claims**



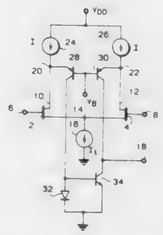
1. A semiconductor circuit comprising a true signal node, a complement signal node, a first node, a first voltage source, a second voltage source, a first insulated gate field effect transistor having a drain coupled to said first voltage source, a gate coupled to said true signal node and a source coupled to said first node, a second insulated gate field effect transistor having a drain coupled to said first voltage source, a gate coupled to said first node and a source connected to said true signal node, a third insulated gate field effect transistor having a drain coupled to said first node, a gate connected to said complement signal node and a source connected to said second voltage source, and a first capacitor having one end connected to said first node and the other end receiving a control signal, whereby in response to said control signal, a level substantially equal to the level of said first voltage source is reproduced at the true signal node.

4,387,309

INPUT STAGE FOR N-CHANNEL JUNCTION FIELD EFFECT TRANSISTOR OPERATIONAL AMPLIFIER

Stuart B. Shacter, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1981, Ser. No. 280,634
Int. Cl.³ H03K *5/24*
U.S. Cl. 307—355 **12 Claims**



1. An amplifier circuit for comparing first and second voltages, comprising:

first and second junction field-effect-transistors each having source, drain, and gate electrodes, the gate electrode of said first junction field-effect-transistor adapted to be coupled to said first voltage, the gate electrode of said second junction field-effect-transistor adapted to be coupled to said second voltage, the source electrodes of said first and second junction field effect transistors being coupled together;

first and second level shifting common base transistors each having base, emitter, and collector terminals, the emitter terminal of said first transistor being coupled to the drain electrode of said first junction field-effect-transistor, and the emitter terminal of said second transistor being coupled to the drain electrode of said second junction field-effect-transistor;

current mirror means coupled to the collectors of said first and second transistors;

first means for supplying current to the emitters of said first and second transistors; and

output means coupled to said current mirror means.

4,387,310

TEMPERATURE STABILIZED SEMICONDUCTOR DELAY ELEMENT

Vasil Uzunoglu, Ellicott City, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Aug. 15, 1980, Ser. No. 178,425
Int. Cl.³ H03K *5/159, 3/26*
U.S. Cl. 307—591 **15 Claims**

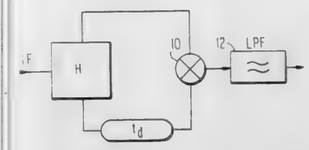
1. A method of delaying an input signal by a delay time to provide a delayed output signal whereby said delay time is substantially independent of temperature comprising:

applying a first electric field across a first semiconductor device having carriers of a first mobility;

applying said input signal to an input of said first semiconductor device, said input signal propagating through said

first semiconductor device to an output of said first semiconductor device after said delay time;

applying a voltage across a second semiconductor device having carriers of a second mobility substantially equal to said first mobility to create a second electric field across said second semiconductor device whereby a decrease in said second carrier mobility will result in an increase in



said second electric field and said voltage and whereby an increase in said carrier mobility will result in a decrease in said second electric field and said voltage;

applying said voltage across said first semiconductor device to provide said first electric field; and

varying said first electric field as a function of said first mobility.

4,387,311

UNINFLAMMABLE DYNAMOELECTRIC MACHINE HAVING COIL WINDINGS AND CORE ENCAPSULATED WITH UNSATURATED POLYESTER RESIN-FILLER COMPOSITION

Tsuguo Kobayashi, Mito; Tetsuo Ishikawa; Kenichi Hironaka, both of Hitachi; Hideo Umetsu, Tokaimura; Masatsugu Ogata, Hitachi, and Hitoshi Yokono, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 940,091, Sep. 6, 1978, abandoned. This application Mar. 25, 1981, Ser. No. 247,269
Claims priority, application Japan, Sep. 9, 1977, 52-107742
Int. Cl.³ H02K *1/04*; C08L *67/06*; C08K *7/14*; B32B *27/36*
U.S. Cl. 310—43 **14 Claims**

1. A dynamoelectric machine comprising a stator assembly including coil windings and a core encapsulated with a heat-dissipating, electro-insulative housing, a rotor assembly including a shaft centrally disposed thereto, and a bearing assembly disposed to the stator assembly, for rotatably supporting the shaft, wherein the housing is made of a cured resin-filler composition comprising:

(I) a liquid unsaturated polyester resin containing an ethylenically unsaturated compound monomer and a curing catalyst, which has a viscosity of from 50 to 50,000 centipoises at 25° C.; and

(II) an inorganic, electro-insulative filler consisting essentially of

(a) a calcium carbonate powder having a particle size corresponding to that of particles which can pass a 325 mesh sieve,

(b) an inorganic mineral particulate having a particle size corresponding to that of particles which can pass a 12 mesh sieve and is retained on a 200 mesh sieve,

(c) a chopped glass fiber having a length larger than 200 μm and a diameter less than 150 μm after the composition has been kneaded, and

(III) an aluminum hydroxide powder which passes a 250 mesh sieve,

wherein the ratios by weight of the respective ingredients are as follows:

(a)/(b)=0.3 to 4, (c)/total weight of the composition=0.05 to 0.25, and ((a)+(b))/total weight of the composition=0.1 to 0.5,

(I)/total weight of the composition=0.1 to 0.4, and

III/total weight of the composition=0.2 to 0.6,

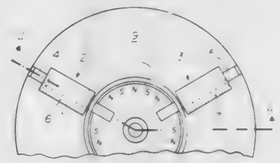
whereby said aluminum hydroxide powder acts to cool said resin and inhibit pyrolysis and combustion of said resin by releasing water of crystallization contained in the aluminum hydroxide powder when the cured resin-filler composition is heated excessively.

4,387,312

STEPPING POLYPHASED MOTOR FOR A CLOCKWORK MECHANISM

Claude Oudet, Besancon, France, assignor to Portescap, La Chaux-De-Fonds, Switzerland

PCT No. PCT/CH80/00044, § 371 Date Dec. 12, 1980, § 102(e) Date Dec. 12, 1980, PCT Pub. No. WO80/02203, PCT Pub. Date Oct. 16, 1980
PCT Filed Apr. 9, 1980, Ser. No. 220,055
Claims priority, application Switzerland, Apr. 12, 1979, 3507/79
Int. Cl.³ H02K *37/00*
U.S. Cl. 310—49 R **11 Claims**



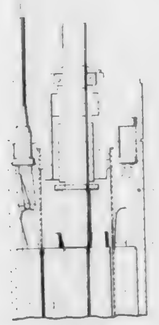
1. A polyphase stepping motor for direct driving of the seconds' or minutes' axis of a time piece movement, comprising a disc-shaped rotor which is magnetized so as to exhibit on at least one of its surfaces 2 N alternately positive and negative poles, where N is a whole number of 15 or less, and comprising at least two stator elements including each a magnetic circuit of magnetically permeable material with an air gap in which the rotor poles are moving, and including each at least one coil coupled with the magnetic circuit and fed by a periodic control current, the arrangement being such that the number of steps P made per control current period of 60 m/N, where m is a whole number.

4,387,313

MOLDED SUBMERSIBLE MOTOR

Sakuei Yamamoto; Mitsuhiro Nishida; Noboru Tashiro, and Nobuo Sonoda, all of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1982, Ser. No. 370,634
Claims priority, application Japan, Apr. 22, 1981, 56-58969; Apr. 22, 1981, 56-58971; Apr. 22, 1981, 56-58973
Int. Cl.³ H02B *11/00*
U.S. Cl. 310—71 **6 Claims**



1. A molded submersible motor, comprising:

(a) an open ended, hollow cylindrical frame (**5**) formed of resinous molding material,
(b) a stator assembly including stator cores (**2**) and stator coils (**3**) embedded in said frame,
(c) a rotor assembly (**20**) rotatably mounted inside of the stator assembly,
(d) an end bracket (**8**) formed of resinous molding material and detachably secured to an upper end of said frame to close the opening thereof,
(e) a starting switch unit (**12**) of said motor embedded in said end bracket,
(f) a connector (**6**) molded into an axial end of said frame having contact means (**61**) connected to the stator coils,
(g) an interconnecting terminal (**9**) embedded in said end bracket and comprising first contact means (**91**) for connection to a power cable (**10**) for said motor, second contact means (**92**) for connection to said stator coil connector, and third contact means (**125, 126**) connected to said starting switch,
(h) an intermediate connector (**11**) disposed in aligned axial apertures (**62, 96**) formed in said frame and end bracket and extending from a lower portion of said end bracket to an upper portion of said frame, said intermediate connector connecting said second contact means of said interconnecting terminal to said contact means of said connector, and
(i) a connecting unit (**101**) disposed in an axial aperture (**95**) formed in said end bracket for connecting said first contact means of said interconnecting terminal to said power cable,
(j) said starting switch unit being embedded in said end bracket in a position laterally displaced from an axial alignment of said connecting unit, said interconnecting terminal, said intermediate connector and said connector.

4,387,314

CHARGING GENERATOR FOR MOTOR VEHICLE

Yoshiyuki Iwaki, Himeji, and Hitoshi Goto, Kakogawa, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,658
Claims priority, application Japan, Jun. 10, 1980, 55-81990[U]
Int. Cl.³ H02K *5/10*
U.S. Cl. 310—88 **2 Claims**



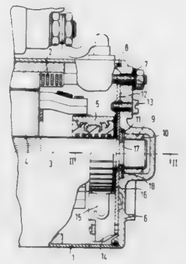
1. A charging generator for a motor vehicle, comprising a rear casing portion having a flat end wall and a bell extending into the casing from said end wall for housing slip rings of the generator, said bell having a brush opening therein, and said end wall having vent openings therein, a brush holder in said casing portion and having brushes therein slidable through said brush opening for engagement with the slip rings in the bell, said brush holder having a surface spaced from said end wall and said bell for defining a space extending from said vent holes to said brushes, a plurality of spaced parallel protuberances on said wall and extending toward said surface of said brush holder, said protuberances having an inverted U-shape with the ends extending to said bell, and defining a groove therebetween, and a further protuberance on said surface of said brush holder having an inverted U-shaped and extending toward said end wall and into said groove to form a labyrinth seal with said spaced parallel protuberances substantially blocking flow of liquid along said space.

4,387,315

STARTER MOTOR FOR INTERNAL COMBUSTION ENGINES

Otto Barthruff, Stuttgart, and Martin Mayer, Sersheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 7, 1981, Ser. No. 281,237
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1980, 3028807
Int. Cl.³ H02K *5/00*
U.S. Cl. 310—90 **8 Claims**



1. Starter motor for an internal combustion engine comprising
a housing (**1**) including an end shield (**6**);
a rotor including a shaft (**3**) and an armature (**4**);
a commutator (**5**) secured to the shaft and located thereon adjacent the end shield (**6**);
a bearing (**10**) located in the end shield and rotatably receiving the shaft (**3**);
a brush holder assembly (**12**) secured to the housing adjacent the end shield;
and means axially positioning the shaft of the rotor with respect to the end shield (**6**) subject to permitted axial play or excursion including
radially inwardly projecting means (**18, 19, 20, 21, 22, 23**) positioned between the brush holder assembly (**12**) and the end shield (**6**) and non-rotatably held in the housing;
a recess (**11**) formed at least in part in the housing, said recess being slightly wider than the thickness of the projecting means and receiving said projecting means, and determining a portion of the permitted axial play;
and a receiving groove (**17**) formed in the shaft, in axial alignment with said projecting means and slightly wider than the thickness of the projecting means and receiving said projecting means, and determining the remaining portion of permitted axial play.

4,387,316

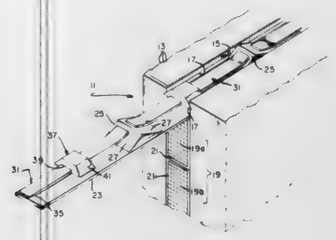
DYNAMOELECTRIC MACHINE STATOR WEDGES AND METHOD

James C. Katsekas, Windham, N.H., assignor to General Electric Company, Lynn, Mass.

Filed Sep. 30, 1981, Ser. No. 307,007
Int. Cl.³ H02K *3/48*
U.S. Cl. 310—214 **6 Claims**

1. A wedging system for retaining conductor bars in conductor bar slots in a dynamoelectric machine, said wedging system comprising:

pressure wedges for providing a radial force against the conductor bars;
a curling wedge positioned between each pair of pressure wedges in the axial direction; and,



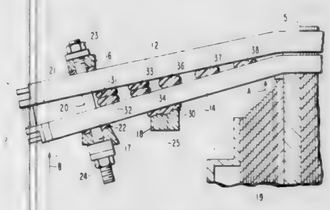
a dovetail wedge bearing against the curling wedge and located approximately midway between the ends of the curling wedge.

4,387,317

METHOD AND APPARATUS FOR SECURING END WINDING CONDUCTORS

Gerald R. Alkire, North Coventry Township, Chester County; George F. Dailey, Plum Borough, and Charles E. Kauric, Manor Borough, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 4, 1981, Ser. No. 260,441
Int. Cl.³ H02K *3/46*
U.S. Cl. 310—260 **23 Claims**



1. A conductor securing apparatus comprising:
means for preventing a conductor from moving in a preselected direction, said preventing means being generally rigid;
a hose, said hose being generally flexible and being disposable between said conductor and said preventing means;
a resin, said resin being disposed within said hose;
a plurality of waxed glass cords, said plurality of waxed glass cords being disposed within said hose;
a plurality of fiberglass sheets, said plurality of fiberglass sheets being disposed within said hose;
a length of cross-weave tape, said length of cross-weave tape being disposed within said hose; and
said resin, cords, fiberglass sheets and cross-weave tape being combined in proportions which form a combination with said hose having a coefficient of thermal expansion generally equivalent to the coefficient of thermal expansion of said conductor.

4,387,318

PIEZOELECTRIC FLUID-ELECTRIC GENERATOR

Eric A. Kolm, Brookline, and Henry H. Kolm, Wayland, both of Mass., assignors to Piezo Electric Products, Inc., Cambridge, Mass.

Filed Jun. 4, 1981, Ser. No. 270,370
Int. Cl.³ H04R *17/00*
U.S. Cl. 310—330 **27 Claims**



1. A piezoelectric fluid-electric generator comprising:
at least one piezoelectric bending element;
means for fixably mounting one end of each said piezoelectric bending element with the distal end of each said piezoelectric bending element disposed to oscillate in a fluid stream;
vane means attached to said distal end of each said piezoelectric bending element for driving each said piezoelectric bending element to oscillate with the energy of said fluid stream; and
electrode means connected to each said piezoelectric bending element to conduct current generated by the oscillating motion of said piezoelectric bending element.

4,387,319

METAL HALIDE LAMP CONTAINING ScI_3 WITH ADDED CADMIUM OR ZINC

Philip J. White, Hyde Park, Mass.; William H. Lake, Novelty, and Robert H. Springer, Solon, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 30, 1981, Ser. No. 248,968
Int. Cl.³ H01J *61/20, 61/22, 61/30*
U.S. Cl. 313—620 **4 Claims**



1. A miniature high intensity metal halide arc discharge lamp comprising an envelope of fused silica, defining a volume not exceeding 1 cubic centimeter,
inleads sealed into said envelope and electrically connected to spaced tungsten electrodes positioned to define an arc gap therein not exceeding 1 centimeter,
a discharge sustaining filling in said envelope-comprising mercury, sodium iodide and scandium triiodide plus an

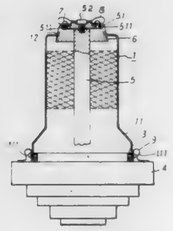
inert starting gas, said envelope containing virtually no thorium except such as may be introduced through the use of thoriated tungsten for the electrodes,
and cadmium or zinc in said envelope in a molar ratio relative to ScI_3 in the range of 0.04 to 1.0.

4,387,320

ELECTRON TUBE WITH CYLINDRICAL GRID OF PYROLYTIC GRAPHITE

Roger Hoet, Paris, France, assignor to Thomson - CSF, Paris, France

Continuation of Ser. No. 58,981, Jul. 20, 1979. This application Apr. 6, 1981, Ser. No. 250,923
Claims priority, application France, Jul. 27, 1978, 78 22265
Int. Cl.³ H01J *1/46, 17/04, 17/40, 21/10*
U.S. Cl. 313—348 **2 Claims**



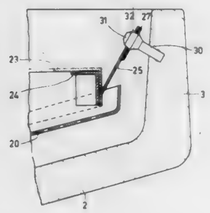
1. An electron tube comprising coaxial cylindrical electrodes, at least one grid of pyrolytic graphite having a circular opening at the top portion thereof, a central conducting mast in coaxial relation with said electrodes and adapted to pass through said opening, a pyrolytic graphite bell having a bottom connected to the top end of said mast and a frusto-conical skirt with strips separated by slits entending from the edges of said skirt, the outer faces of said strips resting against and in electrical contact with the edge of said grid opening at a predetermined distance from the edge of the skirt, thereby providing electrical contact between said mast and said grid at the top ends thereof.

4,387,321

COLOR DISPLAY TUBE AND SUSPENSION MEANS FOR COLOR SELECTION ELECTRODE

Johannes H. N. Gijrath; Albertus A. M. Van Liempd; Hendrik S. A. Versteegen; Josephus J. van der Geer, and Henricus J. M. van der Avoort, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,898
Claims priority, application Netherlands, Jul. 21, 1980, 8004173
Int. Cl.³ H01J *29/07*
U.S. Cl. 313—406 **10 Claims**



1. A color display tube comprising an envelope having a rectangular display window with an upright edge, a rectangular color selection electrode, an electron beam source, and means for removably attaching the color selection electrode to the window;
said means comprising a plurality of pins each having one end attached to a corner of the upright edge, and a plurality of flat resilient elements each having one end attached to a corner of the color selection electrode;
each of said pins forming an acute angle with the respective edge such that the free end is directed parallel to a path followed by the electron beam to the respective corner, and each of said flat resilient elements forming an angle with the color selection electrode such that the element extends perpendicularly to the direction of a respective one of the pins;
each of said pins having a conical portion at its free end, and each of said flat resilient elements having an aperture in its free end for receiving the conical portion of the respective pin to effect attachment of the color selection electrode to the window.

4,387,322

DISPLAY ARRANGEMENTS

Ralph D. Nixon, Braintree, England, assignor to English Electric Valve Company Limited, Chelmsford, England

Filed Sep. 8, 1980, Ser. No. 185,382
Claims priority, application United Kingdom, Sep. 6, 1979, 7930936
Int. Cl.³ H01J *1/92, 63/06*
U.S. Cl. 313—497 **6 Claims**



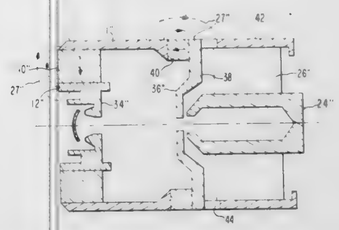
1. A display arrangement including at least one display device, said at least one display device comprising:
an elongated plate provided with a plurality of apertures disposed side by side along the length of said plate;
a plurality of separately addressable mesh electrodes each aligned with a respective one of said apertures and supported by said plate;
two elongated hemicylinders each attached to a respective side of said plate, said two hemicylinders forming an elongated evacuated envelope having first and second ends;
a fluorescent screen disposed on an inner surface of one of said hemicylinders and extending from said first end to said second end of said envelope, at least said one hemicylinder, on which said fluorescent screen is disposed, being light transmitting; and
an electron emissive filament disposed on the side of said plate remote from said hemicylinder on which said fluorescent screen is disposed and extending from said first end to said second end of said envelope;
wherein said mesh electrodes control the passage of electrons from said filament to selected regions of said fluorescent screen.

4,387,323

PERMANENT MAGNET STRUCTURE FOR LINEAR-BEAM ELECTRON TUBES

Albert E. Berwick, San Jose, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 15, 1980, Ser. No. 216,590
Int. Cl.³ H01J *23/08*
U.S. Cl. 315—5.35 **9 Claims**



1. A magnet structure for focusing a linear electron beam comprising:
two opposing polepieces of high-permeability metal separated along the direction of said beam and apertured for passage of said beam,
a yoke of high-permeability metal surrounding said beam and extending between said polepieces, said yoke surrounding at least a part of a first of said polepieces,
a first permanent magnet, magnetized substantially radially of said beam and extending between said yoke and said first polepiece, and
a second permanent magnet, magnetized substantially parallel to said beam and extending in the direction of said beam between said yoke and said second polepiece.

4,387,324

REMOTE RESPONSIVE TELEVISION RECEIVER FERRORESONANT POWER SUPPLY PROTECTION CIRCUIT

Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,957
Int. Cl.³ H01J *29/70*
U.S. Cl. 315—411 **8 Claims**



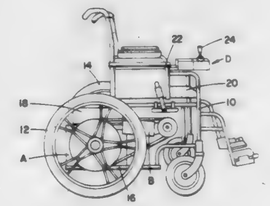
1. A disabling circuit for a television display system regulated power supply responsive to the state of a remote on/off command signal, comprising:
a source of voltage available during both states of said remote on/off command signal;
means for developing an input voltage upon application thereto of said available voltage;
remote control means coupled to said available voltage source and to said input voltage developing means and responsive to said remote on/off command signal for applying said available voltage to said input voltage developing means during the on-state of said command signal;
means including a self-regulating circuit energized by said input voltage for producing a regulated supply voltage, said self-regulating circuit comprising a saturable reactor and a capacitance coupled to a winding thereof to magnetically saturate at least a portion of the core of said reactor;
a load circuit within said television display system energized by said regulated supply voltage; and
means coupled to said remote control means and responsive to a fault operating condition of said self-regulating circuit for disabling said remote control means to discontinue the application of said available voltage to said input voltage developing means upon the occurrence of said fault operating condition.

4,387,325

ELECTRIC WHEELCHAIR WITH SPEED CONTROL CIRCUIT

Robert G. Klimo, Parma, Ohio, assignor to Invacare Corporation, Elyria, Ohio

Filed Apr. 15, 1981, Ser. No. 254,443
Int. Cl.³ H02P *7/68*
U.S. Cl. 318—71 **17 Claims**



1. In an electric wheelchair having a first motor for driving a first wheel, a second motor for driving a second wheel, and a joystick for selecting a speed and track for the wheelchair, a feedback speed control circuit for tracking the wheelchair with the selected speed and with the selected track regardless whether the first and second wheels are under the same, different, and varying loads, the control circuit comprising:
reference signal means for producing a first reference signal whose magnitude varies with the speed selected by the joystick for the first motor and a second reference signal which varies with the speed selected for the second motor, the reference signal means being operatively connected with the joystick;
first detector for detecting the actual speed of the first motor and producing a first motor signal which varies therewith, the first detector being operatively connected with the first motor;
first speed comparing means for comparing the first reference signal and the first motor motor signal to produce a first variance signal which varies with the variance between the first motor selected and actual speeds;
a first variable power regulator for regulating the electric power supplied to the first motor, the power regulator being controlled by the first speed comparing means to vary the power supplied in accordance with the first variance signal;
second detector for detecting the actual speed of the second motor and producing a second motor signal which varies therewith, the second detector being operatively connected with the second motor;
second speed comparing means for comparing the second reference signal and the second motor signal to produce a second variance signal which varies with the variance between the second motor selected and actual speeds; and,
a second variable power supply for supplying power to the second motor, the second power supply being controlled

by the second comparing means to vary the power supplied in accordance with the second variance signal;

such that the actual wheelchair speed is maintained at the selected wheelchair speed regardless of changes of load on the motors and the actual track is maintained at the selected track regardless of variations between the loads on the first and second motors.

4,387,326

VARIABLE RELUCTANCE MOTOR SYSTEMS

William F. Ray, Nottinghamshire, and Rex M. Davis, Leicestershire, both of England, assignors to Chloride Group Limited, London, England

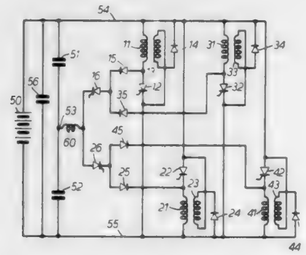
PCT No. PCT/GB79/00078, § 371 Date Jan. 10, 1980, § 102(e) Date Jan. 10, 1980, PCT Pub. No. WO79/01132, PCT Pub. Date Dec. 27, 1979

PCT Filed May 24, 1979, Ser. No. 187,835

Claims priority, application United Kingdom, May 26, 1978, 22893/78

Int. Cl.³ H02K *29/02*

U.S. Cl. 318—138 **19 Claims**



1. A variable reluctance electric motor system including a variable reluctance motor having a main winding for each of an even number of phases greater than two, and a power converter circuit including a main thyristor connected in series with each main winding of the motor across a source of direct voltage having a positive terminal and a negative terminal, with the current in each main winding being independent of that in the other main winding, and means for firing the main thyristors in sequence, the main windings of each pair being connected, one to the positive terminal of the source and the other to the negative terminal of the source, the one main winding having a commutating thyristor which connects the junction of the main thyristor and main winding to a capacitor unit so as, when fired, to allow the current flowing from the positive source terminal through the main winding to bypass the main thyristor, while charging the capacitor unit positively, and the other main winding having a commutating thyristor which connects the junction of its main thyristor and main winding to the said capacitor unit so as, when fired, to allow the other current flowing through the main winding to the negative source terminal to bypass the main thyristor while charging the capacity unit negatively, whereby a commutation of each main thyristor, initiated by firing its commutating thyristor and terminated when this commutating thyristor ceases to conduct leaves the capacity unit charged with the polarity opposite to the polarity prior to the commutation.

4,387,327

NUMERICAL CONTROL SYSTEM FOR A CRANKSHAFT MILLING MACHINE INTEGRAL INTERPOLATORS

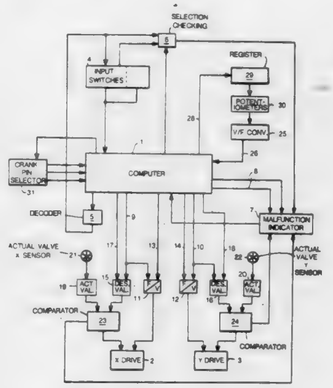
Johanna Kralowetz, and Robert Kralowetz, both of Steyr, Austria, assignors to GFM Gesellschaft für Fertigungstechnik und Maschinebau Aktiengesellschaft, Steyr, Austria

Continuation of Ser. No. 919,764, Jun. 28, 1978, abandoned. This application Aug. 5, 1980, Ser. No. 175,506

Claims priority, application Austria, Jul. 4, 1977, 4734/77

Int. Cl.³ G06F *15/46*

U.S. Cl. 318—573 **8 Claims**



1. A numerical control system for controlling at least two pulse-controlled drive means for moving a tool at a system-selectable speed along a pair of coordinate axis in a crankshaft milling machine, said control system comprising:

(a) input means for presenting workpiece data and tool data;

(b) a tool speed clock operating at a particular one of a plurality of clock frequencies, wherein each of said plurality of clock frequencies corresponds to a predetermined specific frequency, and said one particular frequency is selected by said control system in response to a selection signal;

(c) a computer operable in accordance with a fixed program and having as integral portions thereof;

(d) an arithmetic unit operable under control of said program for processing said workpiece data and tool data, and for providing section end point data which are related to said coordinate axes for operating said tool by said drive means so as to position it along a path in dependence of said data, and for providing change point positions requiring changes in speed and direction of said tool along at least one of said coordinate axes;

(e) selection means operable under control of said program for furnishing said selection signal to said tool speed clock at said provided change point positions; and

(f) interpolating means wholly implemented within said computer and operable under control of said program and arranged to receive said section end point data and said selected one particular frequency and to deliver speed control pulses to each of said drive means to cause said drive means to move said tool at a speed corresponding to said selected one particular frequency substantially between successive ones of said section end positions along path sections having predetermined configurations, including means for moving said tool in a gradual transition path from a path section having a predetermined geometric configuration to a succeeding path section having a different geometric configuration so as to correct any undesired straight path portion due to said defects in said drive means.

4,387,328

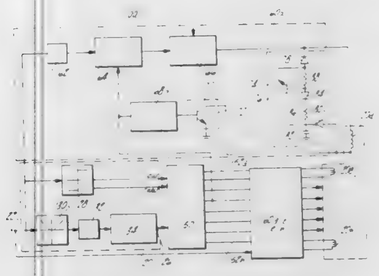
SHAPED VOLTAGE WAVEFORM MOTOR CONTROLLER

Rex W. Presley, Livonia, Mich., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Apr. 29, 1981, Ser. No. 258,719

Int. Cl.³ G05B *19/40*

U.S. Cl. 318—696 **5 Claims**



1. In combination a motor controller and a variable air gap motor (**10**) having a plurality of poles (**14**) and at least one coil (**20**) associated with each said poles, comprising:

first means (**130**) responsive to a command signal indicative of the commanded speed of the motor for providing a first signal indicative of the absolute value of the command signal;

second means (**132**), responsive to the first signal, for limiting the rate of increase of said first signal from exceeding the acceleration capability of said motor;

third means (**128**) responsive to said command signal for generating a direction signal indicative of the desired direction of rotation of said motor;

pulse means, responsive to the output of said second means for generating a train of pulsed signals indicative of the commanded speed;

sequencing means (**150**), responsive to said pulsed signals and said direction signal for generating a plurality of activation signals, one associated with each coil of said motor, to activate said coil;

driver means (**160**), one associated with each coil, responsive to said command signal for controlling the current flowing through a predetermined set of said coils in correspondence with the air gap associated therewith by varying the current through a particular coil at a level just above that needed to magnetically saturate said pole associated with a particular one of said coils.

4,387,329

THREE PHASE POWER-FACTOR CONTROL SYSTEM FOR A.C. INDUCTION MOTORS

John R. Harlow, Richmond, Va., assignor to Electronic Assemblers Company, Richmond, Va.

Filed Mar. 21, 1980, Ser. No. 132,568

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—729 **15 Claims**

1. A multi-phase control system for an AC induction motor comprising:

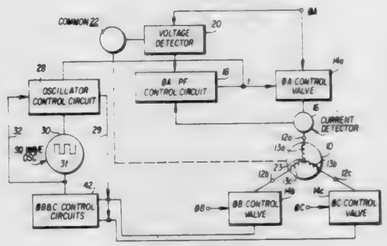
a current sampling means including means adapted to be placed in circuit with a first-phase winding of said multi-phase motor for providing an output signal indicative of the phase of current drawn by said first phase winding;

a voltage sampling means adapted to sense a voltage signal of an electrical input to said motor and for providing an output signal indicative of the phase of said voltage signal;

a phase-difference detection means responsive to the output signals of said current sampling means and said voltage sampling means for providing an output signal which varies in accordance with the phase difference between said current and said voltage signals;

a first control means adapted to be electrically connected in series with said first phase winding of said motor, and responsive to the output signal of said phase difference detection means for varying the duration of "on" time of each cycle of input power to said first-phase winding inversely to the difference in phase between said current and said voltage signals; and,

at least a second control device respectively adapted to be electrically connected in series with a second-phase winding of said multi-phase motor, and responsive to the output of said phase detection means for varying the duration of "on" time of each cycle of input power to said second-



phase winding inversely to the difference in phase between said current and said voltage signals, wherein said phase-difference detection means produces first-phase control pulses to gate said first control means, each pulse determining the on time of a half-cycle of input power to said first-phase winding, and wherein is further included logic circuitry coupling said phase-difference detection means to said second control device, said logic circuitry including a frequency-multiplying means for frequency multiplying the first-phase control pulses to create further pulses, a phase-lock means for phase locking said further pulses to said first-phase control pulses and a distributing means for distributing some of these further pulses to said second control device to be thereby used as control pulses for said second control device.

4,387,330

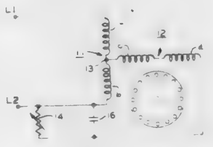
BALANCED SINGLE PHASE ALTERNATING CURRENT INDUCTION MOTOR

Robert V. Zigler, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Filed Sep. 19, 1980, Ser. No. 188,830

Int. Cl.³ H02P *1/44*

U.S. Cl. 318—788 **12 Claims**



1. A single phase alternating current induction type electric motor operable at least at two different voltage levels comprising a slotted stator core carrying a distributed wound main winding having at least first and second sections, formed from a plurality of coil groups defining a number of main magnetic poles corresponding in number to the number of sections of such main winding; said coil groups of the first and second

sections being carried by common slots and being connected for direct energization at the same time during both starting and running conditions so that windings of both sections for a given pole in such shared slots co-operate to establish the same given pole; a distributed wound directly energized auxiliary winding angularly displaced on the core from the main winding to form a plurality of auxiliary poles and being connected permanently in series circuit with the first main winding section and permanently in parallel circuit relation with the second main winding section during starting and running operation of the at least two different voltage levels; and a thermistor connected in series circuit with the auxiliary winding for controlling energization of the auxiliary winding during operation at each of the at least two different voltage levels.

4,387,331

CHARGE-DISCHARGE CURRENT STABILIZER FOR STORAGE BATTERIES

Ivan A. Kolosov, 1 Ogorodny tupik, 15, kv. 104, and Petr Y. Titov, ulitsa Rabochaya, 28/30, kv. 54, both of Saratov, U.S.S.R.

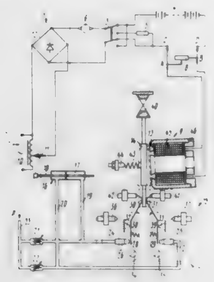
PCT No. PCT/SU79100087, § 371 Date May 28, 1981, § 102(e) Date May 6, 1981, PCT Pub. No. WO81/00935, PCT Pub. Date Apr. 2, 1981

PCT Filed Sep. 28, 1979, Ser. No. 261,190

Claims priority, application U.S.S.R., Aug. 1, 1977, 2513109

Int. Cl.³ H02J *7/04*

U.S. Cl. 320—14 **2 Claims**



1. A charge-discharge current stabilizer for storage batteries, said current stabilizer having a rectifier with a control element, said rectifier being connected in series with a switch and storage batteries in a charge-discharge circuit, and a rectifier control system having a current setter included in said charge-discharge circuit, said charge-discharge current stabilizer comprising

a current sensor included in said rectifier control system and having an electromagnet with a moving armature;

a transducer further included in said rectifier control system for converting electric signals to pneumatic signals, said transducer being of nozzle-flapper type having a pair of nozzles and being mechanically coupled to the armature of said current sensor;

a compressed gas system;

adjustable fluidic resistors; and

a pneumatic drive pneumatically coupled to said compressed gas system and to the nozzles of said transducer via said adjustable fluidic resistors and controlled by said transducer, said pneumatic drive having an operating member, said control element of said rectifier having a slide operatively connected to said operating member of said pneumatic drive.

4,387,332

APPARATUS FOR SUCCESSIVELY CHARGING RECHARGEABLE BATTERIES

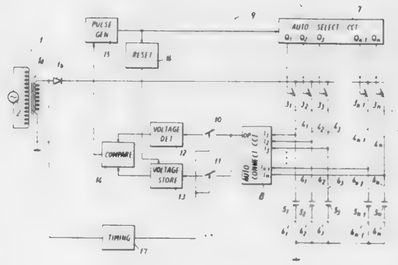
Kenji Oyamada, Yawata, and Kotaro Matsuura, Hirakata, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jan. 26, 1981, Ser. No. 228,684

Claims priority, application Japan, Jan. 29, 1980, 55-9514; Jan. 31, 1980, 55-11069; Jan. 31, 1980, 55-11072; May 23, 1980, 55-69127; May 28, 1980, 55-72062; Jul. 30, 1980, 55-105640; Aug. 4, 1980, 55-107577

Int. Cl.³ H02J *7/04*

U.S. Cl. 320—15 **23 Claims**



1. An apparatus for charging a plurality of rechargeable batteries of the type having a charging voltage characteristic which exhibits an increase until a peak shortly before a fully charged state is reached and thereafter exhibits a gradual decrease until a fully charged state is reached, comprising:

a plurality of charging branches, each including one of said plurality of rechargeable batteries;

a charging voltage source for supplying a charging current to each of said rechargeable battery through each of said charging branch;

charging state detecting means coupled to said rechargeable battery in a charging operation for detecting a charging state of said rechargeable battery wherein said charging state detecting means includes charging completion detecting means for detecting a charging completion state of said rechargeable battery responsive to said charged voltage of said rechargeable battery, said charging completion detection means comprises: associated voltage providing means coupled to said rechargeable battery in a charging operation for providing a voltage associated with a terminal voltage of said rechargeable battery in a charging operation, voltage storage means for storing a voltage lower by a predetermined voltage than said associated voltage corresponding to said peak of said charging voltage characteristic said lower voltage being based on said associated voltage from said associated voltage providing means, and comparing means for comparing said stored voltage in said voltage storing means and said associated voltage from said associated voltage providing means after said peak of said charging voltage characteristic is reached;

automatic switching means responsive to the output of said charging state detecting means for selectively and automatically switching said charging branches being supplied with said charging current from said charging voltage source.

4,387,333

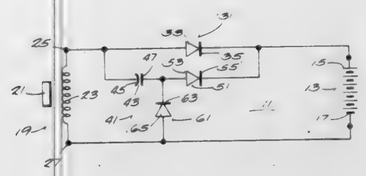
CIRCUIT FOR CHARGING BATTERY AT HIGHER POTENTIAL

Joseph B. St. Ledger, Knoxville, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 1, 1980, Ser. No. 211,641

Int. Cl.³ H02J *7/14*

U.S. Cl. 320—21 **6 Claims**



1. A circuit for charging a battery having opposed terminals, said circuit including a source of alternating potentials of first and second polarities, said source including first and second terminals, a diode having an anode connected to said first terminal of said source and a cathode adapted for connection to one of the battery terminals, whereby to afford application to the battery for charging purposes of the potential of the first polarity, and means connected to said first and second terminals of said source and to the opposed terminals of the battery for storing the energy of the second polarity potential without completing a circuit through the battery and for applying the stored energy to the battery with the application to the battery of the potential of the first polarity, said means for storing energy and for applying the stored energy including a capacitor having a plate connected to said first terminal in parallel with the connection of said anode to said first terminal for application to said plate of alternating potentials.

4,387,334

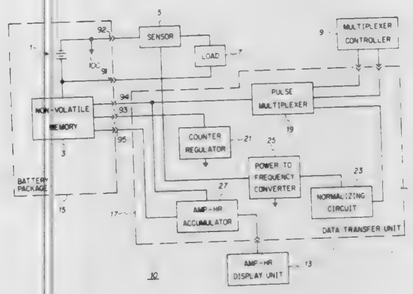
BATTERY MONITOR CIRCUIT

Roger K. Loper, Norway, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 5, 1981, Ser. No. 270,705

Int. Cl.³ H02J *7/04*

U.S. Cl. 320—44 **6 Claims**



1. A battery monitoring system comprising:

a battery encased within a battery package;

a nonvolatile memory means having a memory capacity of N data symbols enclosed within the battery package for accumulating data symbols representative of the power provided by the battery;

a sensor means for sensing the power delivered by the battery to provide a first signal representative of the sensed power; and

converter means for converting the first signal to a stream of digital data pulses to which the nonvolatile memory will respond.

4,387,335

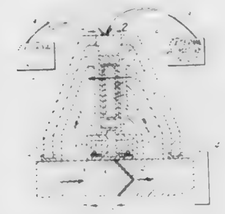
CONSTANT-FREQUENCY DYNAMO WITH STATIONARY ARMATURE

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec, Canada (H3H 1T1), and Sidney T. Fisher, 53 Morrison Ave., Montreal, Quebec, Canada (H3R 1K3)

Filed Jul. 27, 1981, Ser. No. 287,221

Int. Cl.³ H02P *9/30*; H02K *21/10*

U.S. Cl. 322—32 **9 Claims**



1. A dynamo which comprises:

first and second coaxial rotating field structures, and

mechanical reversing means which is connected to said rotating field structures, and which causes said field structures, when rotating, to rotate in opposite directions, and

means for connection of said mechanical reversing means to external rotational means, and

a low-reluctance magnetic connection with a first magnetic pole magnetically connected to the first of said rotating field structures, and a second magnetic pole magnetically connected to the second of said rotating field structures, and

magnetizing means for said low-reluctance magnetic connection which generates said first and said second magnetic poles, and

an annular magnetic stationary armature, carrying one or more toroidal armature windings, located between said first and said second rotating field structures, and

a first path of low magnetic reluctance between said first rotating field structure and a first portion of said armature windings, and

a second path of low magnetic reluctance between said second rotating field structure and a second portion of said armature windings, and

means for connecting said armature windings to external armature circuits, without sliding contacts, and

means for connecting said magnetizing means to external field circuits.

4,387,336

METHOD AND APPARATUS FOR CABLE CONDUCTOR SHIELD FAULT DETECTION

Edward B. Joy, Stone Mountain; Athanasios P. Meliopoulos, Decatur, and Roger P. Webb, Marietta, all of Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Feb. 12, 1980, Ser. No. 120,816

Int. Cl.³ G01R *31/02, 31/12*; B29F *3/10*

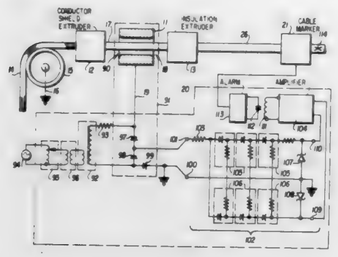
U.S. Cl. 324—51 **19 Claims**

1. Apparatus for detecting defects in a semi-conductive conductor shield of unfinished high voltage cable which is continuously advanced along a path of travel, comprising:

means, including a high voltage electrode arranged in non-contacting relation around said continuously advancing cable, for applying high voltage power concentrically around said continuously advancing cable to produce an electric field around said cable, the magnitude of said high

voltage power being selected such that the electric field intensity existing in the air gap between the shielded cable and the inner cylindrical surface of the electrode approaches, but is less than, the electrical breakdown value for the air in the gap;

means connected to said means for applying high voltage power for detecting the resultant electrode current having a corona discharge component caused by field strength changes in said electric field resulting from defects in said conductor shield;



means connected to the detecting means for filtering said resultant electrode current to eliminate any low frequency components thereof and produce a corona current signal corresponding to said corona discharge component;

means arranged downstream of said means for applying high voltage power for applying insulation about said unfinished high voltage cable; and

means connected to the means for filtering said resultant electrode current for indicating the presence of at least one of a skip, protrusion, protuberance and other defect in said conductor shield upon receiving said corona current signal.

4,387,337

GROUND LOCATING DEVICE FOR CATHODICALLY PROTECTED STEEL PIPING AND/OR ELECTRICAL CONDUITS

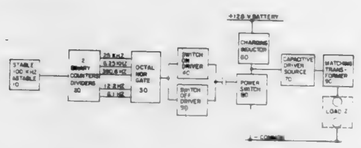
Terrence M. Beeman, 183 MacAuley Crescent, Winnipeg, Manitoba, Canada (R2G 0P6)

Filed Oct. 27, 1980, Ser. No. 201,167

Claims priority, application United Kingdom, Nov. 7, 1979, 7938492

Int. Cl.³ G01R *31/08*

U.S. Cl. 324—52 **20 Claims**



1. A ground fault locating device for cathodically protected steel conduits and the like comprising in combination a Nor-gate modulated transmitter and a receiver, said transmitter including:

(a) the source of power,

(b) frequency generating means operatively connected to said source of power,

(c) means operatively connected to said frequency generating means to produce a plurality of binary divisions of the frequency generated by said frequency generator means,

(d) means operatively connected to a selected number of frequencies to produce a composite output therefrom,

(e) a power switch circuit,

(f) ON and OFF drive means operatively connected to said composite output and said power switch circuit, to control said power switch circuit,

(g) a capacitive driver source,

(h) means to power said capacitive driver source operated by said power switch circuit, and

(i) means operatively connecting said capacitive driver source to the load of said transmitter, said receiver adapted to receive the signals transmitted by said transmitter.

4,387,338

METHOD AND APPARATUS FOR TESTING A METALLIC WORKPIECE BY INDUCING EDDY CURRENTS THEREIN

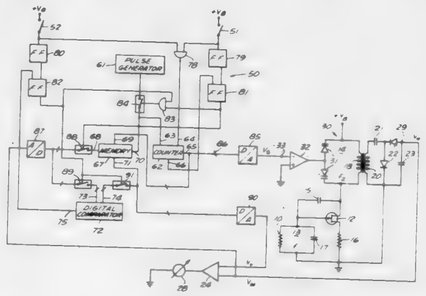
Hans Hecht, Stuttgart, and Peter Neumaier, Reutlingen, both of Fed. Rep. of Germany, assignors to Institut Dr. Friedrich Forster Prüfgerätebau, Reutlingen, Fed. Rep. of Germany

Filed Mar. 27, 1980, Ser. No. 134,495

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1979, 2913291

Int. Cl.³ G01N *27/72*; G01R *33/12*

U.S. Cl. 324—236 **20 Claims**



1. A method for testing a metallic workpiece in which a test coil generates eddy currents in the workpiece, and a measured variable functionally related to the test coil impedance is determined which serves as a measure for material physical properties of the workpiece, comprising:

arranging the test coil and workpiece into a first geometrical relationship;

continuously varying a circuital parameter throughout a predetermined range;

storing and recording first values of the measured variable which are a function of the circuital parameter;

arranging the test coil and workpiece into a second geometrical relationship;

continuously varying the circuital parameter throughout the same range, and storing and recording second values of the measured variable which are a function of the circuital parameter, all while maintaining the second geometric relationship;

comparing the first stored values with the second stored values;

determining the particular circuital parameter and the particular first or second stored values functionally related to the said parameter such that the stored values being compared with one another are in conformity; and utilizing one of the first or second stored values as a comparison voltage for comparison with other digital values of the measured variable functionally related to the particular circuital parameter.

4,387,339

METHOD AND APPARATUS FOR MEASURING THE SPACING BETWEEN THE OPPOSED SURFACES OF SEPARATED ELEMENTS

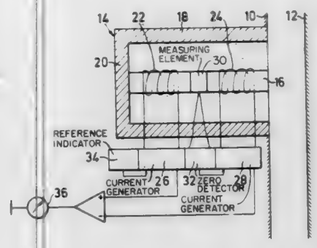
Bengt O. Akerblom, Hägersten, Sweden, assignor to Sunds Defibrator AB, Stockholm, Sweden

Filed Jun. 2, 1980, Ser. No. 155,207

Claims priority, application Sweden, May 6, 1979, 7904903

Int. Cl.³ G01B *7/14*

U.S. Cl. 324—207 **6 Claims**



1. In the method of measuring the spacing between two opposing surfaces of magnetically conductive material according to the reluctance method by means of a position indicator arranged in one of said surfaces and oriented in relation to the other one of said surfaces so that the gap between the two surfaces form part of a magnetic field circuit, the improvement comprising:

providing first and second separate coil windings about a common core of said position indicator,

connecting first and second current generators to said first and second coils, respectively, such that the direction of current flow through said first coil is opposite the direction of current flow through said second coil, so that said first and second coils produce opposed magnetic fields,

detecting the net magnetic flux between said first and second coils,

regulating the current flow through one of said first and second coils until no net magnetic flux is detected between said first and second coils, and

measuring the difference between the current from said first and second current generators for providing an output signal corresponding to the spacing between said two surfaces.

4,387,340

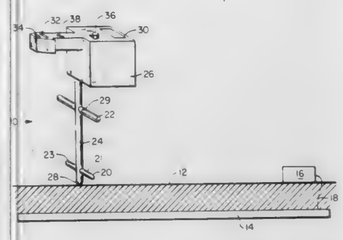
APPARATUS FOR DETERMINING THE DISTANCE TO A CONCEALED CONDUCTIVE OBJECT WHICH IS RADIATING AN ALTERNATING CURRENT SIGNAL

Earl J. Peterman, Philo, Calif., assignor to Metrotech, Inc., Mountain View, Calif.

Filed Jul. 31, 1980, Ser. No. 174,185

Int. Cl.³ G01V *3/11*; G01B *7/14*

U.S. Cl. 324—326 **7 Claims**



1. An apparatus for determining the distance to a concealed conductive object and wherein the object is radiating an alternating current signal, said apparatus comprising:

first signal receptor for receiving said signal and for providing a first output voltage in proportion to the strength of said signal received;

second signal receptor for receiving said signal and for providing a second output voltage in proportion to the strength of said signal received;

support means for positioning said signal receptors a selected and fixed vertical distance apart whereby one receptor may be positioned a selected distance greater than the other from said object;

amplifier means with an input, an output and a gain for receiving an output voltage from said first or second signal receptor at the input and for providing an amplified output voltage at the output;

switch means for switching the connection of said first output voltage to the input of said amplifier means and the connection of said second output voltage to the input of said amplifier means;

automatic gain control means responsive to the amplified output voltage and the switch means for automatically controlling the gain of said amplifier means such that the gain during the amplification of said output voltage of said first receptor is the same as the gain during the amplification of said output voltage of said second receptor;

computing means connected to the amplifier means for calculating the distance to said object based upon the amplified output voltages of said first receptor and of said second receptor; and

display means for displaying the calculated distance.

4,387,341

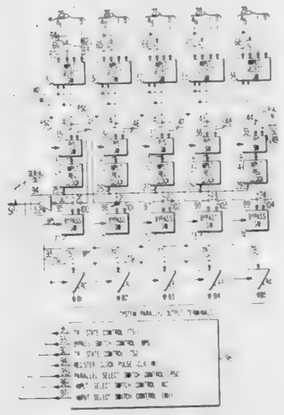
MULTI-PURPOSE RETIMER DRIVER

Lloyd W. Martinson, Haddonfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 13, 1981, Ser. No. 263,125

Int. Cl.³ H03K *3/027, 5/15*

U.S. Cl. 328—73 **6 Claims**



1. A retiming circuit comprising:

a clock pulse source for generating clock pulses;

a plurality of N registers arranged in a given successive order with each register having an input terminal, an output terminal, and clock input terminal means responsive to clock pulses supplied thereto to transfer the signal supplied to said input terminal to said output terminal;

a serial input terminal and means for supplying a serial input signal thereto;

N first switches each having first and second input terminals and an output terminal which is connected to the input

terminal of a corresponding first register of said N registers, and with the first input terminal of the first switch of said N first switches being connected to said serial input terminal and the first input terminal of each of the remainder of said N switches being connected to the output terminal of the register preceding said corresponding register in said row of registers;

means for supplying an N bit input signal in parallel manner to the second input terminals of said N first switches;

means for providing timing control signals;

said N first switches responsive to said timing control signals to selectively connect the first or second input terminals thereof to the output terminal thereof;

N parallel output terminals;

serial output terminal; and

logic means for selectively connecting the output terminals of said N registers to said N parallel output terminals and the output terminal of a selected register in said N registers to said serial output terminals;

said logic means comprising N second switches each corresponding to one of said N registers and arranged in said given successive order and each having first and second input terminals and an output terminal with the first input terminal of each of said second switches being connected to the second input terminal of the corresponding first switch and with the second input terminal thereof being connected to the output terminal of the corresponding register;

said logic means further comprising gating means connecting said output terminals of said second switching means to said N parallel output terminals; and

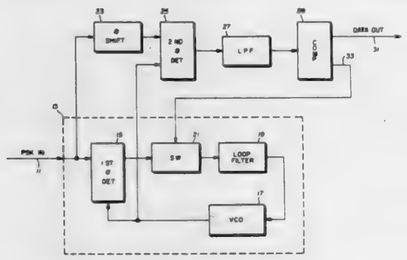
said second switching means responsive to said timing control signals to selectively connect said first or second input terminals of each of said second switches to the output terminal thereof.

4,387,342

PHASE-SHIFT KEYED DECODER

Jon P. Grosjean, South Woodstock, Conn., assignor to Datavision, Inc., Roseville, Mich.

Filed Mar. 4, 1981, Ser. No. 240,531
Int. Cl.³ H04L *27/22*
U.S. Cl. 329—50 **11 Claims**



1. In a PSK communications system wherein a constant amplitude carrier has its phase shifted 180° each time a logical zero is transmitted, a PSK receiver including a phase-locked loop having a first phase detector, a loop filter, and a voltage-controlled oscillator, the output of the voltage-controlled oscillator being operatively coupled to a first pair of inputs of said first phase detector and the transmitted PSK signals being operatively coupled to a second pair of inputs of said first phase detector such that the output of said first phase detector is zero whenever the signals present at its first and second pairs of inputs are 90° out of phase and the output of said first phase detector is a maximum whenever the signals present at its first and second pairs of inputs are in phase or 180° out of phase, the output of said first phase detector being operatively coupled to the input of said voltage-controlled oscillator through said loop filter, the improvement comprising:

said loop filter having a relatively fast time constant for a fast loop lock-up time;

switching means operatively coupled in said loop, said switching means being normally conductive for enabling said phase-locked loop to operate but said switching means being responsive to a gating signal indicative of the detection of data for turning off the phase-locked loop during a data pulse so as to enable the use of a relatively fast time constant loop filter while simultaneously enabling the system to be able to handle even relatively long duration data pulses;

a second phase detector having first and second pairs of inputs and a pair of outputs, said second phase detector outputting a first signal whenever a carrier is detected and a second signal whenever data is detected;

first coupling means for operatively coupling one of said pairs of inputs of said first phase detector to one of said pairs of inputs of said second phase detector;

second coupling means for operatively coupling the other pair of inputs of said first phase detector to the other pair of inputs of said second phase detector;

phase shifter means operatively coupled in one of said first or second coupling means for shifting the phase of an input signal 90°; and

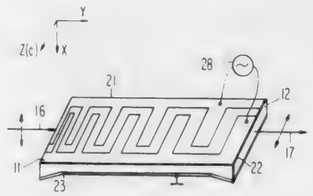
comparator means having inputs operatively coupled to the outputs of said second phase detector, said comparator means having a first output for supplying a first logic state signal whenever a carrier is detected and a second logical state signal whenever data is detected, said comparator means further including a second output for supplying said gating signal to said switching means whenever data is detected.

4,387,343

ELECTROOPTIC LIGHT MODULATOR INCLUDING WEIGHTED INTERDIGITAL ELECTRODES

Michikazu Kondo, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 49,863, Jun. 19, 1979, abandoned. This application May 6, 1981, Ser. No. 261,081
Claims priority, application Japan, Jun. 22, 1978, 53-76026; Jun. 30, 1978, 53-80118
Int. Cl.³ G02F *1/28, 3/00*
U.S. Cl. 332—7.51 **11 Claims**



1. A light modulator comprising:

a modulator medium having a pair of principal surfaces and a first and a second end surface, capable of transmitting an input light beam incident on said first end surface as a propagating light beam and of making said propagating light beam proceed further out of said medium as an output light beam at said second end surface, and having an electrooptic constant for causing rotation of an optical indicatrix of said medium for said propagating light beam when an electric field is produced in said medium substantially in a direction predetermined relative to the distance between said principal surfaces;

a pair of interdigital electrodes along one of said principal surfaces with digit electrodes thereof distributed between said end surfaces at a pitch substantially continuously varied from said first end surface to said second end surface;

means for applying an electric voltage between said interdigital electrodes to produce said electric field in said medium, whereby said input light beam is converted to said output light beam as a result of rotation of said optical indicatrix with an overall conversion efficiency substantially dependent on said electrooptic constant and said electric field, each digit electrode contributing to said conversion efficiency; and

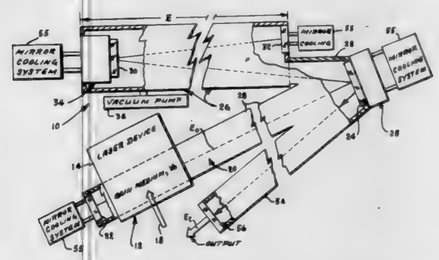
means for attaching weights to at least those of said digit electrodes which are distributed adjacent to each end surface, each weight-attached digit electrode contributing to said conversion efficiency depending on the weight attached thereto and that part of said electric field which is produced in said medium adjacent thereto, said weights being substantially continuously varied according as said weight-attached digit electrodes are distributed nearer to said each end surface.

4,387,344

PHOTON STORAGE TUBE HIGH POWER LASER SYSTEM

Thomas W. Meyer, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 16, 1981, Ser. No. 225,556
Int. Cl.³ A01S *3/05*
U.S. Cl. 330—4.3 **10 Claims**



1. A photon storage tube high power laser system comprising means containing a gain medium for producing a pulse of electromagnetic radiation; means operably connected to said electromagnetic radiation producing means and separated therefrom for storing said pulse of electromagnetic radiation therein for a predetermined period of time, said electromagnetic radiation producing means including adjustable means positioned at one end thereof for reflecting said pulse of electromagnetic radiation into said electromagnetic storage means, back through gain medium, and out of said high power laser system at alternate times; and said electromagnetic storage means including at least two means in optical alignment with each other for receiving said pulse of electromagnetic radiation from said adjustable reflective means and reflecting therebetween said pulse of electromagnetic radiation, at least one of said reflecting means of said storage means being capable of redirecting said pulse of electromagnetic radiation at said predetermined period of time from said electromagnetic radiation storage means to said adjustable reflective means forming part of said electromagnetic radiation producing means; whereby said adjustable reflective means can either redirect said pulse of electromagnetic radiation through said gain medium or out of said high power laser system as a pulse of high power electromagnetic radiation.

4,387,345

PRECISION GAIN AC COUPLED OPERATIONAL AMPLIFIER

Stephen H. Kelley, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 24, 1981, Ser. No. 246,809
Int. Cl.³ H03F *1/32*
U.S. Cl. 330—9 **8 Claims**



1. An inverting operational amplifier circuit comprising:

operational amplifier means having an inverting and a non-inverting input and an output, for developing an output voltage proportional to the difference in voltages applied to the inputs thereof;

capacitive feedback means coupled between the output and the inverting input of the operational amplifier means;

resistive feedback means coupled between the output of the operational amplifier means and the inverting input thereof, for providing a DC feedback voltage proportional to the amplifier's output voltage, comprising:

voltage divider means coupled between the output of the operational amplifier means and a reference voltage; and

switched capacitance means coupled between the voltage divider means and the inverting input of the operational amplifier means.

4,387,346

BIAS CIRCUIT FOR A MICROWAVE TRANSISTOR POWER AMPLIFIER

John D. Fackler, 172 Center St., Southport, Conn. 06490

Continuation of Ser. No. 70,994, Aug. 30, 1979, abandoned. This application Dec. 24, 1980, Ser. No. 219,602
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—296 **6 Claims**



1. A microwave transistor power amplifier operated directly from an unregulated variable voltage source whose voltage decreases with operational time, said voltage source having a rated operating value less than the voltage of said transistor, said transistor having a collector-emitter circuit and a base circuit, the emitter of said transistor connected to ground, a low value resistance connecting the collector of said transistor directly to said voltage source,

a current regulator connected between said voltage source

and said base circuit to supply base current to said transistor,

said current regulator including means for sensing decrease in said source voltage, and means responsive to said sensing means for maintaining the current through said regulator to the base of said transistor amplifier essentially constant whereby the average current through said transistor is relatively unaffected by decrease in the value of source voltage throughout the operational time of said voltage source.

4,387,347

DELAY LINE FREQUENCY DISCRIMINATOR FOR STABILIZING AN OSCILLATOR

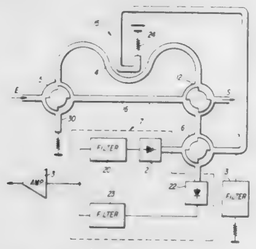
Robert Pierrot, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 14, 1980, Ser. No. 130,474

Claims priority, application France, Mar. 16, 1979, 79 06745; Jan. 29, 1980, 80 01896

Int. Cl.³ H03L *7/04*

U.S. Cl. 331—1 R **8 Claims**



1. A frequency discriminator for stabilizing an oscillator, comprising:

first coupling means having an input fed with an oscillator signal to be frequency-stabilized and having first and second outputs which are each supplied with a wave of amplitude A corresponding to half the power of the oscillator signal fed to the input, said first coupling means comprising a first connecting means and a second connecting means including an electromagnetic transmission line respectively connected to said first and second outputs, said second connecting means introducing a delay t compared with said first connecting means, said delay t determining a tuning frequency;

second coupling means having first and second inputs respectively coupled to outputs of said first and second connecting means for delivering a summation output signal representing the vectorial sum of the signals applied to said second coupling means from said first and second connecting means, said summation output signal corresponding to the stabilized output signal of said oscillator, said second coupling means also producing a difference output signal representing the vectorial difference of said two signals applied to said second coupling means from said first and second connecting means;

third coupling means having a first input coupled to said difference output signal of said second coupling means;

fourth coupling means for deriving a signal based on a sampling of said oscillator signal sampled at a selected point in a selected one of said first or second connecting means, and supplying a second input of said third coupling means with said derived signal; and

a detector connected to an output of said third coupling means and delivering a frequency control signal having an amplitude dependent on the frequency deviation of said oscillator compared with the predetermined tuning frequency.

4,387,348

PHASE-CONTROLLED HIGH FREQUENCY OSCILLATOR

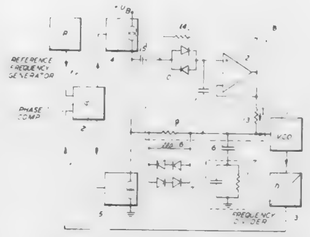
Bernd Fritze, Puchheim, Fed. Rep. of Germany, assignor to Rohde & Schwarz GmbH & Co. K.G., Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 197,942

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1979, 2943510

Int. Cl.³ H03L *7/10*

U.S. Cl. 331—17 **8 Claims**



1. In a phase-controlled high frequency oscillator having a voltage-controlled oscillator which generates an oscillator frequency, a reference frequency generator, a phase comparison circuit for comparing the phase of the oscillator frequency to the phase of the reference frequency, a pair of direct current sources controlled by said phase comparison circuit for generating charge pulses proportional to the phase difference determined by said phase comparison circuit which are supplied to a charging capacitor connected to said voltage controlled oscillator for supplying a control voltage thereto, whereby in the steady-state condition of the control loop both current sources generate charge pulses of equal size and opposite polarity having a duration which is substantially less than the period of said reference frequency, the improvement of:

an auxiliary circuit interconnected between said pair of current sources and said charging capacitor for generating a correction current proportional to the integral of the difference between the charge pulses generated by the current sources, said auxiliary circuit consisting of at least one circuit element connected to both of said current sources, a voltage drop being generated across said element corresponding to the charge pulses from said current sources, an integrating capacitor connected to said circuit element, at least one first rectifier interconnected between each of said current sources and said integrating capacitor such that said integrating capacitor is charged with said voltage drop, and an impedance transformer connected to said integrating capacitor for generating said correction current from the voltage across said integrating capacitor, whereby said auxiliary circuit generates said correction current only when said pulses from said current sources are charge pulses having a period which is less than the period of said reference frequency.

4,387,349

LOW POWER CMOS CRYSTAL OSCILLATOR

A. Karl Rapp, Los Gatos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 15, 1980, Ser. No. 216,332

Int. Cl.³ H03B *5/36*

U.S. Cl. 331—116 FE **1 Claim**

1. A CMOS oscillator circuit comprising:

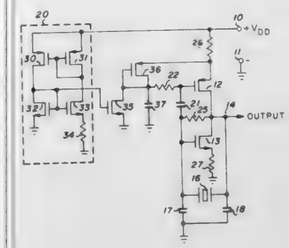
first and second terminals connectable to a source of operating power;

first and second complementary transistors having their source drain circuits directly connected in series across said first and second terminals;

capacitive means coupling the gates of said first and second transistors together;

resonant circuit means coupled between the drain and gate of one of said pair of transistors to create an oscillatory feedback;

a current mirror configured to develop a threshold biasing potential;



high value resistor means for coupling said threshold biasing potential to the gate of at least one of said first and second transistors; and

a buffer coupled between said current mirror and said one of said first and second transistors.

4,387,350

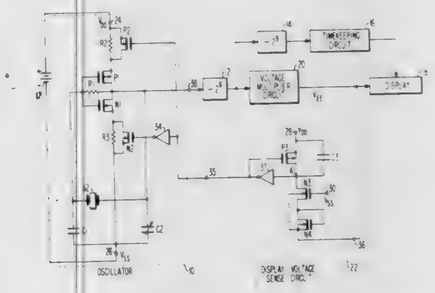
WATCH CIRCUIT WITH OSCILLATOR GAIN CONTROL

Jeffrey M. Bessolo, Somerville, and James E. Gillberg, North Plainfield, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 24, 1980, Ser. No. 220,128

Int. Cl.³ H03B *5/36*

U.S. Cl. 331—116 FE **10 Claims**



1. In a watch circuit arrangement having an oscillator, and having a display voltage generator including a voltage multiplier coupled to said oscillator for generating an output voltage which exceeds a given magnitude only after the receipt of a plurality of pulses from said oscillator, the improvement comprising:

DC voltage threshold detector means responsive to said output voltage for conditioning said oscillator to have a first gain level when said output voltage does not exceed said given magnitude, and for conditioning said oscillator to have a second gain level, lower than said first gain level, when said output voltage does exceed said given value.

4,387,351

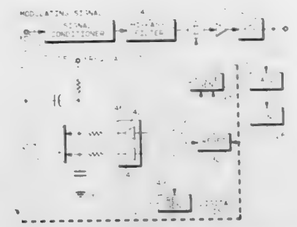
WIDEBAND FM MODULATOR AND AFC CONTROL LOOP THEREFOR

Andrew Furiga, Scottsdale, and Donald J. Sabourin, Mesa, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Dec. 18, 1980, Ser. No. 217,600

Int. Cl.³ H03C *3/00*; H03L *7/06*

U.S. Cl. 332—19 **14 Claims**



1. A digital, frequency discriminator providing an output signal representative of the mean frequency of an input frequency spectrum applied thereto, comprising:

(a) input means for supplying a digital signal representative of the input frequency;

(b) a reference frequency source;

(c) a reset pulse generator connected to said input means and said reference frequency source for providing a reset pulse in response to the application thereto of an appropriate signal from each of said input means and said reference frequency source;

(d) a first generator connected to said reference frequency source and said reset pulse generator for providing an output signal including a pulse each time a predetermined number of cycles from said reference frequency source and a reset pulse from said reset pulse generator are supplied thereto, the output signal of said first generator having an average duty factor which varies linearly with the frequency of the reset pulses;

(e) a second generator connected to said reference frequency source for providing an output signal including a pulse for each predetermined number of cycles applied thereto by said reference frequency source, the output signal of said second generator having a substantially constant duty factor approximately equal to the average duty factor of the output signal of said first generator at a desired mean frequency; and

(f) combining means connected to said first and second generators for combining the output signals from said first and second generators to provide an average voltage signal representing the difference between the output signal from said first generator and the output signal from said second generator.

4,387,352

TRANSDUCER ARRAY CROSSOVER NETWORK

Claude C. Routh, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1980, Ser. No. 126,590

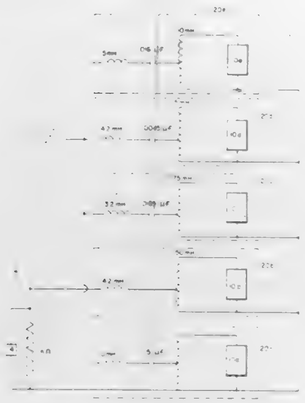
Int. Cl.³ H03H *7/01, 9/125, 7/38*

U.S. Cl. 333—32 **15 Claims**

1. Electrical apparatus for combining with an acoustic transducer of selected frequency range to provide a transducer network having a comparatively low input impedance to signals of frequencies within the selected frequency range, and a comparatively high impedance to signals of frequencies outside the selected frequency range, said apparatus comprising:

first reactance means for forming a parallel LC circuit with a second reactance means, comprising a portion of the electrical structure of said transducer, the resonant fre-

quency of said parallel LC circuit lying within said selected frequency range; and



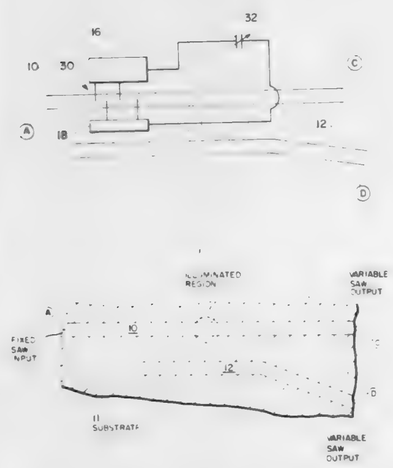
driving means coupled in series between said first reactance means and the source of said signals for providing said transducer with a substantially constant frequency response across said selected frequency range.

4,387,353

ACTIVE WAVEGUIDE COUPLER FOR SURFACE ACOUSTIC WAVES

Thomas G. Giallorenzi, Alexandria, Va., and Joseph F. Weller, Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 12, 1977, Ser. No. 832,507
Int. Cl.³ H01P *5/04, 5/18*
U.S. Cl. 333—111 **3 Claims**



1. A device for controllably coupling SAW power between channel waveguides comprising, in combination:

a substrate formed with a surface;

an input channel waveguide and a coupled waveguide, both located on or at the surface of said substrate and capable of having SAW's propagated therethrough, said waveguides having a coupled region and output ports, and said input waveguide also having an input port; and

variable means acting upon said input waveguide in the coupled region to alter the velocity of any SAW propagating in that region, the action of said variable means being controllable so that the velocity of said SAW is controllable,

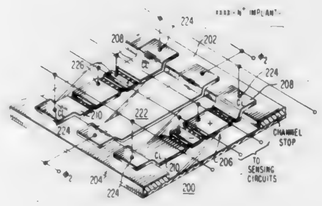
said variable means comprising an interdigital transducer and a variable capacitive load connected thereto.

4,387,354

CCD TRIPLE-SPLIT GATE ELECTRODE TRANSVERSAL FILTER

Rodney L. Angle, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 31, 1981, Ser. No. 297,768
Int. Cl.³ H03H *15/02;* **G11C** *27/02;* **H01L** *27/10*
U.S. Cl. 333—165 **8 Claims**



1. In a CCD split electrode transversal filter operated by multi-phase clock voltages, said filter being of a type comprised of a semiconductor substrate surface on which a pair of substantially equidistant potential barriers defines a CCD channel of a given width, gate electrode extending said given width between said potential barriers, said gate electrodes being arranged in respective sets corresponding to each of said multi-phase clock voltages with the respective members of each set being distributed along the length of said channel in interleaved relationship with respective members of the other sets, certain members of a certain one of said sets each being split into a plurality of separated sections arranged in serial order across said given width, a "plus" summing bus electrically connecting together first corresponding sections of the members of said certain one of said sets, and a "minus" summing bus electrically connecting together second corresponding sections of said certain members of said certain one of said sets; the improvement:

wherein said certain members of said certain one of said sets are split into four sections having respective extents such that (1) the sum of the extents of the first and second sections in serial order is substantially one-half said given width of said channel and (2) the sum of the extents of the third and fourth sections in serial order is also substantially one-half said given width of said channel,

first means including contacts for electrically connecting each one of a given pair of non-adjacent ones of said four sections of said certain members of said certain one of said sets to solely that one of the multi-phase clock voltages corresponding to said certain one of said sets,

second means including contacts for electrically connecting first corresponding ones of the remaining pair of said four sections of said certain members of said certain one of said sets to said "plus" summing bus, and

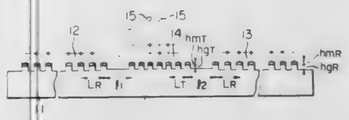
third means including contacts for electrically connecting second corresponding ones of the remaining pair of said four sections of said certain members of said certain one of said sets to said "minus" summing bus.

4,387,355

SURFACE ACOUSTIC WAVE RESONATOR

Takehiko Uno, and Hiromichi Jumonji, both of Yokosuka, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed May 28, 1981, Ser. No. 267,680
Claims priority, application Japan, Jun. 13, 1980, 55-78941; Dec. 13, 1980, 55-175242
Int. Cl.³ H03H *9/25, 9/64*
U.S. Cl. 333—195 **8 Claims**



1. A surface acoustic wave resonator of the type having a pair of surface acoustic wave reflectors which are spaced apart from each other by a suitable distance on a piezoelectric substrate and each of which comprises a grating electrode structure and a periodic array of grooves and a surface acoustic wave transducer which is interposed between the pair of surface acoustic wave reflectors and which comprises an interdigital electrode structure and a periodic array of grooves,

characterized in that

the electrode period L_T of said surface acoustic wave transducer and the electrode period L_R of said surface acoustic wave reflectors are so selected as to satisfy the following equation:

$$\frac{1 - C_{2T} - C_{1T} - C_{1T}/(0.35q_T^2 + 0.3q_T + 0.2)}{1 - C_{2R}} \leqq$$

$$L_T/L_R \leqq \frac{1 - C_{2T} - C_{1T}}{1 - C_{2R}}$$

where

C_{1T}: the acoustic mismatching term at the boundary between the electroded portion and the non-electroded portion of the surface acoustic wave transducer and is given by

$$C_{1T} = |1 - Z_2/Z_1|/\pi$$

where

Z_2: the acoustic impedance of the electroded portion, and

Z_1: the acoustic impedance of the non-electroded portion;

C_{2T}: the relative frequency decrease due to the periodic structure of the surface acoustic wave transducer;

C_{2R}: the relative frequency decrease due to the periodic structure of the surface acoustic wave reflector; and

$q_T = \pi C_{1T} N$ where N: the number of electrode finger pairs in the surface acoustic wave transducer.

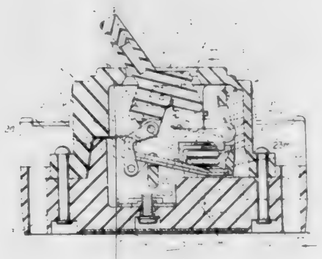
4,387,356

CIRCUIT BREAKER

Kunio Takemura; Hideya Kondo, and Akira Yoshio, all of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Feb. 24, 1981, Ser. No. 237,597
Claims priority, application Japan, Feb. 29, 1980, 55-27198
Int. Cl.³ H01H *75/00*
U.S. Cl. 335—6 **10 Claims**

1. A circuit breaker comprising a housing consisting of a base to be fitted to an external fitting surface and a cover fixed onto said base; a circuit breaking electric element block including current source side and load side terminals fixed respectively at both opposed end positions of said base, a fixed contactor carrying a fixed contact and connected to said current source side terminal, a movable contactor carrying a movable contact contactable with said fixed contact and connected to said load side terminal, said movable contactor being normally biased in a noncontacting direction, and a tripping means inserted between the movable contactor and the load side terminal and at least electromagnetically operating in response to an overcurrent to forcibly trip the contact of the movable contactor with the fixed contactor; and a mechanical contact operating mechanism moving the movable contactor between the positions of contact and noncontact with the fixed contactor with an external operating force given through an operating member projecting out of said cover and operatively connected to the tripping operation of said tripping means,



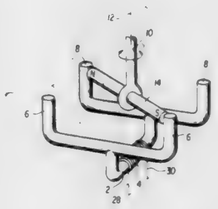
wherein said housing being provided with a pair of side spaces extending substantially in parallel to each other and with an intermediate space provided between said side spaces, at least one of said circuit breaking element block being contained in at least one of the side spaces, said single contact operating mechanism being contained in said intermediate space and operatably engaged with said movable contactor and tripping means of the circuit breaking element block with an operating means extending into the side spaces, and said movable contactor being movably supported by a stationary part of the tripping means and electrically separated from the operating mechanism.

4,387,357

ROTARY ACTIVATOR

Sheldon W. Mandel, Galesburg, and Kenneth E. Davis, Chicago, both of Ill., assignors to Magic Chef, Inc., Cleveland, Tenn.

Filed Apr. 10, 1981, Ser. No. 252,888
Int. Cl.³ H01F *7/08, 7/14;* **H01H** *51/22*
U.S. Cl. 335—272 **4 Claims**



1. A magnetic rotary activator comprising:

(a) a core member;

(b) a coil wound around the core member;

(c) means for selectively directing an electric current flow in either direction through the coil;

(d) the core member including at least three spaced magnetizable pole members whose polarity may be reversed by mo-

mentarily reversing the direction of current flow through the coil;

(e) a rotatable permanent magnet disposed between the pole members for rotating into a first position of alignment with one pair of pole members of opposite polarity during one direction of current flow through the coil, and rotating into a second position of alignment with another pair of pole members during flow of current through the coil in the opposite direction, whereby the permanent magnet is caused to be rotated through a predetermined angle; and

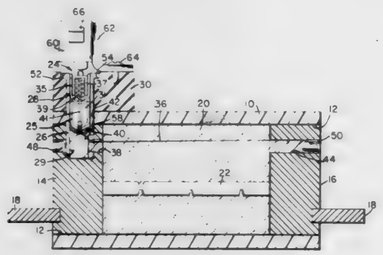
(f) the pole members being configured to permit the formation of a single magnetic circuit through the permanent magnet and its corresponding pair of pole members in either position of alignment to establish a magnetic detent for maintaining the permanent magnet in either position of alignment upon termination of current flow through the coil.

4,387,358

SIDE MOUNTED BLOWN FUSE INDICATOR

Edward J. Knapp, Jr., Salisbury, Mass., assignor to Gould Inc., Electric Fuse Div., Newburyport, Mass.

Filed May 20, 1982, Ser. No. 380,172
Int. Cl.³ H01H *85/30*
U.S. Cl. 337—244 **17 Claims**



1. An electric fuse having a blown fuse indicator comprising:

a casing of insulating material, said casing being open at opposite longitudinal ends thereof;

first and second end terminals arranged adjacent said ends of said casing and closing said ends;

a fusible element contained within said casing and conductively interconnecting said end terminals;

said first end terminals having a first opening therein in a surface thereof facing the interior of said fuse casing and having a second opening therein in a peripheral surface thereof which lies in a plane which is substantially parallel to the longitudinal axis of said casing, said first terminal further having an internal passageway therein communicating said first and second openings;

said fuse casing having an opening therein in axial alignment with said second opening in said terminal;

a spring loaded blown fuse indicator means for extending through said opening in said fuse casing and through said second opening in said terminal wherein it fixedly and conductively engages at least a portion of said passageway;

an indicator restraining wire having one end thereof attached to and extending from said spring loaded indicator through said passageway to the interior of said fuse, and from there extending along the length of said fuse to said second end terminal, said wire being tautly stretched along said path; and

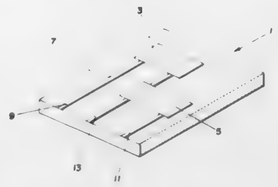
means for conductively attaching the other end of said wire to said second terminal.

4,387,359

TITANIA OXYGEN SENSOR WITH CHROME OXIDE COMPENSATOR

Tseng-Ying Tien, Ann Arbor, Mich.; David C. Weber, Toledo, and Philip R. Woodruff, Tiffin, both of Ohio, assignors to Bendix Autolite Corporation, Fostoria, Ohio

Filed Jan. 21, 1981, Ser. No. 226,652
Int. Cl.³ H01L *7/00*
U.S. Cl. 338—34 **12 Claims**



1. A titania oxygen sensor with a chrome oxide compensator for detecting the oxygen content in an exhaust gas, said sensor comprising a first resistor comprised of titania, the resistance of which varies as a function of both the temperature of the exhaust gas to which it is exposed and the partial pressure of oxygen in the exhaust gas, and a second resistor consisting essentially of a calcine of chromium oxide and a modifier selected from a group consisting of aluminum oxide, zirconium oxide, platinum and glass, the resistance of which varies as a function of temperature in the same sense as the titania but varies as a function of the partial pressure of oxygen in the exhaust gas in the opposite sense to that of the titania, said first and second resistors being connected in series with a common junction such that with a source voltage connected across the two series connected resistors the voltage generated at said common junction is a function of the partial pressure of the exhaust gas to which the two resistors are exposed despite variations in the temperature of the exhaust gases.

4,387,360

GLIDEPATH SYSTEM FOR USE WITH AIRCRAFT ALTIMETERS

Ray M. Jourdan, 11001 E. 59th St., Raytown, Mo. 64133, and Kenneth E. Williams, 5005 W. 72nd St., Prairie Village, Kans. 66208

Continuation-in-part of Ser. No. 75,549, Sep. 14, 1979, abandoned. This application Jun. 30, 1980, Ser. No. 164,884
Int. Cl.³ G01C *21/00;* **G08B** *21/00*
U.S. Cl. 340—27 AT **7 Claims**

1. For use with aircraft provided with an altimeter having a dial including a rotatable pointer adapted for indicating the altitude of the aircraft, a system for calculating and indicating a theoretical glidepath between a first position at a prescribed altitude above a landing area and a second position at a pre-selected altitude above a ground point spaced a fixed distance from said landing area when the aircraft is moving at a known speed, including:

means for displaying reference altitudes corresponding to said glidepath;

structure mounting said reference altitude display means in proximity to said altimeter and in visually associable, juxtaposed relationship to said pointer;

a central processing unit operably coupled with said displaying means for controlling operation of the system;

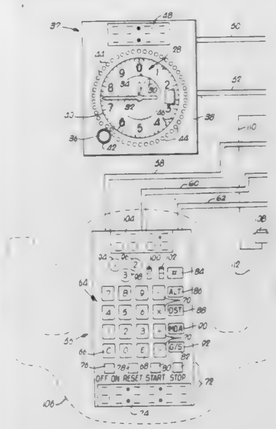
first memory means communicatively coupled with said processing unit for storing data therein;

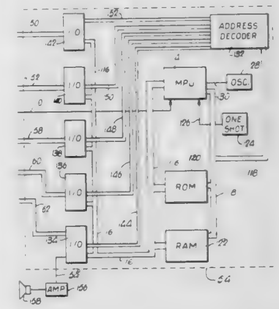
manually operable means communicatively coupled with said processing unit and said first memory means for inputting data including said prescribed altitude, said pre-selected altitude, said distance and the speed of said aircraft, into said first memory means for storage in the latter; and

second memory means communicatively coupled with said processing unit for storing therein programmed instructions governing the operation of said processing unit, and for also storing therein a routine for computing said glidepath,

said processing unit being operative to compute said glidepath in accordance with said routine therefor stored in said second memory means using said data stored in said first memory means, and being further operative to control said reference altitude display means to display said reference altitudes corresponding with said glidepath,

said pointer being visually associable with said reference altitudes to allow a pilot to maintain said aircraft on said glidepath.



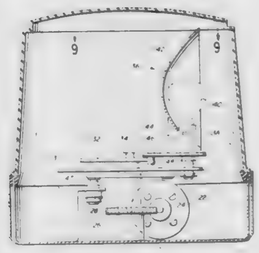


4,387,362

METHOD AND APPARATUS FOR INCREASING EFFECTIVE LIGHT INTENSITY OF A ROTATING LIGHT

Earl W. Gosswiller, Clarendon Hills, Ill., assignor to Federal Signal Corporation, Oak Brook, Ill.

Division of Ser. No. 46,173, Jun. 7, 1979, Pat. No. 4,281,311. This application May 7, 1981, Ser. No. 261,661
Int. Cl.³ B60Q *1/46;* **H02P** *5/08*
U.S. Cl. 340—81 R **2 Claims**



1. A rotatable signal light assembly comprising, in combination, a lamp mounted for rotation for producing light flashes in a plurality of different directions during a complete revolution of the lamp, and drive means for rotating said lamp at a non-uniform rate of speed which changes at least twice during said complete revolution to produce at least two different rates of speed during said revolution, said drive means including means effecting a reduced rate of motion when said lamp is aimed in a predetermined direction where it is desired to provide a light flash of increased intensity, said drive means including rotatable platform means, said lamp being supported on said platform means, reflector means mounted on said platform means in association with said lamp, said reflector means being pivotally movable relative to said platform means, means for rotating said platform means, and means effecting pivotal movement of said reflector relative to said platform means during rotation of the latter, said pivotal movement of said reflector in the direction of rotation of said platform serving to increase the effective rate of speed of said lamp and reduce the effective light flash intensity, and pivotal movement of said reflector opposite to the direction of rotation of said platform serving to reduce the effective rate of speed of said lamp and increase the effective light flash intensity.

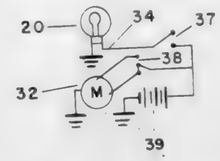
4,387,361

U-TURN VEHICLE LIGHT

Betty C. Reed, 11104 Waycroft Way, Rockville, Md. 20852

Continuation-in-part of Ser. No. 792,719, May 2, 1977; abandoned. This application Feb. 18, 1981, Ser. No. 235,700
Int. Cl.³ B60Q *1/34, 1/00*
U.S. Cl. 340—73 **14 Claims**

1. A signal device adapted to be mounted beneath a motor vehicle hood for indicating a U-Turn to oncoming traffic comprising: a housing, said housing having a front surface, means through said front surface of said housing to indicate to oncoming motorists the intent of a driver to execute a U-Turn, a socket in said housing for receiving a light bulb, and means adapted to be mounted beneath and supported by a vehicle hood for raising and lowering said housing, said means for raising and lowering said housing comprising a reversible motor means, a pinion mounted for rotation by said motor and



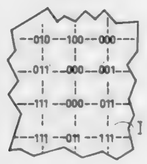
a rack attached to and supporting said housing in meshing engagement with said pinion.

4,387,363

METHOD AND APPARATUS FOR OPTICAL STORAGE OF NUMERICAL IMAGES, AND PROCESSING SYSTEMS FOR SAID IMAGES

Remy Klausz, Paris, France, assignor to Compagnie Generale de Radiologie, Paris, France

Filed Mar. 20, 1980, Ser. No. 132,156
Claims priority, application France, Mar. 20, 1979, 79 07014
Int. Cl.³ G11C *13/00*
U.S. Cl. 382—56 **13 Claims**



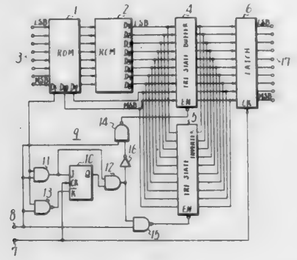
1. A method of optical storage of a numerical image on a recording medium, said image being constituted by numbers each consisting of a plurality of digits and each digit being represented by a modification of an optical characteristic of the recording medium on a surface element of said medium, said optical characteristic being capable of assuming at least as many values as the number of different digits present in the number system employed for the image, wherein the numerical image is split up into at least as many separate sub-images as the digits which it is necessary to employ in order to represent the highest possible value for a number of the numerical image, each sub-image being conventionally associated with the rank of the digit, and wherein the surface element of the recording medium associated with a predetermined digit occupies within each sub-image a similar position to that occupied by the number which contains said digit in the numerical image to be recorded wherein a certain number of sub-images is reserved for additional information such as signs, a detection code or correction of errors.

4,387,364

METHOD AND APPARATUS FOR REDUCING DC COMPONENTS IN A DIGITAL INFORMATION SIGNAL

Norihisa Shirota, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 23, 1980, Ser. No. 171,481
Claims priority, application Japan, Jul. 23, 1979, 54-93504
Int. Cl.³ H04L *3/00*
U.S. Cl. 340—347 DD **22 Claims**



1. In a method of recording a digital information signal comprised of a plurality of N-bit data words by means of a recording apparatus which imperfectly transmits DC components of said digital information signal, the steps of:

selectively generating M-bit data words in which M is an even integer greater than N and each of said N-bit data words and M-bit data words is comprised of a plurality of logic level "1" bits and logic level "0" bits;

weighting each of said M-bit data words on the basis of a first value corresponding to a number, in the M-bit data word, of boundaries between adjacent "1" and "0" bits, a second value corresponding to the number of said "1" bits in the M-bit data word, and a third value corresponding to the numbers, in the M-bit data word, of isolated "1" and "0" bits bounded on both sides by "0" and "1" bits, respectively, and of isolated pairs of "1" and "0" bits bounded on both sides by "0" and "1" bits, respectively;

grouping the weighted M-bit data words in accordance with the run length of data thereof;

assigning each of said N-bit data words to at least a respective one of said M-bit data words in accordance with the generation frequencies of said N-bit data words so that the run lengths of the assigned M-bit data words will vary generally inversely in respect to the generation frequencies of the respective N-bit data words;

converting said N-bit data words to said respective assigned M-bit data words; and

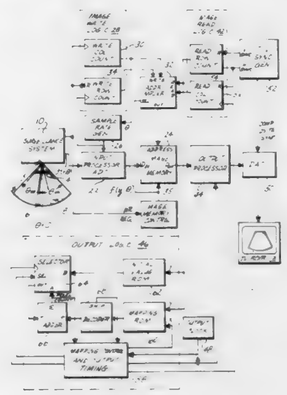
recording on a record medium said M-bit data words to which said N-bit data words are converted so as to minimize DC components of the recorded digital information signal and to concentrate the frequency spectrum.

4,387,365

REAL TIME DIGITAL SCAN CONVERTER

Raymond J. Berry, Bellevue; Ken R. Linkhart, and Edward J. Parker, both of Seattle, all of Wash., assignors to Advanced Technology Laboratories, Inc., Bellevue, Wash.

Filed May 15, 1981, Ser. No. 264,108
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD **14 Claims**



1. A digital scan converter for use with a scanning system which supplies a sequence of n return signals having a one-to-one correspondence with n radially extending scanning paths that are angularly spaced apart from one another about the azimuthal axis of a polar coordinate system to define a sectorial surveillance region, each of said return signals representing signal reflection occurring along said corresponding scanning path, said digital scan converter for supplying output signal information representative of at least a portion of said sectorial surveillance region relative to a Cartesian coordinate system wherein the first axis thereof is substantially parallel to said azimuthal axis of said polar coordinate system and the second axis of said Cartesian coordinate system is perpendicular to the first axis thereof, said digital scan converter comprising:

signal sampling means connected for receiving said sequence of n return signals, said signal sampling means including means for sampling each of said return signals at a rate

proportional to the cosine of the angle between said corresponding scanning path and said azimuthal axis of said polar coordinate system to supply n ordered sets of signal values, the successive signal values of each said ordered set of signal values representing signal reflection occurring from incremental regions of said surveillance region that are located along said corresponding scanning path at equally spaced apart positions relative to said first axis of said Cartesian coordinate system;

memory means connected for receiving and storing said n ordered sets of signal values, said memory means being addressable for accessing those ones of said signal values that are associated incremental regions of said surveillance region that lie along m equally spaced apart traces that are substantially parallel to said second axis of said Cartesian coordinate system to form m ordered sets of signal values in which successive signal values of each ordered set are associated with the successive scanning paths of said surveillance system;

output processor means for sequentially receiving a first sequence of signal values that is formed from an associated one of said m ordered sets of signal values, and for supplying a second sequence of digital signals that represents signal reflection occurring at substantially equally spaced apart locations along that one of said m traces that is associated with the sequence being receiving by said output processor means; and

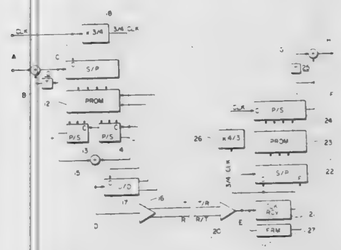
mapping means for controlling said output processor means, said mapping means including addressing means for sequentially accessing the sets of said m ordered sets of signal values, means for sequentially accessing the n signal values within each of said m ordered sets and individually supplying the sequentially accessed n signal values to said output means as said first sequence of signal values, said mapping means further including means for operating said output processor means to establish a predetermined number of consecutive elements within said second sequence of digital signals equal to that one of said n signal values currently being supplied to said output processor means, the predetermined number associated with each of said stored signal values being determined on the basis of the location of the associated one of said m traces and the associated one of said n scanning paths.

4,387,366

CODE CONVERTER FOR POLARITY-INSENSITIVE TRANSMISSION SYSTEMS

Peter E. K. Chow, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 157,479, Jun. 9, 1980, abandoned. This application Nov. 9, 1981, Ser. No. 319,190
Int. Cl.³ H04L *3/00*
U.S. Cl. 340—347 DD **3 Claims**



1. A code converter comprising:

a translator for coding blocks of binary digits into first or second multi-level words, each word being composed of digits having at least three possible levels, the digital sum of the digits of each of the first and second words being equal to zero, or being opposite in polarity to each other;

a selector responsive to the polarity of the running digital sum of previously coded words for selecting the first or second word of opposite polarity;

characterized by:

each block of binary digits is coded so that each first multi-level word coded from one block of binary digits, is the inverse of the second multi-level word coded from another block of binary digits that is the inverse of that one block of binary digits;

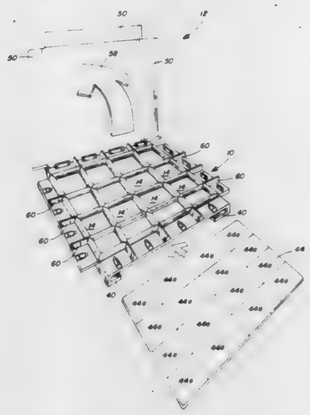
whereby polarity integrity of the binary digits may be restored.

4,387,367

OPTICAL KEYBOARD

Charles R. Fisher, 34781 Glen Dr., Eastlake, Ohio 44094

Filed Jun. 19, 1981, Ser. No. 275,417
Int. Cl.³ G08B *5/36*; G06M *7/00*; H01J *39/12*
U.S. Cl. 340—365 P **7 Claims**



1. A matrix switch apparatus, comprising:

(a) a panel defining an array of key areas arranged in rows and columns;

(b) a paired light source and light receptor associated with each row, each pair determining a path of light extending across its associated row and above the surface of said panel, said light source and light receptor of each row pair disposed at opposite ends of their associated row and outside of said key areas defining said row;

(c) a paired light source and light receptor associated with each column, each pair determining a path of light extending across its associated column and above the surface of said panel, said light source and light receptor of each column pair disposed at opposite ends of their associated column and outside of said key areas defining said column; and,

(d) light refocusing elements disposed along the perimeter of each key area and in the path of the column and row light beams, each element including light refracting surfaces for refocusing said row and column light beams traversing the associated key area.

4,387,368

TELEMETRY SYSTEM FOR CENTRIFUGAL WATER CHILLING SYSTEMS

Arthur R. Day, III, Mechanicsburg, and Fred McMenamy, York, both of Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 3, 1980, Ser. No. 212,299
Int. Cl.³ G08B *19/00*
U.S. Cl. 340—539 **17 Claims**



1. A telemetry system for reporting the status of one or more parameters being monitored in an operative system to a remote station comprising:

means for generating an electrical signal in response to the occurrence of a preselected physical parameter in the operative system,

interface circuit means having input means for receiving said electrical signal,

transmitter means connected to said interface circuit means for selectively transmitting a coded message to a remote location,

said interface circuit means acting to produce a transmitter input signal in response to said electrical signal,

said transmitter means having a transmitter input for receiving said transmitter input signal,

said transmitter means being responsive to said transmitter input signal to automatically dial a pre-programmed telephone number at the remote location and transmit a coded message thereto to report the status of the preselected physical parameter,

said interface circuit means having isolation means to isolate said electrical signal applied thereto to generate a triggering signal,

said interface circuit means further including means responsive to said triggering signal to provide said transmitter input signal, and

indicating means coupled to said interface circuit means to indicate the occurrence of said preselected physical parameter.

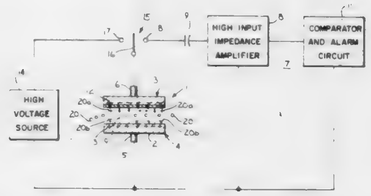
4,387,369

BROAD SPECTRUM CHARGED ELECTRIC FIELD POLAR GAS SENSING AND DETECTION SYSTEM

Carl F. Klein, New Berlin, and John E. Aukofer, Milwaukee, both of Wis., assignors to Johnson Controls, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 950,414, Oct. 11, 1978, abandoned. This application Oct. 16, 1980, Ser. No. 197,521
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—627 **14 Claims**

1. An environmental gaseous product sensing apparatus creating an electrical signal in the presence of environmental borne contaminating products including particles and gaseous products, comprising a first and second sensing plate means each having an extended exposed sensing surface and being closely spaced to define a free space between said exposed sensing surfaces, means for mounting of the plate means exposed to contact with the surrounding environment in which said contaminating products may arise, an electrical detection means having a high input impedance amplifier connected to said first and second plate means, means defining a high voltage charge source having an output voltage of approximately 2,000 volts, switch means connected to said detection means and to at least one of said plate means and to said charge source for creating a high voltage charge on said plate means and disconnecting the charged plate means from the source during connection to said detection means, said charge producing a



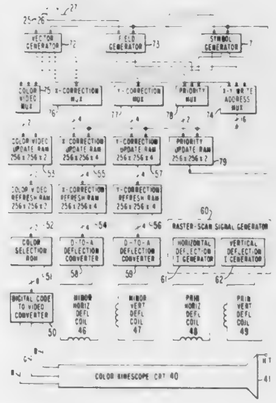
high intensity electric field between said plate means with said source disconnected from said plate means, said field having an intensity selected to induce polarization of particles and gaseous products in said contaminating products between said plate means and within said field, said induced polarization of said products in said free spacing producing an opposing field and with said high intensity electric field producing a changing electric field and thereby producing a detectable electrical output at the detection means related to the environmental borne contaminating products.

4,387,370

APPARATUS FOR ANGULARLY SCANNING MEMORY ADDRESSES

Kazuo Katagi, Woodland Hills, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 18, 1980, Ser. No. 217,847
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—727 **17 Claims**



1. In combination:

a first memory having a plurality of memory planes each addressed in Cartesian coordinates by a row address and a column address specifying a particular respective storage location in that memory plane;

scanning apparatus for angularly scanning selected ones of the storage locations in each memory plane during the writing of said memory, said scanning apparatus comprising

means for generating clock signal indications,

first counter means for counting successive clock signal indications to supply a count output prescribing a first one of said row and column addresses,

means receptive of a value of scanning angularity for specifying a trigonometric function not exceeding unity value associated therewith,

means for successively adding said trigonometric function to its accumulated value modulo one on each clock signal pulse to provide a number with a fractional part corresponding to the revised accumulated value modulo one and possibly with a unity-valued integral part to be discarded from the revised accumulated value modulo one, and

second counter means for counting said discarded unity-valued integral parts when they occur to supply count output prescribing a second one of said row and column addresses;

means for enabling said apparatus for angularly scanning the storage locations in each of said memory planes during the times information bits are to be read into them for storage; and

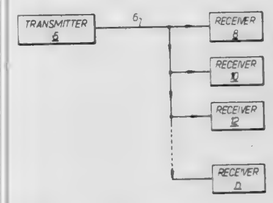
means for supplying to prescribed ones of the plurality of memories in said first memory, as data, at each row and column address supplied by said apparatus for angularly scanning, respective ones of the more significant bits of said fractional part of the number concurrently provided by said means for successively adding.

4,387,371

DATA TRANSMISSION SYSTEMS

Henry J. Beker, Salisbury, and John M. K. Friend, Hythe, both of England, assignors to Racal-Comsec Limited, Bracknell, England

Filed Sep. 22, 1980, Ser. No. 189,145
Claims priority, application United Kingdom, Sep. 28, 1979, 7933706
Int. Cl.³ H04Q *5/00*
U.S. Cl. 340—825.52 **14 Claims**



1. A data transmission system for transmitting data messages, each comprising data units occurring at a predetermined clock rate, from a data transmitter to a specific one of a plurality of receivers to each of which the transmitter is connected by a transmission link and each of which has its own separately controllable clock, comprising

preamble generating means in the transmitter for immediately preceding each data message with a predetermined preamble which is intended to be recognizable by one of the receivers to which the message is directed, but not by other receivers to which the message is not directed, each said preamble comprising a predetermined plurality of data units whose combination of values identifies the said one of the receivers,

recognition means in each of the receivers and responsive to the values of the data units of each preamble received via the transmission link for testing each such preamble for recognition,

character framing means in each of the receivers which is responsive to each recognized preamble to determine that the first part of the message immediately follows, and

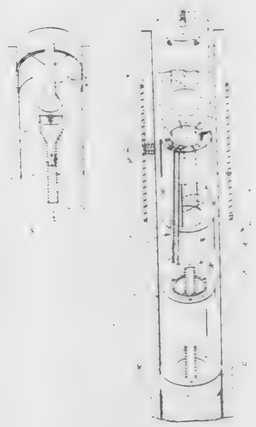
synchronization means in each receiver which is responsive to each preamble recognized by that receiver for adjusting the timing of the clock of that receiver in dependence on the timing of at least some of the said data units whose combination of values identifies the receiver, whereby to bring that clock into synchronism with the first part of the data message immediately following the preamble.

4,387,372

POINT GAP ASSEMBLY FOR A TOROIDAL COUPLED TELEMETRY SYSTEM

Harrison C. Smith, Richardson, and William J. McDonald, Houston, both of Tex., assignors to Tele-Drill, Inc., Richardson, Tex.

Filed Mar. 19, 1981, Ser. No. 245,686
Int. Cl.³ G01V *1/40*
U.S. Cl. 340—854 **4 Claims**



1. An insulated point gap assembly for a toroidal coupled telemetry system for telemetering downhole measurements-while-drilling information from a wellhole to the surface of the earth wherein a drill collar operable to be connected to a lower portion of a drill string carries a toroidal core within the wall of said drill collar having primary windings such that data to be telemetered to the surface may be input to the toroidal core through the primary windings, said insulated point gap assembly comprising:

a generally cylindrical aperture radially extending through the side wall of the drill collar and opening into the drill collar at a position adjacent to the downhole data transmit toroid core;

an electrical insulation member coextensive with said aperture and extending through the side wall of the drill collar and being intimately positioned within and carried by said aperture;

an electrical conductor coaxially extending through said electrical insulation member and through the side wall of the drill collar and being outwardly in direct electrical contact with fluid and earth formations surrounding the drill collar while concomitantly being electrically insulated from said drill collar for providing a conductive path through the side wall of the drill collar so as to permit measurements-while-drilling data to be transmitted from the toroid core through the drill collar and into the earth formation surrounding the drill collar; and

at least one secondary conductor wrapped around said toroidal core and one end of said secondary conductor being connected to said conductor coaxially extending through

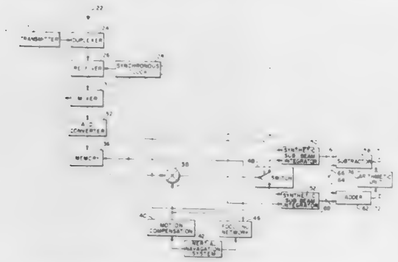
said electrical insulation member and the drill collar side wall while the other end of said at least one secondary conductor being electrically connected to said drill collar such that downhole measurements-while-drilling data may be transmitted from the drill collar and into the surrounding earth formation for electromagnetic transmission through the earth and to the surface of the earth.

4,387,373

SYNTHETIC MONOPULSE RADAR

R. Noel Longuemare, Jr., Ellicott City, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 21, 1977, Ser. No. 789,486
Int. Cl.³ G01S *13/44*
U.S. Cl. 343—5 CM **14 Claims**



1. A synthetic aperture radar for correlating at least two synthetic aperture sub-beams to form an image, said radar comprising:

first means for integrating the echo returns sampled over a first portion of the synthetic aperture to comprise a first synthetic aperture sub-beam;

second means for integrating the echo returns sampled over a second portion of the synthetic aperture to comprise a second synthetic aperture sub-beam; and

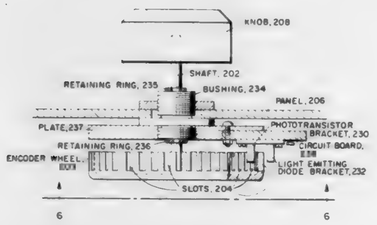
an arithmetic unit that is responsive to the first and second synthetic aperture sub-beams, said arithmetic unit linearly combining the first and second sub-beams to provide sum and difference synthetic monopulse signals.

4,387,374

RANGE MARK POSITION CONTROL EMPLOYING OPTICAL ENCODING

Alan I. Wiener, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 932,876, Aug. 11, 1978, abandoned, which is a continuation of Ser. No. 782,665, Mar. 30, 1977, abandoned. This application Aug. 4, 1980, Ser. No. 175,176
Int. Cl.³ H03K *13/02*; G01S *7/22*
U.S. Cl. 343—5 EM **15 Claims**



1. A device for producing signals representing the position on a display screen of a variable position range mark comprising in combination:

an encoder wheel, said encoder wheel having a cylindrically shaped peripheral portion and an end cap portion, said cylindrically shaped peripheral portion having a plurality of longitudinal slots therein;

a shaft for rotating said encoder wheel, said shaft being coupled to the outer portion of said end cap;

first and second light emitting means positioned adjacent the outer surface of said peripheral portion of said encoder wheel;

first and second means for producing first and second electrical signals in response to light, said first and second electrical signal producing means being positioned inside said peripheral portion of said encoder wheel axially opposite said first and second light producing means, said first and second electrical signal producing means being positioned in relation to said slots such that said first and second signals are produced out of phase with one another as said encoder wheel is rotated;

means for providing a visual display in response to radar return signals, said visual display having a plurality of radar range scale settings;

means for producing a range mark signal for displaying a range mark on said visual display, the displayed position of said range mark being determined by said first and second signals; and

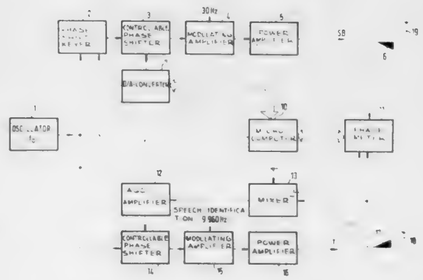
said producing means comprising means for maintaining the distance of movement of said range mark on said visual display for a predetermined amount of rotation of said encoder wheel constant for a plurality of said radar range scale settings.

4,387,375

TRANSMITTER FOR A NAVIGATION SYSTEM

Herbert Kleiber, Ludwigsburg; Horst Idler, and Jürgen Stammelbach, both of Stuttgart, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jul. 10, 1981, Ser. No. 282,341
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1980, 3029169
Int. Cl.³ G01S *1/30*
U.S. Cl. 343—105 R **6 Claims**



1. In a transmitter for a navigation system transmitting at least a first signal and a second signal, said first signal and said second signal each including carrier waves having a fixed phase relationship with respect to each other, a phase regulator comprising:

at least two couplers each extracting a portion of a different one of said first and second signals;

first means having one input coupled to said two couplers on a time division multiplex basis and the other input alternately coupled to a source of reference signal and a quadrature version of said reference signal; and

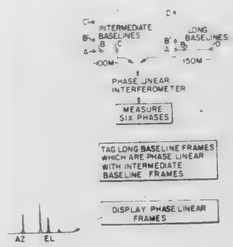
second means coupled to said first means to form a ratio of a first voltage obtained by mixing said first and second signals with said reference signal and a second voltage obtained by mixing said first and second signals with said quadrature version of said reference signal, said ratio determining a phase shift between said carrier waves of said first and second signals and a carrier wave of said reference signal, to calculate from said phase shift a phase difference between said carrier waves of said first and second signals, to compare said calculated phase difference to said fixed phase relationship and to produce a control quantity of the basis of said comparison to control the phase of said carrier wave of at least one of said first and second signals.

4,387,376

PHASE LINEAR INTERFEROMETER SYSTEM AND METHOD

William M. Sherrill; Douglas N. Travers, and Paul E. Martin, all of San Antonio, Tex., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 17, 1980, Ser. No. 207,487
Int. Cl.³ G01S *5/02*
U.S. Cl. 343—113 R **6 Claims**



1. A phase linear interferometer system comprising:

at least four antennas for receiving signals from a source, said antennas being linearly positioned at preselected points to form a baseline array such that:

the first and second antennas form a short baseline;

the first and third antennas form an intermediate baseline; and

the first and fourth antennas form a long baseline; said short and said intermediate baselines forming a first interferometer and said short and said long baselines forming a second interferometer;

processor means connected to each of said antennas for measuring and processing the phase of said received signals, said processor means including means for combining said phase signals within each of said interferometers and providing an output phase from each of said interferometers of all of said signals which are phase linear;

comparison means connected to said processor means for comparing the scaled phase of said first interferometer with the measured phase of said second interferometer to determine the relative coincidence of the output phases; and

output means connected to said comparison means for discarding output phase signals exceeding a given tolerance range of coincidence.

4,387,377

APPARATUS FOR CONVERTING THE POLARIZATION OF ELECTROMAGNETIC WAVES

Erich Kandler, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,566
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023562
Int. Cl.³ H01Q *19/00*
U.S. Cl. 343—756 **7 Claims**



1. Apparatus for converting electro-magnetic waves with a given polarization into waves with circular polarization by using a plurality of lattice grid structures comprising, a first layer upon which are formed a first plurality of meandering conductors which have longitudinal axes which are parallel and which are laterally spaced and are mounted so that they are in phase, a second layer upon which are formed a second plurality of meandering conductors which have longitudinal axes which are parallel and which are mounted so that adjacent ones are out of phase and said first and second layers mounted adjacent each other so that their longitudinal axes extend in the same direction and said first and second plurality of meandering conductors offset laterally from each other and said second plurality of meandering conductors out of phase with said first plurality of meandering conductors.

4,387,378

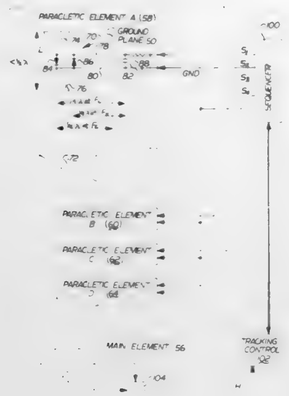
ANTENNA HAVING ELECTRICALLY POSITIONABLE PHASE CENTER

Albert S. Henderson, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Continuation-in-part of Ser. No. 920,133, Jun. 28, 1978, abandoned. This application Jun. 9, 1981, Ser. No. 271,951
Int. Cl.³ H01Q *3/26*
U.S. Cl. 343—854 **32 Claims**

1. A tracking antenna including electromagnetic energy directing means for directing electromagnetic energy to or from a vertex, and a tracking feed located at said vertex, said tracking feed comprising primary radiating/receiving means for receiving or transmitting electromagnetic energy and having a unidirectional radiating pattern, a plurality of paracletic means fixedly positioned about said unidirectional radiating pattern of said primary radiating/receiving means, each having at least two selectable impedance states for controllably shifting the position of the phase center of said tracking feed relative to said directing means, and means for controlling said impedance states of said plurality of paracletic means so as to shift the position of said phase center in a known manner,

whereby a signal received by said primary radiating/receiving means is modulated by said controlled phase center shifting



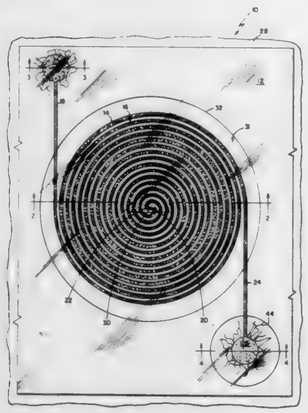
and may be processed to derive tracking information therefrom.

4,387,379

RADIO FREQUENCY ANTENNA

George S. Hardie, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 14, 1980, Ser. No. 196,800
Int. Cl.³ H01Q *1/36*
U.S. Cl. 343—895 **3 Claims**



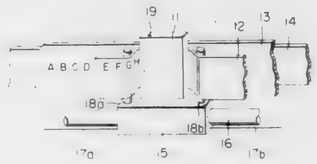
1. A radio frequency antenna comprising:
(a) a dielectric substrate;
(b) a pair of spiral configured conductors disposed on the substrate, such pair of conductors spiraling inwardly from an outer region of the antenna to an inner region of the antenna, a first one of such conductors having a contact region at an end thereof and disposed on the dielectric substrate at the outer region of the antenna;
(c) a diode detector connected directly between ends of the pair of conductors disposed at the inner region of the antenna;
(d) a ground plane conductor having a cavity formed therein, such cavity being disposed under the inner region of the antenna, such ground plane conductor being electrically connected to an end of a second one of the pair of conductors, such end being disposed at the outer region of the antenna; and
(e) a coaxial transmission line having an outer conductor mounted to the ground plane conductor and an inner conductor electrically connected to the contact region, and wherein the inner conductor and the contact region are aligned one under the other, and wherein the inner conductor and the contact region are spaced from the cavity.

4,387,380

PRINTER

Osamu Asakura, Tokyo, and Mineo Nozaki, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 239,903
Claims priority, application Japan, Mar. 6, 1980, 55-27404; Mar. 6, 1980, 55-27405; Jul. 4, 1980, 55-91466
Int. Cl.³ G01D *15/10*; B41J *3/04*
U.S. Cl. 346—76 PH **13 Claims**



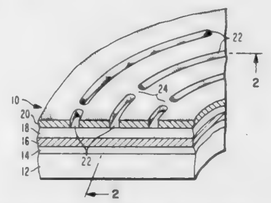
1. A thermal printer comprising:
a thermal head having a plurality of heatable printing elements which transfer a coating on a support material adjacent to a recording medium to said recording medium in response to the application of heat to said printing elements;
control means for moving the position of said thermal head relative to said recording medium beyond to a preset end point for recording by said thermal head on said recording medium; and
means for separating said support material from said recording medium in accordance with the movement of the position of said thermal head subsequent to the preset end point.

4,387,381

OPTICAL RECORDING MEDIUM AND INFORMATION RECORD WITH TRACKING AID

Alan E. Bell, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 12, 1981, Ser. No. 273,250
Int. Cl.³ G01G *19/02, 13/02*
U.S. Cl. 346—135.1 **12 Claims**



1. An optical recording medium comprising
a substrate;
an absorptive layer overlying the substrate which is absorptive of light at the wavelength of a recording light beam;
a buffer layer overlying the absorptive layer; and

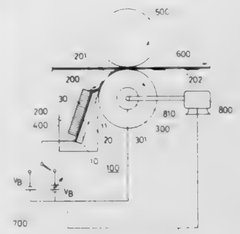
a masking layer overlying the buffer layer and having one or more slots extending therethrough.

4,387,382

INK RECORDING APPARATUS

Tadao Kohashi, Moriguchi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 30, 1981, Ser. No. 307,511
Claims priority, application Japan, Oct. 7, 1980, 55-140986; Nov. 26, 1980, 55-166944
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **39 Claims**



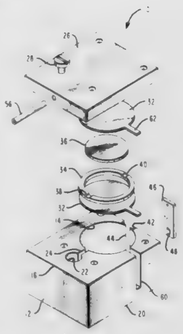
1. An ink recording apparatus comprising:
an ink transfer body for holding fluid ink thereon,
an ink feeding means for feeding fluid ink to said ink transfer body,
a driving means for driving said ink transfer body with respect to said ink feeding means,
a means to control amounts of said fluid ink brought onto parts of said ink transfer body by means of electroosmotic travellings of said fluid ink by means of electric signals, and
a means for transferring ink pattern held on said ink transfer body onto a recording face of a recording medium thereby to record ink pattern corresponding to said electric signal.

4,387,383

MULTIPLE NOZZLE INK JET PRINT HEAD

Steven P. Sayko, Dryden, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 12, 1981, Ser. No. 320,788
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **14 Claims**



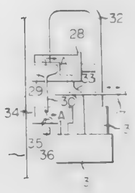
1. An ink jet print head comprising a
housing having a first cavity and a second cavity connected therewith, a
supply of ink in said first cavity, and a
plurality of ink droplet producing devices positioned in said second cavity, each of said devices comprising a conductive element, an annular element forming a chamber for containing ink in said second cavity, and a transducing element in contact with the ink in said chamber and operable to initiate pressure waves in the ink and thereby cause ejection of ink droplets from said print head.

4,387,384

RECORDING DEVICE

Takaji Sue, Hadano, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1980, Ser. No. 205,952
Claims priority, application Japan, Nov. 27, 1979, 54-153445
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—140 R **3 Claims**



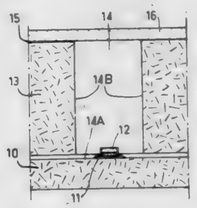
1. A recording device for utilizing liquid ink in the impact printing of characters, comprising:
a reservoir adapted to receive a liquid ink;
means for maintaining a desired level of ink in said reservoir;
an open generally U-shaped vertically oriented ring depending from the bottom of said reservoir, with the opening of said ring being in communication with the ink within said reservoir, said ring being dimensioned to form a thin film of liquid ink therein and to retain said film by surface tension effects, in such a manner that ink constantly flows from said reservoir through said ring via said film and drips from the bottom of said ring;
means for disposing a record medium adjacent said ring and in juxtaposition with said thin ink film; and
a printing stylus adjacent said ring and adapted to be thrust through said thin ink film and against said record medium, to transport a part of said thin ink film to said record medium in accordance with a desired character to be printed.

4,387,385

DISPLAY DEVICE COMPRISING LIGHT-EMISSIVE DIODES

Jacques C. Thillays, Herouville, and Robert Thevenon, Sainte Honorine du Faye, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,792
Claims priority, application France, Nov. 28, 1979, 79 29310
Int. Cl.³ H01L *33/00*
U.S. Cl. 357—17 **7 Claims**



1. A light-emitting display device comprising a base formed

of a thermoplastic resin, electric connection elements formed of layers of an electrically conductive thermosetting resins laminated to a surface of said base, doped electroluminescent semiconductor crystals each having a surface provided with current output and current input regions and each bearing on at least two of said electric connection elements at their current input and current output regions, an aperture providing block formed of the thermoplastic resin employed in forming said base bearing on said base in contact with said electric conductive elements, with each of said apertures positioned above one of said crystals and forming light conductors for each of said crystals and a light filter covering the surface of said block remote from said base.

4,387,386

MICROWAVE CONTROLLED FIELD EFFECT SWITCHING DEVICE

Robert V. Garver, Boyds, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 9, 1980, Ser. No. 157,758
Int. Cl.³ H01L *29/80, 29/78*
U.S. Cl. 357—22 **8 Claims**



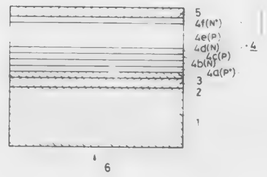
1. A microwave switching device comprising:
a first layer of a substantially intrinsic semiconductor material approximately 1 um thick;
a second layer of a doped semiconductor material formed on a surface of said first layer;
a control terminal which is formed on a surface of said layer;
a first controlled terminal and a second controlled terminal which are formed on said surface of said second layer and are disposed equidistance from the control terminal on respective opposite sides of the control terminal, said first controlled terminal and said second controlled terminal having respective massive surface areas in the range of $60-500\times10^{<9}$ m^2 to minimize parasitic inductance in said device, each controlled terminal being substantially grounded and having a sloping face facing said control terminal to provide progressively increasing separation between said control terminal and said controlled terminal with increasing distance from said second layer; and
a thin layer of insulator material covering said sloping faces and said surface of said second layer between said control terminal and said controlled terminals;
wherein said second layer includes an active region approximately 3 um long substantially centered under said control terminal and extending to opposite portions of said doped semiconductor underlying said first and second controlled terminals, and said control terminal is connected to a source of control voltage providing a potential for depleting said active region of majority carriers.

4,387,387

PN OR PIN JUNCTION TYPE SEMICONDUCTOR PHOTOELECTRIC CONVERSION DEVICE

Shunpei Yamazaki, 21-21 Kitakarasuyama 7-chome, Setagaya-ku, Tokyo, Japan

Filed Aug. 12, 1980, Ser. No. 177,409
Claims priority, application Japan, Aug. 13, 1979, 54/102905; Aug. 13, 1979, 54/102906
Int. Cl.³ H01L *27/14, 29/161, 29/167*
U.S. Cl. 357—30 **3 Claims**



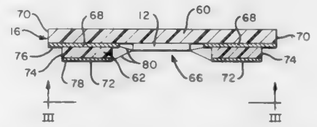
1. A PN or PIN junction type semiconductor photoelectric conversion device which comprises a semiconductor layer having formed therein at least one PN or PIN junction, a light-transparent, conductive layer disposed on the semiconductor layer, and a conductive layer disposed on the semiconductor layer on the opposite side from the light-transparent, conductive layer, characterized in that a light-transparent, current-permeable nitride layer is interposed between the semiconductor layer and the light-transparent, conductive layer, and that nitrogen introduced into at least the region of the semiconductor layer on the side of the light-transparent, current-permeable nitride layer forms a wide-to-narrow energy band gap structure in which the region of the semiconductor layer having introduced thereinto the nitrogen has a larger energy band gap than does a region of the semiconductor layer adjacent thereto.

4,387,388

PACKAGE AND CONNECTOR RECEPTACLE

Ramiz H. Zakhariya, San Diego, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Jul. 14, 1980, Ser. No. 167,855
Int. Cl.³ H01L *23/50*
U.S. Cl. 357—74 **9 Claims**



1. A leadless integrated circuit package for supporting an integrated circuit chip, comprising:
first and second insulating layers, said first and second layers in overlying relation and each having a contact coupling outer edge, with the contact coupling outer edge of one of said first and second layers projecting beyond the contact coupling outer edge of the other of said first and second layers; and
a plurality of conductors associated with each of said first and second layers, each of said conductors extending from said chip at the center of its associated layer to said contact coupling outer edge of its associated layer.

4,387,389

SEMICONDUCTOR FILTER USING CHARGE TRANSFER DEVICE

Hiroshi Tanigawa, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1981, Ser. No. 276,740
Claims priority, application Japan, Jun. 24, 1980, 55-85373
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—37 **14 Claims**



1. A semiconductor filter comprising:
first, second and third delay lines formed by charge transfer elements;
means for applying a signal to be processed to the input portions of said first, second and third delay lines;
said third delay line having means for inverting the phase relation of the output of said third delay line with respect to the output of each of said first and second delay lines;
division means for dividing a signal provided at the output of said first delay line into a first divided signal, a second divided signal and a third divided signal in a predetermined division ratio;
first mixing means for mixing said second divided signal with an output signal from said second delay line;
second mixing means for mixing said third divided signal with an output signal from said third delay line;
first and second output means for providing as output signals the signals mixed by said first and second mixing means, respectively; and
third output means for providing said first divided signal as an output.

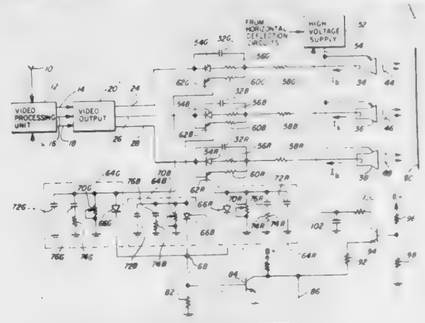
9. A color television contour compensation circuit comprising:
first, second and third semiconductor comb filters, each comprising first, second and third delay lines, means for delaying the output of said first delay line by a predetermined time period with respect to the output of each of said second and third delay lines, means for inverting the phase of the output of said third delay line with respect to those of said first and second delay lines; division means for dividing the output from said first delay line into first, second and third parts in a ratio of 2:1:1, first addition means for adding said second part of the output from said first delay line to the output of said second delay line, a first output terminal for taking out the output of said first addition means; second addition means for adding said third part of the output from said first delay line to the output of said third delay line, a second output terminal for taking out the output of said second addition means, and a third output terminal for taking out said first part of the output from said first delay line;
red signal-, blue signal- and green signal-input terminals for receiving red, blue and green signals;
means for coupling said green signal input terminal to the input terminal of said first semiconductor comb filter;
means for coupling a first output terminal of said first semiconductor comb filter to the input terminal of said second semiconductor comb filter;
differential circuit means coupled to an output terminal of said second semiconductor comb filter;
means for coupling a second output terminal of said first semiconductor comb filter to the input terminal of said third semiconductor comb filter;
lowpass filter means coupled to the output terminal of said third semiconductor comb filter;
first addition means for adding together the red signal applied to said red signal input terminal, the output of said differential circuit and the output of said lowpass filter;
second addition means for adding together the blue signal applied to said blue signal input terminal, the output of said differential circuit and the output of said lowpass filter;
third addition means for adding together the output obtained at the third output terminal of said first semiconductor comb filter, the output of said differential circuit and the output of said lowpass filter; and
a processing circuit for obtaining color television signals from the outputs of each of said first, second and third addition means.

4,387,390

AUTOMATIC BEAM CURRENT LIMITER

Daniel L. Reneau, Elmhurst, and Christopher M. Engel, Arlington Heights, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Nov. 10, 1980, Ser. No. 205,820
Int. Cl.³ H04N *9/20*
U.S. Cl. 358—74 **10 Claims**



1. In a television receiver of the type having an adjustable video processing unit for developing green, red and blue video signals and image display means for developing an individual electron beam current in response to each respective one of said video signals, the improvement comprising:
means for sensing the level of each of said individual beam currents;
means responsive to said sensing means for developing a control signal reflecting the level of the largest of said sensed individual beam currents; and
means responsive to said control signal for adjusting said video processing unit for limiting the level of the largest of said sensed individual beam currents to a first predetermined value.

4,387,391

SATELLITE INSPECTION SYSTEM USING HOVERING-TYPE INTERCEPTORS

Klaus J. Hecker, Oberursel, Fed. Rep. of Germany, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1966, Ser. No. 574,814
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—109 **2 Claims**

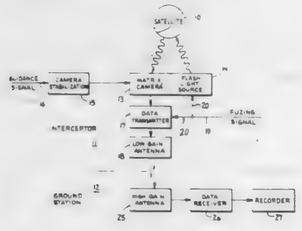
1. A satellite inspection system for use in hovering-type satellite interceptors comprising:
an electro-optical camera in a satellite interceptor having image tube means for receiving the reflected rays of an object in space and for producing electrical outputs representative of the object from the beam scanning readout of the image tube means, said electro-optical camera being a

matrix camera having the focal plane thereof divided into quarter sections, each quarter section having an auxiliary lens to focus the image of an object on said camera image tube thereby providing four matrices, each with a resolution equivalent to the resolution of the image tube scanning system;

means coupled to said camera for stabilizing same and for receiving guidance signals on an input thereto;

a high intensity flash light source coupled to said camera to expose intercepted objects to light for reflection of the object on said camera image tube means;

a data transmitter coupled to said electrical outputs of said camera image tube means for transmitting said electrical outputs as electromagnetic signals;



a low gain antenna coupled to said transmitter for transmitting said electromagnetic signals groundward;

a fuzing proximity switching signal input coupled to said flash light source and to said data transmitter to cause flash light and transmission activity when an object is intercepted at a predetermined range;

a ground receiver station remote from said interceptor having a high gain antenna directed to receive the transmission from said satellite interceptor; and

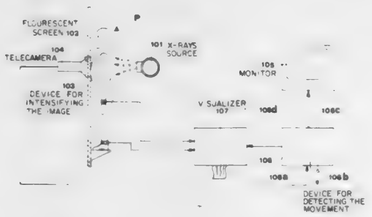
an electro-optical receiver in said ground receiver station for transforming said electromagnetic signals into an optical image of said intercepted object whereby rapid televised information of an intercepted object in space is relayed to ground for observation.

4,387,392

SYSTEM FOR TELEVISED RADIOSCOPY

Paolo Grattoni; Giorgio Quaglia; Cesare Fava, and Giovanni Juliani, all of Turin, Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

Filed Apr. 8, 1981, Ser. No. 253,155
Claims priority, application Italy, Jan. 23, 1981, 19293 A/81
Int. Cl.³ H04M *5/32*
U.S. Cl. 358—111 **28 Claims**



1. In an assembly for televised radioscopy which comprises a source of X-rays **(101)** means for generating a visual signal corresponding to the contour of image of the body organ in motion being examined **(102, 103, 104)** and a monitor provided with a screen **(105)**, said visual signal being provided to said screen for reproducing the image of said body organ and a detecting device for the displacements of said body organ;

the improvement which comprises a detecting device **(106)** which has an input **(106*a*)** to which said visual signal (A) is supplied, at least one output **(106*c*)** which is intended to be connected to the input of said monitor **105**, a first processing electronic transducer device **(108,109,125,126,127,128,130)**, capable of generating and overlapping a registering signal i which is overlapped with said visual signal (A), said registering signal i being capable of causing at least one tracing PR on the televised picture Q of the monitor **105**, said tracing corresponding to at least one point of said contour of the image of the body organ in motion, said tracing PR having a luminosity different from the luminosity of the surrounding portion;

a second processing electronic device comprising detecting means **(110, 111, 114, 131, 134, 135, 136)** capable of supplying at the output an electric signal indicative of the amount of the horizontal displacement of said tracing PR starting from a reference point T which is fixed with respect to the televised picture Q of the monitor **105** during the movement of the image of the same body organ;

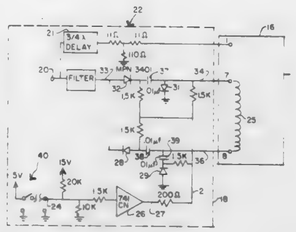
registering means **(107)** connected to the output of the detecting means **(110, 111, 114, 131, 134, 135, 136)** and capable of supplying a representation of the displacement of said point of the contour of the body organ being examined.

4,387,393

SIGNAL UNSCRAMBLER

Keith B. Nicholson, Ocala, Fla., assignor to Microdyne Corporation, Ocala, Fla.

Filed Jul. 11, 1980, Ser. No. 168,668
Int. Cl.³ H04N *7/16;* **H04K** *1/08*
U.S. Cl. 358—124 **3 Claims**



1. A signal unscrambler for inverting a previously inverted signal comprising:

a first and a second input terminal having a signal applied therebetween,

a first and a second lead,

means for developing on said first and second leads the signal appearing on said first and second input terminals, said means including a first unidirectionally conducting device coupled between said first input terminal and said first lead,

a second unidirectionally conducting device coupled between said first input terminal and said second lead,

a third unidirectionally conducting device connected between said first lead and said second input terminal,

a fourth unidirectionally conducting device coupled between said second lead and said second input terminal,

means for concurrently rendering said first and fourth devices conductive and for alternatively rendering said second and third devices conductive, and

a transformer winding connected between said first and second leads.

4,387,394

SENSING FOCUS OF A COLOR KINESCOPE

Jerry P. Powell, Morristown, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,831
Int. Cl.³ H04N *9/62, 7/02*
U.S. Cl. 358—139 **15 Claims**



1. Apparatus for sensing electron beam focus for use with a kinescope having an electron gun assembly for producing an electron beam, said beam impinging on a display screen to excite a plurality of phosphor elements, said sensing apparatus comprising:

means for deflecting said beam across said screen to provide the excitation of said phosphor elements in a predetermined order;

means for detecting an output from said phosphor elements representative of the rate at which said beam excites said phosphor elements; and

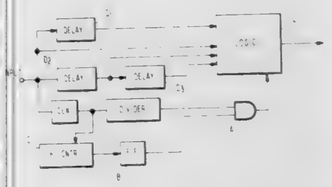
means responsive to said detected output for deriving a signal component the variation of which is indicative of electron beam focus condition.

4,387,395

FACSIMILE TO VIDEO CONVERTER

Richard Schaphorst, Jenkintown, Pa., assignor to Satellite Business Systems, McLean, Va.

Filed Apr. 8, 1981, Ser. No. 252,104
Int. Cl.³ H04N *5/02*
U.S. Cl. 358—140 **5 Claims**



1. A display device for displaying an image in response to a sequence of high resolution binary input signals representing scanning of an image in y columns of x rows each wherein xy=A although said display device comprises a transducer incapable of displaying a visual image consisting of said binary input signals, comprising:

first means responsive to said binary input signals for selecting plural sub-sets of said binary input signals, each sub-set including at least three binary input signals, selected so that two different pairings of two of said at least three signals represent orthogonal scanning,

logic means responsive to binary signals of each subset for producing a multi-bit translated signal for each sub-set with a characteristic numerically related to an arithmetic sum of binary signals of said sub-set, and

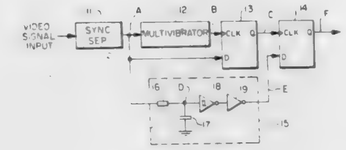
means coupling said translated signal to said transducer to produce a visual image comprised of an ordered array of picture elements each corresponding to a different one of said translated signals.

4,387,396

FIELD RECOGNITION CIRCUIT

Masanobu Tanaka, Hirakata, and Teruo Kitani, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 11, 1981, Ser. No. 292,028
Claims priority, application Japan, Aug. 14, 1980, 55-112584
Int. Cl.³ H04N *5/04, 5/08, 9/58*
U.S. Cl. 358—148 **6 Claims**



1. An apparatus for deriving field identified pulses from an input video signal, said apparatus comprising:

a sync separator means for separating composite sync signals from said input video signal;

a pulse deriving means for deriving a pulse at a rate corresponding to that of continuous horizontal pulses from said composite sync signal;

a first phase detector means for providing a first vertical sync pulse by sampling said composite sync signal with said derived pulse;

a vertical sync separator means for deriving a second vertical sync pulse which is delayed by a constant amount from said composite sync signal; and

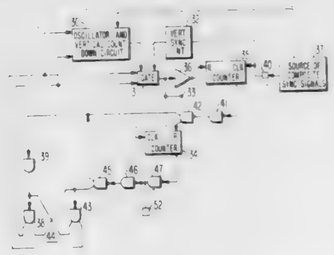
a second phase detector means for providing High and Low level pulses respectively corresponding to one field and sequential other field of a composite video signal by detecting a phase difference between said first vertical sync pulse and said second vertical sync pulse.

4,387,397

INTEGRATED CIRCUIT INTERFACE IN A VERTICAL SYNC CIRCUIT

Wolfgang F. W. Dietz, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 17, 1981, Ser. No. 246,891
Int. Cl.³ H04N *5/10*
U.S. Cl. 358—154 **3 Claims**



1. In an integrated circuit, for use in a television receiver, incorporating oscillator means; countdown means coupled to said oscillator means for providing a first vertical deflection rate signal; a source of second vertical deflection rate signals; gating means selectively responsive to said first and second vertical deflection rate signals; a source of first and second control signals respectively providing an indication of first and second operating conditions of said receiver; and switching means coupled to said gating means and responsive to said first

and second control signals for controlling said gating means for selectively deriving an output of said gating means from said first vertical deflection rate signals in response to said first control signal and from said second vertical deflection rate signals in response to said second control signal; an interface means comprising:

means coupled to said source of first and second control signals and including a dual function integrated circuit interface terminal for providing as a first function an output indication at said interface terminal of one of said first and second receiver operating conditions; and

means coupled to said switching means and to said interface terminal for providing as a second function an input signal via said interface terminal to said switching means for selectively controlling the operation of said gating means in order to simulate said first and second receiver operating conditions.

4,387,398

TELEVISION VIDEO SIGNAL DETECTOR

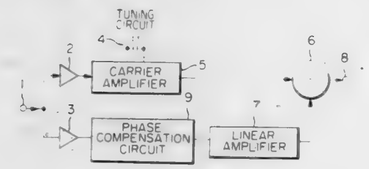
Akira Usui, Takatsuki, and Toshimitsu Fujimori, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Sep. 23, 1981, Ser. No. 304,949

Claims priority, application Japan, Sep. 30, 1980, 55-137204

Int. Cl.³ H04B *1/30;* **H04N** *5/44*

U.S. Cl. 358—188 **5 Claims**



1. A video signal detector comprising:

(a) an input terminal for receiving a video IF signal;

(b) a carrier amplifier comprising

a plurality of transistors for amplifying said video IF signal, a tuning circuit coupled to said amplifier and comprising a plurality of transistors, said tuning circuit being tuned to a video intermediate frequency, and

a limiter coupled to said tuning circuit so as to limit the amplitude of the amplified video IF signal, thereby producing a video intermediate frequency carrier signal;

(c) coupling means for interconnecting said input terminal for receiving the video IF signal and said carrier amplifier;

(d) a linear amplifier which has a plurality of transistor amplifiers equal in number to those of said carrier amplifier and which amplifies the video IF signal;

(e) a phase compensation circuit which imparts the phase variations or shifts to the video IF signal to the same extent as the undesired phase variations or shifts of the carrier signal derived from said carrier amplifier;

(f) series-connecting means which connects said linear amplifier in series with said phase compensation circuit to form a series-connected circuit,

(g) second coupling means for connecting the input side of the series-connected linear amplifier and phase compensation circuit to said input terminal for receiving the video IF signal;

(h) a synchronous detector for synchronously demodulating the video IF signal by means of the carrier signal obtained from said carrier amplifier, said video IF signal being in phase with the carrier signal derived from said series-connected circuit, thereby converting the video IF signal into a television video signal;

(i) third coupling means which couples the input terminal of said synchronous detector to the output terminal of said carrier amplifier and also couples the video input signal terminal to an output terminal of said series-connected circuit;

(j) an output terminal connected to said synchronous detector, at which terminal a detected or demodulated television video signal is provided; and

(k) fourth coupling means for coupling the output terminal connected to said synchronous detector to a television video signal output terminal.

4,387,399

POWER SUPPLY SWITCHING-REGULATOR PARTICULARLY FOR TELEVISION RECEIVERS

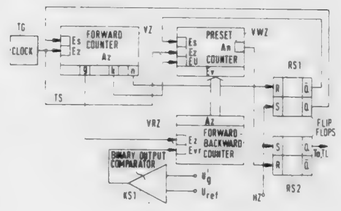
Bernd Novotny, Gundelfingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jun. 30, 1981, Ser. No. 278,940

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3025719

Int. Cl.³ H04N *3/18;* **H01J** *29/70*

U.S. Cl. 358—190 **5 Claims**



1. A device implementable in and as part of integrated circuitry for regulating a d.c. supply voltage, particularly in a television receiver, said device including a power semiconductor device, the conduction duty cycle of which is controlled by a pulse-width modulated signal having a duration which is a function of the deviation of said regulated supply voltage from a reference voltage comprising:

comparison means responsive to said regulated voltage and a reference for generating a binary output signal having a first value when said reference exceeds said regulated voltage and having a second value when said regulated voltage exceeds said reference;

a source of clock pulses and forward and preset counter responsive thereto;

a forward/backward counter responsive to an output of said forward counter and said comparison means to count forward when said comparison means output has said first value and backward when said comparison means output has said second value;

a preset counter responsive to said forward/backward counter, said clock pulses, a predetermined count in said forward counter and an enabling pulse to control the count therein, to a value corresponding to the duration of said pulse-width modulated signal; and

flip-flop means responsive to a second predetermined count in said forward counter, a zero-crossover signal from said preset counter and the horizontal sync pulses of an associated television receiver, to generate said pulse-width modulated signal as an output to control said power semiconductor conduction duty cycle, and to generate and apply reset pulses to said forward counter and said preset counter.

4,387,400

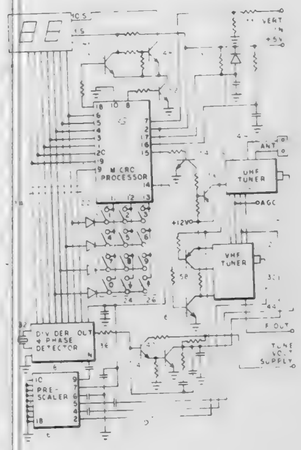
TUNING SYSTEM FOR A TELEVISION RECEIVER

Arthur N. Borg, Lake Forest, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed May 11, 1981, Ser. No. 262,169

Int. Cl.³ H04N *5/44, 5/50*

U.S. Cl. 358—191.1 **7 Claims**



1. In a television receiver having a local oscillator as part of a tuner, and having a frequency synthesizer for tuning the local oscillator, an improved tuning system, comprising:

a keyboard including a plurality of viewer actuable channel selection keys zero through nine for entering a selected channel number to which the frequency synthesizer is to tune the local oscillator, actuation of a selected one of said channel selection keys defining a fine tuning mode of operation wherein the selected channel selection key is associated with a channel number N, where N does not correspond to the first digit of a two digit channel number;

a channel-up key for commanding the frequency synthesizer to change the frequency of the local oscillator in a first direction;

a channel-down key for commanding the frequency synthesizer to change the frequency of the local oscillator in a second, opposite direction; and

a logic circuit associated with the frequency synthesizer and coupled to the keyboard, the channel-up key, and the channel-down key, said logic circuit being responsive to viewer actuation of two keys of the keyboard in sequence for placing the synthesizer in a direct access mode of operation for causing the frequency synthesizer to adjust the local oscillator frequency for changing channels, and being responsive to actuation of the selected channel selection key for placing the frequency synthesizer in a fine tuning mode of operation wherein actuation of the channel-up key causes the frequency synthesizer to fine tune the local oscillator in the first direction, actuation of the channel-down key causes the frequency synthesizer to tune the local oscillator in the second, opposite direction and non-actuation of either the channel-up or channel-down key within a predetermined time interval causes the frequency synthesizer to be removed from the fine tuning mode of operation.

4,387,401

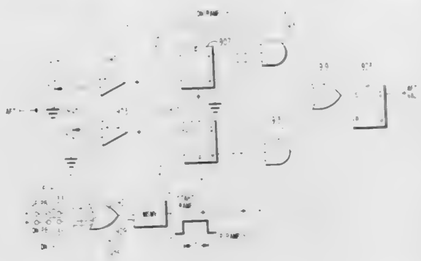
CARRIER DETECTOR APPARATUS USEFUL IN A MULTIBAND SWEEP TYPE TUNING SYSTEM

John G. N. Henderson, Princeton, and Robert J. Maturo, Bricktown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 170,997, Jul. 21, 1980, abandoned, which is a division of Ser. No. 43,765, May 30, 1979, Pat. No. 4,254,506. This application Sep. 25, 1981, Ser. No. 305,688

Int. Cl.³ H04N *5/44;* **H03J** *7/02*

U.S. Cl. 358—193.1 **15 Claims**



1. In a tuning system for a receiver, apparatus comprising:

tuner means for tuning a plurality of RF carriers corresponding to respective channels in a predetermined frequency range to generate an IF signal having at least one carrier modulated in accordance with an information bearing signal with a nominal frequency value;

switch means for generating a "switch" signal when operated by a user;

sweep means responsive to said "switch" signal for causing said tuner means to tune said RF carriers to thereby sweep said predetermined frequency range in a predetermined direction at a predetermined sweep rate, the time required to sweep between the closest pair of adjacent channels having a predetermined minimum duration;

discriminator means responsive to said IF signal for generating a discriminator signal as said predetermined frequency range is swept having a first amplitude portion when the frequency of said IF signal is less than said nominal frequency value and a second amplitude portion when the frequency of said IF signal is greater than said nominal frequency value, said discriminator means generating said first and second amplitude portions in a predetermined sequence when said predetermined range is swept in said predetermined direction and the tuned RF carrier correctly corresponds to one of said channels, the time required to sweep through the first one of said first and second amplitude portions encountered at said predetermined sweep having a predetermined maximum duration;

channel presence detector for detecting when the tuned RF carrier for the selected carrier is correct including sequence detector means responsive to said discriminator signal for detecting the sequence in which said first and second amplitude portions are generated and for generating a "presence indicating" signal when said first and second amplitude portions are generated in said predetermined sequence and said sweep is in said predetermined direction; and

pulse forming means responsive to the operation of said switch means for generating a reset pulse having a predetermined duration independent of the length of time said switch is operated by the user which is longer than said maximum duration of the time required to sweep through said first one of said first and second amplitude portions encountered and shorter than said minimum duration of

the time required to sweep between the closest pair of adjacent channels;

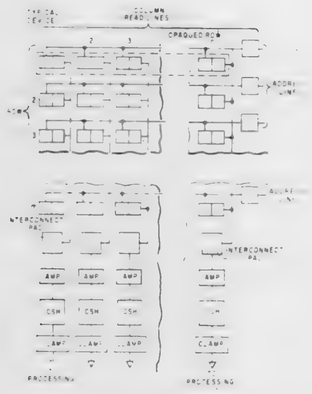
said sequence detector means including reset means responsive to said reset pulse for resetting said sequence detector and thereby ending said "presence indicating" signal and maintaining said sequence detector reset during the time duration of said reset pulse.

4,387,402

CHARGE INJECTION IMAGING DEVICE FOR FAITHFUL (DYNAMIC) SCENE REPRESENTATION

Adam J. Lewis, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 28, 1980, Ser. No. 201,643
Int. Cl.³ H04N *3/14*
U.S. Cl. 358—213 **4 Claims**



1. A device for conversion of radiated energy of a predetermined frequency to electrical signals for representation of a real-time image of a scene as portrayed by its radiated energy, comprising:

an array of charge injection elements having M address rows and N data output columns, having one row of elements optically opaqued;

means for detecting the charge on each individual element of a column from the column output; and

means for referencing column output to the output voltage level detected on said opaqued row element of said column.

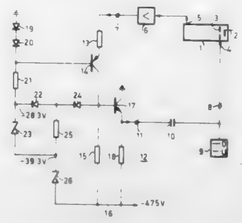
4,387,403

TELEVISION CAMERA COMPRISING A CONTROL CIRCUIT FOR CONTROLLING THE INTENSITY OF THE ELECTRON BEAM CURRENT IN AT LEAST ONE PICK-UP TUBE

Marinus C. W. van Buul, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,064
Claims priority, application Netherlands, Oct. 29, 1980, 8005920
Int. Cl.³ H04N *5/197*
U.S. Cl. 358—219 **2 Claims**

1. A television camera comprising a control circuit for controlling the electron beam current intensity in at least one pick-up tube, the control circuit having an input which is connected to a pick-up tube output for producing a picture signal, and an output which is connected to a pick-up tube input for controlling the intensity of the electron beam current, the control circuit including, between the input and the output, a picture signal amplifier comprising a signal amplifier transistor which is biased by means of its base, an emitter-follower transistor and a signal limiter provided between the junction of the collector of the amplifier transistor and the base of the emitter-follower transistor and a voltage terminal, the signal limiter including a first diode and a first Zener diode which are interconnected, characterized in that the junction of the first diode and the first Zener diode is connected to the base of the signal amplifier transistor via a first resistor and that the signal



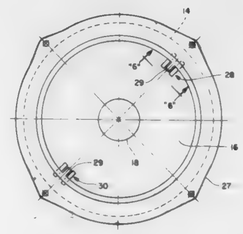
limiter includes a second resistor which is provided between the other terminals of the first diode and the first Zener diode, the junction of said first diode and the second resistor being connected to the collector of the signal amplifier transistor via at least a second diode and the junction of said first Zener diode and the second resistor being connected to a first voltage terminal via a second Zener diode.

4,387,404

PROJECTOR TELEVISION TUBE ALIGNMENT MEANS AND METHOD

Robert B. Feinberg, Niles, and Roy Maskell, Oak Park, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Aug. 21, 1981, Ser. No. 295,181
Int. Cl.³ H04N *5/645*
U.S. Cl. 358—237 **3 Claims**



1. For use in a projection television system, an article of manufacture comprising a cathode ray tube having a funnel with a tube reference line and a face panel with a window for receiving a rectangular imaging screen, said system including receptacle means having conjugate means for accepting said tube in proper rotational alignment, said tube being characterized by having two pairs of substantially radially oriented embossments in said funnel centered on, and azimuthally spaced one hundred and eighty degrees apart, on a diametrical line about forty-five degrees in counter-clockwise rotation with respect to the minor axis of said rectangular imaging screen as viewed from the funnel end of said tube, said embossments of each pair being located about 1.150 inch from said tube reference line, and each of said embossments being about 0.390 inch in length and about 0.120 inch in heighth and width, and spaced from its counterpart about 0.120 inch and with the ends beveled at an angle of about forty-five degrees into said funnel, said pairs of embossments providing for engagement with said conjugate means in said tube receptacle means for proper rotational alignment of said tube in said system.

4,387,405

AUTOMATIC ...ESCOPE BIAS CONTROL SYSTEM WITH DIGITAL SIGNAL PROCESSING

Werner Hinn, Zollikerberg, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Aug. 21, 1981, Ser. No. 295,118
Claims priority, application United Kingdom, Jan. 26, 1971, 8102271
Int. Cl.³ H04N *5/68, 9/20, 9/535*
U.S. Cl. 358—243 **23 Claims**



1. In a system for processing an image representative video signal having periodically recurring image display intervals and image blanking intervals during which image information to be displayed is absent, said system including an image display kinescope having an electron gun with cathode and grid intensity control electrodes; and means for coupling video signals to said kinescope electron gun; apparatus for automatically controlling the level of cathode blanking current conducted by said kinescope, comprising:

means for providing a reference bias voltage to said cathode electrode during a monitoring interval within said blanking interval when said blanking current conduction of said kinescope is to be monitored;

means operative during said monitoring inferval for deriving a signal proportional to the level of cathode current conducted during said blanking interval; and

signal processing means responsive to said derived signal, comprising

digital signal processing means for sensing the condition of the level of a sequence of N derived signals, where N is an integer greater than 1, to develop a first signal when a sensed sequence of derived signals corresponds to a condition of desired cathode blanking current level, and a second signal when a sensed sequence of derived signals corresponds to a deviation of said cathode blanking current level from said desired level; and

bias control voltage generator means responsive to said second signal for supplying a bias control voltage to said video signal coupling means with a sense for modifying the bias of said kinescope cathode in a direction to adjust said cathode blanking current level toward said desired level.

4,387,406

ENCODING AND DECODING DIGITAL DATA IN A VIDEO FORMAT

Granville E. Ott, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 31, 1980, Ser. No. 202,541
Int. Cl.³ H04N *9/00*
U.S. Cl. 358—310 **27 Claims**



1. A method for encoding digital data into a video format having a luminance signal and a chrominance signal, the method comprising the steps of:

generating a first chrominance value, the first chrominance value being a selected one of a predetermined set of chrominance values which corresponds to digital data to be encoded;

generating a second chrominance value, the second chrominance value being another one of the predetermined set of chrominance values different from the first chrominance value;

generating a chrominance signal having the first chrominance value for a first period of time and the second chrominance value for a second period of time immediately following the first period; and

generating a luminance signal having a first predetermined luminance value for the first period and a second predetermined luminance value for the second period.

4,387,407

VIDEO DISC PLAYER HAVING AUXILIARY VERTICAL SYNCHRONIZING GENERATOR

Charles M. Wine, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 27, 1981, Ser. No. 297,056
Int. Cl.³ H04N *5/76, 5/94*
U.S. Cl. 358—342 **10 Claims**



1. A video disc player, comprising:

turntable means for rotating a video disc record at a predetermined substantially constant angular velocity;

means for recovering a signal from said record to provide a video output signal having a vertical timing component;

control means for inhibiting said video output signal during a first operating mode of said player and for enabling said video output signal during a second operating mode of said player;

first means for providing a turntable speed indicating signal having a frequency related to said constant angular velocity; and

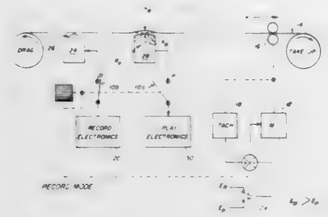
second means responsive to said speed indicating signal and to said vertical timing component of said video output signal for continuously producing a vertical reference signal equal in frequency and substantially equal in phase to said vertical timing component.

4,387,408

MULTI-SPEED MAGNETIC RECORDER WITH WEAR RESISTANCE PLAYBACK HEAD

Lewis B. Browder, Altadena, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 3, 1980, Ser. No. 193,773
Int. Cl.³ G11B *5/60, 5/22*
U.S. Cl. 360—103 **5 Claims**



1. Apparatus for recording signals on and playing back signals from a magnetic tape, said apparatus

(a) being adapted to transport tape, during signal recording, at a first relatively high tape speed and, during signal playback, at a second relatively low tape speed, and

(b) having separate stationary record and playback heads, said playback head being provided with a tape contacting surface that has a constant radius of curvature such that relative head-to-tape flight occurs between said playback head and said tape which is greater during signal recording than during signal playback,

said radius of curvature being such that said head-to-tape flight is, during signal playback, about one-twentieth the shortest recorded wavelength to be played back and, during signal recording, said head-to-tape flight is about ten times that amount.

4,387,409

MAGNETIC HEAD ARM MOUNTING APPARATUS

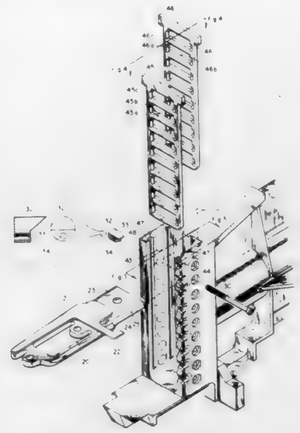
Pavel Otavsky, Woodstock, Vt., and Sigmund Hinlein, Sudbury, Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Mar. 30, 1981, Ser. No. 248,764
Int. Cl.³ G11B *5/48, 21/16*
U.S. Cl. 360—104 **12 Claims**

1. Magnetic disc memory apparatus for mounting a magnetic head arm to a head carriage having a magnetic head arm mounting channel having first and second substantially parallel walls, said apparatus comprising:

means for aligning and supporting said magnetic head arm within said mounting channel,

a clamping slug slidably mounted in said first wall, the slug having a surface that contacts said magnetic head arm formed at an angle such that said slug urges said magnetic head arm both horizontally against said second wall and vertically against said means for aligning and supporting, whereby said arm is properly aligned and mounted between said walls, and



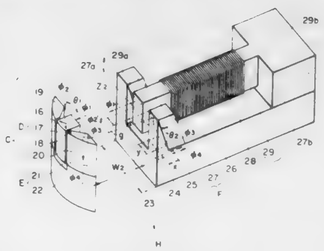
means for urging said clamping slug into contact with said magnetic head arm such that said magnetic head arm is clamped firmly against said second wall, said urging means being mounted in said second wall.

4,387,410

MAGNETIC ERASE HEAD FOR A TAPE PLAYER

Kenji Takanohashi, and Jiro Asahina, both of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Continuation-in-part of Ser. No. 24,876, Mar. 28, 1979, Pat. No. 4,264,938. This application May 2, 1980, Ser. No. 146,112
Claims priority, application Japan, May 4, 1979, 54-53974
Int. Cl.³ G11B *5/12*
U.S. Cl. 360—118 **20 Claims**



1. A magnetic erase head comprising:

(a) a head tip portion including a center tip and a pair of side tips respectively located adjacent and spaced from the sides of said center tip, each of said center tip and said pair of side tips having front and rear ends, the front end portion of said head tip portion being exposed so in use it contacts a magnetic recording medium travelling in a direction from one side tip to the other, each of said center tip and said pair of side tips having a height corresponding to a given width of a track on said recording medium; and

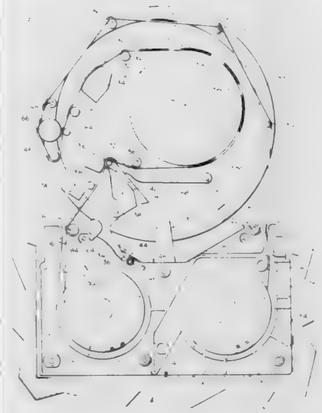
(b) a back core portion including a center core equipped with a winding, and an L-shaped core, each of said center core and said L-shaped core having front and rear ends, said front end of said center core being connected to said rear end of said center tip while said rear end of said center core is connected to said rear end of said L-shaped core, said front end of said L-shaped core having two arms defining a substantially U-shaped recess in which said front end portion of said center core is received without coming into contact therewith, said two arms of said L-shaped core being respectively connected to said rear ends of said side tips, the center lines of the L-shaped core and center core being spaced apart in a plane perpendicular to the direction of travel from one side tip to the other, and the two arms defining the U-shaped recess extending and tapering from the main part of the L-shaped core in a direction normal both to the center line of the L-shaped core and the direction from one side tip to the other so that the areas of the arms facing the center core decrease towards the free ends of the arms.

4,387,411

APPARATUS AND METHOD FOR CLEANING A VIDEO PLAYER/RECORDER

Eivind Clausen, and James D. Allsop, both of Bellingham, Wash., assignors to Allsop, Inc., Bellingham, Wash.

Continuation-in-part of Ser. No. 109,650, Jan. 4, 1980. This application Jan. 6, 1981, Ser. No. 223,025
Int. Cl.³ G11B *5/41*
U.S. Cl. 360—128 **30 Claims**



13. A device adapted to clean a playing and/or recording apparatus where there is:

a. a main housing adapted to receive a tape cassette in an operating location;

b. at least one rotating head member having a head surface that is subject to contamination;

c. guide means having a first retracted position and adapted to engage a tape in the cassette and move to a second position to move said tape into operating engagement with the head member

said device adapted to clean at least said head surface, said device comprising:

a. a cassette housing adapted to be mounted to said main housing in said operating location and having a forward housing portion;

b. a cleaning ribbon which has a cleaning portion;

c. said housing defining access opening means to expose the cleaning portion of the ribbon at a precleaning location in the housing to permit a cleaning material to be applied to the cleaning portion of the ribbon;

d. said cassette housing having mounting means to mount the ribbon in a retracted precleaning position where the cleaning portion of the ribbon is located at said precleaning location and, with the cassette housing in the operating location, the ribbon is positioned to be engaged by the guide means in moving from its first to its second position to be carried by the guide means so as to be extracted from within said cassette housing to an extended cleaning position of the ribbon, where the cleaning portion of the ribbon comes into cleaning engagement with the head surface.

4,387,412

COMBINATION STARTER-PROTECTOR DEVICE

Lee O. Woods, Morrison, and Donald L. Haag, Sterling, both of Ill., assignors to General Electric Company, Fort Wayne, Ind.

Filed Oct. 31, 1980, Ser. No. 202,873
Int. Cl.³ H02H *7/08*
U.S. Cl. 361—27 **11 Claims**



2. A combination starter-protector device comprising:

a housing having a chamber therein:

a PTCR in said chamber;

a bimetal switch means in said chamber and adapted for thermal coupling relation with said PTCR;

an opening in said housing and intersecting with said chamber;

a pair of male terminals arranged in preselected positions in said opening and each including an electrical connector section accessible from exteriorly of said housing and a support section within said chamber; and

means releasably secured to said housing within said chamber so as to close said opening and adapted for mounting said support section of one of said male terminals and for displacement preventing engagement with said support section of the other of said male terminals so as to maintain said male terminals generally in the preselected positions thereof.

4,387,413

SEMICONDUCTOR APPARATUS WITH INTEGRAL HEAT SINK TAB

Patrick D. Griffis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

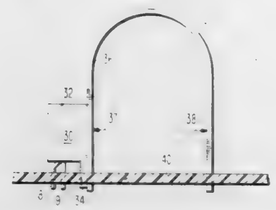
Filed Dec. 24, 1980, Ser. No. 220,127
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—386 **1 Claim**

1. A thermally protected semiconductor package and printed circuit board mounting assembly comprising:

a semiconductor element bonded to a first major surface of a slab of metal and encapsulated in epoxy so as to form a parallelepiped-shaped body for said semiconductor package which encloses said semiconductor element, the second major surface of which serves as a substantial portion of a first side of said body and extends outwardly from a second side of said body which is substantially perpendic-

ular to said first side, said extended portion of said slab of metal serving as a heat sink tab for said element which is integral with said body, and a plurality of lead terminals connected to said semiconductor element within said body and also extending outwardly from said second side of said body;

a printed circuit board having a plurality of lead holes which receive said lead terminals, a first hole, and a second hole located intermediate said lead and first holes which receives said integral heat sink tab; and



a supplemental heat sink comprising a sheet of metal contoured at the center with a first end of said sheet inserted in said first hold and a second, opposite end of said sheet inserted in said second hole with a surface of the second end of said supplemental heat sink forcibly contacting said second major surface of said integral heat sink tab so as to urge said integral heat sink into contact with said printed circuit board in said second hole and thereby retain said supplemental heat sink and said semiconductor package on said printed circuit board.

4,387,414

DIAL ILLUMINATING SYSTEM

Robert H. Hensleigh, 8516 Harwood, Fort Worth, Tex. 76118

Filed Jun. 22, 1981, Ser. No. 275,666
Int. Cl.³ F21V *7/04*
U.S. Cl. 362—31 **13 Claims**



1. An illuminating system including:

(a) A first light transmitting optical element (**120**) formed with:

(1) a thickness diminishing generally from the vicinity of one edge (**130**) of said first element to a circumference in the vicinity of an opposite edge (**132**) of said first element;

(2) a first prescribed surface (**128**) having a composite concave/convex profile (**100**) located adjacent said one edge and merging into a convex contour (**126**) extending generally from said one edge across said first element to said opposite edge;

(3) a second surface (**124**) extending generally radially in a plane across said first element from said one edge to said opposite edge;

(4) said prescribed surface being of configuration designated to cause light rays refracted within said first element from said light source to be reflected from said first surface at said profile and (refracted) passed through said second surface at angles closer to normal with respect to said second surface in the vicinity of said light source and said first edge, and also permitting passage of said light rays through said second surface throughout said optical element; and

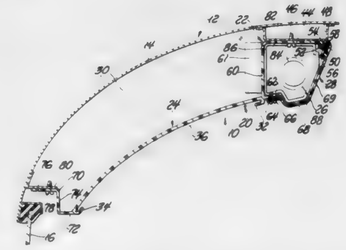
(b) a light source (**122**) so positioned as to cause rays of light to enter into said one edge and to radiate and refract through said first element to said opposite edge.

4,387,415

CORNICE LIGHTING FIXTURE

Ben V. Domas, Lake Orion, Mich., assignor to Transmatic, Inc., Waterford, Mich.

Continuation of Ser. No. 34,301, Apr. 30, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 209,448
Int. Cl.³ B60Q *1/00*
U.S. Cl. 362—74 **6 Claims**



1. A cornice lighting fixture for public transit vehicles, the lighting fixture comprising: a unitary member made as a pultrusion from resin and glass fibers so as to have an elongated shape with a uniform cross section along the length thereof, said unitary member including a light housing that defines one longitudinal margin of the fixture and a trim panel that extends vertically and horizontally from the light housing to define another longitudinal margin of the fixture, said light housing opening toward the direction in which light is to be provided by the fixture, said trim panel including one extremity defining the longitudinal fixture margin opposite the longitudinal fixture margin defined by the housing, said one extremity of the trim panel having a tab adapted to mount one edge of an advertising card on the trim panel, said trim panel also including another extremity connected directly to the housing in a fixed relationship thereto and having another tab adapted to mount another edge of the advertising card such that the card is positioned immediately adjacent the light housing; an electrical connector support for mounting a fluorescent tube on the light housing; and a light cover for cooperating with the light housing to enclose a mounted fluorescent tube within the housing.

4,387,416

WARNING LIGHT HOUSING

Wilton K. Decker, 249 Antoine Dr., Port Washington, Wis. 53074

Filed Aug. 31, 1981, Ser. No. 298,009
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—190 **6 Claims**

1. In a light assembly, the combination comprising:

a base having a supporting platform with a recess in its upper face that has a bottom, side walls and an open top, said base also having an access hole in said bottom leading into said recess from the exterior;

a removable casing fitting over said base to form a housing therewith, said casing having a cavity with side walls and a top extending above said recess;

a coupling between said base and casing for assembly and disassembly of said casing with and from said base in a lateral movement, said coupling restricting vertical removal of said casing from said base;

a light assembly component insertable in said casing cavity



which recedes into said recess upon assembly of the component with said base and casing, said component being in interfering position with sidewalls of said cavity and said recess to block lateral disassembly of said casing from said base; and

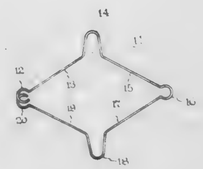
said light assembly component being elevatable out of said recess upon insertion of a tool through said access hole, thereby shifting said component from its interfering position to permit lateral disassembly of said casing and base.

4,387,417

LAMP RETAINING MEANS WITHIN LUMINAIRE

Jerry R. Plemmons, West Asheville, and Tommy R. Taylor, Fletcher, both of N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 30, 1981, Ser. No. 336,113
Int. Cl.³ F21V *15/00*
U.S. Cl. 362—376 **4 Claims**



1. A luminaire comprising an optical assembly having a design light center,

a single-ended lamp socket,

means for supporting said socket relative to said assembly so as to locate a lamp accommodated by it in a predetermined attitude relative to the light center,

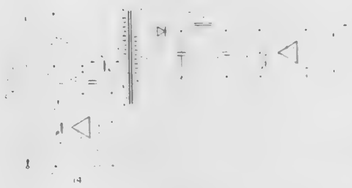
and a lamp retainer within said luminaire for positively locating the lamp in said attitude and securely holding it by engaging its neck, comprising: resilient wire formed to a four-sided parallelogram shape with outboard reverting projections between sides, fixing means engaging one diametrically opposed pair of said projections for fixing said retainer relative to the optical assembly, the other pair of said projections being unrestrained and providing extra flexibility in accommodating different-sized lamps.

4,387,418

SWITCHING REGULATOR

Tsutomu Koike, Matsuyama, Japan, assignor to Toko, Inc., Higashi-Yukigaya, Japan

Division of Ser. No. 928,441, Jul. 27, 1978, Pat. No. 4,283,759. This application Nov. 14, 1980, Ser. No. 206,970
Claims priority, application Japan, Aug. 1, 1977, 52/91425; Sep. 29, 1977, 52/117210; Feb. 24, 1978, 53/20480; Mar. 2, 1978, 53/23991; Apr. 26, 1978, 53/49453
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—19 **4 Claims**



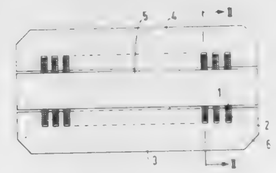
1. A switching regulator comprising a blocking oscillator circuit for converting into an intermittent form a DC voltage supplied from an input power source to thereby drive a transformer; a rectifier circuit for rectifying an AC voltage output derived from said transformer; a voltage comparator circuit for comparing the DC output voltage derived from said rectifier circuit with a reference voltage to provide an output corresponding to the deviation of said DC output voltage from said reference voltage; an error voltage amplifier circuit for amplifying the output of said voltage comparator; a current detecting circuit for detecting a transformer driving current of said blocking oscillator circuit; and a control circuit means for comparing the output of said current detecting circuit with the output of said error voltage amplifier circuit and applying to said oscillator circuit a trigger signal for causing said oscillator circuit to be changed from the on state to the off state only when the output of said current detecting circuit exceeds the output of said error voltage amplifier circuit.

4,387,419

STATIONARY MAGNETIC FREQUENCY MULTIPLIER

Wilhelm Benecke, Bad Neustadt, Fed. Rep. of Germany, and Heinz Rosenberg, Vienna, Austria, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

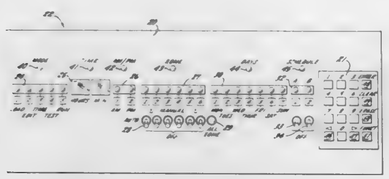
Filed Feb. 26, 1981, Ser. No. 238,369
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1980, 3008125
Int. Cl.³ H02M *5/32*
U.S. Cl. 363—174 **8 Claims**



1. A stationary magnetic frequency multiplier comprising:

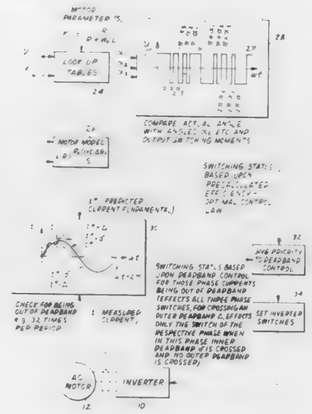
(a) a laminated iron magnetic member;
(b) a laminated iron magnetic return member disposed adjacent thereto;
(c) a slotted zone, comprising two rows of slots, in one of said iron members;
(d) a polyphase primary winding with a pole pitch such as would result in a number of pole pairs p_1, if fully wound, extending over less than two full pole pitches, distributed in said slots;
(e) a polyphase secondary winding magnetically coupled to said primary winding having a pole pitch which would provide a number of pole pairs which is an odd multiple of the number of pole pairs of said primary winding if fully wound, also distributed in said slots;
(f) the primary and secondary windings being arranged in said slotted zone so that a voltage can be induced across the primary winding only by the fundamental of a field with a number of pole pairs p_1 and no voltage can be induced by the same fundamental at the terminal of the secondary winding;
(g) the primary and secondary windings comprising ring windings surrounding said iron member arranged in said two rows of slots as a wound zone in such a manner that they set up traveling fields if fed in the polyphase mode; and
(h) laminated connecting parts outside said wound zone, which remain unsaturated, disposed between said iron member surrounded by windings and said return member.

4,387,420
PROGRAMMABLE CLOCK
Dilip T. Singhi, Skokie, and James E. Dahlquist, Palatine, both of Ill., assignors to Rauland-Borg Corporation, Chicago, Ill.
Filed Nov. 26, 1980, Ser. No. 210,544
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—145 **25 Claims**



1. A user programmable clock comprising in combination, processor means, a keyboard for signalling the processor, a visual display for displaying information from the the processor including separate locations for time, a plurality of active days, and a plurality of active zone positions; a display memory having a plurality of event locations, each event location including means for storing time information and information for a plurality of days and zones; the processor including means for interpreting keystrokes on the keyboard and in response thereto entering information into event locations in the display memory and also activating the display to display the entered information, means for storing the current time and day, means for locating the stored event next in time in the display memory, said last mentioned means including means for comparing the stored day information with the current day, and means for executing said stored event at the time and day and in the zones indicated by the information stored therein.

4,387,421
OPTIMAL AND ADAPTIVE CONTROL OF VARIABLE SPEED AC MOTOR DRIVES
Franz C. Zach, Vienna, Austria; Bimal K. Bose, Latham, N.Y.; Paul M. Espelage, Salem, Va., and John S. Sicko, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Mar. 6, 1981, Ser. No. 241,315
Int. Cl.³ G05B *13/04*
U.S. Cl. 364—148 **4 Claims**



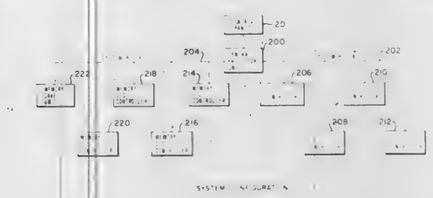
1. An alternating current machine drive system for providing efficiency optimal and adaptive control comprising:
inverter means for providing variable power to the alternating current machine in response to inverter switching signals;
means for determining a plurality of optimal switching angles per quarter period responsive to a voltage command and a frequency command and dependent on motor parameters;
means for generating inverter switching signals responsive to said optimal switching angles;
means for generating a predicted sinusoidal motor current fundamental having means for generating a sinusoidal voltage fundamental dependent on said voltage command and said frequency command, and motor model means coupled to said sinusoidal voltage fundamental for providing the predicted sinusoidal motor current fundamental;
a deadband control having a plurality of comparator means for comparing actual motor current in each phase to a deadband having said predicted sinusoidal motor current as a reference,
means for providing inverter switching signals dependent on said comparator means output with the actual current in one phase exceeding a deadband, producing a signal that will affect said one phase, and
means for giving priority to said switching signals resulting from said deadband control over switching signals resulting from said optimum switching angles in connecting said inverter switching signals to said inverter.

4,387,422
CONTROL SYSTEM PROCESS CONTROLLER
Edward M. Steutermann, 1332 S. Second St., Louisville, Ky. 40208
Filed Jun. 3, 1980, Ser. No. 156,071
Int. Cl.³ G05B *13/00;* **F24J** *3/02*
U.S. Cl. 364—183 **7 Claims**

1. A control system for operating a process controller means to initiate corrective action to maintain a selective process condition in a selected range including first sensor means to sense the process condition and to provide a first condition output signal, second sensor means to sense a second condition which affects the process condition to provide a second condition output signal reflective of the second condition, amplifier means to amplify the first process condition output signal and provide a modified process condition output signal, summing means to sum the first condition output signal and the second condition output signal and provide a reference signal, comparator means to compare the modified process condition output signal and the reference signal to provide a first comparator output signal when the modified process output condition signal exceeds the reference signal and to provide a second output signal when the reference signal exceeds the modified process signal, operator means to receive the first and second output signals and selectively operate the process controller means in response to the first and second output signals to modify the process condition in response thereto.

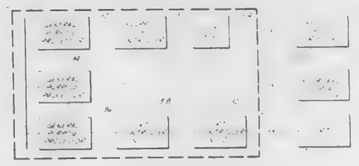


4,387,423
MICROPROGRAMMED SYSTEM HAVING SINGLE MICROSTEP APPARATUS
Richard L. King, Hollis, N.H.; John J. Bradley, Framingham, and Ming T. Miu, Chelmsford, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed Feb. 16, 1979, Ser. No. 12,676
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **8 Claims**



1. A diagnostic system for a microprogrammed processing unit, said microprogrammed processing unit coupled to a rechargeable memory for storing information, said microprogrammed processing unit including an addressable control store having a plurality of storage locations for storing microinstruction words, a decoding means coupled to said control store for decoding said microinstruction words to generate signals to control the operation of said microprogrammed processing unit, a first means coupled to said decoder means and to said rechargeable memory for generating a memory refresh command in response to bits appearing in one or more control fields in said microinstruction words, said diagnostic system for single stepping said microprogrammed processing unit one microinstruction at a time thereby allowing said microprogrammed processing unit and the results of executing a current one of said microinstruction words to be examined before proceeding to the execution of a next one of said microinstruction words, said diagnostic system comprising:
A. second means, coupled to said microprogrammed processing unit, for inhibiting the execution of said next one of said microinstruction words; and
B. third means, coupled to said second means and to said rechargeable memory, for alternatively generating memory refresh commands at a frequency sufficient to prevent the loss of information in said rechargeable memory whereby the memory refresh commands generated by said third means during the period that the execution of said next one of said microinstruction words is inhibited replace the refresh commands that would normally be generated by said first means.

4,387,424
COMMUNICATIONS SYSTEMS FOR A WORD PROCESSING SYSTEM EMPLOYING DISTRIBUTED PROCESSING CIRCUITRY
John K. Frediani, Santa Cruz, and Terrance L. Lillie, Palo Alto, both of Calif., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Aug. 12, 1980, Ser. No. 177,319
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **12 Claims**

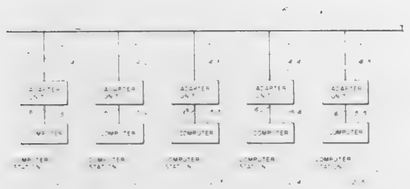


1. A communications system, comprising:
(a) a plurality of data processing stations each having a first communications means for connecting each of said stations to a common communications channel and each having a second communications means for communicating with one or more associated controlled units;
(b) each of said data processing stations further including a processor and a memory, said first communications means, said second communications means and said processor each operatively connected to said memory so that each may access said memory and, contention resolving means operatively connected to said memory and to each device operatively connected to said memory for resolving conflicts between said devices for access to said memory;
(c) a communications channel operatively connected to said first communications means of each of said plurality of data processing stations, whereby each of said processors may access said memory of any of said processing stations;
(d) a first controlled unit including mass storage data entry and retrieval means for entering data for storage and for retrieving stored data and including a controlled unit communications means for data communication, said first controlled unit communications means coupled to said second communications means of a first one of said plurality of data processing stations, whereby said first controlled unit may communicate directly with said first station; and
(e) a second controlled unit including a keyboard for entering alphanumeric data information and including a controlled unit communications means for data communication, said second controlled unit communications means coupled to said second communications means of a second one of said plurality of data processing stations whereby said second controlled unit may communicate directly with said second station.

4,387,425
MASTERLESS AND CONTENTIONLESS COMPUTER NETWORK

Hussein T. El-Gohary, Harvard, Mass., assignor to Data General Corporation, Westboro, Mass.

Filed May 19, 1980, Ser. No. 150,713
Int. Cl.³ G06F *15/16, 3/04;* H04J *6/02*
U.S. Cl. 364—200 31 Claims



1. A computer network comprising:

a. a network transmission bus means, and

b. a plurality of spatially separated computer stations connected to said network transmission bus means, each of said computer stations being capable of either acting as an independent work station or transmitting information to any one or more of said other computer stations over said network transmission bus means or receiving information from any one or more of said other computer stations over said network transmission bus means, each computer station including:

i. a computer, and

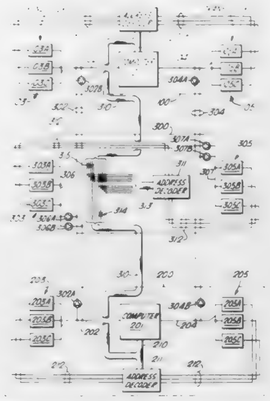
ii. an adapter unit, each adapter unit serving to interface its computer to said network transmission bus means, said adapter units collectively controlling access to said network transmission bus means by said computer stations, each adapter unit including a controller for controlling the operations of said adapter unit, said controller including a timer for measuring time and generating signals at the expiration of first and second preselected time intervals, a line activity indicator for monitoring said bus for activity and for sending signals indicating the presence or absence of activity to the controller, control means in said controller responsive to said signal indicating the absence of activity over said first time interval for sending a first control signal to a pulsing device, said pulsing device coupled to said bus and operative for sending a first pulse over said bus on receival of said first control signal from said controller, said first pulse having a length at least equal to the largest distance between any two adapter units, said control means in said controller responsive to said signal indicating the absence of activity over said second time interval unique to said adapter unit for sending a second control signal to said pulsing device, said pulsing device responsive to said second signal to send a second pulse over said bus,

c. whereby, the second pulse transmitted by the first adapter unit detecting the absence of activity over said second time interval causes each other adapter unit to detect activity before the expiration of its second time interval and wherein said first adapter unit will be in a unique state relative to the other adapter units for the purpose of assuming control over the bus.

4,387,426
DIGITAL DATA PROCESSING SYSTEM

Eric Roberts, Bristol, England, assignor to Rolls-Royce Limited, London, England

Filed Aug. 28, 1980, Ser. No. 181,973
Claims priority, application United Kingdom, Sep. 6, 1979, 7930885
Int. Cl.³ G06F *11/20*
U.S. Cl. 364—200 8 Claims



1. A data processing system comprising:

a first computer and a second computer;

a first transducer associated with said first computer and a second transducer associated with said second computer;

a first data highway connected between said first computer and said first transducer to convey data therebetween and a second data highway connected between said second computer and said second transducer to convey data therebetween;

first address means connected with said first transducer for enabling said first transducer upon receipt of a predetermined address code associated with said first transducer and second address means connected with said second transducer for enabling said second transducer upon receipt of a predetermined address code associated with said second transducer;

a first address highway connected between said first computer and said first address means to convey address codes therebetween and a second address highway connected between said second computer and said second address means to convey address codes therebetween;

a data link connected between said first data highway and said second data highway; and

an address link connected between said first address highway and said second address highway, said computers and said transducers being arranged so that each said computer addresses its associated transducer with a first predetermined address code which is the same for each said computer, wherein

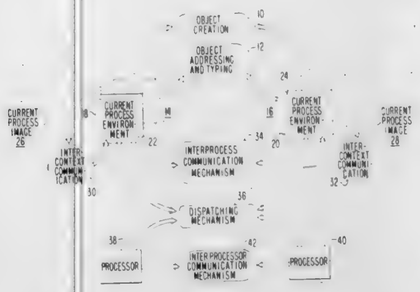
said address link comprises first converter means for converting an address code on either one of said address highways into a different, related address code on the other one of said address highways; and

each said computer is arranged to address its non-associated said transducer with a second predetermined address code which is the same for each said computer, said second predetermined address code being so related to said first address code as to be convertible into said first address code by said first converter means.

4,387,427
HARDWARE SCHEDULER/DISPATCHER FOR DATA PROCESSING SYSTEM

George W. Cox, Portland, and Justin R. Rattner, Aloha, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 972,008, Dec. 21, 1978, abandoned.
This application Oct. 16, 1980, Ser. No. 197,655
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 16 Claims



1. For use in a multiprocessing system wherein a number of processors share a common storage means, said storage means providing the means for storing a number of access descriptors which represent one of said processors as a processor object, one of said access descriptors (process object access descriptor) providing access to a process object for storing process object access descriptors for describing the type and the extent of access to system objects (including a buffered port system object) associated with a process to be executed on said one of said processors, a first one of said access descriptors containing information providing access to said buffered port system object, and a second one of said access descriptors (message access descriptor) representing a message as a system object; the improvement in said one of said processors comprising:

first means for registering first access information, said information providing access to said processor object stored in said storage means, said first means initially being loaded with said first access information;

second means for registering second access information, said information providing access to said buffered port object stored in said storage means;

third means for registering third access information, said information providing access to said process object stored in said storage means, said third means initially being loaded with said third access information;

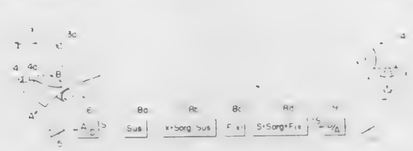
control means, connected to said first, second, and third means, and to said storage means, capable of responding to an instruction of said process, for using said first access information to fetch said process object access descriptor, said control means including means for loading third-access information developed from said process object access descriptor, into said third means for registering, means for using said third access information to fetch said one of said access descriptors containing information providing access to said buffered port system object, means for loading second access information developed from said one of said access descriptors into said second means for registering, means for using said second access information to access said buffered port object, and means for moving said message access descriptor from said process object to said buffered port object;

whereby said processor provides the means for utilizing said buffered port system object for queuing said message access descriptor for a message to be paired with a process.

4,387,428
METHOD OF AND APPARATUS FOR PROCESSING A RADIATION IMAGE

Masamitsu Ishida; Hisatoyo Kato, and Seiji Matsumoto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 29, 1980, Ser. No. 220,780
Claims priority, application Japan, Dec. 25, 1979, 54-168937
The portion of the term of this patent subsequent to Feb. 9, 1999, has been disclaimed.
Int. Cl.³ H04N *1/40*
U.S. Cl. 364—414 10 Claims



1. A method of processing a radiation image in a radiation image recording system in which a stimulable phosphor is scanned with a stimulating ray and the radiation image information recorded in the stimulable phosphor is read out and converted into an electric signal upon stimulation thereof and then a visible image is recorded on a recording material by use of the electrical signal, said method comprising a step of conducting an operation represented by a formula

$$S' = Sorg + F(X)$$

is conducted at every scanning point, where Sorg is the original image signal read out from the stimulable phosphor, Sus is an unsharp mask signal corresponding to a super-low spatial frequency, X is Sorg-Sus, and F(X) is a monotomically increasing function which satisfies the condition of $F'(X_1) \geqq F'(X_2) \geqq 0$ for arbitrary values X_1, X_2 of X ($|X_1| < |X_2|$) and in which there exists at least one certain value X_0 of X which satisfies the condition of $F'(X_1) > F'(X_2)$ when $|X_1| < |X_0| < |X_2|$, whereby the frequency component above said super-low spatial frequency is emphasized.

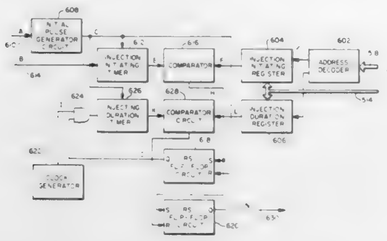
4,387,429
FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Teruo Yamauchi, Katsuta; Mamoru Fujieda, Nishibaraki, and Yoshishige Oyama, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP79/00191, § 371 Date Feb. 22, 1980, § 102(e) Date Feb. 22, 1980, PCT Pub. No. WO80/00267, PCT Pub. Date Feb. 21, 1980
PCT Filed Jul. 20, 1979, Ser. No. 191,244
Claims priority, application Japan, Jul. 21, 1978, 53-88463; Jul. 26, 1978, 53-91993
Int. Cl.³ F02D *5/02;* F02M *51/00;* G05B *15/02*
U.S. Cl. 364—431.05 25 Claims

1. A fuel injection system for an internal combustion engine, comprising a single fuel injecting means for supplying the fuel to a plurality of cylinders of said engine, and control means for controlling said single fuel injection means in such a manner that the fuel injected from said single fuel injecting means is injected by responding to every two suction strokes of said

plurality of cylinders, said control means including means for defining the timing of commencement of the injection of fuel in



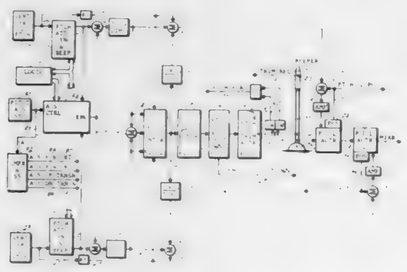
such a manner so as to establish a uniform distribution of fuel supplied to the cylinders among the respective cylinders.

4,387,430

PITCH STICK FORCE INHIBIT OF AIRCRAFT AUTOMATIC OUTER LOOP

David J. Verzella, Guilford; William C. Fischer, Monroe; Don L. Adams, Fairfield, and Stuart C. Wright, Milford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 30, 1981, Ser. No. 249,275
Int. Cl.³ G06F *15/50*; G06G *7/70*
U.S. Cl. 364—434 **4 Claims**



1. A system for positioning attitude-controlling aerodynamic surfaces in a control axis of an aircraft, comprising:

control means responsive to force applied by a pilot to position said aerodynamic surfaces;

force means responsive to said control means for providing a force signal indicative of the pilot applying force to said control means;

a sensor indicative of a parameter of aircraft flight related to said control axis for providing a parameter signal indicative of the magnitude thereof;

actuator means having a full authority outer loop portion and a fast, limited authority inner loop portion and responsive to input command signals applied thereto for positioning said aerodynamic surfaces; and

signal processing means connected for response to said sensor and to said force means, for providing a reference signal indicative of a desired magnitude of said parameter, for providing to said actuator means a first command signal indicative of the difference between said parameter signal and said reference signal, and a second command signal indicative of the magnitude and sense of the rate of change of said parameter signal;

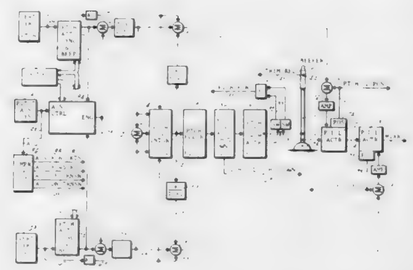
characterized by said signal processing means comprising means for inhibiting provision of said first command signal to said outer loop portion of said actuator means in response to the presence of said force signal.

4,387,431

ROLL ATTITUDE INHIBIT OF AIRCRAFT AUTOMATIC OUTER LOOP

Stuart C. Wright, Milford; Don L. Adams, Fairfield; William C. Fischer, Monroe, and David J. Verzella, Guilford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 30, 1981, Ser. No. 249,298
Int. Cl.³ G06F *15/50*; G06G *7/78*
U.S. Cl. 364—434 **3 Claims**



1. A system for positioning attitude-controlling aerodynamic surfaces in a control axis of an aircraft, comprising:

control means responsive to force applied by a pilot to position said aerodynamic surfaces;

force means responsive to said control means for providing a force signal indicative of the pilot applying force to said control means;

a sensor indicative of a parameter of aircraft flight related to said control axis for providing a parameter signal indicative of the magnitude thereof;

actuator means having a full authority outer loop portion and a fast, limited authority inner loop portion and responsive to input command signals applied thereto for positioning said aerodynamic surfaces; and

signal processing means connected for response to said sensor and said force means, for providing a parameter reference signal indicative of the flight parameter desired for the aircraft in said control axis, for providing to said actuator means a first command signal indicative of the difference between said parameter signal and said reference signal, and a second command signal indicative of the magnitude and sense of the rate of change of said parameter signal;

characterized by said signal processing means comprising means for inhibiting provision of said first command signal to said outer loop portion of said actuator means in response to the presence of said force signal and indefinitely after termination of said force signal until said first command signal is less than a predetermined magnitude.

4,387,432

PULSED AIRCRAFT ACTUATOR

William C. Fischer, Monroe; Don L. Adams, Fairfield; David J. Verzella, Guilford, and Stuart C. Wright, Milford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 30, 1981, Ser. No. 249,300
Int. Cl.³ G06F *15/50*; G06G *7/78*
U.S. Cl. 364—434 **4 Claims**

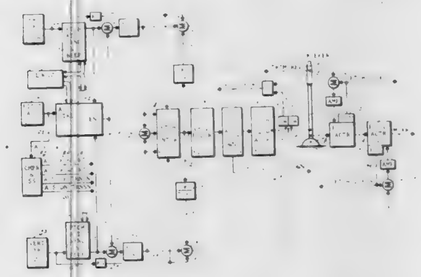
1. A system for automatically positioning aerodynamic surfaces in a control axis of an aircraft, comprising:

a sensor responsive to a parameter of aircraft flight related to said control axis for providing a parameter signal indicative of the magnitude thereof;

a fast, inner loop actuator for changing the position of said aerodynamic surfaces across a limited authority range of positions which is a fraction of the total permissible range of positions thereof;

an outer loop actuator connected to said inner loop actuator for adjusting the position of said inner loop actuator relative to the position of said control surfaces throughout a full authority range of positions equal to the total permissible range of positions thereof, to thereby reposition the center of said limited authority range relative to said full authority range; and

signal processing means for providing a reference-signal indicative of a desired magnitude of said parameter, and responsive to said sensor, for providing a proportional command signal of a first sense indicative of the magnitude and sense of the difference between said parameter signal and said reference signal to adjust the position of said inner loop actuator and therefore of said control surfaces in a first direction, depending on the sense of said difference to cause said parameter signal to approach



equally with said reference signal, for providing to said inner loop actuator, a rate command signal indicative of the magnitude and sense of the rate of change of said parameter signal to adjust the position of said control surfaces in a second direction, depending on the sense of said rate of change, to cause the rate of change of said parameter signal to approach nil, and for providing said proportional command signal to said inner loop actuator;

characterized by said signal processing means comprising means for providing an integral signal representing an integral function of said proportional command signal, for providing an excess signal indicative of said integral signal exceeding a predetermined magnitude, for providing, in response to said excess signal, a reset signal and an outer loop command signal of a fixed magnitude and predetermined duration and of said first sense to said outer loop actuator, and for resetting said integral function to nil in response to said reset signal.

4,387,433

HIGH SPEED DATA INTERFACE BUFFER FOR DIGITALLY CONTROLLED ELECTRON BEAM EXPOSURE SYSTEM

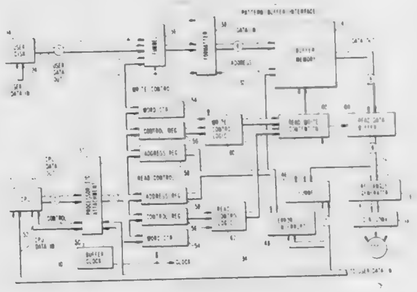
Pasquale A. Cardenia, Wappingers Falls; Thomas V. Landon, Stormville, and Alfred W. Muir, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,700
Int. Cl.³ H01J *37/28*
U.S. Cl. 364—491 **4 Claims**

1. An electron beam exposure system for forming integrated circuit patterns, said system including a source of vector scan pattern data in digital form stored in a mass storage device, a control processor unit, a pattern generator coupled to an electron beam column for generating, within a predetermined time period, discrete circuit patterns from units of data, each unit representative of the location and shape of a predetermined integrated circuit image, and a pattern buffer interface interconnecting said mass storage device and said control processor to said pattern generator, the improvement wherein said pattern buffer interface comprises:

a random access buffer memory unit for addressably storing said units of vector scan pattern data, said buffer memory unit being responsive to memory address signals and to read and write signals to execute a memory access cycle within a time period greater than said predetermined time period;

write control logic means responsive to an address signal and a plurality of write control signals provided by said control processor for controlling the automatic transfer of a first predetermined number of said units of addressable data from a selected one of said mass storage device and said control processor unit to said first predetermined number of addressable locations in said buffer memory unit by generating, independently of said control processor unit, said first predetermined number of memory address signals and a like number of said write signals;



read control logic means responsive to an address signal provided by said control processor unit and being responsive to a plurality of read control signals provided by said control processor unit and said pattern generator for controlling the automatic transfer of a second predetermined number of said addressable units of pattern data from said buffer memory unit to said pattern generator by generating, independently of said control processor unit, said second predetermined number of memory address signals and a like number of read signals in response to read request signals provided by said pattern generator; and

buffer interface clock means coupled to said read and said write control logic means for controlling the timing of said automatic transfers of data within said pattern buffer interface, independently of said control processor unit, whereby said pattern generator receives said units of vector scan data at a rate substantially equal to said memory access cycle time period.

4,387,434

INTELLIGENT FIELD INTERFACE DEVICE FOR FLUID STORAGE FACILITY

Marion L. Moncrief, Jr.; Frank S. Glass, both of Stone Mountain, Ga.; Rafael Hernandez, Jimenez, Mexico, and Edmund E. Chow, Lilburn, Ga., assignors to Process Technologies, Inc., Tucker, Ga.

Filed Oct. 24, 1980, Ser. No. 200,382
Int. Cl.³ G06F *15/00*; H04Q *1/00*; G05D *9/00*; G05B *15/00*
U.S. Cl. 364—509 **5 Claims**

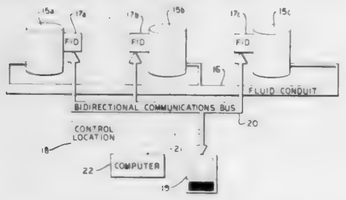
1. In a system for monitoring tank parameters at a control location in a fluid storage faciity including at least one tank including a parameter transducer associated therewith for providing a transducer output signal in response to a physical parameter of said tank including a field supply of electric power;

a controller means at said control location for providing an interrogation signal

a duplex communication link connecting said control location and a field interface means at said tank for providing to said duplex communication link a parameter reading signal corresponding to said transducer output signal in response to each occurrence of said interrogation signal on said duplex communication link;

said field interface means including a transmitter/receiver including an input line and an output line; an improved arrangement for connecting said field interface means to said duplex communication link comprising in combination:

converter means connected to said field supply of electric power for providing an FID power supply pair for providing a source of electric power to said field interface means at a constant voltage which is magnetically isolated from said field supply of electric power;



first optocoupler means connecting said input line to said duplex communication link comprising a light emitting source powered from said field supply of electric power and a light responsive switching device connected to said input line and being optically coupled to said light emitting device and powered from said FID power supply pair;

a second optocoupler means connecting said output line to said duplex communication link comprising a light emitting source powered from said FID power supply pair and a light responsive switching device connected to said duplex communication link and being optically coupled to said light emitting device and powered from said field supply of electric power; and

surge protection means shunting said field supply of electric power and earth ground.

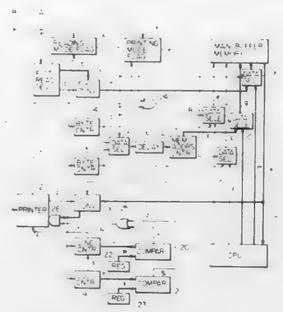
4,387,435

PICTURE PRINTING DEVICE

Yoshio Arai; Hiroyuki Kataoka, and Yasumasa Moriya, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1980, Ser. No. 182,727
Claims priority, application Japan, Sep. 3, 1979, 54-111693
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—514 **4 Claims**

1. A picture printing device for printing pictures using a main scan and a sub scan and in which predetermined picture position data is simultaneously printed at predetermined coordinate positions with respect to main-scanning and sub-scanning start reference points comprising: first comparison means for counting a number of picture elements in a main-scanning direction and comparing said number of picture elements thus counted with a first value preset in said first comparison means; second comparison means for counting the number of scanning lines in a sub-scanning direction and comparing said number of scanning lines thus counted with a second value preset in said second comparison means; means for printing and recording predetermined signals in response to combinations of outputs of said first comparison means and said second comparison means wherein the printing of said predetermined signals is accompanied by said predetermined picture position data, and means for utilizing said predetermined picture position data to



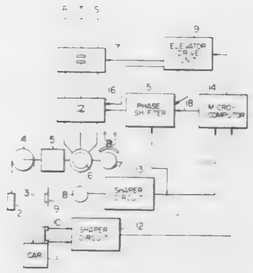
correct the alignment of a re-read print output with respect to the horizontal and vertical axes of a recording medium.

4,387,436

METHOD AND APPARATUS FOR DETECTING ELEVATOR CAR POSITION

Yasunori Katayama, Hitachi; Takanobu Hatakeyama, Katsuta; Seiya Shima, Katsuta; Sadao Hokari, Katsuta; Toshiro Narita, Hitachi; Kenji Yoneda, Katsuta; Kazuhiro Sakata, Katsuta; Tomiaki Kurihara, Katsuta, and Toshio Meguro, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 20, 1980, Ser. No. 208,579
Claims priority, application Japan, Nov. 22, 1979, 54-151357
Int. Cl.³ B66B *3/02*
U.S. Cl. 364—561 **8 Claims**



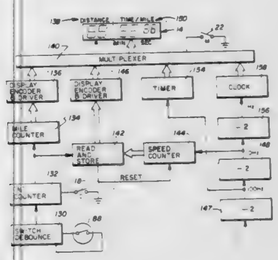
5. In an elevator system comprising an elevator car for traveling to a plurality of floors, motor drive means including a power transmission mechanism for driving said car between floors, pulse generator means coupled to said car through said power transmission mechanism for producing pulses according to the movement of the car and means for calculating the position of the car through the counting of pulses generated from said pulse generator means, an apparatus for detecting the elevator car position comprising first and second car detector means for detecting predetermined first and second car positions in a hatchway through which said car travels, means for detecting the number of pulses produced during a period from the actuation of one of said car detector means till the actuation of the other said car detector means, means for memorizing a reference pulse number corresponding to the distance between said first and second car detector means, means for calculating a correction amount by comparison of said detected pulse number with said reference pulse number, and means for correcting said calculated car position provided by said calculating means in accordance with said correction amount.

4,387,437

RUNNERS WATCH

John W. Lowrey, 511 N. Hope St., Mansfield, La. 71052; Tom M. Hyltin, Dallas, and J. Scott Jamieson, Arlington, both of Tex., assignors to John W. Lowrey, Mansfield, La.

Continuation-in-part of Ser. No. 60,594, Jul. 25, 1979, abandoned. This application Mar. 12, 1981, Ser. No. 242,889
Int. Cl.³ G01C *22/00*
U.S. Cl. 364—561 **16 Claims**



16. A runners watch comprising:

a case dimensioned to be worn on the wrist of the wearer;

a wrist band connected to said case for supporting said case on the wrist of the wearer;

a display face on said case;

sensor means in said case for detecting the occurrence of strides of the wearer while the wearer is running;

input means for inputting the number of strides required for the wearer to travel one-tenth of a mile;

storage means for storing said number of strides;

circuitry within said case responsive to said sensor means for computing the distance traveled by the wearer;

circuitry within said case responsive to said sensor means for measuring the length of time required for the wearer to take a number of strides equal to the stored number of strides;

circuitry within said case for multiplying the length of time required by the wearer to take the stored number of strides by a factor of 10;

circuitry within said case for storing the multiplied length of time as computed rate of travel;

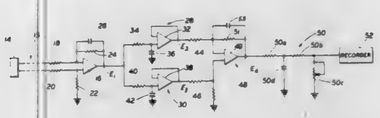
means on said case for being operated for displaying said computed distance traveled and said computed rate of travel on said display face.

4,387,438

CONTINUOUS TRANSDUCER DRIFT COMPENSATOR

George M. Lucich, and Charles A. Seitz, both of Amarillo, Tex., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Nov. 12, 1980, Ser. No. 206,247
Int. Cl.³ H04B *15/00*; G06G *7/186*
U.S. Cl. 364—574 **3 Claims**



1. A circuit for reducing the d.c. outputted drift signal component from a transducer generated signal wherein the transducer signal includes the d.c. drift component to be reduced, a data component, and a high frequency noise component, said circuit comprising:

first and second parallel integrator circuit means which receive and are responsive to said transducer signal;

said first integrator circuit means having a first time constant set to pass the d.c. drift and data components of the received transducer signal while attenuating its received noise component;

said second integrator circuit means having a second time constant set to be longer than the first time constant, said second integrator circuit means passes the said received d.c. drift and a smaller portion of the data component than that passed by the first integrator circuit means, said two integrator circuit means generating, respectively, first and second output signals; and

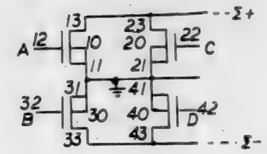
circuit means for receiving said first and second output signals from the integrators and for subtracting said second output signal from said first output signal, the output signal from said subtracting means being a data component signal whose drift and noise component are continuously and automatically suppressed therein.

4,387,439

SEMICONDUCTOR ANALOG MULTIPLIER

Hung C. Lin, 8 Schindler Ct., Silver Spring, Md. 20903

Continuation of Ser. No. 50,069, Jun. 19, 1979, abandoned. This application Jan. 2, 1981, Ser. No. 221,992
Int. Cl.³ G06G *7/12, 7/164*
U.S. Cl. 364—841 **6 Claims**



1. Electronic circuit comprising no less than a pair of nonlinear complementary but not necessarily symmetrical MOSFETs having n-type and p-type channels respectively, each device having a drain; a gate and a source, said drain of said n-channel MOSFET being connected to a positive potential, said output terminal drain of said p-channel MOSFET being connected to a negative potential, two said potentials being of sufficient voltages to bias two said MOSFETs into square-law-mode, said two sources of said pair being connected together and floating, said two gates being connected to two separate input signals which are referenced to a potential intermediate between said positive potential and said negative potential, and means for sensing output from said drain terminals.

4,387,440

MODEM CONTROL DEVICE CODE MULTIPLEXING

Michael D. Eaton, 350 Sharon Park Dr., Unit L-206, Menlo Park, Calif. 94025

Filed Mar. 3, 1980, Ser. No. 126,889
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—900 **6 Claims**

1. A modem for transmitting digitally coded data between an information distribution network and a data processing unit, comprising:

a modulator/demodulator for converting a signal providing digitally coded data in discrete voltage step level form to a modulated signal form suitable for transmission over said distribution network, and for converting an modulated signal received from said distribution network representing digitally coded data into a discrete voltage step level form signal;

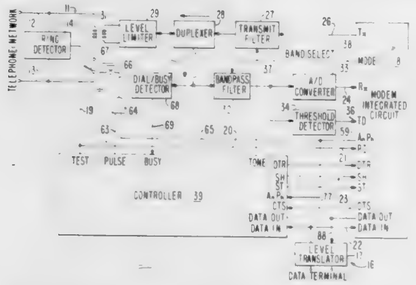
first port means communicably connectable to said distribution network to place thereon analog signals representing digitally coded data and network control information, or receive therefrom analog signals representing digitally coded data and network status information;

second port means communicably connectable to said data

processing unit to provide serially thereto over the same lines a signal providing digitally coded data and network status information, or receive serially therefrom over the same lines a signal to be modulated representing digitally coded data, network control instructions, and modem control instructions;

means in electronic communication with said first and second port means and with said modulator/demodulator for transmitting digitally coded information to be transmitted by said modem and received at one of said first and second port means, through said modulator/demodulator to the other of said first and second port means; and

means in electronic communication with said transmitting



means for controlling communication of digitally coded data between said first and second port means of said modem, which means is responsive to digitally coded modem control instructions received at one of said port means and includes:

means for segregating digitally coded modem control instructions received at said second port means serially with other digitally coded information received thereat from such other digitally coded information;

means to compare digitally coded data being transmitted via said modem with a selected escape signal; and

means responsive to a true comparison between transmitted information and said escape signal by terminating communication via said modem between said ports.

4,387,441

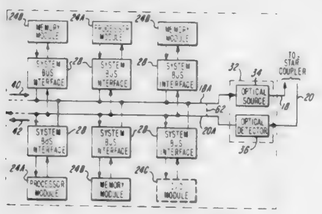
DATA PROCESSING SYSTEM WHEREIN AT LEAST ONE SUBSYSTEM HAS A LOCAL MEMORY AND A MAILBOX MEMORY WITHIN THE LOCAL MEMORY FOR STORING HEADER INFORMATION

James E. Kocol, Escondido; Robert O. Gunderson, Poway; David B. Schuck, Escondido, and Daniel J. Marro, San Diego, all of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 16, 1981, Ser. No. 255,061

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **19 Claims**



1. In a data processing system having a plurality of subsystems, a bus for carrying messages to be received by said subsystems, and a processor and local memory associated in at least one of said subsystems, wherein the messages include control information and wherein at least some of the messages include blocks of data accompanying the control information to be stored in said local memory, the improvement comprising:

a mailbox memory included in said one of said subsystems and having memory locations for storing the control information from messages received by that one of said subsystems apart from the blocks of data stored in said local memory; and

means for sequentially accessing the memory locations in said mailbox memory for storing the control information from each received message as an entry in said mailbox memory, including means for pointing to the next entry following the entry of the last received message, so that control information of each received message may be stored in said mailbox memory without interrupting said processor.

4,387,442

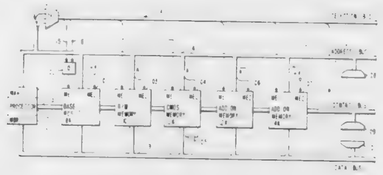
CONTROLLED MACHINE INHIBITION WHEN CONTROL MODULE IS ABSENT

James E. Stuehler, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 1, 1980, Ser. No. 192,751

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—900 **12 Claims**



1. In a programmable control system having an expandable memory system for adding memory modules containing control programs to operate given features of a controlled machine, at least one of said given features being essential for proper machine operation, said control system including output means for supplying control signals to said machine, and add-on memory module means for storing a program to control an essential feature, the improvement comprising:

means for coupling a given control signal from said output means to said add-on memory module means, said given control signal being used to start machine operation; and

means in said add-on memory module means for supplying a control signal to start machine operation if said given control signal is supplied.

4,387,443

MAGNETIC BUBBLE DEVICE

Koji Sakamoto, Ibaragi, Japan, assignor to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

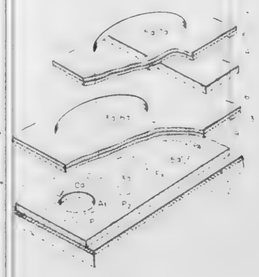
Filed Mar. 23, 1981, Ser. No. 246,251

Claims priority, application Japan, Apr. 14, 1980, 55-48965; May 30, 1980, 55-72218

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—19 **8 Claims**

1. In a current-access magnetic bubble device of a dual-conductor type comprising a substrate for carrying magnetic bubbles and first and second conductors each having apertures arranged serially therein disposed on said substrate and capable of propagating said magnetic bubbles sequentially along a propagation path composed of said apertures in the said first and second conductors upon application of a current to the first and second conductors in accordance with a prescribed sequence, the improvement wherein the magnetic bubble device comprises two magnetic sheets disposed one on the surface of each of said first and second conductors facing away from the substrate, said magnetic sheets being respectively provided with apertures having the same shape and configura-



tion as those of said conductors, whereby magnetic poles are induced at the edges of said apertures in said magnetic sheets by the stray flux of the bubble in the substrate and/or by the application of the current to said conductors.

4,387,444

NON-VOLATILE SEMICONDUCTOR MEMORY CELLS

Colin W. Edwards, Chalfont St. Peter, England, assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Jul. 7, 1980, Ser. No. 166,211

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—156 **14 Claims**

1. A non-volatile memory cell formed on a semiconductive substrate comprising a pair of branches which are connected in parallel and across the same voltage source and at least one data output node, one of said branches comprising:

a first load transistor comprising a source, a drain, and an insulated gate;

a first driver transistor comprising a source, a drain, an insulated floating gate, an overlying insulated control gate and including means for permitting electron tunneling between said substrate and said floating gate;

wherein said first load transistor source and drain and said first driver transistor source and drain are connected in series combination across a voltage source to form a branch node between said first load and first driver transistors, said first load and first driver transistor gates being connected together and connected to the other of said branches;

a first buffer transistor, said first buffer transistor comprising a source, a drain, and an insulated gate, said first buffer transistor gate connected to said branch node, one of said first buffer transistor source and drain connected to said output node and the other connected to one terminal of said voltage source;

the other of said branches comprising:

a second load transistor comprising a source, a drain, and an insulated gate;

a second driver transistor comprising a source, a drain, an insulated floating gate, an overlying insulated control gate and including means for permitting electron tunneling between said substrate and said floating gate;

wherein said second load transistor source and drain and said second driver transistor source and drain are connected in series combination across said voltage source to form a second branch node between said second load and second driver transistors, said second load and second driver transistor gates being connected together and connected to said first branch node and said first load and first driver transistor gates being connected to said second branch node; and

a second buffer transistor, said second buffer transistor comprising a source, a drain, and an insulated gate, said second buffer transistor gate connected to said second branch node and its source and drain being connected in series between the opposite terminal of said voltage source and said output node.

4,387,445

RANDOM ACCESS MEMORY CELL

Bernard A. Denis, Mennecy, France, and David B. Eardley, Stanfordville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1981, Ser. No. 237,796

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—179 **9 Claims**

1. A memory device comprising:

first and second PNP transistors each having an emitter, base and collector;

first and second NPN transistors each having an emitter, base and collector, the bases of said first and second NPN transistors being coupled together and to the collector of said first PNP transistor and to the base of said second PNP transistor, the collectors of said first and second NPN transistors being coupled together and to the base of said first PNP transistor;

third and fourth NPN transistors each having an emitter, base and collector, the bases of said third and fourth NPN transistors being coupled together and to the collector of said second PNP transistor and to the base of said first PNP transistor, and the collectors of said third and fourth NPN transistors being coupled together and to the base of said second PNP transistors;

first and second Schottky diodes coupled between the collector and base of said first and second PNP transistors, respectively;

first and second bit lines coupled to the emitters of said first and fourth NPN transistors, respectively;

a top line connected in common to the emitters of said first and second PNP transistors;

a bottom line connected in common to the emitters of said second and third NPN transistors;

driver means for raising the potentials on said top and bottom lines to thereby generate a potential difference be-

tween said bit lines in accordance with the data stored in said memory device; and

means for sensing said potential difference to determine the data stored in said memory device.

4,387,446

STACK CONTROL SYSTEM

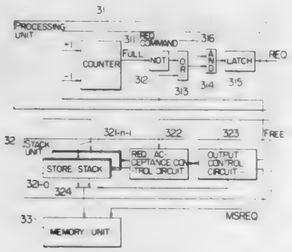
Terushi Okabayashi, Zama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 7, 1980, Ser. No. 204,779

Claims priority, application Japan, Nov. 14, 1979, 54/146580

Int. Cl.³ G11C *13/00*

U.S. Cl. 365—189 **4 Claims**



1. A stack control system in which information issued from an information source is transferred to an information receiving unit through a stack unit having a plurality of stacks, said stack control system comprising:

an information source including means for supervising the idle state of said stacks and means for generating a stack request signal under the control of said supervising means only when one of said stacks is idle; and

means in said stack unit including said plurality of stacks for storing the information from said information source in response to the stack request signal from said stack request signal generating means, and control means for controlling the transfer of information from said stacks to said information unit and for producing an idle stack signal in response thereto;

said supervising means including means for receiving said stack request signal from said stack request signal generating means and said idle stack signal from said control means and for supervising the idle state of said stacks in response thereto.

4,387,447

COLUMN AND GROUND SELECT SEQUENCE IN ELECTRICALLY PROGRAMMABLE MEMORY

Jeffrey M. Klass, Rosenberg; Paul A. Reed, and Isam Rimawi, both of Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 4, 1980, Ser. No. 118,349

Int. Cl.³ G11C *11/40, 7/00*

U.S. Cl. 365—203 **12 Claims**

5. A memory device comprising an array of rows and columns of memory cells, each column of cells being connected at one side to a ground line and at the other side to an output line, means for precharging said ground lines to a voltage level significantly greater than ground, means to select one of said ground lines and to connect it to ground to thereby conditionally discharge adjacent output lines through memory cells



connected to the selected ground line and to thereafter select one of said adjacent output lines to couple it to an output.

4,387,448

DYNAMIC SEMICONDUCTOR MEMORY DEVICE WITH DECREASED CLOCKS

Yoshihiro Takemae, Yokohama; Shigeki Nozaki, Kawasaki, and Tsutomu Mezawa, Aizuwakamatsu, all of Japan, assignors to A. Aoki & Associates, Tokyo, Japan

Filed Apr. 15, 1981, Ser. No. 254,541

Claims priority, application Japan, Apr. 15, 1980, 55/49438

Int. Cl.³ G11C *7/00*

U.S. Cl. 365—203 **5 Claims**



1. A dynamic semiconductor memory device comprising:

a memory cell;

a bit line operatively connected to said memory cell;

a sense amplifier having a first input operatively connected to said bit line, having a second input and having a ground side input; and

a pull up circuit, operatively connected to said bit line and said sense amplifier, including:

a capacitor;

a first switching transistor operatively connected between a power supply and said bit line and having a gate operatively connected to said capacitor; and

a second switching transistor operatively connected between the gate of said first switching transistor and the ground side input of said sense amplifier, operatively connected to said capacitor and having a gate operatively connected to the second input of said sense amplifier.

4,387,449

PROGRAMMABLE MEMORY DEVICE HAVING REDUCED POWER CONSUMPTION UPON UNSELECTION

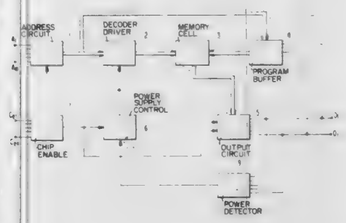
Hajime Masuda, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,547

Claims priority, application Japan, Nov. 8, 1979, 54-144692

Int. Cl.³ G11C *7/00*

U.S. Cl. 365—227 **10 Claims**



1. A memory device comprising electrically programmable memory elements, a selection circuit for selecting one of said memory elements, an output circuit having an output terminal for outputting information from the selected memory element, said memory device being of the type in which a selected memory element may be programmed by the application of a programming signal to said output terminal, the inprovement comprising:

detection means for detecting an application of said programming signal to said output terminal, and

activation means responsive to a detection output of said detection means indicating detection of said programming signal for activating said selection circuit without activating said output circuit.

4,387,450

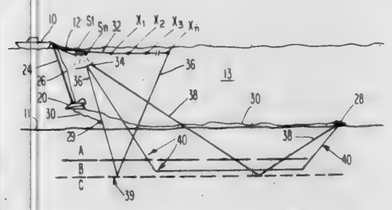
EXPENDABLE SEAFLOOR SENSOR EXPLORATION SYSTEM

Robert G. Zachariadis, Dallas, Tex., assignor to Mobil Oil Corporation, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,734

Int. Cl.³ G01V *1/38*

U.S. Cl. 367—20 **8 Claims**



1. A system for marine seismic survey comprising:

a submerged towable platform adapted to carry a plurality of releasable seismic sensors;

means above the water's surface for towing said platform under water and over a submerged area to be seismic surveyed;

a plurality of seismic sensors carried by said towable platform, eaah sensor comprising a transducer;

means for separately and sequentially releasing said each of said seismic sensors from said platform by means of an expendable signal transmission cable which breaks away from said platform when fully extended;

means for transmitting a data signal from each of the released sensors to said towable platform; and

means for transmitting said sensor data signals from said towable platform to said means for towing.

4,387,451

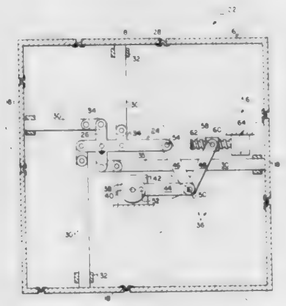
LOW FREQUENCY NONRESONANT ACOUSTIC PROJECTOR

Howard A. Wilcox, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 3, 1981, Ser. No. 270,081

Int. Cl.³ G10K *10/00*

U.S. Cl. 367—142 **13 Claims**



1. A nonresonant acoustic projector comprising:

a housing;

rocker arm means pivotally mounted within the housing on a fixed axis with respect to the housing and extending laterally within the housing from the rocker arm pivotal axis;

piston means sealably mounted in a wall of the housing so that one face of the piston is directed exteriorily and the other face of the piston is directed interiorily with respect to the housing;

said piston means having rod means which extends into the housing;

said rod means being pivotally connected to the rocker arm means at a position which is located laterally from the rocker arm pivotal axis; and

means connected to the rocker arm means at a lateral drive location for oscillating the rocker arm means about its pivotal axis so that the piston means will respond with reciprocatory movement.

4,387,452

OPTICAL DEVICE FOR THE RECORDING AND READING OF DATA MEDIA AND OPTICAL MEMORY SYSTEM INCORPORATING SUCH A DEVICE

Claude Bricot; Francois Le Carvennec, and Pierre Lepetit, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 21, 1981, Ser. No. 226,805

Claims priority, application France, Jan. 23, 1980, 80 01424

Int. Cl.³ G11B *7/08*

U.S. Cl. 369—32 **18 Claims**

1. An optical system for the reading and recording of data media incorporated at least two stacked disks which are rotated about a common axis including at least one device comprising:

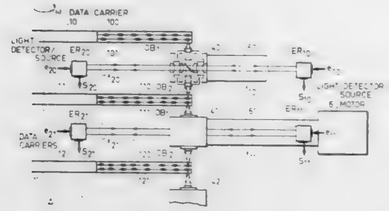
a mobile assembly incorporating:

(1) at least one recording-reading head with two focusing lenses having a common optical axis orthogonal to the main faces of the disks, said head being disposed between two consecutive disks and associated with a facing side of each of said consecutive disks,

(2) a first position control member including at least one solenoid integral with one of the two focusing lenses for controlling movement thereof along said optical axis, and

(3) a second position control member including at least one solenoid integral with the other lens for controlling movement thereof along said optical axis;

an intermediate member between said lenses having a channel whose walls have two windows;



a plane mirror in said channel reflecting on its main faces and forming an angle of $\pi/4$ radians with respect to said optical axes to reflect light transmitted through each of said windows from a light emitter to one of said lenses and reflect light from said lenses through one of said windows to a light receiver; and

a housing for said mobile assembly and members including an assembly of magnetic material forming a magnetic circuit for said solenoids.

4,387,453

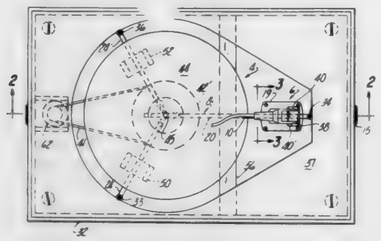
TURNTABLE SYSTEM WITH LOW AGGREGATE RESONANCE

David M. Zolt, 2338 Golfview, Troy, Mich. 48084

Continuation-in-part of Ser. No. 16,091, Feb. 28, 1979, Pat. No. 4,225,142. This application Jul. 11, 1980, Ser. No. 168,682

Int. Cl.³ G11B *25/04*

U.S. Cl. 369—263 **6 Claims**



1. A high fidelity turntable system for reproducing the sound recording on a disk, said system comprising:

a cabinet,

a platter adapted to support the disk and means for mounting said platter to said cabinet,

a tone arm assembly carrying a phonograph cartridge and means for mounting said tone arm assembly to said cabinet,

wherein said means for mounting said platter to said cabinet comprises:

a first member,

a second member and means for rigidly securing said second member to said first member so that at least a portion of the first member is spaced from at least a portion of the second member,

acoustical decoupling means for attaching said first and second members to said cabinet,

at least one damping member positioned in between and contacting said spaced portions of said first and second members, and

means for rotatably mounting said platter to said first or second member.

4,387,454

DISC-SHAPED RECORDING MEDIUM REPRODUCING APPARATUS

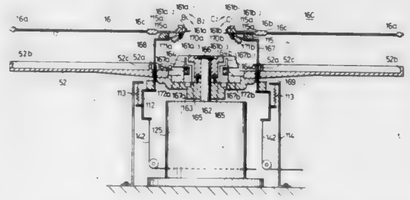
Takashi Yamamura, Yokohama, and Osamu Tajima, Ayase, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 31, 1981, Ser. No. 249,738

Claims priority, application Japan, Mar. 31, 1980, 55-41623

Int. Cl.³ G11B *9/06, 19/20*

U.S. Cl. 369—270 **8 Claims**



1. A reproducing apparatus for reproducing a disc-shaped recording medium which is accommodated within a case, said case comprising a jacket which has a space for accommodating said disc-shaped recording medium and an opening for allowing said disc-shaped recording medium to go into and out of said jacket, and a lid member inserted through said opening of said jacket for closing said opening of said jacket, said reproducing apparatus comprising:

holding means for holding and leaving said disc-shaped recording medium inside said reproducing apparatus when said case is inserted into and then pulled out from within said reproducing apparatus, in a direction which is opposite to the direction of the insertion;

turntable means for rotating said disc-shaped recording medium left inside said reproducing apparatus;

a hub on the turntable means for centering said disc-shaped recording medium when said disc-shaped recording medium is placed on the turntable means; and

clamping means for clamping said disc-shaped recording medium on said turntable;

said clamping means having a support member which is coupled to the turntable and is capable of unitarily rotating with the turntable means and of independently moving up and down with respect to said turntable means, for supporting said disc-shaped recording medium in the vicinity of a center hole thereof and for transferring said disc-shaped recording medium to said hub and to said turntable means, a moving mechanism for moving said support member upwardly and downwardly, clamping fingers on said support member for depressing said disc-shaped recording medium in a vicinity of the center hole thereof toward said turntable means while said disc-shaped recording medium is centered by said hub for reproducing said disc-shaped recording medium, said support member being decoupled from said moving mechanism and resting on the turntable means for reproducing said disc-shaped recording medium, said clamping fingers being positioned at a standby position while said support member is being raised, and an operating mechanism for placing said clamping fingers into a clamping position upon completion of the downward movement of said support member.

4,387,455

APPARATUS AND METHOD FOR TRANSMISSION OF COMMUNICATIONS

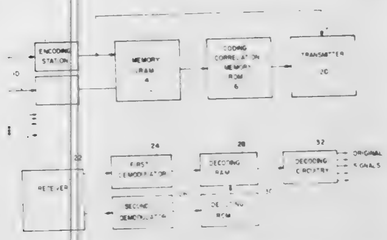
Nira Schwartz, Rehov David 14, Moshav Magshimim, Doar Yahud, Israel

Filed Jul. 13, 1981, Ser. No. 283,086

Claims priority, application Israel, Jun. 18, 1981, 63117

Int. Cl.³ H04L *9/00;* **H04N** *7/12;* **G08C** *25/00*

U.S. Cl. 370—11 **34 Claims**



1. Apparatus for transmission of information in digital form comprising:

means for providing a plurality of signals in parallel coded into a multiplicity of digital code elements in accordance with a first modulation technique; and

means for providing a plurality of coded addresses for transmission, each of said coded addresses representing a digital code in accordance with a second modulation technique corresponding to a combination of code elements of individual ones of said plurality of signals.

4,387,456

ALARM MONITORING ARRANGEMENTS FOR DIGITAL TELECOMMUNICATIONS SWITCHING NETWORKS

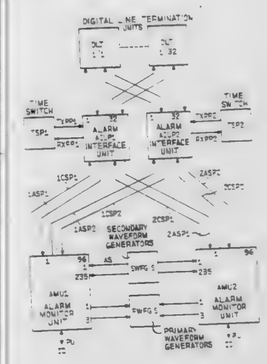
Peter V. Creteau, Wimborne, England, assignor to The Plessey Company plc, Illford, England

Filed Aug. 7, 1980, Ser. No. 176,135

Claims priority, application United Kingdom, Aug. 10, 1979, 7927858

Int. Cl.³ H04J *3/14*

U.S. Cl. 370—13 **3 Claims**



1. A telecommunications exchange handling time division multiplex digital information, comprising:

a plurality of digital line termination units, each terminating a single bidirectional time division multiplex digital exchange line;

a time space switching network; and

at least one alarm monitor unit;

wherein each digital line termination unit is served by one of the alarm monitor units, and each digital line termination unit includes error detection means for detecting errors, and wherein each digital line termination unit includes, for alarm communication purposes, means for communicating with an alarm monitor unit using status and command time division multiplex highways, and each digital line termination unit is allocated an address indicative of a discrete channel in the status time division multiplex highways serving the digital line termination unit, and each channel includes an alarm bit controlled by the digital line termination unit having the corresponding address, and the alarm monitor unit includes means for monitoring the alarm bits.

4,387,457

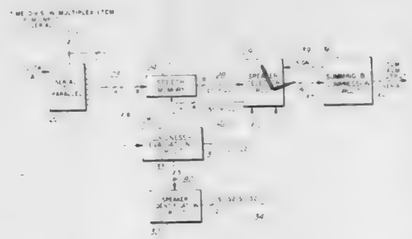
DIGITAL CONFERENCE CIRCUIT AND METHOD

Ernst A. Münter, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 12, 1981, Ser. No. 273,058

Int. Cl.³ H04M *3/56;* **H04Q** *11/04*

U.S. Cl. 370—62 **32 Claims**



1. A conference circuit for connection in a digital telephone system between a first TDM (time division multiplex) bus for carrying, in N distinct time slots of each frame, PCM (pulse code modulation) words to said conference circuit, and a second TDM bus for carrying, in N distinct time slots of each frame, PCM words from said conference circuit, for establishing a conference connection between N-conferees, wherein N is a positive integer, $3 \leqq N$, said conference circuit comprising:

memory means for storing the N PCM words received on said first TDM bus during said N time slots;

means for determing for each conferee, according to a predetermined criterion, which two PCM words stored in said memory means, excluding the PCM word originating from said conferee, meet said criterion; and

means for summing said two PCM words meeting said criterion and for applying the resultant PCM sum word to said second TDM bus.

4,387,458

HIGH CAPACITY SECURE ADDRESS LOOP NETWORK

Robert L. Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 28, 1981, Ser. No. 268,123

Int. Cl.³ H04J *6/02;* **G08B** *5/00;* **H04L** *5/14*

U.S. Cl. 370—88 **39 Claims**

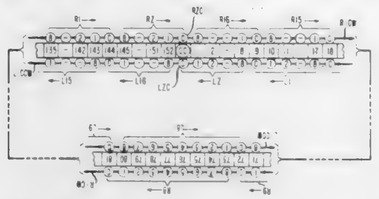
1. A loop switching system comprising,

clockwise and counterclockwise transmission loop paths,

common control means for defining recurrent frames of multi-bit time slots on each of said paths, and

a plurality of ports disposed between said transmission paths, each of said ports having means for selectively reading and altering the bits of said time slots on both of said paths, including means for recognizing an idle time slot traversing one of said transmission paths, and means for seizing an idle slot for use on a connection to another of said ports including means controlled by said recognizing means at

one said port for first marking busy an identifying bit in said idle time slot on one of said transmission paths



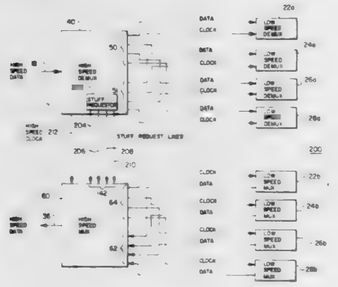
and for thereafter marking the identifying bit of the corresponding time slot on the other of said transmission paths.

4,387,459

NON-BUFFERED LOOP-TIMED CHANNEL BANK

Charles E. Huffman, Plano, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 22, 1981, Ser. No. 276,420
Int. Cl.³ H04J 3/06
U.S. Cl. 370—102 **10 Claims**



1. In a digital transmission system channel bank demultiplexing a high speed data stream into a plurality of lower rate channels, and multiplexing a plurality of lower rate channels to a high speed data stream, an improved technique for loop-timing said demultiplexing and multiplexing without the use of elastic buffers, comprising:

deriving stuff requests from stuff bits in the received high speed data stream;

extracting a high speed clock signal from said received data stream; and

applying said stuff requests and said high speed clock signal directly to said multiplexing for providing stuff bits in the transmitted high speed data stream and for clocking said transmitted high speed data stream.

4,387,460

SUPPLEMENTARY INFORMATION TRANSMITTING ARRANGEMENT FOR A DIGITAL DATA TRANSMISSION SYSTEM

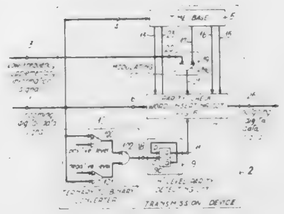
Patrick E. Boutmy, Paris, and Gilbert J. Le Fort, Lannion, both of France, assignors to Societe Anonyme de Telo-Communication, Paris, France

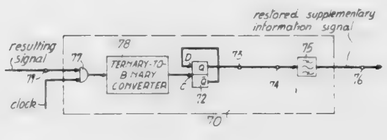
Continuation-in-part of Ser. No. 59,744, Jul. 23, 1979, abandoned. This application Nov. 28, 1980, Ser. No. 210,513
Int. Cl.³ H04J 3/12, 15/00
U.S. Cl. 370—110.4 **10 Claims**

1. A supplementary information transmitting arrangement for a digital data transmission system comprising a transmitter means and a receiver means;

said transmitter means (2) receiving an incoming digital data signal and a digital supplementary information signal having a low frequency wave representative of a rate which is much lower than the frequency of said incoming digital data signal for the purpose of inserting digital parity check words into said incoming digital data signal and to produce thereby a resulting digital data signal;

said transmitter means further comprising parity check word inserting means (11, 7) controlling the logic levels of the digits of said digital parity check words being inserted into the incoming digital data signal as a function of the logic levels of said supplementary information signal so that the accumulated parity of said resulting digital data signal is constant between two successive parity check words





which are inserted from the supplementary information signal;

said receiver means (70 or 80) receiving said resulting digital data signal, said receiver means comprising:

means (72) for detecting the parity modification in said resulting digital data signal; and

a band pass filter (75 or 86) connected to said parity modification detecting means and having its band pass centered on a frequency which is the same as or a multiple of said frequency of said low-frequency wave representative of said supplementary information signal, and restoring said supplementary information signal.

4,387,461

EXPERIENTIALLY DETERMINED SIGNAL QUALITY MEASUREMENT DEVICE FOR ANTIPODAL DATA

Randall G. Evans, San Jose, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Mar. 11, 1981, Ser. No. 242,777
Int. Cl.³ G06F 11/00; H04L 1/00
U.S. Cl. 371—5 **10 Claims**

1. A circuit for quantifying the signal quality of an antipodal data stream comprising:

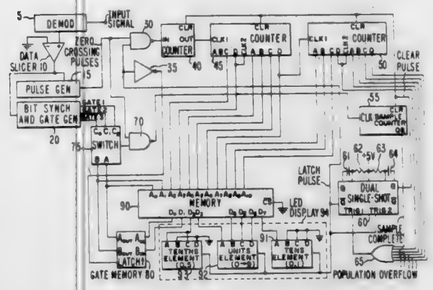
connected to said data stream, means for generating, at the same frequency as the bit frequency of said data stream, a repetitive pattern of pulses defining an error zone and a deadband zone;

connected to said data stream and to said generating means, means for combining said data stream with said pattern;

connected to said combining means, a sample counter for counting bits from said data stream that fall within one of said zones during a sampling time interval;

connected to said data stream, a population counter for counting the bits in said data stream; and

connected to said sample counter and to said population counter, a lookup table, containing experiential data, for



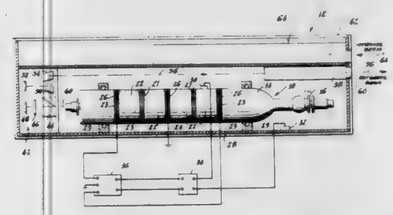
converting said sample and population counts into a quantitative representation of signal quality.

4,387,462

SINGLE-FREQUENCY STABILIZED LASER

Joseph Markus, 2211 D Fortune Dr., San Jose, Calif. 95131

Filed Jun. 16, 1981, Ser. No. 274,097
Int. Cl.³ H01S 3/13
U.S. Cl. 372—32 **7 Claims**



1. A single-frequency stabilized laser having a cold-cathode, hard-sill glass laser tube comprising:

a resistance coating on the exterior surface of said laser tube, a base member,

means for mounting said laser tube on said base member,

a power supply,

means for connecting said power supply to said resistance coating on said laser tube for heating said glass laser tube to stabilize the frequency and eliminate mode changes in the operation of said laser tube,

temperature sensor means mounted in said laser tube for monitoring the temperature of said laser tube,

temperature controller means having said temperature sensor means connected thereto, and

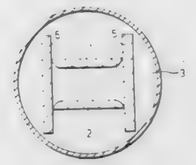
said temperature controller being connected to said power supply for controlling the current applied to said coating, whereby the temperature of said laser tube is continuously monitored and controlled.

4,387,463

ELECTRICAL DISCHARGE APPARATUS AND A GAS LASER PUMPED BY AN ELECTRICAL DISCHARGE THROUGH THE GAS

Kenneth R. Rickwood, 28, King Harold Rd., Colchester CO4 3SQ, Essex, England

PCT No. PCT/GB79/00168, § 371 Date Jun. 20, 1980, § 102(e) Date Jun. 17, 1980, PCT Pub. No. WO80/00898, PCT Pub. Date May 1, 1980
PCT Filed Oct. 19, 1979, Ser. No. 193,277
Claims priority, application United Kingdom, Oct. 20, 1978, 41376/78
Int. Cl.³ H01S 3/09
U.S. Cl. 372—86 **10 Claims**



1. Pulsed discharge gas laser apparatus comprising:

an optical cavity;

first and second spaced main discharge electrodes, respectively mounted adjacent said cavity and defining therebetween an electrical discharge space, through which passes the optical axis of the cavity;

pulse signal supply means connected to and operable for supplying to said electrodes electrical pulse signals for producing main laser-exciting discharges through gas in said discharge space; and

pre-ionising means, mounted adjacent said space, for producing initial discharges which photo-ionise said gas and facilitate initiation of said main discharges, said pre-ionising means comprising at least one pre-ionising discharge electrode member which has a surface portion extending adjacent said discharge space in the general direction of said optical axis, and which is made of material having a resistivity intermediate that of a dielectric and a good metallic conductor and is arranged so that a portion of each pulse signal supplied by said pulse signal supply means is passed as a current flow through the member and there is produced, for each main discharge, an initial photo-ionising discharge substantially evenly distributed along said surface portion of the member and correspondingly a gas pre-ionising effect which is substantially uniform along the optical axis direction of the discharge space.

4,387,464

VESSEL FOR AN ELECTRO FURNACE

Bodo Wronka, Duisburg, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 26, 1981, Ser. No. 278,009
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024549
Int. Cl.³ F27D 1/14
U.S. Cl. 373—76 **5 Claims**

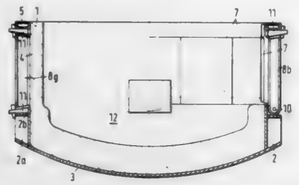
1. A metallurgical vessel comprising

(a) a furnace bottom for containing a melt, said furnace bottom being lined with refractory material,

(b) side walls extending above the top surface of said melt, said side walls comprising a plurality of side wall forming elements,

(c) a support ring extending around said furnace beneath the top surface of said melt, and a vessel top ring extending around said furnace adjacent the top of said side walls

(d) a plurality of spaced, vertically extending support members which are fixed by connecting means, during the operation of the vessel, to said support ring, and said top ring yet, are completely, laterally, selectively removable



from said vessel side walls by release of at least said connecting means at said top ring to provide exterior access to said vessel, and

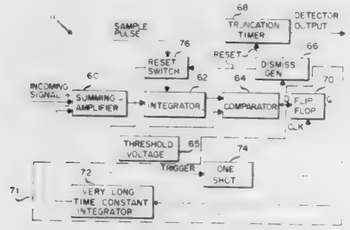
(e) a vessel cover supported on the surfaces formed by said top ring of said supports.

4,387,465

SEQUENTIAL THRESHOLD DETECTOR

James C. Becker, Lawndale, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Apr. 13, 1981, Ser. No. 253,331
Int. Cl.³ H03K *17/30;* **H04B** *15/00*
U.S. Cl. 375—1 **12 Claims**



1. In an improved sequential threshold detection apparatus for use in the receiver of a psuedo-random noise modulation spread-spectrum system having a transmitter and a receiver including respective matched pseudo-random code generators for modulating the transmitter output signal and demodulating the receiver input signal, respectively, in accordance with identical code sequences, an integrator for integrating the input signal, a comparator for comparing the integrated input signal with a pre-selected threshold voltage such that said integrated input signal has a first relationship to said threshold voltage when said code generators are not synchronized and a second relationship to said threshold voltage when said code generators are synchronized a generator for generating a reset pulse in response to said first relationship, and a truncation timer for generating a detector output pulse in response to the existence of said second relationship for a pre-selected time duration indicating synchronization between said code generators;

the improvement comprising:

means for applying a modifying voltage to said receiver input signal so as to modify its level;

means for maintaining said modifying voltage substantially constant over an acquisition period corresponding in time to a plurality of said reset pulses; and

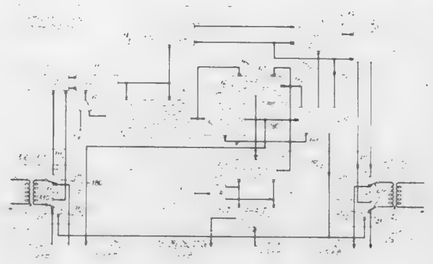
means for alternately increasing and decreasing said modifying voltage during successive sample periods, respectively, to provide a substantially constant median time duration between successive reset pulses over a plurality of acquisition periods.

4,387,466

HALF-DUPLEX DIGITAL TRANSMISSION SYSTEM

Alain Sire, Paris, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Mar. 26, 1981, Ser. No. 247,863
Claims priority, application France, Mar. 28, 1980, 80 07014
Int. Cl.³ H04B *7/14*
U.S. Cl. 375—4 **16 Claims**



1. A half-duplex digital transmission system having two digital packet emitting and receiving terminal means connected through a two-wire transmission line including bidirectional repeaters,

each of said repeaters comprising:

means for receiving and amplifying digital packets propagating in one transmission direction on said line, and means for receiving and amplifying digital packets propagating in the other transmission direction,

means for alternately switching the input of the amplifying means in one direction and the output of the amplifying means in the other direction, and means for switching alternately the output and the input of said amplifying means respectively, at least one of said repeaters also comprising: means for storing each received and amplified packet propagating in one of said transmission directions, said packet being stored for a period equal to at least twice the duration of a packet,

reception timing means triggered by the start of each received packet propagating in said one transmission direction for controlling the writing of said packet in said storing means,

emission timing means triggered by the start of each received and amplified packet propagating in the other transmission direction for controlling the readout of the packet stored during the preceding half-duplex transmission cycle, the packet being readout after a predetermined hold time following the reception of a packet propagating in said other transmission direction, and means for coupling the readout packet to the line.

4,387,467

SATELLITE TEST CHAMBER WITH ELECTROMAGNETIC REFLECTION AND RESONANCE DAMPING FOR SIMULATING SYSTEM GENERATED ELECTROMAGNETIC PULSES

William G. Kirby, Tullohoma, Tenn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 27, 1981, Ser. No. 286,817
Int. Cl.³ A61K *27/02;* **A61N** *5/00;* **C08J** *1/02;* **G21G** *5/00*
U.S. Cl. 378—68 **6 Claims**

1. A satellite test chamber for simulating system generated electromagnetic pulses comprising

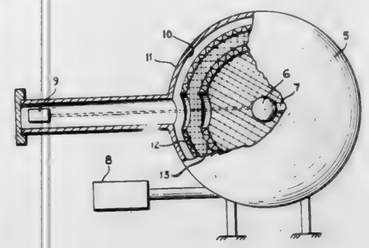
a spherical chamber,

means for holding a satellite to be tested at the center of said chamber,

an X-ray source for generating high power X-ray pulses positioned to direct X-ray pulses generated thereby to the

center of said chamber and onto a satellite disposed thereat, said X-ray source and said spherical chamber being integrated to form a hermetically sealed system,

vacuum means for evacuating said hermetically sealed system, and



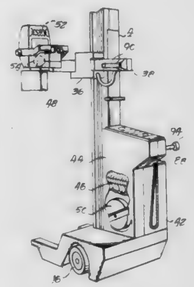
a spherical resistive resonance suppression grid within and concentric with said spherical chamber, said resonance suppression grid being physically spaced from the inner surface of said spherical chamber and electrically isolated therefrom.

4,387,468

MOBILE X-RAY APPARATUS

Kenneth R. Fenne, Glen Ellyn, and Carl A. Wassell, Streamwood, both of Ill., assignors to Techny Industries, Inc., Glenview, Ill.

Filed Oct. 9, 1981, Ser. No. 310,077
Int. Cl.³ A61B *6/00*
U.S. Cl. 378—198 **4 Claims**



4. Mobile X-ray apparatus comprising a base with floor-engaging wheels, a column rotatable on said base about a vertical axis 90° degrees in either direction from a predetermined reference, means for releasably locking said column at said reference against rotation, a horizontal arm projecting from said column above the base, a carriage mounting said arm on said column for horizontal and vertical movement; an X-ray tube head assembly on said arm and comprising an X-ray tube, an X-ray transformer and a collimator, and counterweighting means on said column comprising a storage bin and X-ray tube control circuitry for counterbalancing the weight of said tube head assembly as the column is rotated.

4,387,469

TUNER CONTROL SYSTEM

Takao Miyazaki, and Satoru Tazaki, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed May 28, 1981, Ser. No. 267,951
Claims priority, application Japan, Jun. 3, 1980, 55-75080; Jun. 3, 1980, 55-75081
Int. Cl.³ H04B *1/26;* **H03J** *7/28*
U.S. Cl. 455—161 **3 Claims**



1. A tuner control system which comprises:

a radio receiver means;

a detector for detecting a signal level of a wave received by said radio receiver means;

a means for setting a reference signal level;

a comparator means for comparing a detected signal level with said reference signal level;

a switching means for switching tuning frequency of waves received by said radio receiver means;

a control means for controlling the operation of said switching means in response to a result of the comparison in said comparator means and to a predetermined wave condition, in which

said reference signal level setting means has a high reference signal level setting circuit and a low reference signal level setting circuit;

said comparator means comprises a first comparator and a second comparator;

said first comparator is arranged to compare a detected signal level with said reference signal level,

said control means is arranged to operate said switching means when said detected signal level is lower than said low reference signal level,

said second comparator is arranged to compare said detected signal level with said high reference signal level, and

said control means has first and second counters and a digital comparator, said first counter being arranged to count the number of times when said signal level was lower than said reference signal level, said second counter to count the number of times when said signal level was higher, respectively, and, said digital comparator being arranged to compare the counts of said first and second counters therebetween.

4,387,470

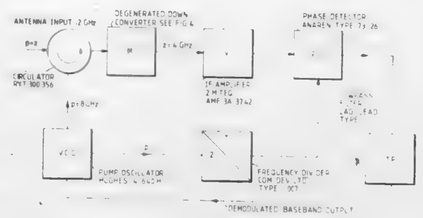
RECEIVER INPUT STAGE WITH AN IMPROVEMENT OF THE SIGNAL TO NOISE RATIO

Robert Maurer, Saarbrücken, and Hans P. Petry, Mettlach, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 17, 1979, Ser. No. 104,022
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1978, 2854128
Int. Cl.³ H04B *1/26;* **H03C** *3/06*
U.S. Cl. 455—257 **5 Claims**

1. A receiver input stage comprising: an upper sideband parametric degenerated down converter for converting a high frequency input signal into an intermediate frequency signal; demodulating means having a signal input; a controllable oscil-

lator connected in a control loop with said converter and said demodulating means for supplying said converter with a pump signal which follows the intermediate signal in frequency and phase and which has a frequency equal to twice the intermediate frequency such that the sum of the pump signal frequency and the intermediate frequency equals three times the intermediate frequency; and means for terminating said converter, connecting the output of said converter to said demodulating means signal input, and defining a real resistance at the converter reflective frequency, where the reflective frequency is the difference between the pump signal frequency and the intermediate signal frequency whereby said circuit has an available power gain greater than unity and an improved signal



to noise ratio for the intermediate frequency signal at said signal input of said demodulating means.

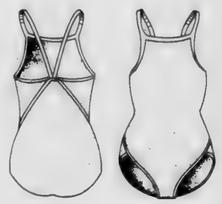
DESIGNS

JUNE 7, 1983

269,219
BRASSIERE
Harold Stern, Wyckoff, and Anthony Tedeschi, Highland Lakes, both of N.J., assignors to International Playtex, Inc., Stamford, Conn.
Filed May 20, 1980, Ser. No. 151,510
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24



269,220
BATHING SUIT
Michel Joseph, Saverne, France, assignor to Adidas Fabrique de Chaussures de Sport, Landersheim, France
Filed Apr. 4, 1980, Ser. No. 137,496
Claims priority, application France, Oct. 5, 1979, 363
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—40



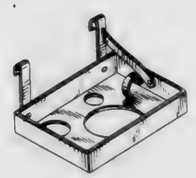
269,221
SHIRT
Presley H. Portwood, 400 Orchard Dr., Taylors, S.C. 29687; Philip N. Simmons, 7 Nash St., Greenville, S.C. 29601, and Sandra L. Coppage, 37 Lisa Dr., Greenville, S.C. 29615
Filed Apr. 16, 1981, Ser. No. 254,923
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—208



269,222
SKATE SHOE
Icaro Olivieri, Montebelluna, Italy, assignor to Gamebridge Inc., St. Jerome, Canada
Filed Jan. 12, 1981, Ser. No. 224,614
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309



269,223
TRAY FOR WALKER OR SIMILAR ARTICLE
Mildred T. Freeman, 2757 Palisades Ave., Bronx, N.Y. 10463
Filed Oct. 23, 1980, Ser. No. 200,083
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D3—10



269,224
DIVER'S BAG
John D. Church, 11 Anarahi Pl., Auckland, New Zealand
Filed Aug. 12, 1980, Ser. No. 177,428
Claims priority, application New Zealand, Feb. 13, 1980, 16429
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—36



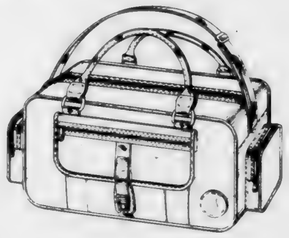
269,225
PORTABLE GOLF EQUIPMENT CASE
William A. Picco, 12433 Surrey Circle Dr., Tantallon, Md. 20022
Filed Jul. 21, 1981, Ser. No. 285,481
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—37



269,226
LUGGAGE
Ted Stark, Montclair, N.J., assignor to M/M Verdi International, Inc., Jersey City, N.J.
Filed Apr. 7, 1982, Ser. No. 366,287
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



269,227
LUGGAGE
Ted Stark, Montclair, N.J., assignor to M/M Verdi International, Inc., Jersey City, N.J.
Filed Apr. 7, 1982, Ser. No. 366,288
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



269,228
LUGGAGE
Ted Stark, Montclair, N.J., assignor to M/M Verdi International, Inc., Jersey City, N.J.
Filed Apr. 7, 1982, Ser. No. 366,290
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



269,229
COMBINED CRIB, CHEST AND BED UNIT
Merlin A. Brunner, New London; Harvey J. Draheim, Weyauwega, and Michael J. Schaffer, New London, all of Wis., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Feb. 25, 1981, Ser. No. 238,246
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—14



269,230
MULTIPLE SEATING UNIT
Jeffrey R. Fear, Toronto, Canada, assignor to Innovative Metal Inc., Rexdale, Canada
Filed Mar. 5, 1979, Ser. No. 17,308
Claims priority, application Canada, Jan. 26, 1979, 26-01-79-5
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—59



269,231
CHAIR OR THE LIKE
Rodney Pickler, Rte. 1, Box 731, Robbins, N.C. 27325
Filed Jun. 15, 1981, Ser. No. 273,739
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68



269,232
CHAIR
Jack Benveniste, Palos Verdes Estates, Calif., assignor to Barzilay Company, Rancho Dominguez, Calif.
Filed Mar. 5, 1981, Ser. No. 240,796
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



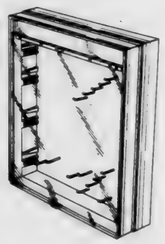
269,233
RACK
Jack J. Gerber, P.O. Box 1437, Paulding, Ohio 64879
Filed Sep. 18, 1980, Ser. No. 188,465
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—114



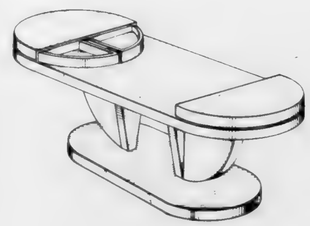
269,234
DENTAL CABINET
Carl W. Voltz, Lindenfels, Fed. Rep. of Germany, assignor to Sybron Corporation, Rochester, N.Y.
Filed Mar. 27, 1981, Ser. No. 248,489
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—150



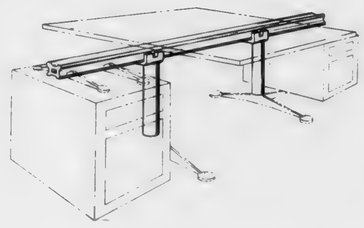
269,235
DISPLAY CABINET
Robert Drapeau, Berwyn, Ill., assignor to Chicago Show Printing Company, Morton Grove, Ill.
Division of Ser. No. 918,169, Jun. 22, 1978. This application Feb. 23, 1981, Ser. No. 236,773
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—172



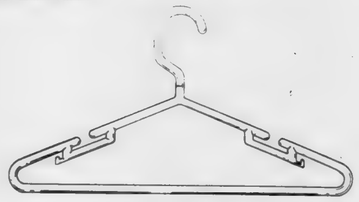
269,236
TABLE
James L. Ohle, 600 S. York Rd., Elmhurst, Ill. 60126
Division of Ser. No. 135,275, Mar. 31, 1980. This application Dec. 23, 1981, Ser. No. 333,723
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



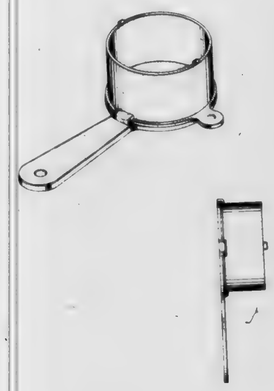
269,237
COMBINED LEG AND MOUNTING MEMBER UNIT FOR A PEDESTAL DESK OR SIMILAR ARTICLE
Bruce A. Burdick, San Francisco, Calif., assignor to Herman Miller, Inc., Zeeland, Mich.
Filed Oct. 3, 1980, Ser. No. 192,941
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



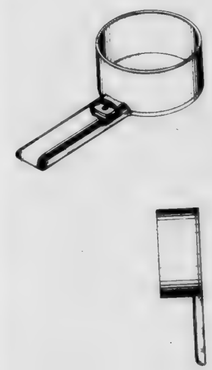
269,238
HANGER
Leonard Bisk, Elkins Park, and Gunther Rogahn, Lansdale, both of Pa., assignors to Independent Products Company, Inc., Lansdale, Pa.
Division of Ser. No. 148,896, May 12, 1980, Pat. No. Des. 265,156. This application Dec. 28, 1981, Ser. No. 335,112
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—254



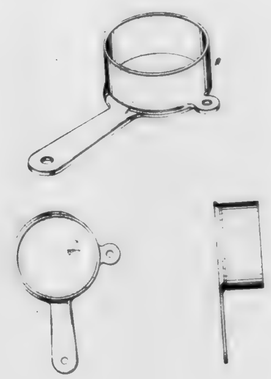
269,239
MEASURING RECEPTACLE WITH REMOVABLE BOTTOM
Shirley J. P. Kelson, 9238-35th Ave. SW., Seattle, Wash. 98126
Filed Feb. 9, 1981, Ser. No. 232,824
Term of patent 14 years
Int. Cl. D07—*04;* D10—*04*
U.S. Cl. D7—50



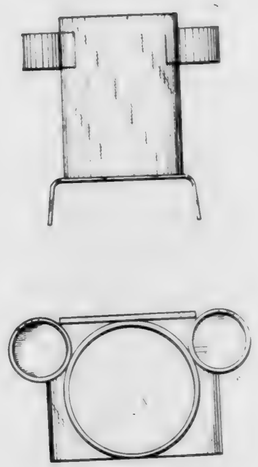
269,240
MEASURING RECEPTACLE WITH INSERT HELD REMOVABLE BOTTOM
Shirley J. P. Kelson, 9238-35th Ave. SW., Seattle, Wash. 98126
Filed Feb. 9, 1981, Ser. No. 232,825
Term of patent 14 years
Int. Cl. D07—*04;* D10—*04*
U.S. Cl. D7—50



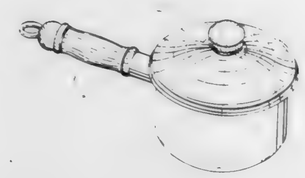
269,241
MEASURING RECEPTACLE HAVING REMOVABLE BOTTOM WITH HANDLE
Shirley J. P. Kelson, 9238-35th Ave. SW., Seattle, Wash. 98126
Filed May 20, 1981, Ser. No. 265,618
Term of patent 14 years
Int. Cl. D07—*04;* D10—*04*
U.S. Cl. D7—50

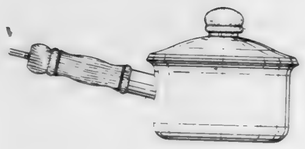


269,242
COMBINED HOLDER FOR DECANTER AND CUPS
James B. Grunden, Box 3578, Boles Acres, Alamogordo, N. Mex. 88310
Filed Sep. 24, 1980, Ser. No. 190,435
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—71



269,243
COVERED SAUCEPAN
Yanta H. T. Lam, Hong Kong, Hong Kong, assignor to Meyer Manufacturing Co. Ltd., Hong Kong, Hong Kong
Filed Sep. 29, 1980, Ser. No. 192,113
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—361

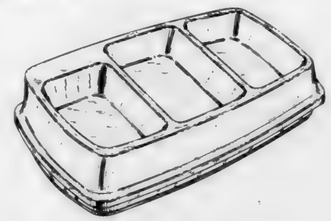


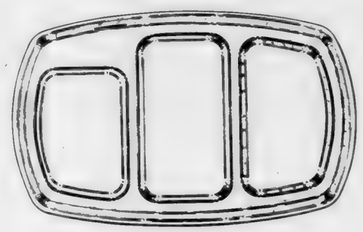


269,244
KNIFE
Barry H. Becher, and Edward J. Valenti, both of 59 W. Shore Rd., Warwick, R.I. 02889
Filed Jan. 12, 1981, Ser. No. 224,492
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—151



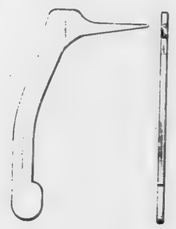
269,245
ELECTRIC FOOD DISH
John W. Fabjancic, Mantua, Ohio, assignor to Questor Corporation, Tampa, Fla.
Filed May 18, 1981, Ser. No. 264,288
Term of patent 14 years
Int. Cl. D07—*01, 02*
U.S. Cl. D7—326



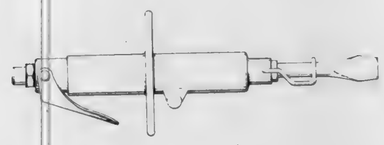




269,246
PULL TAB OPENER
Daniel E. Kroeger, 511 Sycamore, Hayward, Calif. 94544, and Robert C. Anderson, 6215 Manthey Rd., French Camp, Calif. 95231
Filed Sep. 29, 1980, Ser. No. 191,555
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D8—18



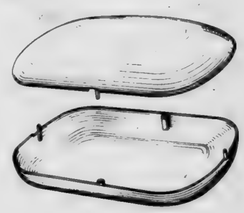
269,247
PNEUMATIC TOOL FOR CLEANING, DESCALING OR ROUGHENING METALLIC SURFACES OR THE LIKE
Fritz Lenzin, Arlesheim, and Paul Dummermuth, Zunzgen, both of Switzerland, assignors to Maschinenfabrik, von Arx AG, Sissach, Switzerland
Filed Oct. 2, 1980, Ser. No. 193,167
Term of patent 14 years
Int. Cl. D8—*04*
U.S. Cl. D8—61



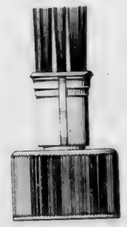
269,248
BOTTLE OR SIMILAR ARTICLE
Camille Ziccardi, 1831 W. Eddy St., Chicago, Ill. 60657
Continuation-in-part of Ser. No. 85,275, Oct. 16, 1979. This application Jun. 16, 1980, Ser. No. 159,483
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—375



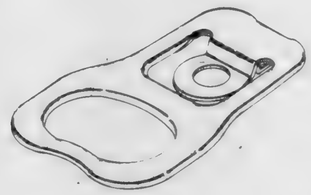
269,249
PACKAGING CONTAINER
Renzo Ciliario, Alba, Italy, assignor to Ferrero S.p.A., Alba, Italy
Filed Jun. 5, 1980, Ser. No. 156,519
Claims priority, application Italy, Dec. 20, 1979, 53830-B/79
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—424



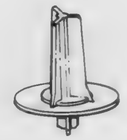
269,250
COMBINED DISPENSING CAP AND BRUSH
Robert D. Berghash, Buffalo, N.Y., assignor to Brimms Inc., Tonawanda, N.Y.
Filed Mar. 9, 1981, Ser. No. 241,623
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—436



269,251
TAB FOR AN EASY OPENING CAN END
Ermal C. Fraze, 355 W. Stroop Rd., Dayton, Ohio 45429
Filed Mar. 9, 1981, Ser. No. 241,931
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—438



269,252
PULL TAB TEAR CAP FOR MEDICAL LIQUID CONTAINER
Thomas W. Balistreri, Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Apr. 13, 1981, Ser. No. 253,341
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—435



269,253
CARRYING HANDLE FOR CONTAINER CARTONS OR THE LIKE
Paul L. Gagnon, 5540 W. 5th, No. 105, Oxnard, Calif. 93030
Filed Mar. 5, 1981, Ser. No. 240,863
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—434

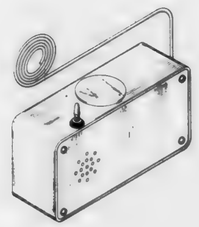


269,254
WRIST WATCH
Kazuo Kishimoto, Tokyo, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan
Filed Feb. 12, 1981, Ser. No. 235,046
Claims priority, application Japan, Aug. 12, 1980, 55-033007
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—32

269,255
ILLUMINATED LEVEL
Ronald A. Olson, P.O. Box 580, Big Pine, Calif. 93513
Filed Mar. 13, 1981, Ser. No. 243,527
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—69



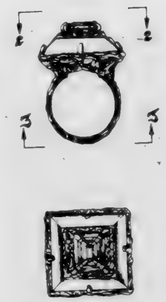
269,256
FREEZER ALARM
Billy J. McMillan, 104 W. Central, Warren, Ark. 71671
Filed Feb. 27, 1981, Ser. No. 239,064
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—106



269,257
GRANDFATHER CLOCK PENDULUM
Arthur Umanoff, Ardsley, N.Y., assignor to Howard Miller Clock Company, Zeeland, Mich.
Filed Apr. 22, 1981, Ser. No. 256,303
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—130



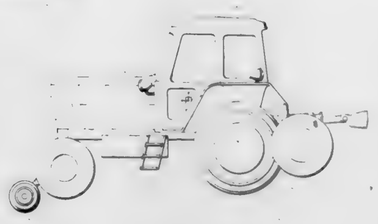
269,258
RING
Edwin E. Conley, 1405 S. Joplin, Tulsa, Okla. 74112
Filed Oct. 31, 1980, Ser. No. 203,811
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—36



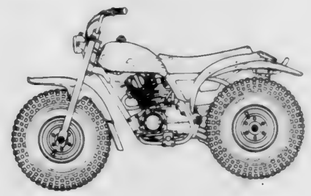
269,259
SLED
William R. Butler, and Mildred A. Butler, both of 3144 Maryland, Flint, Mich. 48506
Filed Feb. 4, 1981, Ser. No. 232,801
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—11



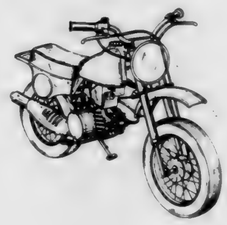
269,260
RAILWAY CAR MOVING VEHICLE
Tapio M. Rannanmaki, Espoo, Finland, assignor to Vaino Tapio Saalasti, Helsinki, Finland
Filed Aug. 13, 1979, Ser. No. 65,966
Term of patent 14 years
Int. Cl. D12—*03*
U.S. Cl. D12—36



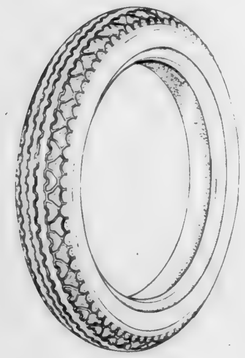
269,261
MOTORTRICYCLE
Yoshio Mikado, Asaka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 23, 1980, Ser. No. 171,401
Claims priority, application Japan, Jan. 24, 1980, 55-1842
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110



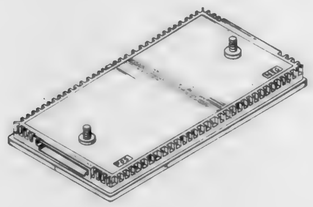
269,262
MOTORCYCLE
Kozo Kuyama, Asaka; Junji Kikuchi, Akabanenishi, and Mutsuo Hirose, Niiza, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Honda Motor Co., Ltd., Tokyo, Japan
Filed Jul. 30, 1980, Ser. No. 173,848
Claims priority, application Japan, Feb. 1, 1980, 55-3131
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110



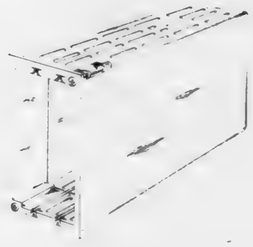
269,263
TIRE FOR A VEHICLE WHEEL
Barrington S. Gill, Sutton Coldfield, England, assignor to Dunlop Limited, London, England
Filed Nov. 13, 1980, Ser. No. 206,661
Claims priority, application United Kingdom, May 16, 1980, 994908
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



269,264
COVER FOR A BATTERY CASE
Terry Oxenreider, Wernersville, Pa., assignor to General Battery Corporation, Reading, Pa.
Filed Mar. 6, 1980, Ser. No. 127,731
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D13—10



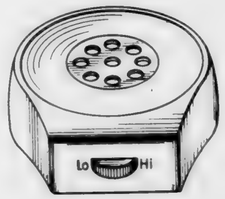
269,265
HOUSING FOR A CONTROL PANEL MOUNTED INSTRUMENT
Thomas R. Bean, Concord Township; Raymond Golden, Willowick; James E. Souders, and Edward F. Stockmaster, both of Mentor, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Feb. 13, 1981, Ser. No. 234,275
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—41



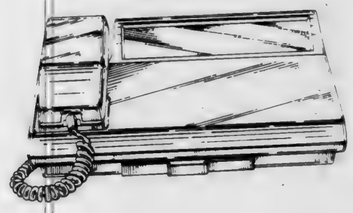
269,266
TAPE PLAYER
Kaoru Sumita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 30, 1981, Ser. No. 259,149
Claims priority, application Japan, Nov. 7, 1980, 55-046619
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6

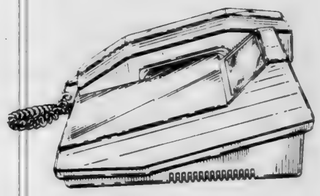


269,267
TELEPHONE AMPLIFIER
Dwight C. Brown, 1516 N. Nicholas St., Arlington, Va. 22205
Filed Sep. 14, 1982, Ser. No. 417,918
Term of patent 14 years
Int. Cl. 14—*03*
U.S. Cl. D14—57



269,268
TELEPHONE UNIT
Anthony S. Ko, North Point, Hong Kong, assignor to Lamba Tele-Equipment Limited, Hong Kong, Hong Kong
Filed May 22, 1980, Ser. No. 152,420
Claims priority, application United Kingdom, Nov. 26, 1979, 992543
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

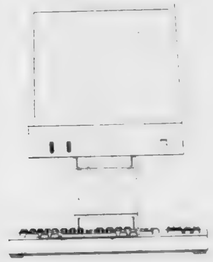




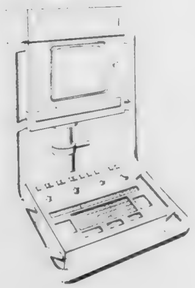
269,269
TELEPHONE DIALLING AND INFORMATION STORAGE UNIT
Anthony S. Ko, North Point, Hong Kong, assignor to Lamba Tele-Equipment Limited, Hong Kong, Hong Kong
Filed May 22, 1980, Ser. No. 152,419
Claims priority, application United Kingdom, Nov. 26, 1979, 992544
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66



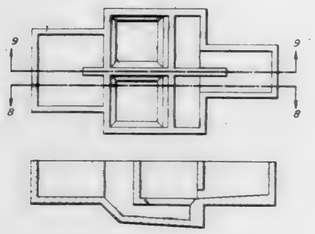
269,270
KEYBOARD DISPLAY TERMINAL
John B. Coppola, Trumbull, Conn., assignor to Allied Corporation, Morris Township, Morris County, N.J.
Filed Sep. 19, 1980, Ser. No. 190,010
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—106



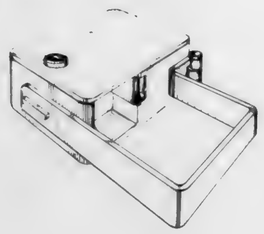
269,271
ELECTRONIC DIGITAL CONTROL PANEL AND DISPLAY UNIT
Ettore Sottsass, Milan, Italy, assignor to Mandelli S.p.A., Piacenza, Italy
Filed Mar. 27, 1981, Ser. No. 248,367
Claims priority, application Italy, Oct. 2, 1980, 22978/80[U]
Term of patent 14 years
Int. Cl. D13—*02*; D14—*02*
U.S. Cl. D14—106



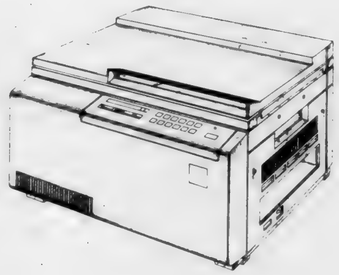
269,272
DUAL BOWL FILTER FOR MOLTEN METAL CASTING SYSTEMS
Robert H. Ogletree, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.
Filed Dec. 18, 1980, Ser. No. 217,929
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—145



269,273
DESIGN FOR PARKING METER CONTROLLER OR SIMILAR ARTICLE
Joel W. Garber, 808 South St., Philadelphia, Pa. 19147, and Peter A. Reich, Philadelphia, Pa., assignors to Joel W. Garber, Philadelphia, Pa.
Filed Jan. 25, 1980, Ser. No. 115,399
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—199



269,274
PAPER COPIER OR SIMILAR ARTICLE
Robert M. Hofland, and Gary L. Switser, both of Boulder, Colo., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Feb. 13, 1981, Ser. No. 234,137
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



269,275
ILLUMINATED MAGNIFIER
Thomas D. Tweedie, Monrovia, Calif., assignor to Tung On Development Co. Ltd., Hong Kong, Hong Kong
Filed Oct. 16, 1980, Ser. No. 197,511
Claims priority, application United Kingdom, Apr. 17, 1980, 80994525
Term of patent 14 years
Int. Cl. D16—*08*
U.S. Cl. D16—135



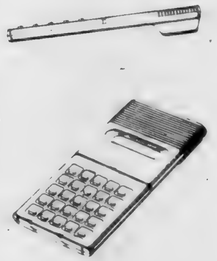
269,276
ELECTRONIC CALCULATOR
Masaji Sawada, and Harumi Sakamoto, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jun. 22, 1981, Ser. No. 275,765
Claims priority, application Japan, Dec. 24, 1980, 55-54814
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



269,277
DESK-TOP ELECTRONIC CALCULATOR
Eiichi Yoshioka, Abiko; Osamu Murakami, Kawasaki, and Kaname Suwa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 28, 1981, Ser. No. 306,364
Claims priority, application Japan, Apr. 3, 1981, 56-14338
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



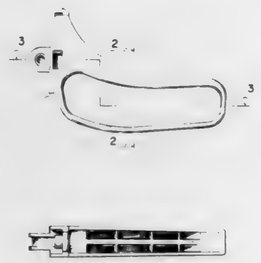
269,278
DESK-TOP ELECTRONIC CALCULATOR
Eiichi Yoshioka, Abiko, and Kazuhiro Arakawa, Yamato, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 28, 1981, Ser. No. 306,379
Claims priority, application Japan, Mar. 31, 1981, 56-13383
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7
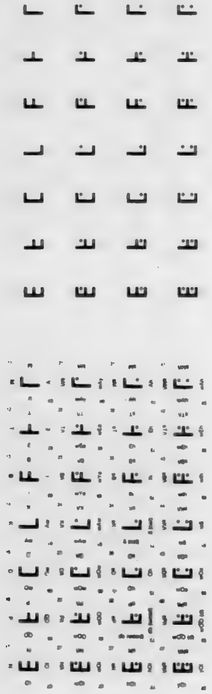


269,279
DESK-TOP ELECTRONIC CALCULATOR
Junji Hirooka, Higashimurayama, and Hideo Fushimoto, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 9, 1981, Ser. No. 310,482
Claims priority, application Japan, Apr. 17, 1981, 56-16475
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



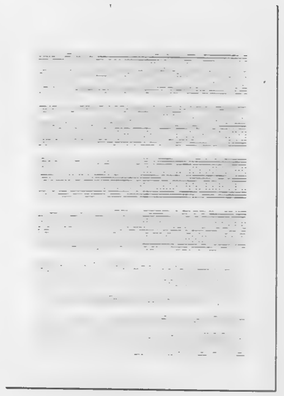
269,280
DRIVING LEVER FOR A LABELLING APPARATUS
Wolfgang Reinke, Rothernberg, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Dec. 22, 1980, Ser. No. 218,635
Claims priority, application Switzerland, Jul. 4, 1980, 111 269
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—19



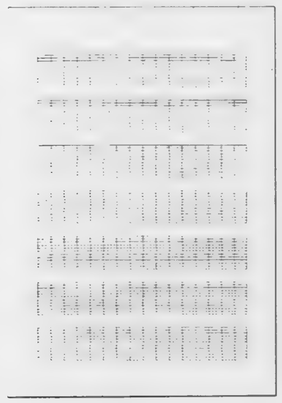
269,281
FONT OF LANGUAGE CHARACTERS
Elmer J. Hankes, 1768 Colfax Ave. South, Minneapolis, Minn. 55403
Filed Aug. 3, 1981, Ser. No. 289,276
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—25



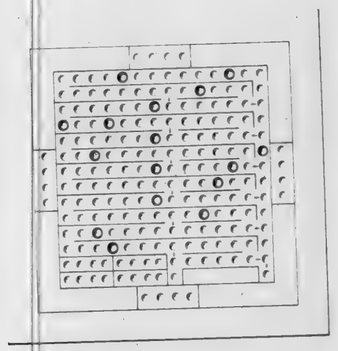
269,282
MUSIC PAPER
Bent I. Svegin, Noddebogade 17, ground floor, 2200 Copenhagen N, Denmark
Filed Mar. 12, 1981, Ser. No. 242,996
Claims priority, application Denmark, Sep. 15, 1980, 725
Term of patent 14 years
Int. Cl. D19—*01*
U.S. Cl. D19—1



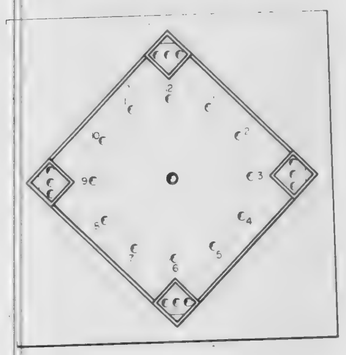
269,283
MUSIC PAPER
Bent I. Svegin, Noddebogade 17, ground floor, 2200 Copenhagen N, Denmark
Filed Mar. 12, 1981, Ser. No. 242,997
Claims priority, application Denmark, Sep. 15, 1980, 726
Term of patent 14 years
Int. Cl. D19—*01*
U.S. Cl. D19—1



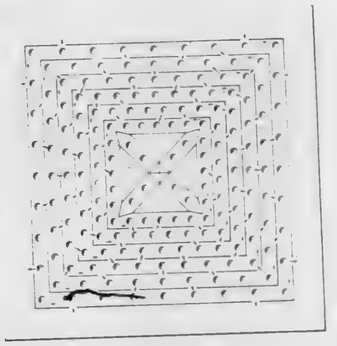
269,284
GAME BOARD
Wayne D. Woolwine, P.O. Box 178, Seminary, Miss. 39479
Continuation-in-part of Ser. No. 9,271, Feb. 1, 1979, abandoned.
This application Mar. 25, 1981, Ser. No. 247,593
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—20



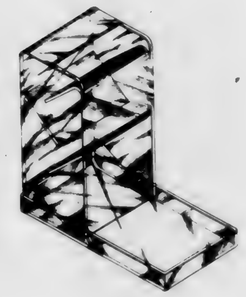
269,285
GAME BOARD
Wayne D. Woolwine, P.O. Box 178, Seminary, Miss. 39479
Continuation-in-part of Ser. No. 9,274, Feb. 1, 1979, abandoned.
This application Mar. 25, 1981, Ser. No. 247,594
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—20



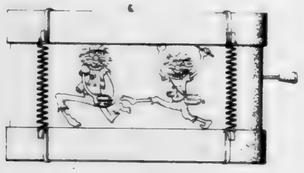
269,286
GAME BOARD
Wayne D. Woolwine, P.O. Box 178, Seminary, Miss. 39479
Continuation-in-part of Ser. No. 9,272, Feb. 1, 1979, abandoned.
This application Mar. 25, 1981, Ser. No. 247,595
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—20



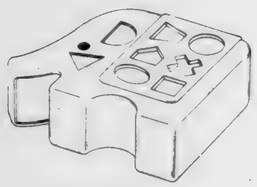
269,287
DIE ROLLER
Harold Z. Gray, 18401 Chase St., Northridge, Calif. 91325
Filed Aug. 31, 1981, Ser. No. 298,069
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—41



269,288
TOY SNARE DRUM
John B. Jones, Granville, Mass., assignor to Noble & Cooley, Granville, Mass.
Filed May 8, 1981, Ser. No. 261,715
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—64



269,289
PUZZLE TOY
Shinroku Nakao, Yokahama; Yoshiyasu Ishii, and Hiroaki Matsuda, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Oct. 6, 1980, Ser. No. 194,700
Claims priority, application Japan, Apr. 8, 1980, 55-13786
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—104



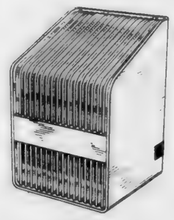
269,290
ROACH TRAP
Carl E. Carlsen, Rutledge Hotel, 161 Lexington Ave., New York, N.Y. 10016
Filed Jan. 5, 1981, Ser. No. 222,695
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19



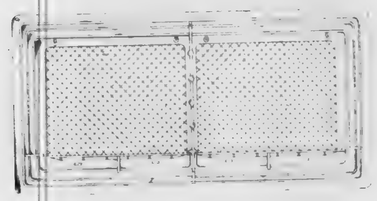
269,291
SMELLING STRIP HOLDER
Jean-Pierre Hofer, Cologny, and Gaston Rebetez, Geneva, both of Switzerland, assignors to Firmenich, S.A., Geneva, Switzerland
Filed Mar. 30, 1981, Ser. No. 249,079
Claims priority, application United Kingdom, Jan. 8, 1981, 998378
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150

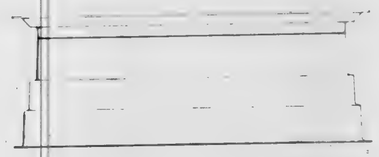


269,292
AIR FRESHENER
John McGaw, 30 Sirkay Dr., Markham, Ontario, Canada
Filed May 27, 1982, Ser. No. 382,619
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150

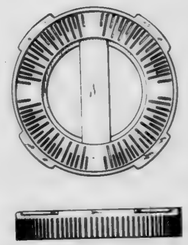


269,293
VENTILATOR
Elwin E. Peirce, 3890 Monroe Ave. NE., and Arthur L. Waltz, 4415 - 75th Ave. SE., both of Salem, Oreg. 97301
Filed Dec. 4, 1978, Ser. No. 966,156
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151





269,294
FILTER CARTRIDGE
William J. Rakocy, Madison, and Ronald L. Muller, Old Saybrook, both of Conn., assignors to North American Philips Corporation, New York, N.Y.
Filed Sep. 2, 1980, Ser. No. 183,683
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163



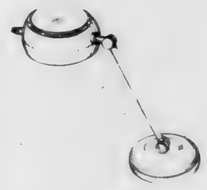
269,295
STETHOSCOPE HEAD
Max Bloom, 335 Hope St., Providence, R.I. 02906
Filed Mar. 2, 1981, Ser. No. 239,886
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—20



269,296
SPOT-FLOOD LIGHT FOR EMERGENCY VEHICLES
Edward S. Stanuch, Oak Forest; Steven R. Akiyama, Park Forest, and Sigmund S. Urbanski, Alsip, all of Ill., assignors to Federal Signal Corporation, Oak Brook, Ill.
Filed Feb. 18, 1981, Ser. No. 235,522
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D26—63



269,297
ADJUSTABLE DESK LAMP
Samuel Lebowitz, Brooklyn, N.Y., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed Apr. 4, 1980, Ser. No. 137,500
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—65



269,298
HAIR CURLING IRON
Robert Oberheim, Liederbach, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany
Filed Jun. 15, 1981, Ser. No. 274,012
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1981, 73 MR 8939
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35

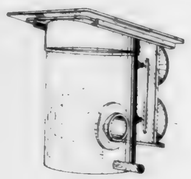


269,299
COMBINED HAIR CURLING IRON AND COVER THEREFOR
Robert Oberheim, Liederbach, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany
Filed Jun. 15, 1981, Ser. No. 274,022
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1981, 73 MR 8939
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35

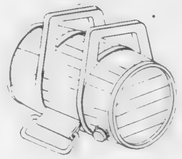




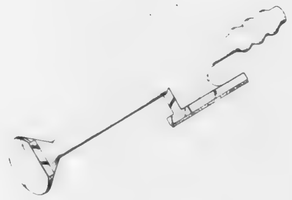
269,300
BIRD SEED FEEDER
Morton L. Blasbalg, 26 Sandro Dr., Warwick, R.I. 02886
Filed Oct. 10, 1978, Ser. No. 949,812
The portion of the term of this patent subsequent to Apr. 7, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—15



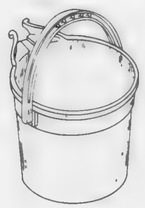
269,301
RETRACTABLE LEASH FOR DOG COLLARS
Daniel T. Deibert, P.O. Box 1553, San Marcos, Calif. 92069
Filed Feb. 9, 1981, Ser. No. 232,949
Term of patent 14 years
Int. Cl. D30—*04*
U.S. Cl. D30—39



269,302
COMBINED GARBAGE DISPOSAL PLUNGER AND SCRAPER
Frederick F. Auerbach, 2660 E. Parley's Way, Salt Lake City, Utah 84109
Filed Sep. 12, 1980, Ser. No. 186,521
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—42



269,303
PAIL
Daniel A. Goetz, and Charles R. Goetz, both of Pittsburgh, Pa., assignors to Stylette Plastics, Inc., Oakdale, Pa.
Filed Sep. 14, 1981, Ser. No. 300,620
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—53



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TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF JUNE, 1983

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Verzella, David J.; Fischer, William C.; Adams, Don L.; and Wright, Stuart C., 4,387,430, Cl. 364-434.000.
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Dola, Frank P.; and Nicholas, Vincent, 4,386,820, Cl. 339-156.00R.
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Nickel, Horst, 4,387,050, Cl. 260-143.000.
Schmitz, Reinold, 4,387,054, Cl. 260-383.000.
Schwindt, Jurgen; Grogler, Gerhard; Ganster, Otto; and Koster, Johannes, 4,387,057, Cl. 260-453.0AR.

Bayer, Ernst; and Frank, Hartmut. Chiral polysiloxanes, process for their preparation and use. 4,387,206, Cl. 528-28.000.

BBC Brown Boveri & Company Limited: *See—*
Beckershoff, Wolfgang, 4,386,885, Cl. 415-178.000.
Melton, Keith; Mercier, Olivier; and Schroder, Gunther, 4,386,971, Cl. 148-11.50R.

Beal, George M. Mental functions complexity model. 4,386,916, Cl. 434-270.000.

Becker, Gerard, to Societe Industrielle de Boulay. Device for the fluid-tight anchorage of an electric conducting cable inlet. 4,387,267, Cl. 174-65.0SS.

Becker, James C., to TRW Inc. Sequential threshold detector. 4,387,465, Cl. 375-1.000.

Becker, John A. Hydraulically operated downhole oil well pump. 4,386,654, Cl. 166-105.500.

Beckershoff, Wolfgang, to BBC Brown Boveri & Company Limited. Cooled guide support vane. 4,386,885, Cl. 415-178.000.

Becton Dickinson and Company: *See—*
Buck, Robert T., 4,386,716, Cl. 222-37.000.

Bee Line Company: *See—*
Harmon, Samuel R., 4,386,517, Cl. 72-455.000.

Beecham Group Limited: *See—*
Corbett, David F.; Southgate, Robert; and Eglington, Alfred J., 4,387,051, Cl. 260-245.20T.

Beeman, Terrence M. Ground locating device for cathodically protected steel piping and/or electrical conduits. 4,387,337, Cl. 324-52.000.

Beery, Jack, to Xerox Corporation. Programmed acceleration. 4,386,842, Cl. 355-8.000.

Behn, Reinhard, to Siemens Aktiengesellschaft. Method of producing electrical layer capacitors with glow-polymerizate layers as dielectrics. 4,387,113, Cl. 427-40.000.

Behrens, Herbert: *See—*
Kittel, Arthur; Gerken, Heiner; and Behrens, Herbert, 4,386,862, Cl. 400-144.200.

Behrenz, Wolfgang: *See—*
Hoffmann, Hellmut; Kruger, Bernd-Wieland; and Behrenz, Wolfgang, 4,387,060, Cl. 260-936.000.

Beker, Henry J.; and Friend, John M. K., to Racal-Comsec Limited. Data transmission systems. 4,387,371, Cl. 340-825.520.

Belcher, Samuel L.: *See—*
Thompson, William W.; and Belcher, Samuel L., 4,386,703, Cl. 206-557.000.

Belknap, Brian D.: *See—*
Belknap, John C., III; and Belknap, Brian D., 4,386,643, Cl. 152-216.000.

Belknap, John C., III; and Belknap, Brian D. Tire traction device. 4,386,643, Cl. 152-216.000.

Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., to International Flavors & Fragrances Inc. Use of norbornyl oxyacetaldehyde in augmenting or enhancing the aroma of detergents. 4,387,035, Cl. 252-174.110.

Bell, Alan E., to RCA Corporation. Optical recording medium and information record with tracking aid. 4,387,381, Cl. 346-135.100.

Bell, Peter M.; and Mao, Ho-Kwang, to Carnegie Institution of Washington. Method and apparatus for producing solid hydrogen. 4,386,950, Cl. 62-10.000.

Bell Telephone Laboratories, Incorporated: *See—*
Boulin, David M., 4,386,459, Cl. 29-574.000.
Carbrey, Robert L., 4,387,458, Cl. 370-88.000.
Klockow, Dennis H., 4,386,460, Cl. 29-593.000.
Plewes, John T.; Quick, Nathaniel R.; and Robbins, Murray, 4,387,276, Cl. 179-125.000.

Belokin, Martin P., to Martin-Paul, Inc. Cone-shaped retrievable and self-contained power projectile for an insect killing gun. 4,386,478, Cl. 43-135.000.

Belton Corporation, The: *See—*
Grice, Karl R.; Bannister, Jimmy L.; Gregory, Leland M.; and Whitfield, Frank J., 4,387,293, Cl. 219-529.000.

Bendix Autolite Corporation: *See—*
Tien, Tseng-Ying; Weber, David C.; and Woodruff, Philip R., 4,387,359, Cl. 338-34.000.

Bendix Corporation, The: *See—*
Frear, David L.; and Gallusser, David O., 4,386,816, Cl. 339-59.00R.
Presley, Rex W., 4,387,328, Cl. 318-696.000.
Thoman, David C.; and Eastman, James M., 4,386,553, Cl. 91-361.000.
Woo, Ji Y.; and Ritsema, Irving R., 4,386,682, Cl. 188-71.800.

Benecke, Wilhelm; and Rosenberg, Heinz, to Siemens Aktiengesellschaft. Stationary magnetic frequency multiplier. 4,387,419, Cl. 363-174.000.

Benezra, Leo L.: *See—*
Covitch, Michael J.; Smith, Mark F.; and Benezra, Leo L., 4,386,987, Cl. 156-155.000.

Benjamin, Harry L., to Centro Corporation. Instrumented tool. 4,386,532, Cl. 73-862.040.

Benjamins, Harm M., to Byk-Mallinckrodt CIL B.V. Radioisotope generator. 4,387,303, Cl. 250-432.0PD.

Benker, Horst; Plensat, Lienhard; and Kratzer, Gernot, to Richard Hirschmann, Radiotechnisches Werk. Cable underpinning. 4,386,817, Cl. 339-103.00B.

Benkler, Walter; and Hartmann, Werner. Electrically insulated rail joint connection. 4,386,736, Cl. 238-159.000.

Benn, Raymond C.; Curwick, LeRoy R.; and Andryszak, Kenneth R., to Inco Research & Development Center, Inc. Dispersion-strengthened nickel-base alloy. 4,386,976, Cl. 148-410.000.

Bennet, Brian S.: *See—*
Cunningham, Douglas J.; and Bennet, Brian S., 4,386,802, Cl. 296-213.000.

Bennett, William G.; and Spease, Arthur L., to Teleflex Incorporated. Mold for remote control assembly (vibration dampening). 4,386,755, Cl. 249-83.000.

Berczes, Jozsef: *See—*
Kiss, Jozsef; Solymos, Andras; Berczes, Jozsef; and Szabo, Karoly, 4,386,657, Cl. 166-261.000.

Bereiter, Rolf, to Hilti Aktiengesellschaft. Self-drilling anchor dowel. 4,386,882, Cl. 411-387.000.

Berg, Eric P., to Minnesota Mining and Manufacturing Company. Oligomeric methacryl substituted alkylsiloxanes. 4,387,240, Cl. 556-440.000.

Bergeson, Jerry R.: *See—*
Axen, Steven G.; Huff, Ray V.; and Bergeson, Jerry R., 4,386,806, Cl. 299-5.000.

Bergh, Ralph A., to Leland Stanford Junior University, The. Polarizer and method. 4,386,822, Cl. 350-96.150.

Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, to BASF Aktiengesellschaft. Navy dye mixtures. 4,386,934, Cl. 8-639.000.

Bergwerksverband GmbH: *See—*
van Heek, Karl H.; Juntgen, Harald; and Peters, Werner, 4,386,942, Cl. 48-202.000.

Berkowitz, Murray, to Curtiss-Wright Corporation. Delivery valve assembly, especially for rotary compressors. 4,386,890, Cl. 418-61.00A.

Bernstein, I. Leonard: *See—*
Vijay, Hari M.; Young, Noel M.; and Bernstein, I. Leonard, 4,387,091, Cl. 424-88.000.

Bernstein, Seymour: *See—*
Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, 4,387,059, Cl. 260-506.000.

Berry, Raymond J.; Linkhart, Ken R.; and Parker, Edward J., to Advanced Technology Laboratories, Inc. Real time digital scan converter. 4,387,365, Cl. 340-347.0DD.

Berryhill, Robert A., to Austin-Berryhill Fabricators, Inc. Fireplace stove. 4,386,599, Cl. 126-126.000.

Berthet, Jean P.: *See—*
Viaud, Jean; and Berthet, Jean P., 4,386,561, Cl. 100-5.000.

Berwick, Albert E., to Varian Associates, Inc. Permanent magnet structure for linear-beam electron tubes. 4,387,323, Cl. 315-5.350.

Bessolo, Jeffrey M.; and Gillberg, James E., to RCA Corporation. Watch circuit with oscillator gain control. 4,387,350, Cl. 331-116.0FE.

Best Lock Corporation: *See—*
Best, Walter E.; and Foshee, William R., 4,386,510, Cl. 70-369.000.

Best, Walter E.; and Foshee, William R., to Best Lock Corporation. Key-changeable lock core. 4,386,510, Cl. 70-369.000.

Bethke, Monika: *See—*
Engelmann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jurgen; and Sydow, Udo, 4,387,159, Cl. 430-544.000.

Betz Laboratories, Inc.: *See—*
May, Roger C.; and Sessa, Frank C., 4,387,027, Cl. 210-697.000.

Bi, Le-Khac, to Atlantic Richfield Company. Diolefin monomer purification process for anionic polymerization. 4,387,264, Cl. 585-822.000.

Bielawiec, Ryzard M.: *See—*
Vonk, Wim; Bielawiec, Ryzard M.; and van der Horn, Hendrik J., 4,386,523, Cl. 73-200.000.

Bigorajski, Gunter: *See—*
Gumbel, Harald; and Bigorajski, Gunter, 4,386,943, Cl. 51-298.000.

Biodec, Inc.: *See—*
Locsei, Anthony A., 4,386,613, Cl. 128-760.000.

Biolab Equipment Ltd.: *See—*
Woolacott, Charles F., 4,387,026, Cl. 210-669.000.

Bishop, Thomas R.: *See—*
Hooker, Richard B.; and Bishop, Thomas R., 4,386,871, Cl. 403-377.000.

Blach, Rodney J. Article identification process and articles for practice thereof. 4,387,112, Cl. 427-7.000.

Black & Decker Inc.: *See—*
Chaconas, Peter C., 4,386,545, Cl. 83-817.000.

Black, Thomas J.: *See—*
Hines, Randal C.; and Black, Thomas J., 4,386,649, Cl. 165-12.000.

Blanc, Hughes: *See—*
Aigle, Michel; Blanc, Hughes; Fournier, Philippe; Gerbaud, Claude; Guerineau, Michel; Heslot, Henri; and Lacroute, Francois, 4,387,162, Cl. 435-172.000.

Blaser, Anton J. Sling shot apparatus. 4,386,598, Cl. 124-21.000.

Blechwarenfabrik Gustav Gruss & Co.: *See—*
Herten, Rolf, 4,386,514, Cl. 72-347.000.

Bluege, John H., to United Technologies Corporation. High power laser mirror repair. 4,386,986, Cl. 156-94.000.

Bluem, Gary R.: *See—*
Jackson, Jeffrey A.; Kluge, Douglas J.; Bluem, Gary R.; Espiritu Santo, Eugenio; and Kittle, Carl E., 4,386,533, Cl. 73-862.640.

Bluver, David B.; and Nelson, Carl S. Leader pin locking device. 4,386,868, Cl. 403-24.000.

Boden, Richard M., to International Flavors & Fragrances Inc. 1-Ethoxy-1-ethanol acetate-acetaldehyde mixtures for augmenting or enhancing the aroma of detergents. 4,387,036, Cl. 252-174.110.

Boden, Richard M.: *See—*
Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., 4,387,035, Cl. 252-174.110.

Boehringer Mannheim GmbH: *See—*
Heerdt, Ruth; Wolff, Hans P.; Kaiser, Fritz; Schaumann, Wolfgang; and Kuhnle, Hans, 4,387,104, Cl. 424-319.000.

Boeing Company, The: *See—*
Haslund, Ralph L., 4,386,578, Cl. 118-669.000.

Bohm, Georg G. A.; Vescelius, Lee E.; and Hamed, Gary R., to Firestone Tire & Rubber Company, The. Thermoplastic elastomer blends with bitumen. 4,387,175, Cl. 524-68.000.

Bohnert, Jozsef: *See—*
Martinko, Matvas; Elekes, Andras; Simon, Kalman; Bohnert, Jozsef; Nemeth, Janos; Bole, Karoly; and Ilyes, Zoltan, 4,386,878, Cl. 405-291.000.

Boisset, Bernard, to Societe Industrielle Bertrand Faure. Seats with an adjustable-tilt back-rest. 4,386,805, Cl. 297-362.000.

Boldt Industries, Inc.: *See—*
Phillips Marvin R.; and Johnston, Erwin L., 4,386,451, Cl. 17-1.00R.

Bole, Karoly: *See—*
Martinko, Matvas; Elekes, Andras; Simon, Kalman; Bohnert, Jozsef; Nemeth, Janos; Bole, Karoly; and Ilyes, Zoltan, 4,386,878, Cl. 405-291.000.

Bolich, Raymond E., Jr., to Procter & Gamble Company, The. Hair conditioning compositions. 4,387,090, Cl. 424-70.000.

Bomber, Robert J.: *See—*
Ware, Ronald D.; and Bomber, Robert J., 4,386,804, Cl. 297-248.000.

Bonneron, Mark P., to Mecanorma S.A. Dry transfer process which employs ultraviolet light and photosensitive materials. 4,387,153, Cl. 430-200.000.

Bonnet, Jean-Claude; and Pithouse, Kenneth B., to Raychem Limited. Process for the production of silicone resins. 4,387,196, Cl. 525-477.000.

Bonnin, Richard M.: *See—*
Stewart, David P. J.; and Bonnin, Richard M., 4,386,718, Cl. 222-185.000.

Boots Company Limited, The: *See—*
Gower, Christopher J., 4,387,253, Cl. 568-812.000.

Bordini, Fosco; and Mauri, Luigi, to Moplefan S.p.A. Metalized bonded sheets comprising a polyolefinic film and a polychlorovinyl film. 4,387,135, Cl. 428-220.000.

Borg, Arthur N., to Zenith Radio Corporation. Tuning system for a television receiver. 4,387,400, Cl. 358-191.100.

Borg-Warner Corporation: *See—*
Day, Arthur R., III; and McMenamy, Fred, 4,387,368, Cl. 340-539.000.
Ivey, John S., 4,386,922, Cl. 474-242.000.
Roberts, Richard W., 4,386,921, Cl. 474-201.000.

Borgman, Robert J.: *See—*
Erhardt, Paul W.; Borgman, Robert J.; and O'Donnell, John P., 4,387,103, Cl. 424-309.000.

Boros, Lawrence A., to Rockwell International Corporation. Method for welding automatic brake shoes. 4,387,288, Cl. 219-107.000.

Bose, Bimal K.: *See—*
Zach, Franz C.; Bose, Bimal K.; Espelage, Paul M.; and Sicko, John S., 4,387,421, Cl. 364-148.000.

Bosse, Dieter; and Frass, Werner, to Hoechst Aktiengesellschaft. Light-curable mixture and light-sensitive copying material made therewith. 4,387,151, Cl. 430-175.000.

Boston, Farwell C.: *See—*
Trentham, H. Lee; Crow, John H.; and Boston, Farwell C., 4,387,037, Cl. 252-184.000.

Bottenbruch, Ludwig: *See—*
Meyer, Karl-Heinrich; Bottenbruch, Ludwig; and Jakob, Wolfgang, 4,387,251, Cl. 568-727.000.

Boulin, David M., to Bell Telephone Laboratories, Incorporated. Electrical measurement of level-to-level misalignment in integrated circuits. 4,386,459, Cl. 29-574.000.

Boutmy, Patrick E.; and Le Fort, Gilbert J., to Societe Anonyme de Tele-Communication. Supplementary information transmitting arrangement for a digital data transmission system. 4,387,460, Cl. 370-110.400.

Bouvet, Jean M.: *See—*
Chevalier, Claude; Zammarchi, Gino; and Bouvet, Jean M., 4,386,687, Cl. 192-3.300.

Bowrey, Ronald G.; Fullford, Andrew K.; and Kearney, Michael S., to Unisearch Limited. In-store drying control method and sytem. 4,386,471, Cl. 34-26.000.

Brackmann, Warren A.; and Snaidr, Stanislav M., to Rothmans of Pall Mall Canada Limited. Tobacco stem shredding. 4,386,617, Cl. 131-290.000.

Bradley, Gerald: *See—*
White, Alan C.; and Bradley, Gerald, 4,387,097, Cl. 424-248.550.

Bradley, John J.: *See—*
King, Richard L.; Bradley, John J.; and Miu, Ming T., 4,387,423, Cl. 364-200.000.

Bradshaw, Norman F., to Carrier ys Limited. Air conditioning system. 4,386,733, Cl. 236-49.00[illegible]

Bradshaw, Robert S.: *See—*
Petersen, David J.; Tartar, Paul E.; and Bradshaw, Robert S., 4,387,298, Cl. 235-462.000.

Braduzzi, Paolo: *See—*
Sacceddu, Pasquale; Vitobello, Vincenza; Braduzzi, Paolo; Cimini, Nadia; and Degen, Ludwig, 4,387,163, Cl. 435-197.000.

Brahm, Richard: *See—*
Franke, Werner; Seibel, Markus; Brahm, Richard; and Trittler, Hans, 4,387,148, Cl. 430-66.000.

Brandell, John T., to Halliburton Company. Downhole pump with floating seal means. 4,386,655, Cl. 166-106.000.

Brandenburg, Bruce L.; and Bauer, Gerald L., to Sterling Drug Inc. Process for treating thiosulfate containing liquors. 4,387,084, Cl. 423-567.00A.

Brandstetter, Franz; Hambrecht, Juergen; Naarmann, Herbert; and Schuster, Hans, to BASF Aktiengesellschaft. Thermoplastic molding materials containing polymers with polyphenylene ether groups and styrene polymers. 4,387,189, Cl. 525-68.000.

Brannegan, Daniel P.: *See—*
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,387,234, Cl. 549-417.000.

Brat[illegible]m, Max. Apparatus for the long-term storage of biological material. 4,386,504, Cl. 62-380.00.

Brennan, Thomas M.; Brannegan, [illegible]; Weeks, Paul D.; and Kuhla, Donald E., to Pfizer Inc. Int[illegible]s for the preparation of gamma-pyrones. 4,387,235, Cl. 549-417.000.

Brent, Albert: *See—*
Crouch, William B.; Richter, George N.; Marion Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward [illegible]., 4,386,941, Cl. 48-197.00R.

Brevick, Arnold A., to Methode Electronics, Inc. Column mounted switch for vehicles and the like. 4,387,279, Cl. 200-61.540.

Bricot, Claude; Le Carvennec, Francois; and Lepetit, Pierre, to Thomson-CSF. Optical device for the recording and reading of data media and optical memory system incorporating such a device. 4,387,452, Cl. 369-32.000.

Bridgestone Tire Company Limited: *See—*
Kadono, Mamoru, 4,386,919, Cl. 441-133.000.

Briley, Jess. Shotgun choke modifier and m[illegible]thod. 4,386,477, Cl. 42-79.000.

Brimmer, Frances M.: *See—*
Coombs, Donald W., 4,386,457, Cl. 29-235.000.

Briska, Marian: *See—*
Bahr, Dietrich J.; and Briska, Marian, 4,387,119, Cl. 427-209.000.

Britax Weathershields Limited: *See—*
Cunningham, Douglas J.; and Bennet, Brian S., 4,386,802, Cl. 296-213.000.

British Railways Board: *See—*
Waters, John M., 4,386,570, Cl. 104-11.000.

Bromley, Eric, to Coleco Industries, Inc. Electronic sports-action game with improved game-object simulation. 4,386,776, Cl. 273-85.00G.

Bronstein, John M. TV Game cartridge with expandable memory. 4,386,773, Cl. 273-1.00E.

Bronstert, Bernd; Hahn, Herbert; Hoffmann, Gerhard; and Lenz, Werner, to BASF Aktiengesellschaft. Photosensitive multi-layer material and preparation of adhesive layers employed therein. 4,387,157, Cl. 430-271.000.

Brooks, Peter L.: *See—*
Cook, Paul M.; Otte, Richard F.; Claypool, James L.; White, Lawrence J.; Broyles, Harry C.; and Brooks, Peter L., 4,386,629, Cl. 138-110.000.

Browder, Lewis B., to Eastman Kodak Company. Multi-speed magnetic recorder with wear resistance playback head. 4,387,408, Cl. 360-103.000.

Brown Group Recreational Products, Inc.: *See—*
Cunard, Joel C.; and Ziegler, William H., Jr., 4,387,070, Cl. 264-247.000.

Brown, Robert A.; Caamano, Jesus L.; and Kasprzak, Henry A., to Textron, Inc. Polymer compositions and manufacture. 4,387,181, Cl. 524-714.000.

Brown, Robert F. Boat anchor. 4,386,575, Cl. 114-299.000.

Brown & Williamson Tobacco Corporation: *See—*
Cantrell, Daniel V., 4,386,618, Cl. 131-336.000.

Broyles, Harry C.: *See—*
Cook, Paul M.; Otte, Richard F.; Claypool, James L.; White, Lawrence J.; Broyles, Harry C.; and Brooks, Peter L., 4,386,629, Cl. 138-110.000.

Brunswick Corporation: *See—*
Moss, Elvis W.; and Gifford, Richard L., 4,386,742, Cl. 242-84.10R.
Moss, Elvis W., 4,386,743, Cl. 242-84.20A.

Brustle, Klaus; and Rock, Erich. Adjustable furniture hinge. 4,386,449, Cl. 16-238.000.

Bryan, Deborah L.: *See—*
Gleason, John G.; Kinzig, Charles M.; and Bryan, Deborah L., 4,387,239, Cl. 549-562.000.

Brymitre Limited: *See—*
Emms, Roy O.; Rae, William; and Wilson, John, 4,387,128, Cl. 428-60.000.

Buchanan, William T.; Pocius, Frances C.; and Peters, Donald L., to Nalco Chemical Company. Chemical drum feeding and flushing system. 4,386,637, Cl. 141-65.000.

Buck, Robert T., to Becton Dickinson and Company. Liquid measuring device. 4,386,716, Cl. 222-37.000.

Bucker, Edward R., to Exxon Research and Engineering Co. Conditioner for adherence of nickel to a tin oxide surface. 4,387,116, Cl. 427-75.000.

Buckman, Charles E., to Wrightman Enterprises, Inc. Ball marker and ground repair tool. 4,386,774, Cl. 273-32.00A.

Budd Company, The: *See—*
Bachman, Jack L., 4,386,693, Cl. 198-409.000.
Eggert, Walter S., Jr., 4,386,600, Cl. 126-438.000.
Weinhaus, Harold R., 4,386,982, Cl. 156-79.000.

Buffalo Forge Company: *See—*
Neal, Maynard J., 4,386,886, Cl. 415-213.00A.

Buhler, Ulrich; Kuhlein, Klaus; Stahl, Theo; Tappe, Horst; and Roth, Kurt, to Cassella Aktiengesellschaft. Process for producing discharge reserve prints on textile materials with amino-azo-benzene dyes. 4,386,935, Cl. 8-451.000.

Burgdorf, Jochen; Reinartz, Hans-Dieter; and Quitmann, Horst, to ITT Industries, Inc. Pressure control valve. 4,386,808, Cl. 303-6.00C.

Burgos Pty. Limited: *See—*
Van Heel, Theodore; and Van Heel, Henry, 4,386,694, Cl. 198-648.000.

Burke Company, The: *See—*
Holt, Neil L.; and Olsen, William G., 4,386,486, Cl. 52-125.500.

Burkhardt, Jurgen: *See—*
Amann, Hans; Burkhardt, Jurgen; Luck, Klaus; and Poeppel, Fritz O., 4,386,473, Cl. 37-57.000.

Burlington Industries, Inc.: *See—*
Shelton, John H., 4,387,118, Cl. 427-176.000.

Burns, Lyle D., to Phillips Petroleum Company. Motor fuel. 4,387,257, Cl. 585-14.000.

Burns, Richard D.; and Wesseldyk, Albert J., to General Electric Company. Methods and apparatus for fabricating electrical phase insulators for dynamoelectric machines. 4,387,001, Cl. 156-495.000.

Burroughs Corporation: *See—*
Petersen, David J.; Tartar, Paul E.; and Bradshaw, Robert S., 4,387,298, Cl. 235-462.000.

Burton, Thomas A.: *See—*
Tretinyak, Carl W.; and Burton, Thomas A., 4,386,606, Cl. 604-220.000.

Bussey, Marlin G.: *See—*
Zabrocki, Vincent S.; and Bussey, Marlin G., 4,387,169, Cl. 521-79.000.

Butler, James R.: *See—*
Watson, James M.; Butler, James R.; and Forward, Cleve H., 4,387,260, Cl. 585-467.000.

Butzke, Jurgen: *See—*
Wittmann, Rolf; Wintermeyer, Willi; and Butzke, Jurgen, 4,387,245, Cl. 562-587.000.

Byer, Robert L., to Leland Stanford Junior University, The Board of Trustees of the. Method and means for optically generating signals for use in monitoring an environment using tomographic techniques. 4,386,854, Cl. 356-438.000.

Byk-Mallinckrodt CIL B.V.: *See—*
Benjamins, Harm M., 4,387,303, Cl. 250-432.0PD.

Caamano, Jesus L.: *See—*
Brown, Robert A.; Caamano, Jesus L.; and Kasprzak, Henry A., 4,387,181, Cl. 524-714.000.

Cabrera, Pedro P.; Talbot, Glenn D.; and Carman, Larry C., to Coulter Electronics, Inc. Sample feeding arrangement. 4,387,076, Cl. 422-67.000.

Cadre Corporation, The: *See—*
Smith, Daniel B., 4,386,907, Cl. 432-225.000.

Calfax, Inc.: *See—*
Newsome, Michael R.; Segan, Marc H.; and Swarztrauber, Sayre, 4,386,550, Cl. 84-464.00R.

Calkins, Noel C. Thermostatically controlled valve. 4,386,584, Cl. 123-41.080.

Callan, Elizabeth L.: *See—*
Tracy, Douglas H.; Otto, Jeffrey B.; Arnio, Bruce M.; and Callan, Elizabeth L., 4,387,178, Cl. 524-448.000.

Calvin, Donald W.: *See—*
Harnden, Robert M.; and Calvin, Donald W., 4,387,249, Cl. 564-488.000.

Cameron Iron Works, Inc.: *See—*
Fisher, Edmund A.; and Miller, Henry W., 4,386,656, Cl. 166-117.500.

Canadian Patents & Development Limited: *See—*
Vijay, Hari M.; Young, Noel M.; and Bernstein, I. Leonard, 4,387,091, Cl. 424-88.000.

Canadian Stackpole Limited: *See—*
King, George W., 4,386,995, Cl. 156-362.000.

Canon Kabushiki Kaisha: *See—*
Ando, Yujiro, 4,386,837, Cl. 355-3.0CH.
Asakura, Osamu; and Nozaki, Mineo, 4,387,380, Cl. 346-76.0PH.
Hosono, Nagao; Kinoshita, Koichi; and Takahashi, Toru, 4,386,577, Cl. 118-657.000.
Sumi, Akiyasu, 4,386,829, Cl. 350-429.000.

Cantrell, Daniel V., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,386,618, Cl. 131-336.000.

Carbrey, Robert L., to Bell Telephone Laboratories, Incorporated. High capacity secure address loop network. 4,387,458, Cl. 370-88.000.

Cardenia, Pasquale A.; Landon, Thomas V.; and Muir, Alfred W., to International Business Machines Corporation. High speed data interface buffer for digitally controlled electron beam exposure system. 4,387,433, Cl. 364-491.000.

Carlson, John G.: *See—*
Griffith, Robert L.; Carlson, John G.; Gritzner, Daniel E.; and Mullan, William H., 4,386,490, Cl. 53-148.000.

Carlstein, Jan; and Jonsson, Sven, to Fjellman Press AB. Machine for handling or treating plastic material. 4,386,902, Cl. 425-558.000.

Carman, Larry C.: *See—*
Cabrera, Pedro P.; Talbot, Glenn D.; and Carman, Larry C., 4,387,076, Cl. 422-67.000.

Carnegie Institution of Washington: *See—*
Bell, Peter M.; and Mao, Ho-Kwang, 4,386,950, Cl. 62-10.000.

Carney, Thomas R.: *See—*
Farmer, Audley J.; Moffett, Robert B.; and Carney, Thomas R., 4,386,957, Cl. 75-51.000.

Carpenter, Peter F.: *See—*
Peery, John R.; Griesinger, William K.; and Carpenter, Peter F., 4,386,929, Cl. 604-132.000.

Carr, Keith E.; and Symons, John J., to Whirlpool Corporation. Ice body dispenser. 4,386,640, Cl. 141-361.000.

Carrier Drysys Limited: *See—*
Bradshaw, Norman F., 4,386,733, Cl. 236-49.000.

Carson, Dennis A.: *See—*
McGarrity, Gerard J.; and Carson, Dennis A., 4,387,161, Cl. 435-34.000.

Carter, Clyde T.; and Ney, Reuben E., to AMP Incorporated. Connector assembly for mounting a module on a circuit board or the like. 4,386,815, Cl. 339-17.00M.

Carter, Robert M.; and Vrba, Robert J., to FMC Corporation. Axle joint. 4,386,673, Cl. 180-9.20R.

Casale, Stephen: *See—*
Roberto, Louise; and Casale, Stephen, 4,386,714, Cl. 220-339.000.

Casio Computer Co., Ltd.: *See—*
Hakata, Masayuki, 4,386,856, Cl. 368-72.000.

Cassella Aktiengesellschaft: *See—*
Buhler, Ulrich; Kuhlein, Klaus; Stahl, Theo; Tappe, Horst; and Roth, Kurt, 4,386,935, Cl. 8-451.000.

Cassidy, Joseph A.; and Talmadge, Paul C., to Perkin-Elmer Corporation, The. Phase synchronization apparatus. 4,386,852, Cl. 356-323.000.

Castro, Horacio: *See—*
Castro, Marcelo; and Castro, Horacio, 4,387,272, Cl. 179-6.110.

Castro, Marcelo; and Castro, Horacio. Method and apparatus for controlling a subscriber phone system including at least one automatic phone-answering machine. 4,387,272, Cl. 179-6.110.

Caterpillar Tractor Co.: *See—*
Englund, Michael S.; Hafele, Joseph C.; and Schulze, Dwain C., Jr., 4,386,534, Cl. 73-863.010.

Cattani, Augusto, to Officine Augusto Cattani & C.S.a.S. Console for suction tubes of suction units used in dentistry. 4,386,910, Cl. 433-92.000.

Cautilli, Philip A.; and Wotier, Edward, to GAF Corporation. Method of manufacture of a water-permeable-hydrophobic membrane. 4,387,121, Cl. 427-243.000.

CBS: *See—*
Drasche, Walter G., 4,386,455, Cl. 29-149.50S.

Celotex Corporation, The: *See—*
Hipchen, Donald E.; Skowronski, Michael J.; and Hagan, Joseph R., 4,386,983, Cl. 156-79.000.

Centro Corporation: *See—*
Benjamin, Harry L., 4,386,532, Cl. 73-862.040.

Chaconas, Peter C., to Black & Decker Inc. Alinement and support means for guiding pulley of band saw. 4,386,545, Cl. 83-817.000.

Chambers, James E., to Xerox Corporation. Stapler apparatus with means to determine staple supply. 4,386,725, Cl. 227-2.000.

Champion International Corporation: *See—*
Hain, Paul, 4,387,132, Cl. 428-211.000.
Korte, Ralph J., 4,386,706, Cl. 206-628.000.
Rebholz, James H., 4,387,126, Cl. 428-35.000.

Chapman, Anthony C. B.; and Wright, Peter G., to Team Lotus International Limited. Ground effect vehicle. 4,386,801, Cl. 296-1.00S.

Chappaz, Roger: *See—*
Sundt, Erling; Schenk, Walter; Chappaz, Roger; and Joyeux, Michel, 4,387,047, Cl. 252-522.00R.

Charles, Stanley E.; Long, Donald A.; Katsenis, Peter G.; and Mosher, Walter W., Jr., to Precision Dynamics Corporation. Identification device with versatile imprinting means. 4,386,795, Cl. 283-5.000.

Chauvin, Yves; Commereuc, Domonique; Gaillard, Jean; Leger, Gerard; and Phung, Nhu H., to Institut Francais Du Petrole. Process for oligomerizing olefins. 4,387,262, Cl. 585-523.000.

Chavez, Bill R., Sr.: *See—*
Matthews, Carol L.; and Chavez, Bill R., Sr., 4,386,918, Cl. 440-7.000.

Chea, Ramon C. W., Jr., to International Telephone and Telegraph Corporation. Subscriber line interface circuit with impedance synthesizer. 4,387,273, Cl. 179-16.00F.

Chemische Werke Huels AG: *See—*
Horlbeck, Gernot; Heuer, Horst; Bax, Hanns-Jorg; and Jadamus, Hans, 4,387,213, Cl. 525-437.000.

Chervonenko, Viktor M.: *See—*
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Chester, Arthur W.; and Chu, Yung F., to Mobil Oil Corporation. Treatment of effluent resulting from conversion of methanol to gasoline in order to decrease durene and produce distillate. 4,387,261, Cl. 585-489.000.

Chevalier, Claude; Zammarchi, Gino; and Bouvet, Jean M., to Regie Nationale des Usines Renault. Electronic device controlling the bridging or locking of a hydrodynamic torque converter and method of application. 4,386,687, Cl. 192-3.300.

Chibana, Manobu, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 4,386,547, Cl. 84-1.220.

Chiesa, Peter J., Jr., to Enterra Corporation. Concentrates for fire-fighting foam. 4,387,032, Cl. 252-3.000.

Child, Edward T.: *See—*
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,386,941, Cl. 48-197.00R.

Chisso Corporation: *See—*
Fukui, Masahiro; Inoue, Hiromichi; and Goto, Yasuyuki, 4,387,038, Cl. 252-299.630.
Sato, Akihiro; Tachibana, Masami; Kikuta, Kazutsune; Higuchi, Yoshiharu; and Miyajima, Masazumi, 4,387,198, Cl. 526-97.000.
Sugimori, Shigeru; and Sato, Hideo, 4,387,039, Cl. 252-299.630.

Chloride Group Limited: *See—*
Ray, William F.; and Davis, Rex M., 4,387,326, Cl. 318-138.000.

Choksi, Pradip V.; Davidner, Alan A.; and Vidal, Claude A., to American Hospital Supply Corporation. Filter drive. 4,386,948, Cl. 55-499.000.

Chow, Edmund E.: *See—*
Moncrief, Marion L., Jr.; Glass, Frank S.; Hernandez, Rafael; and Chow, Edmund E., 4,387,434, Cl. 364-509.000.

Chow, Peter E. K., to Northern Telecom Limited. Code converter for polarity-insensitive transmission systems. 4,387,366, Cl. 340-347.0DD.

Christianson, Tony. Pilot controlled regulator second stage. 4,386,624, Cl. 137-102.000.

Chu, Yung F.: *See—*
Chester, Arthur W.; and Chu, Yung F., 4,387,261, Cl. 585-489.000.

Chvilev, Anatoly A.: *See—*
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Cianci, James P., to Kendall Company, The. Collection device for body fluids with antiseptic pump. 4,386,930, Cl. 604-317.000.

Ciba-Geigy AG: *See—*
Postle, Stephen R., 4,387,158, Cl. 430-364.000.

Ciba-Geigy Corporation: *See—*
Fringeli, Werner; Flubacher, Max; and Lauton, Alain, 4,386,965, Cl. 106-214.000.
Irving, Edward, 4,387,216, Cl. 528-408.000.
Zahir, Abdul-Cader; and Eldin, Sameer H., 4,387,204, Cl. 526-249.000.

Ciccone, Thomas Q.; and Doris, Thomas A., Jr., to United States of America, Army. Combination percussion-electric primer. 4,386,567, Cl. 102-202.500.

Cimini, Nadia: *See—*
Sacceddu, Pasquale; Vitobello, Vincenza; Braduzzi, Paolo; Cimini, Nadia; and Degen, Ludwig, 4,387,163, Cl. 435-197.000.

Citizen Watch Co., Ltd.: *See—*
Kurihara, Toshio; Kunita, Masao; Yasunaga, Makoto; and Uchida, Satoru, 4,386,861, Cl. 400-124.000.

Clapperton, Allan S., to W. R. Grace & Co. Method of waterproofing roofs and the like. 4,386,981, Cl. 156-71.000.

Clarion Co., Ltd.: *See—*
Miyazaki, Takao; and Tazaki, Satoru, 4,387,469, Cl. 455-161.000.

Clark Equipment Company: *See—*
Lewis, Steven A., 4,386,537, Cl. 74-512.000.

Clark, William D.; Edwards, Earl G.; and Queener, Carl A., to International Business Machines Corporation. Method and apparatus for limiting book wear while being copied. 4,386,846, Cl. 355-25.000.

Clausen, Eivind; and Allsop, James D., to Allsop, Inc. Apparatus and method for cleaning a video player/recorder. 4,387,411, Cl. 360-128.000.

Claxton, Raymond J. Apparatus for submerging, entraining, melting and circulating metal charge in molten media. 4,386,764, Cl. 266-235.000.

Claypool, James L.: *See—*
Cook, Paul M.; Otte, Richard F.; Claypool, James L.; White, Lawrence J.; Broyles, Harry C.; and Brooks, Peter L., 4,386,629, Cl. 138-110.000.

Clayton, Sarah D.: *See—*
Montgomery, John A.; and Clayton, Sarah D., 4,387,228, Cl. 546-118.000.

Clendenin, Ralph M.; and Freeman, Raymond S., to Martin Marietta Corporation. Optical target tracking and designating system. 4,386,848, Cl. 356-5.000.

Clifford, Alexander R.: *See—*
McCallum, David J. M.; and Clifford, Alexander R., 4,387,144, Cl. 429-251.000.

Cogas Development Company: *See—*
Sacks, Martin E.; and McClelland, Richard H., 4,386,940, Cl. 48-197.00R.

Coker, Theodore R. Detachable electric drive unit for wheelchair. 4,386,672, Cl. 180-13.000.

Cole, John F.; and Dowell, Frederick S., to Dunlop Limited. Brake take-up mechanism with a spring biased rotary adjustment. 4,386,685, Cl. 188-196.00P.

Coleco Industries, Inc.: *See—*
Bromley, Eric, 4,386,776, Cl. 273-85.00G.

Coleman, Richard M.: *See—*
Cook, Gus T.; Holshouser, Stephen K.; Coleman, Richard M.; Harless, Charles E.; and Whinnery, Walter N., III, 4,387,018, Cl. 208-262.000.

Colgate-Palmolive Company: *See—*
Straw, Alan, 4,387,040, Cl. 252-368.000.

Collins, Jake. Fence. 4,386,762, Cl. 256-59.000.

Combustion Engineering, Inc.: *See—*
Bauver, Wesley P., II, 4,386,738, Cl. 239-102.000.

Commereuc, Domonique: *See—*
Chauvin, Yves; Commereuc, Domonique; Gaillard, Jean; Leger, Gerard; and Phung, Nhu H., 4,387,262, Cl. 585-523.000.

Commeyras, Auguste; Sagnes, Rene; and Guery, Claudine, to Produits Chimiques Ugine Kuhlmann. Process for the preparation of iodoalcohols having a perfluoroalkyl chain. 4,387,254, Cl. 568-842.000.

Communications Satellite Corporation: *See—*
Uzunoglu, Vasil, 4,387,310, Cl. 307-591.000.

Compagnie Generale de Radiologie: *See—*
Klausz, Remy, 4,387,363, Cl. 382-56.000.

Conner, Alfred W.; and Anderson, J. Reid, to Verbatim Corporation. Spindle aperture reinforcement for a floppy disk. 4,387,114, Cl. 427-54.100.

Conoco Inc.: *See—*
Miller, Thomas R., 4,386,664, Cl. 175-45.000.

Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, to American Cyanamid Company. Ureylenebis substituted (or unsubstituted) phenylene-carbonyl (or sulfonyl)-imino-1,3,5 or 6-naphthalenetrisulfonic acids and salts. 4,387,059, Cl. 260-506.000.

Consiglio Nazionale Delle Ricerche: *See—*
Grattoni, Paolo; Quaglia, Giorgio; Fava, Cesare; and Juliani, Giovanni, 4,387,392, Cl. 358-111.000.

Constructors John Brown Limited: *See—*
Shotbolt, Keith, 4,386,659, Cl. 166-342.000.

Control Specialties, Inc.: *See—*
DeViney, Terrence E.; and Ochendowski, Richard W., 4,387,305, Cl. 307-66.000.

Conway, Paul E.: *See—*
Tibbs, Oscar, 4,386,593, Cl. 123-523.000.

Cook, Gus T.; Holshouser, Stephen K.; Coleman, Richard M.; Harless, Charles E.; and Whinnery, Walter N., III, to United States of America, Energy. Method of removing polychlorinated biphenyl from oil. 4,387,018, Cl. 208-262.000.

Cook, James E., to Morrell Company. Injector for plastic molds. 4,386,899, Cl. 425-225.000.

Cook, Paul M.; Otte, Richard F.; Claypool, James L.; White, Lawrence J.; Broyles, Harry C.; and Brooks, Peter L., to Raychem Corporation. Apparatus for internal pipe protection. 4,386,629, Cl. 138-110.000.

Coombs, Donald W., to Coombs, Donald W.; Brimmer, Frances M.; and Anderson, Daniel J., a part interest. Surgical blade remover-receptacle. 4,386,457, Cl. 29-235.000.

Cooper Industries: *See—*
Minichiello, George M., 4,387,295, Cl. 235-201.00R.

Copperthwaite, Martin: *See—*
Roberts, Michael A.; and Copperthwaite, Martin, 4,386,765, Cl. 266-236.000.

Coquard, Jean; and Goletto, Jean, to Rhone-Poulenc Industries. Heat stable polyphase polyamide compositions and preparation thereof. 4,387,184, Cl. 525-183.000.

Corbett, David F.; Southgate, Robert; and Eglington, Alfred J., to Beecham Group Limited. β-Lactam antibiotics, their preparation and their use in pharmaceutical compositions. 4,387,051, Cl. 260-245.20T.

Cordis Corporation: *See—*
Leckrone, Michael, 4,386,610, Cl. 128-419.0PG.

Cornell Iron Works, Inc.: *See—*
Dever, James E.; Stascavage, John A.; and Rawls, William W., 4,386,645, Cl. 160-183.000.

Cornell Research Foundation, Inc.: *See—*
Barak, Lawrence S.; Nothnagel, Eugene A.; Webb, Watt W.; and Yocum, Robert R., 4,387,[illegible], Cl. 424-3.000.

Cornils, Boy: *See—*
Falbe, Jurgen; Cornils, Boy; Hetkamp, Guunter; Otterbein, Karl, deceased; Payer, Wolfgang; and Schneller, Peter, 4,387,202, Cl. 526-138.000.

Corteel, Guy, to Societe Europeenne de Propulsion. Process and apparatus for carrying out the first stage of separation of constituents of a reaction mixture obtained during synthesis of asymmetric dimethylhydrazine by the Raschig method. 4,387,005, Cl. 203-81.000.

Cosden Technology, Inc.: *See—*
Fortuna, Vincent E.; and MacLaughlin, Donald N., 4,386,999, Cl. 156-494.000.
Watson, James M.; Butler, James R.; and Forward, Cleve H., 4,387,260, Cl. 585-467.000.

Cosentino, Louis C.: *See—*
Stasz, Peter; and Cosentino, Louis C., 4,386,634, Cl. 141-2.000.

Coulter Electronics, Inc.: *See—*
Cabrera, Pedro P.; Talbot, Glenn D.; and Carman, Larry C., 4,387,076, Cl. 422-67.000.

Coulter Systems Corporation: *See—*
Torto, Nicholas L.; and DiNallo, Samuel R., Sr., 4,386,847, Cl. 355-75.000.

Covitch, Michael J.; Smith, Mark F.; and Benezra, Leo L., to Diamond Shamrock Corporation. Electrolytic cell membrane/SPE formation by solution coating. 4,386,987, Cl. 156-155.000.

Cox, George W.; and Rattner, Justin R., to Intel Corporation. Hardware scheduler/dispatcher for data processing system. 4,387,427, Cl. 364-200.000.

Cramer, Jerry W.; and LaVars, Everett G., to Sunkist Growers, Inc. Apparatus for selectively packing layers of objects in boxes of different depths. 4,386,491, Cl. 53-247.000.

Crane Packing Limited: *See—*
Back, Anthony C., 4,386,785, Cl. 277-82.000.

Crase, Gary M.; and Tschirky, John E., to Smith International, Inc. In-hole motor drill with locking bit clutch. 4,386,666, Cl. 175-101.000.

Crawford, Donald C.; and Aterianus, John S., to FMC Corporation. Handle bag making apparatus. 4,386,924, Cl. 493-196.000.

Crawford, George H.; and Fisch, Richard S., to Minnesota Mining and Manufacturing Company. Imageable film containing a metal oxide opacifying layer. 4,387,156, Cl. 430-271.000.

Crean, Gerald J.: *See—*
Wang, An; and Crean, Gerald J., 4,386,864, Cl. 400-625.000.

Creteau, Peter V., to Plessey Company plc, The. Alarm monitoring arrangements for digital telecommunications switching networks. 4,387,456, Cl. 370-13.000.

Cross Company, The: *See—*
Wenzel, Heinz-Dieter; and Hanson, Melville, deceased, 4,386,692, Cl. 198-394.000.

Cross, Lary A.: *See—*
Newell, William C.; and Cross, Lary A., 4,387,296, Cl. 235-376.000.

Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., to Texaco Inc. Process for the partial oxidation of slurries of solid carbonaceous fuel. 4,386,941, Cl. 48-197.00R.

Crow, John H.: *See—*
Trentham, H. Lee; Crow, John H.; and Boston, Farwell C., 4,387,037, Cl. 252-184.000.

Crow, Joseph W.: *See—*
Giachino, Joseph M.; Haeberle, Russell J.; and Crow, Joseph W., 4,386,453, Cl. 29-25.410.

Crown Zellerbach Corporation: *See—*
Reba, Imants; and Wolthausen, Edward C., 4,387,065, Cl. 264-39.000.

CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Artom, Auro, 4,387,271, Cl. 179-2.0DP.

Csordas, Elemer: *See—*
Meinecke, Albrecht; Csordas, Elemer; and Egelhof, Dieter, 4,387,003, Cl. 162-336.000.

Culler, Lawrence R.: *See—*
Roth, David J.; Culler, Lawrence R.; and Heifner, Ralph D., 4,386,956, Cl. 75-24.000.

Cunard, Joel C.; and Ziegler, William H., Jr., to Brown Group Recreational Products, Inc. Method for making a wheel with an integral tire. 4,387,070, Cl. 264-247.000.

Cunningham, Douglas J.; and Bennet, Brian S., to Britax Weathershields Limited. Vehicle sliding roof assembly. 4,386,802, Cl. 296-213.000.

Curtis Machine Company: *See—*
Skaggs, Riley E., Jr., 4,386,540, Cl. 74-805.000.

Curtiss-Wright Corporation: *See—*
Berkowitz, Murray, 4,386,890, Cl. 418-61.00A.

Curver, B.V.: *See—*
van Berne, Joost; and van Schaick, Franciskus H., 4,386,484, Cl. 52-16.000.

Curwick, LeRoy R.: *See—*
Benn, Raymond C.; Curwick, LeRoy R.; and Andryszak, Kenneth R., 4,386,976, Cl. 148-410.000.

Dahan, Abraham: *See—*
Raviv, Avi; and Dahan, Abraham, 4,386,499, Cl. 60-657.000.

Dahlquist, James E.: *See—*
Singhi, Dilip T.; and Dahlquist, James E., 4,387,420, Cl. 364-145.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Okushita, Masataka, 4,386,923, Cl. 493-87.000.

Daikin Kogyo Co., Ltd.: *See—*
Morita, Shigeru, 4,387,168, Cl. 521-54.000.

Dailey, George F.: *See—*
Alkire, Gerald R.; Dailey, George F.; and Kauric, Charles E., 4,387,317, Cl. 310-260.000.

Dalal, Vikram L., to University of Delaware. Tandem junction amorphous semiconductor photovoltaic cell. 4,387,265, Cl. 136-249.000.

Dale, Kenneth H.; and Ludwig, Walter G., to Reynolds Metals Company. Aluminum can reclamation method. 4,387,019, Cl. 209-12.000.

Damon Corporation: *See—*
Sodickson, Lester A., 4,386,895, Cl. 425-5.000.

Dano, Tage H., to F. L. Smidth & Co. Method for burning granular or pulverous materials and kiln plant thereof. 4,386,906, Cl. 432-14.000.

D'Antonio, Nicholas D. Electronic safety ski binding release. 4,387,307, Cl. 307-119.000.

Data Card Corporation: *See—*
Price, Robert J.; and Taber, Bruce C., 4,386,860, Cl. 400-124.000.

Data General Corporation: *See—*
El-Gohary, Hussein T., 4,387,425, Cl. 364-200.000.
Otavsky, Pavel; and Hinlein, Sigmund, 4,387,409, Cl. 360-104.000.

Datavision, Inc.: *See—*
Grosjean, Jon P., 4,387,342, Cl. 329-50.000.

Daughton, Christian G., to United States of America, Energy. Purifying contaminated water. 4,387,025, Cl. 210-612.000.

Daum, Sol J.: *See—*
Yamamoto, Haruo; and Daum, Sol J., 4,387,219, Cl. 536-13.600.

Dauman Displays, Inc.: *See—*
Dauman, Sidney M., 4,386,710, Cl. 211-49.00D.

Dauman, Sidney M., to Dauman Displays, Inc. Combination point-of-sale display and dispenser device. 4,386,710, Cl. 211-49.00D.

Davidner, Alan A.: *See—*
Choksi, Pradip V.; Davidner, Alan A.; and Vidal, Claude A., 4,386,948, Cl. 55-499.000.

Davidoff, Charles: *See—*
Winyall, Milton E.; and Davidoff, Charles, 4,387,008, Cl. 204-101.000.

Davidson, Donald R.; and Reinert, Gerhard, to Singer Company, The. Embroidery attachment for electronic sewing machine. 4,386,573, Cl. 112-103.000.

Davis, Glenn R., to Otis Engineering Corporation. Packing nut and stuffing box for hydraulic or manual actuation. 4,386,783, Cl. 277-73.000.

Davis, Kenneth E.: *See—*
Mandel, Sheldon W.; and Davis, Kenneth E., 4,387,357, Cl. 335-272.000.

Davis, Rex M.: *See—*
Ray, William F.; and Davis, Rex M., 4,387,326, Cl. 318-138.000.

Davis, Stephen H.; Etzel, James E.; and Wiegert, Robert E., to Water Refining Company, Inc. System for handling exhausted vermiculite cation exchange materials. 4,387,021, Cl. 210-96.100.

Day, Arthur R., III; and McMenamy, Fred, to Borg-Warner Corporation. Telemetry system for centrifugal water chilling systems. 4,387,368, Cl. 340-539.000.

Dean, David A.: *See—*
Riefel, Richard P.; Henne, John G.; and Dean, David A., 4,386,891, Cl. 418-81.000.

Deas, Robert W., to United States of America, Army. Solid propellant grain for improved ballistic performance guns. 4,386,569, Cl. 102-292.000.

Deaton, Thomas P., to Nestier Corporation. Drain control for multiple stacked containers. 4,386,700, Cl. 206-507.000.

DeBlende, Remi. Apparatus to support a frame of casing element for forming a beam on a pile-plank screen. 4,386,875, Cl. 405-229.000.

Debs, Victor, to Levolor Lorentzen, Inc. Vertical blind tilt control. 4,386,644, Cl. 160-174.000.

Decker, Rudolf: *See—*
Herwig, Walter; Erbes, Kurt; Decker, Rudolf; and Sikora, Helga, 4,387,139, Cl. 428-423.700.

Decker, Wilton K. Warning light housing. 4,387,416, Cl. 362-190.000.

Deere & Company: *See—*
Drenner, David D., 4,386,588, Cl. 123-187.50R.
Hauser, Herbert J., Jr., 4,386,893, Cl. 418-191.000.
Jackson, Jeffrey A.; Kluge, Douglas J.; Bluem, Gary R.; Espiritu Santo, Eugenio; and Kittle, Carl E., 4,386,533, Cl. 73-862.640.
Viaud, Jean; and Berthet, Jean P., 4,386,561, Cl. 100-5.000.

Defaut, Bernard: *See—*
Simon, Jacques; and Defaut, Bernard, 4,386,821, Cl. 350-96.200.

Degen, Helmut: *See—*
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, 4,386,934, Cl. 8-639.000.

Degen, Ludwig: *See—*
Sacceddu, Pasquale; Vitobello, Vincenza; Braduzzi, Paolo; Cimini, Nadia; and Degen, Ludwig, 4,387,163, Cl. 435-197.000.

Degussa AG: *See—*
Voigt, Carl; Kleinschmit, Peter; Schreyer, Gerd; and Sperka, Gerhard, 4,387,081, Cl. 423-376.000.

Dellinger, Thomas B., to Mobil Oil Corporation. Drilling technique for providing multiple-pass penetration of a mineral-bearing formation. 4,386,665, Cl. 175-61.000.

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Klein, Robert W.; and Foxx, Mary E., 4,387,107, Cl. 424-338.000.

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Sekmakas, Kazys; and Shah, Raj, 4,387,197, Cl. 525-481.000.

Despins, Paul. Method and apparatus for stringing power lines across supporting towers. 4,386,758, Cl. 254-134.30R.

Determann, Hans: *See—*
Stankewitz, Hans-Werner; Determann, Hans; and Reinheimer, Guenter, 4,386,830, Cl. 350-524.000.

Deutsch, Edward A.; and Glavan, Kenneth A., to Research Corporation. Cationic lipophilic complexes of ^{99m}Tc and their use for myocardial and hepatobiliary imaging. 4,387,087, Cl. 424-1.500.

Dever, James E.; Stascavage, John A.; and Rawls, William W., to Cornell Iron Works, Inc. Side folding closure. 4,386,645, Cl. 160-183.000.

DeViney, Terrence E.; and Ochendowski, Richard W., to Control Specialties, Inc. Emergency power system for electromagnets. 4,387,305, Cl. 307-66.000.

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DeWallace, Robert C., to Owens-Illinois, Inc. Safety closure with liner. 4,386,712, Cl. 215-211.000.

Dhaliwal, Jugraj S.: *See—*
McCanse, James E.; and Dhaliwal, Jugraj S., 4,386,661, Cl. 172-112.000.

Diamond Shamrock Corporation: *See—*
Covitch, Michael J.; Smith, Mark F.; and Benezra, Leo L., 4,386,987, Cl. 156-155.000.
Glatzhofer, James P., 4,387,053, Cl. 260-349.000.

Diamond S.A.: *See—*
Marazzi, Silvio, 4,387,287, Cl. 219-69.00M.

Dietz, Wolfgang F. W., to RCA Corporation. Integrated circuit interface in a vertical sync circuit. 4,387,397, Cl. 358-154.000.

Dimetrics, Inc.: *See—*
Taff, James T., 4,386,726, Cl. 228-29.000.

DiNallo, Samuel R., Sr.: *See—*
Torto, Nicholas L.; and DiNallo, Samuel R., Sr., 4,386,847, Cl. 355-75.000.

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Tessler, Martin M.; Wurzburg, Otto B.; and Dirscherl, Teresa A., 4,387,221, Cl. 536-107.000.

Dirstine, Roger T., to North American Philips Corporation. Method of making ceramic dielectric for base metal electrode capacitors. 4,386,985, Cl. 156-89.000.

di Schiena, Michele; and Orru, Vittoria, to Ausonia Farmaceutici s.r.l. Cephalosporine compounds with antibiotic activity. 4,387,096, Cl. 424-246.000.

Disdier, Camille; Martinaud, Jacques-Pierre; and Sullivan, John W., Jr., to Rhone-Poulenc Industries. Method of preparing orthotrifluoromethyl aniline. 4,387,246, Cl. 564-417.000.

Ditty, Allan V., to Portable Tool & Electronics, Inc. Spiral meat slicer. 4,386,560, Cl. 99-538.000.

Dodson, Stuart A.: *See—*
Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., 4,387,225, Cl. 544-212.000.

Dola, Frank P.; and Nicholas, Vincent, to AMP Incorporated. Modular connector for power systems. 4,386,820, Cl. 339-156.00R.

Dolzhenkov, Fedor E.: *See—*
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Domas, Ben V., to Transmatic, Inc. Cornice lighting fixture. 4,387,415, Cl. 362-74.000.

Donath, Ernest E.: *See—*
Thorogood, Robert M.; Yeh, Chung-Liang; and Donath, Ernest E., 4,387,015, Cl. 208-8.0LE.

Donskoi, Semen A.: *See—*
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Doris, Thomas A., Jr.: *See—*
Ciccone, Thomas Q.; and Doris, Thomas A., Jr., 4,386,567, Cl. 102-202.500.

Dortzbach, Richard A. Adjustable spark arrester for fireplace flue. 4,386,571, Cl. 110-119.000.

Doudet, Michel, to SECIM. Method of production of metal wires. 4,386,513, Cl. 72-256.000.

Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., to William H. Rorer, Inc. Heterocyclic alkylene triazinones. 4,387,225, Cl. 544-212.000.

Douglas, William Dan, Jr.: *See—*
Tibbs, Oscar, 4,386,593, Cl. 123-523.000.

Dow Chemical Company, The: *See—*
Fee, Basil S., 4,387,028, Cl. 210-708.000.
Friedli, Hans R.; Nelson, Donald L.; and Massingill, John L., Jr., 4,387,182, Cl. 525-44.000.
Gessell, Donald E.; Gibbs, Ronald L.; and Fuentes, Ricardo, Jr., 4,387,200, Cl. 526-122.000.
Harnden, Robert M.; and Calvin, Donald W., 4,387,249, Cl. 564-488.000.
Pawloski, Chester E., 4,387,058, Cl. 260-465.00D.
Renga, James M.; and Kolb, Gerald C., 4,387,237, Cl. 549-518.000.
Stube, Steven H., 4,386,707, Cl. 209-546.000.
Sun, Yun-Chung, 4,387,179, Cl. 524-458.000.
Zabrocki, Vincent S.; and Bussey, Marlin G., 4,387,169, Cl. 521-79.000.

Dowa Co., Ltd.: *See—*
Miyahara, Kingo, 4,386,905, Cl. 431-168.000.

Dowell, Frederick S.: *See—*
Cole, John F.; and Dowell, Frederick S., 4,386,685, Cl. 188-196.00P.

Doyle, Gerald, to Exxon Research and Engineering Co. Copper oxalate complexes. 4,387,055, Cl. 260-438.100.

Dragojevic, Bozo, to North York Mobile Wash Limited. Heat exchange assembly. 4,386,652, Cl. 165-144.000.

Drake, Eldon L. Anti-gas locking apparatus. 4,386,653, Cl. 166-105.000.

Draper, Geoffrey R., to Lucas Industries Limited. Motor vehicle lamp reflector. 4,386,824, Cl. 350-296.000.

Drasche, Walter G., to CBS. Bearings for piano action mechanism employing bushing cloth and method of fabricating same. 4,386,455, Cl. 29-149.50S.

Drenner, David D., to Deere & Company. Canister retainer assembly. 4,386,588, Cl. 123-187.50R.

Dudash, Carl S.; and Hansen, Kenneth P., to United Technologies Corporation. Optical transducer. 4,387,300, Cl. 250-239.000.

Dufour, Daniel L.; and Harris, Alva F., to Monsanto Company. Heat stabilized polymers. 4,387,191, Cl. 525-207.000.

Dulin, Gary T.: *See—*
El-Hag, Nabil A.; Dulin, Gary T.; and Krasnow, Todd J., 4,386,559, Cl. 99-404.000.

Dunlop Limited: *See—*
Cole, John F.; and Dowell, Frederick S., 4,386,685, Cl. 188-196.00P.

Dupeuble, Paul, to Sondages Injections Forages (SIF) Enterprise Bachy. Production of anchored tie-rods. 4,386,876, Cl. 405-260.000.

Du Pont de Nemours, E. I., and Company: *See—*
Fitzgerald, Patrick H., 4,386,966, Cl. 106-288.00Q.
Maucher, Charles, 4,386,527, Cl. 73-597.000.
Patten, Stanley H., 4,387,141, Cl. 428-690.000.
Pinkerton, Robert B., 4,387,236, Cl. 549-505.000.
Statz, Robert J., 4,387,188, Cl. 524-494.000.
Stowe, Gerald T., 4,387,056, Cl. 260-439.00R.
Tancredi, Henry J., 4,387,000, Cl. 156-495.000.

Duran, Joe, Sr. Door knob latch apparatus. 4,386,797, Cl. 292-292.000.

Durbin, William H. Universal portable pack. 4,386,642, Cl. 150-34.000.

Dustman, Larry L. Transmitter extension apparatus for manipulating model vehicles. 4,386,914, Cl. 434-32.000.

Dyck, George. Torque arm mounting for weigh scale. 4,386,671, Cl. 177-208.000.

Dyckes, Dennis B.; Johnson, Ross; and Hibbeler, Richard. Portable clamping device. 4,386,767, Cl. 269-97.000.

Dynamit Nobel AG: *See—*
Kuhnel, Werner; and Spielau, Paul, 4,387,170, Cl. 521-85.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Josten, Walter; and Vahlensieck, Hans-Joachim, 4,387,199, Cl. 526-113.000.

E.N.I. Ente Nazionale Idrocarburi: *See—*
Emmi, Egidio; and Sodini, Giancarlo, 4,387,110, Cl. 426-430.000.
Sacceddu, Pasquale; Vitobello, Vincenza; Braduzzi, Paolo; Cimini, Nadia; and Degen, Ludwig, 4,387,163, Cl. 435-197.000.

Eapen, Kuttikandathil E.: *See—*
Kahn, Marvin L.; and Eapen, Kuttikandathil E., 4,387,109, Cl. 426-321.000.

Eardley, David B.: *See—*
Denis, Bernard A.; and Eardley, David B., 4,387,445, Cl. 365-179.000.

Earle M. Jorgensen Co.: *See—*
Farmer, Audley J.; Moffett, Robert B.; and Carney, Thomas R., 4,386,957, Cl. 75-51.000.

Earle, Roland D., to Prime Manufacturing Company. Methanol automotive fuel. 4,386,938, Cl. 44-53.000.

Eastman, James M.: *See—*
Thoman, David C.; and Eastman, James M., 4,386,553, Cl. 91-361.000.

Eastman Kodak Company: *See—*
Browder, Lewis B., 4,387,408, Cl. 360-103.000.
Passmore, David T.; Wooten, Willis C.; and McBride, Paul, 4,387,214, Cl. 528-296.000.
Whitmore, Keith E., 4,387,146, Cl. 430-7.000.
Whitmore, Keith E., 4,387,154, Cl. 430-202.000.

Eaton, Michael D. Modem control device code multiplexing. 4,387,440, Cl. 364-900.000.

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Maire, Bernard, 4,386,857, Cl. 368-187.000.

Edwards, Bill R., to Paratech, Inc. Resorcinol composition and method of making same. 4,387,207, Cl. 528-86.000.

Edwards, Colin W., to Hughes Aircraft Company. Non-volatile semiconductor memory cells. 4,387,444, Cl. 365-156.000.

Edwards, Earl G.: *See—*
Clark, William D.; Edwards, Earl G.; and Queener, Carl A., 4,386,846, Cl. 355-25.000.

Egelhof, Dieter: *See—*
Meinecke, Albrecht; Csordas, Elemer; and Egelhof, Dieter, 4,387,003, Cl. 162-336.000.

Eggert, Walter S., Jr., to Budd Company, The. Support structure for supporting a plurality of aligned solar reflector panels. 4,386,600, Cl. 126-438.000.

Eglington, Alfred J.: *See—*
Corbett, David F.; Southgate, Robert; and Eglington, Alfred J., 4,387,051, Cl. 260-245.20T.

Eguchi, Chikahiko; Kakizaki, Fusayoshi; and Eto, Hirozumi, to Ajinomoto Company Incorporated. Process for preparing N-acylcarnosine. 4,387,232, Cl. 548-344.000.

Ehrlich, Kenneth B. Eye irrigating apparatus. 4,386,608, Cl. 604-298.000.

Eichenbaum, Daniel M., to Ocular Associates. Device to be utilized in extracapsular cataract surgery. 4,386,927, Cl. 604-51.000.

Eidorff, Stig K. Instrument for measuring or marking out distances from a line or a plane. 4,386,851, Cl. 356-254.000.

Eldin, Sameer H.: *See—*
Zahir, Abdul-Cader; and Eldin, Sameer H., 4,387,204, Cl. 526-249.000.

Electronic Assemblers Company: *See—*
Harlow, John R., 4,387,329, Cl. 318-729.000.

Elekes, Andras: *See—*
Martinko, Matvas; Elekes, Andras; Simon, Kalman; Bohnert, Jozsef; Nemeth, Janos; Bole, Karoly; and Ilyes, Zoltan, 4,386,878, Cl. 405-291.000.

El-Gohary, Hussein T., to Data General Corporation. Masterless and contentionless computer network. 4,387,425, Cl. 364-200.000.

El-Hag, Nabil A.; Dulin, Gary T.; and Krasnow, Todd J., to General Foods Corporation. Apparatus for continuous preparation of reconstitutable batter-coated comestibles. 4,386,559, Cl. 99-404.000.

Ellert, Roger H., to Scholle Corporation. Container conveyor for flexible container filling machine. 4,386,636, Cl. 141-10.000.

Eltvedt, Frank A.: *See—*
Werderitch, Frank J.; and Eltvedt, Frank A., 4,387,064, Cl. 264-40.100.

Emmi, Egidio; and Sodini, Giancarlo, to E.N.I. Ente Nazionale Idrocarburi. Method and apparatus for solid-liquid extraction steps. 4,387,110, Cl. 426-430.000.

Emms, Roy O.; Rae, William; and Wilson, John, to Brymitre Limited. Foldable structure. 4,387,128, Cl. 428-60.000.

Emoto, Kazuhiro; and Futaki, Kiyoshi, to Mitsubishi Paper Mills, Ltd. Electrophotographic sensitive material having a dye sensitizer containing a carbonium atom. 4,387,149, Cl. 430-83.000.

Energy Research Associates: *See—*
Painter, Roy, 4,386,647, Cl. 164-332.000.

Engel, Christopher M.: *See—*
Reneau, Daniel L.; and Engel, Christopher M., 4,387,390, Cl. 358-74.000.

Engelmann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jurgen; and Sydow, Udo, to VEB Filmfabrik Wolfen. Light sensitive, color photographic silver halide compositions with DIR-couplers. 4,387,159, Cl. 430-544.000.

Engelsen, Per-Einar; and Nybo, Reidar O., to A/S Akers Mek. Verksted. Method for installation of a mooring cable. 4,386,874, Cl. 405-224.000.

Engineering Products of America: *See—*
Kirkhuff, William J., 4,387,071, Cl. 264-279.100.

Engineering Research Applications: *See—*
Rooney, Craig E., 4,386,863, Cl. 400-185.000.

Engle, Gary L., to General Electric Company. Method and means for generating pixel data in an ultrasonic scanning system. 4,386,528, Cl. 73-606.000.

Engle, Gary L., to General Electric Company. Method and means for improving video display image. 4,386,529, Cl. 73-606.000.

English Electric Valve Company Limited: *See—*
Nixon, Ralph D., 4,387,322, Cl. 313-497.000.

Englund, Michael S.; Hafele, Joseph C.; and Schulze, Dwain C., Jr., to Caterpillar Tractor Co. System for obtaining exhaust samples and analyzing the same. 4,386,534, Cl. 73-863.010.

Enterra Corporation: *See—*
Chiesa, Peter J., Jr., 4,387,032, Cl. 252-3.000.

Epson Corporation: *See—*
Hirano, Seiichi; and Ooshima, Toshiaki, 4,386,564, Cl. 101-93.150.

Erbes, Kurt: *See—*
Herwig, Walter; Erbes, Kurt; Decker, Rudolf; and Sikora, Helga, 4,387,139, Cl. 428-423.700.

Erhardt, Paul W.; Borgman, Robert J.; and O'Donnell, John P., to American Hospital Supply Corporation. Method for treatment or prophylaxis of cardiac disorders. 4,387,103, Cl. 424-309.000.

Ernst Leitz Wetzlar GmbH: *See—*
Stankewitz, Hans-Werner; Determann, Hans; and Reinheimer, Guenter, 4,386,830, Cl. 350-524.000.

Espelage, Paul M.: *See—*
Zach, Franz C.; Bose, Bimal K.; Espelage, Paul M.; and Sicko, John S., 4,387,421, Cl. 364-148.000.

Espiritu Santo, Eugenio: *See—*
Jackson, Jeffrey A.; Kluge, Douglas J.; Bluem, Gary R.; Espiritu Santo, Eugenio; and Kittle, Carl E., 4,386,533, Cl. 73-862.640.

Estel Hoogovens B.V.: *See—*
Prins, Klaar, 4,387,004, Cl. 202-248.000.

Etablissements Morel, Ateliers Electromecaniques de Favieres: *See—*
Morel, Andre; and Morel, Jacques, 4,387,268, Cl. 174-92.000.

Eto, Hirozumi: *See—*
Eguchi, Chikahiko; Kakizaki, Fusayoshi; and Eto, Hirozumi, 4,387,232, Cl. 548-344.000.

Etzel, James E.: *See—*
Davis, Stephen H.; Etzel, James E.; and Wiegert, Robert E., 4,387,021, Cl. 210-96.100.

Eue, Ludwig: *See—*
Kranz, Eckart; Findeisen, Kurt; Schmidt, Robert; and Eue, Ludwig, 4,386,953, Cl. 71-93.000.

Evans, Morris L.: *See—*
Agarwal, Pawan K.; Turner, S. Richard; Lundberg, Robert D.; and Evans, Morris L., 4,387,172, Cl. 524-60.000.

Evans, Randall G., to Ford Aerospace & Communications Corporation. Experientially determined signal quality measurement device for antipodal data. 4,387,461, Cl. 371-5.000.

Evans, Robert F. Fatigue resistance for coupling and connection joint mechanisms. 4,386,458, Cl. 29-527.700.

Evans, Robert F. Drill bit with yielding support and force applying structure for abrasion cutting elements. 4,386,669, Cl. 175-269.000.

Evans, Thomas L.: *See—*
Allcock, Harry R.; Fuller, Timothy J.; and Evans, Thomas L., 4,387,208, Cl. 528-166.000.

Evin, Richard A. Garments having detachable liners therefor. 4,386,438, Cl. 2-272.000.

Ex-Cell-O Corporation: *See—*
Perkins, Jimmie G.; and MacMillan, Robert E., 4,386,625, Cl. 137-255.000.

Excelermatic Inc.: *See—*
Kraus, James H., 4,386,536, Cl. 74-200.000.

Exxon Research and Engineering Co.: *See—*
Agarwal, Pawan K.; Turner, S. Richard; Lundberg, Robert D.; and Evans, Morris L., 4,387,172, Cl. 524-60.000.
Bucker, Edward R., 4,387,116, Cl. 427-75.000.
Doyle, Gerald, 4,387,055, Cl. 260-438.100.
Lenack, Alain L.; and Tirtiaux, Robert, 4,387,033, Cl. 252-18.000.
Lin, An-Chung R., 4,386,961, Cl. 106-22.000.
Lundberg, Robert D.; Agarwal, Pawan K.; and Weiss, Robert A., 4,387,174, Cl. 524-66.000.
Vadekar, Mohan; and Robson, Harry E., 4,387,258, Cl. 585-259.000.

Ezaki, Norio. Cutting apparatus for frozen food. 4,386,465, Cl. 30-114.000.

F. L. Smidth & Co.: *See—*
Dano, Tage H., 4,386,906, Cl. 432-14.000.

Fackler, John D. Bias circuit for a microwave transistor power amplifier. 4,387,346, Cl. 330-296.000.

Fadler, Kurt: *See—*
Kittel, Friedrich; Fadler, Kurt; and Anders, Peter, 4,386,585, Cl. 123-41.120.

Fairchild Camera & Instrument Corp.: *See—*
Lehrer, William I.; and Vincak, John H., 4,387,145, Cl. 430-5.000.

Fairchild Industries, Inc.: *See—*
Kramer, Richard E., 4,386,485, Cl. 52-108.000.

Falbe, Jurgen; Cornils, Boy; Hetkamp, Guunter; Otterbein, Karl, deceased (by Otterbein, Maria, heiress); Payer, Wolfgang; and Schneller, Peter, to Ruhrchemie Aktiengesellschaft. Polymerization using mixed aluminum compounds. 4,387,202, Cl. 526-138.000.

Fallen, Burke. Speed floor buffer bearing construction. 4,386,442, Cl. 15-98.000.

Fanelli, Anthony J.; and Walsh, Arthur T., to Allied Corporation. Process for preparing high surface area alumina. 4,387,085, Cl. 423-630.000.

Farb, Norman E., to Printronix, Inc. Printing system having staggered hammer release. 4,386,563, Cl. 101-93.040.

Fareri, Elizabeth L.; and Templin, Philip R., to Gulf Research & Development Company. Wax-impregnated fire kindling sticks. 4,386,937, Cl. 44-41.000.

Farmer, Audley J.; Moffett, Robert B.; and Carney, Thomas R., to Earle M. Jorgensen Co. Process for making nonmagnetic steel. 4,386,957, Cl. 75-51.000.

Fava, Cesare: *See—*
Grattoni, Paolo; Quaglia, Giorgio; Fava, Cesare; and Juliani, Giovanni, 4,387,392, Cl. 358-111.000.

Federal Paper Board Co., Inc.: *See—*
Sutherland, Robert L., 4,386,699, Cl. 206-434.000.

Federal Signal Corporation: *See—*
Gosswiller, Earl W., 4,387,362, Cl. 340-81.00R.

Fee, Basil S., to Dow Chemical Company, The. Use of quaternized polyalkylene polyamines as demulsifiers. 4,387,028, Cl. 210-708.000.

Feely, Wayne E., to Rohm & Haas Company. Autoxidizable compositions containing low molecular weight polymers of dicyclopentenyl methacrylate or dicyclopentenyloxyalkyl methacrylate. 4,387,190, Cl. 525-175.000.

Fehrle, Martin: *See—*
Rieder, Werner; and Fehrle, Martin, 4,387,209, Cl. 528-176.000.

Feinberg, Robert B.; and Maskell, Roy, to Zenith Radio Corporation. Projector television tube alignment means and method. 4,387,404, Cl. 358-237.000.

Felix, Ernst, to Felix, Ernst; and Zellweger Uster Ltd. Production of bindings of fiber bundles. 4,386,494, Cl. 57-22.000.

Fenne, Kenneth R.; and Wassell, Carl A., to Techny Industries, Inc. Mobile X-ray apparatus. 4,387,468, Cl. 378-198.000.

Fichtel & Sachs AG: *See—*
Kittel, Friedrich; Fadler, Kurt; and Anders, Peter, 4,386,585, Cl. 123-41.120.

Findeisen, Kurt: *See—*
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Finike Italiana Marposs S.p.A.: *See—*
Possati, Mario; Golinelli, Guido; and Selleri, Narciso, 4,386,467, Cl. 33-178.00E.

Finkel Outdoor Products, Inc.: *See—*
Redl, Stefan, 4,386,621, Cl. 135-20.00M.

Firestone Tire & Rubber Company, The: *See—*
Bohm, Georg G. A.; Vescelius, Lee E.; and Hamed, Gary R., 4,387,175, Cl. 524-68.000.
Higbee, Wallace C., 4,386,744, Cl. 242-107.700.

Firmenich SA: *See—*
Pickenhagen, Wilhelm; and Velluz, Alain, 4,387,248, Cl. 568-448.000.
Sundt, Erling; Schenk, Walter; Chappaz, Roger; and Joyeux, Michel, 4,387,047, Cl. 252-522.00R.
Uijttewaal, Arnoldus; and Snowden, Roger, 4,387,250, Cl. 568-2.000.

Fisch, Richard S.: *See—*
Crawford, George H.; and Fisch, Richard S., 4,387,156, Cl. 430-271.000.

Fischer, Horst: *See—*
Stich, Bodo; Fischer, Horst; and Schulz, Helmut, 4,386,892, Cl. 418-170.000.

Fischer, William C.; Adams, Don L.; Verzella, David J.; and Wright, Stuart C., to United Technologies Corporation. Pulsed aircraft actuator. 4,387,432, Cl. 364-434.000.

Fischer, William C.: *See—*
Verzella, David J.; Fischer, William C.; Adams, Don L.; and Wright, Stuart C., 4,387,430, Cl. 364-434.000.
Wright, Stuart C.; Adams, Don L.; Fischer, William C.; and Verzella, David J., 4,387,431, Cl. 364-434.000.

Fisher, Charles B.; and Fisher, Sidney T. Constant-frequency dynamo with stationary armature. 4,387,335, Cl. 322-32.000.

Fisher, Charles R. Optical keyboard. 4,387,367, Cl. 340-365.00P.

Fisher, Edmund A.; and Miller, Henry W., to Cameron Iron Works, Inc. Tubing hanger landing and orienting tool. 4,386,656, Cl. 166-117.500.

Fisher, Sidney T.: *See—*
Fisher, Charles B.; and Fisher, Sidney T., 4,387,335, Cl. 322-32.000.

Fitzgerald, Patrick H., to Du Pont de Nemours, E. I., and Company. Copper phthalocyanine pigment process. 4,386,966, Cl. 106-288.00Q.

Fitzpatrick, Elizabeth M. D.; and Fitzpatrick, Matthew F., to Marguerite Trading Co. Pty. Limited. Production of quilting piecework. 4,386,980, Cl. 156-63.000.

Fitzpatrick, Matthew F.: *See—*
Fitzpatrick, Elizabeth M. D.; and Fitzpatrick, Matthew F., 4,386,980, Cl. 156-63.000.

Fjellman Press AB: *See—*
Carlstein, Jan; and Jonsson, Sven, 4,386,902, Cl. 425-558.000.

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FMC Corporation: *See—*
Carter, Robert M.; and Vrba, Robert J., 4,386,673, Cl. 180-9.20R.
Crawford, Donald C.; and Aterianus, John S., 4,386,924, Cl. 493-196.000.
Hevey, Richard C.; and Forget, Ronald D., 4,387,164, Cl. 436-45.000.
Kondo, Kiyoshi; Takashima, Toshiyuji; and Suda, Minoru, 4,387,233, Cl. 549-273.000.

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Focke, Heinz, 4,386,925, Cl. 493-338.000.

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Evans, Randall G., 4,387,461, Cl. 371-5.000.

Ford Motor Company: *See—*
Bates, Bradford, 4,386,590, Cl. 123-198.00F.
Giachino, Joseph M.; Haeberle, Russell J.; and Crow, Joseph W., 4,386,453, Cl. 29-25.410.
Moore, Thomas S.; and Smith, Terrence, 4,386,792, Cl. 280-781.000.
Simko, Aladar O., 4,386,587, Cl. 123-65.00R.
Van Wicklin, Warren A., Jr., 4,386,538, Cl. 74-552.000.
Watanabe, Shunso F., 4,386,791, Cl. 280-707.000.

Forget, Ronald D.: *See—*
Hevey, Richard C.; and Forget, Ronald D., 4,387,164, Cl. 436-45.000.

Forrest, Leonard E. Suturing training device and method. 4,386,917, Cl. 434-267.000.

Fortuna, Vincent E.; and MacLaughlin, Donald N., to Cosden Technology, Inc. Inertial spin welding of thermoplastic and thermoplastic coated container parts. 4,386,999, Cl. 156-494.000.

Forward, Cleve H.: *See—*
Watson, James M.; Butler, James R.; and Forward, Cleve H., 4,387,260, Cl. 585-467.000.

Fosdick, Dale P.: *See—*
Rosaen, Borje O.; and Fosdick, Dale P., 4,387,022, Cl. 210-132.000.

Foshee, William R.: *See—*
Best, Walter E.; and Foshee, William R., 4,386,510, Cl. 70-369.000.

Fosher, Donald H. Headwear having interior pocket. 4,386,437, Cl. 2-199.000.

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Aigle, Michel; Blanc, Hughes; Fournier, Philippe; Gerbaud, Claude; Guerineau, Michel; Heslot, Henri; and Lacroute, Francois, 4,387,162, Cl. 435-172.000.

Foxwell, W. John. Power cylinder with internally mounted position indicator. 4,386,552, Cl. 91-1.000.

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Klein, Robert W.; and Foxx, Mary E., 4,387,107, Cl. 424-338.000.

Francis, Peter S., to Atlantic Richfield Company. Thromboresistant molded article and method for its production. 4,387,183, Cl. 525-54.230.

Frank, Hartmut: *See—*
Bayer, Ernst; and Frank, Hartmut, 4,387,206, Cl. 528-28.000.

Franke, Werner; Seibel, Markus; Brahm, Richard; and Trittler, Hans, to Hoechst Aktiengesellschaft. Electrophotographic recording material and process for its production. 4,387,148, Cl. 430-66.000.

Frass, Werner: *See—*
Bosse, Dieter; and Frass, Werner, 4,387,151, Cl. 430-175.000.

Frazer, Robert E.: *See—*
Sheldon, Charles H.; Frazer, Robert E.; and Lutes, Harold R., 4,386,602, Cl. 128-4.000.

Frear, David L.; and Gallusser, David O., to Bendix Corporation, The. Electrical connector insert assembly. 4,386,816, Cl. 339-59.00R.

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Clendenin, Ralph M.; and Freeman, Raymond S., 4,386,848, Cl. 356-5.000.

Frehn, Fritz, to Thyssen Edelstahlwerke AG. Method for compound sintering. 4,386,959, Cl. 419-8.000.

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Baumeyer, Phillip E.; Frentzel, Karl O.; Kirk, William A.; and Manack, Gary L., 4,386,713, Cl. 220-269.000.

Frick, Klaus: *See—*
Lehmann, Hans W.; Frick, Klaus; and Widmer, Roland W., 4,387,013, Cl. 204-192.00E.

Friedli, Hans R.; Nelson, Donald L.; and Massingill, John L., Jr., to Dow Chemical Co., The. Cycloaliphatic acrylate compositions. 4,387,182, Cl. 525-44.000.

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Beker, Henry J.; and Friend, John M. K., 4,387,371, Cl. 340-825.520.

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Fritz Bauer & Sohne oHG: *See—*
Bauer, Fritz; Bauer, Hans-Peter; and Bauer, Hans J., 4,386,766, Cl. 267-64.120.

Fritz, Gary R.; Howell, Stephen L.; and Robinson, John W., to Kimball International, Inc. Phase locking system for an electronic organ. 4,386,546, Cl. 84-1.010.

Fritze, Bernd, to Rohde & Schwarz GmbH & Co. K.G. Phase-controlled high frequency oscillator. 4,387,348, Cl. 331-17.000.

Fromm, Dieter; Schier, Ernst-Juergen; Schneehage, Hans H.; and Vodrazka, Wolfgang, to BASF Aktiengesellschaft. Melamine quality by reactivation of the melamine synthesis catalyst. 4,387,224, Cl. 544-201.000.

Frommer, Elmar: *See—*
Grosskinsky, Alfred-Otto; Frommer, Elmar; Rapp, Guenther, deceased; Thomas, Erwin; and Schmitz, Ruediger, 4,387,082, Cl. 423-387.000.

Frye, Robert B., to General Electric Company. Silicone flame retardants for plastics. 4,387,176, Cl. 524-268.000.

Fuentes, Ricardo, Jr.: *See—*
Gessell, Donald E.; Gibbs, Ronald L.; and Fuentes, Ricardo, Jr., 4,387,200, Cl. 526-122.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Ohgami, Masaaki; and Matsui, Fujio, 4,386,592, Cl. 123-440.000.

Fuji Photo Film Co., Ltd.: *See—*
Ishida, Masamitsu; Kato, Hisatoyo; and Matsumoto, Seiji, 4,387,428, Cl. 364-414.000.

Fuji Xerox Co., Ltd.: *See—*
Arai, Yoshio; Kataoka, Hiroyuki; and Moriya, Yasumasa, 4,387,435, Cl. 364-514.000.

Fujieda, Mamoru: *See—*
Yamauchi, Teruo; Fujieda, Mamoru; and Oyama, Yoshishige, 4,387,429, Cl. 364-431.050.

Fujii, Kunihiko; Haraga, Koichi; Hirosaki, Yukihiro; and Sato, Koichiro, to Tokyo Electric Co., Ltd. Conveyor control apparatus in a fully automatic labeling system. 4,386,994, Cl. 156-360.000.

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Mori, Hiroyuki; Ogawa, Yasuo; Sugi, Hideo; Fujikawa, Noboru; and Tamai, Kiyoshi, 4,387,218, Cl. 536-6.400.

Fujikawa, Takao: *See—*
Fukutsuka, Toshiro; Moritoki, Masato; and Fujikawa, Takao, 4,386,970, Cl. 148-11.50P.

Fujimori, Toshimitsu: *See—*
Usui, Akira; and Fujimori, Toshimitsu, 4,387,398, Cl. 358-188.000.

Fujimoto, Ted T.: *See—*
Ashmore, John W.; and Fujimoto, Ted T., 4,386,954, Cl. 71-98.000.

Fujitsu Fanuc Limited: *See—*
Obara, Haruki, 4,387,285, Cl. 219-69.00P.

Fukami, Akira: *See—*
Mizuno, Junzi; Fukami, Akira; Okamoto, Kunio; and Hanaki, Kenichi, 4,386,947, Cl. 55-387.000.

Fukuchi, Masakazu: *See—*
Kamogawa, Nin-ichi; Umezawa, Tadashi; and Fukuchi, Masakazu, 4,386,844, Cl. 355-15.000.

Fukuda, Katsuhito: *See—*
Kajiwara, Toshiyuki; Fukuda, Katsuhito; and Tanii, Yoshinori, 4,387,006, Cl. 204-32.00R.

Fukuda, Kazushige: *See—*
Hatta, Tokuaki; Ueno, Haruyuki; Katsura, Yuji; Fukuda, Kazushige; Kubota, Hiroshi; and Hamamatu, Takashi, 4,387,080, Cl. 423-345.000.

Fukuda Metal Foil & Powder Co., Ltd.: *See—*
Kajiwara, Toshiyuki; Fukuda, Katsuhito; and Tanii, Yoshinori, 4,387,006, Cl. 204-32.00R.

Fukui, Masahiro; Inoue, Hiromichi; and Goto, Yasuyuki, to Chisso Corporation. 4-(Trans-4'-alkylcyclohexyl) benzoic acid 4"'-cyano-4"-biphenylyl esters. 4,387,038, Cl. 252-299.630.

Fukutsuka, Toshiro; Moritoki, Masato; and Fujikawa, Takao, to Kabushiki Kaisha Kobe Seiko Sho. Production method of compound-type superconducting wire. 4,386,970, Cl. 148-11.50P.

Fukuyama, Tatsuo: *See—*
Shimada, Yasuomi; Fukuyama, Tatsuo; and Mizutani, Toshiyuki, 4,387,275, Cl. 179-115.50R.

Fuller, Timothy J.: *See—*
Allcock, Harry R.; Fuller, Timothy J.; and Evans, Thomas L., 4,387,208, Cl. 528-166.000.

Fullford, Andrew K.: *See—*
Bowrey, Ronald G.; Fullford, Andrew K.; and Kearney, Michael S., 4,386,471, Cl. 34-26.000.

Fuminier, Claude, to Pont-A-Mousson S.A. Device for rotatably gripping a cylindrical piece. 4,386,544, Cl. 82-101.000.

Funabashi, Tsuneo: *See—*
Nakamura, Hideo; and Funabashi, Tsuneo, 4,387,294, Cl. 377-78.000.

Funakoshi, Katsumi: *See—*
Shiomi, Teiichi; and Funakoshi, Katsumi, 4,386,991, Cl. 156-308.600.

Funk, Gary L.; and Stewart, William S., to Phillips Petroleum Company. Nonlinear control of liquid level. 4,386,623, Cl. 137-2.000.

Furiga, Andrew; and Sabourin, Donald J., to Motorola Inc. Wideband FM modulator and AFC control loop therefor. 4,387,351, Cl. 332-19.000.

Furusato, Masayasu: *See—*
Sakurai, Hisaya; Morita, Hideo; Ikegami, Tadashi; and Furusato, Masayasu, 4,387,045, Cl. 252-429.00B.

Furuta, Isao; Takemura, Yasuhiko; Miyabayashi, Toshio; Zen, Shinichiro; and Sakai, Masato, to Japan Synthetic Rubber Co., Ltd. Multicomponent polymer rubber. 4,387,203, Cl. 526-245.000.

Furuta, Mamoru: *See—*
Kobayashi, Kazuo; Furuta, Mamoru; and Maeno, Yoshio, 4,387,067, Cl. 264-63.000.

Futagi, Masaaki: *See—*
Hamada, Hideo; Morimoto, Yoshiro; Suga, Masaaki; Futagi, Masaaki; and Suzuki, Tadashi, 4,386,521, Cl. 73-118.000.

Futaki, Kiyoshi: *See—*
Emoto, Kazuhiro; and Futaki, Kiyoshi, 4,387,149, Cl. 430-83.000.

Fuwa, Yoshio: *See—*
Kondo, Katsumi: Fuwa, Yoshio; and Miyazaki, Shoji, 4,387,140, Cl. 428-553.000.

G. L. Rexroth GmbH: *See—*
Stich, Bodo; Fischer, Horst; and Schulz, Helmut, 4,386,892, Cl. 418-170.000.

Gable, Derek J.; Sweet, Roger H.; and Wilson, Nicol S., to Sta-Lube, Inc. Oil drainage apparatus. 4,386,639, Cl. 141-351.000.

Gadde, Villy; and Larsson, Jan E. Sound-damping mat or drape. 4,386,676, Cl. 181-290.000.

Gaeddert, Melvin V.: *See—*
Holdeman, Adin F.; Gaeddert, Melvin V.; Ratzlaff, Howard J.; Pruitt, Martin E.; and Lohrentz, Howard R., 4,386,493, Cl. 56-341.000.

GAF Corporation: *See—*
Cautilli, Philip A.; and Wotier, Edward, 4,387,121, Cl. 427-243.000.
Hort, Eugene V.; Anderson, Lowell R.; and Alwani, Dru W., 4,387,041, Cl. 252-392.000.
Hort, Eugene V.; Anderson, Lowell R.; and Alwani, Dru W., 4,387,042, Cl. 252-392.000.
Williams, Earl P.; and Lorenz, Donald H., 4,387,186, Cl. 525-327.800.

Gagon, Hugh W. Method for extraction of bituminous material. 4,387,016, Cl. 208-11.0LE.

Gailey, J. Lynn: *See—*
Wollam, Carl A.; and Gailey, J. Lynn, 4,387,123, Cl. 427-286.000.

Gaillard, Jean: *See—*
Chauvin, Yves; Commereuc, Domonique; Gaillard, Jean; Leger, Gerard; and Phung, Nhu H., 4,387,262, Cl. 585-523.000.

Gajdusek, Ernest, Jr.: *See—*
Torok, George E.; and Gajdusek, Ernest, Jr., 4,386,728, Cl. 228-111.000.

Galer, Herbert W., to United States Steel Corporation. Tight head pail construction. 4,386,701, Cl. 206-509.000.

Gallusser, David O.: *See—*
Frear, David L.; and Gallusser, David O., 4,386,816, Cl. 339-59.00R.

Gamalei, Edvin I.: *See—*
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Ganster, Otto: *See—*
Schwindt, Jurgen; Grogler, Gerhard; Ganster, Otto; and Koster, Johannes, 4,387,057, Cl. 260-453.0AR.

Gapinski, Maurycy A. Method and means for insulating a pipe. 4,386,630, Cl. 138-149.000.

Gardner, Charles S.; Price, Robert B.; and Tillen, Keith G., to Rolls-Royce Limited. Method of operating electrochemical machine tool. 4,387,009, Cl. 204-129.200.

Gardner, Paul J., to Litton Systems, Inc. Process and compound bed means for evolving a first component enriched gas. 4,386,945, Cl. 55-26.000.

Garthwaite, Albert N.; and Suarez, Luis A., Jr., to International Business Machines Corporation. Dual flash fuser reflector with alternating flash for power reduction. 4,386,840, Cl. 355-3.0FU.

Garver, Robert V., to United States of America, Army. Microwave controlled field effect switching device. 4,387,386, Cl. 357-22.000.

Gattu, Narahari; and Terranova, Joseph C., III, to Harnischfeger Corporation. Crane having stabilizer outriggers and vertically positionable jacks for same. 4,386,711, Cl. 212-189.000.

Gearhart, R. Nelson. Vehicle spare tire holder. 4,386,722, Cl. 224-42.230.

Geesen, Donald H., to PPG Industries Canada Ltd. Production of potassium chloride using pond crystallization. 4,386,936, Cl. 23-295.00S.

General Electric Company: *See—*
Burns, Richard D.; and Wesseldyk, Albert J., 4,387,001, Cl. 156-495.000.
Engle, Gary L., 4,386,528, Cl. 73-606.000.
Engle, Gary L., 4,386,529, Cl. 73-606.000.
Frye, Robert B., 4,387,176, Cl. 524-268.000.
Giles, Harold F., Jr., 4,387,193, Cl. 525-431.000.
Iacovangelo, Charles D.; and Zarnoch, Kenneth P., 4,386,960, Cl. 419-9.000.
Iman, Imdad, 4,387,280, Cl. 200-82.000R.
Katsekas, James C., 4,387,316, Cl. 310-214.000.
Kimura, Shiro G., 4,386,944, Cl. 55-16.000.
Plemmons, Jerry R.; and Taylor, Tommy R., 4,387,417, Cl. 362-376.000.
Van Deursen, Gary E., 4,386,740, Cl. 241-93.000.
White, Philip J.; Lake, William H.; and Springer, Robert H., 4,387,319, Cl. 313-620.000.
Woods, Lee O.; and Haag, Donald L., 4,387,412, Cl. 361-27.000.
Zach, Franz C.; Bose, Bimal K.; Espelage, Paul M.; and Sicko, John S., 4,387,421, Cl. 364-148.000.
Ziemba, Richard T., 4,386,568, Cl. 102-204.000.
Zigler, Robert V., 4,387,330, Cl. 318-788.000.

General Foods Corporation: *See—*
El-Hag, Nabil A.; Dulin, Gary T.; and Krasnow, Todd J., 4,386,559, Cl. 99-404.000.

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Ottaviani, Robert A.; and Short, William T., 4,387,194, Cl. 525-454.000.
Patel, Chimanbhai M.; Magyar, Joseph J.; and Lee, David N., 4,386,745, Cl. 242-107.40B.
Pavlak, John J.; and Plyler, Robert G., 4,386,752, Cl. 248-73.000.
Riefel, Richard P.; Henne, John G.; and Dean, David A., 4,386,891, Cl. 418-81.000.

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Henry, Francis W., Jr.; Wood, Merrill, Jr.; and Rankovic, Ljubisa, 4,387,173, Cl. 524-63.000.

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Kawka, Richard J.; Herring, Daniel H.; Roth, Philip; and Sitko, Richard J., 4,386,973, Cl. 148-16.500.
Sibley, Henry C., 4,387,306, Cl. 307-125.000.

Gerbaud, Claude: *See—*
Aigle, Michel; Blanc, Hughes; Fournier, Philippe; Gerbaud, Claude; Guerineau, Michel; Heslot, Henri; and Lacroute, Francois, 4,387,162, Cl. 435-172.000.

Gerken, Heiner: *See—*
Kittel, Arthur; Gerken, Heiner; and Behrens, Herbert, 4,386,862, Cl. 400-144.200.

Germanov, Vadim I.: *See—*
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Gesellschaft fur Strahlen-und Umweltforschung mbH Munchen: *See—*
Roder, Ulrich; Seidlitz, Harald; and Scherg, Christof, 4,386,612, Cl. 128-660.000.

Gessell, Donald E.; Gibbs, Ronald L.; and Fuentes, Ricardo, Jr., to Dow Chemical Company, The. Process for polymerizing olefins employing a catalyst prepared from organomagnesium compound; oxygen- or nitrogen- containing compound; halide source; transition metal compound and reducing agent. 4,387,200, Cl. 526-122.000.

GFM Gesellschaft fur Fertigungstechnik und Maschinebau Aktiengesellschaft: *See—*
Kralowetz, Johanna; and Kralowetz, Robert, 4,387,327, Cl. 318-573.000.

Giachino, Joseph M.; Haeberle, Russell J.; and Crow, Joseph W., to Ford Motor Company. Method for manufacturing variable capacitance pressure transducers. 4,386,453, Cl. 29-25.410.

Giallorenzi, Thomas G.; and Weller, Joseph F., to United States of America, Navy. Active waveguide coupler for surface acoustic waves. 4,387,353, Cl. 333-111.000.

Gibbs, Michael J. Vent apparatus for insulated roof structures. 4,386,488, Cl. 52-199.000.

Gibbs, Ronald L.: *See—*
Gessell, Donald E.; Gibbs, Ronald L.; and Fuentes, Ricardo, Jr., 4,387,200, Cl. 526-122.000.

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Moss, Elvis W.; and Gifford, Richard L., 4,386,742, Cl. 242-84.10R.

Gift, Warren H., to Plaskolite, Inc. Acrylate material comprising sequentially polymerized four composition particle having radially graduated transitional properties. 4,387,138, Cl. 428-407.000.

Gijrath, Johannes H. N.; Van Liempd, Albertus A. M.; Versteegen, Hendrik S. A.; van der Geer, Josephus J.; and van der Avoort, Henricus J. M., to U.S. Philips Corporation. Color display tube and suspension means for color selection electrode. 4,387,321, Cl. 313-406.000.

Gilderbloom, Clarence W. Motorized reclining chair. 4,386,803, Cl. 297-84.000.

Giles, Harold F., Jr., to General Electric Company. Blends of polyetherimides and organopolysiloxane-polycarbonate block copolymers. 4,387,193, Cl. 525-431.000.

Gillberg, James E.: *See—*
Bessolo, Jeffrey M.; and Gillberg, James E., 4,387,350, Cl. 331-116.0FE.

Gilles, Bernard; Paulet, Jose A.; and Roux, Raphael J. S., to Thomson-CSF Telephone. Four wire to two wire converter. 4,387,277, Cl. 179-170.0NC.

Gilliam, Barry R., to Airoex Products, Inc. Dry land trick ski trainer. 4,386,915, Cl. 434-253.000.

Giner-Sorolla, Alfredo: *See—*
Hadden, John W.; Simon, Lionel N.; and Giner-Sorolla, Alfredo, 4,387,226, Cl. 544-247.000.

Givaudan Corporation: *See—*
De Polo, Karl-Fred, 4,387,089, Cl. 424-59.000.

Givens, Wyatt W., to Mobil Oil Corporation. Measuring of gamma-ray energy due to inelastic neutron scattering. 4,387,302, Cl. 250-270.000.

Glaser, Hermann: *See—*
Vogt, Wilhelm; Glaser, Hermann; and Koch, Jurgen, 4,387,263, Cl. 585-640.000.

Glass, Frank S.: *See—*
Moncrief, Marion L., Jr.; Glass, Frank S.; Hernandez, Rafael; and Chow, Edmund E., 4,387,434, Cl. 364-509.000.

Glass, Michael: *See—*
Koch, Edwin R.; and Glass, Michael, 4,387,108, Cl. 426-4.000.

Glatzhofer, James P., to Diamond Shamrock Corporation. Stabilization of oxime carbamates with gallic acid, lower alkyl ester derivatives thereof. 4,387,053, Cl. 260-349.000.

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Deutsch, Edward A.; and Glavan, Kenneth A., 4,387,087, Cl. 424-1.500.

Gleason, John G.; Kinzig, Charles M.; and Bryan, Deborah L., to SmithKline Beckman Corporation. Process for the preparation of esters of leukotriene A. 4,387,239, Cl. 549-562.000.

Gluckin, Gerald. Method of making a molded brassiere cup. 4,386,990, Cl. 156-245.000.

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Rannou, Jean; Grozellier, Michel; and Godet, Marcel, 4,387,122, Cl. 427-244.000.

Goi, Masami; Kameo, Kazuya; Sawada, Jiro; Hanada, Kazunori; Tamai, Masaharu; and Oguma, Kiyoshi, to Taisho Pharmaceutical Co., Ltd. Epoxysuccinamic acid compounds. 4,387,238, Cl. 549-549.000.

Goletto, Jean: *See—*
Coquard, Jean; and Goletto, Jean, 4,387,184, Cl. 525-183.000.

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Possati, Mario; Golinelli, Guido; and Selleri, Narciso, 4,386,467, Cl. 33-178.00E.

Gomez, Magdalena U.; Miller, Marvin L.; and Wicks, Richard W., to Hoffmann-La Roche Inc. Immunochemical assay for creatine kinase-MB isoenzyme. 4,387,160, Cl. 435-7.000.

Goncalves, Antonin, to L'Oreal. Device for storing separately two products which are to be dispensed simultaneously. 4,386,696, Cl. 206-221.000.

Gosswiller, Earl W., to Federal Signal Corporation. Method and apparatus for increasing effective light intensity of a rotating light. 4,387,362, Cl. 340-81.00R.

Goto, Hitoshi: *See—*
Iwaki, Yoshiyuki; and Goto, Hitoshi, 4,387,314, Cl. 310-88.000.

Goto, Yasuyuki: *See—*
Fukui, Masahiro; Inoue, Hiromichi; and Goto, Yasuyuki, 4,387,038, Cl. 252-299.630.

Gould Inc., Electric Fuse Div.: *See—*
Knapp, Edward J., Jr., 4,387,358, Cl. 337-244.000.

Gower, Christopher J., to Boots Company Limited, The. Preparation of dichlorobenzyl alcohol. 4,387,253, Cl. 568-812.000.

Graber, Joseph V. Bicycle support device. 4,386,709, Cl. 211-20.000.

Graco Inc.: *See—*
Kwok, Kui C., 4,386,739, Cl. 239-296.000.

Graham, George W.; and Tucker, William E., to A. T. Cross Company. Fountain pen cartridge. 4,386,866, Cl. 401-133.000.

Grattoni, Paolo; Quaglia, Giorgio; Fava, Cesare; and Juliani, Giovanni, to Consiglio Nazionale Delle Ricerche. System for televised radioscopy. 4,387,392, Cl. 358-111.000.

Green Mountain Products, Inc.: *See—*
Johnson, Robert M., 4,386,580, Cl. 119-1.000.

Gregory, Leland M.: *See—*
Grice, Karl R.; Bannister, Jimmy L.; Gregory, Leland M.; and Whitfield, Frank J., 4,387,293, Cl. 219-529.000.

Grice, Karl R.; Bannister, Jimmy L.; Gregory, Leland M.; and Whitfield, Frank J., to Belton Corporation, The. Electric heating appliance. 4,387,293, Cl. 219-529.000.

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Peery, John R.; Griesinger, William K.; and Carpenter, Peter F., 4,386,929, Cl. 604-132.000.

Griffin, Richard H., to International Telephone and Telegraph Corporation. Current tap ground contact. 4,386,813, Cl. 339-14.00R.

Griffis, Patrick D., to RCA Corporation. Semiconductor apparatus with integral heat sink tab. 4,387,413, Cl. 361-386.000.

Griffith, Robert L.; Carlson, John G.; Gritzner, Daniel E.; and Mullan, William H., to Armour-Dial, Inc. Apparatus for collating, cutting and packing food products. 4,386,490, Cl. 53-148.000.

Gritzner, Daniel E.: *See—*
Griffith, Robert L.; Carlson, John G.; Gritzner, Daniel E.; and Mullan, William H., 4,386,490, Cl. 53-148.000.

Grogler, Gerhard: *See—*
Schwindt, Jurgen; Grogler, Gerhard; Ganster, Otto; and Koster, Johannes, 4,387,057, Cl. 260-453.0AR.

Grosjean, Jon P., to Datavision, Inc. Phase-shift keyed decoder. 4,387,342, Cl. 329-50.000.

Grosskinsky, Alfred-Otto; Frommer, Elmar; Rapp, Guenther, deceased (by Rapp, Ruth E., Legal Representative); Thomas, Erwin; and Schmitz, Ruediger, to BASF Aktiengesellschaft. Removal of nitrous oxide from exit gases containing this compound during the production of hydroxylammonium salts. 4,387,082, Cl. 423-387.000.

Grounauer, Pierre-Alain. Device for the measurement of electrical potentials of the eye. 4,386,831, Cl. 351-205.000.

Grover, Mark D.; and Moore, Gary B., to Grover, Mark D. Line transporter. 4,386,759, Cl. 254-134.500.

Grozellier, Michel: *See—*
Rannou, Jean; Grozellier, Michel; and Godet, Marcel, 4,387,122, Cl. 427-244.000.

Grudzinskas, Charles V.; and Weiss, Martin J., to American Cyanamid Company. Novel 16-aryloxy-17,18,19,20-tetranorprostanoic acids and derivatives. 4,387,241, Cl. 560-55.000.

GTE Automatic Electric Labs Inc.: *See—*
McGough, Gerald B., 4,386,690, Cl. 194-1.00D.

GTI Corporation: *See—*
Stein, Jeffrey D.; and McCool, John M., 4,387,274, Cl. 179-99.00H.

Guerineau, Michel: *See—*
Aigle, Michel; Blanc, Hughes; Fournier, Philippe; Gerbaud, Claude; Guerineau, Michel; Heslot, Henri; and Lacroute, Francois, 4,387,162, Cl. 435-172.000.

Guery, Claudine: *See—*
Commeyras, Auguste; Sagnes, Rene; and Guery, Claudine, 4,387,254, Cl. 568-842.000.

Gulezian, Walter W. Sawbuck with juxtaposed plates journalled on an axle. 4,386,677, Cl. 182-154.000.

Gulf Research & Development Company: *See—*
Fareri, Elizabeth L.; and Templin, Philip R., 4,386,937, Cl. 44-41.000.

Gulf & Western Manufacturing Company: *See—*
Smith, Joseph E., 4,386,869, Cl. 403-39.000.

Gumbel, Harald; and Bigorajski, Gunter, to Vereinigte Schmirgel- und Machinen Fabriken Aktiengesellschaften. Treated polyester fabric for use in flexible abrasives. 4,386,943, Cl. 51-298.000.

Gunderson, Robert O.: *See—*
Kocol, James E.; Gunderson, Robert O.; Schuck, David B.; and Marro, Daniel J., 4,387,441, Cl. 364-200.000.

Haag, Donald L.: *See—*
Woods, Lee O.; and Haag, Donald L., 4,387,412, Cl. 361-27.000.

Haar, Lucas H., to ITT Industries, Inc. Pressure regulating valve for hydraulic brake systems. 4,386,807, Cl. 303-6.00C.

Hadden, John W.; Simon, Lionel N.; and Giner-Sorolla, Alfredo, to Newport Pharmaceuticals International, Inc.; and Sloan-Kettering Institute For Cancer Research. Purine-dihydrothiazoles. 4,387,226, Cl. 544-247.000.

Haeberle, Russell J.: *See—*
Giachino, Joseph M.; Haeberle, Russell J.; and Crow, Joseph W., 4,386,453, Cl. 29-25.410.

Haeusler, Gerd; and Jaerisch, Walter, to International Business Machines Corporation. Method of moire-metrical testing of optical imaging systems. 4,386,849, Cl. 356-124.000.

Hafele, Joseph C.: *See—*
Englund, Michael S.; Hafele, Joseph C.; and Schulze, Dwain C., Jr., 4,386,534, Cl. 73-863.010.

Hagan, Joseph R.: *See—*
Hipchen, Donald E.; Skowronski, Michael J.; and Hagan, Joseph R., 4,386,983, Cl. 156-79.000.

Hahn, Herbert: *See—*
Bronstert, Bernd; Hahn, Herbert; Hoffmann, Gerhard; and Lenz, Werner, 4,387,157, Cl. 430-271.000.
Hummerich, Rainer; Hahn, Herbert; Weiss, Wolfram; Immel, Guenther; Krause, Hans-Joachim; and Peters, Karl-Clemens, 4,387,212, Cl. 528-232.000.

Hain, Paul, to Champion International Corporation. Heat transfer paper. 4,387,132, Cl. 428-211.000.

Hajos, Zoltan G.; and Wachter, Michael P., to Ortho Pharmaceutical Corporation. Synthesis of dioxabicyclo[3.2.1]octanes and oxepanes. 4,387,234, Cl. 549-346.000.

Hakata, Masayuki, to Casio Computer Co., Ltd. Miniature electronic device having time informing sound generating function. 4,386,856, Cl. 368-72.000.

Hall, Charles P.; and Johenning, John B., to Monterey Manufacturing, Inc. Coupling for waterbed mattress valves. 4,386,638, Cl. 141-98.000.

Hall, William C. Construction industry teaching game. 4,386,778, Cl. 273-256.000.

Halliburton Company: *See—*
Brandell, John T., 4,386,655, Cl. 166-106.000.

Hamada, Hideo; Morimoto, Yoshiro; Suga, Masaaki; Futagi, Masaaki; and Suzuki, Tadashi, to Nissan Motor Company, Limited. Indicator for lock-up state of lock-up type automatic transmission. 4,386,521, Cl. 73-118.000.

Hamamatu, Takashi: *See—*
Hatta, Tokuaki; Ueno, Haruyuki; Katsura, Yuji; Fukuda, Kazushige; Kubota, Hiroshi; and Hamamatu, Takashi, 4,387,080, Cl. 423-345.000.

Hambrecht, Juergen: *See—*
Brandstetter, Franz; Hambrecht, Juergen; Naarmann, Herbert; and Schuster, Hans, 4,387,189, Cl. 525-68.000.

Hamed, Gary R.: *See—*
Bohm, Georg G. A.; Vescelius, Lee E.; and Hamed, Gary R., 4,387,175, Cl. 524-68.000.

Hanada, Kazunori: *See—*
Goi, Masami; Kameo, Kazuya; Sawada, Jiro; Hanada, Kazunori; Tamai, Masaharu; and Oguma, Kiyoshi, 4,387,238, Cl. 549-549.000.

Hanaki, KenIchi: *See—*
Mizuno, Junzi; Fukami, Akira; Okamoto, Kunio; and Hanaki, KenIchi, 4,386,947, Cl. 55-387.000.

Handler, Caroll. Hair styling brush. 4,386,620, Cl. 132-85.000.

Hani & Cie. AG: *See—*
Heimgartner, Hans; and Wirz, Karl, 4,386,531, Cl. 73-756.000.

Hanna, Marie R.: *See—*
Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., 4,387,035, Cl. 252-174.110.

Hansen, Guenter: *See—*
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, 4,386,934, Cl. 8-639.000.

Hansen, Kenneth P.: *See—*
Dudash, Carl S.; and Hansen, Kenneth P., 4,387,300, Cl. 250-239.000.

Hanson, Gustaf H., to Augusta Developments Inc. Orthodontic arch wires. 4,386,909, Cl. 433-20.000.

Hanson, Melville, deceased: *See—*
Wenzel, Heinz-Dieter; and Hanson, Melville, deceased, 4,386,692, Cl. 198-394.000.

Haraga, Koichi: *See—*
Fujii, Kanihiko; Haraga, Koichi; Hirosaki, Yukihiro; and Sato, Koichiro, 4,386,994, Cl. 156-360.000.

Harbert, Charles A.: *See—*
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,387,229, Cl. 546-216.000.

Hardie, George S., to Raytheon Company. Radio frequency antenna. 4,387,379, Cl. 343-895.000.

Harless, Charles E.: *See—*
Cook, Gus T.; Holshouser, Stephen K.; Coleman, Richard M.; Harless, Charles E.; and Whinnery, Walter N., III, 4,387,018, Cl. 208-262.000.

Harlow, John R., to Electronic Assemblers Company. Three phase power-factor control system for A.C. induction motors. 4,387,329, Cl. 318-729.000.

Harmon, Samuel R., to Bee Line Company. Pulling tower structure. 4,386,517, Cl. 72-455.000.

Harnden, Robert M.; and Calvin, Donald W., to Dow Chemical Company, The. Process for the manufacture of diethylenetriamine. 4,387,249, Cl. 564-488.000.

Harnischfeger Corporation: *See—*
Gattu, Narahari; and Terranova, Joseph C., III, 4,386,711, Cl. 212-189.000.

Harris, Alva F.: *See—*
Dufour, Daniel L.; and Harris, Alva F., 4,387,191, Cl. 525-207.000.

Harris Corporation: *See—*
Henderson, Albert S., 4,387,378, Cl. 343-854.000.
Zugel, Victor A., 4,386,768, Cl. 270-53.000.

Harris Metals, Inc.: *See—*
Kilbert, Robert K., 4,386,969, Cl. 148-3.000.

Harrison, Shelley A.: *See—*
Swartz, Jerome; Barkan, Edward; and Harrison, Shelley A., 4,387,297, Cl. 235-462.000.

Harsh, Angie; and Schulein, Benjamin M., Jr., to Alfa-Pet, Inc. Animal litter. 4,386,579, Cl. 119-1.000.

Hart, Nathan C. Feminine hygienic device. 4,386,928, Cl. 604-83.000.

Hartmann, Werner: *See—*
Benkler, Walter; and Hartmann, Werner, 4,386,736, Cl. 238-159.000.

Hashimoto, Shintaro; Morita, Akitaka; and Tsuda, Hiroshi, to Sharp Kabushiki Kaisha. Electronic apparatus with speech synthesizer. 4,387,269, Cl. 179-1.0SM.

Haslund, Ralph L., to Boeing Company, The. High velocity metallic mass increment vacuum deposit gun. 4,386,578, Cl. 118-669.000.

Hatakeyama, Takanobu: *See—*
Katayama, Yasunori; Hatakeyama, Takanobu; Shima, Seiya; Hokari, Sadao; Narita, Toshiro; Yoneda, Kenji; Sakata, Kazuhiro; Kurihara, Tomiaki; and Meguro, Toshio, 4,387,436, Cl. 364-561.000.

Hatta, Tokuaki; Ueno, Haruyuki; Katsura, Yuji; Fukuda, Kazushige; Kubota, Hiroshi; and Hamamatu, Takashi, to Kurosaki Refractories Co., Ltd. Flaky β-silicon carbide and ceramics having laminar structure produced therefrom. 4,387,080, Cl. 423-345.000.

Hatz, Ernst; Absenger, Erich; and Schmuck, Johann, to Motorenfabrik Hatz GmbH & Co. KG. Internal combustion engine. 4,386,589, Cl. 123-192.00B.

Haury, Andre; and Siffroi, Lucien, to La Telemecanique Electrique. Arc blowing chamber. 4,387,281, Cl. 200-147.00R.

Hauser, Herbert J., Jr., to Deere & Company. Gear pump or motor with a shaftless gear. 4,386,893, Cl. 418-191.000.

Hayes, Robert D.; and Richards, Glenn L., to Stromberg-Carlson Corporation. Maintenance facility for telephony system with remote port groups. 4,387,278, Cl. 179-175.20C.

Hecht, Hans; and Neumaier, Peter, to Institut Dr. Friedrich Forster Prufgeratebau. Method and apparatus for testing a metallic workpiece by inducing eddy currents therein. 4,387,338, Cl. 324-236.000.

Hecker, Klaus J., to United States of America, Navy. Satellite inspection system using hovering-type interceptors. 4,387,391, Cl. 358-109.000.

Heemskerk, Rutgerus S.; and v Engelenburg, Hendrik, to SKF Industrial Trading & Development Co. Ball bearing. 4,386,811, Cl. 308-188.000.

Heerdt, Ruth; Wolff, Hans P.; Kaiser, Fritz; Schaumann, Wolfgang; and Kuhnle, Hans, to Boehringer Mannheim GmbH. N-Substituted pyruvic acid hydrazones, preparation thereof and pharmaceutical compositions containing them. 4,387,104, Cl. 424-319.000.

Hehl, Karl. Proportional valve for hydraulic systems. 4,386,626, Cl. 137-529.000.

Heifner, Ralph D.: *See—*
Roth, David J.; Culler, Lawrence R.; and Heifner, Ralph D., 4,386,956, Cl. 75-24.000.

Heimgartner, Hans; and Wirz, Karl, to Hani & Cie. AG. Method and apparatus for determining the injection pressure during injection operations during construction work. 4,386,531, Cl. 73-756.000.

Heindl, Christine: *See—*
Leibenzeder, Siegfried; and Heindl, Christine, 4,386,975, Cl. 148-171.000.

Heller, Joel. Relatively rigid sheet plastic folding method, apparatus and article. 4,386,926, Cl. 493-396.000.

Hellin, Jean P. Needle for automatically handling layers of material. 4,386,770, Cl. 271-18.300.

Hemala, Jirina, Michal Hemala, Martin Hemala, legal representatives: *See—*
Rothmeier, Waldemar; Weber, Rolf-Dieter; and Hemala, Zdenek, deceased, 4,386,495, Cl. 57-279.000.

Hemala, Zdenek, deceased: *See—*
Rothmeier, Waldemar; Weber, Rolf-Dieter; and Hemala, Zdenek, deceased, 4,386,495, Cl. 57-279.000.

Henderson, Albert S., to Harris Corporation. Antenna having electrically positionable phase center. 4,387,378, Cl. 343-854.000.

Henderson, Harry E.; Smith, Clinton R.; and Alexander, A. Gordon, to Imperial Oil Limited. Traction fluid lubricants derived from coal tar. 4,387,256, Cl. 585-1.000.

Henderson, John G. N.; and Maturo, Robert J., to RCA Corporation. Carrier detector apparatus useful in a multiband sweep type tuning system. 4,387,401, Cl. 358-193.100.

Henne, John G.: *See—*
Riefel, Richard P.; Henne, John G.; and Dean, David A., 4,386,891, Cl. 418-81.000.

Henry, Francis W., Jr.; Wood, Merrill, Jr.; and Rankovic, Ljubisa, to General Refractories Company. Use of resorcinal polymer blend as a binder for carbon-containing refractory brick and shape. 4,387,173, Cl. 524-63.000.

Hensleigh, Robert H. Dial illuminating system. 4,387,414, Cl. 362-31.000.

Herbert, Virginia, to Verve Enterprises Pty. Limited. Modelling compounds. 4,386,964, Cl. 106-150.000.

Hercules Incorporated: *See—*
Baczuk, Robert J.; and Robinson, Anderson E., Jr., 4,386,978, Cl. 149-19.400.

Hernandez, Rafael: *See—*
Moncrief, Marion L., Jr.; Glass, Frank S.; Hernandez, Rafael; and Chow, Edmund E., 4,387,434, Cl. 364-509.000.

Herring, Daniel H.: *See—*
Kawka, Richard J.; Herring, Daniel H.; Roth, Philip; and Sitko, Richard J., 4,386,973, Cl. 148-16.500.

Hershey, Daniel. Determination of the basal metabolic rate of humans with a whole-body calorimeter. 4,386,604, Cl. 128-718.000.

Herten, Rolf, to Blechwarenfabrik Gustav Gruss & Co. Method forming a drawn container and a container produced by this method. 4,386,514, Cl. 72-347.000.

Herwig, Walter; Erbes, Kurt; Decker, Rudolf; and Sikora, Helga, to KALLE, Niederlassung der Hoechst AG. Elastomeric, ethylenically unsaturated polyurethanes and radiation polymerizable mixtures containing such polyurethanes. 4,387,139, Cl. 428-423.700.

Heslot, Henri: *See—*
Aigle, Michel; Blanc, Hughes; Fournier, Philippe; Gerbaud, Claude; Guerineau, Michel; Heslot, Henri; and Lacroute, Francois, 4,387,162, Cl. 435-172.000.

Hesston Corporation: *See—*
Holdeman, Adin F.; Gaeddert, Melvin V.; Ratzlaff, Howard J.; Pruitt, Martin E.; and Lohrentz, Howard R., 4,386,493, Cl. 56-341.000.
McCanse, James E.; and Dhaliwal, Jugraj S., 4,386,661, Cl. 172-112.000.

Hetkamp, Guunter: *See—*
Falbe, Jurgen; Cornils, Boy; Hetkamp, Guunter; Otterbein, Karl, deceased; Payer, Wolfgang; and Schneller, Peter, 4,387,202, Cl. 526-138.000.

Heuer, Horst: *See—*
Horlbeck, Gernot; Heuer, Horst; Bax, Hanns-Jorg; and Jadamus, Hans, 4,387,213, Cl. 525-437.000.

Hevey, Richard C.; and Forget, Ronald D., to FMC Corporation. Method and apparatus for chemical analysis using reactive reagents dispersed in soluble film. 4,387,164, Cl. 436-45.000.

Hewlett-Packard Company: *See—*
Vincent, Kent D., 4,387,129, Cl. 428-195.000.

Hibbeler, Richard: *See—*
Dyckes, Dennis B.; Johnson, Ross; and Hibbeler, Richard, 4,386,767, Cl. 269-97.000.

Hickam, William M.: *See—*
Lee, Pang-Kai; Hickam, William M.; and Steltz, William G., 4,386,498, Cl. 60-646.000.

Hickory Springs Manufacturing Company: *See—*
Hooker, Richard B.; and Bishop, Thomas R., 4,386,871, Cl. 403-377.000.

Higbee, Wallace C., to Firestone Tire & Rubber Company, The. Comfort mechanism for safety belt retractors. 4,386,744, Cl. 242-107.700.

Higuchi, Yoshiharu: *See—*
Sato, Akihiro; Tachibana, Masami; Kikuta, Kazutsune; Higuchi, Yoshiharu; and Miyajima, Masazumi, 4,387,198, Cl. 526-97.000.

Hill, Donald C.: *See—*
Lyall, Robert W.; and Hill, Donald C., 4,386,796, Cl. 285-31.000.

Hill, Robert C., to Atlantic Richfield Company. Flow control apparatus. 4,387,020, Cl. 210-86.000.

Hill, Ruth L.; and Jerry, Roger E., to Polaroid Corporation. Spectrally sensitized photosensitive silver halide emulsion. 4,387,155, Cl. 430-217.000.

Hilti Aktiengesellschaft: *See—*
Bereiter, Rolf, 4,386,882, Cl. 411-387.000.
Koob, Friedrich, 4,386,717, Cl. 222-94.000.

Hilzinger, Hans-Reiner; Krueger, Kurt; and Hock, Stefan, to Vacumschmelze GmbH. Method and device for manufacture of amorphous metal tapes. 4,386,648, Cl. 164-463.000.

Hines, Randal C.; and Black, Thomas J., to Nuclear Systems, Inc. Programmable thermostatic control device. 4,386,649, Cl. 165-12.000.

Hinkel, Holger; Kempf, Jurgen; Kraus, Georg; and Schmid, Gerhard E., to International Business Machines Corporation. Method of making semiconductor device structures by means of ion implantation under a partial pressure of oxygen. 4,386,968, Cl. 148-1.500.

Hinlein, Sigmund: *See—*
Otavsky, Pavel; and Hinlein, Sigmund, 4,387,409, Cl. 360-104.000.

Hinn, Werner, to RCA Corporation. Automatic kinescope bias control system with digital signal processing. 4,387,405, Cl. 358-243.000.

Hipchen, Donald E.; Skowronski, Michael J.; and Hagan, Joseph R., to Celotex Corporation, The. Method of making a foam structural laminate. 4,386,983, Cl. 156-79.000.

Hirabayashi, Tsugio; and Ikemoto, Isao, to Konishiroku Photo Industry Co., Ltd. Component mounting arrangement for electrostatic recording apparatus. 4,386,838, Cl. 355-3.0DR.

Hirano, Seiichi; and Ooshima, Toshiaki, to Epson Corporation. Serial printer. 4,386,564, Cl. 101-93.150.

Hironaka, Kenichi: *See—*
Kobayashi, Tsuguo; Ishikawa, Tetsuo; Hironaka, Kenichi; Umetsu, Hideo; Ogata, Masatsugu; and Yokono, Hitoshi, 4,387,311, Cl. 310-43.000.

Hirosaki, Yukihiro: *See—*
Fujii, Kunihiko; Haraga, Koichi; Hirosaki, Yukihiro; and Sato, Koichiro, 4,386,994, Cl. 156-360.000.

Hirose, Hideo, to Nippon Kogaku K. K. Telecentric illumination system. 4,386,828, Cl. 350-427.000.

Hirose, Hideo, to Nippon Kogaku K.K. Epi-illumination type projection device. 4,386,833, Cl. 353-67.000.

Hirose, Sumio: *See—*
Kitamura, Tadashi; and Hirose, Sumio, 4,387,115, Cl. 427-58.000.

Hitachi, Ltd.: *See—*
Kanda, Hiroshi; Ishikawa, Isao; and Kondo, Toshio, 4,386,530, Cl. 73-613.000.
Katayama, Yasunori; Hatakeyama, Takanobu; Shima, Seiya; Hokari, Sadao; Narita, Toshiro; Yoneda, Kenji; Sakata, Kazuhiro; Kurihara, Tomiaki; and Meguro, Toshio, 4,387,436, Cl. 364-561.000.
Kobayashi, Tsuguo; Ishikawa, Tetsuo; Hironaka, Kenichi; Umetsu, Hideo; Ogata, Masatsugu; and Yokono, Hitoshi, 4,387,311, Cl. 310-43.000.
Nakamura, Hideo; and Funabashi, Tsuneo, 4,387,294, Cl. 377-78.000.
Okabayashi, Terushi, 4,387,446, Cl. 365-189.000.
Yamauchi, Teruo; Fujieda, Mamoru; and Oyama, Yoshishige, 4,387,429, Cl. 364-431.050.

Hitomi, Chiyoji: *See—*
Ichikawa, Rinjiro; and Hitomi, Chiyoji, 4,387,133, Cl. 428-215.000.

Hitosugi, Toshiaki: *See—*
Umezu, Kenji; Takazawa, Kazuhiro; Hitosugi, Toshiaki; and Kuwahara, Eiji, 4,386,502, Cl. 62-129.000.

Hock, Stefan: *See—*
Hilzinger, Hans-Reiner; Krueger, Kurt; and Hock, Stefan, 4,386,648, Cl. 164-463.000.

Hoechst Aktiengesellschaft: *See—*
Bosse, Dieter; and Frass, Werner, 4,387,151, Cl. 430-175.000.
Franke, Werner; Seibel, Markus; Brahm, Richard; and Trittler, Hans, 4,387,148, Cl. 430-66.000.
Reichert, Gunter; Mainzer, Franz; Lehmann, Kurt; and Niermann, Hermann, 4,386,503, Cl. 62-188.000.
Stahlhofen, Paul, 4,387,152, Cl. 430-191.000.
Vogt, Wilhelm; Glaser, Hermann; and Koch, Jurgen, 4,387,263, Cl. 585-640.000.

Hoet, Roger, to Thomson - CSF. Electron tube with cylindrical grid of pyrolytic graphite. 4,387,320, Cl. 313-348.000.

Hoffman, Henry C., to United States of America, National Aeronautics and Space Administration. Method of damping nutation motion with minimum spin axis attitude disturbance. 4,386,750, Cl. 244-169.000.

Hoffman, Wayne E.: *See—*
Sweet, David B.; and Hoffman, Wayne E., 4,386,749, Cl. 244-134.00D.

Hoffmann, Gerhard: *See—*
Bronstert, Bernd; Hahn, Herbert; Hoffmann, Gerhard; and Lenz, Werner, 4,387,157, Cl. 430-271.000.

Hoffmann, Heiko: *See—*
Huber, Adalbert; Schirmer, Dietrich; and Hoffmann, Heiko, 4,387,029, Cl. 210-758.000.

Hoffmann, Hellmut; Kruger, Bernd-Wieland; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. 2-Thi-1,3,2-oxazaphospholanes. 4,387,060, Cl. 260-936.000.

Hoffmann-La Roche Inc.: *See—*
Gomez, Magdalena U.; Miller, Marvin L.; and Wicks, Richard W., 4,387,160, Cl. 435-7.000.
Machin, Peter J., 4,387,100, Cl. 424-269.000.
Seiler, Peter, 4,387,007, Cl. 204-59.00R.

Hogan, Arthur S.; and McCann, Paul G., Jr., to Rig-A-Matic, Inc. Materials lifting apparatus. 4,386,883, Cl. 414-22.000.

Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, to Owens-Corning Fiberglas Corporation. Method and apparatus for preheating glass batch. 4,386,951, Cl. 65-27.000.

Hokari, Sadao: *See—*
Katayama, Yasunori; Hatakeyama, Takanobu; Shima, Seiya; Hokari, Sadao; Narita, Toshiro; Yoneda, Kenji; Sakata, Kazuhiro; Kurihara, Tomiaki; and Meguro, Toshio, 4,387,436, Cl. 364-561.000.

Holcomb, Dysart E.: *See—*
Kidwell, Louis E., Jr.; and Holcomb, Dysart E., 4,387,167, Cl. 501-140.000.

Holcomb, James A.: *See—*
Landon, Robert K., 4,386,675, Cl. 180-221.000.

Holdeman, Adin F.; Gaeddert, Melvin V.; Ratzlaff, Howard J.; Pruitt, Martin E.; and Lohrentz, Howard R., to Hesston Corporation. Method and apparatus for making large round crop bales. 4,386,493, Cl. 56-341.000.

Holman, J. Harrison; and Holman, Jay C. Convection cooking equipment. 4,386,558, Cl. 99-386.000.

Holman, Jay C.: *See—*
Holman, J. Harrison; and Holman, Jay C., 4,386,558, Cl. 99-386.000.

Holshouser, Stephen K.: *See—*
Cook, Gus T.; Holshouser, Stephen K.; Coleman, Richard M.; Harless, Charles E.; and Whinnery, Walter N., III, 4,387,018, Cl. 208-262.000.

Holt, Neil L.; and Olsen, William G., to Burke Company, The. Cover for concrete voids of lifting inserts. 4,386,486, Cl. 52-125.500.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Ootaka, Shoichi; Kawabata, Etsuo; Otobe, Yutaka; Kawamoto, Michio; and Sato, Norio, 4,386,597, Cl. 123-568.000.

Honeywell Inc.: *See—*
Kude, William B.; Pearman, A. Noel J.; and Youngbauer, Daniel L., 4,386,858, Cl. 374-37.000.

Honeywell Information Systems Inc.: *See—*
King, Richard L.; Bradley, John J.; and Miu, Ming T., 4,387,423, Cl. 364-200.000.

Hooker, Richard B.; and Bishop, Thomas R., to Hickory Springs Manufacturing Company. Interlocking bed frame members. 4,386,871, Cl. 403-377.000.

Hopper, Thomas P. Apparatus for assembling a shade device. 4,386,454, Cl. 29-33.00K.

Horiuchi, George H.; and Wynn, Edward J., to Sperry Corporation. Hydraulic cylinder cushion device. 4,386,555, Cl. 91-395.000.

Horlbeck, Gernot; Heuer, Horst; Bax, Hanns-Jorg; and Jadamus, Hans, to Chemische Werke Huels AG. Process for the condensation of linear polyalkylene terephthalates. 4,387,213, Cl. 525-437.000.

Horn, Hans, to TMC Corporation. Ski binding. 4,386,789, Cl. 280-605.000.

Horn, James N., to Saab-Scania Aktiebolag. Retractable cant supports for lumber cant positioner-feeders. 4,386,641, Cl. 144-329.000.

Horng Meei Spring Enterprise Co., Ltd.: *See—*
Wu, Hann C., 4,386,772, Cl. 272-65.000.

Horowitz, Alvin E. Simulated tree trunk for supporting vines or vine-like plants. 4,386,480, Cl. 47-45.000.

Hort, Eugene V.; Anderson, Lowell R.; and Alwani, Dru W., to GAF Corporation. Corrosion inhibitors. 4,387,041, Cl. 252-392.000.

Hort, Eugene V.; Anderson, Lowell R.; and Alwani, Dru W., to GAF Corporation. Corrosion inhibitor comprising the ethynylation reaction product of a dialkylamine, a substituted benzaldehyde and acetylene. 4,387,042, Cl. 252-392.000.

Hosono, Nagao; Kinoshita, Koichi; and Takahashi, Toru, to Canon Kabushiki Kaisha. Developing apparatus for electrostatic image. 4,386,577, Cl. 118-657.000.

Houdaille Industries, Inc.: *See—*
Torok, George E.; and Gajdusek, Ernest, Jr. (said George E. Torok assors. to), 4,386,728, Cl. 228-111.000.

Howell, Stephen L.: *See—*
Fritz, Gary R.; Howell, Stephen L.; and Robinson, John W., 4,386,546, Cl. 84-1.010.

Huber, Adalbert; Schirmer, Dietrich; and Hoffmann, Heiko, to UHDE GmbH. Method for the reprocessing of condensate from urea production plants. 4,387,029, Cl. 210-758.000.

Huff, Ray V.: *See—*
Axen, Steven G.; Huff, Ray V.; and Bergeson, Jerry R., 4,386,806, Cl. 299-5.000.

Huffman, Charles E., to Rockwell International Corporation. Non-buffered loop-timed channel bank. 4,387,459, Cl. 370-102.000.

Hughes Aircraft Company: *See—*
Edwards, Colin W., 4,387,444, Cl. 365-156.000.
Wirick, Michael P.; and Wright, James P., 4,387,301, Cl. 250-252.100.

Hughes Tool Company: *See—*
Ippolito, Rodolfo M., 4,386,663, Cl. 175-17.000.
Millsapps, Stuart C., Jr., 4,386,667, Cl. 175-228.000.
Parish, Verble W., 4,386,668, Cl. 175-228.000.

Huie, Nicholas C.: *See—*
Naim, Houssam M.; Huie, Nicholas C.; and Kuhlmann, George E., 4,387,243, Cl. 562-413.000.

Humbach, Michael J.: *See—*
Vickers, Anthony G.; and Humbach, Michael J., 4,387,043, Cl. 252-417.000.

Hummerich, Rainer; Hahn, Herbert; Weiss, Wolfram; Immel, Guenther; Krause, Hans-Joachim; and Peters, Karl-Clemens, to BASF Aktiengesellschaft. Preparation of aminoplast resins. 4,387,212, Cl. 528-232.000.

Humphries, Truman W.: *See—*
Neal, Jesse R., Jr.; and Humphries, Truman W., 4,386,855, Cl. 366-177.000.

Hungerford, Gordon P., to Mobil Oil Corporation. System for recovering film from pressurized extrusion zone. 4,386,897, Cl. 425-71.000.

Hunt, William C., III, to Mobil Oil Corporation. Solvent push-pull process for improving vertical conformance of steam drive process. 4,386,658, Cl. 166-263.000.

Husky Injection Molding Systems Ltd.: *See—*
Wybenga, William J., 4,386,903, Cl. 425-563.000.

Hutton, Albert J. Self-tailing winch. 4,386,760, Cl. 254-371.000.

Hyltin, Tom M.: *See—*
Lowrey, John W.; Hyltin, Tom M.; and Jamieson, J. Scott, 4,387,437, Cl. 364-561.000.

Hyzak, Daniel L., to Stauffer Chemical Company. O-(Substituted phenyl) N-methylcarbamates as herbicide extenders. 4,386,955, Cl. 71-100.000.

I-Tron, Inc.: *See—*
Newell, William C.; and Cross, Lary A., 4,387,296, Cl. 235-376.000.

Iacovangelo, Charles D.; and Zarnoch, Kenneth P., to General Electric Company. Electrode material for molten carbonate fuel cells. 4,386,960, Cl. 419-9.000.

Ichikawa, Rinjiro; and Hitomi, Chiyoji, to Toyo Boseki Kabushiki Kaisha. Laminated light-polarizing sheet. 4,387,133, Cl. 428-215.000.

Idler, Horst: *See—*
Kleiber, Herbert; Idler, Horst; and Stammelbach, Jurgen, 4,387,375, Cl. 343-105.00R.

Ikeda, Yoshiyuki; Inoue, Atsuo; Tanabe, Yoshio; and Ariki, Toshinori, to Nippon Kayaku Kabushiki Kaisha. Water-in-oil emulsion explosive. 4,386,977, Cl. 149-2.000.

Ikegami, Tadashi: *See—*
Sakurai, Hisaya; Morita, Hideo; Ikegami, Tadashi; and Furusato, Masayasu, 4,387,045, Cl. 252-429.00B.

Ikemoto, Isao: *See—*
Hirabayashi, Tsugio; and Ikemoto, Isao, 4,386,838, Cl. 355-3.0DR.

Illinois Tool Works Inc.: *See—*
Klygis, Mindaugas J., 4,386,698, Cl. 206-432.000.
Speedie, Robert, 4,386,720, Cl. 222-498.000.

Illinois Water Treatment Company: *See—*
Morgart, James R., 4,387,075, Cl. 422-50.000.

Ilyes, Zoltan: *See—*
Martinko, Matvas; Elekes, Andras; Simon, Kalman; Bohnert, Jozsef; Nemeth, Janos; Bole, Karoly; and Ilyes, Zoltan, 4,386,878, Cl. 405-291.000.

Imaki, Naoshi: *See—*
Suzuki, Tetsumi; Imaki, Naoshi; and Nakanome, Takemi, 4,387,061, Cl. 260-968.000.

Iman, Imdad, to General Electric Company. High speed hydraulically-actuated operating system for an electric circuit breaker. 4,387,280, Cl. 200-82.00R.

Immel, Guenther: *See—*
Hummerich, Rainer; Hahn, Herbert; Weiss, Wolfram; Immel, Guenther; Krause, Hans-Joachim; and Peters, Karl-Clemens, 4,387,212, Cl. 528-232.000.

Imperial Chemical Industries Limited: *See—*
Newton, Alan B., 4,387,187, Cl. 525-409.000.
Smith, Leslie H., 4,387,099, Cl. 424-263.000.

Imperial Oil Limited: *See—*
Henderson, Harry E.; Smith, Clinton R.; and Alexander, A. Gordon, 4,387,256, Cl. 585-1.000.

Inco Research & Development Center, Inc.: *See—*
Benn, Raymond C.; Curwick, LeRoy R.; and Andryszak, Kenneth R., 4,386,976, Cl. 148-410.000.

Inoue, Atsuo: *See—*
Ikeda, Yoshiyuki; Inoue, Atsuo; Tanabe, Yoshio; and Ariki, Toshinori, 4,386,977, Cl. 149-2.000.

Inoue, Hiromichi: *See—*
Fukui, Masahiro; Inoue, Hiromichi; and Goto, Yasuyuki, 4,387,038, Cl. 252-299.630.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,387,286, Cl. 219-69.00D.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Apparatus for controlling splashes and purification of a machining liquid. 4,387,286, Cl. 219-69.00D.

Inoue, Yuzuru, to Victor Company of Japan, Limited. Device for reducing counter-light incident on a single-lens reflex view finder 4,386,835, Cl. 354-23.00R.

Institut Dr. Friedrich Forster Prufgeratebau: *See—*
Hecht, Hans; and Neumaier, Peter, 4,387,338, Cl. 324-236.000.

Institut Francais Du Petrole: *See—*
Chauvin, Yves; Commereuc, Domonique; Gaillard, Jean; Leger, Gerard; and Phung, Nhu H., 4,387,262, Cl. 585-523.000

Institute for Medical Research: *See—*
McGarrity, Gerard J.; and Carson, Dennis A., 4,387,161, Cl 435-34.000.

Intel Corporation: *See—*
Cox, George W.; and Rattner, Justin R., 4,387,427, Cl. 364-200.000.

Intercane Systems, Inc.: *See—*
Tilby, Sydney E., 4,386,492, Cl. 56-13.900.

International Business Machines Corporation: *See—*
Anderson, Leslie C.; Nufer, Robert W.; and Pugliese, Frank G., 4,387,131, Cl. 428-201.000.
Bahr, Dietrich J.; and Briska, Marian, 4,387,119, Cl. 427-209.000.
Cardenia, Pasquale A.; Landon, Thomas V.; and Muir, Alfred W., 4,387,433, Cl. 364-491.000.
Clark, William D.; Edwards, Earl G.; and Queener, Carl A., 4,386,846, Cl. 355-25.000.
Denis, Bernard A.; and Eardley, David B., 4,387,445, Cl. 365-179.000.
Garthwaite, Albert N.; and Suarez, Luis A., Jr., 4,386,840, Cl. 355-3.0FU.
Haeusler, Gerd; and Jaerisch, Walter, 4,386,849, Cl. 356-124.000.
Hinkel, Holger; Kempf, Jurgen; Kraus, Georg; and Schmid, Gerhard E., 4,386,968, Cl. 148-1.500.
Mulzet, Alfred P., 4,386,730, Cl. 494-81.000.
Pipkin, David J., 4,387,124, Cl. 427-356.000.
Stuehler, James E., 4,387,442, Cl. 364-900.000.

International Coal Refining Company: *See—*
Thorogood, Robert M.; Yeh, Chung-Liang; and Donath, Ernest E., 4,387,015, Cl. 208-8.0LE.

International Flavors & Fragrances Inc.: *See—*
Belko, Robert P.; Boden, Richard M.; and Hanna, Marie R., 4,387,035, Cl. 252-174.110.
Boden, Richard M., 4,387,036, Cl. 252-174.110.
Yoshida, Takao, 4,387,048, Cl. 252-522.00R.

International Paper Company: *See—*
Schmidt, Dennis A., 4,386,729, Cl. 229-39.00R.

International Standard Electric Corporation: *See—*
Kleiber, Herbert; Idler, Horst; and Stammelbach, Jurgen, 4,387,375, Cl. 343-105.00R.
Robertson, Alexander J.; and Shutt, Colin, 4,386,541, Cl. 81-9.50R.

International Telephone and Telegraph Corporation: *See—*
Chea, Ramon C. W., Jr., 4,387,273, Cl. 179-16.00F.
Griffin, Richard H., 4,386,813, Cl. 339-14.00R.

Invacare Corporation: *See—*
Klimo, Robert G., 4,387,325, Cl. 318-71.000.

Ippolito, Rodolfo M., to Hughes Tool Company. Cooled journal bearing. 4,386,663, Cl. 175-17.000.

Irving, Edward, to Ciba-Geigy Corporation. Heat-polymerizable compositions comprising epoxide resins, aromatic sulfoxonium salts, and organic oxidants. 4,387,216, Cl. 528-408.000.

ishida, Masamitsu; Kato, Hisatoyo; and Matsumoto, Seiji, to Fuji Photo Film Co., Ltd. Method of and apparatus for processing a radiation image. 4,387,428, Cl. 364-414.000.

Ishihara Sangyo Kaisha, Ltd.: *See*—
Mori, Hiroyuki; Ogawa, Yasuo; Sugi, Hideo; Fujikawa, Noboru; and Tamai, Kiyoshi, 4,387,218, Cl. 536-6.400.
Ishikawa, Isao: *See*—
Kanda, Hiroshi; Ishikawa, Isao; and Kondo, Toshio, 4,386,530, Cl. 73-613.000.
Ishikawa, Tetsuo: *See*—
Kobayashi, Tsuguo; Ishikawa, Tetsuo; Hironaka, Kenichi; Umetsu, Hideo; Ogata, Masatsugu; and Yokono, Hitoshi, 4,387,311, Cl. 310-43.000.
Isovolta Osterreichische Isolierstoffwerke: *See*—
Rieder, Werner; and Fehrle, Martin, 4,387,209, Cl. 528-176.000.
Ito, Masazumi; Shibazaki, Kenji; and Kitagawa, Tsuneo, to Minolta Camera Kabushiki Kaisha. Automatic paper feeding arrangement. 4,386,769, Cl. 271-9.000.
Itoh, Yushi: *See*—
Suami, Tetsuo; Itoh, Yushi; and Oki, Shuichi, 4,387,220, Cl. 536-53.000.
ITT Industries, Inc.: *See*—
Burgdorf, Jochen; Reinartz, Hans-Dieter; and Quitmann, Horst, 4,386,808, Cl. 303-6.00C.
Haar, Lucas H., 4,386,807, Cl. 303-6.00C.
Novotny, Bernd, 4,387,399, Cl. 358-190.000.
ITW Fastex Italia S.p.A.: *See*—
Bassi, Alberto, 4,386,949, Cl. 55-507.000.
Ivey, John S., to Borg-Warner Corporation. Power transmission chain belt. 4,386,922, Cl. 474-242.000.
Iwaki, Yoshiyuki; and Goto, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Charging generator for motor vehicle. 4,387,314, Cl. 310-88.000.
Izumi, Toshiaki: *See*—
Saito, Seitoku; Maruta, Fumio; Izumi, Toshiaki; and Sugihara, Hiroshi, 4,387,136, Cl. 428-328.000.
J. H. Fenner & Co., Ltd.: *See*—
Potter, Charles W., 4,386,781, Cl. 277-38.000.
J. M. Ney Company, The: *See*—
Schaffer, Stephen P., 4,387,072, Cl. 420-463.000.
J. M. Voith GmbH: *See*—
Meinecke, Albrecht; Csordas, Elemer; and Egelhof, Dieter, 4,387,003, Cl. 162-336.000.
Jackson, Charles H., Jr. Gas generating compositions. 4,386,979, Cl. 149-21.000.
Jackson, Jeffrey A.; Kluge, Douglas J.; Bluem, Gary R.; Espiritu Santo, Eugenio; and Kittle, Carl E., to Deere & Company. Capacitance transducer. 4,386,533, Cl. 73-862.640.
Jacobsson, Kurt A. G., to Aktiebolaget IRO. Apparatus for selective positive feeding of a plurality of yarns to a striping knitting machine. 4,386,508, Cl. 66-132.00T.
Jadamus, Hans: *See*—
Horlbeck, Gernot; Heuer, Horst; Bax, Hanns-Jorg; and Jadamus, Hans, 4,387,213, Cl. 525-437.000.
Jaeger, Frederick A., to Martin Marietta Corporation. Heat pump using liquid ammoniated ammonium chloride, and thermal storage system. 4,386,501, Cl. 62-112.000.
Jaerisch, Walter: *See*—
Haeusler, Gerd; and Jaerisch, Walter, 4,386,849, Cl. 356-124.000.
Jagenberg Werke AG: *See*—
Weiss, Peter; and Schaffner, Georg, 4,386,741, Cl. 242-58.600.
Jakob, Wolfgang: *See*—
Meyer, Karl-Heinrich; Bottenbruch, Ludwig; and Jakob, Wolfgang, 4,387,251, Cl. 568-727.000.
James River-Dixie/Northern, Inc.: *See*—
Meuller, David C., 4,386,705, Cl. 206-626.000.
Jamieson, J. Scott: *See*—
Lowrey, John W.; Hyltin, Tom M.; and Jamieson, J. Scott, 4,387,437, Cl. 364-561.000.
Janssen, Johannes A.: *See*—
Weterings, Cornelis A. M.; Ramakers, Louis H. M.; and Janssen, Johannes A., 4,387,077, Cl. 423-21.100.
Weterings, Cornelis A. M.; and Janssen, Johannes A., 4,387,083, Cl. 423-555.000.
Japan Atomic Energy Research Institute: *See*—
Makuuchi, Keizo; Takagi, Tohru; Nakayama, Hiroyuki; and Yamamoto, Tsutomu, 4,387,011, Cl. 204-159.150.
Japan Synthetic Rubber Co., Ltd.: *See*—
Furuta, Isao; Takemura, Yasuhiko; Miyabayashi, Toshio; Zen, Shinichiro; and Sakai, Masato, 4,387,203, Cl. 526-245.000.
Jen, James S.; and Kalinowski, Marie R. P., to Owens-Corning Fiberglas Corporation. Glass compositions. 4,387,180, Cl. 524-594.000.
Jeppesen, Stig E., to V. Kann Rasmussen Holding A/S. Tilting window. 4,386,481, Cl. 49-248.000.
Jerry, Roger E.: *See*—
Hill, Ruth L.; and Jerry, Roger E., 4,387,155, Cl. 430-217.000.
Jervis, James E., to Raychem Corporation. Heat-shrinkable hollow article. 4,386,984, Cl. 156-86.000.
Johenning, John B.: *See*—
Hall, Charles P.; and Johenning, John B., 4,386,638, Cl. 141-98.000.
John Wyeth and Brother Limited: *See*—
White, Alan C.; and Bradley, Gerald, 4,387,097, Cl. 424-248.550.
White, Alan C.; and Shepherd, Robin G., 4,387,230, Cl. 546-249.000.
Johnson Controls, Inc.: *See*—
Klein, Carl F.; and Aukofer, John E., 4,387,369, Cl. 340-627.000.
Johnson, Craig N., to Paper Machinery Corporation. Glue applicator for paper cup machines. 4,386,576, Cl. 118-211.000.
Johnson, Michael R.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,387,229, Cl. 546-216.000.
Johnson, Robert M., to Green Mountain Products, Inc. Animal litter and method for deodorizing animal waste with dried citrus pulp. 4,386,580, Cl. 119-1.000.
Johnson, Ross: *See*—
Dyckes, Dennis B.; Johnson, Ross; and Hibbeler, Richard, 4,386,767, Cl. 269-97.000.
Johnston, Erwin L.: *See*—
Phillips Marvin R.; and Johnston, Erwin L., 4,386,451, Cl. 17-1.00R.
Jonsson, Sven: *See*—
Carlstein, Jan; and Jonsson, Sven, 4,386,902, Cl. 425-558.000.
Jordan, Heinz, to Technische Gerate -u Entwichlungsgesellschaft m.b.H. Aircraft with counterrotating members. 4,386,748, Cl. 244-12.200.
Josten, Walter; and Vahlensieck, Hans-Joachim, to Dynamit Nobel Aktiengesellschaft. Tetravalent vanadium compounds which are soluble in organic solvents. 4,387,199, Cl. 526-113.000.
Jourdan, Ray M.; and Williams, Kenneth E. Glidepath system for use with aircraft altimeters. 4,387,360, Cl. 340-27.0AT.
Joy, Edward B.; Meliopoulos, Athanasios P.; and Webb, Roger P., to Southwire Company. Method and apparatus for cable conductor shield fault detection. 4,387,336, Cl. 324-51.000.
Joyeux, Michel: *See*—
Sundt, Erling; Schenk, Walter; Chappaz, Roger; and Joyeux, Michel, 4,387,047, Cl. 252-522.00R.
Juliani, Giovanni: *See*—
Grattoni, Paolo; Quaglia, Giorgio; Fava, Cesare; and Juliani, Giovanni, 4,387,392, Cl. 358-111.000.
Jumonji, Hiromichi: *See*—
Uno, Takehiko; and Jumonji, Hiromichi, 4,387,355, Cl. 333-195.000.
Junek, Hans; and Thierrichter, Burkhard, to Lonza Ltd. 3-Amino-2-cyano-3-(5-amino-3-phenyl-isoxazole-4-yl)-acrylonitrile. 4,387,231, Cl. 548-245.000.
Juntgen, Harald: *See*—
van Heek, Karl H.; Juntgen, Harald; and Peters, Werner, 4,386,942, Cl. 48-202.000.
Jupe, Christoph; Waldmann, Helmut; and Seifert, Hermann, to Bayer Aktiengesellschaft. Process for the preparation of polyhydric phenols. 4,387,252, Cl. 568-771.000.
Kabushiki Kaisha Kobe Seiko Sho: *See*—
Fukutsuka, Toshiro; Moritoki, Masato; and Fujikawa, Takao, 4,386,970, Cl. 148-11.50P.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Sato, Yoshito; and Yato, Tokuhiro, 4,386,688, Cl. 192-0.033.
Kabushiki Kaisha Suwa Seikosha: *See*—
Aoki, Kenji; Nakamura, Haruo; Miura, Teiji; and Nagata, Mitsuo, 4,386,836, Cl. 355-3.00R.
Mitsui, Yoshihiro, 4,386,565, Cl. 101-93.340.
Kabushiki Kaisha Tokai-Rika-Denki Seisakusho: *See*—
Katsuno, Mitsuaki; and Ogura, Mitsuhiro, 4,386,793, Cl. 280-802.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Arakawa, Hiroshi; and Mitsuya, Kinpei, 4,386,632, Cl. 139-435.000.
Kadono, Mamoru, to Bridgestone Tire Company Limited. Float for loading hoses. 4,386,919, Cl. 441-133.000.
Kaduba, Pavel A.: *See*—
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.
Kageyama, Hidehei; and Suzuki, Takahiko, to Kotobuki & Co., Ltd. Automatic sharp pencil. 4,386,865, Cl. 401-67.000.
Kahn, Marvin L.; and Eapen, Kuttikandathil E., to Rich Products Corporation. Intermediate-moisture frozen oil-in-water emulsion foods. 4,387,109, Cl. 426-321.000.
Kai, Masami: *See*—
Miyoshi, Yoshitake; Shibata, Kiyoshi; Watanabe, Toshio; Kai, Masami; and Ohata, Yousuke, 4,386,845, Cl. 355-15.000.
Kaiser, Fritz: *See*—
Heerdt, Ruth; Wolff, Hans P.; Kaiser, Fritz; Schaumann, Wolfgang; and Kuhnle, Hans, 4,387,104, Cl. 424-319.000.
Kajiwara, Toshiyuki; Fukuda, Katsuhito; and Tanii, Yoshinori, to Fukuda Metal Foil & Powder Co., Ltd. Method of treating the surface of the copper foil used in printed wire boards. 4,387,006, Cl. 204-32.00R.
Kakizaki, Fusayoshi: *See*—
Eguchi, Chikahiko; Kakizaki, Fusayoshi; and Eto, Hirozumi, 4,387,232, Cl. 548-344.000.
Kalbskopf, Reinhard; and Baumberger, Otto, to Societa Italiana Vetro - SIV - SpA. Electrically conducting laminar article. 4,387,134, Cl. 428-215.000.
Kalif, Aitan. Leveler frame attached to an agricultural tractor. 4,386,662, Cl. 172-445.100.
Kalinowski, Marie R. P.: *See*—
Jen, James S.; and Kalinowski, Marie R. P., 4,387,180, Cl. 524-594.000.
KALLE, Niederlassung der Hoechst AG: *See*—
Herwig, Walter; Erbes, Kurt; Decker, Rudolf; and Sikora, Helga, 4,387,139, Cl. 428-423.700.

Kameo, Kazuya: *See*—
Goi, Masami; Kameo, Kazuya; Sawada, Jiro; Hanada, Kazunori; Tamai, Masaharu; and Oguma, Kiyoshi, 4,387,238, Cl. 549-549.000.
Kamiya, Shigeru: *See*—
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,386,497, Cl. 60-296.000.
Kamogawa, Nin-ichi; Umezawa, Tadashi; and Fukuchi, Masakazu, to Konishiroku Photo Industry Co., Ltd. Two-cycle electrophotographic copying apparatus in which a cleaning lamp and a neutralizing electrode are disposed on opposite sides of an electric charging device. 4,386,844, Cl. 355-15.000.
Kanda, Hiroshi; Ishikawa, Isao; and Kondo, Toshio, to Hitachi, Ltd. Ultrasonic imaging equipment. 4,386,530, Cl. 73-613.000.
Kandler, Erich, to Siemens Aktiengesellschaft. Apparatus for converting the polarization of electromagnetic waves. 4,387,377, Cl. 343-756.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Yonezawa, Kazuya; Kira, Kazuaki; Wakabayashi, Hiroshi; and Nagano, Hirosaku, 4,387,192, Cl. 525-426.000.
Kansai Paint Co., Ltd.: *See*—
Makuuchi, Keizo; Takagi, Tohru; Nakayama, Hiroyuki; and Yamamoto, Tsutomu, 4,387,011, Cl. 204-159.150.
Kantorski, Joseph W.; and Lavallee, Robert G., to Warner Lambert Technologies, Inc. Tonometer with improved fluid discharged tube. 4,386,611, Cl. 128-645.000.
Kao Soap Co., Ltd.: *See*—
Yasuda, Shinichiro; Morimoto, Eiji; and Sonobe, Atsushi, 4,387,211, Cl. 528-179.000.
Kary, Kenneth E.: *See*—
Maplethorpe, Clifford; and Kary, Kenneth E., 4,386,787, Cl. 280-206.000.
Kasai, Kiyoshi, Tsukuma, Kohji; and Tsukidate, Takaaki, to Toyo Soda Manufacturing Co., Ltd. Method of manufacturing high-purity silicon nitride powder. 4,387,079, Cl. 423-344.000.
Kasprzak, Henry A.: *See*—
Brown, Robert A.; Caamano, Jesus L.; and Kasprzak, Henry A., 4,387,181, Cl. 524-714.000.
Kassai Kabushikikaisha: *See*—
Kassai, Kenzou, 4,386,790, Cl. 280-650.000.
Kassai, Kenzou, to Kassai Kabushikikaisha. Baby carriage. 4,386,790, Cl. 280-650.000.
Katagi, Kazuo, to RCA Corporation. Apparatus for angularly scanning memory addresses. 4,387,370, Cl. 340-727.000.
Katagiri, Masayoshi; and Ogura, Osamu, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Brake booster. 4,386,554, Cl. 91-369.00A.
Kataoka, Hiroyuki: *See*—
Arai, Yoshio; Kataoka, Hiroyuki; and Moriya, Yasumasa, 4,387,435, Cl. 364-514.000.
Kataoka, Takashi: *See*—
Katoh, Nobukatsu; Morimoto, Yoshio; Kataoka, Takashi; and Yuasa, Teruo, 4,387,210, Cl. 528-179.000.
Katayama, Shigenari: *See*—
Yamamoto, Michihiro; Katayama, Shigenari; Koshiba, Masao; and Yamamoto, Hisao, 4,387,223, Cl. 544-116.000.
Katayama, Yasunori; Hatakeyama, Takanobu; Shima, Seiya; Hokari, Sadao; Narita, Toshiro; Yoneda, Kenji; Sakata, Kazuhiro; Kurihara, Tomiaki; and Meguro, Toshio, to Hitachi, Ltd. Method and apparatus for detecting elevator car position. 4,387,436, Cl. 364-561.000.
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Ishida, Masamitsu; Kato, Hisatoyo; and Matsumoto, Seiji, 4,387,428, Cl. 364-414.000.
Kato, Taizo. Torque limiter. 4,386,689, Cl. 192-56.00R.
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Katsekas, James C., to General Electric Company. Dynamoelectric machine stator wedges and method. 4,387,316, Cl. 310-214.000.
Katsenis, Peter G.: *See*—
Charles, Stanley E.; Long, Donald A.; Katsenis, Peter G.; and Mosher, Walter W., Jr., 4,386,795, Cl. 283-5.000.
Katsuno, Mitsuaki; and Ogura, Mitsuhiro, to Kabushiki Kaisha Tokai-Rika-Denki Seisakusho. Webbing lock device. 4,386,793, Cl. 280-802.000.
Katsura, Yuji: *See*—
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Kauric, Charles E.: *See*—
Alkire, Gerald R.; Dailey, George F.; and Kauric, Charles E., 4,387,317, Cl. 310-260.000.
Kawabata, Etsuo: *See*—
Ootaka, Shoichi; Kawabata, Etsuo; Otobe, Yutaka; Kawamoto, Michio; and Sato, Norio, 4,386,597, Cl. 123-568.000.
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Nakata, Shuji; Nishikawa, Masahiro; and Kawaguchi, Yoshio, 4,387,289, Cl. 219-110.000.
Kawahara, Yoshio: *See*—
Nakanishi, Noriaki; Nishizono, Tadayoshi; Nakanishi, Masaaki; Nakanishi, Toshiaki; and Kawahara, Yoshio, 4,386,462, Cl. 29-792.000.
Kawamatsu, Yutaka; and Yamamoto, Yujiro, to Takeda Chemical Industries, Ltd.; and Senju Pharmaceutical Co., Ltd. Thiazolidine derivatives and their use. 4,387,101, Cl. 424-270.000.
Kawamoto, Michio: *See*—
Ootaka, Shoichi; Kawabata, Etsuo; Otobe, Yutaka; Kawamoto, Michio; and Sato, Norio, 4,386,597, Cl. 123-568.000.
Kawka, Richard J.; Herring, Daniel H.; Roth, Philip; and Sitko, Richard J., to General Signal Corporation. Vacuum carburizing steel. 4,386,973, Cl. 148-16.500.
Kearney, Michael S.: *See*—
Bowrey, Ronald G.; Fullford, Andrew K.; and Kearney, Michael S., 4,386,471, Cl. 34-26.000.
Keck, Karl, to Luk Lamellen und Kupplungsbau GmbH. Cone pulley. 4,386,920, Cl. 474-39.000.
Kell, Thomas N.: *See*—
Tully, Paul R.; and Kell, Thomas N., 4,387,195, Cl. 525-475.000.
Kelley, Stephen H., to Motorola, Inc. Precision gain AC coupled operational amplifier. 4,387,345, Cl. 330-9.000.
Kelsey-Hayes Company: *See*—
Prokop, B. Robert, 4,386,684, Cl. 188-138.000.
Kempf, Jurgen: *See*—
Hinkel, Holger; Kempf, Jurgen; Kraus, Georg; and Schmid, Gerhard E., 4,386,968, Cl. 148-1.500.
Kendall Company, The: *See*—
Cianci, James P., 4,386,930, Cl. 604-317.000.
Keppel, Theo, to Texas Instruments Incorporated. Fuel heater system and self-regulating heater therefor. 4,387,291, Cl. 219-206.000.
Kermer, Wolf-Dieter: *See*—
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, 4,386,934, Cl. 8-639.000.
Kernforschungsanlage Julich GmbH: *See*—
Barnert, Eike, 4,387,120, Cl. 427-213.000.
Kidwell, Louis E., Jr.; and Holcomb, Dysart E., to Pennzoil Company. Sulfur-based adducts and compositions. 4,387,167, Cl. 501-140.000.
Kikuta, Kazutsune: *See*—
Sato, Akihiro; Tachibana, Masami; Kikuta, Kazutsune; Higuchi, Yoshiharu; and Miyajima, Masazumi, 4,387,198, Cl. 526-97.000.
Kilbert, Robert K., to Harris Metals, Inc. Ferrous alloy and abrasion resistant articles thereof. 4,386,969, Cl. 148-3.000.
Kimball International, Inc.: *See*—
Fritz, Gary R.; Howell, Stephen L.; and Robinson, John W., 4,386,546, Cl. 84-1.010.
Kimura, Shiro G., to General Electric Company. System and process for increasing the combustible component content of a gaseous mixture. 4,386,944, Cl. 55-16.000.
King, George W., to Canadian Stackpole Limited. Label dispenser magazine. 4,386,995, Cl. 156-362.000.
King, Richard L.; Bradley, John J.; and Miu, Ming T., to Honeywell Information Systems Inc. Microprogrammed system having single microstep apparatus. 4,387,423, Cl. 364-200.000.
Kinoshita, Koichi: *See*—
Hosono, Nagao; Kinoshita, Koichi; and Takahashi, Toru, 4,386,577, Cl. 118-657.000.
Kinugawa, Masumi: *See*—
Nagase, Masaomi; Miyagi, Hideo; and Kinugawa, Masumi, 4,386,591, Cl. 123-339.000.
Kinzig, Charles M.: *See*—
Gleason, John G.; Kinzig, Charles M.; and Bryan, Deborah L., 4,387,239, Cl. 549-562.000.
Kira, Kazuaki: *See*—
Yonezawa, Kazuya; Kira, Kazuaki; Wakabayashi, Hiroshi; and Nagano, Hirosaku, 4,387,192, Cl. 525-426.000.
Kirby, William G., to United States of America, Air Force. Satellite test chamber with electromagnetic reflection and resonance damping for simulating system generated electromagnetic pulses. 4,387,467, Cl. 378-68.000.
Kirk, William A.: *See*—
Baumeyer, Phillip E.; Frentzel, Karl O.; Kirk, William A.; and Manack, Gary L., 4,386,713, Cl. 220-269.000.
Kirkhuff, William J., to Engineering Products of America. Nonpneumatic tire and method of making the same. 4,387,071, Cl. 264-279.100.
Kirlian Equipment Corporation: *See*—
Toolan, William K., 4,386,834, Cl. 354-3.000.
Kiss, Jozsef; Solymos, Andras; Berczes, Jozsef; and Szabo, Karoly, to Kozponti Banyaszati Fejlesztesi Intezet; and Tatabanyai Szenbanyak. Process for the underground gasification of coal and carbonaceous materials. 4,386,657, Cl. 166-261.000.
Kitagawa, Tsuneo: *See*—
Ito, Masazumi; Shibazaki, Kenji; and Kitagawa, Tsuneo, 4,386,769, Cl. 271-9.000.
Kitamura, Tadashi; and Hirose, Sumio, to Mitsui Toatsu Chemicals, Inc. Composition for conductive cured product. 4,387,115, Cl. 427-58.000.
Kitani, Teruo: *See*—
Tanaka, Masanobu; and Kitani, Teruo, 4,387,396, Cl. 358-148.000.
Kittel, Arthur; Gerken, Heiner; and Behrens, Herbert, to Olympia Werke AG. System for introducing function control instructions into a data writing office machine. 4,386,862, Cl. 400-144.200.
Kittel, Friedrich; Fadler, Kurt; and Anders, Peter, to Fichtel & Sachs AG. Liquid friction coupling. 4,386,585, Cl. 123-41.120.
Kittle, Carl E.: *See*—
Jackson, Jeffrey A.; Kluge, Douglas J.; Bluem, Gary R.; Espiritu Santo, Eugenio; and Kittle, Carl E., 4,386,533, Cl. 73-862.640.

Klaas, Jeffrey M.; Reed, Paul A.; and Rimawi, Isam, to Texas Instruments Incorporated. Column and ground select sequence in electrically programmable memory. 4,387,447, Cl. 365-203.000.

Klausz, Remy, to Compagnie Generale de Radiologie. Method and apparatus for optical storage of numerical images, and processing systems for said images. 4,387,363, Cl. 382-56.000.

Kleiber, Herbert; Idler, Horst; and Stammelbach, Jurgen, to International Standard Electric Corporation. Transmitter for a navigation system. 4,387,375, Cl. 343-105.00R.

Klein, Carl F.; and Aukofer, John E., to Johnson Controls, Inc. Broad spectrum charged electric field polar gas sensing and detection system. 4,387,369, Cl. 340-627.000.

Klein, Robert W.; and Foxx, Mary E., to Dermik Laboratories, Inc. Stable benzoyl peroxide composition. 4,387,107, Cl. 424-338.000.

Klein, Schanzlin & Becker Aktiengesellschaft: *See*—
Dernedde, Robert, 4,386,780, Cl. 277-15.000.

Kleinschmit, Peter: *See*—
Voigt, Carl; Kleinschmit, Peter; Schreyer, Gerd; and Sperka, Gerhard, 4,387,081, Cl. 423-376.000.

Klimo, Robert G., to Invacare Corporation. Electric wheelchair with speed control circuit. 4,387,325, Cl. 318-71.000.

Klockner-Humboldt-Deutz AG: *See*—
Tholen, Paul; and Nieden, Achim Z., 4,386,735, Cl. 237-12.30R.

Klockow, Dennis H., to Bell Telephone Laboratories, Incorporated. Method of making multi-megohm thin film resistors. 4,386,460, Cl. 29-593.000.

Kluge, Douglas J.: *See*—
Jackson, Jeffrey A.; Kluge, Douglas J.; Bluem, Gary R.; Espiritu Santo, Eugenio; and Kittle, Carl E., 4,386,533, Cl. 73-862.640.

Klygis, Mindaugas J., to Illinois Tool Works Inc. Bottle multi-package and packaging device. 4,386,698, Cl. 206-432.000.

Knapp, Edward J., Jr., to Gould Inc., Electric Fuse Div. Side mounted blown fuse indicator. 4,387,358, Cl. 337-244.000.

Knecht, Siegfried H., to Maschinenfabrik Alfred Schmermund GmbH & Co. Adhesive discharge device. 4,387,002, Cl. 156-578.000.

Knight, David G., to Air Products and Chemicals, Inc. Method of heat treating ferrous metal articles under controlled furnace atmospheres. 4,386,972, Cl. 148-16.000.

Kobashi, Kiyoshi: *See*—
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,386,497, Cl. 60-296.000.

Kobayashi, Hidetoshi: *See*—
Takita, Hitoshi; Noda, Sakuo; Mukaida, Yutaka; and Kobayashi, Hidetoshi, 4,387,102, Cl. 424-282.000.

Kobayashi, Kazuo; Furuta, Mamoru; and Maeno, Yoshio, to NGK Insulators, Ltd. Ceramic arc tube of metal vapor discharge lamps and a method of producing the same. 4,387,067, Cl. 264-63.000.

Kobayashi, Tsuguo; Ishikawa, Tetsuo; Hironaka, Kenichi; Umetsu, Hideo; Ogata, Masatsugu; and Yokono, Hitoshi, to Hitachi, Ltd. Uninflammable dynamoelectric machine having coil windings and core encapsulated with unsaturated polyester resin-filler composition. 4,387,311, Cl. 310-43.000.

Koch, Edwin R.; and Glass, Michael, to Warner-Lambert Company. Non-stick chewing gum composition and method of preparation. 4,387,108, Cl. 426-4.000.

Koch, Jurgen: *See*—
Vogt, Wilhelm; Glaser, Hermann; and Koch, Jurgen, 4,387,263, Cl. 585-640.000.

Kocol, James E.; Gunderson, Robert O.; Schuck, David B.; and Marro, Daniel J., to NCR Corporation. Data processing system wherein at least one subsystem has a local memory and a mailbox memory within the local memory for storing header information. 4,387,441, Cl. 364-200.000.

Kohashi, Tadao, to Matsushita Electric Industrial Co., Ltd. Ink recording apparatus. 4,387,382, Cl. 346-140.00R.

Kohn, Irving. Eating and oral hygiene aid. 4,386,448, Cl. 16-121.000.

Koike, Tsutomu, to Toko, Inc. Switching regulator. 4,387,418, Cl. 363-19.000.

Kolb, Gerald C.: *See*—
Renga, James M.; and Kolb, Gerald C., 4,387,237, Cl. 549-518.000.

Kolm, Eric A.; and Kolm, Henry H., to Piezo Electric Products, Inc. Piezoelectric fluid-electric generator. 4,387,318, Cl. 310-330.000.

Kolm, Henry H.: *See*—
Kolm, Eric A.; and Kolm, Henry H., 4,387,318, Cl. 310-330.000.

Kolosov, Ivan A.; and Titov, Petr Y. Charge-discharge current stabilizer for storage batteries. 4,387,331, Cl. 320-14.000.

Kondo, Eiji: *See*—
Tanaka, Kentaro; Kondo, Eiji; Matsumoto, Kouichi; Shoji, Jun'ichi; and Tsuji, Naoki, 4,387,052, Cl. 260-245.20T.

Kondo, Hideya: *See*—
Takemura, Kunio; Kondo, Hideya; and Yoshio, Akira, 4,387,356, Cl. 335-6.000.

Kondo, Katsumi; Fuwa, Yoshio; and Miyazaki, Shoji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Slide member. 4,387,140, Cl. 428-553.000.

Kondo, Kiyoshi; Takashima, Toshiyuji; and Suda, Minoru, to FMC Corporation. Derivatives of 2H-pyran-2-one. 4,387,233, Cl. 549-273.000.

Kondo, Michikazu, to Nippon Electric Co., Ltd. Electrooptic light modulator including weighted interdigital electrodes. 4,387,343, Cl. 332-7.510.

Kondo, Toshio: *See*—
Kanda, Hiroshi; Ishikawa, Isao; and Kondo, Toshio, 4,386,530, Cl. 73-613.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Hirabayashi, Tsugio; and Ikemoto, Isao, 4,386,838, Cl. 355-3.0DR.
Kamogawa, Nin-ichi; Umezawa, Tadashi; and Fukuchi, Masakazu, 4,386,844, Cl. 355-15.000.

Kontz, Robert F., to Owens-Illinois, Inc. Web handling apparatus. 4,386,988, Cl. 156-157.000.

Koob, Friedrich, to Hilti Aktiengesellschaft. Dispenser having hose-like expandable member. 4,386,717, Cl. 222-94.000.

Kopf, Martin: *See*—
Wunsch, Adolf; and Kopf, Martin, 4,386,516, Cl. 72-434.000.

Kornienko, Alexei S.: *See*—
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Korotky, Vladimir A.: *See*—
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Korte, Ralph J., to Champion International Corporation. Food container and cover therefor. 4,386,706, Cl. 206-628.000.

Koshar, Robert J., to Minnesota Mining and Manufacturing Company. Cyclic perfluoroaliphaticdisulfonimides. 4,387,222, Cl. 544-4.000.

Koshiba, Masao: *See*—
Yamamoto, Michihiro; Katayama, Shigenari; Koshiba, Masao; and Yamamoto, Hisao, 4,387,223, Cl. 544-116.000.

Koster, Johannes: *See*—
Schwindt, Jurgen; Grogler, Gerhard; Ganster, Otto; and Koster, Johannes, 4,387,057, Cl. 260-453.0AR.

Kotler, Norman L. Camera strap. 4,386,724, Cl. 224-255.000.

Kotobuki & Co., Ltd.: *See*—
Kageyama, Hidehei; and Suzuki, Takahiko, 4,386,865, Cl. 401-67.000.

Kouros, Thomas C. Hand support for bowling. 4,386,775, Cl. 273-54.00B.

Kozponti Banyaszati Fejlesztesi Intezet: *See*—
Kiss, Jozsef; Solymos, Andras; Berczes, Jozsef; and Szabo, Karoly, 4,386,657, Cl. 166-261.000.
Martinko, Matvas; Elekes, Andras; Simon, Kalman; Bohnert, Jozsef; Nemeth, Janos; Bole, Karoly; and Ilyes, Zoltan, 4,386,878, Cl. 405-291.000.

Krallmann, Reinhold: *See*—
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, 4,386,934, Cl. 8-639.000.

Kralowetz, Johanna; and Kralowetz, Robert, to GFM Gesellschaft fur Fertigungstechnik und Maschinebau Aktiengesellschaft. Numerical control system for a crankshaft milling machine integral interpolators. 4,387,327, Cl. 318-573.000.

Kralowetz, Robert: *See*—
Kralowetz, Johanna; and Kralowetz, Robert, 4,387,327, Cl. 318-573.000.

Kramer, Richard E., to Fairchild Industries, Inc. Multicomponent extendible structure. 4,386,485, Cl. 52-108.000.

Kranz, Eckart; Findeisen, Kurt; Schmidt, Robert; and Eue, Ludwig, to Bayer Aktiengesellschaft. Herbicidally active substituted 6-halogeno-tert.-butyl-1,2,4-triazin-5-ones. 4,386,953, Cl. 71-93.000.

Krapf, Wallace A. Scheduling board overrider system. 4,386,475, Cl. 40-373.000.

Krasnow, Todd J.: *See*—
El-Hag, Nabil A.; Dulin, Gary T.; and Krasnow, Todd J., 4,386,559, Cl. 99-404.000.

Kratzer, Gernot: *See*—
Benker, Horst; Plensat, Lienhard; and Kratzer, Gernot, 4,386,817, Cl. 339-103.00B.

Kraus, Georg: *See*—
Hinkel, Holger; Kempf, Jurgen; Kraus, Georg; and Schmid, Gerhard E., 4,386,968, Cl. 148-1.500.

Kraus, James H., to Excelermatic Inc. Infinitely variable traction roller transmission. 4,386,536, Cl. 74-200.000.

Krause, Hans-Joachim: *See*—
Hummerich, Rainer; Hahn, Herbert; Weiss, Wolfram; Immel, Guenther; Krause, Hans-Joachim; and Peters, Karl-Clemens, 4,387,212, Cl. 528-232.000.

Krauss, Leonard. Positioning hinge having narrow terminal areas in matching curvilinear slots. 4,386,450, Cl. 16-361.000.

Krivenko, Alexandr P.: *See*—
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Krob, Erwin, to TMC Corporation. Ski brake. 4,386,788, Cl. 280-605.000.

Krueger, Kurt: *See*—
Hilzinger, Hans-Reiner; Krueger, Kurt; and Hock, Stefan, 4,386,648, Cl. 164-463.000.

Krueger Metal Products, Inc.: *See*—
Ware, Ronald D.; and Bomber, Robert J., 4,386,804, Cl. 297-248.000.

Kruger, Bernd-Wieland: *See*—
Hoffmann, Hellmut; Kruger, Bernd-Wieland; and Behrenz, Wolfgang, 4,387,060, Cl. 260-936.000.

Kubick, Matthew D., to Perfex Corporation. Floor squeegee structure. 4,386,443, Cl. 15-245.000.

Kubota, Hiroshi: *See*—
Hatta, Tokuaki; Ueno, Haruyuki; Katsura, Yuji; Fukuda, Kazushige; Kubota, Hiroshi; and Hamamatu, Takashi, 4,387,080, Cl. 423-345.000.

Kudamatsu, Akio: *See*—
Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; and Tsuboi, Shinichi, 4,387,095, Cl. 424-211.000.

Kude, William B.; Pearman, A. Noel J.; and Youngbauer, Daniel L., to Honeywell Inc. Method and apparatus for determining the heat content of gaseous fuels. 4,386,858, Cl. 374-37.000.

Kuhl, Raymond D. Projectile stabilization from smooth bore barrel. 4,386,747, Cl. 244-3.100.

Kuhla, Donald E.: *See*—
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,387,235, Cl. 549-417.000.

Kuhlein, Klaus: *See*—
Buhler, Ulrich; Kuhlein, Klaus; Stahl, Theo; Tappe, Horst; and Roth, Kurt, 4,386,935, Cl. 8-451.000.

Kuhlmann, George E.: *See*—
Naim, Houssam M.; Huie, Nicholas C.; and Kuhlmann, George E., 4,387,243, Cl. 562-413.000.

Kuhnel, Werner; and Spielau, Paul, to Dynamit Nobel AG. Process for the production of foamed materials from polyolefins. 4,387,170, Cl. 521-85.000.

Kuhnle, Hans: *See*—
Heerdt, Ruth; Wolff, Hans P.; Kaiser, Fritz; Schaumann, Wolfgang; and Kuhnle, Hans, 4,387,104, Cl. 424-319.000.

Kulichenko, Valentin A.: *See*—
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Kumagai, Junichi; and Wakao, Nobutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrostatic copying apparatus. 4,386,839, Cl. 355-3.0DR.

Kumano, Hiroshi: *See*—
Arita, Tomohiko; Murakami, Kaoru; Okahisa, Mitsugu; and Kumano, Hiroshi, 4,387,143, Cl. 429-174.000.

Kunishige, Tadao: *See*—
Takegawa, Shuji; and Kunishige, Tadao, 4,386,992, Cl. 156-327.000.

Kunita, Masao: *See*—
Kurihara, Toshio; Kunita, Masao; Yasunaga, Makoto; and Uchida, Satoru, 4,386,861, Cl. 400-124.000.

Kuraray Company Limited: *See*—
Nagase, Yoshinori; Shibatani, Kyoichiro; Yamauchi, Junichi; and Omura, Ikuo, 4,386,912, Cl. 433-228.000.

Kurbatova, Adelaida L.: *See*—
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Takita, Hitoshi; Noda, Sakuo; Mukaida, Yutaka; and Kobayashi, Hidetoshi, 4,387,102, Cl. 424-282.000.

Kurihara, Masaru; Uemura, Tadahiro; and Okada, Kiyoshi, to Toray Industries, Inc. High performance semipermeable composite membrane and process for producing the same. 4,387,024, Cl. 210-490.000.

Kurihara, Tomiaki: *See*—
Katayama, Yasunori; Hatakeyama, Takanobu; Shima, Seiya; Hokari, Sadao; Narita, Toshiro; Yoneda, Kenji; Sakata, Kazuhiro; Kurihara, Tomiaki; and Meguro, Toshio, 4,387,436, Cl. 364-561.000.

Kurihara, Toshio; Kunita, Masao; Yasunaga, Makoto; and Uchida, Satoru, to Citizen Watch Co., Ltd. Dot matrix impact printer. 4,386,861, Cl. 400-124.000.

Kurosaki Refractories Co., Ltd.: *See*—
Hatta, Tokuaki; Ueno, Haruyuki; Katsura, Yuji; Fukuda, Kazushige; Kubota, Hiroshi; and Hamamatu, Takashi, 4,387,080, Cl. 423-345.000.

Kurz, Craven H. Lingual orthodontic appliance system for the mandibular arch. 4,386,908, Cl. 433-9.000.

Kuttelwesch, Rudolf, to MEWA Mechanische Weberei Altstadt GmbH. Device for extracting water from laundry. 4,386,509, Cl. 68-20.000.

Kuwahara, Eiji: *See*—
Umezu, Kenji; Takazawa, Kazuhiro; Hitosugi, Toshiaki; and Kuwahara, Eiji, 4,386,502, Cl. 62-129.000.

Kwok, Ku C., to Graco Inc. Nozzle for hydrostatic fluid tip. 4,386,739, Cl. 239-296.000.

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Haury, Andre; and Siffroi, Lucien, 4,387,281, Cl. 200-147.00R.

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Bagros, Michel, 4,387,094, Cl. 424-180.000.

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Llabres, Raymond; Antoine, Robert; Lacotte, Jean P.; and Marchi, Charles, 4,387,068, Cl. 264-107.000.

Lacroute, Francois: *See*—
Aigle, Michel; Blanc, Hughes; Fournier, Philippe; Gerbaud, Claude; Guerineau, Michel; Heslot, Henri; and Lacroute, Francois, 4,387,162, Cl. 435-172.000.

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Lake, William H.: *See*—
White, Philip J.; Lake, William H.; and Springer, Robert H., 4,387,319, Cl. 313-620.000.

Lam, Tony Y. K., to Merck & Co., Inc. Hypocholesterolemic fermentation products and process of preparation. 4,387,242, Cl. 560-119.000.

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Landon, Robert K., to Nelson, Philip V.; and Holcomb, James A. Self-engaging drive for wheeled vehicles. 4,386,675, Cl. 180-221.000.

Landon, Thomas V.: *See*—
Cardenia, Pasquale A.; Landon, Thomas V.; and Muir, Alfred W., 4,387,433, Cl. 364-491.000.

Lange, Bruce A., to W. R. Grace & Co. Grinding aids for granular blast furnace slag. 4,386,963, Cl. 106-117.000.

Lange, Richard M., to Lubrizol Corporation, The. Reaction products of certain heterocycles with aminophenols. 4,386,939, Cl. 44-63.000.

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DeVries, Vern G.; and Largis, Elwood E., 4,387,105, Cl. 424-322.000.
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Gadde, Villy; and Larsson, Jan E., 4,386,676, Cl. 181-290.000.

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Fringeli, Werner; Flubacher, Max; and Lauton, Alain, 4,386,965, Cl. 106-214.000.

Lavallee, Robert G.: *See*—
Kantorski, Joseph W.; and Lavallee, Robert G., 4,386,611, Cl. 128-645.000.

LaVars, Everett G.: *See*—
Cramer, Jerry W.; and LaVars, Everett G., 4,386,491, Cl. 53-247.000.

Lawson, William Ray: *See*—
Sparks, Jimmy L., 4,386,660, Cl. 168-32.000.

Leahy, Michael F., to RCA Corporation. Calibration device and method for an optical defect scanner. 4,386,850, Cl. 356-243.000.

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Bricot, Claude; Le Carvennec, Francois; and Lepetit, Pierre, 4,387,452, Cl. 369-32.000.

Leckrone, Michael, to Cordis Corporation. Ventricular-inhibited cardiac pacer. 4,386,610, Cl. 128-419.0PG.

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Patel, Chimanbhai M.; Magyar, Joseph J.; and Lee, David N., 4,386,745, Cl. 242-107.40B.

Lee, LeRoy J., to Avers, Dale L., a part interest. Crutch gauge measuring device. 4,386,466, Cl. 33-174.00D.

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Lee, Richard J., to Standard Oil Company (Indiana). Zinc N,N'-alkenylsuccinoyl dipyridyl succinate as antioxidant. 4,387,227, Cl. 546-5.000.

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Boutmy, Patrick E.; and Le Fort, Gilbert J., 4,387,460, Cl. 370-110.400.

Leger, Gerard: *See*—
Chauvin, Yves; Commereuc, Domonique; Gaillard, Jean; Leger, Gerard; and Phung, Nhu H., 4,387,262, Cl. 585-523.000.

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Lehmann, Kurt: *See*—
Reichert, Gunter; Mainzer, Franz; Lehmann, Kurt; and Niermann, Hermann, 4,386,503, Cl. 62-188.000.

Lehrer, William I.; and Vincak, John H., to Fairchild Camera & Instrument Corp. Lift-off shadow mask. 4,387,145, Cl. 430-5.000.

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Leland Stanford Junior University, The: *See*—
Bergh, Ralph A., 4,386,822, Cl. 350-96.150.
Byer, Robert L., 4,386,854, Cl. 356-438.000.
Little, William A., 4,386,505, Cl. 62-514.00R.

Lenack, Alain L.; and Tirtiaux, Robert, to Exxon Research & Engineering Co. Calcium sulphonate process. 4,387,033, Cl. 252-18.000.

Lenz, Werner: *See*—
Bronstert, Bernd; Hahn, Herbert; Hoffmann, Gerhard; and Lenz, Werner, 4,387,157, Cl. 430-271.000.

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Bricot, Claude; Le Carvennec, Francois; and Lepetit, Pierre, 4,387,452, Cl. 369-32.000.

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Debs, Victor, 4,386,644, Cl. 160-174.000.

Lewis, Adam J., to Texas Instruments Incorporated. Charge injection imaging device for faithful (dynamic) scene representation. 4,387,402, Cl. 358-213.000.

Lewis, Steven A., to Clark Equipment Company. Variable ratio brake pedal. 4,386,537, Cl. 74-512.000.

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Torok, George E.; and Gajdusek, Ernest, Jr. (said Ernest Gajdusek, Jr. assors. to), 4,386,728, Cl. 228-111.000.

Liautaud, Jacques; and Shanbrom, Edward, to Societe Anonyme dite: L'Oreal. Process for the preparation of factor VIII concentrate. 4,387,092, Cl. 424-101.000.

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Maurer, Robert; and Petry, Hans P., 4,387,470, Cl. 455-257.000.

Liebel, Henry L., to Angleboard Inc. Side load spacer. 4,386,881, Cl. 410-154.000.

Lillie, Terrance L.: *See*—
Frediani, John K.; and Lillie, Terrance L., 4,387,424, Cl. 364-200.000.

Lin, An-Chung R., to Exxon Research and Engineering Co. Heterologous ink jet compositions. 4,386,961, Cl. 106-22.000.

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Berry, Raymond J.; Linkhart, Ken R.; and Parker, Edward J., 4,387,365, Cl. 340-347.0DD.

Little, William A., to Leland Stanford Junior University, The Board of Trustees of the. Refrigerators. 4,386,505, Cl. 62-514.00R.

Litton Systems, Inc.: *See*—
Gardner, Paul J., 4,386,945, Cl. 55-26.000.

Ljung, Bo H. G., to Singer Company, The. Bending actuator for ring laser gyroscope. 4,386,853, Cl. 356-350.000.

Llabres, Raymond; Antoine, Robert; Lacotte, Jean P.; and Marchi, Charles, to Thomson-CSF. Method for the manufacture of flexible disks. 4,387,068, Cl. 264-107.000.

Lo-Rich Enterprises, Inc.: *See*—
Smith, LeRoy, 4,386,753, Cl. 248-210.000.

Locsei, Anthony A., to Biodec, Inc. Method and apparatus for bleeding a test animal. 4,386,613, Cl. 128-760.000.

Lohrentz, Howard R.: *See*—
Holdeman, Adin F.; Gaeddert, Melvin V.; Ratzlaff, Howard J.; Pruitt, Martin E.; and Lohrentz, Howard R., 4,386,493, Cl. 56-341.000.

Long, Donald A.: *See*—
Charles, Stanley E.; Long, Donald A.; Katsenis, Peter G.; and Mosher, Walter W., Jr., 4,386,795, Cl. 283-5.000.

Longuemare, R. Noel, Jr., to Westinghouse Electric Corp. Synthetic monopulse radar. 4,387,373, Cl. 343-5.0CM.

Lonza Ltd.: *See*—
Junek, Hans; and Thierrichter, Burkhard, 4,387,231, Cl. 548-245.000.

Loper, Roger K., to Rockwell International Corporation. Battery monitor circuit. 4,387,334, Cl. 320-44.000.

L'Oreal: *See*—
Goncalves, Antonin, 4,386,696, Cl. 206-221.000.

Lorenz, Donald H.: *See*—
Williams, Earl P.; and Lorenz, Donald H., 4,387,186, Cl. 525-327.800.

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McGuffie, Michael J.; and Lorinovich, David A., 4,386,810, Cl. 308-174.000.

Lowrey, John W.; Hyltin, Tom M.; and Jamieson, J. Scott, to Lowrey, John W. Runners watch. 4,387,437, Cl. 364-561.000.

Lubrizol Corporation, The: *See*—
Lange, Richard M., 4,386,939, Cl. 44-63.000.

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Draper, Geoffrey R., 4,386,824, Cl. 350-296.000.

Lucich, George E.; and Seitz, Charles A., to United States of America, Interior. Continuous transducer drift compensator. 4,387,438, Cl. 364-574.000.

Luck, Klaus: *See*—
Amann, Hans; Burkhardt, Jurgen; Luck, Klaus; and Poeppel, Fritz O., 4,386,473, Cl. 37-57.000.

Ludwig, Walter G.: *See*—
Dale, Kenneth H.; and Ludwig, Walter G., 4,387,019, Cl. 209-12.000.

Luk Lamellen und Kupplungsbau GmbH: *See*—
Keck, Karl, 4,386,920, Cl. 474-39.000.

Lundberg, Robert D.; Agarwal, Pawan K.; and Weiss, Robert A., to Exxon Research and Engineering Co. Adhesive compositions. 4,387,174, Cl. 524-66.000.

Lundberg, Robert D.: *See*—
Agarwal, Pawan K.; Turner, S. Richard; Lundberg, Robert D.; and Evans, Morris L., 4,387,172, Cl. 524-60.000.

Lundholm, Frans G. Folding pontoon arrangement. 4,386,441, Cl. 14-27.000.

Lutes, Harold R.: *See*—
Sheldon, Charles H.; Frazer, Robert E.; and Lutes, Harold R., 4,386,602, Cl. 128-4.000.

Lyall, Robert W.; and Hill, Donald C., to R. W. Lyall Co., Inc. Pipe repair coupling. 4,386,796, Cl. 285-31.000.

Lysaght, Wallace. Arthritis treatment. 4,387,093, Cl. 424-131.000.

M T S International S.A.: *See*—
Sultan, Jean-Claude, 4,386,900, Cl. 425-279.000.

Machin, Peter J., to Hoffmann-La Roche Inc. Substituted phenoxyaminopropanol derivatives. 4,387,100, Cl. 424-269.000.

MacLaughlin, Donald N.: *See*—
Fortuna, Vincent E.; and MacLaughlin, Donald N., 4,386,999, Cl. 156-494.000.

MacMillan, Robert E.: *See*—
Perkins, Jimmie G.; and MacMillan, Robert E., 4,386,625, Cl. 137-255.000.

Maeno, Yoshio: *See*—
Kobayashi, Kazuo; Furuta, Mamoru; and Maeno, Yoshio, 4,387,067, Cl. 264-63.000.

Maes, Roland F., to Anda Biologicals. Immunoassay wherein immune complex forms and ages for at least one hour. 4,387,166, Cl. 436-541.000.

Magic Chef, Inc.: *See*—
Mandel, Sheldon W.; and Davis, Kenneth E., 4,387,357, Cl. 335-272.000.

Magnusson, Rolf C. G.: *See*—
Lindholm, Alfons S. M.; and Magnusson, Rolf C. G., 4,387,142, Cl. 429-50.000.

Magyar, Joseph J.: *See*—
Patel, Chimanbhai M.; Magyar, Joseph J.; and Lee, David N., 4,386,745, Cl. 242-107.40B.

Maikher, Pavel B.: *See*—
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Maillet, Pierre, to Trefileries de Bourbourg. Method of forming packs of rolls of metal wire netting. 4,386,704, Cl. 206-597.000.

Mainzer, Franz: *See*—
Reichert, Gunter; Mainzer, Franz; Lehmann, Kurt; and Niermann, Hermann, 4,386,503, Cl. 62-188.000.

Maire, Bernard, to Ebauches Electroniques SA. Electronic timepiece with automatic correction of the variation of rate. 4,386,857, Cl. 368-187.000.

Maisel, Hans. Wing cam guide for knitting machine locks. 4,386,507, Cl. 66-78.000.

Majors, Edward M.: *See*—
Peterson, James R.; and Majors, Edward M., 4,387,283, Cl. 219-56.210.

Makuuchi, Keizo; Takagi, Tohru; Nakayama, Hiroyuki; and Yamamoto, Tsutomu, to Japan Atomic Energy Research Institute; and Kansai Paint Co., Ltd. Resin composition for aqueous paint. 4,387,011, Cl. 204-159.150.

Maloney, Albert L.: *See*—
Maloney, Holly H.; and Maloney, Albert L., 4,386,911, Cl. 433-125.000.

Maloney, Holly H.; and Maloney, Albert L. Pressurized irrigating oral scrubber. 4,386,911, Cl. 433-125.000.

Manack, Gary L.: *See*—
Baumeyer, Phillip E.; Frentzel, Karl O.; Kirk, William A.; and Manack, Gary L., 4,386,713, Cl. 220-269.000.

Mandel, Sheldon W.; and Davis, Kenneth E., to Magic Chef, Inc. Rotary activator. 4,387,357, Cl. 335-272.000.

Mannesmann Aktiengesellschaft: *See*—
Landgraf, Helmut; and Stucke, Walter, 4,386,996, Cl. 156-382.000.
Wronka, Bodo, 4,387,464, Cl. 373-76.000.

Mao, Ho-Kwang: *See*—
Bell, Peter M.; and Mao, Ho-Kwang, 4,386,950, Cl. 62-10.000.

Maplethorpe, Clifford; and Kary, Kenneth E. Spherical vehicle. 4,386,787, Cl. 280-206.000.

Marathon Electric Manufacturing Corp.: *See*—
Anderson, Wesley K., 4,386,812, Cl. 308-236.000.

Marazzi, Silvio, to Diamond S.A. Method for a shaping of polycrystalline synthetic diamond. 4,387,287, Cl. 219-69.00M.

Marchi, Charles: *See*—
Llabres, Raymond; Antoine, Robert; Lacotte, Jean P.; and Marchi, Charles, 4,387,068, Cl. 264 107.000.

Marguerite Trading Co. Pty. Limited: *See*—
Fitzpatrick, Elizabeth M. D.; and Fitzpatrick, Matthew F., 4,386,980, Cl. 156-63.000.

Marion, Charles P.: *See*—
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,386,941, Cl. 48-197.00R.

Markus, Joseph. Single-frequency stabilized laser. 4,387,462, Cl. 372-32.000.

Marro, Daniel J.: *See*—
Kocol, James E.; Gunderson, Robert O.; Schuck, David B.; and Marro, Daniel J., 4,387,441, Cl. 364-200.000.

Marsch, Wilhelm; and Wolfer, Dietrich, to Wacker-Chemie. Electrically conductive organopolysiloxane elastomers. 4,387,046, Cl. 252-511.000.

Martin Marietta Corporation: *See*—
Clendenin, Ralph M.; and Freeman, Raymond S., 4,386,848, Cl. 356-5.000.
Jaeger, Frederick A., 4,386,501, Cl. 62-112.000.

Martin, Paul E.: *See*—
Sherrill, William M.; Travers, Douglas N.; and Martin, Paul E., 4,387,376, Cl. 343-113.00R.

Martin-Paul, Inc.: *See*—
Belokin, Martin P., 4,386,478, Cl. 43-135.000.

Martinaud, Jacques-Pierre: *See*—
Disdier, Camille; Martinaud, Jacques-Pierre; and Sullivan, John W., Jr., 4,387,246, Cl. 564-417.000.

Martinko, Matvas; Elekes, Andras; Simon, Kalman; Bohnert, Jozsef; Nemeth, Janos; Bole, Karoly; and Ilyes, Zoltan, to Kozponti Banyaszati Fejlesztesi Intezet; and Varpalotai Szenbanyak. Mining equipment, mainly for extraction of heavy beds. 4,386,878, Cl. 405-291.000.

Martinmaas, Werner W. Operating means for a chuck. 4,386,879, Cl. 408-241.00R.

Martinson, Lloyd W., to RCA Corporation. Multi-purpose retimer driver. 4,387,341, Cl. 328-73.000.

Maruta, Fumio: *See*—
Saito, Seitoku; Maruta, Fumio; Izumi, Toshiaki; and Sugihara, Hiroshi, 4,387,136, Cl. 428-328.000.

Marvin Glass & Associates: *See*—
Terzian, Rouben T.; and Wozniak, Walter J., 4,386,479, Cl. 46-102.000.

Mary, Raymond, to Societe Alser. Transfer device especially for product checkout systems in stores. 4,386,679, Cl. 186-68.000.

Maschinenfabrik Alfred Schmermund GmbH & Co.: *See*—
Knecht, Siegfried H., 4,387,002, Cl. 156-578.000.

Maschinenfabrik Carl Zangs Aktiengesellschaft: *See*—
Slomma, Heinz-Georg, 4,386,572, Cl. 112-98.000.

Maskell, Roy: *See*—
Feinberg, Robert B.; and Maskell, Roy, 4,387,404, Cl. 358-237.000.

Massingill, John L., Jr.: *See*—
Friedli, Hans R.; Nelson, Donald L.; and Massingill, John L., Jr., 4,387,182, Cl. 525-44.000.

Masuda, Hajime, to Nippon Electric Co., Ltd. Programmable memory device having reduced power consumption upon unselection. 4,387,449, Cl. 365-227.000.

Matsui, Fujio: *See*—
Ohgami, Masaaki; and Matsui, Fujio, 4,386,592, Cl. 123-440.000.

Matsumoto, Kouichi: *See*—
Tanaka, Kentaro; Kondo, Eiji; Matsumoto, Kouichi; Shoji, Jun'ichi; and Tsuji, Naoki, 4,387,052, Cl. 260-245.20T.

Matsumoto, Seiji: *See*—
Ishida, Masamitsu; Kato, Hisatoyo; and Matsumoto, Seiji, 4,387,428, Cl. 364-414.000.

Matsuo, Mototsugu. Heating press-on apparatus for transfer marks. 4,386,993, Cl. 156-358.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Arita, Tomohiko; Murakami, Kaoru; Okahisa, Mitsugu; and Kumano, Hiroshi, 4,387,143, Cl. 429-174.000.
Kohashi, Tadao, 4,387,382, Cl. 346-140.00R.
Shimada, Yasuomi; Fukuyama, Tatsuo; and Mizutani, Toshiyuki, 4,387,275, Cl. 179-115.50R.
Tanaka, Masanobu; and Kitani, Teruo, 4,387,396, Cl. 358-148.000.
Usui, Akira; and Fujimori, Toshimitsu, 4,387,398, Cl. 358-188.000.

Matsushita Electric Works, Ltd.: *See*—
Takemura, Kunio; Kondo, Hideya; and Yoshio, Akira, 4,387,356, Cl. 335-6.000.

Matsuura, Kotaro: *See*—
Oyamada, Kenji; and Matsuura, Kotaro, 4,387,332, Cl. 320-15.000.

Matthaus, Gunther, to Siemens Aktiengesellschaft. Foil-insulated high voltage bushing with embossed potential control inserts. 4,387,266, Cl. 174-31.00R.

Matthews, Carol L.; and Chavez, Bill R., Sr. Trolling motor steering device. 4,386,918, Cl. 440-7.000.

Maturo, Robert J.: *See*—
Henderson, John G. N.; and Maturo, Robert J., 4,387,401, Cl. 358-193.100.

Matyas, George W., to Alliance Metal Products Inc. Folding door hardware. 4,386,646, Cl. 160-206.000.

Maucher, Charles, to Du Pont de Nemours, E. I., and Company. Ultrasonic measuring instrument. 4,386,527, Cl. 73-597.000.

Maurer, Robert; and Petry, Hans P., to Licentia Patent-Verwaltungs-G.m.b.H. Receiver input stage with an improvement of the signal to noise ratio. 4,387,470, Cl. 455-257.000.

Mauri, Luigi: *See*—
Bordini, Fosco; and Mauri, Luigi, 4,387,135, Cl. 428-220.000.

May, Roger C.; and Sessa, Frank C., to Betz Laboratories, Inc. Control of iron induced fouling in water systems. 4,387,027, Cl. 210-697.000.

Mayer, Martin: *See*—
Barthruff, Otto; and Mayer, Martin, 4,387,315, Cl. 310-90.000.

Mayfield, Jack K. Distraction device for spinal distraction systems. 4,386,603, Cl. 128-69.000.

McBride, Paul: *See*—
Passmore, David T.; Wooten, Willis C.; and McBride, Paul, 4,387,214, Cl. 528-296.000.

MCC Corporation: *See*—
Ohyama, Taketomo, 4,386,440, Cl. 10-87.000.

McCallum, David J. M.; and Clifford, Alexander R., to Tullis Russell & Company Limited. Battery separator material. 4,387,144, Cl. 429-251.000.

McCann, Paul G., Jr.: *See*—
Hogan, Arthur S.; and McCann, Paul G., Jr., 4,386,883, Cl. 414-22.000.

McCann's Engineering and Manufacturing Company: *See*—
Verley, Donald J., 4,386,888, Cl. 417-393.000.

McCanse, James E.; and Dhaliwal, Jugraj S., to Hesston Corporation. Rear mounted rotary tiller. 4,386,661, Cl. 172-112.000.

McClelland, Richard H.: *See*—
Sacks, Martin E.; and McClelland, Richard H., 4,386,940, Cl. 48-197.00R.

McCool, John M.: *See*—
Stein, Jeffrey D.; and McCool, John M., 4,387,274, Cl. 179-99.00H.

McCoy, David R.: *See*—
McEntire, Edward E.; and McCoy, David R., 4,387,017, Cl. 208-188.000.

McDonald, Jimmie R.; and Baronavski, Andrew P., to United States of America, Navy. Method of separating ^{15}N from natural abundance NO. 4,387,010, Cl. 204-157.10R.

McDonald, William J.: *See*—
Smith, Harrison C.; and McDonald, William J., 4,387,372, Cl. 340-854.000.

McDonnell Douglas Corporation: *See*—
Younkin, Douglas R., 4,387,304, Cl. 250-492.200.

McDowell, Guy, Jr., to Peabody Coal Company. Mine roof bolting. 4,386,877, Cl. 405-261.000.

McEntire, Edward E.; and McCoy, David R., to Texaco Inc. Demulsification of bitumen emulsions using polymers of diquaternary ammonium monomers containing hydroxyl groups. 4,387,017, Cl. 208-188.000.

McGahey, Dean C.: *See*—
Vest, Eugene W.; and McGahey, Dean C., 4,386,524, Cl. 73-299.000.

McGarrity, Gerard J.; and Carson, Dennis A., to Institute for Medical Research. Detection of mycoplasma infection in cell cultures. 4,387,161, Cl. 435-34.000.

McGough, Gerald B., to GTE Automatic Electric Labs Inc. Coin relay selector card. 4,386,690, Cl. 194-1.00D.

McGuffie, Michael J.; and Lorinovich, David A., to Torrington Company, The. Radial and bi-directional thrust bearing. 4,386,810, Cl. 308-174.000.

McIntyre, Donald B.; and McIntyre, Frederic S., to Acumeter Laboratories, Inc. Adhesive applicator and method for cigarette-to-filter adhesion and similar applications. 4,386,998, Cl. 156-473.000.

McIntyre, Frederic S.: *See*—
McIntyre, Donald B.; and McIntyre, Frederic S., 4,386,998, Cl. 156-473.000.

McLaughlin, Richard S., to Mostek Corporation. Lead frame embedding fixture. 4,386,463, Cl. 29-827.000.

McMenamy, Fred: *See*—
Day, Arthur R., III; and McMenamy, Fred, 4,387,368, Cl. 340-539.000.

Mecanorma S.A.: *See*—
Bonneron, Mark P., 4,387,153, Cl. 430-200.000.

Mechavich, Sylvester; and Spector, George. Snow hoe shoe. 4,386,474, Cl. 37-285.000.

Medical Engineering Corporation: *See*—
Trick, Robert E., 4,386,601, Cl. 128-1.00R.

Meguro, Toshio: *See*—
Katayama, Yasunori; Hatakeyama, Takanobu; Shima, Seiya; Hokari, Sadao; Narita, Toshiro; Yoneda, Kenji; Sakata, Kazuhiro; Kurihara, Tomiaki; and Meguro, Toshio, 4,387,436, Cl. 364-561.000.

Meinecke, Albrecht; Csordas, Elemer; and Egelhof, Dieter, to J. M. Voith GmbH. Headbox for papermaking machine. 4,387,003, Cl. 162-336.000.

Meinert, Leo L.; and Rymarchyk, Nicholas M., to Pullman Berry Company. Lance mounted spray apparatus. 4,386,763, Cl. 266-158.000.

Meliopoulos, Athanasios P.: *See*—
Joy, Edward B.; Meliopoulos, Athanasios P.; and Webb, Roger P., 4,387,336, Cl. 324-51.000.

Melton, Keith; Mercier, Olivier; and Schroder, Gunther, to BBC Brown, Boveri & Company, Limited. Process for manufacturing a finished component from an Ni/Ti or Ni/Ti/Cu memory alloy. 4,386,971, Cl. 148-11.50R.

Melvin, Lawrence S., Jr.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,387,229, Cl. 546-216.000.

Melz, Christa: *See*—
Engelmann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jurgen; and Sydow, Udo, 4,387,159, Cl. 430-544.000.

Menard, Michel, to Regie Nationale des Usines Renault. Locking and latch control device for vehicle doors. 4,386,798, Cl. 292-336.300.

Meraj, David: *See—*
Meraj, Paul P.; and Meraj, David, 4,386,557, Cl. 99-372.000.

Meraj, Paul P.; and Meraj, David. Heating apparatus for preparation of precooked frozen waffles. 4,386,557, Cl. 99-372.000.

Mercier Accumulator Corporation: *See—*
Lachaux, Maurice, 4,386,627, Cl. 138-30.000.

Mercier, Olivier: *See—*
Melton, Keith; Mercier, Olivier; and Schroder, Gunther, 4,386,971, Cl. 148-11.50R.

Merck & Co., Inc.: *See—*
Agrama, Ali, 4,386,786, Cl. 277-135.000.
Lam, Tony Y. K., 4,387,242, Cl. 560-119.000.

Merck Patent Gesellschaft Mit Beschrankter Haftung: *See—*
Wittmann, Rolf; Wimtermeyer, Willi; and Butzke, Jurgen, 4,387,245, Cl. 562-587.000.

Messner, Franz; and Unterwaditzer, Adolf. Device for draining sandy ground areas. 4,386,873, Cl. 405-36.000.

Methode Electronics, Inc.: *See—*
Brevick, Arnold A., 4,387,279, Cl. 200-61.540.

Metrotech, Inc.: *See—*
Peterman, Earl J., 4,387,340, Cl. 324-326.000.

Meuller, David C., to James River-Dixie/Northern, Inc. Ice cream carton. 4,386,705, Cl. 206-626.000.

MEWA Mechanische Weberei Altstadt GmbH: *See—*
Kuttelwesch, Rudolf, 4,386,509, Cl. 68-20.000.

Meyer, J. Joe, to Western-Cullen-Hayes, Inc. Switch point guard. 4,386,751, Cl. 246-441.000.

Meyer, Karl-Heinrich; Bottenbruch, Ludwig; and Jakob, Wolfgang, to Bayer Aktiengesellschaft. Process for the preparation of pure 4,4'-dihydroxyphenyl alkanes or 4,4'-dihydroxydiphenyl cycloalkanes. 4,387,251, Cl. 568-727.000.

Meyer, Thomas W., to United States of America, Air Force. Photon storage tube high power laser system. 4,387,344, Cl. 330-4.300.

Mezawa, Tsutomu: *See—*
Takemae, Yoshihiro; Nozaki, Shigeki; and Mezawa, Tsutomu, 4,387,448, Cl. 365-203.000.

Mica Corporation, The: *See—*
Rice, James M., 4,387,137, Cl. 428-332.000.

Microdyne Corporation: *See—*
Nicholson, Keith B., 4,387,393, Cl. 358-124.000.

Miller, Henry W.: *See—*
Fisher, Edmund A.; and Miller, Henry W., 4,386,656, Cl. 166-117.500.

Miller, Marvin L.: *See—*
Gomez, Magdalena U.; Miller, Marvin L.; and Wicks, Richard W., 4,387,160, Cl. 435-7.000.

Miller, Roscoe E. Enema apparata improvements relating to double contrast studies. 4,386,607, Cl. 604-37.000.

Miller, Thomas R., to Conoco Inc. Method for guiding rotary drill. 4,386,664, Cl. 175-45.000.

Millhimes, Wayne L.; and Murren, Daniel J., to AMP Incorporated. Polarity indicating connector for battery jumper cables. 4,386,818, Cl. 339-113.00L.

Millsapps, Stuart C., Jr., to Hughes Tool Company. Plunger lubricant compensator for an earth boring drill bit. 4,386,667, Cl. 175-228.000.

Mine, Katsutoshi; and Tamaki, Tadao, to Toray Silicone Company, Ltd. Room temperature curable organopolysiloxane compositions and methods for their preparation. 4,387,177, Cl. 524-425.000.

Minichiello, George M., to Cooper Industries. Pneumatic penetration sensor for oil drilling. 4,387,295, Cl. 235-201.00R.

Ministry of International Trade and Industry: *See—*
Sakamoto, Koji, 4,387,443, Cl. 365-19.000.

Minnesota Mining and Manufacturing Company: *See—*
Berg, Eric P., 4,387,240, Cl. 556-440.000.
Crawford, George H.; and Fisch, Richard S., 4,387,156, Cl. 430-271.000.
Koshar, Robert J., 4,387,222, Cl. 544-4.000.
Mongeon, Douglas R., 4,386,609, Cl. 128-317.000.

Minolta Camera Kabushiki Kaisha: *See—*
Ito, Masazumi; Shibazaki, Kenji; and Kitagawa, Tsuneo, 4,386,769, Cl. 271-9.000.

Mistol, Jurgen: *See—*
Engelmann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jurgen; and Sydow, Udo, 4,387,159, Cl. 430-544.000.

Mita Industrial Company Limited: *See—*
Miyoshi, Yoshitake; Shibata, Kiyoshi; Watanabe, Toshio; Kai, Masami; and Ohata, Yousuke, 4,386,845, Cl. 355-15.000.
Motomura, Minoru; Shibata, Kiyoshi; and Watanabe, Toshio, 4,386,539, Cl. 74-661.000.

Mitsubishi Chemical Industries Ltd.: *See—*
Suzuki, Tetsumi; Imaki, Naoshi; and Nakanome, Takemi, 4,387,061, Cl. 260-968.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Iwaki, Yoshiyuki; and Goto, Hitoshi, 4,387,314, Cl. 310-88.000.
Yamamoto, Sakuei; Nishida, Mitsuhiro; Tashiro, Noboru; and Sonoda, Nobuo, 4,387,313, Cl. 310-71.000.

Mitsubishi Paper Mills, Ltd.: *See—*
Emoto, Kazuhiro; and Futaki, Kiyoshi, 4,387,149, Cl. 430-83.000.
Yabuta, Kenji; Tosa, Senji; and Tanaka, Akira, 4,387,150, Cl. 430-162.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Shiomi, Teiichi; and Funakoshi, Katsumi, 4,386,991, Cl. 156-308.600.

Mitsui Toatsu Chemical, Inc.: *See—*
Katoh, Nobukatsu; Morimoto, Yoshio; Kataoka, Takashi; and Yuasa, Teruo, 4,387,210, Cl. 528-179.000.

Mitsui Toatsu Chemicals, Inc.: *See—*
Kitamura, Tadashi; and Hirose, Sumio, 4,387,115, Cl. 427-58.000.

Mitsui, Yoshihiro, to Shinshu Seiki Kabushiki Kaisha; and Kabushiki Kaisha Suwa Seikosha. Printer apparatus using electromagnet. 4,386,565, Cl. 101-93.340.

Mitsuya, Kinpei: *See—*
Arakawa, Hiroshi; and Mitsuya, Kinpei, 4,386,632, Cl. 139-435.000.

Miu, Ming T.: *See—*
King, Richard L.; Bradley, John J.; and Miu, Ming T., 4,387,423, Cl. 364-200.000.

Miura, Ieaki, to Tokico Ltd. Hydraulic shock absorber. 4,386,686, Cl. 188-322.170.

Miura, Teiji: *See—*
Aoki, Kenji; Nakamura, Haruo; Miura, Teiji; and Nagata, Mitsuo, 4,386,836, Cl. 355-3.00R.

Miyabayashi, Toshio: *See—*
Furuta, Isao; Takemura, Yasuhiko; Miyabayashi, Toshio; Zen, Shinichiro; and Sakai, Masato, 4,387,203, Cl. 526-245.000.

Miyagi, Hideo: *See—*
Nagase, Masaomi; Miyagi, Hideo; and Kinugawa, Masumi, 4,386,591, Cl. 123-339.000.

Miyahara, Hisao; and Tsukamura, Tatsumi, to Pegasus Candle Co., Ltd. Colored flame candle. 4,386,904, Cl. 431-126.000.

Miyahara, Kingo, to Dowa Co., Ltd. Liquid fuel gasifying burner. 4,386,905, Cl. 431-168.000.

Miyajima, Masazumi: *See—*
Sato, Akihiro; Tachibana, Masami; Kikuta, Kazutsune; Higuchi, Yoshiharu; and Miyajima, Masazumi, 4,387,198, Cl. 526-97.000.

Miyazaki, Shoji: *See—*
Kondo, Katsumi; Fuwa, Yoshio; and Miyazaki, Shoji, 4,387,140, Cl. 428-553.000.

Miyazaki, Takao; and Tazaki, Satoru, to Clarion Co., Ltd. Tuner control system. 4,387,469, Cl. 455-161.000.

Miyoshi, Yoshitake; Shibata, Kiyoshi; Watanabe, Toshio; Kai, Masami; and Ohata, Yousuke, to Mita Industrial Company Limited. Electrostatic copying apparatus. 4,386,845, Cl. 355-15.000.

Mizoguchi, Hiroyuki, to Yamada Dobby Co., Ltd. Negative double lift dobby machine. 4,386,631, Cl. 139-68.000.

Mizuno, Junzi; Fukami, Akira; Okamoto, Kunio; and Hanaki, Kenichi, to Nippon Soken, Inc. Apparatus for adsorbing fuel vapor. 4,386,947, Cl. 55-387.000.

Mizutani, Toshiyuki: *See—*
Shimada, Yasuomi; Fukuyama, Tatsuo; and Mizutani, Toshiyuki, 4,387,275, Cl. 179-115.50R.

Mobil Oil Corporation: *See—*
Arbit, Harold A., 4,387,012, Cl. 204-159.170.
Barile, George C., 4,387,259, Cl. 585-467.000.
Chester, Arthur W.; and Chu, Yung F., 4,387,261, Cl. 585-489.000.
Dellinger, Thomas B., 4,386,665, Cl. 175-61.000.
Givens, Wyatt W., 4,387,302, Cl. 250-270.000.
Hungerford, Gordon P., 4,386,897, Cl. 425-71.000.
Hunt, William C., III, 4,386,658, Cl. 166-263.000.
Zachariadis, Robert G., 4,387,450, Cl. 367-20.000.

Moen, Walter K., to Rockwell International Corporation. Temperature control system. 4,386,650, Cl. 165-12.000.

Moffett, Robert B.: *See—*
Farmer, Audley J.; Moffett, Robert B.; and Carney, Thomas R., 4,386,957, Cl. 75-51.000.

Molitor, Edwin A.; and Scholefield, Edward H., to Multifold-International, Inc. Machine for banding a stack of articles. 4,386,997, Cl. 156-443.000.

Molnar, Arpad A., to Molnar Industries, Inc. Shock absorbing device having predictable deflection characteristics. 4,386,799, Cl. 293-120.000.

Molnar Industries, Inc.: *See—*
Molnar, Arpad A., 4,386,799, Cl. 293-120.000.

Moncrief, Marion L., Jr.; Glass, Frank S.; Hernandez, Rafael; and Chow, Edmund E., to Process Technologies, Inc. Intelligent field interface device for fluid storage facility. 4,387,434, Cl. 364-509.000.

Mongeon, Douglas R., to Minnesota Mining and Manufacturing Company. Attaching assembly for an osteotomy saw blade. 4,386,609, Cl. 128-317.000.

Monsanto Company: *See—*
Dufour, Daniel L.; and Harris, Alva F., 4,387,191, Cl. 525-207.000.

Monterey Manufacturing, Inc.: *See—*
Hall, Charles P.; and Johenning, John B., 4,386,638, Cl. 141-98.000.

Montgomery, John A.; and Clayton, Sarah D., to Southern Research Institute. Process for the production of (±)3-deazaaristeromycin. 4,387,228, Cl. 546-118.000.

Mooney, Joseph R. Device for and method of detecting leaks in a liquid storage reservoir. 4,386,525, Cl. 73-49.200.

Moore, Gary B.: *See—*
Grover, Mark D.; and Moore, Gary B., 4,386,759, Cl. 254-134.500.

Moore, Thomas S.; and Smith, Terrence, to Ford Motor Company. Fabricated load support structural member. 4,386,792, Cl. 280-781.000.

Moplefan S.p.A.: *See—*
Bordini, Fosco; and Mauri, Luigi, 4,387,135, Cl. 428-220.000.

Morel, Andre; and Morel, Jacques, to Etablissements Morel, Ateliers Electromecaniques de Favieres. Sleeve for protecting splices in electric or telephone cables. 4,387,268, Cl. 174-92.000.

Morel, Jacques: *See—*
Morel, Andre; and Morel, Jacques, 4,387,268, Cl. 174-92.000.

Morgando, John P. Method and apparatus for teaching musical instruments. 4,386,551, Cl. 84-470.00R.

Morgart, James R., to Illinois Water Treatment Company. Preanalytical processing apparatus for ion exchange resin. 4,387,075, Cl. 422-50.000.

Mori, Hiroyuki; Ogawa, Yasuo; Sugi, Hideo; Fujikawa, Noboru; and Tamai, Kiyoshi, to Ishihara Sangyo Kaisha, Ltd. Anthracycline antibiotics FA-1180 B and B_1, or salts thereof. 4,387,218, Cl. 536-6.400.

Morimoto, Eiji: *See—*
Yasuda, Shinichiro; Morimoto, Eiji; and Sonobe, Atsushi, 4,387,211, Cl. 528-179.000.

Morimoto, Yoshio: *See—*
Katoh, Nobukatsu; Morimoto, Yoshio; Kataoka, Takashi; and Yuasa, Teruo, 4,387,210, Cl. 528-179.000.

Morimoto, Yoshiro: *See—*
Hamada, Hideo; Morimoto, Yoshiro; Suga, Masaaki; Futagi, Masaaki; and Suzuki, Tadashi, 4,386,521, Cl. 73-118.000.

Morita, Akitaka: *See—*
Hashimoto, Shintaro; Morita, Akitaka; and Tsuda, Hiroshi, 4,387,269, Cl. 179-1.0SM.

Morita, Hideo: *See—*
Sakurai, Hisaya; Morita, Hideo; Ikegami, Tadashi; and Furusato, Masayasu, 4,387,045, Cl. 252-429.00B.

Morita, Shigeru, to Daikin Kogyo Co., Ltd. Adhesive composition comprising a fluorine containing elastomer and fibrated PTFE. 4,387,168, Cl. 521-54.000.

Morita, Shinichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and system for controlling a plate width. 4,386,511, Cl. 72-121.000.

Moritoki, Masato: *See—*
Fukutsuka, Toshiro; Moritoki, Masato; and Fujikawa, Takao, 4,386,970, Cl. 148-11.50P.

Moriya, Yasumasa: *See—*
Arai, Yoshio; Kataoka, Hiroyuki; and Moriya, Yasumasa, 4,387,435, Cl. 364-514.000.

Morrell Company: *See—*
Cook, James E., 4,386,899, Cl. 425-225.000.

Morrison, Donald R. Portable vibrating concrete screed. 4,386,901, Cl. 425-456.000.

Morton, Clifton G. Container. 4,386,715, Cl. 220-354.000.

Mosher, Walter W., Jr.: *See—*
Charles, Stanley E.; Long, Donald A.; Katsenis, Peter G.; and Mosher, Walter W., Jr., 4,386,795, Cl. 283-5.000.

Moss, Elvis W.; and Gifford, Richard L., to Brunswick Corporation. Spinning reel housing with an improved access opening and removable cap. 4,386,742, Cl. 242-84.10R.

Moss, Elvis W., to Brunswick Corporation. Line brake for spin cast reels. 4,386,743, Cl. 242-84.20A.

Moss, Lester I., to Mosstype Corporation. Mandrel assembly for demountable printing cylinder. 4,386,566, Cl. 101-375.000.

Mosstype Corporation: *See—*
Moss, Lester I., 4,386,566, Cl. 101-375.000.

Mostek Corporation: *See—*
McLaughlin, Richard S., 4,386,463, Cl. 29-827.000.

Motomura, Minoru; Shibata, Kiyoshi; and Watanabe, Toshio, to Mita Industrial Company Limited. Fixing and heating device for electrostatic copying apparatus. 4,386,539, Cl. 74-661.000.

Motorenfabrik Hatz GmbH & Co. KG: *See—*
Hatz, Ernst; Absenger, Erich; and Schmuck, Johann, 4,386,589, Cl. 123-192.00B.

Motorola Inc.: *See—*
Furiga, Andrew; and Sabourin, Donald J., 4,387,351, Cl. 332-19.000.
Kelley, Stephen H., 4,387,345, Cl. 330-9.000.
Latasiewicz, Leonard, 4,387,282, Cl. 200-340.000.
Shacter, Stuart B., 4,387,309, Cl. 307-355.000.

Muchow, John D., to Valve Concepts International. Self centering floating metal seal for a ball valve. 4,386,756, Cl. 251-172.000.

Muir, Alfred W.: *See—*
Cardenia, Pasquale A.; Landon, Thomas V.; and Muir, Alfred W., 4,387,433, Cl. 364-491.000.

Mukaida, Yutaka: *See—*
Takita, Hitoshi; Noda, Sakuo; Mukaida, Yutaka; and Kobayashi, Hidetoshi, 4,387,102, Cl. 424-282.000.

Mule, Carmine P. Firearm sling attachment. 4,386,723, Cl. 224-150.000.

Mullan, William H.: *See—*
Griffith, Robert L.; Carlson, John G.; Gritzner, Daniel E.; and Mullan, William H., 4,386,490, Cl. 53-148.000.

Mullender, Gernot. Helical or spiral-shaped bulbous food product. 4,387,111, Cl. 426-615.000.

Multi-Story Transporters, Inc.: *See—*
Reed, Waymon B., 4,386,680, Cl. 187-6.000.

Multifold-International, Inc.: *See—*
Molitor, Edwin A.; and Scholefield, Edward H., 4,386,997, Cl. 156-443.000.

Mulzet, Alfred P., to International Business Machines Corporation. Centrifuge assembly. 4,386,730, Cl. 494-81.000.

Munsch, John M., to Baxter Travenol Laboratories, Inc. Breakaway valve. 4,386,622, Cl. 137-1.000.

Munter, Ernst A., to Northern Telecom Limited. Digital conference circuit and method. 4,387,457, Cl. 370-62.000.

Murakami, Kaoru: *See—*
Arita, Tomohiko; Murakami, Kaoru; Okahisa, Mitsugu; and Kumano, Hiroshi, 4,387,143, Cl. 429-174.000.

Murakami, Reiji: *See—*
Wakao, Nobutaka; Murakami, Reiji; Okamoto, Katsuhiko; and Uchida, Kohachi, 4,386,841, Cl. 355-3.0DR.

Murase, Shigemitsu, to Unitika Limited. Method of manufacturing polyester fibers with good adhesion to rubber. 4,387,069, Cl. 264-210.300.

Murren, Daniel J.: *See—*
Millhimes, Wayne L.; and Murren, Daniel J., 4,386,818, Cl. 339-113.00L.

Musha, Toru, to Olympus Optical Co. Ltd. Objective lens driving device. 4,386,823, Cl. 350-247.000.

Myo-Tronics Research Inc.: *See—*
Ryan, Gregory J., 4,386,614, Cl. 128-777.000.

Naarmann, Herbert: *See—*
Brandstetter, Franz; Hambrecht, Juergen; Naarmann, Herbert; and Schuster, Hans, 4,387,189, Cl. 525-68.000.

Nagaishi, Hatsuo, to Nissan Motor Company, Limited. Flow rate measuring apparatus. 4,386,520, Cl. 73-118.000.

Nagami, Akira, to Nippon Electric Co., Ltd. Semiconductor circuit. 4,387,308, Cl. 307-264.000.

Nagano, Hirosaku: *See—*
Yonezawa, Kazuya; Kira, Kazuaki; Wakabayashi, Hiroshi; and Nagano, Hirosaku, 4,387,192, Cl. 525-426.000.

Nagase, Masaomi; Miyagi, Hideo; and Kinugawa, Masumi, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Nippondenso Co., Ltd. Method of and apparatus for controlling the air intake of an internal combustion engine. 4,386,591, Cl. 123-339.000.

Nagase, Yoshinori; Shibatani, Kyoichiro; Yamauchi, Junichi; and Omura, Ikuo, to Kuraray Company Limited. Method for filling tooth cavities employing a polymerizable urethane cement composition. 4,386,912, Cl. 433-228.000.

Nagata, Mitsuo: *See—*
Aoki, Kenji; Nakamura, Haruo; Miura, Teiji; and Nagata, Mitsuo, 4,386,836, Cl. 355-3.00R.

Naim, Houssam M.; Huie, Nicholas C.; and Kuhlmann, George E., to Standard Oil Company (Indiana). Continuous production of orthophthalic acid product by two-step catalytic neat oxidation of liquid ortho-xylene with air. 4,387,243, Cl. 562-413.000.

Nakamura, Haruo: *See—*
Aoki, Kenji; Nakamura, Haruo; Miura, Teiji; and Nagata, Mitsuo, 4,386,836, Cl. 355-3.00R.

Nakamura, Hideo; and Funabashi, Tsuneo, to Hitachi, Ltd. Shift register-latch circuit driven by clocks with half cycle phase deviation and usable with a serial alu. 4,387,294, Cl. 377-78.000.

Nakanishi Kikai Kabushiki Kaisha: *See—*
Nakanishi, Noriaki; Nishizono, Tadayoshi; Nakanishi, Masaaki; Nakanishi, Toshiaki; and Kawahara, Yoshio, 4,386,462, Cl. 29-792.000.

Nakanishi, Masaaki: *See—*
Nakanishi, Noriaki; Nishizono, Tadayoshi; Nakanishi, Masaaki; Nakanishi, Toshiaki; and Kawahara, Yoshio, 4,386,462, Cl. 29-792.000.

Nakanishi, Noriaki; Nishizono, Tadayoshi; Nakanishi, Masaaki; Nakanishi, Toshiaki; and Kawahara, Yoshio, to Nakanishi Kikai Kabushiki Kaisha. Assembly apparatus having operating units and a power unit interconnected by bowden cables. 4,386,462, Cl. 29-792.000.

Nakanishi, Toshiaki: *See—*
Nakanishi, Noriaki; Nishizono, Tadayoshi; Nakanishi, Masaaki; Nakanishi, Toshiaki; and Kawahara, Yoshio, 4,386,462, Cl. 29-792.000.

Nakanome, Takemi: *See—*
Suzuki, Tetsumi; Imaki, Naoshi; and Nakanome, Takemi, 4,387,061, Cl. 260-968.000.

Nakata, Shuji; Nishikawa, Masahiro; and Kawaguchi, Yoshio, to Nissan Motor Company, Limited. Control system for resistance welding. 4,387,289, Cl. 219-110.000.

Nakayama, Hiroyuki: *See—*
Makuuchi, Keizo; Takagi, Tohru; Nakayama, Hiroyuki; and Yamamoto, Tsutomu, 4,387,011, Cl. 204-159.150.

Nalco Chemical Company: *See—*
Buchanan, William T.; Pocius, Frances C.; and Peters, Donald L., 4,386,637, Cl. 141-65.000.

Nally, Robert B., to NCR Canada Ltd - NCR Canada LTEE. Bar code printer. 4,386,562, Cl. 101-91.000.

Nannini, Giorgio. Adjustable luminous intensity sun glasses. 4,386,832, Cl. 351-49.000.

Napier, Dwight. Transmission filter adapter. 4,387,023, Cl. 210-168.000.

Narita, Toshiro: *See—*
Katayama, Yasunori; Hatakeyama, Takanobu; Shima, Seiya; Hokari, Sadao; Narita, Toshiro; Yoneda, Kenji; Sakata, Kazuhiro; Kurihara, Tomiaki; and Meguro, Toshio, 4,387,436, Cl. 364-561.000.

National Research Institute for Metals: *See—*
Amano, Muneyuki; and Sasaki, Yasuo, 4,386,974, Cl. 148-31.000.

National Semiconductor Corporation: *See—*
Rapp, A. Karl, 4,387,349, Cl. 331-116.0FE.

National Starch and Chemical Corporation: *See—*
Tessler, Martin M.; Wurzburg, Otto B.; and Dirscherl, Teresa A., 4,387,221, Cl. 536-107.000.

NCR Canada Ltd - NCR Canada LTEE: *See—*
Nally, Robert B., 4,386,562, Cl. 101-91.000.

NCR Corporation: *See—*
Kocol, James E.; Gunderson, Robert O.; Schuck, David B.; and Marro, Daniel J., 4,387,441, Cl. 364-200.000.
Sayko, Steven P., 4,387,383, Cl. 346-140.00R.
Zakhariya, Ramiz H., 4,387,388, Cl. 357-74.000.

Neal, Jesse R., Jr.; and Humphries, Truman W., to United States of America, Navy. High pressure mechanical mixer for epoxy compounds. 4,386,855, Cl. 366-177.000.

Neal, Maynard J., to Buffalo Forge Company. Adjustable vortex pump. 4,386,886, Cl. 415-213.00A.

Nelson, Bernice A., administrator: *See—*
Nelson, Vernon L., deceased, 4,386,931, Cl. 604-338.000.

Nelson, Carl S.: *See—*
Bluver, David B.; and Nelson, Carl S., 4,386,868, Cl. 403-24.000.

Nelson, Donald L.: *See—*
Friedli, Hans R.; Nelson, Donald L.; and Massingill, John L., Jr., 4,387,182, Cl. 525-44.000.

Nelson, Philip V.: *See—*
Landon, Robert K., 4,386,675, Cl. 180-221.000.

Nelson, Vernon L., deceased (by Nelson, Bernice A., administrator). Ostomy leakage represser. 4,386,931, Cl. 604-338.000.

Nemeth, Janos: *See—*
Martinko, Matvas; Elekes, Andras; Simon, Kalman; Bohnert, Jozsef; Nemeth, Janos; Bole, Karoly; and Ilyes, Zoltan, 4,386,878, Cl. 405-291.000.

Nestier Corporation: *See—*
Deaton, Thomas P., 4,386,700, Cl. 206-507.000.

Neumaier, Peter: *See—*
Hecht, Hans; and Neumaier, Peter, 4,387,338, Cl. 324-236.000.

Newell, Edward B. Automatic tub dumper. 4,386,884, Cl. 414-653.000.

Newell, William C.; and Cross, Lary A., to I-Tron, Inc. Portable utility billing apparatus. 4,387,296, Cl. 235-376.000.

Newport Pharmaceuticals International, Inc.: *See—*
Hadden, John W.; Simon, Lionel N.; and Giner-Sorolla, Alfredo, 4,387,226, Cl. 544-247.000.

Newsome, Michael R.; Segan, Marc H.; and Swarztrauber, Sayre, to Calfax, Inc. Optically coupled decorative light controller. 4,386,550, Cl. 84-464.00R.

Newton, Alan B., to Imperial Chemical Industries Limited. Compatible polymer blend compositions. 4,387,187, Cl. 525-409.000.

Ney, Reuben E.: *See—*
Carter, Clyde T.; and Ney, Reuben E., 4,386,815, Cl. 339-17.00M.

NGK Insulators, Ltd.: *See—*
Kobayashi, Kazuo; Furuta, Mamoru; and Maeno, Yoshio, 4,387,067, Cl. 264-63.000.

Nicholas, Leo P.; and Nicholas, Robert J., to Nicholas, Leo P.; and Nicholas, Robert J. Electrical discharge machining apparatus. 4,387,284, Cl. 219-69.00R.

Nicholas, Robert J.: *See—*
Nicholas, Leo P.; and Nicholas, Robert J., 4,387,284, Cl. 219-69.00R.

Nicholas, Vincent: *See—*
Dola, Frank P.; and Nicholas, Vincent, 4,386,820, Cl. 339-156.00R.

Nicholson, Keith B., to Microdyne Corporation. Signal unscrambler. 4,387,393, Cl. 358-124.000.

Nickel, Horst, to Bayer Aktiengesellschaft. Polyazo dyestuffs, a process for their preparation and their use for dyeing vegetable fibre materials and leather. 4,387,050, Cl. 260-143.000.

Nieden, Achim Z.: *See—*
Tholen, Paul; and Nieden, Achim Z., 4,386,735, Cl. 237-12.30R.

Niermann, Hermann: *See—*
Reichert, Gunter; Mainzer, Franz; Lehmann, Kurt; and Niermann, Hermann, 4,386,503, Cl. 62-188.000.

Nihon Tokushu Noyaku Seizo K.K.: *See—*
Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; and Tsuboi, Shinichi, 4,387,095, Cl. 424-211.000.

Nimee, George S.: *See—*
Zunkel, Richard L.; and Nimee, George S., 4,386,446, Cl. 16-58.000.

Nippon Electric Co., Ltd.: *See—*
Kondo, Michikazu, 4,387,343, Cl. 332-7.510.
Masuda, Hajime, 4,387,449, Cl. 365-227.000.
Nagami, Akira, 4,387,308, Cl. 307-264.000.
Tanigawa, Hiroshi, 4,387,389, Cl. 358-37.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Chibana, Manobu, 4,386,547, Cl. 84-1.220.

Nippon Kayaku Kabushiki Kaisha: *See—*
Ikeda, Yoshiyuki; Inoue, Atsuo; Tanabe, Yoshio; and Ariki, Toshinori, 4,386,977, Cl. 149-2.000.

Nippon Kogaku K. K.: *See—*
Hirose, Hideo, 4,386,828, Cl. 350-427.000.

Nippon Kogaku K.K.: *See—*
Hirose, Hideo, 4,386,833, Cl. 353-67.000.

Nippon Soken, Inc.: *See—*
Mizuno, Junzi; Fukami, Akira; Okamoto, Kunio; and Hanaki, KenIchi, 4,386,947, Cl. 55-387.000.
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,386,497, Cl. 60-296.000.

Nippon Telegraph & Telephone Public Corporation: *See—*
Uno, Takehiko; and Jumonji, Hiromichi, 4,387,355, Cl. 333-195.000.

Nippondenso Co., Ltd.: *See—*
Nagase, Masaomi; Miyagi, Hideo; and Kinugawa, Masumi, 4,386,591, Cl. 123-339.000.

Nishida, Mitsuhiro: *See—*
Yamamoto, Sakuei; Nishida, Mitsuhiro; Tashiro, Noboru; and Sonoda, Nobuo, 4,387,313, Cl. 310-71.000.

Nishikawa, Masahiro: *See—*
Nakata, Shuji; Nishikawa, Masahiro; and Kawaguchi, Yoshio, 4,387,289, Cl. 219-110.000.

Nishizono, Tadayoshi: *See—*
Nakanishi, Noriaki; Nishizono, Tadayoshi; Nakanishi, Masaaki; Nakanishi, Toshiaki; and Kawahara, Yoshio, 4,386,462, Cl. 29-792.000.

Nissan Motor Company, Limited: *See—*
Hamada, Hideo; Morimoto, Yoshiro; Suga, Masaaki; Futagi, Masaaki; and Suzuki, Tadashi, 4,386,521, Cl. 73-118.000.
Nagaishi, Hatsuo, 4,386,520, Cl. 73-118.000.
Nakata, Shuji; Nishikawa, Masahiro; and Kawaguchi, Yoshio, 4,387,289, Cl. 219-110.000.
Ohgami, Masaaki; and Matsui, Fujio, 4,386,592, Cl. 123-440.000.
Yasuda, Akira, 4,387,290, Cl. 219-202.000.

Nissin Sugar Manufacturing Co., Ltd., The: *See—*
Suami, Tetsuo; Itoh, Yushi; and Oki, Shuichi, 4,387,220, Cl. 536-53.000.

Nitschke, David B. Glass sheet bending system utilizing gas jets. 4,386,952, Cl. 65-268.000.

Nixon, Ralph D., to English Electric Valve Company Limited. Display arrangements. 4,387,322, Cl. 313-497.000.

Noda, Sakuo: *See—*
Takita, Hitoshi; Noda, Sakuo; Mukaida, Yutaka; and Kobayashi, Hidetoshi, 4,387,102, Cl. 424-282.000.

North American Philips Corporation: *See—*
Dirstine, Roger T., 4,386,985, Cl. 156-89.000.

North York Mobile Wash Limited: *See—*
Dragojevic, Bozo, 4,386,652, Cl. 165-144.000.

Northern Telecom Limited: *See—*
Chow, Peter E. K., 4,387,366, Cl. 340-347.0DD.
Munter, Ernst A., 4,387,457, Cl. 370-62.000.

Nothnagel, Eugene A.: *See—*
Barak, Lawrence S.; Nothnagel, Eugene A.; Webb, Watt W.; and Yocum, Robert R., 4,387,088, Cl. 424-3.000.

Novotny, Bernd, to ITT Industries, Inc. Power supply switching-regulator particularly for television receivers. 4,387,399, Cl. 358-190.000.

Nozaki, Mineo: *See—*
Asakura, Osamu; and Nozaki, Mineo, 4,387,380, Cl. 346-76.0PH.

Nozaki, Shigeki: *See—*
Takemae, Yoshihiro; Nozaki, Shigeki; and Mezawa, Tsutomu, 4,387,448, Cl. 365-203.000.

Nuclear Systems, Inc.: *See—*
Hines, Randal C.; and Black, Thomas J., 4,386,649, Cl. 165-12.000.

Nufer, Robert W.: *See—*
Anderson, Leslie C.; Nufer, Robert W.; and Pugliese, Frank G., 4,387,131, Cl. 428-201.000.

N.V. Verengide Instrumentenfabrieken Enraf- Noniús: *See—*
Vonk, Wim; Bielawiec, Ryzard M.; and van der Horn, Hendrik J., 4,386,523, Cl. 73-200.000.

Nybo, Reidar O.: *See—*
Engelsen, Per-Einar; and Nybo, Reidar O., 4,386,874, Cl. 405-224.000.

Obara, Haruki, to Fujitsu Fanuc Limited. Power source for wire-cut electric discharge machines. 4,387,285, Cl. 219-69.00P.

Occidental Minerals Corporation: *See—*
Axen, Steven G.; Huff, Ray V.; and Bergeson, Jerry R., 4,386,806, Cl. 299-5.000.

Ochendowski, Richard W.: *See—*
DeViney, Terrence E.; and Ochendowski, Richard W., 4,387,305, Cl. 307-66.000.

Ocular Associates: *See—*
Eichenbaum, Daniel M., 4,386,927, Cl. 604-51.000.

O'Donnell, John P.: *See—*
Erhardt, Paul W.; Borgman, Robert J.; and O'Donnell, John P., 4,387,103, Cl. 424-309.000.

Oestreich, Ulrich, to Siemens Aktiengesellschaft. Device for SZ stranding of elements into units and bundles of units. 4,386,496, Cl. 57-293.000.

Officine Augusto Cattani & C.S.a.S.: *See—*
Cattani, Augusto, 4,386,910, Cl. 433-92.000.

Ogata, Masatsugu: *See—*
Kobayashi, Tsuguo; Ishikawa, Tetsuo; Hironaka, Kenichi; Umetsu, Hideo; Ogata, Masatsugu; and Yokono, Hitoshi, 4,387,311, Cl. 310-43.000.

Ogawa, Yasuo: *See—*
Mori, Hiroyuki; Ogawa, Yasuo; Sugi, Hideo; Fujikawa, Noboru; and Tamai, Kiyoshi, 4,387,218, Cl. 536-6.400.

Ogden, Ralph. Membrane switch control panel arrangement and label assembly for labeling same. 4,387,127, Cl. 428-42.000.

Oguma, Kiyoshi: *See—*
Goi, Masami; Kameo, Kazuya; Sawada, Jiro; Hanada, Kazunori; Tamai, Masaharu; and Oguma, Kiyoshi, 4,387,238, Cl. 549-549.000.

Ogura, Mitsuhiro: *See—*
Katsuno, Mitsuaki; and Ogura, Mitsuhiro, 4,386,793, Cl. 280-802.000.

Ogura, Osamu: *See—*
Katagiri, Masayoshi; and Ogura, Osamu, 4,386,554, Cl. 91-369.00A.

Ohata, Yousuke: *See—*
Miyoshi, Yoshitake; Shibata, Kiyoshi; Watanabe, Toshio; Kai, Masami; and Ohata, Yousuke, 4,386,845, Cl. 355-15.000.

Ohgami, Masaaki; and Matsui, Fujio, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. Air-fuel ratio control system. 4,386,592, Cl. 123-440.000.

Ohyama, Taketomo, to MCC Corporation. Pipe cutter for use on a pipe thread cutting machine. 4,386,440, Cl. 10-87.000.

Oishi, Kiyohiko: *See—*
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,386,497, Cl. 60-296.000.

Okabayashi, Terushi, to Hitachi, Ltd. Stack control system. 4,387,446, Cl. 365-189.000.

Okada, Kiyoshi: *See—*
Kurihara, Masaru; Uemura, Tadahiro; and Okada, Kiyoshi, 4,387,024, Cl. 210-490.000.

Okahisa, Mitsugu: *See—*
Arita, Tomohiko; Murakami, Kaoru; Okahisa, Mitsugu; and Kumano, Hiroshi, 4,387,143, Cl. 429-174.000.

Okamoto, Katsuhiko: *See—*
Wakao, Nobutaka; Murakami, Reiji; Okamoto, Katsuhiko; and Uchida, Kohachi, 4,386,841, Cl. 355-3.0DR.

Okamoto, Kunio: *See—*
Mizuno, Junzi; Fukami, Akira; Okamoto, Kunio; and Hanaki, KenIchi, 4,386,947, Cl. 55-387.000.

Okamura, Masatoshi; Shiba, Haruo; and Tanaka, Kimio, to TDK Electronics Co., Ltd. Magnetic tape cassette. 4,386,746, Cl. 242-199.000.

Oki, Shuichi: *See—*
Suami, Tetsuo; Itoh, Yushi; and Oki, Shuichi, 4,387,220, Cl. 536-53.000.

Okushita, Masataka, to Dai Nippon Insatsu Kabushiki Kaisha. Method for fabricating bag-in-box package. 4,386,923, Cl. 493-87.000.

Olin Corporation: *See—*
Tyler, Derek E.; Yun, Ik Y.; and Renschen, Patrick D., 4,386,958, Cl. 75-93.00R.

Olsen, William G.: *See—*
Holt, Neil L.; and Olsen, William G., 4,386,486, Cl. 52-125.500.

Olson, George E., to A. O. Smith Harvestore Products, Inc. Sweep auger construction for a bottom unloading mechanism. 4,386,695, Cl. 198-661.000.

Olympia Werke AG: *See—*
Kittel, Arthur; Gerken, Heiner; and Behrens, Herbert, 4,386,862, Cl. 400-144.200.

Olympus Optical Co. Ltd.: *See—*
Musha, Toru, 4,386,823, Cl. 350-247.000.

Omura, Ikuo: *See—*
Nagase, Yoshinori; Shibatani, Kyoichiro; Yamauchi, Junichi; and Omura, Ikuo, 4,386,912, Cl. 433-228.000.

Ooshima, Toshiaki: *See—*
Hirano, Seiichi; and Ooshima, Toshiaki, 4,386,564, Cl. 101-93.150.

Ootaka, Shoichi; Kawabata, Etsuo; Otobe, Yutaka; Kawamoto, Michio; and Sato, Norio, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas recirculation control device for an internal combustion engine and associated method. 4,386,597, Cl. 123-568.000.

Orceyre, Germain C. Device for constructing in situ a concrete reservoir. 4,386,754, Cl. 249-19.000.

Ormat Turbines, Ltd.: *See—*
Raviv, Ami; and Dahan, Abraham, 4,386,499, Cl. 60-657.000.

Orru, Vittoria: *See—*
di Schiena, Michele; and Orru, Vittoria, 4,387,096, Cl. 424-246.000.

Ortho Pharmaceutical Corporation: *See—*
Hajos, Zoltan G.; and Wachter, Michael, P., 4,387,234, Cl. 549-346.000.

Ortolano, Ralph J., to Southern California Edison Company. Continuous harmonic shrouding. 4,386,887, Cl. 416-190.000.

Otavsky, Pavel; and Hinlein, Sigmund, to Data General Corporation. Magnetic head arm mounting apparatus. 4,387,409, Cl. 360-104.000.

Otis Engineering Corporation: *See—*
Davis, Glenn R., 4,386,783, Cl. 277-73.000.

Otobe, Yutaka: *See—*
Ootaka, Shoichi; Kawabata, Etsuo; Otobe, Yutaka; Kawamoto, Michio; and Sato, Norio, 4,386,597, Cl. 123-568.000.

Ott, Granville E., to Texas Instruments Incorporated. Encoding and decoding digital data in a video format. 4,387,406, Cl. 358-310.000.

Ottaviani, Robert A.; and Short, William T., to General Motors Corporation. High solids internally U.V. stabilized melamine cured urethane paint. 4,387,194, Cl. 525-454.000.

Otte, Richard F.: *See—*
Cook, Paul M.; Otte, Richard F.; Claypool, James L.; White, Lawrence J.; Broyles, Harry C.; and Brooks, Peter L., 4,386,629, Cl. 138-110.000.

Otterbein, Karl, deceased: *See—*
Falbe, Jurgen; Cornils, Boy; Hetkamp, Guunter; Otterbein, Karl, deceased; Payer, Wolfgang; and Schneller, Peter, 4,387,202, Cl. 526-138.000.

Otterbein, Maria, heiress: *See—*
Falbe, Jurgen; Cornils, Boy; Hetkamp, Guunter; Otterbein, Karl, deceased; Payer, Wolfgang; and Schneller, Peter, 4,387,202, Cl. 526-138.000.

Otto, Jeffrey B.: *See—*
Tracy, Douglas H.; Otto, Jeffrey B.; Arnio, Bruce M.; and Callan, Elizabeth L., 4,387,178, Cl. 524-448.000.

Oude Alink, Bernardus A.; and Outlaw, Benjamin T., to Petrolite Corporation. Polyols of tetrahydropyrimidines as corrosion inhibitors. 4,387,074, Cl. 422-12.000.

Oudet, Claude, to Portescap. Stepping polyphased motor for a clockwork mechanism. 4,387,312, Cl. 310-49.00R.

Outboard Marine Corporation: *See—*
St. Ledger, Joseph B., 4,387,333, Cl. 320-21.000.

Outlaw, Benjamin T.: *See—*
Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,387,074, Cl. 422-12.000.

Owens-Corning Fiberglas Corporation: *See—*
Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, 4,386,951, Cl. 65-27.000.
Jen, James S.; and Kalinowski, Marie R. P., 4,387,180, Cl. 524-594.000.

Owens-Illinois, Inc.: *See—*
DeWallace, Robert C., 4,386,712, Cl. 215-211.000.
Kontz, Robert F., 4,386,988, Cl. 156-157.000.
Thompson, William W.; and Belcher, Samuel L., 4,386,703, Cl. 206-557.000.

Oyama, Yoshishige: *See—*
Yamauchi, Teruo; Fujieda, Mamoru; and Oyama, Yoshishige, 4,387,429, Cl. 364-431.050.

Oyamada, Kenji; and Matsuura, Kotaro, to Sanyo Electric Co., Ltd. Apparatus for successively charging rechargeable batteries. 4,387,332, Cl. 320-15.000.

Painter, Roy, to Energy Research Associates. Tool for forming interplate connections. 4,386,647, Cl. 164-332.000.

Pap, Geza: *See—*
Ratcliffe, Charles T.; and Pap, Geza, 4,387,247, Cl. 564-420.000.

Paper Machinery Corporation: *See—*
Johnson, Craig N., 4,386,576, Cl. 118-211.000.

Paratech, Inc.: *See—*
Edwards, Bill R., 4,387,207, Cl. 528-86.000.

Parish, Verble W., to Hughes Tool Company. Sealed lubricated and air cooled rock bit bearing. 4,386,668, Cl. 175-228.000.

Parker, Edward J.: *See—*
Berry, Raymond J.; Linkhart, Ken R.; and Parker, Edward J., 4,387,365, Cl. 340-347.0DD.

Passmore, David T.; Wooten, Willis C.; and McBride, Paul, to Eastman Kodak Company. Thermosetting powder coating compositions. 4,387,214, Cl. 528-296.000.

Patel, Chimanbhai M.; Magyar, Joseph J.; and Lee, David N., to General Motors Corporation. Tension reliever for seat belt retractor. 4,386,745, Cl. 242-107.40B.

Patten, Stanley H., to Du Pont de Nemours, E. I., and Company. X-Ray screens based on phosphor mixtures of $CaWO_4$ and rare earth tantalates. 4,387,141, Cl. 428-690.000.

Paulet, Jose A.: *See—*
Gilles, Bernard; Paulet, Jose A.; and Roux, Raphael J. S., 4,387,277, Cl. 179-170.0NC.

Pavlak, John J.; and Plyler, Robert G., to General Motors Corporation. Hinged collar clip. 4,386,752, Cl. 248-73.000.

Pawloski, Chester E., to Dow Chemical Company, The. Carbamic acid derivatives. 4,387,058, Cl. 260-465.00D.

Payer, Wolfgang: *See—*
Bahadir, Mufit; and Payer, Wolfgang, 4,387,201, Cl. 526-125.000.
Falbe, Jurgen; Cornils, Boy; Hetkamp, Guunter; Otterbein, Karl, deceased; Payer, Wolfgang; and Schneller, Peter, 4,387,202, Cl. 526-138.000.

Peabody Coal Company: *See—*
McDowell, Guy, Jr., 4,386,877, Cl. 405-261.000.

Pearman, A. Noel J.: *See—*
Kude, William B.; Pearman, A. Noel J.; and Youngbauer, Daniel L., 4,386,858, Cl. 374-37.000.

Peery, John R.; Griesinger, William K.; and Carpenter, Peter F., to ALZA Corporation. Elastomeric bladder assembly. 4,386,929, Cl. 604-132.000.

Pegasus Candle Co., Ltd.: *See—*
Miyahara, Hisao; and Tsukamura, Tatsumi, 4,386,904, Cl. 431-126.000.

Pennwalt Corporation: *See—*
Sanchez, Jose; and Westbrook, Solomon C., Jr., 4,387,044, Cl. 252-426.000.

Pennzoil Company: *See—*
Kidwell, Louis E., Jr.; and Holcomb, Dysart E., 4,387,167, Cl. 501-140.000.

Perfex Corporation: *See—*
Kubick, Matthew D., 4,386,443, Cl. 15-245.000.

Perkin-Elmer Corporation, The: *See—*
Cassidy, Joseph A.; and Talmadge, Paul C., 4,386,852, Cl. 356-323.000.

Perkins, Jimmie G.; and MacMillan, Robert E., to Ex-Cell-O Corporation. Fuel transfer valve. 4,386,625, Cl. 137-255.000.

Perry, David L. E. Drafting apparatus. 4,386,470, Cl. 33-438.000.

Peterman, Earl J., to Metrotech, Inc. Apparatus for determining the distance to a concealed conductive object which is radiating an alternating current signal. 4,387,340, Cl. 324-326.000.

Peters, Donald L.: *See—*
Buchanan, William T.; Pocius, Frances C.; and Peters, Donald L., 4,386,637, Cl. 141-65.000.

Peters, Karl-Clemens: *See—*
Hummerich, Rainer; Hahn, Herbert; Weiss, Wolfram; Immel, Guenther; Krause, Hans-Joachim; and Peters, Karl-Clemens, 4,387,212, Cl. 528-232.000.

Peters, Werner: *See—*
van Heek, Karl H.; Juntgen, Harald; and Peters, Werner, 4,386,942, Cl. 48-202.000.

Petersen, David J.; Tartar, Paul E.; and Bradshaw, Robert S., to Burroughs Corporation. Recognition logic circuit for bar code reader systems. 4,387,298, Cl. 235-462.000.

Peterson, James R.; and Majors, Edward M., to Texas Instruments Incorporated. Apparatus and method of forming aluminum balls for ball bonding. 4,387,283, Cl. 219-56.210.

Petrolite Corporation: *See—*
Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,387,074, Cl. 422-12.000.

Petry, Hans P.: *See—*
Maurer, Robert; and Petry, Hans P., 4,387,470, Cl. 455-257.000.

Pfeiffer, Francis R., to SmithKline Beckman Corporation. Adamantyl containing peptides. 4,387,049, Cl. 260-112.50R.

Pfizer Inc.: *See—*
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,387,229, Cl. 546-216.000.
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,387,235, Cl. 549-417.000.

Phillips, Jarald Allen: *See—*
Sparks, Jimmy L., 4,386,660, Cl. 168-32.000.

Phillips Marvin R.; and Johnston, Erwin L., to Boldt Industries, Inc. Method and means of compressing meat products. 4,386,451, Cl. 17-1.00R.

Phillips Petroleum Company: *See—*
Burns, Lyle D., 4,387,257, Cl. 585-14.000.
Funk, Gary L.; and Stewart, William S., 4,386,623, Cl. 137-2.000.
Volz, Herbert A., 4,386,456, Cl. 29-157.30R.

Phung, Nhu H.: *See—*
Chauvin, Yves; Commereuc, Domonique; Gaillard, Jean; Leger, Gerard; and Phung, Nhu H., 4,387,262, Cl. 585-523.000.

Pickenhagen, Wilhelm; and Velluz, Alain, to Firmenich SA. α,β-Unsaturated aldehydes and use of same as flavoring ingredients. 4,387,248, Cl. 568-448.000.

Pierrot, Robert, to Thomson-CSF. Delay line frequency discriminator for stabilizing an oscillator. 4,387,347, Cl. 331-1.00R.

Piezo Electric Products, Inc.: *See—*
Kolm, Eric A.; and Kolm, Henry H., 4,387,318, Cl. 310-330.000.

Pinkerton, Robert B., to Du Pont de Nemours, E. I., and Company. Liquid phase oxidation. 4,387,236, Cl. 549-505.000.

Pip, Wolfgang, to Rohm GmbH. Method of making a foamed resin sheet. 4,387,066, Cl. 264-55.000.

Pipkin, David J., to International Business Machines Corporation. Coating apparatus and method. 4,387,124, Cl. 427-356.000.

Pithouse, Kenneth B.: *See—*
Bonnet, Jean-Claude; and Pithouse, Kenneth B., 4,387,196, Cl. 525-477.000.

Pitney Bowes Inc.: *See—*
Frediani, John K.; and Lillie, Terrance L., 4,387,424, Cl. 364-200.000.

Pitts, Linda F. Absorbent article. 4,386,932, Cl. 604-383.000.

Plaskolite, Inc.: *See—*
Gift, Warren H., 4,387,138, Cl. 428-407.000.

Plemmons, Jerry R.; and Taylor, Tommy R., to General Electric Company. Lamp retaining means within luminaire. 4,387,417, Cl. 362-376.000.

Plensat, Lienhard: *See—*
Benker, Horst; Plensat, Lienhard; and Kratzer, Gernot, 4,386,817, Cl. 339-103.00B.

Plessey Company plc, The: *See—*
Creteau, Peter V., 4,387,456, Cl. 370-13.000.

Plewes, John T.; Quick, Nathaniel R.; and Robbins, Murray, to Bell Telephone Laboratories, Incorporated. Carbon transducer with electrical contact. 4,387,276, Cl. 179-125.000.

Plummer, Robert E., to ARCO Pipe Line Company. Ribbon cable connector tool. 4,386,461, Cl. 29-749.000.

Plyler, Robert G.: *See—*
Pavlak, John J.; and Plyler, Robert G., 4,386,752, Cl. 248-73.000.

Pocius, Frances C.: *See—*
Buchanan, William T.; Pocius, Frances C.; and Peters, Donald L., 4,386,637, Cl. 141-65.000.

Poeppel, Fritz O.: *See—*
Amann, Hans; Burkhardt, Jurgen; Luck, Klaus; and Poeppel, Fritz O., 4,386,473, Cl. 37-57.000.

Polaroid Corporation: *See—*
Hill, Ruth L.; and Jerry, Roger E., 4,387,155, Cl. 430-217.000.

Poletto, John F.: *See—*
Conrow, Ransom B.; Poletto, John F.; and Bernstein, Seymour, 4,387,059, Cl. 260-506.000.

Pont-A-Mousson S.A.: *See—*
Fuminier, Claude, 4,386,544, Cl. 82-101.000.

Pontoppidan, Michael, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Carburettors comprising a main fuel circuit and an auxiliary circuit. 4,387,063, Cl. 261-41.00D.

Portable Tool & Electronics, Inc.: *See—*
Ditty, Allan V., 4,386,560, Cl. 99-538.000.

Portescap: *See—*
Oudet, Claude, 4,387,312, Cl. 310-49.00R.

Possati, Mario; Golinelli, Guido; and Selleri, Narciso, to Finike Italiana Marposs S.p.A. Gauge for checking linear dimensions of mechanical pieces. 4,386,467, Cl. 33-178.00E.

Postle, Stephen R., to Ciba-Geigy AG. Photographic materials. 4,387,158, Cl. 430-364.000.

Potter, Charles W., to J. H. Fenner & Co., Ltd. Annular fluid face seal with diaphragm. 4,386,781, Cl. 277-38.000.

Powell, Jerry P., to RCA Corporation. Sensing focus of a color kinescope. 4,387,394, Cl. 358-139.000.

PPG Industries Canada Ltd.: *See—*
Geesen, Donald H., 4,386,936, Cl. 23-295.00S.

Prandi, Luigi. Compositions able to separate the erythrocytes from the serum or plasma in blood analysis samples, and the method which uses them. 4,387,031, Cl. 210-787.000.

Precision Dynamics Corporation: *See—*
Charles, Stanley E.; Long, Donald A.; Katsenis, Peter G.; and Mosher, Walter W., Jr., 4,386,795, Cl. 283-5.000.

Prehodka, Barry V., to Aurora Products Canada Limited. Toy vehicle racing game. 4,386,777, Cl. 273-86.00B.

Presley, Rex W., to Bendix Corporation, The. Shaped voltage waveform motor controller. 4,387,328, Cl. 318-696.000.

Preussag Aktiengesellschaft: *See—*
Amann, Hans; Burkhardt, Jurgen; Luck, Klaus; and Poeppel, Fritz O., 4,386,473, Cl. 37-57.000.

Prewo, Karl M.: *See—*
Stalcup, Robert K.; and Prewo, Karl M., 4,386,825, Cl. 350-310.000.

Price, Robert B.: *See—*
Gardner, Charles S.; Price, Robert B.; and Tillen, Keith G., 4,387,009, Cl. 204-129.200.

Price, Robert J.; and Taber, Bruce C., to Data Card Corporation. High speed label printer. 4,386,860, Cl. 400-124.000.

Prime Manufacturing Company: *See—*
Earle, Roland D., 4,386,938, Cl. 44-53.000.

Prins, Klaar, to Estel Hoogovens B.V. Seal for a coke oven door. 4,387,004, Cl. 202-248.000.

Printronix, Inc.: *See—*
Farb, Norman E., 4,386,563, Cl. 101-93.040.

Pro-Tech Advisory Services Limited: *See—*
Stanley, Robert K., 4,386,628, Cl. 138-97.000.

Process Technologies, Inc.: *See—*
Moncrief, Marion L., Jr.; Glass, Frank S.; Hernandez, Rafael; and Chow, Edmund E., 4,387,434, Cl. 364-509.000.

Procter & Gamble Company, The: *See—*
Bolich, Raymond E., Jr., 4,387,090, Cl. 424-70.000.

Produits Chimiques Ugine Kuhlmann: *See—*
Commeyras, Auguste; Sagnes, Rene; and Guery, Claudine, 4,387,254, Cl. 568-842.000.

Prokop, B. Robert, to Kelsey-Hayes Company. Electric brake magnet. 4,386,684, Cl. 188-138.000.

Propster, Mark A.: *See—*
Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, 4,386,951, Cl. 65-27.000.

Pruitt, Martin E.: *See—*
Holdeman, Adin F.; Gaeddert, Melvin V.; Ratzlaff, Howard J.; Pruitt, Martin E.; and Lohrentz, Howard R., 4,386,493, Cl. 56-341.000.

Pugliese, Frank G.: *See—*
Anderson, Leslie C.; Nufer, Robert W.; and Pugliese, Frank G., 4,387,131, Cl. 428-201.000.

Pullman Berry Company: *See—*
Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,386,763, Cl. 266-158.000.

Quaglia, Giorgio: *See—*
Grattoni, Paolo; Quaglia, Giorgio; Fava, Cesare; and Juliani, Giovanni, 4,387,392, Cl. 358-111.000.

Queener, Carl A.: *See—*
Clark, William D.; Edwards, Earl G.; and Queener, Carl A., 4,386,846, Cl. 355-25.000.

Quick, Nathaniel R.: *See—*
Plewes, John T.; Quick, Nathaniel R.; and Robbins, Murray, 4,387,276, Cl. 179-125.000.

Quinif, Edward G., to Walled Lake Door Co. Wood door with molding strips forming annular seal around the periphery of the door to prevent delamination. 4,386,482, Cl. 49-488.000.

Quitmann, Horst: *See—*
Burgdorf, Jochen; Reinartz, Hans-Dieter; and Quitmann, Horst, 4,386,808, Cl. 303-6.00C.

R. W. Lyall Co., Inc.: *See—*
Lyall, Robert W.; and Hill, Donald C., 4,386,796, Cl. 285-31.000.

Rabas, Thomas J., to Westinghouse Electric Corp. Moisture separator reheater apparatus. 4,386,583, Cl. 122-483.000.

Racal-Comsec Limited: *See—*
Beker, Henry J.; and Friend, John M. K., 4,387,371, Cl. 340-825.520.

Rae, William: *See—*
Emms, Roy O.; Rae, William; and Wilson, John, 4,387,128, Cl. 428-60.000.

Ramaglia, Joseph M., to Sun Chemical Corporation. Pretreatment of pigments. 4,386,967, Cl. 106-309.000.

Ramakers, Louis H. M.: *See—*
Weterings, Cornelis A. M.; Ramakers, Louis H. M.; and Janssen, Johannes A., 4,387,077, Cl. 423-21.100.

Rankovic, Ljubisa: *See—*
Henry, Francis W., Jr.; Wood, Merrill, Jr.; and Rankovic, Ljubisa, 4,387,173, Cl. 524-63.000.

Rannou, Jean; Grozellier, Michel; and Godet, Marcel, to Thomson-CSF. Method for the manufacture of material absorbing ultra-high frequency waves. 4,387,122, Cl. 427-244.000.

Rapp, A. Karl, to National Semiconductor Corporation. Low power CMOS crystal oscillator. 4,387,349, Cl. 331-116.0FE.

Rapp, Guenther, deceased: *See—*
Grosskinsky, Alfred-Otto; Frommer, Elmar; Rapp, Guenther, deceased; Thomas, Erwin; and Schmitz, Ruediger, 4,387,082, Cl. 423-387.000.

Rapp, Ruth E., Legal Representative: *See—*
Grosskinsky, Alfred-Otto; Frommer, Elmar; Rapp, Guenther, deceased; Thomas, Erwin; and Schmitz, Ruediger, 4,387,082, Cl. 423-387.000.

Ratcliffe, Charles T.; and Pap, Geza, to Allied Corporation. Catalytic reduction of nitro aromatic compounds with hydrogen sulfide and carbon monoxide. 4,387,247, Cl. 564-420.000.

Rattner, Justin R.: *See—*
Cox, George W.; and Rattner, Justin R., 4,387,427, Cl. 364-200.000.

Ratzlaff, Howard J.: *See—*
Holdeman, Adin F.; Gaeddert, Melvin V.; Ratzlaff, Howard J.; Pruitt, Martin E.; and Lohrentz, Howard R., 4,386,493, Cl. 56-341.000.

Rauland-Borg Corporation: *See—*
Singhi, Dilip T.; and Dahlquist, James E., 4,387,420, Cl. 364-145.000.

Raviv, Avi; and Dahan, Abraham, to Ormat Turbines, Ltd. Automatic start-up system for a closed rankine cycle power plant. 4,386,499, Cl. 60-657.000.

Rawls, William W.: *See—*
Dever, James E.; Stascavage, John A.; and Rawls, William W., 4,386,645, Cl. 160-183.000.

Ray, Ranjan, to Allied Corporation. Apparatus for making metallic glass powder. 4,386,896, Cl. 425-7.000.

Ray, William F.; and Davis, Rex M., to Chloride Group Limited. Variable reluctance motor systems. 4,387,326, Cl. 318-138.000.

Raychem Corporation: *See—*
Cook, Paul M.; Otte, Richard F.; Claypool, James L.; White, Lawrence J.; Broyles, Harry C.; and Brooks, Peter L., 4,386,629, Cl. 138-110.000.
Jervis, James E., 4,386,984, Cl. 156-86.000.

Raychem Limited: *See—*
Bonnet, Jean-Claude; and Pithouse, Kenneth B., 4,387,196, Cl. 525-477.000.

Raytheon Company: *See—*
Hardie, George S., 4,387,379, Cl. 343-895.000.
Wiener, Alan I., 4,387,374, Cl. 343-5.0EM.

RCA Corporation: *See—*
Angle, Rodney L., 4,387,354, Cl. 333-165.000.
Bell, Alan E., 4,387,381, Cl. 346-135.100.
Bessolo, Jeffrey M.; and Gillberg, James E., 4,387,350, Cl. 331-116.0FE.
Dietz, Wolfgang F. W., 4,387,397, Cl. 358-154.000.
Griffis, Patrick D., 4,387,413, Cl. 361-386.000.
Henderson, John G. N.; and Maturo, Robert J., 4,387,401, Cl. 358-193.100.
Hinn, Werner, 4,387,405, Cl. 358-243.000.
Katagi, Kazuo, 4,387,370, Cl. 340-727.000.
Leahy, Michael F., 4,386,850, Cl. 356-243.000.
Lehmann, Hans W.; Frick, Klaus; and Widmer, Roland W., 4,387,013, Cl. 204-192.00E.
Martinson, Lloyd W., 4,387,341, Cl. 328-73.000.
Powell, Jerry P., 4,387,394, Cl. 358-139.000.
Willis, Donald H., 4,387,324, Cl. 315-411.000.
Wine, Charles M., 4,387,407, Cl. 358-342.000.

Reba, Imants; and Wolthausen, Edward C., to Crown Zellerbach Corporation. System and method for continuously preventing filament bridging between adjacent draw nozzles. 4,387,065, Cl. 264-39.000.

Rebholz, James H., to Champion International Corporation. Laminated packaging material. 4,387,126, Cl. 428-35.000.

Redl, Stefan, to Finkel Outdoor Products, Inc. Wind-up mechanism for a tiltable umbrella. 4,386,621, Cl. 135-20.00M.

Redmann, Rainer: *See—*
Engelmann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jurgen; and Sydow, Udo, 4,387,159, Cl. 430-544.000.

Reed, Betty C. U-Turn vehicle light. 4,387,361, Cl. 340-73.000.

Reed, Paul A.: *See—*
Klaas, Jeffrey M.; Reed, Paul A.; and Rimawi, Isam, 4,387,447, Cl. 365-203.000.

Reed, Waymon B., to Multi-Story Transporters, Inc. Emergency rescue system. 4,386,680, Cl. 187-6.000.

Regie Nationale des Usines Renault: *See—*
Chevalier, Claude; Zammarchi, Gino; and Bouvet, Jean M., 4,386,687, Cl. 192-3.300.
Menard, Michel, 4,386,798, Cl. 292-336.300.

Rehag, Klaus; and Stinnertz, Horst, to Wean United, Inc. Pilger tube rolling mill. 4,386,512, Cl. 72-214.000.

Reichert, Gunter; Mainzer, Franz; Lehmann, Kurt; and Niermann, Hermann, to Hoechst Aktiengesellschaft. Method and apparatus for controlling and optionally regulating the level of liquid P_2S_5 in a cooling device. 4,386,503, Cl. 62-188.000.

Reinartz, Hans-Dieter: *See—*
Burgdorf, Jochen; Reinartz, Hans-Dieter; and Quitmann, Horst, 4,386,808, Cl. 303-6.00C.

Reinert, Gerhard: *See—*
Davidson, Donald R.; and Reinert, Gerhard, 4,386,573, Cl. 112-103.000.

Reinhard, Heinrich, to Autz + Herrmann Metallwaren-und Maschinenfabrik. Heat exchanger accessory for electronic circuit cabinets. 4,386,651, Cl. 165-104.330.

Reinheimer, Guenter: *See—*
Stankewitz, Hans-Werner; Determann, Hans; and Reinheimer, Guenter, 4,386,830, Cl. 350-524.000.

Renal Systems, Inc.: *See—*
Stasz, Peter; and Cosentino, Louis C., 4,386,634, Cl. 141-2.000.

Reneau, Daniel L.; and Engel, Christopher M., to Zenith Radio Corporation. Automatic beam current limiter. 4,387,390, Cl. 358-74.000.

Renga, James M.; and Kolb, Gerald C., to Dow Chemical Company, The. Process for making vicinal epoxides. 4,387,237, Cl. 549-518.000.

Renschen, Patrick D.: *See—*
Tyler, Derek E.; Yun, Ik Y.; and Renschen, Patrick D., 4,386,958, Cl. 75-93.00R.

Research Corporation: *See—*
Deutsch, Edward A.; and Glavan, Kenneth A., 4,387,087, Cl. 424-1.500.

Reverberi, Corrado, to Annovi Reverebi S.p.A. Guide and seal assembly for a piston of a drowned piston type pump. 4,386,782, Cl. 277-59.000.

Reynolds, Blake: *See—*
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,386,941, Cl. 48-197.00R.

Reynolds Metals Company: *See—*
Dale, Kenneth H.; and Ludwig, Walter G., 4,387,019, Cl. 209-12.000.

Rhone-Poulenc Industries: *See—*
Coquard, Jean; and Goletto, Jean, 4,387,184, Cl. 525-183.000.
Disdier, Camille; Martinaud, Jacques-Pierre; and Sullivan, John W., Jr., 4,387,246, Cl. 564-417.000.

Rice, James M., to Mica Corporation, The. Capacitor material. 4,387,137, Cl. 428-332.000.

Rich Products Corporation: *See—*
Kahn, Marvin L.; and Eapen, Kuttikandathil E., 4,387,109, Cl 426-321.000.

Richard Hirschmann, Radiotechnisches Werk: *See—*
Benker, Horst; Plensat, Lienhard; and Kratzer, Gernot, 4,386,817, Cl. 339-103.00B.

Richards, Glenn L.: *See—*
Hayes, Robert D.; and Richards, Glenn L., 4,387,278, Cl. 179-175.20C.

Richter, George N.: *See—*
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,386,941, Cl. 48-197.00R.

Rickwood, Kenneth R. Electrical discharge apparatus and a gas laser pumped by an electrical discharge through the gas. 4,387,463, Cl. 372-86.000.

Ricoh Co., Ltd.: *See—*
Sakai, Kiyoshi, 4,387,147, Cl. 430-58.000.
Sue, Takaji, 4,387,384, Cl. 346-140.00R

Rieder, Werner; and Fehrle, Martin, to Isovolta Osterreichische Isolierstoffwerke. Novel polyester. 4,387,209, Cl. 528-176.000.

Riefel, Richard P.; Henne, John G.; and Dean, David A., to General Motors Corporation. Rotary hydraulic vane pump with undervane passages for priming. 4,386,891, Cl. 418-81.000.

Rig-A-Matic, Inc.: *See—*
Hogan, Arthur S.; and McCann, Paul G., Jr., 4,386,883, Cl 414-22.000.

Rimawi, Isam: *See—*
Klaas, Jeffrey M.; Reed, Paul A.; and Rimawi, Isam, 4,387,447, Cl 365-203.000.

Riolland, Pierre L. Sail assembly of variable profile, reversible and collapsible. 4,386,574, Cl. 114-103.000.

Ritchie, Leon T.: *See—*
Asick, John C.; Ritchie, Leon T.; and Snyder, Clair W., Jr., 4,386,819, Cl. 339-147.00R.

Ritsema, Irving R.: *See—*
Woo, Ji Y.; and Ritsema, Irving R., 4,386,682, Cl. 188-71.800.

Robbins, Murray: *See—*
Plewes, John T.; Quick, Nathaniel R.; and Robbins, Murray, 4,387,276, Cl. 179-125.000.

Robert Bosch GmbH: *See—*
Barthruff, Otto; and Mayer, Martin, 4,387,315, Cl. 310-90.000.

Roberto, Louise; and Casale, Stephen. Container cover assembly. 4,386,714, Cl. 220-339.000.

Roberts, Eric, to Rolls-Royce Limited. Digital data processing system. 4,387,426, Cl. 364-200.000.

Roberts, Hermand. Skating velocipede apparatus. 4,386,794, Cl. 280-826.000.

Roberts, Michael A.; and Copperthwaite, Martin, to USS Engineers and Consultants, Inc. Composite moulded refractory articles. 4,386,765, Cl. 266-236.000.

Roberts, Richard W., to Borg-Warner Corporation. Metal power transmission belt. 4,386,921, Cl. 474-201.000.

Robertson, Alexander J.; and Shutt, Colin, to International Standard Electric Corporation. Tool for stripping plastics coatings from optical fibres. 4,386,541, Cl. 81-9.50R.

Robinson, Anderson E., Jr.: *See—*
Baczuk, Robert J.; and Robinson, Anderson E., Jr., 4,386,978, Cl. 149-19.400.

Robinson, John W.: *See—*
Fritz, Gary R.; Howell, Stephen L.; and Robinson, John W., 4,386,546, Cl. 84-1.010.

Robson, Harry E.: *See—*
Vadekar, Mohan; and Robson, Harry E., 4,387,258, Cl. 585-259.000.

Robson, Peter A.: *See—*
Barnes, Alan C.; and Robson, Peter A., 4,387,098, Cl. 424-256.000.

Roccograndi, Daniel M.: *See—*
Roccograndi, Yolanda C.; and Roccograndi, Daniel M., 4,386,439, Cl. 5-498.000.

Roccograndi, Yolanda C.; and Roccograndi, Daniel M. Bedspread. 4,386,439, Cl. 5-498.000.

Rock, Erich: *See—*
Brustle, Klaus; and Rock, Erich, 4,386,449, Cl. 16-238.000.
Rockwell International Corporation: *See—*
Boros, Lawrence A., 4,387,288, Cl. 219-107.000.
Huffman, Charles E., 4,387,459, Cl. 370-102.000.
Loper, Roger K., 4,387,334, Cl. 320-44.000.
Moen, Walter K., 4,386,650, Cl. 165-12.000.
Roder, Ulrich; Seidlitz, Harald; and Scherg, Christof, to Gesellschaft fur Strahlen-und Umweltforschung mbH Munchen. Ultrasonic transmitter. 4,386,612, Cl. 128-660.000.
Roeder, Eckhard. Method for quality control of processes and construction components. 4,386,526, Cl. 73-587.000.
Rogers Corporation: *See—*
Tracy, Douglas H.; Otto, Jeffrey B.; Arnio, Bruce M.; and Callan, Elizabeth L., 4,387,178, Cl. 524-448.000.
Rohde & Schwarz GmbH & Co. K.G.: *See—*
Fritze, Bernd, 4,387,348, Cl. 331-17.000.
Rohm GmbH: *See—*
Pip, Wolfgang, 4,387,066, Cl. 264-55.000.
Rohm and Haas Company: *See—*
Ashmore, John W.; and Fujimoto, Ted T., 4,386,954, Cl. 71-98.000.
Feely, Wayne E., 4,387,190, Cl. 525-175.000.
Rokhvarg, Yakov. Animal breeding conveyor house. 4,386,581, Cl. 119-14.030.
Rolls-Royce Limited: *See—*
Banks, Michael D., 4,386,784, Cl. 277-80.000.
Gardner, Charles S.; Price, Robert B.; and Tillen, Keith G., 4,387,009, Cl. 204-129.200.
Roberts, Eric, 4,387,426, Cl. 364-200.000.
Romey, Edward J., Sr. Coffee maker with insulated dispensing container. 4,386,556, Cl. 99-290.000.
Rooney, Craig E., to Engineering Research Applications. Printer mechanism for typewriter. 4,386,863, Cl. 400-185.000.
Rosaen, Borje O.; and Fosdick, Dale P. Fluid filtering device. 4,387,022, Cl. 210-132.000.
Rosen, Louis M. Cigarette tube. 4,386,616, Cl. 131-174.000.
Rosenberg, Heinz: *See—*
Benecke, Wilhelm; and Rosenberg, Heinz, 4,387,419, Cl. 363-174.000.
Rosenthaler, Joachim, to Sandoz Ltd. Organic compounds. 4,387,086, Cl. 436-541.000.
Roth, David J.; Culler, Lawrence R.; and Heifner, Ralph D., to Anaconda Company, The. Metal recovery process from aluminum dross. 4,386,956, Cl. 75-24.000.
Roth, Kurt: *See—*
Buhler, Ulrich; Kuhlein, Klaus; Stahl, Theo; Tappe, Horst; and Roth, Kurt, 4,386,935, Cl. 8-451.000.
Roth, Philip: *See—*
Kawka, Richard J.; Herring, Daniel H.; Roth, Philip; and Sitko, Richard J., 4,386,973, Cl. 148-16.500.
Rothmans of Pall Mall Canada Limited: *See—*
Brackmann, Warren A.; and Snaidr, Stanislav M., 4,386,617, Cl. 131-290.000.
Rothmeier, Waldemar; Weber, Rolf-Dieter; and Hemala, Zdenek, deceased (by Hemala, Jirina, Michal Hemala, Martin Hemala, legal representatives), to Saurer-Allma GmbH. Double twisting spindle with a pneumatically operated threading device. 4,386,495, Cl. 57-279.000.
Roussel Uclaf: *See—*
Barnes, Alan C.; and Robson, Peter A., 4,387,098, Cl. 424-256.000.
Routh, Claude C., to United States of America, Navy. Transducer array crossover network. 4,387,352, Cl. 333-32.000.
Roux, Raphael J. S.: *See—*
Gilles, Bernard; Paulet, Jose A.; and Roux, Raphael J. S., 4,387,277, Cl. 179-170.0NC.
Rozenberg, Leib V.: *See—*
Zaslavsky, Dan; and Rozenberg, Leib V., 4,387,205, Cl. 527-400.000.
Rudolf, Alain. Dynamic vacuum cleaning device. 4,386,445, Cl. 15-409.000.
Ruhrchemie Aktiengesellschaft: *See—*
Bahadir, Mufit; and Payer, Wolfgang, 4,387,201, Cl. 526-125.000.
Falbe, Jurgen; Cornils, Boy; Hetkamp, Guunter; Otterbein, Karl, deceased; Payer, Wolfgang; and Schneller, Peter, 4,387,202, Cl. 526-138.000.
Russell, Robert F., to Scott Baker Company Limited. Unsaturated polyester resins. 4,387,171, Cl. 523-518.000.
Ryan, Gregory J., to Myo-Tronics Research Inc. System for comparing a real-time waveform with a stored waveform. 4,386,614, Cl. 128-777.000.
Rymarchyk, Nicholas M.: *See—*
Meinert, Leo L.; and Rymarchyk, Nicholas M., 4,386,763, Cl. 266-158.000.
Saab-Scania Aktiebolag: *See—*
Horn, James N., 4,386,641, Cl. 144-329.000.
Sabourin, Donald J.: *See—*
Furiga, Andrew; and Sabourin, Donald J., 4,387,351, Cl. 332-19.000.
Sacceddu, Pasquale; Vitobello, Vincenza; Braduzzi, Paolo; Cimini, Nadia; and Degen, Ludwig, to E.N.I. Ente Nazionale Idrocarburi. Process for producing the enzyme cholesterol esterase and for hydrolyzing cholesterol esters of fatty acids by using the enzyme itself. 4,387,163, Cl. 435-197.000.
Sacks, Martin E.; and McClelland, Richard H., to Cogas Development Company. Gasification of carbonaceous solids. 4,386,940, Cl. 48-197.00R.
Sagnes, Rene: *See—*
Commeyras, Auguste; Sagnes, Rene; and Guery, Claudine, 4,387,254, Cl. 568-842.000.
St. Ledger, Joseph B., to Outboard Marine Corporation. Circuit for charging battery at higher potential. 4,387,333, Cl. 320-21.000.
Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; and Tsuboi, Shinichi, to Nihon Tokushu Noyaku Seizo K.K. Combating pests with O-Alkyl-S-alkyl-S-acyloxyethyl-phosphorodithiolates. 4,387,095, Cl. 424-211.000.
Saito, Seitoku; Maruta, Fumio; Izumi, Toshiaki; and Sugihara, Hiroshi, to TDK Electronics Co., Ltd. Magnetic recording medium and apparatus for preparing the same. 4,387,136, Cl. 428-328.000.
Sakai, Kiyoshi, to Ricoh Co., Ltd. Electrophotographic element containing hydrazone compounds in charge transport layers. 4,387,147, Cl. 430-58.000.
Sakai, Masato: *See—*
Furuta, Isao; Takemura, Yasuhiko; Miyabayashi, Toshio; Zen, Shinichiro; and Sakai, Masato, 4,387,203, Cl. 526-245.000.
Sakamoto, Koji, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Magnetic bubble device. 4,387,443, Cl. 365-19.000.
Sakano, Hideki; and Todokoro, Shigeru, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of harmonizing the impedances of an audio amplifier and loudspeaker interconnected therewith. 4,387,270, Cl. 179-1.00F.
Sakata, Kazuhiro: *See—*
Katayama, Yasunori; Hatakeyama, Takanobu; Shima, Seiya; Hokari, Sadao; Narita, Toshiro; Yoneda, Kenji; Sakata, Kazuhiro; Kurihara, Tomiaki; and Meguro, Toshio, 4,387,436, Cl. 364-561.000.
Sakurai, Hisaya; Morita, Hideo; Ikegami, Tadashi; and Furusato, Masayasu, to Asahi Kasei Kogyo Kabushiki Kaisha. Olefin polymerization catalyst and a process for producing polyolefins by the use of said catalyst. 4,387,045, Cl. 252-429.00B.
Sanchez, Enrique R. Sterile adapter for use in blood transfers. 4,386,933, Cl. 604-408.000.
Sanchez, Jose; and Westbrook, Solomon C., Jr., to Pennwalt Corporation. Safe, dry, free-flowing solid peroxide/unsubstituted or alkyl substituted benzoic acid compositions. 4,387,044, Cl. 252-426.000.
Sandoz Ltd.: *See—*
Rosenthaler, Joachim, 4,387,086, Cl. 436-541.000.
Santiago, Andres; and Santiago, Enrique, to Zeuna-Staerker GmbH & Co. KG. Manifold on a six-cylinder in line engine. 4,386,586, Cl. 123-52.00M.
Santiago, Enrique: *See—*
Santiago, Andres; and Santiago, Enrique, 4,386,586, Cl. 123-52.00M.
Santrade Ltd.: *See—*
Westermark, Gustav L., 4,386,670, Cl. 175-344.000.
Sanyo Electric Co., Ltd.: *See—*
Oyamada, Kenji; and Matsuura, Kotaro, 4,387,332, Cl. 320-15.000.
Sasaki, Yasuo: *See—*
Amano, Muneyuki; and Sasaki, Yasuo, 4,386,974, Cl. 148-31.000.
Satellite Business Systems: *See—*
Schaphorst, Richard, 4,387,395, Cl. 358-140.000.
Sato, Akihiro; Tachibana, Masami; Kikuta, Kazutsune; Higuchi, Yoshiharu; and Miyajima, Masazumi, to Chisso Corporation. Process for producing α-olefin polymers. 4,387,198, Cl. 526-97.000.
Sato, Hideo: *See—*
Sugimori, Shigeru; and Sato, Hideo, 4,387,039, Cl. 252-299.630.
Sato, Koichiro: *See—*
Fujii, Kunihiko; Haraga, Koichi; Hirosaki, Yukihiro; and Sato, Koichiro, 4,386,994, Cl. 156-360.000.
Sato, Norio: *See—*
Ootaka, Shoichi; Kawabata, Etsuo; Otobe, Yutaka; Kawamoto, Michio; and Sato, Norio, 4,386,597, Cl. 123-568.000.
Sato, Yoshito; and Yato, Tokuhiro, to Kabushiki Kaisha Komatsu Seisakusho. Vehicle speed responsive brake and decelerator controls. 4,386,688, Cl. 192-0.033.
Satomoto, Atsushi, to Aisin Seiki Kabushiki Kaisha. Thermally responsive valve assembly. 4,386,732, Cl. 236-48.00R.
Sauder, Larry D. Fluid separation system. 4,387,030, Cl. 210-774.000.
Saurer-Allma GmbH: *See—*
Rothmeier, Waldemar; Weber, Rolf-Dieter; and Hemala, Zdenek, deceased, 4,386,495, Cl. 57-279.000.
Sawada, Jiro: *See—*
Goi, Masami; Kameo, Kazuya; Sawada, Jiro; Hanada, Kazunori; Tamai, Masaharu; and Oguma, Kiyoshi, 4,387,238, Cl. 549-549.000.
Sayko, Steven P., to NCR Corporation. Multiple nozzle ink jet print head. 4,387,383, Cl. 346-140.00R.
Scanlon, Patricia M.; and Young, E. Richard, to W. R. Grace & Co. Chelating agents for non-aqueous systems. 4,387,244, Cl. 562-448.000.
Schaffer, Stephen P., to J. M. Ney Company, The. Novel palladium alloy and dental restorations utilizing same. 4,387,072, Cl. 420-463.000.
Schaffner, Georg: *See—*
Weiss, Peter; and Schaffner, Georg, 4,386,741, Cl. 242-58.600.
Schaphorst, Richard, to Satellite Business Systems. Facsimile to video converter. 4,387,395, Cl. 358-140.000.
Schaumann, Wolfgang: *See—*
Heerdt, Ruth; Wolff, Hans P.; Kaiser, Fritz; Schaumann, Wolfgang; and Kuhnle, Hans, 4,387,104, Cl. 424-319.000.
Schenk, Walter: *See—*
Sundt, Erling; Schenk, Walter; Chappaz, Roger; and Joyeux, Michel, 4,387,047, Cl. 252-522.00R.

Scherg, Christof: *See—*
Roder, Ulrich; Seidlitz, Harald; and Scherg, Christof, 4,386,612, Cl. 128-660.000.
Schier, Ernst-Juergen: *See—*
Fromm, Dieter; Schier, Ernst-Juergen; Schneehage, Hans H.; and Vodrazka, Wolfgang, 4,387,224, Cl. 544-201.000.
Schimmeyer, Werner K. Trailer transporting rail-way car. 4,386,880, Cl. 410-56.000.
Schirmer, Dietrich: *See—*
Huber, Adalbert; Schirmer, Dietrich; and Hoffmann, Heiko, 4,387,029, Cl. 210-758.000.
Schlaefli, Alfred, to Voumard Machines Co. S.A. Method and apparatus for grinding convergent conical surfaces. 4,386,483, Cl. 51-5.00D.
Schlage Lock Company: *See—*
Zunkel, Richard L.; and Nimee, George S., 4,386,446, Cl. 16-58.000.
Schlosser, Hermann: *See—*
Ahlers, Egon; and Schlosser, Hermann, 4,386,635, Cl. 141-6.000.
Schmid, Gerhard E.: *See—*
Hinkel, Holger; Kempf, Jurgen; Kraus, Georg; and Schmid, Gerhard E., 4,386,968, Cl. 148-1.500.
Schmidt, Dennis A., to International Paper Company. Self-locking design for octagonal container. 4,386,729, Cl. 229-39.00R.
Schmidt, Robert: *See—*
Kranz, Eckart; Findeisen, Kurt; Schmidt, Robert; and Eue, Ludwig, 4,386,953, Cl. 71-93.000.
Schmitz, Gerd, to Sulzer Brothers Limited. Brake for a weaving machine. 4,386,683, Cl. 188-77.00R.
Schmitz, Reinold, to Bayer Aktiengesellschaft. Process for the preparation of quinizarin. 4,387,054, Cl. 260-383.000.
Schmitz, Ruediger: *See—*
Grosskinsky, Alfred-Otto; Frommer, Elmar; Rapp, Guenther, deceased; Thomas, Erwin; and Schmitz, Ruediger, 4,387,082, Cl. 423-387.000.
Schmolka, Irving R., to BASF Wyandotte Corporation. High foaming iodophors. 4,387,217, Cl. 528-417.000.
Schmuck, Johann: *See—*
Hatz, Ernst; Absenger, Erich; and Schmuck, Johann, 4,386,589, Cl. 123-192.00B.
Schneehage, Hans H.: *See—*
Fromm, Dieter; Schier, Ernst-Juergen; Schneehage, Hans H.; and Vodrazka, Wolfgang, 4,387,224, Cl. 544-201.000.
Schneller, Peter: *See—*
Falbe, Jurgen; Cornils, Boy; Hetkamp, Guunter; Otterbein, Karl, deceased; Payer, Wolfgang; and Schneller, Peter, 4,387,202, Cl. 526-138.000.
Scholefield, Edward H.: *See—*
Molitor, Edwin A.; and Scholefield, Edward H., 4,386,997, Cl. 156-443.000.
Scholle Corporation: *See—*
Ellert, Roger H., 4,386,636, Cl. 141-10.000.
Schreyer, Gerd: *See—*
Voigt, Carl; Kleinschmit, Peter; Schreyer, Gerd; and Sperka, Gerhard, 4,387,081, Cl. 423-376.000.
Schroder, Gunther: *See—*
Melton, Keith; Mercier, Olivier; and Schroder, Gunther, 4,386,971, Cl. 148-11.50R.
Schroeder, Carl W.; and Webster, Joseph R., to Shell Oil Company. Cracked blend of propylene copolymer and E/VA. 4,387,185, Cl. 525-194.000.
Schuck, David B.: *See—*
Kocol, James E.; Gunderson, Robert O.; Schuck, David B.; and Marro, Daniel J., 4,387,441, Cl. 364-200.000.
Schulein, Benjamin M., Jr.: *See—*
Harsh, Angie; and Schulein, Benjamin M., Jr., 4,386,579, Cl. 119-1.000.
Schulman, Manfred. Edge lighted display sign. 4,386,476, Cl. 40-546.000.
Schultz, Frank L.; and Schultz, Marilyn. Molded foam plastic plate packing box. 4,386,702, Cl. 206-523.000.
Schultz, Marilyn: *See—*
Schultz, Frank L.; and Schultz, Marilyn, 4,386,702, Cl. 206-523.000.
Schulz, Helmut: *See—*
Stich, Bodo; Fischer, Horst; and Schulz, Helmut, 4,386,892, Cl. 418-170.000.
Schulze, Dwain C., Jr.: *See—*
Englund, Michael S.; Hafele, Joseph C.; and Schulze, Dwain C., Jr., 4,386,534, Cl. 73-863.010.
Schuster, Hans: *See—*
Brandstetter, Franz; Hambrecht, Juergen; Naarmann, Herbert; and Schuster, Hans, 4,387,189, Cl. 525-68.000.
Schwartz, Nira. Apparatus and method for transmission of communications. 4,387,455, Cl. 370-11.000.
Schwindt, Jurgen; Grogler, Gerhard; Ganster, Otto; and Koster, Johannes, to Bayer Aktiengesellschaft. New diisocyanates containing sulfur and a process for their preparation. 4,387,057, Cl. 260-453.0AR.
Scifres, Donald R.; and Sprague, Robert A., to Xerox Corporation. Electrooptical scanning device. 4,386,827, Cl. 350-356.000.
Scott Baker Company Limited: *See—*
Russell, Robert F., 4,387,171, Cl. 523-518.000.
Scott, Peder W., to United Technologies Corporation. Low torsion mounting construction. 4,386,487, Cl. 52-184.000.
SECIM: *See—*
Doudet, Michel, 4,386,513, Cl. 72-256.000.
See, Jacques L. A. Tiles for forming sports ground coverings and in particular ski runs. 4,387,130, Cl. 428-17.000.
Seedhouse, Frederick A., to Xerox Corporation. Scanning system for document reproduction device. 4,386,843, Cl. 355-8.000.
Segan, Marc H.: *See—*
Newsome, Michael R.; Segan, Marc H.; and Swarztrauber, Sayre, 4,386,550, Cl. 84-464.00R.
Seibel, Markus: *See—*
Franke, Werner; Seibel, Markus; Brahm, Richard; and Trittler, Hans, 4,387,148, Cl. 430-66.000.
Seidlitz, Harald: *See—*
Roder, Ulrich; Seidlitz, Harald; and Scherg, Christof, 4,386,612, Cl. 128-660.000.
Seifert, Hermann: *See—*
Jupe, Christoph; Waldmann, Helmut; and Seifert, Hermann, 4,387,252, Cl. 568-771.000.
Seiler, Peter, to Hoffmann-La Roche Inc. Process for the manufacture of an aldehyde. 4,387,007, Cl. 204-59.00R.
Seitz, Charles A.: *See—*
Lucich, George E.; and Seitz, Charles A., 4,387,438, Cl. 364-574.000.
Seitz-Werke GmbH: *See—*
Ahlers, Egon; and Schlosser, Hermann, 4,386,635, Cl. 141-6.000.
Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Production of water soluble amine resins. 4,387,197, Cl. 525-481.000.
Selleri, Narciso: *See—*
Possati, Mario; Golinelli, Guido; and Selleri, Narciso, 4,386,467, Cl. 33-178.00E.
Seng, Stephen: *See—*
Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, 4,386,951, Cl. 65-27.000.
Senju Pharmaceutical Co., Ltd.: *See—*
Kawamatsu, Yutaka; and Yamamoto, Yujiro, 4,387,101, Cl. 424-270.000.
Sera, Michitoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Molding machine for encapsulation. 4,386,898, Cl. 425-145.000.
Serizawa, Nobuo. Constant feed apparatus. 4,386,719, Cl. 222-242.000.
Sessa, Frank C.: *See—*
May, Roger C.; and Sessa, Frank C., 4,387,027, Cl. 210-697.000.
Shacter, Stuart B., to Motorola, Inc. Input stage for N-channel junction field effect transistor operational amplifier. 4,387,309, Cl. 307-355.000.
Shah, Raj: *See—*
Sekmakas, Kazys; and Shah, Raj, 4,387,197, Cl. 525-481.000.
Shanbrom, Edward: *See—*
Liautaud, Jacques; and Shanbrom, Edward, 4,387,092, Cl. 424-101.000.
Shanton, Kenneth J., to Wiggins Teape Group Limited, The. Record material carrying a color developer composition. 4,387,117, Cl. 427-150.000.
Sharp Kabushiki Kaisha: *See—*
Hashimoto, Shintaro; Morita, Akitaka; and Tsuda, Hiroshi, 4,387,269, Cl. 179-1.0SM.
Sheahan, James J. Metal truss for use in reinforced concrete slabs. 4,386,489, Cl. 52-694.000.
Sheldon, Charles H.; Frazer, Robert E.; and Lutes, Harold R. Intracranial surgical operative apparatus. 4,386,602, Cl. 128-4.000.
Shell Oil Company: *See—*
Schroeder, Carl W.; and Webster, Joseph R., 4,387,185, Cl. 525-194.000.
Shelton, John H., to Burlington Industries, Inc. Minimizing voids in foam coating. 4,387,118, Cl. 427-176.000.
Shepherd, Robin G.: *See—*
White, Alan C.; and Shepherd, Robin G., 4,387,230, Cl. 546-249.000.
Sherrill, William M.; Travers, Douglas N.; and Martin, Paul E., to United States of America, Army. Phase linear interferometer system and method. 4,387,376, Cl. 343-113.00R.
Shiba, Haruo: *See—*
Okamura, Masatoshi; Shiba, Haruo; and Tanaka, Kimio, 4,386,746, Cl. 242-199.000.
Shibata, Kiyoshi: *See—*
Miyoshi, Yoshitake; Shibata, Kiyoshi; Watanabe, Toshio; Kai, Masami; and Ohata, Yousuke, 4,386,845, Cl. 355-15.000.
Motomura, Minoru; Shibata, Kiyoshi; and Watanabe, Toshio, 4,386,539, Cl. 74-661.000.
Shibatani, Kyoichiro: *See—*
Nagase, Yoshinori; Shibatani, Kyoichiro; Yamauchi, Junichi; and Omura, Ikuo, 4,386,912, Cl. 433-228.000.
Shibazaki, Kenji: *See—*
Ito, Masazumi; Shibazaki, Kenji; and Kitagawa, Tsuneo, 4,386,769, Cl. 271-9.000.
Shima, Seiya: *See—*
Katayama, Yasunori; Hatakeyama, Takanobu; Shima, Seiya; Hokari, Sadao; Narita, Toshiro; Yoneda, Kenji; Sakata, Kazuhiro; Kurihara, Tomiaki; and Meguro, Toshio, 4,387,436, Cl. 364-561.000.
Shimada, Yasuomi; Fukuyama, Tatsuo; and Mizutani, Toshiyuki, to Matsushita Electric Industrial Co., Ltd. Speaker and speaker system. 4,387,275, Cl. 179-115.50R.
Shimano Industrial Company Limited: *See—*
Shimano, Keizo, 4,386,472, Cl. 36-131.000.
Shimano, Keizo, 4,386,721, Cl. 224-39.000.
Shimano, Keizo, to Shimano Industrial Company Limited. Fixing band for shoes. 4,386,472, Cl. 36-131.000.
Shimano, Keizo, to Shimano Industrial Company Limited. Fixture for a water bottle to a bicycle frame. 4,386,721, Cl. 224-39.000.

Shin, Tokujiro, to Tsudakoma Kogyo Kabushiki Kaisha. Weft reservoir for an alternate two-pick change type fluid jet shuttleless loom. 4,386,633, Cl. 139-452.000.

Shinneman, Leonice L. Special effects mallet. 4,386,549, Cl. 84-422.00S.

Shinshu Seiki Kabushiki Kaisha: *See—*
Mitsui, Yoshihiro, 4,386,565, Cl. 101-93.340.

Shiokawa, Kozo: *See—*
Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; and Tsuboi, Shinichi, 4,387,095, Cl. 424-211.000.

Shiomi, Teiichi; and Funakoshi, Katsumi, to Mitsui Petrochemical Industries, Ltd. Method of bonding 4-methyl-1-pentene polymers. 4,386,991, Cl. 156-308.600.

Shionogi & Co., Ltd.: *See—*
Tanaka, Kentaro; Kondo, Eiji; Matsumoto, Kouichi; Shoji, Jun'ichi; and Tsuji, Naoki, 4,387,052, Cl. 260-245.20T.

Shirota, Norihisa, to Sony Corporation. Method and apparatus for reducing DC components in a digital information signal. 4,387,364, Cl. 340-347.0DD.

Shirouchi, Hideo: *See—*
Yanai, Seiji; and Shirouchi, Hideo, 4,386,464, Cl. 29-834.000.

Shoji, Jun'ichi: *See—*
Tanaka, Kentaro; Kondo, Eiji; Matsumoto, Kouichi; Shoji, Jun'ichi; and Tsuji, Naoki, 4,387,052, Cl. 260-245.20T.

Short, William T.: *See—*
Ottaviani, Robert A.; and Short, William T., 4,387,194, Cl. 525-454.000.

Shotbolt, Keith, to Constructors John Brown Limited. Guides for forming connections. 4,386,659, Cl. 166-342.000.

Shtepa, Evgeny D.: *See—*
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Shutt, Colin: *See—*
Robertson, Alexander J.; and Shutt, Colin, 4,386,541, Cl. 81-9.50R.

Sibley, Henry C., to General Signal Corporation. Vital contact checking circuit. 4,387,306, Cl. 307-125.000.

Sicko, John S.: *See—*
Zach, Franz C.; Bose, Bimal K.; Espelage, Paul M.; and Sicko, John S., 4,387,421, Cl. 364-148.000.

Siemens Aktiengesellschaft: *See—*
Behn, Reinhard, 4,387,113, Cl. 427-40.000.
Benecke, Wilhelm; and Rosenberg, Heinz, 4,387,419, Cl. 363-174.000.
Kandler, Erich, 4,387,377, Cl. 343-756.000.
Leibenzeder, Siegfried; and Heindl, Christine, 4,386,975, Cl. 148-171.000.
Matthaus, Gunther, 4,387,266, Cl. 174-31.00R.
Oestreich, Ulrich, 4,386,496, Cl. 57-293.000.

Sieverin, Walter J., to American Can Company. Container reject system. 4,386,708, Cl. 209-549.000.

Siffroi, Lucien: *See—*
Haury, Andre; and Siffroi, Lucien, 4,387,281, Cl. 200-147.00R.

Sigafoose, Boyd. Water heater heat exchange apparatus, kit, and method of installation. 4,386,500, Cl. 62-79.000.

Sikora, Helga: *See—*
Herwig, Walter; Erbes, Kurt; Decker, Rudolf; and Sikora, Helga, 4,387,139, Cl. 428-423.700.

Simko, Aladar O., to Ford Motor Company. Two stroke cycle engine with increased efficiency. 4,386,587, Cl. 123-65.00R.

Simon, Jacques; and Defaut, Bernard, to Thomson-CSF. Opto-electronic coupling head and method for fitting such a head. 4,386,821, Cl. 350-96.200.

Simon, Kalman: *See—*
Martinko, Matvas; Elekes, Andras; Simon, Kalman; Bohnert, Jozsef; Nemeth, Janos; Bole, Karoly; and Ilyes, Zoltan, 4,386,878, Cl. 405-291.000.

Simon, Lionel N.: *See—*
Hadden, John W.; Simon, Lionel N.; and Giner-Sorolla, Alfredo, 4,387,226, Cl. 544-247.000.

Singer Company, The: *See—*
Albert, William C., 4,386,535, Cl. 74-5.60D.
Davidson, Donald R.; and Reinert, Gerhard, 4,386,573, Cl. 112-103.000.
Ljung, Bo H. G., 4,386,853, Cl. 356-350.000.
Zocher, Josef, 4,386,697, Cl. 206-383.000.

Singhi, Dilip T.; and Dahlquist, James E., to Rauland-Borg Corporation. Programmable clock. 4,387,420, Cl. 364-145.000.

Sinkey, John D. Specific surface fractionator. 4,386,519, Cl. 73-61.400.

Sire, Alain, to Societe Anonyme de Telecommunications. Half-duplex digital transmission system. 4,387,466, Cl. 375-4.000.

Sitko, Richard J.: *See—*
Kawka, Richard J.; Herring, Daniel H.; Roth, Philip; and Sitko, Richard J., 4,386,973, Cl. 148-16.500.

Skaggs, Riley E., Jr., to Curtis Machine Company. Hypocyclic drive transmission apparatus. 4,386,540, Cl. 74-805.000.

Skelton, Colin W. Safety drop brake. 4,386,681, Cl. 188-4.00R.

SKF Industrial Trading & Development Co.: *See—*
Heemskerk, Rutgerus S.; and v Engelenburg, Hendrik, 4,386,811, Cl. 308-188.000.

Skowronski, Michael J.: *See—*
Hipchen, Donald E.; Skowronski, Michael J.; and Hagan, Joseph R., 4,386,983, Cl. 156-79.000.

Sloan-Kettering Institute For Cancer Research: *See—*
Hadden, John W.; Simon, Lionel N.; and Giner-Sorolla, Alfredo, 4,387,226, Cl. 544-247.000.

Slomma, Heinz-Georg, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Device for displacing the color-change carriage on multiple-head embroidery machines. 4,386,572, Cl. 112-98.000.

Smeltzer, Dennis V.: *See—*
Unger, Kim N.; and Smeltzer, Dennis V., 4,387,034, Cl. 252-61.000.

Smith, Clinton R.: *See—*
Henderson, Harry E.; Smith, Clinton R.; and Alexander, A. Gordon, 4,387,256, Cl. 585-1.000.

Smith, Daniel B., to Cadre Corporation, The. Ladle heater with stopper rod opening. 4,386,907, Cl. 432-225.000.

Smith, Frederick A. Dredge environ protection assembly. 4,386,872, Cl. 405-13.000.

Smith, Harrison C.; and McDonald, William J., to Tele-Drill, Inc. Point gap assembly for a toroidal coupled telemetry system. 4,387,372, Cl. 340-854.000.

Smith International, Inc.: *See—*
Crase, Gary M.; and Tschirky, John E., 4,386,666, Cl. 175-101.000.

Smith, Joseph E., to Gulf & Western Manufacturing Company. Integrally sealed vibration dampening ball and socket joints. 4,386,869, Cl. 403-39.000.

Smith, LeRoy, to Lo-Rich Enterprises, Inc. Levelable receptacle ladder attachment. 4,386,753, Cl. 248-210.000.

Smith, Leslie H., to Imperial Chemical Industries Limited. Alkanolamine derivatives. 4,387,099, Cl. 424-263.000.

Smith, Mark F.: *See—*
Covitch, Michael J.; Smith, Mark F.; and Benezra, Leo L., 4,386,987, Cl. 156-155.000.

Smith, Terrence: *See—*
Moore, Thomas S.; and Smith, Terrence, 4,386,792, Cl. 280-781.000.

SmithKline Beckman Corporation: *See—*
Gleason, John G.; Kinzig, Charles M.; and Bryan, Deborah L., 4,387,239, Cl. 549-562.000.
Pfeiffer, Francis R., 4,387,049, Cl. 260-112.50R.

Snaidr, Stanislav M.: *See—*
Brackmann, Warren A.; and Snaidr, Stanislav M., 4,386,617, Cl. 131-290.000.

Snowden, Roger: *See—*
Uijttewaal, Arnoldus; and Snowden, Roger, 4,387,250, Cl. 568-2.000.

Snyder, Clair W., Jr.: *See—*
Asick, John C.; Ritchie, Leon T.; and Snyder, Clair W., Jr., 4,386,819, Cl. 339-147.00R.

Societa Italiana Vetro - SIV - SpA: *See—*
Kalbskopf, Reinhard; and Baumberger, Otto, 4,387,134, Cl. 428-215.000.

Societe Alser: *See—*
Mary, Raymond, 4,386,679, Cl. 186-68.000.

Societe Anonyme de Tele-Communication: *See—*
Boutmy, Patrick E.; and Le Fort, Gilbert J., 4,387,460, Cl. 370-110.400.

Societe Anonyme de Telecommunications: *See—*
Sire, Alain, 4,387,466, Cl. 375-4.000.

Societe Anonyme dite: L'Oreal: *See—*
Liautaud, Jacques; and Shanbrom, Edward, 4,387,092, Cl. 424-101.000.

Societe des Engrenages Durand: *See—*
Vezole, Lucien, 4,386,757, Cl. 254-89.00R.

Societe Europeenne de Propulsion: *See—*
Corteel, Guy, 4,387,005, Cl. 203-81.000.

Societe Industrielle Bertrand Faure: *See—*
Boisset, Bernard, 4,386,805, Cl. 297-362.000.

Societe Industrielle de Boulay: *See—*
Becker, Gerard, 4,387,267, Cl. 174-65.0SS.

Societe Industrielle de Brevets et d'Etudes S.I.B.E.: *See—*
Pontoppidan, Michael, 4,387,063, Cl. 261-41.00D.

Societe Nationale Industrielle et Aerospatiale: *See—*
Aubry, Jacques A., 4,386,989, Cl. 156-182.000.

Sodickson, Lester A., to Damon Corporation. Apparatus for producing capsules. 4,386,895, Cl. 425-5.000.

Sodini, Giancarlo: *See—*
Emmi, Egidio; and Sodini, Giancarlo, 4,387,110, Cl. 426-430.000.

Solymos, Andras: *See—*
Kiss, Jozsef; Solymos, Andras; Berczes, Jozsef; and Szabo, Karoly, 4,386,657, Cl. 166-261.000.

Sondages Injections Forages (SIF) Enterprise Bachy: *See—*
Dupeuble, Paul, 4,386,876, Cl. 405-260.000.

Sonobe, Atsushi: *See—*
Yasuda, Shinichiro; Morimoto, Eiji; and Sonobe, Atsushi, 4,387,211, Cl. 528-179.000.

Sonoda, Nobuo: *See—*
Yamamoto, Sakuei; Nishida, Mitsuhiro; Tashiro, Noboru; and Sonoda, Nobuo, 4,387,313, Cl. 310-71.000.

Sony Corporation: *See—*
Shirota, Norihisa, 4,387,364, Cl. 340-347.0DD.

Southern California Edison Company: *See—*
Ortolano, Ralph J., 4,386,887, Cl. 416-190.000.

Southern Research Institute: *See—*
Montgomery, John A.; and Clayton, Sarah D., 4,387,228, Cl. 546-118.000.

Southgate, Robert: *See—*
Corbett, David F.; Southgate, Robert; and Eglington, Alfred J., 4,387,051, Cl. 260-245.20T.

Southwire Company: *See—*
Joy, Edward B.; Meliopoulos, Athanasios P.; and Webb, Roger P., 4,387,336, Cl. 324-51.000.

Sowton, Edgar. Electrodes for cardiac pacemakers. 4,386,615, Cl. 128-786.000.

Sparks, Jimmy L., to Lawson, William Ray; and Phillips, Jarald Allen, part interest to each. Horseshoe for a thoroughbred. 4,386,660, Cl. 168-32.000.

Spease, Arthur L.: *See—*
Bennett, William G.; and Spease, Arthur L., 4,386,755, Cl. 249-83.000.

Spector, George: *See—*
Mechavich, Sylvester; and Spector, George, 4,386,474, Cl. 37-285.000.

Speedie, Robert, to Illinois Tool Works Inc. One-piece plastic tap. 4,386,720, Cl. 222-498.000.

Sperka, Gerhard: *See—*
Voigt, Carl; Kleinschmit, Peter; Schreyer, Gerd; and Sperka, Gerhard, 4,387,081, Cl. 423-376.000.

Sperry Corporation: *See—*
Horiuchi, George H.; and Wynn, Edward J., 4,386,555, Cl. 91-395.000.

Spielau, Paul: *See—*
Kuhnel, Werner; and Spielau, Paul, 4,387,170, Cl. 521-85.000.

Sprague, Robert A.: *See—*
Scifres, Donald R.; and Sprague, Robert A., 4,386,827, Cl. 350-356.000.

Springer, Robert H.: *See—*
White, Philip J.; Lake, William H.; and Springer, Robert H., 4,387,319, Cl. 313-620.000.

Squirrel S.p.A.: *See—*
Vitaloni, Alberto, 4,387,292, Cl. 219-267.000.

Sta-Lube, Inc.: *See—*
Gable, Derek J.; Sweet, Roger H.; and Wilson, Nicol S., 4,386,639, Cl. 141-351.000.

Stahl, Theo: *See—*
Buhler, Ulrich; Kuhlein, Klaus; Stahl, Theo; Tappe, Horst; and Roth, Kurt, 4,386,935, Cl. 8-451.000.

Stahlhofen, Paul, to Hoechst Aktiengesellschaft. Light-sensitive mixture and copying material prepared therefrom, and process for the preparation of a printing form from the copying material. 4,387,152, Cl. 430-191.000.

Stalcup, Robert K.; and Prewo, Karl M., to United Technologies Corporation. Cooled, thermally stable composite mirrors. 4,386,825, Cl. 350-310.000.

Stamicarbon, B.V.: *See—*
Weterings, Cornelis A. M.; Ramakers, Louis H. M.; and Janssen, Johannes A., 4,387,077, Cl. 423-21.100.
Weterings, Cornelis A. M.; and Janssen, Johannes A., 4,387,083, Cl. 423-555.000.

Stammelbach, Jurgen: *See—*
Kleiber, Herbert; Idler, Horst; and Stammelbach, Jurgen, 4,387,375, Cl. 343-105.00R.

Standard Oil Company (Indiana): *See—*
Lee, Richard J., 4,387,227, Cl. 546-5.000.
Naim, Houssam M.; Huie, Nicholas C.; and Kuhlmann, George E., 4,387,243, Cl. 562-413.000.
Wood, George R., 4,387,255, Cl. 568-860.000.

Stankewitz, Hans-Werner; Determann, Hans; and Reinheimer, Guenter, to Ernst Leitz Wetzlar GmbH. Incident light, bright-field Kohler illuminating device. 4,386,830, Cl. 350-524.000.

Stanley, Robert K., to Pro-Tech Advisory Services Limited. Maintenance lining of passageways. 4,386,628, Cl. 138-97.000.

Starke, David E., to USM Corporation. Setting tool for blind fasteners. 4,386,515, Cl. 72-391.000.

Stascavage, John A.: *See—*
Dever, James E.; Stascavage, John A.; and Rawls, William W., 4,386,645, Cl. 160-183.000.

Stasz, Peter; and Cosentino, Louis C., to Renal Systems, Inc. Proportioning system. 4,386,634, Cl. 141-2.000.

Statz, Robert J., to Du Pont de Nemours, E. I., and Company. Molding resins based on blends of acid copolymer/linear polyolefin/reinforcing fiber. 4,387,188, Cl. 524-494.000.

Stauffer Chemical Company: *See—*
Hyzak, Daniel L., 4,386,955, Cl. 71-100.000.

Stegall, Joe. Tool for pulling cable. 4,386,800, Cl. 294-100.000.

Stein, Jeffrey D.; and McCool, John M., to GTI Corporation. Hook flash signal actuated telephone control device. 4,387,274, Cl. 179-99.00H.

Steltz, William G.: *See—*
Lee, Pang-Kai; Hickam, William M.; and Steltz, William G., 4,386,498, Cl. 60-646.000.

Stengel, Edgar, to AEG-Elotherm G.m.b.H. Electrochemical metal processing apparatus. 4,387,014, Cl. 204-212.000.

Stephenson, Robert L., to Allied Corporation. Adjustable self-locking tongue plate for seat belts. 4,386,452, Cl. 24-196.000.

Sterling Drug Inc.: *See—*
Brandenburg, Bruce L.; and Bauer, Gerald L., 4,387,084, Cl. 423-567.00A.
Yamamoto, Haruo; and Daum, Sol J., 4,387,219, Cl. 536-13.600.

Steutermann, Edward M. Control system process controller. 4,387,422, Cl. 364-183.000.

Stewart, David P. J.; and Bonnin, Richard M. Liquid dispensing means with novel air bleed valve. 4,386,718, Cl. 222-185.000.

Stewart, William S.: *See—*
Funk, Gary L.; and Stewart, William S., 4,386,623, Cl. 137-2.000.

Stich, Bodo; Fischer, Horst; and Schulz, Helmut, to G. L. Rexroth GmbH. Hydrostatic meshing gear machine with arcuate tooth flanks. 4,386,892, Cl. 418-170.000.

Stinnertz, Horst: *See—*
Rehag, Klaus; and Stinnertz, Horst, 4,386,512, Cl. 72-214.000.

Stolov, Michael. Alphanumeric display with electronically controlled colors. 4,386,826, Cl. 350-345.000.

Stowe, Gerald T., to Du Pont de Nemours, E. I., and Company. Process for separating zero-valent nickel species from divalent nickel species. 4,387,056, Cl. 260-439.00R.

Straw, Alan, to Colgate-Palmolive Company. Liquid toilet soap. 4,387,040, Cl. 252-368.000.

Stromberg-Carlson Corporation: *See—*
Hayes, Robert D.; and Richards, Glenn L., 4,387,278, Cl. 179-175.20C.

Stube, Steven H., to Dow Chemical Company, The. Laser beam imperfection detection for plastic film rolls. 4,386,707, Cl. 209-546.000.

Stucke, Walter: *See—*
Landgraf, Helmut; and Stucke, Walter, 4,386,996, Cl. 156-382.000.

Studt, William L.: *See—*
Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., 4,387,225, Cl. 544-212.000.

Stuehler, James E., to International Business Machines Corporation. Controlled machine inhibition when control module is absent. 4,387,442, Cl. 364-900.000.

Stump, John L. Earring and methed of making same. 4,386,506, Cl. 63-13.000.

Suami, Tetsuo; Itoh, Yushi; and Oki, Shuichi, to Nissin Sugar Manufacturing Co., Ltd., The; and Suami, Tetsuo. Nitrosourea derivatives of sucrose. 4,387,220, Cl. 536-53.000.

Suarez, Luis A., Jr.: *See—*
Garthwaite, Albert N.; and Suarez, Luis A., Jr., 4,386,840, Cl. 355-3.0FU.

Suda, Minoru: *See—*
Kondo, Kiyoshi; Takashima, Toshiyuji; and Suda, Minoru, 4,387,233, Cl. 549-273.000.

Sue, Takaji, to Ricoh Co., Ltd. Recording device. 4,387,384, Cl. 346-140.00R.

Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
Weible, Reinhold, 4,386,734, Cl. 237-12.30B.

Suga, Masaaki: *See—*
Hamada, Hideo; Morimoto, Yoshiro; Suga, Masaaki; Futagi, Masaaki; and Suzuki, Tadashi, 4,386,521, Cl. 73-118.000.

Sugata, Takashi, to Toyo Umpanki Co., Ltd. Apparatus for preventing overturn. 4,386,674, Cl. 180-142.000.

Sugi, Hideo: *See—*
Mori, Hiroyuki; Ogawa, Yasuo; Sugi, Hideo; Fujikawa, Noboru; and Tamai, Kiyoshi, 4,387,218, Cl. 536-6.400.

Sugihara, Hiroshi: *See—*
Saito, Seitoku; Maruta, Fumio; Izumi, Toshiaki; and Sugihara, Hiroshi, 4,387,136, Cl. 428-328.000.

Sugimori, Shigeru; and Sato, Hideo, to Chisso Corporation. Trans-4-(trans-4'-alkylcyclohexyl)-cyclohexane carboxylic acid 4'''-cyanobiphenyl ester. 4,387,039, Cl. 252-299.630.

Sullivan, John W., Jr.: *See—*
Disdier, Camille; Martinaud, Jacques-Pierre; and Sullivan, John W., Jr., 4,387,246, Cl. 564-417.000.

Sultan, Jean-Claude, to M T S International S.A. Frozen food server. 4,386,900, Cl. 425-279.000.

Sulzer Brothers Limited: *See—*
Schmitz, Gerd, 4,386,683, Cl. 188-77.00R.

Sumi, Akiyasu, to Canon Kabushiki Kaisha. Mechanical mounting system for a zoom lens assembly. 4,386,829, Cl. 350-429.000.

Sumitomo Chemical Company, Limited: *See—*
Yamamoto, Michihiro; Katayama, Shigenari; Koshiba, Masao; and Yamamoto, Hisao, 4,387,223, Cl. 544-116.000.

Sun Chemical Corporation: *See—*
Ramaglia, Joseph M., 4,386,967, Cl. 106-309.000.

Sun, Yun-Chung, to Dow Chemical Company, The. Method for the preparation of alkenyl aromatic monomer nitrile copolymer reinforced with rubbery copolymer. 4,387,179, Cl. 524-458.000.

Sunds Defibrator AB: *See—*
Akerblom, Bengt O., 4,387,339, Cl. 324-207.000.

Sundt, Erling; Schenk, Walter; Chappaz, Roger; and Joyeux, Michel, to Firmenich SA. Esters of 1,3-dimethyl-but-3-en-1-yl, their utilization as perfuming and flavoring ingredients and compositions containing same. 4,387,047, Cl. 252-522.00R.

Sunkist Growers, Inc.: *See—*
Cramer, Jerry W.; and LaVars, Everett G., 4,386,491, Cl. 53-247.000.

Sunstar Chemical Ind. Co., Ltd.: *See—*
Takegawa, Shuji; and Kunishige, Tadao, 4,386,992, Cl. 156-327.000.

Sutherland, Robert L., to Federal Paper Board Co., Inc. Bottle package. 4,386,699, Cl. 206-434.000.

Suzuki, Tadashi: *See—*
Hamada, Hideo; Morimoto, Yoshiro; Suga, Masaaki; Futagi, Masaaki; and Suzuki, Tadashi, 4,386,521, Cl. 73-118.000.

Suzuki, Takahiko: *See—*
Kageyama, Hidehei; and Suzuki, Takahiko, 4,386,865, Cl. 401-67.000.

Suzuki, Tetsumi; Imaki, Naoshi; and Nakanome, Takemi, to Mitsubishi Chemical Industries Ltd. Process for preparing phosphinic acid derivatives of aminothio methylcarbamates. 4,387,061, Cl. 260-968.000.

Swartz, Jerome; Barkan, Edward; and Harrison, Shelley A., to Symbol Technologies, Inc. Portable laser scanning system and scanning methods. 4,387,297, Cl. 235-462.000.

Swarztrauber, Sayre: *See—*
Newsome, Michael R.; Segan, Marc H.; and Swarztrauber, Sayre, 4,386,550, Cl. 84-464.00R.

Sweet, David B.; and Hoffman, Wayne E., to B. F. Goodrich Company, The. Propeller deicer. 4,386,749, Cl. 244-134.00D.

Sweet, Roger H.: *See—*
Gable, Derek J.; Sweet, Roger H.; and Wilson, Nicol S., 4,386,639, Cl. 141-351.000.

Sydow, Udo: *See—*
Engelmann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jurgen; and Sydow, Udo, 4,387,159, Cl. 430-544.000.

Symbol Technologies, Inc.: *See—*
Swartz, Jerome; Barkan, Edward; and Harrison, Shelley A., 4,387,297, Cl. 235-462.000.

Symons, John J.: *See—*
Carr, Keith E.; and Symons, John J., 4,386,640, Cl. 141-361.000.

Szabo, Karoly: *See—*
Kiss, Jozsef; Solymos, Andras; Berczes, Jozsef; and Szabo, Karoly, 4,386,657, Cl. 166-261.000.

Szloboda, David T. Apparatus for enabling an engine to burn either liquid fuel or gaseous fuel. 4,386,594, Cl. 123-525.000.

Taber, Bruce C.: *See—*
Price, Robert J.; and Taber, Bruce C., 4,386,860, Cl. 400-124.000.

Tachibana, Masami: *See—*
Sato, Akihiro; Tachibana, Masami; Kikuta, Kazutsune; Higuchi, Yoshiharu; and Miyajima, Masazumi, 4,387,198, Cl. 526-97.000.

Taff, James T., to Dimetrics, Inc. Adapter for socket welds. 4,386,726, Cl. 228-29.000.

Taisho Pharmaceutical Co., Ltd.: *See—*
Goi, Masami; Kameo, Kazuya; Sawada, Jiro; Hanada, Kazunori; Tamai, Masaharu; and Oguma, Kiyoshi, 4,387,238, Cl. 549-549.000.

Taiyo Yuden Co., Ltd.: *See—*
Yanai, Seiji; and Shirouchi, Hideo, 4,386,464, Cl. 29-834.000.

Tajima, Osamu: *See—*
Yamamura, Takashi; and Tajima, Osamu, 4,387,454, Cl. 369-270.000.

Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas cleaning device for internal combustion engine. 4,386,497, Cl. 60-296.000.

Takagi, Tohru: *See—*
Makuuchi, Keizo; Takagi, Tohru; Nakayama, Hiroyuki; and Yamamoto, Tsutomu, 4,387,011, Cl. 204-159.150.

Takahashi, Toru: *See—*
Hosono, Nagao; Kinoshita, Koichi; and Takahashi, Toru, 4,386,577, Cl. 118-657.000.

Takanohashi, Kenji; and Asahina, Jiro, to Victor Company of Japan, Limited. Magnetic erase head for a tape player. 4,387,410, Cl. 360-118.000.

Takashima, Toshiyuji: *See—*
Kondo, Kiyoshi; Takashima, Toshiyuji; and Suda, Minoru, 4,387,233, Cl. 549-273.000.

Takazawa, Kazuhiro: *See—*
Umezu, Kenji; Takazawa, Kazuhiro; Hitosugi, Toshiaki; and Kuwahara, Eiji, 4,386,502, Cl. 62-129.000.

Takeda Chemical Industries, Ltd.: *See—*
Kawamatsu, Yutaka; and Yamamoto, Yujiro, 4,387,101, Cl. 424-270.000.

Takegawa, Shuji; and Kunishige, Tadao, to Sunstar Chemical Ind. Co., Ltd. Two-part adhesive and bonding method employing same. 4,386,992, Cl. 156-327.000.

Takemae, Yoshihiro; Nozaki, Shigeki; and Mezawa, Tsutomu, to A. Aoki & Associates. Dynamic semiconductor memory device with decreased clocks. 4,387,448, Cl. 365-203.000.

Takemura, Kunio; Kondo, Hideya; and Yoshio, Akira, to Matsushita Electric Works, Ltd. Circuit breaker. 4,387,356, Cl. 335-6.000.

Takemura, Yasuhiko: *See—*
Furuta, Isao; Takemura, Yasuhiko; Miyabayashi, Toshio; Zen, Shinichiro; and Sakai, Masato, 4,387,203, Cl. 526-245.000.

Takeuchi, Yukihisa: *See—*
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,386,497, Cl. 60-296.000.

Takita, Hitoshi; Noda, Sakuo; Mukaida, Yutaka; and Kobayashi, Hidetoshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. 4-(N-(3',4'-Methylenedioxybenzylidene)-aminomethyl)cyclohexane-1-carboxylic acid and derivatives thereof and pharmaceutical composition thereof. 4,387,102, Cl. 424-282.000.

Talbot, Glenn D.: *See—*
Cabrera, Pedro P.; Talbot, Glenn D.; and Carman, Larry C., 4,387,076, Cl. 422-67.000.

Talmadge, Paul C.: *See—*
Cassidy, Joseph A.; and Talmadge, Paul C., 4,386,852, Cl. 356-323.000.

Tamai, Kiyoshi: *See—*
Mori, Hiroyuki; Ogawa, Yasuo; Sugi, Hideo; Fujikawa, Noboru; and Tamai, Kiyoshi, 4,387,218, Cl. 536-6.400.

Tamai, Masaharu: *See—*
Goi, Masami; Kameo, Kazuya; Sawada, Jiro; Hanada, Kazunori; Tamai, Masaharu; and Oguma, Kiyoshi, 4,387,238, Cl. 549-549.000.

Tamaki, Tadao: *See—*
Mine, Katsutoshi; and Tamaki, Tadao, 4,387,177, Cl. 524-425.000.

Tanabe, Yoshio: *See—*
Ikeda, Yoshiyuki; Inoue, Atsuo; Tanabe, Yoshio; and Ariki, Toshinori, 4,386,977, Cl. 149-2.000.

Tanaka, Akira: *See—*
Yabuta, Kenji; Tosa, Senji; and Tanaka, Akira, 4,387,150, Cl. 430-162.000.

Tanaka, Kentaro; Kondo, Eiji; Matsumoto, Kouichi; Shoji, Jun'ichi; and Tsuji, Naoki, to Shionogi & Co., Ltd. Antibiotic PA-39504-X_3 and production thereof. 4,387,052, Cl. 260-245.20T.

Tanaka, Kimio: *See—*
Okamura, Masatoshi; Shiba, Haruo; and Tanaka, Kimio, 4,386,746, Cl. 242-199.000.

Tanaka, Masanobu; and Kitani, Teruo, to Matsushita Electric Industrial Co., Ltd. Field recognition circuit. 4,387,396, Cl. 358-148.000.

Tanaka, Yoshiyuki, to Toyota Jidosha Kabushiki Kaisha. Carburetor float chamber venting system. 4,387,062, Cl. 261-23.00A.

Tancredi, Henry J., to Du Pont de Nemours, E. I., and Company. Laminating roll actuating crank mechanism. 4,387,000, Cl. 156-495.000.

Tanigawa, Hiroshi, to Nippon Electric Co., Ltd. Semiconductor filter using charge transfer device. 4,387,389, Cl. 358-37.000.

Tanii, Yoshinori: *See—*
Kajiwara, Toshiyuki; Fukuda, Katsuhito; and Tanii, Yoshinori, 4,387,006, Cl. 204-32.00R.

Tappe, Horst: *See—*
Buhler, Ulrich; Kuhlein, Klaus; Stahl, Theo; Tappe, Horst; and Roth, Kurt, 4,386,935, Cl. 8-451.000.

Tartar, Paul E.: *See—*
Petersen, David J.; Tartar, Paul E.; and Bradshaw, Robert S., 4,387,298, Cl. 235-462.000.

Tashiro, Noboru: *See—*
Yamamoto, Sakuei; Nishida, Mitsuhiro; Tashiro, Noboru; and Sonoda, Nobuo, 4,387,313, Cl. 310-71.000.

Tatabanyai Szenbanyak: *See—*
Kiss, Jozsef; Solymos, Andras; Berczes, Jozsef; and Szabo, Karoly, 4,386,657, Cl. 166-261.000.

Taylor, Tommy R.: *See—*
Plemmons, Jerry R.; and Taylor, Tommy R., 4,387,417, Cl. 362-376.000.

Tazaki, Satoru: *See—*
Miyazaki, Takao; and Tazaki, Satoru, 4,387,469, Cl. 455-161.000.

TDK Electronics Co., Ltd.: *See—*
Okamura, Masatoshi; Shiba, Haruo; and Tanaka, Kimio, 4,386,746, Cl. 242-199.000.
Saito, Seitoku; Maruta, Fumio; Izumi, Toshiaki; and Sugihara, Hiroshi, 4,387,136, Cl. 428-328.000.

Team Lotus International Limited: *See—*
Chapman, Anthony C. B.; and Wright, Peter G., 4,386,801, Cl. 296-1.00S.

Technion Research & Development Foundation, Ltd.: *See—*
Zaslavsky, Dan; and Rozenberg, Leib V., 4,387,205, Cl. 527-400.000.

Technische Gerate -u Entwichlungsgesellschaft m.b.H.: *See—*
Jordan, Heinz, 4,386,748, Cl. 244-12.200.

Techny Industries, Inc.: *See—*
Fenne, Kenneth R.; and Wassell, Carl A., 4,387,468, Cl. 378-198.000.

Tele-Drill, Inc.: *See—*
Smith, Harrison C.; and McDonald, William J., 4,387,372, Cl. 340-854.000.

Teleflex Incorporated: *See—*
Bennett, William G.; and Spease, Arthur L., 4,386,755, Cl. 249-83.000.

Templin, Philip R.: *See—*
Fareri, Elizabeth L.; and Templin, Philip R., 4,386,937, Cl. 44-41.000.

Terranova, Joseph C., III: *See—*
Gattu, Narahari; and Terranova, Joseph C., III, 4,386,711, Cl. 212-189.000.

Terzian, Rouben T.; and Wozniak, Walter J., to Marvin Glass & Associates. Walking doll. 4,386,479, Cl. 46-102.000.

Tessler, Martin M.; Wurzburg, Otto B.; and Dirscherl, Teresa A., to National Starch and Chemical Corporation. Alkyl- and alkenyl-sulfosuccinate starchhalf-esters, a method for the preparation thereof. 4,387,221, Cl. 536-107.000.

Texaco Inc.: *See—*
Crouch, William B.; Richter, George N.; Marion, Charles P.; Reynolds, Blake; Brent, Albert; and Child, Edward T., 4,386,941, Cl. 48-197.00R.
McEntire, Edward E.; and McCoy, David R., 4,387,017, Cl. 208-188.000.
Vest, Eugene W.; and McGahey, Dean C., 4,386,524, Cl. 73-299.000.

Texas Instruments Incorporated: *See—*
Keppel, Theo, 4,387,291, Cl. 219-206.000.
Klaas, Jeffrey M.; Reed, Paul A.; and Rimawi, Isam, 4,387,447, Cl. 365-203.000.

Lewis, Adam J., 4,387,402, Cl. 358-213.000.
Ott, Granville E., 4,387,406, Cl. 358-310.000.
Peterson, James R.; and Majors, Edward M., 4,387,283, Cl. 219-56.210.

Textron, Inc.: *See—*
Brown, Robert A.; Caamano, Jesus L.; and Kasprzak, Henry A., 4,387,181, Cl. 524-714.000.

Thevenon, Robert: *See—*
Thillays, Jacques C.; and Thevenon, Robert, 4,387,385, Cl. 357-17.000.

Thierrichter, Burkhard: *See—*
Junek, Hans; and Thierrichter, Burkhard, 4,387,231, Cl. 548-245.000.

Thillays, Jacques C.; and Thevenon, Robert, to U.S. Philips Corporation. Display device comprising light-emissive diodes. 4,387,385, Cl. 357-17.000.

Thiotech, Inc.: *See—*
Unger, Kim N.; and Smeltzer, Dennis V., 4,387,034, Cl. 252-61.000.

Tholen, Paul; and Nieden, Achim Z., to Klockner-Humboldt-Deutz AG. Apparatus for heating an operator's cabin. 4,386,735, Cl. 237-12.30R.

Thoman, David C.; and Eastman, James M., to Bendix Corporation, The. Control system for doser actuator. 4,386,553, Cl. 91-361.000.

Thomas, Erwin: *See—*
Grosskinsky, Alfred-Otto; Frommer, Elmar; Rapp, Guenther, deceased; Thomas, Erwin; and Schmitz, Ruediger, 4,387,082, Cl. 423-387.000.

Thompson, William W.; and Belcher, Samuel L., to Owens-Illinois, Inc. Food service tray. 4,386,703, Cl. 206-557.000.

Thomson-CSF: *See—*
Bricot, Claude; Le Carvennec, Francois; and Lepetit, Pierre, 4,387,452, Cl. 369-32.000.
Hoet, Roger, 4,387,320, Cl. 313-348.000.
Llabres, Raymond; Antoine, Robert; Lacotte, Jean P.; and Marchi, Charles, 4,387,068, Cl. 264-107.000.
Pierrot, Robert, 4,387,347, Cl. 331-1.00R.
Rannou, Jean; Grozellier, Michel; and Godet, Marcel, 4,387,122, Cl. 427-244.000.
Simon, Jacques; and Defaut, Bernard, 4,386,821, Cl. 350-96.200.

Thomson-CSF Telephone: *See—*
Gilles, Bernard; Paulet, Jose A.; and Roux, Raphael J. S., 4,387,277, Cl. 179-170.0NC.

Thorogood, Robert M.; Yeh, Chung-Liang; and Donath, Ernest E., to International Coal Refining Company. Coal liquefaction quenching process. 4,387,015, Cl. 208-8.0LE.

Thyssen Edelstahlwerke AG: *See—*
Frehn, Fritz, 4,386,959, Cl. 419-8.000.

Tibbs, Oscar, to Douglas, William Dan, Jr.; Wood, Diane Douglas; and Conway, Paul E. Fuel-air injection control system for internal combustion engines. 4,386,593, Cl. 123-523.000.

Tichy, James B. Radial wave pump. 4,386,889, Cl. 417-487.000.

Tien, Tseng-Ying; Weber, David C.; and Woodruff, Philip R., to Bendix Autolite Corporation. Titania oxygen sensor with chrome oxide compensator. 4,387,359, Cl. 338-34.000.

Tilby, Sydney E., to Intercane Systems, Inc. Sugarcane harvesting methods and apparatus. 4,386,492, Cl. 56-13.900.

Tillen, Keith G.: *See—*
Gardner, Charles S.; Price, Robert B.; and Tillen, Keith G., 4,387,009, Cl. 204-129.200.

Tirtiaux, Robert: *See—*
Lenack, Alain L.; and Tirtiaux, Robert, 4,387,033, Cl. 252-18.000.

Tischenko, Oleg I.: *See—*
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Titov, Petr Y.: *See—*
Kolosov, Ivan A.; and Titov, Petr Y., 4,387,331, Cl. 320-14.000.

TMC Corporation: *See—*
Horn, Hans, 4,386,789, Cl. 280-605.000.
Krob, Erwin, 4,386,788, Cl. 280-605.000.

Todokoro, Shigeru: *See—*
Sakano, Hideki; and Todokoro, Shigeru, 4,387,270, Cl. 179-1.00F.

Tokico Ltd.: *See—*
Miura, Ieaki, 4,386,686, Cl. 188-322.170.

Toko, Inc.: *See—*
Koike, Tsutomu, 4,387,418, Cl. 363-19.000.

Tokyo Electric Co., Ltd.: *See—*
Fujii, Kunihiko; Haraga, Koichi; Hirosaki, Yukihiro; and Sato, Koichiro, 4,386,994, Cl. 156-360.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Kumagai, Junichi; and Wakao, Nobutaka, 4,386,839, Cl. 355-3.0DR.
Morita, Shinichi, 4,386,511, Cl. 72-121.000.
Sakano, Hideki; and Todokoro, Shigeru, 4,387,270, Cl. 179-1.00F.
Sera, Michitoshi, 4,386,898, Cl. 425-145.000.
Umezu, Kenji; Takazawa, Kazuhiro; Hitosugi, Toshiaki; and Kuwahara, Eiji, 4,386,502, Cl. 62-129.000.
Wakao, Nobutaka; Murakami, Reiji; Okamoto, Katsuhiko; and Uchida, Kohachi, 4,386,841, Cl. 355-3.0DR.

Tomita, Masahiro: *See—*
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,386,497, Cl. 60-296.000.

Toolan, William K., to Kirlian Equipment Corporation. Kirlian photography device. 4,386,834, Cl. 354-3.000.

Toray Industries, Inc.: *See—*
Kurihara, Masaru; Uemura, Tadahiro; and Okada, Kiyoshi, 4,387,024, Cl. 210-490.000.

Toray Silicone Company, Ltd.: *See—*
Mine, Katsutoshi; and Tamaki, Tadao, 4,387,177, Cl. 524-425.000.

Torok, George E.; and Gajdusek, Ernest, Jr., to Houdaille Industries, Inc., by said George E. Torok; and Leybold-Heraeus Vacuum Systems, Inc., by said Ernest Gajdusek, Jr. Hermetic sealing of abutment joints by non-vacuum focused energy welding. 4,386,728, Cl. 228-111.000.

Torrington Company, The: *See—*
McGuffie, Michael J.; and Lorinovich, David A., 4,386,810, Cl. 308-174.000.

Torto, Nicholas L.; and DiNallo, Samuel R., Sr., to Coulter Systems Corporation. Office copier with articulated hinge cover. 4,386,847, Cl. 355-75.000.

Tosa, Senji: *See—*
Yabuta, Kenji; Tosa, Senji; and Tanaka, Akira, 4,387,150, Cl. 430-162.000.

Toyo Boseki Kabushiki Kaisha: *See—*
Ichikawa, Rinjiro; and Hitomi, Chiyoji, 4,387,133, Cl. 428-215.000.

Toyo Soda Manufacturing Co., Ltd.: *See—*
Kasai, Kiyoshi; Tsukuma, Kohji; and Tsukidate, Takaaki, 4,387,079, Cl. 423-344.000.

Toyo Umpanki Co., Ltd.: *See—*
Sugata, Takashi, 4,386,674, Cl. 180-142.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Tanaka, Yoshiyuki, 4,387,062, Cl. 261-23.00A.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Katagiri, Masayoshi; and Ogura, Osamu, 4,386,554, Cl. 91-369.00A.
Kondo, Katsumi; Fuwa, Yoshio; and Miyazaki, Shoji, 4,387,140, Cl. 428-553.000.
Nagase, Masaomi; Miyagi, Hideo; and Kinugawa, Masumi, 4,386,591, Cl. 123-339.000.
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,386,497, Cl. 60-296.000.

Tracy, Douglas H.; Otto, Jeffrey B.; Arnio, Bruce M.; and Callan, Elizabeth L., to Rogers Corporation. Compressible soft asbestos free gasket material. 4,387,178, Cl. 524-448.000.

Transmatic, Inc.: *See—*
Domas, Ben V., 4,387,415, Cl. 362-74.000.

Travers, Douglas N.: *See—*
Sherrill, William M.; Travers, Douglas N.; and Martin, Paul E., 4,387,376, Cl. 343-113.00R.

Trefileries de Bourbourg: *See—*
Maillet, Pierre, 4,386,704, Cl. 206-597.000.

Trentham Corporation: *See—*
Trentham, H. Lee; Crow, John H.; and Boston, Farwell C., 4,387,037, Cl. 252-184.000.

Trentham, H. Lee; Crow, John H.; and Boston, Farwell C., to Trentham Corporation. Removal of sulfur from waste gas streams. 4,387,037, Cl. 252-184.000.

Tretinyak, Carl W.; and Burton, Thomas A., to Waters Instruments, Inc. Syringe lock. 4,386,606, Cl. 604-220.000.

Trick, Robert E., to Medical Engineering Corporation. Artificial sphincter. 4,386,601, Cl. 128-1.00R.

Trittler, Hans: *See—*
Franke, Werner; Seibel, Markus; Brahm, Richard; and Trittler, Hans, 4,387,148, Cl. 430-66.000.

TRW Inc.: *See—*
Becker, James C., 4,387,465, Cl. 375-1.000.

Tschirky, John E.: *See—*
Crase, Gary M.; and Tschirky, John E., 4,386,666, Cl. 175-101.000.

Tsuboi, Shinichi: *See—*
Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; and Tsuboi, Shinichi, 4,387,095, Cl. 424-211.000.

Tsuda, Hiroshi: *See—*
Hashimoto, Shintaro; Morita, Akitaka; and Tsuda, Hiroshi, 4,387,269, Cl. 179-1.0SM.

Tsudakoma Kogyo Kabushiki Kaisha: *See—*
Shin, Tokujiro, 4,386,633, Cl. 139-452.000.

Tsuji, Naoki: *See—*
Tanaka, Kentaro; Kondo, Eiji; Matsumoto, Kouichi; Shoji, Jun'ichi; and Tsuji, Naoki, 4,387,052, Cl. 260-245.20T.

Tsukamura, Tatsumi: *See—*
Miyahara, Hisao; and Tsukamura, Tatsumi, 4,386,904, Cl. 431-126.000.

Tsukidate, Takaaki: *See—*
Kasai, Kiyoshi; Tsukuma, Kohji; and Tsukidate, Takaaki, 4,387,079, Cl. 423-344.000.

Tsukuma, Kohji: *See—*
Kasai, Kiyoshi; Tsukuma, Kohji; and Tsukidate, Takaaki, 4,387,079, Cl. 423-344.000.

Tucker, William E.: *See—*
Graham, George W.; and Tucker, William E., 4,386,866, Cl. 401-133.000.

Tuckey, Charles R. Fuel conditioning device. 4,386,596, Cl. 123-557.000.

Tullis Russell & Company Limited: *See—*
McCallum, David J. M.; and Clifford, Alexander R., 4,387,144, Cl. 429-251.000.

Tully, Paul R.; and Kell, Thomas N. Hydrophobic ceramic wares. 4,387,195, Cl. 525-475.000.

Turner, S. Richard: *See—*
Agarwal, Pawan K.; Turner, S. Richard; Lundberg, Robert D.; and Evans, Morris L., 4,387,172, Cl. 524-60.000.

Tyler, Derek E.; Yun, Ik Y.; and Renschen, Patrick D., to Olin Corporation. Process and flotation box for inclusion removal. 4,386,958, Cl. 75-93.00R.

Uchida, Kohachi: *See—*
Wakao, Nobutaka; Murakami, Reiji; Okamoto, Katsuhiko; and Uchida, Kohachi, 4,386,841, Cl. 355-3.0DR.

Uchida, Satoru: *See—*
Kurihara, Toshio; Kunita, Masao; Yasunaga, Makoto; and Uchida, Satoru, 4,386,861, Cl. 400-124.000.

Uemura, Tadahiro: *See—*
Kurihara, Masaru; Uemura, Tadahiro; and Okada, Kiyoshi, 4,387,024, Cl. 210-490.000.

Ueno, Haruyuki: *See—*
Hatta, Tokuaki; Ueno, Haruyuki; Katsura, Yuji; Fukuda, Kazushige; Kubota, Hiroshi; and Hamamatu, Takashi, 4,387,080, Cl. 423-345.000.

UHDE GmbH: *See—*
Huber, Adalbert; Schirmer, Dietrich; and Hoffmann, Heiko, 4,387,029, Cl. 210-758.000.

Uijttewaal, Arnoldus; and Snowden, Roger, to Firmenich SA. Phosphonium salts, process for their preparation and use of same as starting materials for preparing unsaturated bicyclic compounds. 4,387,250, Cl. 568-2.000.

Umetsu, Hideo: *See—*
Kobayashi, Tsuguo; Ishikawa, Tetsuo; Hironaka, Kenichi; Umetsu, Hideo; Ogata, Masatsugu; and Yokono, Hitoshi, 4,387,311, Cl. 310-43.000.

Umezawa, Tadashi: *See—*
Kamogawa, Nin-ichi; Umezawa, Tadashi; and Fukuchi, Masakazu, 4,386,844, Cl. 355-15.000.

Umezu, Kenji; Takazawa, Kazuhiro; Hitosugi, Toshiaki; and Kuwahara, Eiji, to Tokyo Shibaura Denki Kabushiki Kaisha. Humidity-measuring device for use with an air conditioner. 4,386,502, Cl. 62-129.000.

Unde, Madhav A. Prevention of build up of residual stresses in welds during welding and subsequent reheat cycles. 4,386,727, Cl. 228-102.000.

Unger, Kim N.; and Smeltzer, Dennis V.; to Thiotech, Inc. Mixed alkylthionocarbamates flotation collectors and ore dressing methods in which the collectors are employed. 4,387,034, Cl. 252-61.000.

Unisearch Limited: *See—*
Bowrey, Ronald G.; Fullford, Andrew K.; and Kearney, Michael S., 4,386,471, Cl. 34-26.000.

United States of America
Air Force: *See—*
Kirby, William G., 4,387,467, Cl. 378-68.000.
Meyer, Thomas W., 4,387,344, Cl. 330-4.300.
Army: *See—*
Ciccone, Thomas Q.; and Doris, Thomas A., Jr., 4,386,567, Cl. 102-202.500.
Deas, Robert W., 4,386,569, Cl. 102-292.000.
Garver, Robert V., 4,387,386, Cl. 357-22.000.
Lapsys, Algis L., 4,386,809, Cl. 305-31.000.
Sherrill, William M.; Travers, Douglas N.; and Martin, Paul E., 4,387,376, Cl. 343-113.00R.
Energy: *See—*
Cook, Gus T.; Holshouser, Stephen K.; Coleman, Richard M.; Harless, Charles E.; and Whinnery, Walter N., III, 4,387,018, Cl. 208-262.000.
Daughton, Christian G., 4,387,025, Cl. 210-612.000.
Interior: *See—*
Lucich, George E.; and Seitz, Charles A., 4,387,438, Cl. 364-574.000.
Zatko, Jalna R., 4,386,518, Cl. 73-55.000.
National Aeronautics and Space Administration: *See—*
Hoffman, Henry C., 4,386,750, Cl. 244-169.000.
Navy: *See—*
Allcock, Harry R.; Fuller, Timothy J.; and Evans, Thomas L., 4,387,208, Cl. 528-166.000.
Assard, Gerald L., 4,386,913, Cl. 434-9.000.
Giallorenzi, Thomas G.; and Weller, Joseph F., 4,387,353, Cl. 333-111.000.
Hecker, Klaus J., 4,387,391, Cl. 358-109.000.
McDonald, Jimmie R.; and Baronavski, Andrew P., 4,387,010, Cl. 204-157.10R.
Neal, Jesse R., Jr.; and Humphries, Truman W., 4,386,855, Cl. 366-177.000.
Routh, Claude C., 4,387,352, Cl. 333-32.000.
Westbrook, Jack H., 4,387,073, Cl. 420-507.000.
Wilcox, Howard A., 4,387,451, Cl. 367-142.000.

U.S. Philips Corporation: *See—*
Gijrath, Johannes H. N.; Van Liempd, Albertus A. M.; Versteegen, Hendrik S. A.; van der Geer, Josephus J.; and van der Avoort, Henricus J. M., 4,387,321, Cl. 313-406.000.
Thillays, Jacques C.; and Thevenon, Robert, 4,387,385, Cl. 357-17.000.
van Buul, Marinus C. W., 4,387,403, Cl. 358-219.000.

U.S. Product Development Company: *See—*
Adell, Robert, 4,387,125, Cl. 428-31.000.

United States Steel Corporation: *See—*
Galer, Herbert W., 4,386,701, Cl. 206-509.000.

United Technologies Corporation: *See—*
Bluege, John H., 4,386,986, Cl. 156-94.000.
Dudash, Carl S.; and Hansen, Kenneth P., 4,387,300, Cl. 250-239.000.
Fischer, William C.; Adams, Don L.; Verzella, David J.; and Wright, Stuart C., 4,387,432, Cl. 364-434.000.
Scott, Peder W., 4,386,487, Cl. 52-184.000.
Stalcup, Robert K.; and Prewo, Karl M., 4,386,825, Cl. 350-310.000.
Verzella, David J.; Fischer, William C.; Adams, Don L.; and Wright, Stuart C., 4,387,430, Cl. 364-434.000.
Wright, Stuart C.; Adams, Don L.; Fischer, William C.; and Verzella, David J., 4,387,431, Cl. 364-434.000.

Unitika Limited: *See—*
Murase, Shigemitsu, 4,387,069, Cl. 264-210.300.

University of Delaware: *See—*
Dalal, Vikram L., 4,387,265, Cl. 136-249.000.

Uno, Takehiko; and Jumonji, Hiromichi, to Nippon Telegraph & Telephone Public Corporation. Surface acoustic wave resonator. 4,387,355, Cl. 333-195.000.

Unterwaditzer, Adolf: *See—*
Messner, Franz; and Unterwaditzer, Adolf, 4,386,873, Cl. 405-36.000.

UOP Inc.: *See—*
Vickers, Anthony G.; and Humbach, Michael J., 4,387,043, Cl. 252-417.000.

USM Corporation: *See—*
Starke, David E., 4,386,515, Cl. 72-391.000.

USS Engineers and Consultants, Inc.: *See—*
Roberts, Michael A.; and Copperthwaite, Martin, 4,386,765, Cl. 266-236.000.

Usui, Akira; and Fujimori, Toshimitsu, to Matsushita Electric Industrial Co. Ltd. Television video signal detector. 4,387,398, Cl. 358-188.000.

Uzunoglu, Vasil, to Communications Satellite Corporation. Temperature stabilized semiconductor delay element. 4,387,310, Cl. 307-591.000.

v Engelenburg, Hendrik: *See—*
Heemskerk, Rutgerus S.; and v Engelenburg, Hendrik, 4,386,811, Cl. 308-188.000.

V. Kann Rasmussen Holding A/S: *See—*
Jeppesen, Stig E., 4,386,481, Cl. 49-248.000.

Vacuumschmelze GmbH: *See—*
Hilzinger, Hans-Reiner; Krueger, Kurt; and Hock, Stefan, 4,386,648, Cl. 164-463.000.

Vadekar, Mohan; and Robson, Harry E., to Exxon Research & Engineering Co. Selective hydrogenation using palladium/platinum on crystalline silica polymorph/silicalite/high silica zeolite. 4,387,258, Cl. 585-259.000.

Vahlensieck, Hans-Joachim: *See—*
Josten, Walter; and Vahlensieck, Hans-Joachim, 4,387,199, Cl. 526-113.000.

Valve Concepts International: *See—*
Muchow, John D., 4,386,756, Cl. 251-172.000.

Van Dorn Company: *See—*
Baumeyer, Phillip E.; Frentzel, Karl O.; Kirk, William A.; and Manack, Gary L., 4,386,713, Cl. 220-269.000.

van Berne, Joost; and van Schaick, Franciskus H., to Curver, B.V. Process and device for collecting rainwater. 4,386,484, Cl. 52-16.000.

van Buul, Marinus C. W., to U.S. Philips Corporation. Television camera comprising a control circuit for controlling the intensity of the electron beam current in at least one pick-up tube. 4,387,403, Cl. 358-219.000.

van der Avoort, Henricus J. M.: *See—*
Gijrath, Johannes H. N.; Van Liempd, Albertus A. M.; Versteegen, Hendrik S. A.; van der Geer, Josephus J.; and van der Avoort, Henricus J. M., 4,387,321, Cl. 313-406.000.

van der Geer, Josephus J.: *See—*
Gijrath, Johannes H. N.; Van Liempd, Albertus A. M.; Versteegen, Hendrik S. A.; van der Geer, Josephus J.; and van der Avoort, Henricus J. M., 4,387,321, Cl. 313-406.000.

van der Horn, Hendrik J.: *See—*
Vonk, Wim; Bielawiec, Ryzard M.; and van der Horn, Hendrik J., 4,386,523, Cl. 73-200.000.

Van Deursen, Gary E., to General Electric Company. Food processor. 4,386,740, Cl. 241-93.000.

van Heek, Karl H.; Juntgen, Harald; and Peters, Werner, to Bergwerksverband GmbH. Production of H_2 and CO-containing gases. 4,386,942, Cl. 48-202.000.

Van Heel, Henry: *See—*
Van Heel, Theodore; and Van Heel, Henry, 4,386,694, Cl. 198-648.000.

Van Heel, Theodore; and Van Heel, Henry, to Burgos Pty. Limited. Conveying apparatus for tile making machines. 4,386,694, Cl. 198-648.000.

Van Liempd, Albertus A. M.: *See—*
Gijrath, Johannes H. N.; Van Liempd, Albertus A. M.; Versteegen, Hendrik S. A.; van der Geer, Josephus J.; and van der Avoort, Henricus J. M., 4,387,321, Cl. 313-406.000.

van Schaick, Franciskus H.: *See—*
van Berne, Joost; and van Schaick, Franciskus H., 4,386,484, Cl. 52-16.000.

Van Wicklin, Warren A., Jr., to Ford Motor Company. Energy absorbing steering wheel. 4,386,538, Cl. 74-552.000.

Varian Associates, Inc.: *See—*
Berwick, Albert E., 4,387,323, Cl. 315-5.350.

Varpalotai Szenbanyak: *See—*
Martinko, Matvas; Elekes, Andras; Simon, Kalman; Bohnert, Jozsef; Nemeth, Janos; Bole, Karoly; and Ilyes, Zoltan, 4,386,878, Cl. 405-291.000.

VEB Filmfabrik Wolfen: *See—*
Engelmann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jurgen; and Sydow, Udo, 4,387,159, Cl. 430-544.000.

Vedkalov, Ivan R.: *See—*
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Velluz, Alain: *See—*
Pickenhagen, Wilhelm; and Velluz, Alain, 4,387,248, Cl. 568-448.000.

Verbatim Corporation: *See—*
Conner, Alfred W.; and Anderson, J. Reid, 4,387,114, Cl. 427-54.100.

Vereinigte Schmirgel- und Machinen Fabriken Aktiengesellschaften: *See—*
Gumbel, Harald; and Bigorajski, Gunter, 4,386,943, Cl. 51-298.000.

Verley, Donald J., to McCann's Engineering and Manufacturing Company. Double diaphragm operated reversing valve pump. 4,386,888, Cl. 417-393.000.

Verna, Louis R. Gripping tool. 4,386,542, Cl. 81-420.000.

Versteegen, Hendrik S. A.: *See—*
Gijrath, Johannes H. N.; Van Liempd, Albertus A. M.; Versteegen, Hendrik S. A.; van der Geer, Josephus J.; and van der Avoort, Henricus J. M., 4,387,321, Cl. 313-406.000.

Verve Enterprises Pty. Limited: *See—*
Herbert, Virginia, 4,386,964, Cl. 106-150.000.

Verzella, David J.; Fischer, William C.; Adams, Don L.; and Wright, Stuart C., to United Technologies Corporation. Pitch stick force inhibit of aircraft automatic outer loop. 4,387,430, Cl. 364-434.000.

Verzella, David J.: *See—*
Fischer, William C.; Adams, Don L.; Verzella, David J.; and Wright, Stuart C., 4,387,432, Cl. 364-434.000.
Wright, Stuart C.; Adams, Don L.; Fischer, William C.; and Verzella, David J., 4,387,431, Cl. 364-434.000.

Vescelius, Lee E.: *See—*
Bohm, Georg G. A.; Vescelius, Lee E.; and Hamed, Gary R., 4,387,175, Cl. 524-68.000.

Vest, Eugene W.; and McGahey, Dean C., to Texaco Inc. Manometer type apparatus with improvement. 4,386,524, Cl. 73-299.000.

Vezole, Lucien, to Societe des Engrenages Durand. Marine platform lifting device. 4,386,757, Cl. 254-89.00R.

Viaud, Jean; and Berthet, Jean P., to Deere & Company. Tying device for cylindrical-bale-forming baler. 4,386,561, Cl. 100-5.000.

Vickers, Anthony G.; and Humbach, Michael J., to UOP Inc. Fluid catalyst regeneration process and apparatus. 4,387,043, Cl. 252-417.000.

Victor Company of Japan, Limited: *See—*
Inoue, Yuzuru, 4,386,835, Cl. 354-23.00R.
Takanohashi, Kenji; and Asahina, Jiro, 4,387,410, Cl. 360-118.000.
Yamamura, Takashi; and Tajima, Osamu, 4,387,454, Cl. 369-270.000.

Vidal, Claude A.: *See—*
Choksi, Pradip V.; Davidner, Alan A.; and Vidal, Claude A., 4,386,948, Cl. 55-499.000.

Vijay, Hari M.; Young, Noel M.; and Bernstein, I. Leonard, to Canadian Patents & Development Limited. Non-allergenic protective antigens from molds and process for preparation thereof. 4,387,091, Cl. 424-88.000.

Vincak, John H.: *See—*
Lehrer, William I.; and Vincak, John H., 4,387,145, Cl. 430-5.000.

Vincent, Kent D., to Hewlett-Packard Company. Laminates having optically clear laminates having high molecular weight phenoxy-high crystallinity polyurethane adhesive. 4,387,129, Cl. 428-195.000.

Vitaloni, Alberto, to Squirrel S.p.A. Electric lighter for motor vehicles and the like. 4,387,292, Cl. 219-267.000.

Vitobello, Vincenza: *See—*
Sacceddu, Pasquale; Vitobello, Vincenza; Braduzzi, Paolo; Cimini, Nadia; and Degen, Ludwig, 4,387,163, Cl. 435-197.000.

Vodrazka, Wolfgang: *See—*
Fromm, Dieter; Schier, Ernst-Juergen; Schneehage, Hans H.; and Vodrazka, Wolfgang, 4,387,224, Cl. 544-201.000.

Voegeli, Ronald C. Electromechanical coin-operated latch mechanism. 4,386,691, Cl. 194-7.000.

Vogt, Wilhelm; Glaser, Hermann; and Koch, Jurgen, to Hoechst Aktiengesellschaft. Process for mixing olefins. 4,387,263, Cl. 585-640.000.

Voigt, Carl; Kleinschmit, Peter; Schreyer, Gerd; and Sperka, Gerhard, to Degussa AG. Process for the production of hydrogen cyanide. 4,387,081, Cl. 423-376.000.

Volz, Herbert A., to Phillips Petroleum Company. Method of assembling a unitary heat exchanger tube bundle assembly. 4,386,456, Cl. 29-157.30R.

Vonk, Wim; Bielawiec, Ryzard M.; and van der Horn, Hendrik J., to N.V. Verengide Instrumentenfabrieken Enraf- Nonius. Apparatus for measuring and/or sampling the milk-yield of a cow during milking. 4,386,523, Cl. 73-200.000.

Voumard Machines Co. S.A.: *See—*
Schlaefli, Alfred, 4,386,483, Cl. 51-5.00D.

Vrba, Robert J.: *See—*
Carter, Robert M.; and Vrba, Robert J., 4,386,673, Cl. 180-9.20R.

W. R. Grace & Co.: *See—*
Clapperton, Allan S., 4,386,981, Cl. 156-71.000.
Lange, Bruce A., 4,386,963, Cl. 106-117.000.
Scanlon, Patricia M.; and Young, E. Richard, 4,387,244, Cl. 562-448.000.
Winyall, Milton E.; and Davidoff, Charles, 4,387,008, Cl. 204-101.000.

Wachter, Michael P.: *See—*
Hajos, Zoltan G.; and Wachter, Michael P., 4,387,234, Cl. 549-346.000.

Wacker-Chemie: *See—*
Marsch, Wilhelm; and Wolfer, Dietrich, 4,387,046, Cl. 252-511.000.

Wakabayashi, Hiroshi: *See—*
Yonezawa, Kazuya; Kira, Kazuaki; Wakabayashi, Hiroshi; and Nagano, Hirosaku, 4,387,192, Cl. 525-426.000.

Wakao, Nobutaka; Murakami, Reiji; Okamoto, Katsuhiko; and Uchida, Kohachi, to Tokyo Shibaura Denki Kabushiki Kaisha. Image-forming device having a photosensitive member. 4,386,841, Cl. 355-3.0DR.

Wakao, Nobutaka: *See—*
Kumagai, Junichi; and Wakao, Nobutaka, 4,386,839, Cl. 355-3.0DR.

Waldmann, Helmut: *See—*
Jupe, Christoph; Waldmann, Helmut; and Seifert, Hermann, 4,387,252, Cl. 568-771.000.

Walker, Walter N., Jr. Device for locking standing seam roof panels. 4,386,543, Cl. 81-420.000.

Walker, William F. Composition and method for producing ceramic articles. 4,386,962, Cl. 106-35.000.

Walled Lake Door Co.: *See—*
Quinif, Edward G., 4,386,482, Cl. 49-488.000.

Walsh, Arthur T.: *See—*
Fanelli, Anthony J.; and Walsh, Arthur T., 4,387,085, Cl. 423-630.000.

Wang, An; and Crean, Gerald J., to Wang Laboratories, Inc. Selective paper insertion and feeding means for individual sheet printing apparatus. 4,386,864, Cl. 400-625.000.

Wang Laboratories, Inc.: *See—*
Wang, An; and Crean, Gerald J., 4,386,864, Cl. 400-625.000.

Ware, Ronald D.; and Bomber, Robert J., to Krueger Metal Products, Inc. Chair ganging equipment. 4,386,804, Cl. 297-248.000.

Warner-Lambert Company: *See—*
Koch, Edwin R.; and Glass, Michael, 4,387,108, Cl. 426-4.000.

Warner Lambert Technologies, Inc.: *See—*
Kantorski, Joseph W.; and Lavallee, Robert G., 4,386,611, Cl. 128-645.000.

Wassell, Carl A.: *See—*
Fenne, Kenneth R.; and Wassell, Carl A., 4,387,468, Cl. 378-198.000.

Watanabe, Shunso F., to Ford Motor Company. Actively controlled suspension system and height sensor. 4,386,791, Cl. 280-707.000.

Watanabe, Toshio: *See—*
Miyoshi, Yoshitake; Shibata, Kiyoshi; Watanabe, Toshio; Kai, Masami; and Ohata, Yousuke, 4,386,845, Cl. 355-15.000.
Motomura, Minoru; Shibata, Kiyoshi; and Watanabe, Toshio, 4,386,539, Cl. 74-661.000.

Water Refining Company, Inc.: *See—*
Davis, Stephen H.; Etzel, James E.; and Wiegert, Robert E., 4,387,021, Cl. 210-96.100.

Waters Instruments, Inc.: *See—*
Tretinyak, Carl W.; and Burton, Thomas A., 4,386,606, Cl. 604-220.000.

Waters, John M., to British Railways Board. Maintenance of railway track. 4,386,570, Cl. 104-11.000.

Watson, James M.; Butler, James R.; and Forward, Cleve H., to Cosden Technology, Inc. Alkylation of aromatic compounds with silicalite catalysts in the presence of steam. 4,387,260, Cl. 585-467.000.

Wean United, Inc.: *See—*
Rehag, Klaus; and Stinnertz, Horst, 4,386,512, Cl. 72-214.000.

Webb, Roger P.: *See—*
Joy, Edward B.; Meliopoulos, Athanasios P.; and Webb, Roger P., 4,387,336, Cl. 324-51.000.

Webb, Watt W.: *See—*
Barak, Lawrence S.; Nothnagel, Eugene A.; Webb, Watt W.; and Yocum, Robert R., 4,387,088, Cl. 424-3.000.

Weber, David C.: *See—*
Tien, Tseng-Ying; Weber, David C.; and Woodruff, Philip R., 4,387,359, Cl. 338-34.000.

Weber, Rolf-Dieter: *See—*
Rothmeier, Waldemar; Weber, Rolf-Dieter; and Hemala, Zdenek, deceased, 4,386,495, Cl. 57-279.000.

Webster, Joseph R.: *See—*
Schroeder, Carl W.; and Webster, Joseph R., 4,387,185, Cl. 525-194.000.

Weeks, Paul D.: *See—*
Brennan, Thomas M.; Brannegan, Daniel P.; Weeks, Paul D.; and Kuhla, Donald E., 4,387,235, Cl. 549-417.000.

Weible, Reinhold, to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG. Device for operation of a fluid circuit. 4,386,734, Cl. 237-12.30B.

Weinhaus, Harold R., to Budd Company, The. Method of making a water ski construction. 4,386,982, Cl. 156-79.000.

Weiss, Martin J.: *See—*
Grudzinskas, Charles V.; and Weiss, Martin J., 4,387,241, Cl. 560-55.000.

Weiss, Peter; and Schaffner, Georg, to Jagenberg Werke AG. Apparatus for the multiple unwinding of webs. 4,386,741, Cl. 242-58.600.

Weiss, Robert A.: *See—*
Lundberg, Robert D.; Agarwal, Pawan K.; and Weiss, Robert A., 4,387,174, Cl. 524-66.000.

Weiss, Wolfram: *See—*
Hummerich, Rainer; Hahn, Herbert; Weiss, Wolfram; Immel, Guenther; Krause, Hans-Joachim; and Peters, Karl-Clemens, 4,387,212, Cl. 528-232.000.

Weller, Joseph F.: *See—*
Giallorenzi, Thomas G.; and Weller, Joseph F., 4,387,353, Cl. 333-111.000.

Wendell, John R. Collapsible work support. 4,386,678, Cl. 182-182.000.

Wenzel, Heinz-Dieter; and Hanson, Melville, deceased, to Cross Company, The. Apparatus for automatically loading and orienting a cylindrical workpiece. 4,386,692, Cl. 198-394.000.

Werderitch, Frank J.; and Eltvedt, Frank A. Method and apparatus for sorting defective parts. 4,387,064, Cl. 264-40.100.

Wesseldyk, Albert J.: *See—*
Burns, Richard D.; and Wesseldyk, Albert J., 4,387,001, Cl. 156-495.000.

West, Gerd: *See—*
Engelmann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jurgen; and Sydow, Udo, 4,387,159, Cl. 430-544.000.

Westbrook, Jack H., to United States of America, Navy. Gold based electrical contact materials. 4,387,073, Cl. 420-507.000.

Westbrook, Solomon C., Jr.: *See—*
Sanchez, Jose; and Westbrook, Solomon C., Jr., 4,387,044, Cl. 252-426.000.

Westermark, Gustav L., to Santrade Ltd. Boring head with extension elements. 4,386,670, Cl. 175-344.000.

Western-Cullen-Hayes, Inc.: *See—*
Meyer, J. Joe, 4,386,751, Cl. 246-441.000.

Westinghouse Electric Corp.: *See—*
Alkire, Gerald R.; Dailey, George F.; and Kauric, Charles E., 4,387,317, Cl. 310-260.000.
Lee, Pang-Kai; Hickam, William M.; and Steltz, William G., 4,386,498, Cl. 60-646.000.
Longuemare, R. Noel, Jr., 4,387,373, Cl. 343-5.0CM.
Rabas, Thomas J., 4,386,583, Cl. 122-483.000.

Weterings, Cornelis A. M.; and Janssen, Johannes A., to Stamicarbon, B.V. Process for the recovery of substantially radium free calcium sulphate, yttrium and lanthanides, as well as calcium sulphate, yttrium and lanthanides obtained by this process. 4,387,077, Cl. 423-21.100.

Weterings, Cornelis A. M.; and Janssen, Johannes A., to Stamicarbon, B.V. Process for the preparation of calcium sulphate anhydrite and calcium sulphate anhydrite obtained by this process. 4,387,083, Cl. 423-555.000.

Whinnery, Walter N., III: *See—*
Cook, Gus T.; Holshouser, Stephen K.; Coleman, Richard M.; Harless, Charles E.; and Whinnery, Walter N., III, 4,387,018, Cl. 208-262.000.

Whirlpool Corporation: *See—*
Carr, Keith E.; and Symons, John J., 4,386,640, Cl. 141-361.000.

White, Alan C.; and Bradley, Gerald, to John Wyeth and Brother Limited. Morpholines. 4,387,097, Cl. 424-248.550.

White, Alan C.; and Shepherd, Robin G., to John Wyeth and Brother Limited. Process for preparing a dihydropyridine derivative. 4,387,230, Cl. 546-249.000.

White, Lawrence J.: *See—*
Cook, Paul M.; Otte, Richard F.; Claypool, James L.; White, Lawrence J.; Broyles, Harry C.; and Brooks, Peter L., 4,386,629, Cl. 138-110.000.

White, Philip J.; Lake, William H.; and Springer, Robert H., to General Electric Company. Metal halide lamp containing ScI3 with added cadmium or zinc. 4,387,319, Cl. 313-620.000.

Whitfield, Frank J.: *See—*
Grice, Karl R.; Bannister, Jimmy L.; Gregory, Leland M.; and Whitfield, Frank J., 4,387,293, Cl. 219-529.000.

Whitlock, Darrell D. Game apparatus. 4,386,779, Cl. 273-336.000.

Whitmore, Keith E., to Eastman Kodak Company. Multicolor filters with nonplanar support elements. 4,387,146, Cl. 430-7.000.

Whitmore, Keith E., to Eastman Kodak Company. Receivers with nonplanar support elements. 4,387,154, Cl. 430-202.000.

Whitney, Walter D. Automobile frame aligning device. 4,386,468, Cl. 33-180.0AT.

Whittaker, Richard E. Buffing machine pad cleaning device. 4,386,444, Cl. 15-257.00R.

Wicks, Richard W.: *See—*
Gomez, Magdalena U.; Miller, Marvin L.; and Wicks, Richard W., 4,387,160, Cl. 435-7.000.

Widmer, Roland W.: *See—*
Lehmann, Hans W.; Frick, Klaus; and Widmer, Roland W., 4,387,013, Cl. 204-192.00E.

Wiegert, Robert E.: *See—*
Davis, Stephen H.; Etzel, James E.; and Wiegert, Robert E., 4,387,021, Cl. 210-96.100.

Wiener, Alan I., to Raytheon Company. Range mark position control employing optical encoding. 4,387,374, Cl. 343-5.0EM.

Wiggins Teape Group Limited, The: *See—*
Shanton, Kenneth J., 4,387,117, Cl. 427-150.000.

Wilcox, Howard A., to United States of America, Navy. Low frequency nonresonant acoustic projector. 4,387,451, Cl. 367-142.000.

William H. Rorer, Inc.: *See—*
Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., 4,387,225, Cl. 544-212.000.

Williams, Earl P.; and Lorenz, Donald H., to GAF Corporation. Water swellable polymers. 4,387,186, Cl. 525-327.800.

Williams, Kenneth E.: *See—*
Jourdan, Ray M.; and Williams, Kenneth E., 4,387,360, Cl. 340-27.0AT.

Williams, Raymond F. Hair hair-enhancing cap. 4,386,619, Cl. 132-53.000.

Willis, Donald H., to RCA Corporation. Remote responsive television receiver ferroresonant power supply protection circuit. 4,387,324, Cl. 315-411.000.

Wilson, John: *See—*
Emms, Roy O.; Rae, William; and Wilson, John, 4,387,128, Cl. 428-60.000.

Wilson, Nicol S.: *See—*
Gable, Derek J.; Sweet, Roger H.; and Wilson, Nicol S., 4,386,639, Cl. 141-351.000.

Wine, Charles M., to RCA Corporation. Video disc player having auxiliary vertical synchronizing generator. 4,387,407, Cl. 358-342.000.

Wintermeyer, Willi: *See—*
Wittmann, Rolf; Wintermeyer, Willi; and Butzke, Jurgen, 4,387,245, Cl. 562-587.000.

Winyall, Milton E.; and Davidoff, Charles, to W. R. Grace & Co. Electrodialytic method for production of silica gel. 4,387,008, Cl. 204-101.000.

Wirick, Michael P.; and Wright, James P., to Hughes Aircraft Company. Target for calibrating and testing infrared detection devices. 4,387,301, Cl. 250-252.100.

Wirz, Karl: *See—*
Heimgartner, Hans; and Wirz, Karl, 4,386,531, Cl. 73-756.000.

Wittmann, Rolf; Wintermeyer, Willi; and Butzke, Jurgen, to Merck Patent Gesellschaft Mit Beschränkter Haftung. Preparation of diacetoneketogulonic acid by oxidation of diacetonesorbose. 4,387,245, Cl. 562-587.000.

Wolf, Wilhelm. Shoulder rest for a string instrument. 4,386,548, Cl. 84-280.000.

Wolfer, Dietrich: *See—*
Marsch, Wilhelm; and Wolfer, Dietrich, 4,387,046, Cl. 252-511.000.

Wolff, George D. Position sensor for fuel injection apparatus. 4,386,522, Cl. 73-119.00A.

Wolff, Hans P.: *See—*
Heerdt, Ruth; Wolff, Hans P.; Kaiser, Fritz; Schaumann, Wolfgang; and Kuhnle, Hans, 4,387,104, Cl. 424-319.000.

Wollam, Carl A.; and Gailey, J. Lynn, to Alcan Aluminum Corporation. Coating process and apparatus. 4,387,123, Cl. 427-286.000.

Wolthausen, Edward C.: *See—*
Reba, Imants; and Wolthausen, Edward C., 4,387,065, Cl. 264-39.000.

Won, Chong M.: *See—*
Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., 4,387,225, Cl. 544-212.000.

Wong, Albert. Capture and restraining device. 4,386,605, Cl. 128-134.000.

Woo, Ji Y.; and Ritsema, Irving R., to Bendix Corporation, The. Piston retraction and wear compensation for low-drag disc brakes. 4,386,682, Cl. 188-71.800.

Wood, Diane Douglas: *See—*
Tibbs, Oscar, 4,386,593, Cl. 123-523.000.

Wood, George R., to Standard Oil Company (Indiana). Process for production of ethylene glycol. 4,387,255, Cl. 568-860.000.

Wood, Merrill, Jr.: *See—*
Henry, Francis W., Jr.; Wood, Merrill, Jr.; and Rankovic, Ljubisa, 4,387,173, Cl. 524-63.000.

Woodruff, Philip R.: *See—*
Tien, Tseng-Ying; Weber, David C.; and Woodruff, Philip R., 4,387,359, Cl. 338-34.000.

Woods, Lee O.; and Haag, Donald L., to General Electric Company. Combination starter-protector device. 4,387,412, Cl. 361-27.000.

Woolacott, Charles F., to Biolab Equipment Ltd. Ion exchange regeneration plant. 4,387,026, Cl. 210-669.000.

Wooten, Willis C.: *See—*
Passmore, David T.; Wooten, Willis C.; and McBride, Paul, 4,387,214, Cl. 528-296.000.

Wotier, Edward: *See—*
Cautilli, Philip A.; and Wotier, Edward, 4,387,121, Cl. 427-243.000.

Wozniak, Walter J.: *See—*
Terzian, Rouben T.; and Wozniak, Walter J., 4,386,479, Cl. 46-102.000.

Wright, James P.: *See—*
Wirick, Michael P.; and Wright, James P., 4,387,301, Cl. 250-252.100.

Wright, Peter G.: *See—*
Chapman, Anthony C. B.; and Wright, Peter G., 4,386,801, Cl. 296-1.00S.

Wright, Stuart C.; Adams, Don L.; Fischer, William C.; and Verzella, David J., to United Technologies Corporation. Roll attitude inhibit of aircraft automatic outer loop. 4,387,431, Cl. 364-434.000.

Wright, Stuart C.: *See—*
Fischer, William C.; Adams, Don L.; Verzella, David J.; and Wright, Stuart C., 4,387,432, Cl. 364-434.000.
Verzella, David J.; Fischer, William C.; Adams, Don L.; and Wright, Stuart C., 4,387,430, Cl. 364-434.000.

Wrightman Enterprises, Inc.: *See—*
Buckman, Charles E., 4,386,774, Cl. 273-32.00A.

Wronka, Bodo, to Mannesmann Aktiengesellschaft. Vessel for an electro furnace. 4,387,464, Cl. 373-76.000.

Wu, Hann C., to Horng Meei Spring Enterprise Co., Ltd. Trampoline with horizontal and vertical elastic force. 4,386,772, Cl. 272-65.000.

Wunsch, Adolf; and Kopf, Martin. Automatic bending machine. 4,386,516, Cl. 72-434.000.

Wurz, Dieter. Water cooling tower including a suction fan. 4,386,946, Cl. 55-257.00C.

Würzburg, Otto B.: *See—*
Tessler, Martin M.; Wurzburg, Otto B.; and Dirscherl, Teresa A., 4,387,221, Cl. 536-107.000.

Wybenga, William J., to Husky Injection Molding Systems Ltd. Injection-molding machine with hydraulic mold clamping. 4,386,903, Cl. 425-563.000.

Wynn, Edward J.: *See—*
Horiuchi, George H.; and Wynn, Edward J., 4,386,555, Cl. 91-395.000.

Xerox Corporation: *See—*
Beery, Jack, 4,386,842, Cl. 355-8.000.
Chambers, James E., 4,386,725, Cl. 227-2.000.
Lakdawala, Kushkumar N., 4,386,771, Cl. 271-82.000.
Scifres, Donald R.; and Sprague, Robert A., 4,386,827, Cl. 350-356.000.
Seedhouse, Frederick A., 4,386,843, Cl. 355-8.000.

Yabuta, Kenji; Tosa, Senji; and Tanaka, Akira, to Mitsubishi Paper Mills, Ltd. Fixable thermosensitive recording sheet. 4,387,150, Cl. 430-162.000.

Yamada Dobby Co., Ltd.: *See—*
Mizoguchi, Hiroyuki, 4,386,631, Cl. 139-68.000.

Yamamoto, Haruo; and Daum, Sol J., to Sterling Drug Inc. 2-Hydroxy gentamicin compounds. 4,387,219, Cl. 536-13.600.

Yamamoto, Hisao: *See—*
Yamamoto, Michihiro; Katayama, Shigenari; Koshiba, Masao; and Yamamoto, Hisao, 4,387,223, Cl. 544-116.000.

Yamamoto, Michihiro; Katayama, Shigenari; Koshiba, Masao; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Process for preparing 2(1H)-quinazolinone derivatives. 4,387,223, Cl. 544-116.000.

Yamamoto, Sakuei; Nishida, Mitsuhiro; Tashiro, Noboru; and Sonoda, Nobuo, to Mitsubishi Denki Kabushiki Kaisha. Molded submersible motor. 4,387,313, Cl. 310-71.000.

Yamamoto, Tsutomu: *See—*
Makuuchi, Keizo; Takagi, Tohru; Nakayama, Hiroyuki; and Yamamoto, Tsutomu, 4,387,011, Cl. 204-159.150.

Yamamoto, Yujiro: *See—*
Kawamatsu, Yutaka; and Yamamoto, Yujiro, 4,387,101, Cl. 424-270.000.

Yamamura, Takashi; and Tajima, Osamu, to Victor Company of Japan, Ltd. Disc-shaped recording medium reproducing apparatus. 4,387,454, Cl. 369-270.000.

Yamanaka, Shizuo. Multangular pen nib construction. 4,386,867, Cl. 401-292.000.

Yamauchi, Junichi: *See—*
Nagase, Yoshinori; Shibatani, Kyoichiro; Yamauchi, Junichi; and Omura, Ikuo, 4,386,912, Cl. 433-228.000.

Yamauchi, Teruo; Fujieda, Mamoru; and Oyama, Yoshishige, to Hitachi, Ltd. Fuel injection system for internal combustion engine. 4,387,429, Cl. 364-431.050.

Yamazaki, Shunpei. PN Or PIN junction type semiconductor photoelectric conversion device. 4,387,387, Cl. 357-30.000.

Yanai, Seiji; and Shirouchi, Hideo, to Taiyo Yuden Co., Ltd. Method and apparatus for mounting electronic components in position on circuit boards. 4,386,464, Cl. 29-834.000.

Yarmal, Anatoly A.: *See—*
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Yasuda, Akira, to Nissan Motor Company, Limited. Anti-freezing system for a windshield-wiper. 4,387,290, Cl. 219-202.000.

Yasuda, Shinichiro; Morimoto, Eiji; and Sonobe, Atsushi, to Kao Soap Co., Ltd. Process for producing new polyester resin and product thereof. 4,387,211, Cl. 528-179.000.

Yasunaga, Makoto: *See—*
Kurihara, Toshio; Kunita, Masao; Yasunaga, Makoto; and Uchida, Satoru, 4,386,861, Cl. 400-124.000.

Yato, Tokuhiro: *See—*
Sato, Yoshito; and Yato, Tokuhiro, 4,386,688, Cl. 192-0.033.

Yazaki Sogyo Kabushiki Kaisha: *See—*
Akiyama, Isao, 4,387,299, Cl. 250-231.0SE.

Yeh, Chung-Liang: *See—*
Thorogood, Robert M.; Yeh, Chung-Liang; and Donath, Ernest E., 4,387,015, Cl. 208-8.0LE.

Yocum, Robert R.: *See—*
Barak, Lawrence S.; Nothnagel, Eugene A.; Webb, Watt W.; and Yocum, Robert R., 4,387,088, Cl. 424-3.000.

Yokono, Hitoshi: *See—*
Kobayashi, Tsuguo; Ishikawa, Tetsuo; Hironaka, Kenichi; Umetsu, Hideo; Ogata, Masatsugu; and Yokono, Hitoshi, 4,387,311, Cl. 310-43.000.

Yoneda, Kenji: *See—*
Katayama, Yasunori; Hatakeyama, Takanobu; Shima, Seiya; Hokari, Sadao; Narita, Toshiro; Yoneda, Kenji; Sakata, Kazuhiro; Kurihara, Tomiaki; and Meguro, Toshio, 4,387,436, Cl. 364-561.000.

Yonezawa, Kazuya; Kira, Kazuaki; Wakabayashi, Hiroshi; and Nagano, Hirosaku, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Heat resistant polyamide-imide resin from polycarboxylic acid-polyisocyanate modified with unsaturated monomer. 4,387,192, Cl. 525-426.000.

Yoshida, Takao, to International Flavors & Fragrances Inc. Methyl substituted oxobicyclo-4,4,0-decane derivatives and organoleptic uses thereof. 4,387,048, Cl. 252-522.00R.

Yoshio, Akira: *See—*
Takemura, Kunio; Kondo, Hideya; and Yoshio, Akira, 4,387,356, Cl. 335-6.000.

Young, E. Richard: *See—*
Scanlon, Patricia M.; and Young, E. Richard, 4,387,244, Cl. 562-448.000.

Young, James W. Air treating device for fuel burning engines. 4,386,595, Cl. 123-539.000.

Young, Noel M.: *See—*
Vijay, Hari M.; Young, Noel M.; and Bernstein, I. Leonard, 4,387,091, Cl. 424-88.000.

Youngbauer, Daniel L.: *See—*
Kude, William B.; Pearman, A. Noel J.; and Youngbauer, Daniel L., 4,386,858, Cl. 374-37.000.

Youngblood, James L. H_2S Detector having semiconductor and non-continuous inert film deposited thereon. 4,387,165, Cl. 436-121.000.

Younkin, Douglas R., to McDonnell Douglas Corporation. Phase dependent SEM IC chip testing with voltage contrast. 4,387,304, Cl. 250-492.200.

Yuasa, Teruo: *See—*
Katoh, Nobukatsu; Morimoto, Yoshio; Kataoka, Takashi; and Yuasa, Teruo, 4,387,210, Cl. 528-179.000.

Yun, Ik Y.: *See—*
Tyler, Derek E.; Yun, Ik Y.; and Renschen, Patrick D., 4,386,958, Cl. 75-93.00R.

Zabrocki, Vincent S.; and Bussey, Marlin G., to Dow Chemical Co., The. Low density, extruded ethylenic polymer foams. 4,387,169, Cl. 521-79.000.

Zach, Franz C.; Bose, Bimal K.; Espelage, Paul M.; and Sicko, John S., to General Electric Company. Optimal and adaptive control of variable speed AC motor drives. 4,387,421, Cl. 364-148.000.

Zachariadis, Robert G., to Mobil Oil Corporation. Expendable seafloor sensor exploration system. 4,387,450, Cl. 367-20.000.

Zahir, Abdul-Cader; and Eldin, Sameer H., to Ciba-Geigy Corporation. Self-crosslinkable monomer composition containing alkenylphenyl substituted acrylates or methacrylates. 4,387,204, Cl. 526-249.000.

Zakhariya, Ramiz H., to NCR Corporation. Package and connector receptacle. 4,387,388, Cl. 357-74.000.

Zalipsky, Jerome J.: *See—*
Douglas, George H.; Studt, William L.; Won, Chong M.; Dodson, Stuart A.; and Zalipsky, Jerome J., 4,387,225, Cl. 544-212.000.

Zammarchi, Gino: *See—*
Chevalier, Claude; Zammarchi, Gino; and Bouvet, Jean M., 4,386,687, Cl. 192-3.300.

Zarnoch, Kenneth P.: *See—*
Iacovangelo, Charles D.; and Zarnoch, Kenneth P., 4,386,960, Cl. 419-9.000.

Zaslavsky, Dan; and Rozenberg, Leib V., to Technion Research & Development Foundation, Ltd. Method for stabilization of soil aggregates. 4,387,205, Cl. 527-400.000.

Zatko, Jalna R., to United States of America, Interior. Apparatus and method for measuring low concentrations of high molecular weight polymers in solution. 4,386,518, Cl. 73-55.000.

Zellweger Uster Ltd.: *See—*
Felix, Ernst, 4,386,494, Cl. 57-22.000.

Zen, Shinichiro: *See—*
Furuta, Isao; Takemura, Yasuhiko; Miyabayashi, Toshio; Zen, Shinichiro; and Sakai, Masato, 4,387,203, Cl. 526-245.000.

Zenith Radio Corporation: *See—*
Borg, Arthur N., 4,387,400, Cl. 358-191.100.
Feinberg, Robert B.; and Maskell, Roy, 4,387,404, Cl. 358-237.000.
Reneau, Daniel L.; and Engel, Christopher M., 4,387,390, Cl. 358-74.000.

Zeuna-Staerker GmbH & Co. KG: *See—*
Santiago, Andres; and Santiago, Enrique, 4,386,586, Cl. 123-52.00M.

Zhavoronkov, Jury I.: *See—*
Antonov, Veniamin V.; Shtepa, Evgeny D.; Krivenko, Alexandr P.; Kurbatova, Adelaida L.; Vedkalov, Ivan R.; Chervonenko, Viktor M.; Yarmal, Anatoly A.; Donskoi, Semen A.; Korotky, Vladimir A.; Zhavoronkov, Jury I.; Germanov, Vadim I.; Kornienko, Alexei S.; Kaduba, Pavel A.; Chvilev, Anatoly A.; Gamalei, Edvin I.; Dolzhenkov, Fedor E.; Kulichenko, Valentin A.; Maikher, Pavel B.; Tischenko, Oleg I.; and Atlasova, Galia A., 4,386,737, Cl. 239-79.000.

Ziegler, William H., Jr.: *See—*
Cunard, Joel C.; and Ziegler, William H., Jr., 4,387,070, Cl. 264-247.000.

Ziemba, Richard T., to General Electric Company. Detonator assembly. 4,386,568, Cl. 102-204.000.

Zigler, Robert V., to General Electric Company. Balanced single phase alternating current induction motor. 4,387,330, Cl. 318-788.000.

Zocher, Josef, to Singer Company, The. Needle pack. 4,386,697, Cl. 206-383.000.

Zolt, David M. Turntable system with low aggregate resonance. 4,387,453, Cl. 369-263.000.

Zugel, Victor A., to Harris Corporation. Signature feeding and stitching apparatus. 4,386,768, Cl. 270-53.000.

Zunkel, Richard L.; and Nimee, George S., to Schlage Lock Company. Door closer. 4,386,446, Cl. 16-58.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF JUNE, 1983

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Andrews, William J.; Espley, David J. C.; and Philpott, William J. M., to British Cellophane Limited. Heat-sealable antistatic polypropylene films. Re. 31,269, Cl. 428-516.000.

Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., to Mead Corporation, The. Ink jet printing apparatus. Re. 31,271, Cl. 346-75.000.

Bridge, Patrick E.: *See*—
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., Re. 31,271, Cl. 346-75.000.

British Cellophane Limited: *See*—
Andrews, William J.; Espley, David J. C.; and Philpott, William J. M., Re. 31,269, Cl. 428-516.000.

Burkhardt, Joseph A.: *See*—
Sinclair, Albert R.; Daughtry, Arthur C.; Childers, Thomas W.; and Burkhardt, Joseph A., Re. 31,265, Cl. 405-169.000.

Childers, Thomas W.: *See*—
Sinclair, Albert R.; Daughtry, Arthur C.; Childers, Thomas W.; and Burkhardt, Joseph A., Re. 31,265, Cl. 405-169.000.

Coulter, Robert W.: *See*—
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., Re. 31,271, Cl. 346-75.000.

Daughtry, Arthur C.: *See*—
Sinclair, Albert R.; Daughtry, Arthur C.; Childers, Thomas W.; and Burkhardt, Joseph A., Re. 31,265, Cl. 405-169.000.

Denlinger, George W.: *See*—
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., Re. 31,271, Cl. 346-75.000.

Edgar, Allen C.; and Smith, George N., to Mid-Florida Mining Company. Method for the containment of oils and oil sludges. Re. 31,267, Cl. 208-13.000.

Engesland, Arne, to Lista Og Mosjoen Aluminiumverk, Elkem Aluminum A/S & Co. Apparatus for gas collection in aluminum smelting furnaces. Re. 31,266, Cl. 204-247.000.

Espley, David J. C.: *See*—
Andrews, William J.; Espley, David J. C.; and Philpott, William J. M., Re. 31,269, Cl. 428-516.000.

Exxon Production Research Co.: *See*—
Sinclair, Albert R.; Daughtry, Arthur C.; Childers, Thomas W.; and Burkhardt, Joseph A., Re. 31,265, Cl. 405-169.000.

Fernalld, Clifford S., Jr.: *See*—
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., Re. 31,271, Cl. 346-75.000.

Goodyear Tire & Rubber Company, The: *See*—
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Hansen, Jorgen F., to Nordisk Insulinlaboratorium. Method of recovering immunoglobulin using a polyol and an alkanoic acid. Re. 31,268, Cl. 260-112.00B.

Hill, Charlie H., Jr.: *See*—
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., Re. 31,271, Cl. 346-75.000.

Holmes, Gordon W., to Professional Packaging Limited. Plastic coin holder. Re. 31,264, Cl. 133-1.00A.

Huliba, David A.: *See*—
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., Re. 31,271, Cl. 346-75.000.

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Mead Corporation, The: *See*—
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., Re. 31,271, Cl. 346-75.000.

Meckstroth, James R.: *See*—
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., Re. 31,271, Cl. 346-75.000.

Mid-Florida Mining Company: *See*—
Edgar, Allen C.; and Smith, George N., Re. 31,267, Cl. 208-13.000.

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Philpott, William J. M.: *See*—
Andrews, William J.; Espley, David J. C.; and Philpott, William J. M., Re. 31,269, Cl. 428-516.000.

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Scranton, Robert J.: *See*—
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernalld, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., Re. 31,271, Cl. 346-75.000.

Sinclair, Albert R.; Daughtry, Arthur C.; Childers, Thomas W.; and Burkhardt, Joseph A., to Exxon Production Research Co. Method and apparatus for making subsea pipe connections. Re. 31,265, Cl. 405-169.000.

Smith, George N.: *See*—
Edgar, Allen C.; and Smith, George N., Re. 31,267, Cl. 208-13.000.

Tung, William C. T., to Goodyear Tire & Rubber Company, The. Random elastomeric copolyesters. Re. 31,270, Cl. 528-295.300.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Schwalberg, Bernard J., to Hohmann Enterprises, Inc. Veneer anchor and dry wall contruction system and method. B1 4,021,990, Cl. 52—479.

Hohmann Enterprises, Inc.: *See*—
Schwalberg, Bernard J., B1 4,021,990, Cl. 52—479.

Yerkes, John W.; and Avery, James E., to Atlantic Richfield Company. Photovoltaic array including light diffuser. B1 4,116,718, Cl. 136—246.

Atlantic Richfield Company: *See*—
Yerkes, John W.; and Avery, James E., B1 4,116,718, Cl. 136—246.

Yerkes, John W.; and Avery, James E., B1 4,116,718, Cl. 136—246.

Veith, Werner, to Siemens Aktiengesellschaft. Luminous discharge display device. B1 3,956,667, Cl. 340—703.

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Veith, Werner. B1 3,956,667, Cl. 340—703.

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Adidas Fabrique de Chaussures de Sport: *See*—
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Stanuch, Edward S.; Akiyama, Steven R.; and Urbanski, Sigmund S., 269,296, Cl. D26-63.000.

Allied Corporation: *See*—
Coppola, John B., 269,270, Cl. D14-106.000.

Anderson, Robert C.: *See*—
Kroeger, Daniel E.; and Anderson, Robert C., 269,246, Cl. D8-18.000.

Arakawa, Kazuhiro: *See*—
Yoshioka, Eiichi; and Arakawa, Kazuhiro, 269,278, Cl. D18-7.000.

Auerbach, Frederick F. Combined garbage disposal plunger and scraper. 269,302, 6-7-83, Cl. D32-42.000.

Babcock & Wilcox Company, The: *See*—
Bean, Thomas R.; Golden, Raymond; Souders, James E.; and Stockmaster, Edward F., 269,265, Cl. D13-41.000.

Balistreri, Thomas W., to Abbott Laboratories. Pull tab tear cap for medical liquid container. 269,252, 6-7-83, Cl. D9-435.000.

Barzilay Company: *See*—
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Bean, Thomas R.; Golden, Raymond; Souders, James E.; and Stockmaster, Edward F., to Babcock & Wilcox Company, The. Housing for a control panel mounted instrument. 269,265, 6-7-83, Cl. D13-41.000.

Becher, Barry H.; and Valenti, Edward J. Knife. 269,244, 6-7-83, Cl. D7-151.000.

Benveniste, Jack, to Barzilay Company. Chair. 269,232, 6-7-83, Cl. D6-73.000.

Berghash, Robert D., to Brimms Inc. Combined dispensing cap and brush. 269,250, 6-7-83, Cl. D9-436.000.

Bisk, Leonard; and Rogahn, Gunther, to Independent Products Company, Inc. Hanger. 269,238, 6-7-83, Cl. D6-254.000.

Blasbalg, Morton L. Bird seed feeder. 269,300, 6-7-83, Cl. D30-15.000.

Bloom, Max. Stethoscope head. 269,295, 6-7-83, Cl. D24-20.000.

Braun Aktiengesellschaft: *See*—
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Oberheim, Robert, 269,299, Cl. D28-35.000.

Brimms Inc.: *See*—
Berghash, Robert D., 269,250, Cl. D9-436.000.

Brown, Dwight C. Telephone amplifier. 269,267, 6-7-83, Cl. D14-57.000.

Brunner, Merlin A.; Draheim, Harvey J.; and Schaffer, Michael J., to Simmons Universal Corporation. Combined crib, chest and bed unit. 269,229, 6-7-83, Cl. D6-14.000.

Burdick, Bruce A., to Herman Miller, Inc. Combined leg and mounting member unit for a pedestal desk or similar article. 269,237, 6-7-83, Cl. D6-191.000.

Butler, Mildred A.: *See*—
Butler, William R.; and Butler, Mildred A., 269,259, Cl. D12-11.000.

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Yoshioka, Eiichi; Murakami, Osamu; and Suwa, Kaname, 269,277, Cl. D18-7.000.
Yoshioka, Eiichi; and Arakawa, Kazuhiro, 269,278, Cl. D18-7.000.

Carlsen, Carl E. Roach trap. 269,290, 6-7-83, Cl. D22-19.000.

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Church, John D. Diver's bag. 269,224, 6-7-83, Cl. D3-36.000.

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Kishimoto, Kazuo, 269,254, Cl. D10-32.000.

Combi Co., Ltd.: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsuda, Hiroaki, 269,289, Cl. D21-104.000.

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Coppage, Sandra L.: *See*—
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Coppola, John B., to Allied Corporation. Keyboard display terminal. 269,270, 6-7-83, Cl. D14-106.000.

Deibert, Daniel T. Retractable leash for dog collars. 269,301, 6-7-83, Cl. D30-39.000.

Draheim, Harvey J.: *See*—
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Esselte Pendaflex Corporation: *See*—
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Fabjancic, John W., to Questor Corporation. Electric food dish. 269,245, 6-7-83, Cl. D7-326.000.

Fear, Jeffrey R., to Innovative Metal Inc. Multiple seating unit. 269,230, 6-7-83, Cl. D6-59.000.

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Ferrero S.p.A.: *See*—
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Firmenich, S.A.: *See*—
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Fraze, Ermal C. Tab for an easy opening can end. 269,251, 6-7-83, Cl. D9-438.000.

Freeman, Mildred T. Tray for walker or similar article. 269,223, 6-7-83, Cl. D3-10.000.

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Gagnon, Paul L. Carrying handle for container cartons or the like. 269,253, 6-7-83, Cl. D9-434.000.

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Garber, Joel W.; and Reich, Peter A., to Garber, Joel W. Design for parking meter controller or similar article. 269,273, 6-7-83, Cl. D15-199.000.

General Battery Corporation: *See*—
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Gerber, Jack J. Rack. 269,233, 6-7-83, Cl. D6-114.000.

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Goetz, Charles R.: *See*—
Goetz, Daniel A.; and Goetz, Charles R., 269,303, Cl. D32-53.000.

Goetz, Daniel A.; and Goetz, Charles R., to Stylette Plastics, Inc. Pail. 269,303, 6-7-83, Cl. D32-53.000.

Golden, Raymond: *See*—
Bean, Thomas R.; Golden, Raymond; Souders, James E.; and Stockmaster, Edward F., 269,265, Cl. D13-41.000.

Gray, Harold Z. Die roller. 269,287, 6-7-83, Cl. D21-41.000.

Grunden, James B. Combined holder for decanter and cups. 269,242, 6-7-83, Cl. D7-71.000.

Hankes, Elmer J. Font of language characters. 269,281, 6-7-83, Cl. D18-25.000.

Herman Miller, Inc.: *See*—
Burdick, Bruce A., 269,237, Cl. D6-191.000.

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Hirose, Mutsuo: *See*—
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Hofer, Jean-Pierre; and Rebetez, Gaston, to Firmenich, S.A. Smelling strip holder. 269,291, 6-7-83, Cl. D23-150.000.

Hofland, Robert M.; and Switser, Gary L., to International Business Machines Corp. Paper copier or similar article. 269,274, 6-7-83, Cl. D16-31.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
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International Playtex, Inc.: *See*—
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Jones, John B., to Noble & Cooley. Toy snare drum. 269,288, 6-7-83, Cl. D21-64.000.

Joseph, Michel, to Adidas Fabrique de Chaussures de Sport. Bathing suit. 269,220, 6-7-83, Cl. D2-40.000.

Kelson, Shirley J. P. Measuring receptacle with removable bottom. 269,239, 6-7-83, Cl. D7-50.000.

Kelson, Shirley J. P. Measuring receptacle with insert held removable bottom. 269,240, 6-7-83, Cl. D7-50.000.

Kelson, Shirley J. P. Measuring receptacle having removable bottom with handle. 269,241, 6-7-83, Cl. D7-50.000.

Ketcham & McDougall, Inc.: *See*—
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Kishimoto, Kazuo, to Citizen Watch Company Limited. Wrist watch. 269,254, 6-7-83, Cl. D10-32.000.

Ko, Anthony S., to Lamba Tele-Equipment Limited. Telephone unit. 269,268, 6-7-83, Cl. D14-53.000.

Ko, Anthony S., to Lamba Tele-Equipment Limited. Telephone dialling and information storage unit. 269,269, 6-7-83, Cl. D14-66.000.

Kroeger, Daniel E.; and Anderson, Robert C. Pull tab opener. 269,246, 6-7-83, Cl. D8-18.000.

Kuyama, Kozo; Kikuchi, Junji; and Hirose, Mutsuo, to Honda Giken Kogyo Kabushiki Kaisha, Honda Motor Co., Ltd. Motorcycle. 269,262, 6-7-83, Cl. D12-110.000.

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Lamba Tele-Equipment Limited: *See—*
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Ko, Anthony S., 269,269, Cl. D14-66.000.

Lebowitz, Samuel, to Ketcham & McDougall, Inc. Adjustable desk lamp. 269,297, 6-7-83, Cl. D26-65.000.

Lenzin, Fritz; and Dummermuth, Paul, to Maschinenfabrik, von Arx AG. Pneumatic tool for cleaning, descaling or roughening metallic surfaces or the like. 269,247, 6-7-83, Cl. D8-61.000.

M/M Verdi International, Inc.: *See—*
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Stark, Ted, 269,227, Cl. D3-71.000.
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McGaw, John. Air freshener. 269,292, 6-7-83, Cl. D23-150.000.

McMillan, Billy J. Freezer alarm. 269,256, 6-7-83, Cl. D10-106.000.

Meyer Manufacturing Co. Ltd.: *See—*
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Mikado, Yoshio, to Honda Giken Kogyo Kabushiki Kaisha. Motortricycle. 269,261, 6-7-83, Cl. D12-110.000.

Muller, Ronald L.: *See—*
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Murakami, Osamu: *See—*
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Noble & Cooley: *See—*
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Oberheim, Robert, to Braun Aktiengesellschaft. Hair curling iron. 269,298, 6-7-83, Cl. D28-35.000.

Oberheim, Robert, to Braun Aktiengesellschaft. Combined hair curling iron and cover therefor. 269,299, 6-7-83, Cl. D28-35.000.

Ogletree, Robert H., to Southwire Company. Dual bowl filter for molten metal casting systems. 269,272, 6-7-83, Cl. D15-145.000.

Ohle, James L. Table. 269,236, 6-7-83, Cl. D6-179.000.

Olivieri, Icaro, to Gamebridge Inc. Skate shoe. 269,222, 6-7-83, Cl. D2-309.000.

Olson, Ronald A. Illuminated level. 269,255, 6-7-83, Cl. D10-69.000.

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Peirce, Elwin E.; and Waltz, Arthur L. Ventilator. 269,293, 6-7-83, Cl. D23-151.000.

Picco, William A. Portable golf equipment case. 269,225, 6-7-83, Cl. D3-37.000.

Pickler, Rodney. Chair or the like. 269,231, 6-7-83, Cl. D6-68.000.

Portwood, Presley H.; Simmons, Philip N.; and Coppage, Sandra L. Shirt. 269,221, 6-7-83, Cl. D2-208.000.

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Sawada, Masaji; and Sakamoto, Harumi, to Sharp Corporation. Electronic calculator. 269,276, 6-7-83, Cl. D18-7.000.

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Stark, Ted, to M/M Verdi International, Inc. Luggage. 269,226, 6-7-83, Cl. D3-71.000.

Stark, Ted, to M/M Verdi International, Inc. Luggage. 269,227, 6-7-83, Cl. D3-71.000.

Stark, Ted, to M/M Verdi International, Inc. Luggage. 269,228, 6-7-83, Cl. D3-71.000.

Stern, Harold; and Tedeschi, Anthony, to International Playtex, Inc. Brassiere. 269,219, 6-7-83, Cl. D2-24.000.

Stockmaster, Edward F.: *See—*
Bean, Thomas R.; Golden, Raymond; Souders, James E.; and Stockmaster, Edward F., 269,265, Cl. D13-41.000.

Stylette Plastics, Inc.: *See—*
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Sumita, Kaoru, to Sony Corporation. Tape player. 269,266, 6-7-83, Cl. D14-6.000.

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Svegin, Bent I. Music paper. 269,282, 6-7-83, Cl. D19-1.000.

Svegin, Bent I. Music paper. 269,283, 6-7-83, Cl. D19-1.000.

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Tweedie, Thomas D., to Tung On Development Co. Ltd. Illuminated magnifier. 269,275, 6-7-83, Cl. D16-135.000.

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Woolwine, Wayne D. Game board. 269,284, 6-7-83, Cl. D21-20.000.

Woolwine, Wayne D. Game board. 269,285, 6-7-83, Cl. D21-20.000.

Woolwine, Wayne D. Game board. 269,286, 6-7-83, Cl. D21-20.000.

Yoshioka, Eiichi; Murakami, Osamu; and Suwa, Kaname, to Canon Kabushiki Kaisha. Desk-top electronic calculator. 269,277, 6-7-83, Cl. D18-7.000.

Yoshioka, Eiichi; and Arakawa, Kazuhiro, to Canon Kabushiki Kaisha. Desk-top electronic calculator. 269,278, 6-7-83, Cl. D18-7.000.

Ziccardi, Camille. Bottle or similar article. 269,248, 6-7-83, Cl. D9-375.000.

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Elsner, Wilhelm, to Oglevee Associates, Inc. Distinct variety of geranium named Glacier Carmen. 5,059, 6-7-83, Cl. 68.000.

Oglevee Associates, Inc.: *See—*
Elsner, Wilhelm, 5,059, Cl. 68.000.

Olesen, Mogens; and Olesen, Pernille, to Conard-Pyle Company, The. Miniature rose plant — Poulfi variety. 5,058, 6-7-83, Cl. 9.000.

Olesen, Pernille: *See—*
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CLASSIFICATION OF PATENTS

ISSUED JUNE 7, 1983

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
199 4,386,437
272 4,386,438

CLASS 5
498 4,386,439

CLASS 8
451 4,386,935
639 4,386,934

CLASS 10
87 4,386,440

CLASS 14
27 4,386,441

CLASS 15
98 4,386,442
245 4,386,443
257 R 4,386,444
409 4,386,445

CLASS 16
58 4,386,446
105 4,386,447
121 4,386,448
238 4,386,449
361 4,386,450

CLASS 17
1 R 4,386,451

CLASS 23
295 S 4,386,936

CLASS 24
196 4,386,452

CLASS 29
25.41 4,386,453
33 K 4,386,454
149.5 S 4,386,455
157.3 R 4,386,456
235 4,386,457
527.7 4,386,458
574 4,386,459
593 4,386,460
749 4,386,461
792 4,386,462
827 4,386,463
834 4,386,464

CLASS 30
114 4,386,465

CLASS 33
174 D 4,386,466
178 E 4,386,467
180 AT 4,386,468
203.19 4,386,469
438 4,386,470

CLASS 34
26 4,386,471

CLASS 36
131 4,386,472

CLASS 37
57 4,386,473
285 4,386,474

CLASS 40
373 4,386,475
546 4,386,476

CLASS 42
79 4,386,477

CLASS 43
135 4,386,478

CLASS 44
41 4,386,937
53 4,386,938
63 4,386,939

CLASS 46
102 4,386,479

CLASS 47
45 4,386,480

CLASS 48
197 R 4,386,940
202 4,386,942

CLASS 49
248 4,386,481
488 4,386,482

CLASS 51
5 D 4,386,483
298 4,386,943

CLASS 52
479 B1 4,021,990
16 4,386,484
108 4,386,485
125.5 4,386,486
184 4,386,487
199 4,386,488
694 4,386,489

CLASS 53
148 4,386,490
247 4,386,491

CLASS 55
16 4,386,944
26 4,386,945
257 C 4,386,946
387 4,386,947
499 4,386,948
507 4,386,949

CLASS 56
13.9 4,386,492
341 4,386,493

CLASS 57
22 4,386,494
279 4,386,495
293 4,386,496

CLASS 60
296 4,386,497
646 4,386,498
657 4,386,499

CLASS 62
10 4,386,950
79 4,386,500
112 4,386,501
129 4,386,502
188 4,386,503
380 4,386,504
514 R 4,386,505

CLASS 63
13 4,386,506

CLASS 65
27 4,386,951
268 4,386,952

CLASS 66
78 4,386,507
132 T 4,386,508

CLASS 68
20 4,386,509

CLASS 70
369 4,386,510

CLASS 71
93 4,386,953
98 4,386,954
100 4,386,955

CLASS 72
121 4,386,511
214 4,386,512
256 4,386,513
347 4,386,514
391 4,386,515
434 4,386,516
455 4,386,517

CLASS 73
49.2 4,386,525
55 4,386,518
61.4 4,386,519
118 4,386,520
4,386,521
119 A 4,386,522
200 4,386,523
299 4,386,524
587 4,386,526
597 4,386,527
606 4,386,528
4,386,529
613 4,386,530
756 4,386,531
862.04 4,386,532
862.64 4,386,533
863.01 4,386,534

CLASS 74
5.6 D 4,386,535
200 4,386,536
512 4,386,537
552 4,386,538
661 4,386,539
805 4,386,540

CLASS 75
24 4,386,956
51 4,386,957
93 R 4,386,958

CLASS 81
9.5 R 4,386,541
420 4,386,542
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CLASS 82
101 4,386,544

CLASS 83
817 4,386,545

CLASS 84
1.01 4,386,546
1.22 4,386,547
280 4,386,548
422 S 4,386,549
464 R 4,386,550
470 R 4,386,551

CLASS 91
1 4,386,552
361 4,386,553
369 A 4,386,554
395 4,386,555

CLASS 99
290 4,386,556
372 4,386,557
386 4,386,558
404 4,386,559
538 4,386,560

CLASS 100
5 4,386,561

CLASS 101
91 4,386,562
93.04 4,386,563
93.15 4,386,564
93.34 4,386,565
375 4,386,566

CLASS 102
202.5 4,386,567
204 4,386,568
292 4,386,569

CLASS 104
11 4,386,570

CLASS 106
22 4,386,961
35 4,386,962
117 4,386,963
150 4,386,964
214 4,386,965
288 Q 4,386,966
309 4,386,967

CLASS 110
119 4,386,571

CLASS 112
98 4,386,572
103 4,386,573

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299 4,386,575

CLASS 118
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669 4,386,578

CLASS 119
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CLASS 123
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41.12 4,386,585
52 M 4,386,586
65 R 4,386,587
187.5 R 4,386,588
192 B 4,386,589
198 F 4,386,590
339 4,386,591
440 4,386,592
523 4,386,593
525 4,386,594
539 4,386,595
557 4,386,596
568 4,386,597

CLASS 124
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69 4,386,603
134 4,386,605
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419 PG 4,386,610
645 4,386,611
660 4,386,612
718 4,386,604
760 4,386,613
777 4,386,614
786 4,386,615

CLASS 131
174 4,386,616
290 4,386,617
336 4,386,618

CLASS 132
53 4,386,619
85 4,386,620

CLASS 133
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CLASS 135
20 M 4,386,621

CLASS 136
246 B1 4,116,718
249 4,387,265

CLASS 137
1 4,386,622
2 4,386,623
102 4,386,624
255 4,386,625
529 4,386,626

CLASS 138
30 4,386,627
97 4,386,628
110 4,386,629
149 4,386,630

CLASS 139
88 4,386,631
435 4,386,632
452 4,386,633

CLASS 141
2 4,386,634
6 4,386,635
10 4,386,636
65 4,386,637
98 4,386,638
351 4,386,639
361 4,386,640

CLASS 144
329 4,386,641

CLASS 148
1.5 4,386,968
3 4,386,969
11.5 P 4,386,970
11.5 R 4,386,971
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16.5 4,386,973
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171 4,386,975
410 4,386,976

CLASS 149
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21 4,386,979

CLASS 150
34 4,386,642

CLASS 152
216 4,386,643

CLASS 156
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79 4,386,982
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86 4,386,984
89 4,386,985
94 4,386,986
155 4,386,987
157 4,386,988
182 4,386,989
245 4,386,990
308.6 4,386,991
327 4,386,992
358 4,386,993
360 4,386,994
362 4,386,995
382 4,386,996
443 4,386,997
473 4,386,998
494 4,386,999
495 4,387,000
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578 4,387,002

CLASS 160
174 4,386,644
183 4,386,645
206 4,386,646

CLASS 162
336 4,387,003

CLASS 164
332 4,386,647
463 4,386,648

CLASS 165
12 4,386,649
4,386,650
104.33 4,386,651
144 4,386,652

CLASS 166
105 4,386,653
105.5 4,386,654
106 4,386,655
117.5 4,386,656
261 4,386,657
263 4,386,658
342 4,386,659

CLASS 168
32 4,386,660

CLASS 172
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445.1 4,386,662

CLASS 174
31 R 4,387,266
65 SS 4,387,267
92 4,387,268

CLASS 175
17 4,386,663
45 4,386,664
61 4,386,665
101 4,386,666
228 4,386,667
4,386,668
269 4,386,669
344 4,386,670

CLASS 177
208 4,386,671

CLASS 179
1 F 4,387,270
1 SM 4,387,269
2 DP 4,387,271
6.11 4,387,272
16 F 4,387,273
99 H 4,387,274
115.5 R 4,387,275
125 4,387,276
170 NC 4,387,277
175.2 C 4,387,278

CLASS 180
9.2 R 4,386,673
13 4,386,672
142 4,386,674
221 4,386,675

CLASS 181
290 4,386,676

CLASS 182
154 4,386,677
182 4,386,678

CLASS 186
68 4,386,679

CLASS 187
6 4,386,680

CLASS 188
4 R 4,386,681
71.8 4,386,682
77 R 4,386,683
138 4,386,684
196 P 4,386,685
322.17 4,386,686

CLASS 192
0.033 4,386,688
3.3 4,386,687
56 R 4,386,689

CLASS 194
1 D 4,386,690
7 4,386,691

CLASS 198
394 4,386,692
409 4,386,693
648 4,386,694
661 4,386,695

CLASS 200
61.54 4,387,279
82 R 4,387,280
147 R 4,387,281
340 4,387,282

CLASS 202
248 4,387,004

CLASS 203
81 4,387,005

CLASS 204
32 R 4,387,006
59 R 4,387,007
101 4,387,008
129.2 4,387,009
157.1 R 4,387,010
159.15 4,387,011
159.17 4,387,012
192 E 4,387,013
212 4,387,014
247 Re.31,266

CLASS 206
221 4,386,696
383 4,386,697
432 4,386,698
434 4,386,699
507 4,386,700
509 4,386,701
523 4,386,702
557 4,386,703
597 4,386,704
626 4,386,705
628 4,386,706

CLASS 208

8 LE 4,387,015
11 LE 4,387,016
13 Re.31,267
188 4,387,017
262 4,387,018

CLASS 209

12 4,387,019
546 4,386,707
549 4,386,708

CLASS 210

86 4,387,020
96.1 4,387,021
132 4,387,022
168 4,387,023
490 4,387,024
612 4,387,025
669 4,387,026
697 4,387,027
708 4,387,028
758 4,387,029
774 4,387,030
787 4,387,031

CLASS 211

20 4,386,709
49 D 4,386,710

CLASS 212

189 4,386,711

CLASS 215

211 4,386,712

CLASS 219

56.21 4,387,283
69 D 4,387,286
69 M 4,387,287
69 P 4,387,285
69 R 4,387,284
107 4,387,288
110 4,387,289
202 4,387,290
206 4,387,291
267 4,387,292
529 4,387,293

CLASS 220

269 4,386,713
339 4,386,714
354 4,386,715

CLASS 222

37 4,386,716
94 4,386,717
185 4,386,718
242 4,386,719
498 4,386,720

CLASS 224

39 4,386,721
42.23 4,386,722
150 4,386,723
255 4,386,724

CLASS 227

2 4,386,725

CLASS 228

29 4,386,726
102 4,386,727
111 4,386,728

CLASS 229

39 R 4,386,729

CLASS 235

201 R 4,387,295
376 4,387,296
462 4,387,297
4,387,298

CLASS 236

1 G 4,386,731
48 R 4,386,732
49 4,386,733

CLASS 237

12.3 B 4,386,734
12.3 R 4,386,735

CLASS 238

159 4,386,736

CLASS 239

79 4,386,737
102 4,386,738
296 4,386,739

CLASS 241

93 4,386,740

CLASS 242

58.6 4,386,741
84.1 R 4,386,742
84.2 A 4,386,743
107.4 B 4,386,745
107.7 4,386,744
199 4,386,746

CLASS 244

3.1 4,386,747
12.2 4,386,748
134 D 4,386,749
169 4,386,750

CLASS 246

441 4,386,751

CLASS 248

73 4,386,752
210 4,386,753

CLASS 249

19 4,386,754
83 4,386,755

CLASS 250

231 SE 4,387,299
239 4,387,300
252.1 4,387,301
270 4,387,302
432 PD 4,387,303
492.2 4,387,304

CLASS 251

172 4,386,756

CLASS 252

3 4,387,032
18 4,387,033
61 4,387,034
174.11 4,387,035
4,387,036
184 4,387,037
299.63 4,387,038
4,387,039
368 4,387,040
392 4,387,041
4,387,042
417 4,387,043
426 4,387,044
429 B 4,387,045
511 4,387,046
522 R 4,387,047
4,387,048

CLASS 254

89 R 4,386,757
134.3 R 4,386,758
134.5 4,386,759
371 4,386,760

CLASS 256

21 4,386,761
59 4,386,762

CLASS 260

112 B Re.31,268
112.5 R 4,387,049
143 4,387,050
245.2 T 4,387,051
4,387,052
349 4,387,053
383 4,387,054
438.1 4,387,055
439 R 4,387,056
453 AR 4,387,057
465 D 4,387,058
506 4,387,059
936 4,387,060
968 4,387,061

CLASS 261

23 A 4,387,062
41 D 4,387,063

CLASS 264

39 4,387,065
40.1 4,387,064
55 4,387,066
63 4,387,067
107 4,387,068
210.3 4,387,069
247 4,387,070
279.1 4,387,071

CLASS 266

158 4,386,763
235 4,386,764
236 4,386,765

CLASS 267

64.12 4,386,766

CLASS 269

97 4,386,767

CLASS 270

53 4,386,768

CLASS 271

9 4,386,769
18.3 4,386,770
82 4,386,771

CLASS 272

65 4,386,772

CLASS 273

1 E 4,386,773
32 A 4,386,774
54 B 4,386,775
85 G 4,386,776
86 B 4,386,777
4,386,778
336 4,386,779

CLASS 277

15 4,386,780
38 4,386,781
59 4,386,782
73 4,386,783
80 4,386,784
82 4,386,785
135 4,386,786

CLASS 280

206 4,386,787
605 4,386,788
4,386,789
650 4,386,790
707 4,386,791
781 4,386,792
802 4,386,793
826 4,386,794

CLASS 283

5 4,386,795

CLASS 285

31 4,386,796

CLASS 292

292 4,386,797
336.3 4,386,798

CLASS 293

120 4,386,799

CLASS 294

100 4,386,800

CLASS 296

1 S 4,386,801
213 4,386,802

CLASS 297

84 4,386,803
248 4,386,804
362 4,386,805

CLASS 299

5 4,386,806

CLASS 303

6 C 4,386,807
4,386,808

CLASS 305

31 4,386,809

CLASS 307

66 4,387,305
119 4,387,307
125 4,387,306
264 4,387,308
355 4,387,309
591 4,387,310

CLASS 308

174 4,386,810
188 4,386,811
236 4,386,812

CLASS 310

43 4,387,311
49 R 4,387,312
71 4,387,313
88 4,387,314
90 4,387,315
214 4,387,316
260 4,387,317
330 4,387,318

CLASS 313

348 4,387,320
406 4,387,321
497 4,387,322
620 4,387,319

CLASS 315

5.35 4,387,323
411 4,387,324

CLASS 318

71 4,387,325
138 4,387,326
573 4,387,327
696 4,387,328
729 4,387,329
788 4,387,330

CLASS 320

14 4,387,331
15 4,387,332
21 4,387,333
44 4,387,334

CLASS 322

32 4,387,335

CLASS 324

51 4,387,336
52 4,387,337
207 4,387,339
236 4,387,338
326 4,387,340

CLASS 328

73 4,387,341

CLASS 329

50 4,387,342

CLASS 330

4.3 4,387,344
9 4,387,345
296 4,387,346

CLASS 331

1 R 4,387,347
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4,387,350

CLASS 332

7.51 4,387,343
19 4,387,351

CLASS 333

32 4,387,352
111 4,387,353
165 4,387,354
195 4,387,355

CLASS 335

6 4,387,356
272 4,387,357

CLASS 337

244 4,387,358

CLASS 338

34 4,387,359

CLASS 339

14 R 4,386,813
4,386,814
17 M 4,386,815
59 R 4,386,816
103 B 4,386,817
113 L 4,386,818
147 R 4,386,819
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CLASS 340

703 B1 3,956,667
27 AT 4,387,360
73 4,387,361
81 R 4,387,362
347 DD 4,387,364
4,387,365
4,387,366
365 P 4,387,367
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627 4,387,369
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825.52 4,387,371
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CLASS 343

5 CM 4,387,373
5 EM 4,387,374
105 R 4,387,375
113 R 4,387,376
756 4,387,377
854 4,387,378
895 4,387,379

CLASS 346

75 Re.31,271
76 PH 4,387,380
135.1 4,387,381
140 R 4,387,382
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CLASS 350

96.15 4,386,822
96.2 4,386,821
247 4,386,823
296 4,386,824
310 4,386,825
345 4,386,826
356 4,386,827
427 4,386,828
429 4,386,829
524 4,386,830

CLASS 351

49 4,386,832
205 4,386,831

CLASS 353

67 4,386,833

CLASS 354

3 4,386,834
23 R 4,386,835

CLASS 355

3 CH 4,386,837
3 DR 4,386,838
4,386,839
4,386,841
3 FU 4,386,840
3 R 4,386,836
8 4,386,842
4,386,843
15 4,386,844
4,386,845
25 4,386,846
75 4,386,847

CLASS 356

5 4,386,848
124 4,386,849
243 4,386,850
254 4,386,851
323 4,386,852
350 4,386,853
438 4,386,854

CLASS 357

17 4,387,385
22 4,387,386
30 4,387,387
74 4,387,388

CLASS 358

37 4,387,389
74 4,387,390
109 4,387,391
111 4,387,392
124 4,387,393
139 4,387,394
140 4,387,395
148 4,387,396
154 4,387,397
188 4,387,398
190 4,387,399
191.1 4,387,400
193.1 4,387,401
213 4,387,402
219 4,387,403
237 4,387,404
243 4,387,405
310 4,387,406
342 4,387,407

CLASS 360

103 4,387,408
104 4,387,409
118 4,387,410
128 4,387,411

CLASS 361

27 4,387,412
386 4,387,413

CLASS 362

31 4,387,414
74 4,387,415
190 4,387,416
376 4,387,417

CLASS 363

19 4,387,418
174 4,387,419

CLASS 364

145 4,387,420
148 4,387,421
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4,387,425
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414 4,387,428
431.05 4,387,429
434 4,387,430
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4,387,432
491 4,387,433
509 4,387,434
514 4,387,435
561 4,387,436
4,387,437
574 4,387,438
641 4,387,439
900 4,387,440
4,387,442

CLASS 365

19 4,387,443
156 4,387,444
179 4,387,445
189 4,387,446
203 4,387,447
4,387,448
227 4,387,449

CLASS 366

177 4,386,855

CLASS 367

20 4,387,450
142 4,387,451

CLASS 368

72 4,386,856
187 4,386,857

CLASS 369

32 4,387,452
263 4,387,453
270 4,387,454

CLASS 370

11 4,387,455
13 4,387,456
62 4,387,457
88 4,387,458
102 4,387,459
110.4 4,387,460

CLASS 371

5 4,387,461

CLASS 372

32 4,387,462
86 4,387,463

CLASS 373

76 4,387,464

CLASS 374

37 4,386,858

CLASS 375

1 4,387,465
4 4,387,466

CLASS 377

78 4,387,294

CLASS 378

68 4,387,467
198 4,387,468

CLASS 382

56 4,387,363

CLASS 384

420 4,386,859

CLASS 400

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4,386,861
144.2 4,386,862
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625 4,386,864

CLASS 401

67 4,386,865
133 4,386,866
292 4,386,867

CLASS 403

24 4,386,868
39 4,386,869
234 4,386,870
377 4,386,871

CLASS 405

13 4,386,872
36 4,386,873
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224 4,386,874
229 4,386,875
260 4,386,876
261 4,386,877
291 4,386,878

CLASS 408

241 R 4,386,879

CLASS 410

56 4,386,880
154 4,386,881

CLASS 411

387 4,386,882

CLASS 414

22 4,386,883
653 4,386,884

CLASS 415

178 4,386,885
213 A 4,386,886

CLASS 416

190 4,386,887

CLASS 417

393 4,386,888
487 4,386,889

CLASS 418

61 A 4,386,890
81 4,386,891
170 4,386,892
191 4,386,893
215 4,386,894

CLASS 419

8 4,386,959
9 4,386,960

CLASS 420

463 4,387,072
507 4,387,073

CLASS 422

12 4,387,074
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67 4,387,076

CLASS 423

21.1 4,387,077
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387 4,387,082
555 4,387,083
567 A 4,387,084
630 4,387,085

CLASS 424

1.5 4,387,087
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88 4,387,091
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131 4,387,093
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211 4,387,095
246 4,387,096
248.55 4,387,097
256 4,387,098
263 4,387,099
269 4,387,100
270 4,387,101
282 4,387,102
309 4,387,103
319 4,387,104
322 4,387,105
4,387,106
4,387,107
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CLASS 425

5 4,386,895
7 4,386,896
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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Dec. 3, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,147,836, Re. S.N. 243,359, Filed Mar. 13, 1981, Cl. 164/428, POLYESTER COATED PAPERBOARD FOR FORMING FOOD CONTAINERS AND PROCESS FOR PRODUCING THE SAME, Lee J. Murray, Jr., Owner of Record: *American Can Co., Greenwich, Conn.,* Attorney or Agent: Robert P. Auber, et al., Ex. Gp.: 164

4,255,717, Re. S.N. 473,304, Filed Mar. 8, 1983, Cl. 331/94.508, MONOLITHIC MULTI-EMITTING LASER DEVICE, Donald R. Scifres, et al., Owner of Record: *Xerox Corp., Stamford, Conn.,* Attorney or Agent: Ronald Zibelli, Ex. Gp.: 252

4,345,464, Re. S.N. 480,278, Filed Mar. 30, 1983, Cl. 73/201, CENTERING DEVICE FOR FLOMETERS INTERPOSED IN FLOW LINE, Peter J. Herzl, et al., Owner of Record: *Fischer & Porter Co., Warminster, Pa.,* Attorney or Agent: None, Ex. Gp.: 244

4,374,741, Re. S.N. 481,494, Filed Apr. 1, 1983, Cl. 252/34, POLYAMIDE AND FUNCTIONAL FLUID CONTAINING SAME, Walter E. Rieder, Owner of Record: *Cincinnati Milacron, Inc., Cincinnati, Ohio,* Attorney or Agent: C. Richard Eby, et al., Ex. Gp.: 116

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,588,039, Reexam. No. 90/000,374, Requested: May 5, 1983, Cl. 251/141, SOLENOID VALVE STRUCTURES AND SYSTEMS, Stephen V. Chelminski, et al., Owner of Record: *Inventor,* Attorney or Agent: Roland T. Bryan, Ex. Gp.: 341, Requester: Mark Precision Corp., Houston, Tex.

3,982,383, Reexam. No. 90/000,369, Requested: May 2, 1983, Cl. 56/11.6, HARVESTING PLATFORM WITH A FLOATING CUTTER BAR, Roger E. Mott, Owner of Record: *Deere & Co., Moline, Ill.,* Attorney or Agent: H. Vincent Harsha, Ex. Gp.: 330, Requester: Striker, Striker & Stenby, New York, N. Y.

4,047,608, Reexam. No. 90/000,377, Requested: May 9, 1983, Cl. 400/208, COMPLAINT RIBBON-GUILDING STRUCTURE, Frederick P. Willcox, Owner of Record: *Inventor,* Attorney or Agent: William D. Hall, Ex. Gp.: 330, Requester: Exxon Research & Engineering Co., Florham Park, N. J.

4,232,179, Reexam. No. 90/000,378, Requested: May 9, 1983, Cl. 585/640, PROCESS FOR PREPARING ETHENE, Helcio V. Valladares Barracas, et al., Owner of Record: *Petroleo Brasiliero S. A., Rio de Janeiro, Brazil,* Attorney or Agent: Norbert P. Holler, Ex. Gp.: 116, Requester: The Halcon SD Group, Inc., New York, N. Y.

4,243,681, Reexam. No. 90/000,381, Requested: May 11, 1983, Cl. 424/330, ALKYLTHIOPHENOXYPROPANOLAMINES AND PHARMACEUTICAL COMPOSITIONS AND USES THEREOF, Duane F. Morrow, et al., Owner of Record: *Mead Johnson & Co., Evansville, Ind.,* Attorney or Agent: Robert H. Uloth, Ex. Gp.: 120, Requester: Continental Pharma S. A., Brussels, Belgium

4,275,727, Reexam. No. 90/000,379, Requested: May 10, 1983, Cl. 604/66, DEVICE FOR MONITORING AND CONTROLLING SELF-ADMINISTERED INTRAVENOUS DRUG DOSAGE, Michael Keeri-Szanto, Owner of Record: *Inventor,* Attorney or Agent: Fetherstonhaugh & Co., Ex. Gp.: 330, Requester: C. R. Bard, Inc., Murry Hill, N. J.

4,321,956, Reexam. No. 90/000,373 Requested: May 2, 1983, Cl. 152/222, BELT ATTACHMENT FOR TIRE CHAINS, Rene Martinelli, Owner of Record: *Burns Bros., Portland, Oreg.,* Attorney or Agent: John P. Dellett, Ex. Gp.: 160, Requester: Owner

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Department of the Treasury
United States Customs Service

19 CFR Part 133

Application for Recordation of Trade Name: "UNITED ASSOCIATION OF JOURNEYMEN AND APPRENTICES OF THE PLUMBING AND PIPE FITTING INDUSTRY OF THE UNITED STATES AND CANADA"

Agency: U.S. Customs Service, Department of the Treasury

Action: Notice of Application for Recordation of Trade Name

Summary: Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "UNITED ASSOCIATION OF JOURNEYMEN AND APPRENTICES OF THE PLUMBING AND PIPE FITTING INDUSTRY OF THE UNITED STATES AND CANADA," used by the United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States and Canada, an unincorporated association, located at 901 Massachusetts Ave., N.W., Washington, D.C. 20001.

The application states that the trade name is used by the Association to identify its union activities, which include the formation of local labor unions in the plumbing and pipe fitting industry, as well as certifying (1) that pipe, fabricated pipe, welded pipe and fabricated welded pipe formations were made by members of United Association's local unions and (2) that the services of fabricating and assembling such goods were performed by members of United Association's local unions. The Association's member unions and their members are authorized to use the trade name in the United States and Canada.

Before final action is taken on the application, consideration will be given to any relevent data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Notice of the action taken on the application for recordation of this trade name will be published in the Federal Register.

Date: Comments must be received on or before July 11, 1983.

Address: Written comments should be addressed to the Commissioner of Customs, Attention: Entry, Licensing and Restricted Merchandise Branch, 1301 Constitution Ave. NW., Rm. 2417, Washington, D.C. 20229.

For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Ave. NW., Washington, D.C. 20229 (202-566-5765).

A. PIAZZA,
May 4, 1983 *Acting Director, Entry Procedures and Penalties Division.*

Department of the Treasury
United States Customs Service

(T.D. 83-61)

19 CFR Part 133.12

Recordation of Trade Name: THE BAYER COMPANY

Agency: Customs Service, Treasury

Action: Notice of Recordation of Trade Name: THE BAYER COMPANY

Summary: On Sept. 14, 1982, a notice of application for the recordation under section 42 of the Act of July 15, 1946, as amended (15 U.S.C. 1124), of the trade name "THE BAYER COMPANY" was published in the Federal Register (47 FR 40519). The notice advised that prior to final action on the application, filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), consideration would be given to relevant data, views, or arguments submitted in opposition to the recordation and received not later than Nov. 14, 1982. No responses were received in opposition to the application.

The name "THE BAYER COMPANY" is hereby recorded as the trade name used by Sterling Drug Inc., a corporation organized under the laws of the State of Delaware, 90 Park Ave., New York, N.Y. 10016. The trade name is used in connection with pharmaceuticals manufactured in Canada, West Indies and the United States. Sterling Drug Ltd. of Aurora, Canada, is authorized to use the trade name.

For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765).

DONALD W. LEWIS,
Mar. 10, 1983. *Director, Entry Procedures and Penalties Division.*

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

GEORGE KUDRAVETZ,
Program Manager,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-272,842. (4,376,633). ZWITTERION COMPOUNDS AS CATALYSTS IN EASY-CARE FINISHING.
SN 6-455,727. A METHOD FOR THE CONTROL OF INSECTS.

DEPARTMENT OF HEALTH & HUMAN SERVICES

SN 6-457,266. METHOD OF DIFFERENTIATING KILHAM STRAIN MUMPS.
SN 6-468,950. 2,5-RIBOADENYLATE-MORPHOLINOADENYLATE NUCLEOTIDES.
SN 6-475,215. MULTI-LAYER COIL ASSEMBLY MOUNTED AROUND THE ROTARY AXIS FOR PREPATORY COUNTER-CURRENT CHROMATOGRAPHY.
SN 6-480,142. CELL LINES SECRETING ANTI-INSULIN ANTIBODIES AND TEST KITS.

DEPARTMENT OF INTERIOR

SN 6-460,102. RECOVERY OF METALS FROM GRINDING SLUDGES.
SN 6-460,201. SEPARATION OF LITHIUM FROM ALUMINUM AND SODIUM.
SN 6-455,187. UNIVERSAL RIPPER MINER.

Requirement for a Response Under 37 CFR 1.136 and 1.137 Where a Continuing Application is Being Filed.

This notice is intended to clarify the requirements for a response as required by 37 CFR 1.136 or 1.137 in situations involving a petition for extension of time or a petition to revive an abandoned application for the purpose of filing a continuing application.

In those instances where an extension of time or a revival of an abandoned application is sought solely for the purpose of filing a continuing application under 35 U.S.C. 120 and where the prior application is to be abandoned in favor of the continuing application, the fil-

ing of a response as required by 37 CFR 1.111, 1.113, 1.192 or other regulation is considered to be an unnecessary expenditure of resources by the applicant. Accordingly, in these situations, the Patent and Trademark Office will accept the filing of a continuing application as a response under 37 CFR 1.136 or 1.137.

To facilitate processing by the Office, any such petition for extension of time or petition to revive should specifically refer to the filing of a continuing application and also include an express abandonment of the prior application conditioned upon the granting of the petition and the granting of a filing date to the continuing application.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

May 13, 1983.

Adverse Decisions in Interference

Patent No. 3,888,804, Carl E. Swanholm and Robert G. Caldwell, PHOTODEGRADABLE HYDROCARBON POLYMERS, Interference No. 99,902, decided Mar. 10, 1983, claim 1.

Patent No. 4,096,589, Morton I. Goldstein, ADJUSTABLE EYE SHADE, Interference No. 100,796, decided Mar. 4, 1983, claims 1 & 2.

Patent No. 4,152,445, Gordon Wootton, 1-(3-HYDROXYALK-1-YL)-5-(CARBOXYALKYL) HYDANTOIN DERIVATIVES, Interference No. 100,772, decided Mar. 22, 1983, claims 1–22.

Patent No. 4,160,614, Stephen F. Koval, EXPANSION SHELL ASSEMBLY AND METHOD FOR COMBINING RESIN BONDING AND MECHANICAL ANCHORING OF A BOLT IN A ROCK FORMATION, Interference No. 100,743, decided Mar. 11, 1983, claims 1–4, 6 and 9–13.

Patent No. 4,168,900, Iwao P. Adachi, COMPACT ERECT OPTICAL IMAGING COPIER SYSTEM AND METHOD, Interference No. 100,762, decided Mar. 17, 1983, claims 1–4, 8, 10, 12, 13, & 17.

Patent No. 4,203,993, Eric M. Gordon, 6α -BROMOPENICILLANIC ACID SULFONE, Interference No. 100,886, decided Mar. 4, 1983, claims 1 & 2.

Patent No. 4,240,767, Bert E. Gracia, VALVING METHODS AND APPARATUS FOR FLOODING AND GROUTING OFFSHORE JACKET SLEEVES, Interference No. 100,919, decided Jan. 27, 1983, claims 1, 4 & 24.

Patent No. 4,276,726, David L. Derus, COLLAPSABLE, ARTICULATED WALL STRUCTURE, Interference No. 100,916, decided Mar. 7, 1983, claims 1, 2, 4–8, 10, 12, 13, 15, 18, 21 & 28.

Patent No. 4,308,752, Eggert Appel and Peter Nissen, MAGNETIC FLOWMETER, Interference No. 100,942, decided Mar. 22, 1983, claims 1 & 4.

NANNIE B. HENRY,
Deputy Clerk
Board of Patent Interferences.

PATENT NOTICES

Certificates of Correction for the Week of June 14, 1983

D. 221,370	4,332,976	4,362,820	4,371,890
4,068,079	4,333,336	4,363,042	4,372,458
4,090,236	4,340,208	4,363,162	4,372,757
4,237,007	4,341,325	4,363,678	4,373,088
4,243,814	4,342,766	4,363,821	4,373,796
4,257,911	4,342,963	4,363,922	4,373,835
4,269,991	4,343,973	4,364,099	4,374,317
4,273,468	4,347,127	4,364,372	4,374,451
4,281,408	4,347,174	4,365,074	4,374,819
4,293,675	4,348,287	4,366,146	4,375,820
4,294,989	4,348,770	4,366,618	4,376,358
4,300,988	4,349,152	4,367,037	4,377,073
4,303,742	4,349,626	4,367,844	4,377,390
4,306,289	4,350,644	4,368,091	4,377,953
4,307,461	4,352,484	4,368,504	4,378,205
4,310,511	4,353,190	4,369,021	4,378,235
4,315,161	4,356,552	4,369,425	4,378,331
4,315,445	4,357,011	4,369,502	4,378,603
4,325,938	4,357,095	4,369,885	4,378,955
4,327,929	4,357,673	4,370,143	4,379,121
4,329,030	4,358,592	4,370,446	4,379,307
4,329,361	4,359,235	4,370,775	4,379,512
4,329,402	4,360,420	4,371,722	
4,330,647	4,362,356	4,371,780	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

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*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170— R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240— G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330— R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350— A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,243,822 to 3,248,737, inclusive

Plant Patents ..... Numbers 2,616 to 2,627 inclusive

REEXAMINATIONS

June 14, 1983

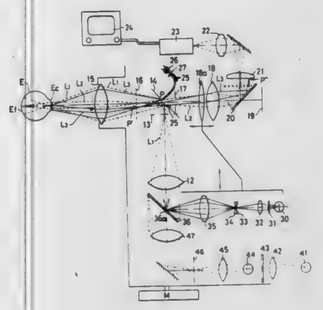
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,196,979 (94th)

METHOD AND DEVICE FOR DETECTING DISTANCE BETWEEN EYE-EXAMINING INSTRUMENT AND EYE

Yoshimi Kohayakawa; Isao Matsumura, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Reexamination Request No. 90/000,117, Nov. 30, 1981.
Reexamination Certificate for Patent No. 4,196,979, issued Apr. 8, 1980, Ser. No. 832,827, Sep. 13, 1977.
Claims priority, application Japan, Oct. 16, 1976, 51-124289; May 30, 1977, 52-63065.
U.S. Cl. 351/208 **Int. Cl.[3] A61B** *3/14*



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **13**, **14**, and **22** is confirmed.

Claims **1**, **11**, and **15** are determined to be patentable as amended:

Claims **2–10**, **12**, and **16–21** dependent on amended claims, are determined to be patentable.

New claims **23–35** are added and determined to be patentable.

1. A device for detecting the distance between an eye-examining instrument and an eye comprising:
an inspecting system for inspection of a human eye, said system having a front optical means confronting the human eye;
means for forming at least one index; and
said front optical means being arranged for converging a beam of light emitted from said index to a degree required for illumination of the front part of the human eye with the beam of light and also allowing said front optical means to converge, substantially on an image surface of said front optical means, a beam of light reflected by the front of the human eye arranged at a predetermined position[.] *and the image surface of the front optical means being out of the condition of being conjugate to the front of the human eye with respect to the front optical means.*

B1 4,355,032 (95th)

9-(1,3-DIHYDROXY-2-PROPOXYMETHYL)-GUANINE AS ANTIVIRAL AGENT

Julien P. Verheyden, Los Altos; John C. Martin, Redwood City, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Reexamination Request No. 90/000,299, Oct. 21, 1982.
Reexamination Certificate for Patent No. 4,355,032, issued Oct. 19, 1982, Ser. No. 267,210, May 21, 1981.
U.S. Cl. 424/253 **Int. Cl.[3] C07D** *473/18*

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5** is confirmed.

1. The compound 9-(1,3-dihydroxy-2-propoxymethyl)guanine and the pharmaceutically acceptable salts thereof.

B1 3,400,012 (96th)

PROCESS OF PLATING METAL OBJECTS

Michael Golben, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Reexamination Request No. 90/000,093, Oct. 19, 1981.
Reexamination Certificate for Patent No. 3,400,012, issued Sep. 3, 1968, Ser. No. 374,151, Jun. 10, 1964.
U.S. Cl. 427/242 **Int. Cl.[3] B05D** *3/12*

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–11** having been finally determined to be unpatentable, are cancelled.

1. A galvanomechanical process for plating a thin continuous layer of silverly metal on each of a number of small metal parts, comprising the steps of providing in a tumbling barrel
water,
said metal parts,
impact media,
a water-soluble salt of said silvery metal,
a small amount of a powdered driving metal which is less noble than either said silvery metal or the metal of said parts, and
an agent which will render the pH of the liquid barrel contents such as will dissolve the driving metal, and
rotating said barrel to agitate the contents thereof exposed to the atmosphere, whereby the metal parts are contacted, substantially over their entire exposed surfaces and including such difficultly accessible areas as thread roots, by the remaining contents of said barrel for a brief time on the order of ten minutes or less.

REISSUES

JUNE 14, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,272

CATHETER DELIVERY SYSTEM AND METHOD

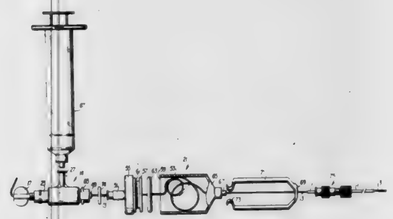
Paul H. Pevsner, 4121 King Crest Pkwy., Richmond, Va. 23221

Original No. 4,159,022, dated Jun. 26, 1979, Ser. No. 790,622, Apr. 25, 1977. Application for reissue Dec. 31, 1979, Ser. No. 108,937

Int. Cl.[3] A61M *5/00*

U.S. Cl. 604—28

18 Claims



16. A catheter delivery system for delivering an elongated miniature cannula-type catheter to a body of a mammal and controlling the movement of the catheter tip in the mammal's body, the system comprising:

a miniature cannula-type catheter having a proximal end and a distal end;

said catheter delivery system further comprising a conduit system including:

a hollow cannula delivery housing defining a relatively large cavity for receiving gathered portions of said cannula-type catheter therein, said cannula delivery housing having an inlet opening and an outlet opening positioned on opposite sides of the cavity, said cannula delivery housing further including a tubular means at the outlet opening for attaching said cannula delivery housing to a mammal's blood vessel to communicate the cavity with said blood vessel and thereby allow said cannula-type catheter to extend through said outlet opening of said cannula delivery housing into said mammal's body;

a hollow cannula-control member mounted at said inlet opening, said hollow cannula-control member having first and second openings therein positioned to allow said cannula-type catheter to extend through said hollow cannula delivery housing and said hollow cannula control member, said hollow cannula control member and said hollow cannula delivery housing being attached to one another at their respective second and inlet openings, said cannula control member further including a clamping seal for selectively clamping said cannula control member to said cannula-type catheter to create a seal preventing fluid flow between said first and second openings about said cannula-type catheter and for releasing said cannula-type catheter to allow longitudinal movement of said cannula-type catheter through said first and second openings by means of a hand manipulation applied to said cannula-type catheter outside of said first opening; and

a coupling means for coupling a fluid source to the interior of said conduit system on the distal side of said clamping seal.

Re. 31,273

CURING RIM

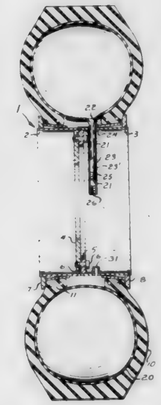
Harold S. Peterson, Fargo, N. Dak., assignor to Branick Mfg. Co., Fargo, N. Dak.

Original No. 4,051,881, dated Oct. 4, 1977, Ser. No. 666,607, Mar. 15, 1976. Application for reissue Oct. 12, 1979, Ser. No. 84,528

Int. Cl.[3] B60C *25/06*

U.S. Cl. 157—1.1

3 Claims



7. A method of supporting a vehicle tire during a curing operation comprising the steps of:

mounting a vehicle tire having an inner tube on the periphery of a rim;

introducing a predetermined pressure into said inner tube for inflation thereof for seating the bead of the vehicle tire in sealed relationship on the rim; and

introducing pressure greater than said predetermined pressure into said vehicle tire between the interior of the tire and the outer periphery of the inner tube to exhaust said predetermined pressure from the inner tube and bias said tire in position during a curing operation.

Re. 31,274

ENGINE COOLING SYSTEM FLUSHING APPARATUS AND METHOD

John A. Babish, Glendora; Larry K. Arnot, Duarte, and Douglas C. Appel, Glendora, all of Calif., assignors to Wynn Oil Company, Fullerton, Calif.

Original No. 4,109,703, dated Aug. 29, 1978, Ser. No. 741,065, Nov. 11, 1976. Application for reissue Jan. 10, 1980, Ser. No. 110,923

Int. Cl.[3] F28G *9/00*; F02B *77/04*

U.S. Cl. 165—95

13 Claims

19. For combination with an internal combustion engine cooling system that includes a liquid coolant heat radiator and a liquid coolant pump connected with coolant passages of an engine, and a heater having a liquid coolant passage connected with the engine coolant passages, flushing apparatus comprising:

(a) first means to produce a pressurized flow of flushing liquid and entrained gas bubbles,

(b) a series of flow ports selectively connectible to different points in said system, utilizing appropriate adaptors, the series including a first port selectively connectible to the radiator, a

second port selectively connectible to the heater, and a third port selectively connectible to the coolant pump, and

(c) control means operable to direct said flow from said first means and via said ports in four separate modes, identified as follows:

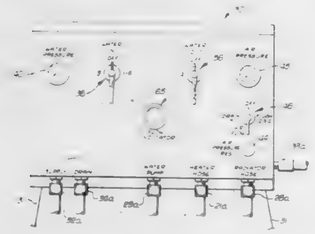
(i) through the radiator in a reverse direction,

(ii) through the engine coolant passages in a reverse direction,

(iii) through the radiator in a forward direction,

(iv) through the engine coolant passages in a forward direction,

flow also passing through the heater in some of said modes, and



(d) said control means including a primary valve connected to receive said flow in the form of pressurized liquid and air bubbles, said valve having three outlets respectively connected with said first, second and third ports, there being a drain port, and said control means also including a secondary valve having three inlets respectively connected with said first, second and third ports, said secondary valve having a discharge port connected with the drain port, operation of said primary and secondary valves characterized as controlling said flow in said four separate modes.

Re. 31,275

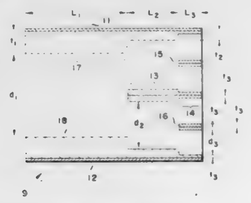
ZENO DUCT SOUND ATTENUATING MEANS

Leslie S. Wirt, Newhall, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Original No. 4,109,750, dated Aug. 29, 1978, Ser. No. 799,953, May 24, 1977. Application for reissue May 26, 1981, Ser. No. 266,715

Int. Cl.³ F01N *1/04*

U.S. Cl. 181—224 **22 Claims**



15. A sound attenuating duct comprising:

means defining an elongate flow passage of substantially uniform cross-sectional area throughout and a lesser transverse dimension d which varies along the length of said flow passage; and,

sound absorptive means located within said passage defining means, and wherein the acoustical resistance of said absorptive means measured in rayls equals approximately 0.9 (df/c) pc, and the acoustical reactance X of said duct measured in rayls equals approximately −0.8 (df/c) pc, *and the product df is kept essentially constant,* where d equals the lesser transverse dimension of said flow passage, f equals the frequency of local maximum attenuation, c equals the speed of sound in the medium within the duct, and p equals the density of said medium, whereby R and X remain essentially constant throughout the length of said flow passage.

Re. 31,276

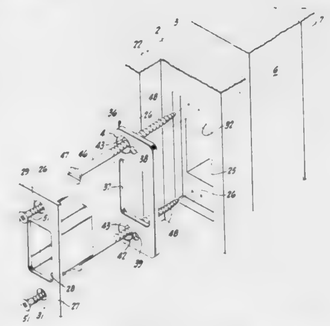
LOCK STRIKE CONSTRUCTION

Ernest L. Schlage, Burlingame, Calif., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Original No. 4,065,162, dated Dec. 27, 1977, Ser. No. 724,929, Sep. 20, 1976. Application for reissue Dec. 26, 1979, Ser. No. 106,498

Int. Cl.³ E05C *21/02*

U.S. Cl. 292—340 **5 Claims**



1. A lock strike construction for use with a wall having an upright structural cripple and an upright door casing side rail parallel to and separated from said cripple by an intervening space comprising an elongated planar plate having a longitudinal axis, means defining an elongated bolt opening [entirely enclosed] in said planar plate and extending along and substantially symmetrical with said axis, means forming a pair of screw-receiving circular holes in said planar plate on said axis and on opposite ends of said bolt opening, means forming a pair of screw rod holes in said planar plate both on one side of said axis and on opposite ends of said bolt opening, a pair of screw rods in said screw rod holes and extending through said side rail and through said space and into said cripple, *said planar plate including means on the door-opening side thereof forming a continuous web between said screw rod holes toward the direction of door opening,* a strike plate abutting said planar plate and said screw rods and in substantial registry with said planar plate, means defining a bolt opening and screw openings in said strike plate substantially registering with said elongated bolt opening and said screw receiving holes, and screw fasteners disposed in said screw receiving holes in said strike plate freely passing through said screw receiving circular holes in said planar plate and laterally engagable by both said strike plate and said planar plate.

Re. 31,277

TELEPHONE CABLE WITH IMPROVED SHIELD COMBINATION

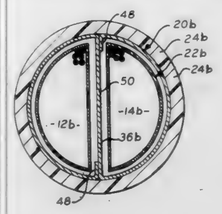
Anthony P. Gabriel, Staten Island, N.Y., and Jimmy Justiss, Bonham, Tex., assignors to General Cable Corporation

Original No. 4,165,442, dated Aug. 21, 1979, Ser. No. 914,505, Jun. 12, 1978. Application for reissue Aug. 21, 1981, Ser. No. 295,126

Int. Cl.³ H01B *11/06*

U.S. Cl. 174—36 **23 Claims**

1. A communication cable including a core containing a plurality of conductors divided into groups along a generally diametral plane through the core, a metal screen, that is a conductor of electricity, having a middle panel that extends between said different groups at said diametral plane, the middle panel of the metal screen being bent in opposite circumferential directions at the opposite ends thereof and curving around the circumferential portions of the different groups of conductors and extending circumferentially around one-half of the circumference of the core to form a portion of the screen that is semi-circular cross-section, and each of the portions



of the screen that is of semi-circular cross-section having end portions, remote from its connection to the middle panel of the screen, said end portions being bent inward substantially parallel to the middle panel of the screen, and a layer of dielectric material on one side of the screen.

Re. 31,278

BRUSHLESS D-C MOTOR

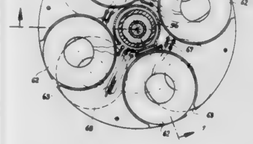
Fritz Schmider, Hornberg, Fed. Rep. of Germany, assignor to Papst Motoren GmbH & Co., KG, St. Georgen, Fed. Rep. of Germany

Original No. 4,125,792, dated Nov. 14, 1978, Ser. No. 576,650, May 12, 1975. Application for reissue Nov. 12, 1980, Ser. No. 206,159

Claims priority, application Fed. Rep. of Germany, May 18, 1974, 2424290

Int. Cl.³ H02K *3/04, 29/02*

U.S. Cl. 310—268 **78 Claims**



1. A slow speed brushless speed controlled d-c motor having a coreless stator winding and a rotary multipolar permanent magnet rotor which in operation interacts with a rotary field produced by the coreless stator winding, and a sensor arrangement controlled by the rotary position of the rotor connected to control current flow through the stator winding;

wherein the stator winding has a maximum of two magnetically active coil sections per pole of the multipolar rotor two coil sections forming a set;

the coil sections are located in two superposed layers; and a number of coil sections (62) corresponding to the number of pairs of poles are interconnected and symmetrically distributed in one layer and the same number of coil sections (63) are symmetrically distributed in the second layer of the two layer winding, the coil sections of the second layer being displaced by an angle (α) relative to the coils of the first layer;

wherein the displacement angle (α) is an odd multiple of 90°-el and the maximum width of the coils is about 360°-el;

means deriving a control signal representative of speed of rotation of the rotor;

and means controlling current flow through said stator coil sections in dependence on said control signal.

Re. 31,279

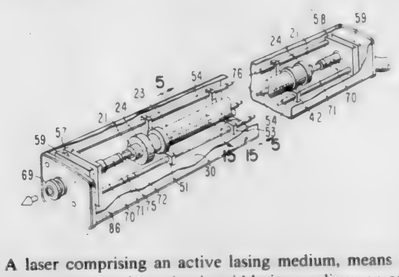
LASER OPTICAL RESONATOR

Wayne S. Mefferd, and James L. Hobart, both of Palo Alto, Calif.

Original No. 3,783,407, dated Jan. 1, 1974, Ser. No. 292,343, Sep. 26, 1972. Continuation of Ser. No. 842,956, Jul. 18, 1969, abandoned. Application for reissue Nov. 5, 1979, Ser. No. 91,121

Int. Cl.³ H01S *3/02*

U.S. Cl. 372—107 **16 Claims**



1. A laser comprising an active lasing medium, means for creating a population inversion in said lasing medium, an optical resonator including a pair of reflectors aligned with each other and about the active lasing medium to form the optical beam path of the laser and for stimulating the emission of radiation along said path, a pair of reflector adjustment plates in which said reflectors are mounted, and means for accurately positioning and aligning said reflectors including at least three spaced-apart rods made of a material having a low thermal coefficient of expansion, the rods extending parallel with but displaced from the optical path, the outer ends of the rods being coupled to the reflector adjustment plates, sleeves surrounding [at least a part of each of the rods and] *each of said rods over the entire length and said rods are segmented and are coupled together by fixed bearings within each sleeve and each sleeve* being made of a material of high thermal conductivity for minimizing thermal gradients along said rods, and means positioned along said rods for thermally coupling by thermal conduction said sleeves for minimizing thermal gradients both among and along said sleeves and said rods.

PLANT PATENTS

GRANTED JUNE 14, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,060

ROSE PLANT — MEIROTERVI VARIETY

Marie L. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Nov. 18, 1981, Ser. No. 322,583
Claims priority, application France, Dec. 8, 1980, 2876
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of Hybrid Tea rose plant, substantially as illustrated and described, having (a) a vigorous upright growth habit, (b) the ability to form in abundance double flowers of firm petal substance which are brilliant luminous red in coloration borne on substantially straight stems and which are long lasting and substantially resistant to color change, (c) the ability to form glossy dark green foliage, and (d) the presence of a large number of thorns.

5,061

CHRYSANTHEMUM PLANT

Fred Hartman, 867 Dickson St., Kirkwood, Mo. 63122

Filed Oct. 29, 1981, Ser. No. 316,393
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—79 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant known by the cultivar name Hartmann's Radiance, as described and illustrated, and particularly characterized by its reddish bronze flower color and standard incurved form.

PATENTS

GRANTED JUN. 14, 1983

ERRATA

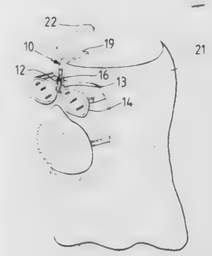
For CLASS	See PATENT NO.
604–333	4,387,712
604–333	4,387,713
604–009	4,387,715
494–081	4,387,848
340–682	4,387,937
123–555	4,388,292
382–008	4,388,610

PATENTS

GRANTED JUNE 14, 1983

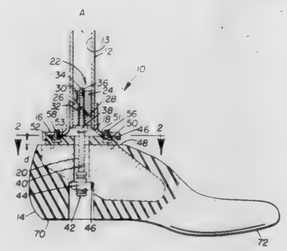
GENERAL AND MECHANICAL

4,387,471
RETAINER FOR SURGEON'S EYE GLASSES
Herbert H. Hsu, and Inri Tan-Hsu, both of 3745 Woodvale Rd., Birmingham, Ala. 35223
Filed May 18, 1981, Ser. No. 264,570
Int. Cl.[3] **A61F** *9/00;* **B32B** *3/06;* **A61M** *15/00*
U.S. Cl. 2—10 **2 Claims**



1. In a retainer for detachably connecting a surgeon's eye glasses having a nose bridge to a surgical hood,
(a) an elongated flexible tape-like member of a length for one end portion thereto to extend around said nose bridge and overlap an adjacent portion of said tape-like member with the other end portion of said tape-like member extending upwardly over a superjacent portion of said hood,
(b) cooperating surfaces carried by said one end portion and said adjacent portion and adapted to face each other while said one end portion overlaps said adjacent portion with hook-like members carried by one of said cooperating surfaces in position to engage a felt-like material carried by the other of said cooperating surfaces to detachably connect said one end portion to said ajacent portion with said nose bridge secured therebetween, and
(c) an area of adhesive carried by said other end portion of said tape-like member in position to detachably connect said other end portion to said superjacent portion of said hood with said tape-like member limiting downward movement of the glasses and retaining them in place.

4,387,472
TORQUE ABSORBER WITH BIOFEEDBACK
Michael T. Wilson, Missouri City, Tex., assignor to Medical Center Prosthetics, Inc., Houston, Tex.
Filed Oct. 2, 1980, Ser. No. 193,129
Int. Cl.[3] **A61F** *1/04, 1/08;* **G08B** *23/00*
U.S. Cl. 3—32 **18 Claims**



1. A prosthesis comprising:
a first member;
a second member;
means for interconnecting said first and said second members while allowing limited motion therebetween;
said interconnecting means including a resilient member disposed between said first and second member;
indicator means positioned in said resilient member for sensing a predetermined force between said first member and said second member.

4,387,473
PATIENT HANDLER
Donald F. Gettner, Charter Oak, Iowa 51439
Filed Jun. 5, 1979, Ser. No. 45,616
Int. Cl.[3] **A61G** *7/08, 7/10*
U.S. Cl. 5—81 B **9 Claims**



9. A patient handler comprising a buttocks support panel having a substantially horizontal upper surface, a back support panel having an upper surface disposable substantially horizontal and substantially in alignment with the upper surface of said buttocks panel, for use when the patient being handled is in a prone position, said back panel having an inner end adjacent a rearward end of said buttocks panel, hinge means interconnecting said inner end of said back panel to said rearward end of said buttocks panel for the hinging of said back panel with respect to said buttocks panel about a horizontal first axis, said back panel being disposed substantially upwardly extending from said buttocks panel at a time when said panels are in a position for holding a patient in a sitting position, a limiting assembly disposed during sitting position times between a first point adjacent said back panel and spaced a substantial distance from said first axis and a second point adjacent said buttocks panel and spaced a substantial distance from said first axis, said limiting assembly having a stiff means extending between said points, attaching means attaching said stiff means to said back and buttocks panels and capable of preventing movement of said stiff means along said back panel beyond said first point and preventing movement of said stiff means along said buttocks panel beyond said second point during sitting position times, said stiff means being stiff in portions thereof between said points during sitting position times, said attaching means permitting said stiff means to move so that said back panel can be moved from its sitting times position to its prone times position, said buttocks and said back panels comprising a pair of main panels, said panels having back and forward sides facing in opposite directions from said first axis when said back and buttocks panels are in prone position, said panels having right and left sides at opposite ends of said first axis, a supporting assembly attached to said panels and suspending said panels in said sitting times positions when said panels are in said positions for sitting times, said supporting assembly being provided with right and left suspension assemblies attached to right and left sides of said main panels and a supporting bar extending from right to left and upholding upper ends of said suspension assemblies at spaced places thereon respectively, said limiting assembly having releasable holding means operatively associated with said stiff means and causing said stiff

means to hold said main panels with their upper sides in substantial alignment during prone position times, said releasable holding means comprising said stiff means having a first anchoring means thereon disposed between said points, one of said main panels having a second anchoring means thereon disposed between said points, and a releasable means for interconnecting said two anchoring means for holding said anchoring means together at prone position times, whereby at prone position times, said main panels are held together with their upper surfaces substantially in alignment and whereby when said releasable interconnecting means is released then said first and second anchoring means can move apart from each other so that said stiff means is free to assume a position extending at an acute angle with respect to the horizontal permitting said back panel to assume an upwardly extending position with respect to said buttocks panel.

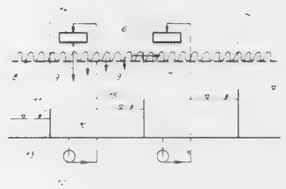
4,387,474
BEEHIVE MEDICATOR
J. Calvin Schierloh, Rte. 1, Box 136-D, Santa Maria, Calif. 93454
Filed Sep. 23, 1981, Ser. No. 304,844
Int. Cl.³ A01K *51/00;* **A61M** *13/00*
U.S. Cl. 6—12 R **14 Claims**



1. Beehive medicator apparatus for applying powdered medication to the interior of a beehive, said apparatus comprising: a substantially L-shaped, hollow, open-ended, tubular member defining an upper substantially straight section, a lower section, and an intermediate arcuate section connecting together said upper and lower sections at substantially a right angle with respect to each other; said lower section defining a horizontally flared open end having an interior vertical dimension less than the interior diametrical dimension of said tubular member; and a lip member projecting from said flared end and substantially along the lower edge of said flared end.

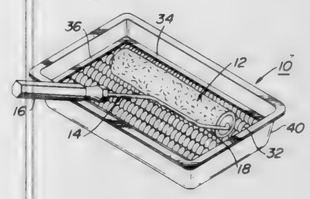
4,387,475
Patent Not Issued For This Number

4,387,476
METHOD AND AN APPARATUS FOR A WASHING PROCESS SUBSEQUENT TO THE SPINNING OF SYNTHETIC FIBERS
Michael Bueb, Dormagen; Robert Brück, Erftstadt-Ahrem; Edgar Muschelknautz, Leverkusen; Dieter Paulini, and Karl-heinz Feltgen, both of Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen
Filed Dec. 1, 1980, Ser. No. 212,052
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2950014
Int. Cl.³ D06B *5/06*
U.S. Cl. 8—151.2 **3 Claims**



1. In a process of washing polyacrylonitrile fibers directly subsequent to a dry spinning process in which the tow is deposited in a folded condition onto a transporting device, the washing is carried out on the folded tow in counterflow on said transporting device in several stages, whereby in each stage washing liquid is sprayed onto the folded tow, the liquid trickles through the tow and through the transporting device within the stage and is then collected in a receiver below the transporting device and is returned repeatedly in the same stage while the tow is sprayed, and the tow before entering into the next stage after spraying, passes in each stage through a region in which it is dehydrated, the improvement wherein the transportation device is a vibrating conveyor which is operated with out-of-balance type drive or electromagnetic actuation, the base of which consists of perforated plates, sieve fabrics or slotted sheet metal with a 10 to 50% free cross sectional area and, according to the covering thickness, impermeable or permeable lateral walls and said folded tow and said conveyor are moved at a rate from 0.5 to 5 meters per minute while being vibrated at a vibrational frequency of 10 to 50 Hz, the tow being deposited on said vibrating conveyor at a rate from 100 to 400 meters per minute.

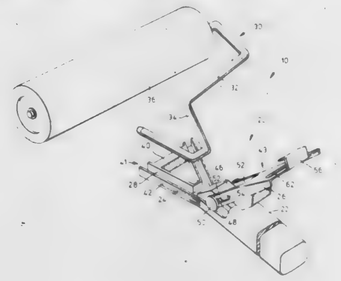
4,387,477
PAINT ROLLER CLEANING SYSTEM
Abraham Eisenberg, 6604 Chippewa Dr., Baltimore, Md. 21209
Filed Sep. 14, 1981, Ser. No. 302,314
Int. Cl.³ B44D *3/00*
U.S. Cl. 15—104.92 **8 Claims**



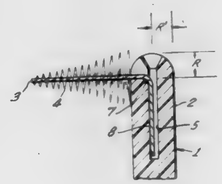
1. A paint roller cleaning system for cleaning a paint roller, comprising:
(a) a longitudinally extended frame member having sidewalls extending around a closed periphery thereof, said frame member having a predetermined longitudinal dimension and a predetermined transverse dimension;
(b) a plurality of longitudinally extending helical coil members secured to said frame member on opposing longitudinal ends thereof, said helical coil members being located adjacent each to the other in a transverse direction when taken with respect to said longitudinal direction where said helical coil members are flexibly displaceable in (1) said transverse direction, (2) said longitudinal direction, and (3) a vertical direction when contacted by said paint roller being rolled over said helical coil members in a reciprocal transverse direction; and,
(c) a receptacle adapted to contain fluid, said frame member being insertable within said receptacle for contacting said helical coil members with said paint roller for removal of contaminants contained thereon.

4,387,478
HAND TOOLS
Morley L. Smith, Beaconsfield, Canada, assignor to T. S. Simms & Co. Limited, Saint John, Canada
Filed Jan. 26, 1982, Ser. No. 342,783
Int. Cl.³ B05C *17/02*
U.S. Cl. 15—145 **2 Claims**

1. In an implement handle assembly having a handle portion and first and second jaws each having a clamping face adapted to co-operate with one another to releasably engage a mounting member of an implement when disposed in a face-to-face clamping position, said first jaw being fast with respect to said handle, the improvement wherein:
(a) said first jaw has a mounting edge extending transversely of the distal end thereof, and
(b) said second jaw has a locking lip formed at the distal end thereof, said locking lip being shaped and proportion to hook around said mounting edge when said jaws are in said clamping position to lock said jaws in said clamping position, and
(c) said second jaw has its proximal end both pivotally and slidably mounted with respect to said handle whereby said first jaw may slide between an extended position and a retracted position and may pivot between an open position and said clamping position with respect to said first jaw such that, when said second jaw is in said retracted and clamping positions, said locking lip is hooked around said mounting edge to prevent pivotal movement of said second jaw and when said second jaw is in said extended position, said second jaw is free to pivot between said clamping position and said open position.



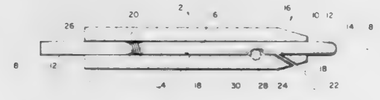
4,387,479
INTERPROXIMAL TOOTHBRUSH
Frank Kigyos, Aurora, Ill., assignor to Block Drug Company, Inc., Jersey City, N.J.
Filed May 14, 1981, Ser. No. 263,781
Int. Cl.³ A46B *9/04*
U.S. Cl. 15—167 R **7 Claims**



1. An interproximal toothbrush consisting essentially of an elongated handle having one end bent at an obtuse angle relative to the remainder of the handle, a bore along the central

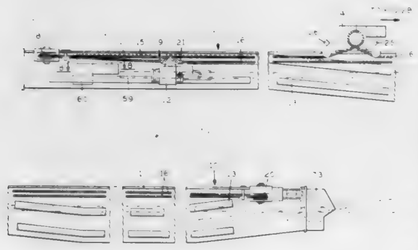
longitudinal axis of said one end extending from the terminal end thereof, an elongated bristle support having first and second portions, said first portion of said bristle support extending through the axial surface of said one end at a point displaced from the terminal end to and substantially perpendicular to said bore and then carried in that portion of said bore extending toward said remainder of said handle, said second portion of said bristle support carrying a plurality of bristles extending radially therefrom so as to extend toward opposed tooth surfaces when said support is between adjacent teeth, said second portion of said bristle support and bristles, in combination, having a conical cross-section, the exterior surfaces of said elongated handle in the vicinity of said first portion bristles being smooth, continuous and rounded whereby, in use, the user's gums will not confront a discontinuous surface.

4,387,480
ADJUSTABLE BRUSH
Roger Cobianco, 85 Suncrest Dr., Safety Harbor, Fla. 33572
Filed May 6, 1981, Ser. No. 260,978
Int. Cl.³ A46B *9/08*
U.S. Cl. 15—169 **15 Claims**



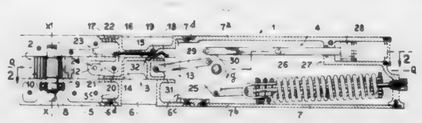
1. An adjustable brush, comprising:
a hollow cylindrical housing having a main channel coaxial with the cylindrical axis thereof and opening onto a working end of the housing;
a plurality of filamentary bristles slideably mounted in said channel of said housing for projecting a workpiece contacting end out from said working end of said housing;
a filament having a first end wrapped around said plurality of bristles within said channel and a second end extending axially along said channel and terminating outside said channel for grasping by the operator to produce a selective adjustment of the position of said bristles along said cylindrical axis;
whereby said contacting end of said bristles can be renewed by selectively adjusting said filament and cutting said bristles to the desired shape.

4,387,481
SOOT BLOWER
Gerald F. Zalewski, Albion, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Feb. 17, 1981, Ser. No. 234,982
Int. Cl.³ F23J *3/02*
U.S. Cl. 15—316 R **7 Claims**



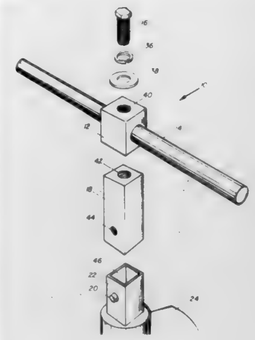
1. In a soot blower of the long retracting type including a traveling carriage rotatably supporting a lance tube and movable along a path of travel between a forwardmost working position and a rearwardmost non-working position, means to impart traverse motion to said traveling carriage, which comprises
(a) a motor means,
(b) a rotatable drum-like element operatively asociated with said motor means,
(c) a first cable including one end fastened to said rotatable drum-like element,
(d) said first cable extending from said drum-like element around a pulley mounted at said rearwardmost non-working position to said traveling carriage,
(e) said first cable including a second end fastened to said traveling carriage,
(f) a second cable including an end fastened to said rotatable drum-like element,
(g) said second cable extending from said drum-like element around a pulley mounted at said forwardmost working position to said traveling carriage,
(h) said second cable including a second end fastened to said traveling carriage whereby said fastened ends of said first and second cables are fastened to said traveling carriage on opposite sides thereof.
(i) said rotatable drum-like element being positioned at a location adjacent said path of travel midway between said forwardmost working position and said rearwardmost non-working position,
(j) each of said first and second cables being wound through several complete turns about said rotatable drum-like element,
(k) said cables being arranged and configured whereby rotation of said drum-like element will take up one of said cables onto said element and unwind the other of said cables from said element,
(l) said cable being taken up by said element acting to pull said carriage,
(m) whereby each of said first and second cables is of the shortest practicable length relative to the distance between the forwardmost working position and the rearwardmost non-working position.

4,387,482
MODULAR SINGLE OR DOUBLE ACTION DOOR CLOSURE SYSTEM
Georges Maublanc, St. Germain du Plain, France, assignor to Pont-A-Mousson S.A., Nancy, France
Filed Nov. 10, 1980, Ser. No. 205,494
Claims priority, application France, Nov. 15, 1979, 79 28191
Int. Cl.³ E05F *3/00*
U.S. Cl. 16—64 **8 Claims**



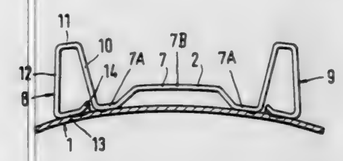
1. A modular door closure system comprising: a first motor assembly having a single action door-opening mechanism, a second motor assembly having a double action door-opening mechanism; a spring- and shock absorber-restoration drive assembly matable with both said first and second motor assemblies to form single action and double action door closures, respectively; a first elongated casing containing said first motor assembly and having a first coupling means; a second elongated casing containing said second motor assembly and having a second coupling means identical to said first coupling means; and a third elongated housing having a third coupling means matable with said first and second coupling means to form unitary single action and double action door closures, respectively; wherein the transverse dimensions of said first, second and third elongated casings are substantially the same.

4,387,483
EXTRACTING HANDLE FOR EARTH DRILL AUGERS
Edward M. Larrabee, 86 Snowden La., Princeton, N.J. 08540
Filed Jul. 11, 1980, Ser. No. 167,749
Int. Cl.³ A47B *95/02*
U.S. Cl. 16—114 R **10 Claims**



10. An extricating handle for dislodging an earth drill auger of the type having a shaft with a spiral screw-flight thereabout, said handle comprising:
handle grip means;
an auger shaft receiving means for selective connection to said auger shaft, said hand grip means being connectable to said auger shaft receiving means; and,
locking means for locking said auger shaft with respect to said auger shaft receiving means, said locking means including a spring-biased means for automatically locking said auger shaft to said auger shaft receiving means when said auger shaft receiving means is placed in locking position with respect to said auger shaft.

4,387,484
SUPPORTING BRACKET FOR SIDE HANDLES OF UTENSILS
Wolfgang Fischbach, Daaden, Fed. Rep. of Germany, assignor to Heinrich Baumgarten KG Eisen- und Blechwarenfabrik, Neunkirchen, Fed. Rep. of Germany
Filed Mar. 5, 1981, Ser. No. 240,709
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009766; Mar. 25, 1980, 8008180[U]
Int. Cl.³ A47J *45/10*
U.S. Cl. 16—114 A **6 Claims**



1. In a handle apparatus for a utensil, including a supporting bracket secured to a wall of said utensil and having a leg projecting away from said utensil, a handle having a recess therein for receiving said leg of said supporting bracket, and retaining means disposed in said handle recess and cooperable with said leg for releasably securing said handle on said utensil, the improvement comprising wherein said leg includes spaced first and second portions projecting outwardly from said utensil wall, a third portion extending between the outer ends of said first and second portions, and fourth and fifth portions respectively provided at the inner ends of said first and second portions and extending along and secured to said utensil wall, said first and second portions converging away from said utensil wall and said third portion being approximately parallel to said utensil wall, whereby said leg is of approximately trapezoidal shape, wherein said supporting bracket includes two said legs and a connecting web which extends therebetween so that said supporting bracket is generally U-shaped, each said fourth portion being a portion of said connecting web and each said fifth portion extending from the inner end of a respective said second portion toward the inner end of a respective said first portion, each said leg being received in said handle recess and said retaining means cooperating with each said leg.

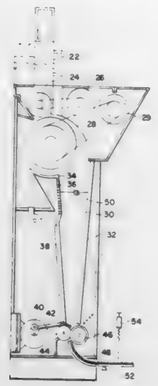
4,387,485
METHOD OF EXTRACTING MEAT OF SMALL CRUSTACEANS
Efim N. Grinberg, ulitsa Bazhova, 13, korpus 2, kv. 119; Yakov I. Braginsky, ulitsa Moldagulovoi, 28, korpus 3, kv. 64; Yakov M. Zhislin, Fakultetsky pereulok, 4, kv. 19; Vladimir V. Lavrov, ulitsa Narodnogo Opolchenia, 23, korpus 1, kv. 63; Viktor A. Mitrofanov, bulvar Generala Karbysheva, 18, korpus 1, kv. 19; Nikolai A. Nikitushkin, ulitsa Volgina, 15, korpus 1, kv. 43; Alexandr A. Filatov, Yaroslavskoe shosse, 134, kv. 22; Jury F. Yaroshenko, Novo-Basmannaya ulitsa, 17, kv. 103; Samuil S. Torban, ulitsa Bolshaya Polyanka, 30, kv. 305; Viktor M. Kovalev, ulitsa Shipilovskaya, 41, korpus 1, kv. 140; Georgy I. Urusov, Preobrazhensky val, 24, kv. 135; Alla V. Rozanova, Amstradamskaya ulitsa, 9, stroenie 1, kv. 1; Tatyana N. Radakova, 1 Akademichesky proezd, 15, kv. 25; Larisa I. Krivosheina, Sevastopolsky prospekt, 83, korpus 1, kv. 47; Vladimir P. Bykov; Vladimira M. Bykova, both of Chertanovskaya ulitsa, 1a, korpus 1, kv. 84, and Igor V. Gultsev, ulitsa Malaya Schukinskaya, 15, kv. 78, all of Moscow, U.S.S.R.
Filed May 14, 1979, Ser. No. 38,792
Claims priority, application U.S.S.R., May 15, 1978, 2614820
Int. Cl.³ A22C *29/02*
U.S. Cl. 17—48 **4 Claims**

1. A method of extracting meat of small crustaceans, comprising the following sequence of steps:
introducing the crustaceans into an air flow;
breaking up the shells of the crustaceans and separating the meat therefrom by making said air flow relative to the surface of said crustaceans at a predetermined velocity sufficient for creating a pressure differential between the internal cavity of said crustaceans and the said air flow.

4,387,486
CONTROL SYSTEM FOR FIBER PROCESSING APPARATUS
Alex J. Keller, Clover, S.C.; Joseph R. Williams, Kings Mountain, N.C.; Erhard A. Fechner, Gastonia, N.C., and Akiva Pinto, Gastonia, N.C., assignors to Automatic Material Handling, Inc., Bessemer City, N.C.
Continuation-in-part of Ser. No. 255,109, Apr. 17, 1981, abandoned. This application Jul. 16, 1981, Ser. No. 283,828
Int. Cl.³ D01H *5/38*
U.S. Cl. 19—105 **16 Claims**

1. A control system for use in textile processing equipment that includes fiber feeding means for delivering a batt of fiber to carding means, said fiber feed means including an oscillating plate acting on the fiber in said fiber feeding means to densify said fiber, said control system comprising:
(a) signal generating means for sensing a function of the quantity of fiber in said batt delivered by said fiber feeding means to said carding means and for generating a signal that is proportional to said sensed quantity of fiber; and

(b) control means receiving said generated signal and varying the movement of said oscillating plate in said fiber feeding



means in a predetermined ratio to the quantity of fiber sensed by said signal generating means.

4,387,487

HIGH DRAFT APPARATUS IN SPINNING MACHINE

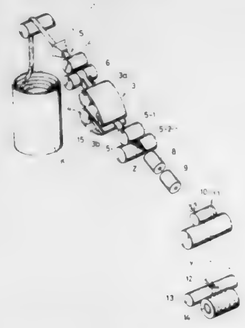
Teiji Nakahara, Ujishi; Toshifumi Morihashi, Ohtsushi; Teruo Nakayama, Ohtsushi; Shinichi Nishimura, Ohtsushi; Hisaaki Kato, Shigaken; Ikuzo Uematsu, Kyotoshi, and Takashi Yoshioka, Kyotofu, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed Oct. 14, 1980, Ser. No. 196,480

Claims priority, application Japan, Oct. 16, 1979, 54-133979; Oct. 25, 1979, 54-138494

Int. Cl.³ D01H *5/88*

U.S. Cl. 19—249 **9 Claims**



1. A high draft apparatus in a spinning machine comprising back rollers, a width adjusting guide, apron-provided middle rollers and front rollers which are arranged in succession along a yarn passage characterized in that the draft apparatus further includes a gripping and pressing means disposed on the front end of the apron which gripping and pressing means comprises a tenser bar having a T-shaped cross section which is fixed to a fixing bar and is disposed on the inner side of the front end of the lower apron, and a cradle which is urged toward the inner side of the front end of the upper apron by a spring and is urged in the pressed state toward the tenser bar.

4,387,488

FABRIC-COVERED BUTTON

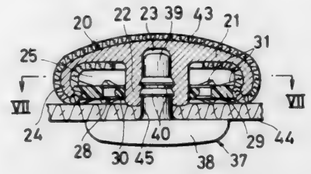
Yoshihiro Kanzaka, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 11, 1981, Ser. No. 242,608

Claims priority, application Japan, Mar. 26, 1980, 55-39973[U]

Int. Cl.³ A44B *1/12, 1/38*

U.S. Cl. 24—113 R **13 Claims**



1. A covered button for attachment to a piece of cloth having a preformed aperture, comprising:

(a) a button body including a domed head and a central boss projecting inwardly from said domed head and having a cylindrical outer surface and a cylindrical bore having a continuous circumferential wall and closed at its outer end, said domed head having an inwardly directed peripheral flange surrounding said central boss in spaced relation thereto;

(b) a retainer washer of synthetic resin adapted to be mounted on said boss resiliently with a force fit and having an outer periphery adapted to coact with said inwardly directed peripheral flange of the domed head in gripping between the outer peripheral edge of said washer and a radially inner surface of said flange an edge portion of a piece of fabric extending over said domed head and in around said peripheral flange; and

(c) a fastener having a base and a central shank projecting from said base and adapted to fit forcibly into said cylindrical bore in the central boss through an aperture in the piece of cloth to sandwich the piece of cloth between said base and said button body, one of said central shank and said boss having means for allowing air to escape from said bore when said shank is forced axially into said bore, said means comprising a passage extending axially between said shank and boss from the interior of said bore to the atmosphere.

4,387,489

CLASP FOR LOCKING A LIGATURE LOOP

Günter Dudek, Pulheim, Fed. Rep. of Germany, assignor to Prämeta Präzisionsmetaal-und Kunstofferzeugnisse G. Baumann & Co., Cologne, Fed. Rep. of Germany

Filed Feb. 5, 1982, Ser. No. 346,204

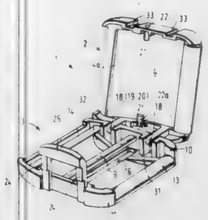
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1981, 3104382

Int. Cl.³ F16G *11/00;* **A44B** *11/06;* **A61B** *17/08*

U.S. Cl. 24—133 **20 Claims**

1. A clasp for gripping free end portions of a strap to maintain a loop thereof tightly engaged around an object such as a portion of the human body, said clasp comprising an upper casing half and a lower casing half and means for releasably securing said casing halves in superposed relation to each other to define a passage therebetween through which the free end portions of a strap may pass thereby forming a loop end at one end portion of a clamping lever, said clamping lever being pivotally carried by said clasp to present said one end portion lying at the loop end of said passage whereby to be forcibly engaged by the loop when tight so that the other end of said

clamping lever clamps the free end portions of the strap between it and one of the casing halves, said lower casing half



having a bridgelike cross bar lying transversely within said passage.

4,387,490

BUCKLES

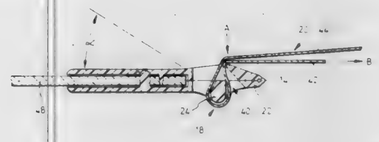
Neil P. Blackburn, Winchester; Alfred E. C. Piper, and Alan M. G. Meeks, both of Basingstoke, all of England, assignors to ITW Limited, Berkshire, England

Filed Jul. 14, 1981, Ser. No. 282,983

Claims priority, application United Kingdom, Jul. 15, 1980, 8023033

Int. Cl.³ A44B *11/02, 11/20*

U.S. Cl. 24—200 **4 Claims**



1. In combination with a workpiece, and a wrapable strap member, said strap member having a free-end portion, an improved buckle, said improved buckle being readily fixedly securable to said workpiece, said strap member being adjustably securable to said improved buckle, said improved buckle comprising: a one-piece plastic member, said one-piece member including a first flap and a second flap integral through a resilient hinge with said first flap; said first and second flaps including means for clinching said workpiece engaged therebetween, said workpiece-clinching means being in distal relation to said hinge, for readily fixedly securing said buckle to said workpiece; said first and second flaps including bar means having a first bar and a second bar for adjustably securing said strap member to said buckle, said bar means being proximate to said hinge in relation to said workpiece-clinching means, said strap member extending in one direction from said buckle and said free-end portion being wrapable around said first bar and then directable back in said one direction between said second bar and the remainder of said strap member for causing said free-end portion of said strap member engaging said second bar to be secured to said buckle and for pulling said flaps around said hinge and against said workpiece engaged therebetween, said buckle when fixedly secured to said workpiece being rotatable about the axis of said first bar for disengaging said strap member from said second bar thereby permitting adjustment of said strap member secured to said buckle.

4,387,491

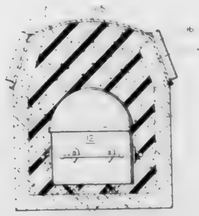
BURIAL ENCLOSURE ARRANGEMENT AND METHOD

Cecil F. Schaaf; Craig R. Schaaf, both of 3015 Palmer Rd., Standish, Mich. 48658; James E. Van Linden, and Kirk S. Van Linden, both of 3384 Michelle Ct., Clio, Mich. 48420

Continuation-in-part of Ser. No. 133,345, Mar. 24, 1980, abandoned. This application Jul. 30, 1981, Ser. No. 288,630

Int. Cl.³ A61G *17/00*

U.S. Cl. 27—35 **3 Claims**



1. An improved method for protectively sealing and enclosing a substantially closed container within an initially open-topped outer receptacle having sides which extend above the top of the enclosed container to prevent leakage of the contents of the container to the exterior of the receptacle or infiltration of outside elements into the container, comprising the steps of:

supporting the substantially closed container within the receptacle so that substantially all of the lower surface of the container is spaced from the bottom of the receptacle and so that the container is laterally spaced from the side enclosing walls of the receptacle;

partially filling the open-topped receptacle with a foamable plastic material in liquid form, the volume of liquid being insufficient to cause floatation of the container within the receptacle unit but sufficient so that the resulting foam will contact the lower portion of the container and anchor it to the interior of the receptacle as a result of the bond which is formed at the foam-to-receptacle and foam-to-container interfaces;

after the first foaming has at least substantially set, applying at least one additional pouring of foamable plastic material in liquid form to the interior of the still-open-topped receptacle, the volume of said additional application being sufficient so that the resulting foam will completely cover and enclose the container, thereby eliminating all air space immediately adjacent the exterior of the substantially closed container.

4,387,492

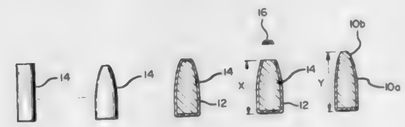
PLATED JACKET SOFT POINT BULLET

Darrel F. Inman, Lewiston, Id., assignor to Omark Industries, Inc., Portland, Oreg.

Filed Oct. 2, 1980, Ser. No. 193,093

Int. Cl.³ B21K *21/06*

U.S. Cl. 29—1.23 **6 Claims**



1. A method for manufacturing a plated soft nose bullet comprising the steps of

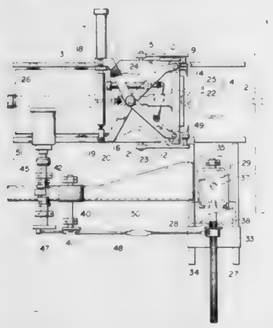
providing a selected quantity of a deformable first metal capable of being electroplated,
forming said first metal into a core generally of the size and shape of the desired finished bullet, said core having opposed forward and rear ends,
electroplating said core with a second metal to a pre-selected thickness,
removing the electroplated second metal from the forward end of said core to expose a portion of said first metal, and
forming said plated core to its desired final shape and size in such a manner that a quantity of unplated first metal is extruded forwardly from remaining plated portions to form an unplated forward portion for said bullet.

4,387,493

BINDING BAND CUTTING APPARATUS

Tamio Nakaie, 3-11-1 Uenomaru, Akashi-shi, Hyogo-ken, Japan

Filed Nov. 24, 1980, Ser. No. 209,827
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—56.5 **4 Claims**



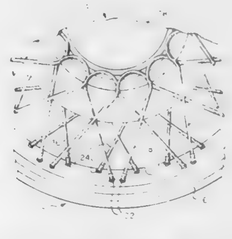
1. An apparatus for cutting the binding band on a strip coil which comprises a carriage movable towards and away from said strip coil in parallel to the strip axis of the strip coil when the strip coil is carried to said apparatus, a substantially T-shaped pawl guide rod operatively connected to the leading end of said carriage for movement towards and away from said strip coil and having a transverse pawl guide groove in the front face of the transverse portion of said T-shaped pawl guide rod, a substantially X-shaped jaw member including a pair of plates intersecting each other and pivoted in the centers of the plates to each other and at the leading ends to the opposite ends of said transverse portion of the T-shaped pawl guide rod, a pair of pawls each having a pointed leading end bent inwardly and secured to said leading ends of the plates of the jaw member to be slidably guided along said pawl guide groove in the T-shaped pawl guide rod, a first cylinder operatively connected to said pawl guide rod for operating the guide rod, a second cylinder operatively connected to the rear end of said jaw member for operating the jaw member, a pair of substantially L-shaped probe rods journalled on the opposite sides of said carriage with the longer legs of said probe rods extending towards each other, a primary cutting blade secured to the undersurface of said transverse portion of the T-shaped pawl guide rod, a rubber pad secured to said cutting blade substantially in the center of the blade, a second carriage provided adjacent to said transverse portion of the T-shaped pawl guide rod for slidable movement towards and away from said strip coil at right angles to the axis of said first-mentioned carriage, a lower feed roller rotatably mounted in a lower portion of said second carriage, a splined shaft journalled in said second carriage for rotatably supporting said lower feed roller, an upper feed roller positioned above said lower feed roller for movement towards and away from said lower feed roller, a third cylinder for operating said upper feed roller, feed rollers for shredding positioned rearwardly from said lower feed roller, and shredding blade means positioned rearwardly from said feed rollers for shredding and mounted for upward and downward movement by means of a crank mechanism, whereby said shredding blade means cooperate with said feed rollers for shredding, in further cutting said binding band into pieces after the binding band has been pulled from the strip coil by the pawls and primarily sheared off by said primary cutting blade and then pulled to the shredding blade means by said feed rollers on said second carriage for delivery to the feed rollers for shredding and in turn to the shredding blade means.

4,387,494

METHOD FOR MANUFACTURING A SIMULATED WIRE WHEEL COVER

Don W. McClure, Sterling Heights, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 26, 1981, Ser. No. 267,167
Int. Cl.³ B21D *53/26*
U.S. Cl. 29—159 A **6 Claims**



1. A method of assembling a wire wheel cover comprising: inserting a rim member in a fixture; inserting a hub member centered within said rim member, said hub member having a truncated conical camming surface thereon; positioning a row of spokes between said rim member and said hub member, said row of spokes comprising a plurality of generally V-shaped wire members, said generally V-shaped members are capable of engaging said hub member with the apex of each of said generally V-shaped simulated wire members bearing upon said truncated conical camming surface on said hub; moving generally V-shaped simulated wire members along said conical camming surface and thereby driving the ends of said simulated wire members radially outwardly into positive engagement with said rim member; welding said generally V-shaped wire members to form an integral array of spokes; and fastening said hub member to said integral array of spokes.

4,387,495

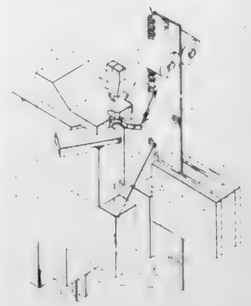
METHOD AND APPARATUS FOR FEEDING CONDUCTIVE WIRE FOR ANODIZING PROCESS OF SLIDE FASTENER CHAIN

Koitsu Morioka, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 24, 1981, Ser. No. 286,476
Claims priority, application Japan, Sep. 25, 1980, 55-133477
Int. Cl.³ B21F *45/18;* **A41H** *37/06*
U.S. Cl. 29—408 **6 Claims**

1. A method of feeding a conductive wire for anodizing process of a slide fastener chain in a system in which the wire is mounted on the beaded portion of the fastener tape by fastener elements successively fixed to the beaded portion, the method comprising: providing a wire guide member movable perpendicularly to the feeding movement of the fastener tape; passing the conductive wire through said guide member so that it is guided by the wire guide member before it is secured to said beaded portion of the tape; reciprocating said guide member between a first position in which the wire portion adjacent the lastly secured elements is in contact with the beaded portion of the tape and extends parallel with the feeding direction

of the tape and a second position in which said wire portion angularly extends away from the beaded portion; and fixing a



fastener element together with the wire to said beaded portion and feeding the tape thereafter when said wire guide member is in its first position.

4,387,496

METHOD OF FORMING A SPRAY ARM

Raymond W. Spiegel, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 8, 1980, Ser. No. 214,018
Int. Cl.³ B23P *11/00, 17/00;* **B21D** *39/02*
U.S. Cl. 29—416 **5 Claims**



1. The method of forming a hollow dishwasher spray arm having a top wall defining a first formed configuration and a bottom wall defining a second, substantially different formed configuration, comprising the steps of:
providing a strip of sheet material from which the spray arm is to be formed;
dividing the strip successively at longitudinally spaced portions to define a series of blanks, each blank having a central portion extending the full width of the strip and oppositely extending end portions, one end portion extending from one side of the strip substantially one-half the width of the strip and the other end portion extending from the opposite side of the strip substantially one-half the width of the strip, the substantially different configurations of the spray arm top and bottom walls and the configuration of said blanks from which they are to be formed being coordinated such that each of said blanks is identical and suitable for use in forming either of said spray arm top or bottom walls with effectively minimized wastage;
forming said top wall from one of said blanks;
forming said substantially different bottom wall from the other of said blanks; and
securing the top and bottom walls edgewise to form the hollow spray arm.

4,387,497

CAPTIVE SCREW ASSEMBLY METHOD AND PRODUCT

Bulent Gulistan, 3944 Bon Homme Rd., Woodland Hills, Calif. 91364

Filed Nov. 7, 1980, Ser. No. 204,823
Int. Cl.³ B23P *11/00, 19/02*
U.S. Cl. 29—511 **4 Claims**

1. A method of providing a captive screw assembly including the sequential steps of:
(a) inserting a cylindrical bushing over the shank of a screw member prior to forming threads on the shank and positioning one end of the bushing next to the underside of the screw head so that the maximum length of the screw shank is exposed from the opposite end of the bushing;
(b) forming threads on the screw shank over a given exposed length of the shank, the inside diameter of said bushing being less than the outside diameter of the formed screw threads, so as to be held captive on the screw shank; and



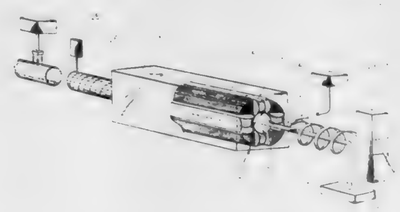
(c) inwardly deforming an outer sleeve onto said bushing, said outer sleeve having means spaced axially beyond said opposite end of said bushing for securing the bushing to a panel opening whereby the threads can be formed of sufficient length to assure continuous threaded engagement with a member to be fastened to the panel by the captive screw.

4,387,498

METHOD FOR MAKING HELICALLY WOUND SURFACE-COATED TUBES, AND APPARATUS FOR CARRYING OUT THIS METHOD

Alfred Morhard, Königsberger Str. 24, 7272 Altensteig-Waldd., Fed. Rep. of Germany

Filed Mar. 20, 1980, Ser. No. 132,363
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1979, 2912308
Int. Cl.³ B22D *11/126*
U.S. Cl. 29—527.2 **4 Claims**



1. A method of making a multi-layer tube, comprising the steps of preheating two elongate, flat metal strips; bending each said preheated metal strip to a substantially arcuate curvature; winding each said curved metal strip in a helical configuration with the edges of adjacent windings butting against each other, one said strip being closely concentrically wound around and axially offset with respect to the other said strip, whereby said metal strips define a generally cylindrical metal tube; applying a first synthetic resin between said metal strips as said strips are wound into said concentric relationship, thereby effecting a continuous and concentric layer of resin intermediate said strips; applying a continuous coating of second synthetic resin to the radially inner surface of said tube during said winding step; pre-curing said intermediate layer and said inner coating thereafter applying a continuous coating of a third synthetic resin to the radially outer surface of said

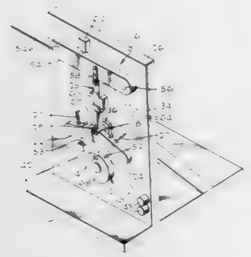
tube; and curing fully said intermediate layer, inner coating and outer coating.

4,387,499

LEADER TO HUB LOCKING SYSTEM

Vern R. Schwartz, and Bernard D. Benz, both of Sunnyvale, Calif., assignors to Verbatim Corporation, Sunnyvale, Calif.

Filed Feb. 3, 1977, Ser. No. 765,130
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—564.6 **9 Claims**



4. Apparatus for installing a tape leader on a hub that has an undercut slot, comprising:

means for holding the tape leader over the hub slot;

a pair of compressing means for pressing on opposite sides of a resilient locking member to establish it at a reduced width at a location adjacent to said hub slot but on a side of said tape leader which is opposite said slot; and

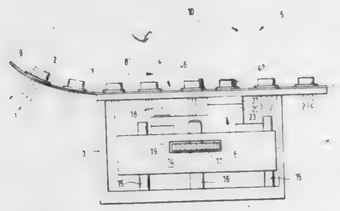
means for pressing said resilient member from between said pair of compressing means and against the tape leader into said slot.

4,387,500

APPARATUS FOR OPERATING UPON CONNECTING WIRES OF ELECTRIC COMPONENTS

Thomas Weresch, Greschbachstr. 19, D-7500 Karlsruhe 41, Fed. Rep. of Germany

Filed Sep. 17, 1980, Ser. No. 187,995
Int. Cl.³ B23P *23/00;* **B21F** *45/00*
U.S. Cl. 29—566.3 **30 Claims**



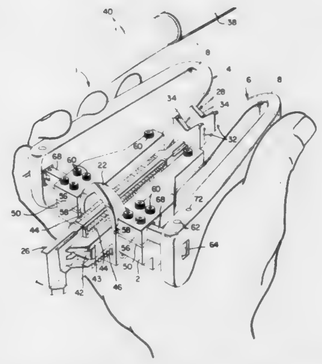
1. An apparatus for preparing leads of electrical components, having connecting leads extending parallel to one another and only in one direction, with the apparatus having a conveying device adapted to supply the components, the conveying device being a non-moving component guide comprising a sliding guide with a guide slot, through which the connecting leads extend to project downwardly, and having a cutting device for cutting the connecting leads to length, said apparatus further comprising at least one tool set having two tools which are cooperable for shaping the connecting leads between them by bending and kinking, the tool set being disposed beneath the guide slot, at least one of the tools being operable to move against the other by a closing movement in a direction which is perpendicular to the guide slot, and both of the tools being jointly movable parallel to one another, within an operating range, in an operating movement, said closing movement of the tool set being synchronized with said operating movement in such a manner that the tools are closed during a part of the operating movement which takes place in a direction in which the components are conveyed and are opened in a direction opposite to the conveying direction.

4,387,501

PALM GRIP APPARATUS FOR INSERTION OF WIRES

Robert D. Rix, Winston-Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 24, 1980, Ser. No. 209,566
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—566.4 **5 Claims**



1. An apparatus for cutting and inserting a pair of wires into electrical terminals of an electrical connector, and for indexing the connector, the improvement comprising:

a body,

a carriage movable with respect to said body,

a cusp mounted on said body and defining wire receiving slots on either side thereof,

a pair of wire insertion and cutting rams mounted for reciprocation in said body, toward and away from opposite sides of said carriage,

resilient levers connected to said body and doubled back on themselves and pivotally connected to said rams,

a feed pawl engaged on said carriage and pivotally secured on an arm, in turn, reciprocably mounted on said body and secured to one of said levers, and

a locking pawl reciprocably mounted on said body for releasable engagement on said carriage.

4,387,502

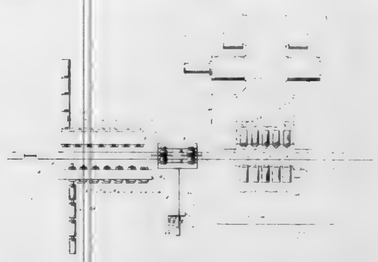
SEMI-AUTOMATIC TOOL CHANGER

Harry A. Dom, Tiffin, Ohio, assignor to The National Machinery Company, Tiffin, Ohio

Filed Apr. 6, 1981, Ser. No. 251,352
Int. Cl.³ B23Q *3/157*
U.S. Cl. 29—568 **6 Claims**

1. A tool changer for forging machines or the like comprising a machine providing tools at a plurality of spaced work stations, a tool supply adjacent to said machine providing replacement tools at a plurality of spaced storage stations, said tool changer providing a horizontally movable carriage movable on support means between said machine and said supply, a power lift supported by said carriage for movement therewith, a tool handling head supported by said lift for vertical movement thereby, a plurality of locater means positioned to be associated with said work and storage stations providing an

indication when said carriage is positioned over each of said work stations and each of said storage stations for positioning said tool changer at each station, first and second cam means operable to position said head with respect to said stations as



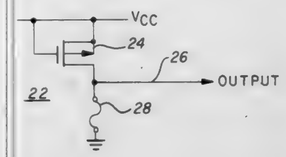
said head is lowered by said lift, said first cam means operating first to ensure relatively close positioning of said head, and said second cam means operating to thereafter provide final positioning of said head.

4,387,503

METHOD FOR PROGRAMMING CIRCUIT ELEMENTS IN INTEGRATED CIRCUITS

Cecil J. Aswell, Coppell, and Hugh N. Chapman, Lewisville, both of Tex., assignors to Mostek Corporation, Carrollton, Tex.

Filed Aug. 13, 1981, Ser. No. 292,512
Int. Cl.³ H01L *21/268, 21/322*
U.S. Cl. 29—575 **7 Claims**



1. A method for programming a logic switch in an integrated circuit, comprising the steps of:

directing an energy beam to open a link fabricated in said integrated circuit thereby disconnecting an output node from a first power terminal; and

directing an energy beam toward a transistor fabricated in said integrated circuit, where said transistor is connected between said output node and a second power terminal and is normally turned off, to damage the structure of said transistor and produce therefrom a conducting path between said output node and said second power terminal.

4,387,504

MACHINE FOR FLATS OR CONICAL WINDINGS IN THE FORM OF A DISC FOR ELECTRIC MOTORS

Michel Coquillart, Saint Etienne Terrenoire, France, assignor to Mavilor Systemes, Switzerland

Filed Nov. 21, 1980, Ser. No. 209,293
Claims priority, application France, Dec. 5, 1979, 79 30267
Int. Cl.³ B21F *3/00*
U.S. Cl. 29—598 **33 Claims**

1. In a machine for making dynamo-electric windings, having a rotatable coil holder (24) and wire distributing means radially displaceable relative to the coil holder for continuous formation of winding coils from wire (F) fed thereto, the improvement comprising rotatable cam means (20-21-41-42) engageable with the wire distributing means for said displacement thereof, a drive motor (6), transmission means (10-11-12-13-17-18-22-23a) drivingly connecting the motor to the cam means and the coil holder for rotation thereof, and clutch-brake control means (7-9) operatively connected to the transmission means for alternatively imparting said rotation to both the cam means and the coil holder or to the coil holder alone,



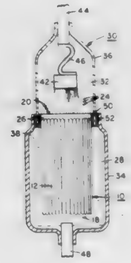
to adjustably form the winding coils (S) in offset trapezoidal sections extending in conical relation to radially inner dead turns (S3) about a winding center.

4,387,505

METHOD OF FORMING A BATTERY CELL

George C. Shay, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

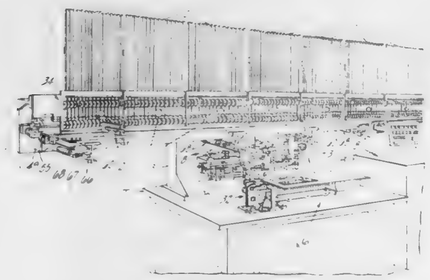
Division of Ser. No. 167,423, Jul. 11, 1980, Pat. No. 4,310,607.
This application Aug. 17, 1981, Ser. No. 293,612
Int. Cl.³ H01M *10/38*
U.S. Cl. 29—623.1 **5 Claims**



1. A method of making a battery cell having a first oxidizable liquid metal electrode, a second fluid reducible electrode and a substantially fluid tight electrolyte/separator separating said first and second electrodes wherein said electrolyte/separator is in the form of a plurality of hollow fibers which comprises, forming a plurality of a longitudinally extending hollow fibers having open ends, sealing off one end of each of said hollow fibers, forming a bundle of said hollow fibers by juxtapositioning a plurality of said hollow fibers in substantially parallel relationship with longitudinally extending outer surface portions of adjacent hollow fibers contacting one another and with said sealed ends of said hollow fibers being positioned at one end of said bundle and opposite open ends of said fibers being positioned at the opposite end of said bundle, sealing wall portions of adjacent fibers forming said separator bundle together adjacent the open ends of said fibers and forming a solid sealing mass of the same composition as said fibers and thus closing off interstices between said fibers adjacent their open ends, sealing at least a portion of the contacting longitudinally extending outer surface portions of adjacent hollow fibers together at locations spaced apart from said solid sealing mass

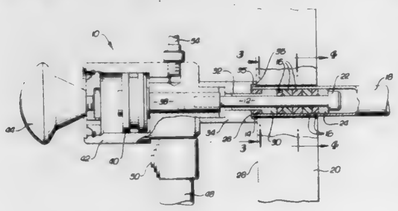
to form a substantially rigid separator bundle with interstices formed between adjacent fibers along their outer longitudinal surfaces, positioning current collecting means within said fibers so as to extend outwardly therefrom through said open ends, and sealing said separator bundle within a battery cell housing with said solid sealing mass positioned substantially at an interface between said first and second electrodes.

4,387,506
COMPONENT INSERTING MACHINE
Henry L. Wright, Ipswich; Vitaly Bandura, Danvers, and Daniel W. Woodman, Jr., Beverly, all of Mass., assignors to USM Corporation, Farmington, Conn.
Filed Jun. 9, 1981, Ser. No. 271,836
Int. Cl.³ H05K *3/30*
U.S. Cl. 29—714 **11 Claims**



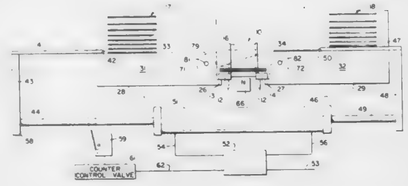
1. In a machine for applying to circuit boards components selected individually from magazines and having picker means movable in a predetermined sequence between selected magazines and a component conditioning means, the improvement in which the picker means includes at least two pickers movable along opposite sides of a path in which the magazines are arranged, each picker having a receptacle movable between a retracted position to an advanced position for receiving a component selected from a predetermined magazine, the pickers being arranged to pass without interference during movement between the conditioning means and the magazines when at least one of said receptacles is in retracted position.

4,387,507
METHOD AND APPARATUS FOR RADIALLY EXPANDING TUBES
John W. Kelly, Burbank, Calif., assignor to Haskel Engineering & Supply Co., Burbank, Calif.
Filed Apr. 20, 1981, Ser. No. 255,789
Int. Cl.³ B23P *15/26, 17/00, 11/02;* **B21D** *39/20*
U.S. Cl. 29—727 **14 Claims**



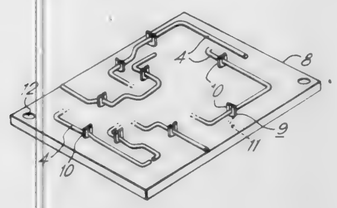
11. An apparatus for anchoring a tube within a tube sheet in preparation for a subsequent swaging operation, said apparatus comprising:
an anvil adapted to engage a surface of said tube sheet and thereby position said apparatus;
a hydraulic cylinder connected to said anvil and immovable with respect thereto;
a piston movable within said cylinder;
a draw bar connected to said piston for movement therewith and adapted to be inserted in said tube;
a sleeve in which said draw bar is slidable;
a primary expander encircling said sleeve and adapted to be positioned within said tube adjacent to said tube sheet surface;
a segmented secondary expander encircling said draw bar, said secondary expander having a larger cross section than said primary expander when considered with respect to a plane passing transversely through said tube; and
a head carried by said draw bar to compress said expanders radially and thereby expand said expanders radially upon axial movement of said draw bar.

4,387,508
APPARATUS FOR MAGNETICALLY ASSEMBLING FRAGILE PARTS
Kenneth L. Wyatt, Oklahoma City, Okla., assignor to Western Electric Company, Inc., New York, N.Y.
Filed Feb. 26, 1981, Ser. No. 238,315
Int. Cl.³ H01F *41/02*
U.S. Cl. 29—738 **5 Claims**



1. A machine for assembling magnetically soft laminates into an opening formed in a frame, which comprises:
a bin having a pair of walls for receiving a stack of magnetically soft laminates;
planar magnetic means positioned adjacent to the outer sides of said walls for establishing a magnetic field extending into said bin to magnetize the edge sections of said laminates, said magnetic means having facing surfaces magnetized with opposite polarities to induce magnetizing forces in adjacent edge sections of like polarity that act as repelling forces to separate said laminates;
means for supporting a frame with a top portion of the opening therein extending toward the lowermost laminate in said bin;
a pickup device for cyclically engaging and advancing the lowermost laminate from said bin into the top portion of the opening in the supported frame whereafter the laminate drops and seats in the frame opening;
magnets positioned adjacent to the lower portion of the supported frame for assisting the seating of the laminate in the opening and for holding the laminate in the position during the seating of subsequent laminates; and
magnetic means for vibrating each advanced laminate relative to the opening to impart a slight twist to the leading edges of the laminate whereupon the leading edge seeks out the opening and then advances into the opening in the frame.

4,387,509
METHOD OF MANUFACTURING AN ELECTRICAL INTERCONNECTION ASSEMBLY
Helen Dechelette, St. Cloud, France, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Aug. 17, 1981, Ser. No. 293,561
Int. Cl.³ H01K *3/10*
U.S. Cl. 29—850 **10 Claims**



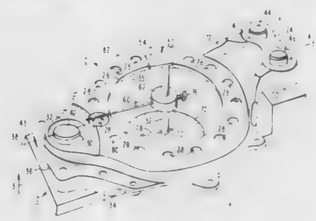
1. A method of manufacturing an electrical interconnection assembly comprising a plurality of electrical terminals carried by a common electrically insulating support and interconnected in a predetermined arrangement by electrical conductors, the method including the steps of laying a continuous length of insulated electrical wire in a groove formed in a template; cutting the length of wire in the groove into a plurality of pieces; and urging the pieces of wire from the groove on to an insulating support carrying a plurality of electrical terminals each having a slotted plate portion providing an insulation displacement slot which receives a piece of wire and establishes an electrical connection thereto whereby the terminals become interconnected by the pieces of wire in the predetermined arrangement.

4,387,510
GARDEN CUTTING TOOL
Mirahmad Hashemifard, 3 Robin Hill Rd., Great Neck, N.Y. 11024
Filed Oct. 30, 1981, Ser. No. 316,773
Int. Cl.³ B26B *3/00*
U.S. Cl. 30—314 **6 Claims**



1. A garden cutting tool which comprises:
(a) a blade;
(b) a neck having an arm affixed to bottom of said blade, a sleeve having a central aperture, extending from said arm and a pair of rods diametrically extending vertically from bottom of said sleeve;
(c) a handle having an extension that mates within said central aperture of said sleeve, said handle having a pair of apertures diametrically extending vertically at base of said extension, whereby said rods go into said apertures and are bent at bottom of said handle to keep said handle in a secure and stable position; and
(d) a fastener placed horizontally through said sleeve of said neck and said extension of said handle to keep said handle in a secure and stable position.

4,387,511
CAM MASTER SPIDER IDENTIFIER
Jon H. Wong, Sterling Heights, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Jun. 26, 1981, Ser. No. 277,517
Int. Cl.³ G01B *3/00*
U.S. Cl. 33—1 BB **11 Claims**



1. An apparatus for identifying automotive brake spiders of the type having two anchor pin holes which extend between a first and second side of a boss on said spider said anchor pin holes at a first end of said spider and capable of said spider capable of receiving an automotive axle spindle therethrough, a plurality of mounting holes in a circular pattern around said spindle hole extending from a first to a second side of said spider, said first side of said spider capable of engaging a mounting flange on said spindle, a single actuator rod hole located at the end of said spider opposite said first end, said boss offset from said first side of said spider, said spider having an axis running through the centers of said actuating rod hole and said spindle hole and perpendicularly bisecting a line in between the centers of said anchor pin holes, said apparatus comprising: means for supporting and positioning said brake spider; depth gauge means, removably mounted on said supporting and positioning means, capable of measuring the offset between said anchor pin boss and said first side of said brake spider and means capable of measuring the angular offset of a predetermined mounting hole from said axis, said angular offset measured from a center located at said center of said spindle hole, said means for measuring said angular offset being rotatably mounted on said supporting and positioning means.

4,387,512
PASTA GAUGE AND CONTAINER
Carol A. Gorski, and Saul B. Gorski, both of 123 S. Blanchard St., Wheaton, Ill. 60187
Continuation-in-part of Ser. No. 32,509, Apr. 23, 1979, Pat. No. 4,334,361. This application Dec. 8, 1980, Ser. No. 214,036
Int. Cl.³ G01B *5/00;* **B65D** *5/72*
U.S. Cl. 33—174 T **4 Claims**

1. A pasta gauge and container for holding a supply of elongated, dried pasta members and for removing selected, predetermined amounts of said pasta members therefrom comprising
an elongated box having top and bottom mutually parallel, planar walls, a pair of mutually parallel, planar side walls, and an end wall affixed to said walls at one end of said box, the other ends of said walls providing a rectangular opening at the other end of said box,
a generally planar cover and gauge member slidably mounted to said box over said rectangular opening for movement between a closed position completely covering

said opening and a plurality of other positions only partially covering said opening,

said cover when in said other positions defining with said side walls and one of said top and bottom walls a rectangular opening through which a selected amount of said pasta members may be poured out of said box, and



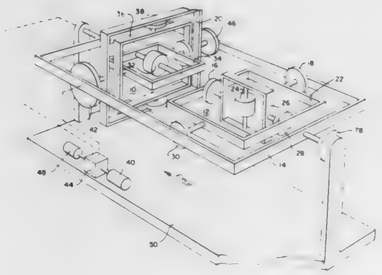
indicia provided on at least one of said sidewalls in proximity to said other end for providing a visible indication of the amount of pasta members selected by the position of said cover.

4,387,513

AIRCRAFT BODY-AXIS ROTATION MEASUREMENT SYSTEM

Kenneth T. Cowdin, Lancaster, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 11, 1981, Ser. No. 242,790
Int. Cl.[3] G01C *19/44*
U.S. Cl. 33—322 **9 Claims**



1. A displacement gyroscope system for indicating the orientation of a body in space, said body having orthogonal longitudinal, lateral and vertical axes, comprising:

an outer roll gimbal mounted to said body for rotation about an outer roll axis substantially parallel to said longitudinal axis;

first means for providing an indication that the magnitude of the first angular displacement of the longitudinal axis from the horizontal earth plane is equal to or greater than a threshold value;

second means, responsive to said first means, for maintaining said outer roll gimbal substantially stationary with respect to a first plane defined by said longitudinal and said lateral axes; and

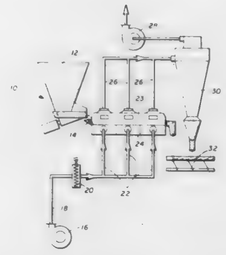
third means for providing a first signal indicative of the angular displacement of said longitudinal axis about said vertical axis when the magnitude of said first angular displacement is less than said threshold value and indicative of the angular displacement of said vertical axis about said longitudinal axis when the magnitude of said first angular displacement is equal to or greater than said threshold value.

4,387,514

METHOD FOR DRYING OIL WELL DRILL CUTTINGS

James N. McCaskill, Jr., Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 6, 1981, Ser. No. 251,437
Int. Cl.[3] F26B *3/04*
U.S. Cl. 34—31 **6 Claims**



1. A method for drying oil well drill cuttings to eliminate pollution causing volatile organic material including hyrocarbons from the cuttings comprising the steps of:

conveying the drill cuttings bearing the organic material to a heat transfer zone;

pre-heating large quantities of relatively warm combustion supporting gas acting as a heat transfer medium to a temperature less than the ignition point of said hydrocarbons;

supplying large quantities of the relatively warm gas to the heat transfer zone to form a diluted gas-organic material mixture to prevent the formation of a combustible mixture; and

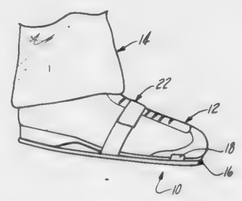
directly mixing the gas with the drill cuttings to rapidly vaporize water and pollution causing volatile organic material from the drill cuttings and subsequently increase the temperature of the cuttings.

4,387,515

BOWLING SHOE PROTECTOR

Darwin E. Baldwin, 9721 Andersonville Rd., Clarkston, Mich. 48016

Filed Oct. 22, 1980, Ser. No. 199,480
Int. Cl.[3] A43B *3/10, 5/00*
U.S. Cl. 36—7.5 **10 Claims**



1. A bowling shoe protector consisting of:

a substantially flat support sole having a peripheral configuration which generally conforms to the lower surface profile of a bowling shoe;

a single strap secured at its center laterally across the sole at substantially the longitudinal center of the sole;

first means for securing the ends of the strap to each other, whereby securing the ends forms a loop into which a shoe can be inserted;

second means for entraining the shoe within the peripheral edges of at least a port n of the sole;

wherein said single strap is the sole means for securing the protector to the shoe;

whereby the bowling shoe protector is freely slidable over said shoe so that the shoe becomes engaged within said loop to secure said protector to said shoe; and

whereby the protector is easily removed by being freely slidable over said shoe to disengage said shoe from said loop.

4,387,516

UNIVERSAL INSOLE

Joseph J. Laux, Scottsdale, Ariz., assignor to L & A, Inc., Phoenix, Ariz.

Filed Dec. 22, 1980, Ser. No. 218,532
Int. Cl.[3] A43B *13/38*
U.S. Cl. 36—43 **4 Claims**



1. A universally sized insert for footwear comprising:

(a) an insole having the general shape of a human foot having opposite surfaces, a heel portion, a toe porton and opposite lateral and medial sides;

(b) a first set of pattern markings on one of said surfaces representing a plurality of foot sizes, each of said first set of pattern markings being in the general configuration of a human foot, said first set of markings having a common toe portion and being displaced on said insole toward the toe portion of said insole and having a plurality of generally arcuate sections in the heel area representing different sizes;

(c) a second set of contrasting markings on the said one of said surfaces representing a plurality of foot sizes, each of said second set of markings being in the general configuration of a human foot, and second set of markings having a common heel portion and being displaced on said insole toward the heel of said insole and having a plurality of generally arcuate sections in the toe portion all representing the different shoe sizes thereby permitting the user to trim the insert to the desired size by trimming at a preselected marking.

4,387,517

SKI BOOT WITH REMOVABLE FASTENING STRAPS

Giuseppe Annovi, Montebelluna, Italy, assignor to Dolomite S.p.A., Treviso, Italy

Filed Feb. 11, 1981, Ser. No. 233,562
Claims priority, application Italy, Feb. 21, 1980, 61913/80[U]
Int. Cl.[3] A43B *5/04, 11/00;* **A43C** *11/00*
U.S. Cl. 36—117 **4 Claims**



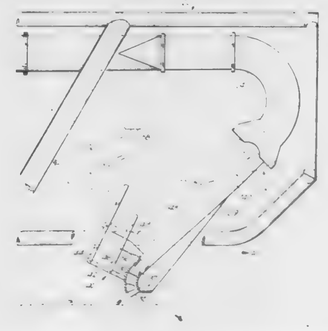
1. A ski boot formed of plastics material and including an upper having flaps, one flap of the upper having integral mushroom-like projecting elements formed of the same plastics material from which the upper is made by injection molding, closing straps for the upper adapted to be tightened by pulling levers fixed on the flap remote from the projecting elements, a ring on the end of each of said straps adapted to interlock with one of said projecting elements, and stems rising from said one flap and spaced from the margin of said projecting elements by a distance slightly less than the thickness of said ring, whereby when the straps are broken they may be easily replaced by new straps.

4,387,518

SEPARABLE LIQUID FLOW SCREENING MEANS FOR EXCLUDING OVERSIZED, SLENDER OBJECTS CARRIED BY A LIQUID, AND DREDGE MEANS INCLUDING SAME

John P. Latimer, Newport News, Va., assignor to Deepsea Ventures, Inc., Gloucester Point, Va.

Continuation-in-part of Ser. No. 232,835, Feb. 9, 1981, Pat. No. 4,347,765. This application Jun. 8, 1981, Ser. No. 271,550
Int. Cl.[3] E02F *3/94;* **B07B** *1/16, 1/28;* **B01D** *35/12*
U.S. Cl. 37—57 **16 Claims**



1. Screening means for preventing the passage of long slen-

der objects carried by liquid flowing through a conduit, said screening means comprises:

(1) a conduit for liquid flow having a longitudinal axis extending along the conduit, and having a first wall, a portion of which is movable to open the conduit;

(2) a plurality of adjacent, complementary corrugated plates, movably secured within the conduit, and located adjacent the movable portion of the first wall, the opposed major surfaces of each adjacent pair of plates defining a serpentine, restricted flow passage therebetween, the axes of the corrugations of the plates being substantially mutually parallel and extending in a direction perpendicular to the longitudinal axis of the conduit;

(3) means for remotely opening the movable wall portion of the conduit, the movable conduit wall portion extending parallel to the axes of curvature of the plates; and

(4) means for remotely moving at least some of the plurality of corrugated plates as a group to outside of the conduit through the opening defined by the movable wall portion and in a direction transverse to the longitudinal axis of the conduit and transverse to the axes of the corrugations while at least instantaneously increasing the distance separating the corrugated surfaces of the adjacent plates when the plates are outside of the conduit, and for returning the corrugated plates to their positions within the conduit.

13. In a dredge means for collecting particles from the floor of the ocean, the particles entering the dredge means together with a large volume of water, the dredge means comprising: a nozzle having a nozzle inlet designed to be located adjacent to the ocean floor; liquid pumping means for drawing a flow of liquid with suspended solids into and through the nozzle inlet; and conduit having a longitudinal axis extending along the conduit, the nozzle and conduit defining an internal flow channel between the nozzle opening and the pumping means; the improvement comprising, a first side of the conduit, a portion of which is movable to open the conduit, screening means suitable for excluding long slender objects from passing through the flow channel, the screening means comprising a plurality of adjacent plates having corrugated surfaces, the plates being movably secured to the conduit such that in a first position within the flow channel the corrugated opposed surfaces of adjacent plates define curved, restricted flow passages within the conduit, the axes of the curves of which extend transversely to the longitudinal axis of the flow channel; and means for remotely cleaning the screening means comprising

(1) means for remotely opening the movable portion of the first side of the conduit adjacent to the undulating plates; and

(2) means for remotely moving at least some of the plates to outside of the conduit through the opening defined by said movable portion and in a direction transverse to the direction of fluid flow in the conduit while at least instantaneously increasing the distance separating the adjacent plates when the plates are outside of the conduit, and for returning the plates to inside of the conduit.

4,387,519

METHOD FOR CONTROLLING THE POSITION OF THE SUCTION HEAD OF A DREDGE IN RELATION TO THE BOTTOM

Rudolf H. Loevendie, Alblasserdam, Netherlands, assignor to IHC Holland N.V., Papendrecht, Netherlands

Filed Nov. 20, 1981, Ser. No. 323,587

Claims priority, application Netherlands, Nov. 21, 1980, 8006379

Int. Cl.[3] **E02F** *1/00*

U.S. Cl. 37—195 **1 Claim**

1. A method for controlling the position of the suction head of a moving dredge in relation to a sludge layer on the bottom, comprising directing, from a point on the dredge, in the direction of movement of the dredge, an acoustic pulse series through the water to the sludge on the bottom a substantial distance in front of the suction head, receiving reflected said pulses, determining the time difference between transmission and reception of the pulses, determining the loss of energy of the reflected pulses in comparison to the transmitted pulses, determining the configuration and composition of the sludge layer on the bottom as well as the preferred position of the suction head in relation to said sludge layer on the basis of the two said differences, and controlling the vertical position of the suction head in accordance with the last-mentioned determination so that the suction head will be in said preferred position when the suction head passes over that position of the sludge layer as to which said last-mentioned determination was made.

4,387,520

SIGN HOLDER

James E. Ahrens, 435 N. Old Ranch Rd., Arcadia, Calif. 91006

Filed Jan. 5, 1981, Ser. No. 222,599

Int. Cl.[3] **G09F** *3/18, 1/10, 7/02*; **A47F** *7/14*

U.S. Cl. 40—16.6 **12 Claims**



1. A holder for an essentially thin rigid planar sign, the holder comprising:

a base;

first and second rigid walls formed in the base;

a V-shaped groove defined by the first and second walls within the base, the groove being adapted for receiving an edge of the sign; and

resilient blade means mounted in the base, the blade means oriented for urging a sign inserted in the V-shaped groove against the first wall, the V-shaped groove restraining an edge of the sign so that the sign is prevented from rotation away from the wall;

the first and second walls being characterized in that they define a fixed angle therebetween during insertion and removal of the sign,

the blade means being characterized in that there is a deformation thereof during insertion and removal of the sign to facilitate ease of insertion and removal.

4,387,521

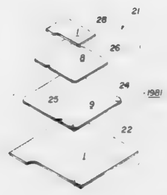
ALPHA NUMERIC CHARACTER ARRANGEMENT

Donald C. Wilhelm, 110 Clarion Dr., Whitesboro, N.Y. 13492

Filed Jul. 21, 1981, Ser. No. 285,479

Int. Cl.[3] **G09D** *3/00*

U.S. Cl. 40—107 **15 Claims**



1. An indicia arrangement for alpha numeric displays including a calendar date, comprising plural visually superposed substantially block type indicia characters in coaxial relationship, each being of graduated and progressively diminishing sizes uniformly, bottom-to-top, in relation to a reference plane for the indicia arrangement, the individual characters in said arrangement differing in marginal edge profile by being selectively curved, notched and angularly indented to form a respective letter or number and each successive character from the largest character upwardly in the arrangement covering and concealing a central area portion of the next underlying indicia character, whereby the edge profiles of all of the characters in the arrangement coact to produce, in a relatively abstract fashion, a readable sequence of indicia characters when read from bottom-to-top in relation to said reference plane.

4,387,522

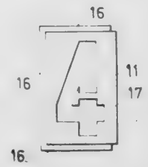
INTERCHANGEABLE ILLUMINATED SIGN

Paul Sommers-Szoszky, 3002-3 Meadowbrook, Windsor, Ontario N8T 3G8, Canada

Continuation of Ser. No. 188,310, Sep. 18, 1980, abandoned. This application Apr. 20, 1982, Ser. No. 370,104

Int. Cl.[3] **G09F** *13/04*

U.S. Cl. 40—576 **1 Claim**



1. A sign illuminated by a fluorescent light comprising, in combination, a rectangular box having an open rectangular front face and having inwardly-extending lugs at the front face to receive fasteners, a rectangular frame of a size to cover the front of the box and having thin flanges extending inwardly around the entire periphery of said frame and defining a rectangular sign opening, said frame having raised bars extending longitudinally thereof on the inner surface thereof and located outwardly of the thin flanges which define longitudinal edges of the sign opening, said raised bars having fastener openings therein, threaded fasteners extending through said fastener openings and being threadedly received in said lugs, a fluorescent light tube located centrally within said box and extending longitudinally thereof, electrical wiring for said light tube located within said box and extending to the outside of said box in the form of an electric cord, a plurality of thin, opaque plates which are rectangular in shape and uniform in height, said plates having transparent indicia in the form of numbers, letters, or designs formed therein, a plurality of spacer blank plates of the same height as said opaque plates serving as spacers between appropriate ones of said thin, opaque plates, as required, the height of all of said plates being substantially equal to the distance between the inner edges of said thin flanges extending longitudinally of the sign opening, each of said plates having thin, rear edge flanges extending beyond the ends of the plate and a rear, thin side flange extending beyond one side edge of the plate, with the opposite side edge of the plate having a front, thin side flange extending beyond the opposite side edge of the plate to engage the rear side flange of an adjacent one of said plates, with said end rear flanges being behind and in contact with the inner surfaces of the longitudinal frame flanges and outer edges of said end flanges being in substantially abutting relationship with edge portions of said raised bars, a light-transmitting plate extending over the backs of said plates and in contact therewith, and clamping means fastened to said raised bars and engaging the back surface of said light-transmitting plate.

4,387,523

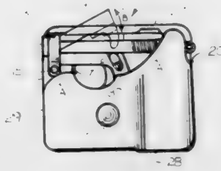
WALLET HOLSTER FOR A SEMI AUTOMATIC WEAPON

Richard N. Gallagher, 918 Waukegan Rd., Glenview, Ill. 60025

Filed Jan. 2, 1981, Ser. No. 222,003

Int. Cl.[3] **F41C** *27/00*

U.S. Cl. 42—1 J **10 Claims**



1. A wallet holster including,

(a) a flat elongated rectangular semi flexible body designed to fold amid its longer dimensions for wrapping forwardly about the sides of a weapon and creating inside and outside surfaces,

(b) a loop of semi flexible material connected to said body at the end most distal from said fold on an inside surface thereof and arranged to carry the barrel end of the weapon parallel to one of the longer dimensions of said body,

(c) openings provided in said forwardly wrapping sides of said holster for permitting control of the weapon trigger without removing the weapon from said holster,

(d) supporting means being semi flexible and carried along an inside surface of said body adjacent said loop and extending toward said fold to cooperatively engage the forwardly lower portions of the weapon,

(e) releasable engagement means juxtaposed on said inside surfaces to hold same together and tightly against the forwardly lower portions of the weapon, and

(f) relief means provided along the folding portion of said body to allow motion of the weapon relative thereto and to permit said longer dimensions of said body to be bent away from the top of the weapon.

4,387,524

FIREARMS WITH RECHARGEABLE MAGAZINE

Norman T. Brint, and Leon J. Williams, both of Waltham Abbey, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB81/00118, § 371 Date Mar. 15, 1982, § 102(e) Date Mar. 15, 1982, PCT Pub. No. WO82/00346, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 1, 1981, Ser. No. 361,920

Claims priority, application United Kingdom, Jul. 14, 1980, 8022931

Int. Cl.[3] **F41C** *25/02, 15/00, 11/00, 19/00*

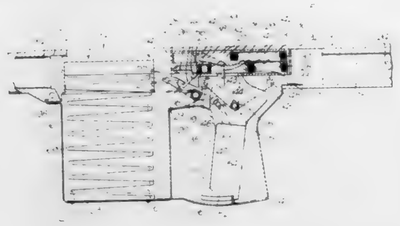
U.S. Cl. 42—18 **6 Claims**

1. A firearm including a body (**101**) and having a magazine characterised in that one or more rimmed rounds (**74**) of ammunition may be stacked each in contact with an adjacent round; resilient magazine bias means (**109**);

a breech opening (**112**) through which a round of ammunition may be inserted into the magazine, the breech opening defining transverse guide means (**113, 114**) through which a round can be inserted in a direction transversely of the barrel axis against the action of the magazine bias means, and restraining means (**114,115**) which are effective on subsequent forward movement of the inserted round to restrain the round in the breech against the action of the magazine bias means;

a catch (**118**) which can assume a locking position in which it prevents return of a round forwardly located in the

breech to a position in which it can re-enter the transverse guide means; further guide means (**116**) by which a round in the breech can be guided in a direction transversely of the barrel axis and rearwardly into the magazine against the magazine bias means on insertion of a further round into the breech;



the catch (**118**) being effective to keep separate the rims of one round (**74**) and a subsequently inserted round during the insertion of the subsequently inserted round, whereby the subsequently inserted round when engaged in the breech has its rim forward of the rim of the said one round.

4,387,525

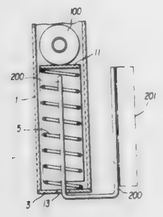
MAGAZINE ENGAGEMENT DEVICE

Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20818

Filed Jul. 15, 1981, Ser. No. 283,505

Int. Cl.³ F41C *25/02*

U.S. Cl. 42—50 **12 Claims**



1. In a cartridge magazine including a casing having a compression spring positioned therein, passage means positionally adapted for insertion of support means into a void encompassed by said spring whereby said magazine can be supported in an extended manner.

4,387,526

FIREARM

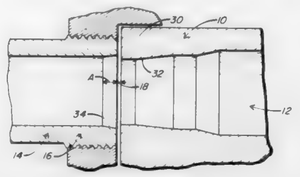
Paul E. Brouthers, Monson, and Robert W. MacWilliams, Springfield, both of Mass., assignors to D.W.A. Associates, Inc., Monson, Mass.

Filed Dec. 24, 1980, Ser. No. 219,903

Int. Cl.³ F41C *1/00*

U.S. Cl. 42—59 **5 Claims**

1. In a firearm having a cylinder with round chambers leading to a barrel throat, the improvement comprising, said round chambers each having a cartridge accommodating section and a bullet accommodating section with said sections being defined based upon the round being in an unfired rest position in the chamber, said bullet accommodating chamber section including a section tapering from a larger diameter bore remote from the barrel to a smaller diameter bore adjacent the barrel to thereby provide bullet sizing in the cylinder along the tapered bullet accommodating chamber section at a lower velocity level during acceleration than when the bullet is first sized in the barrel, said bullet sizing commencing at a bullet velocity greater than zero with said bullet initially disposed



sufficiently rearwardly in the round chamber so as to be out of contact with said tapered bullet accommodating chamber section in the unfired rest position thereof.

4,387,527

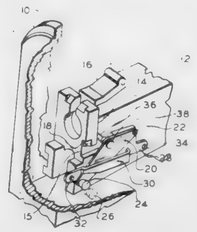
GUN SAFETY

Clifford E. La Fever, Mission Viejo, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 9, 1981, Ser. No. 241,911

Int. Cl.³ F41C *17/00*

U.S. Cl. 42—70 R **2 Claims**



1. A safety for a gun having a frame supporting a longitudinally reciprocatable bolt and a sear operable to engage and restrain said bolt, said safety comprising:

a manually operable member mounted on said frame to reciprocate between a safe and a fire position; and

a catch mounted on said member and positioned to engage and restrain said bolt when said member is in said safe position and operable to restrain said bolt as it reaches a retrogressed position;

wherein said bolt has a shoulder and a slanted face on a side of said bolt opposite said shoulder and wherein said catch is mounted to reciprocate between a retracted and an extended position, said bolt being backwardly moveable to cause said shoulder to engage said catch, causing it to retract and then extend as said bolt reaches said retrogressed position.

4,387,528

SELF SETTING FISH HOOK MEANS

Manfred E. Kahl, 47 Louisa Ct., Northport, N.Y. 11768

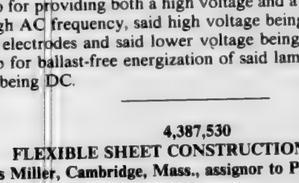
Continuation-in-part of Ser. No. 134,108, Mar. 26, 1980, abandoned. This application Jul. 9, 1981, Ser. No. 281,568

Int. Cl.³ A01K *83/02*

U.S. Cl. 43—36 **3 Claims**

1. An invention comprising a fish hook including:

an arm-biasing spring and first and second extending arms, said arm-biasing spring biasing said first and second extending arms apart; first and second hooks respectively disposed on said first and second arms; a coil latch spring wrapped around said first extending arm, said coil latch spring having a first extending member with a hook portion at an end and a second extending member longer than said first extending member, said coil latch spring biasing said first and second extending members apart, said hook portion operative to hold said second extending arm compressed relatively close to said first extending arm, said hook portion adapted to release said second extending arm when a fish causes said first and second extending arms to



move closer together, and said coil latch spring and said second extending portion are operative to snap said hook portion away from said second extending arm when a fish causes said first and second extending arms to move closer together such that said arm-biasing spring springs said first and second extending arms apart.

4,387,529

ELECTRONIC INSECT KILLER

Mark D. Hedstrom, Vincennes, Ind., assignor to Delta Promotions, Inc., Vincennes, Ind.

Continuation-in-part of Ser. No. 42,940, May 29, 1979, Pat. No. 4,248,005. This application Dec. 29, 1980, Ser. No. 220,414

The portion of the term of this patent subsequent to Feb. 3, 1998, has been disclaimed.

Int. Cl.³ A01M *1/04, 1/22*

U.S. Cl. 43—112 **9 Claims**

1. An electronic insect killer comprising a plurality of spaced electrodes adapted to be electrically contacted by the bodies of insects, means for attracting insects toward said electrodes comprising at least one fluorescent lamp, and solid state circuitry interconnected with said electrodes and also with said lamp for providing both a high voltage and a lower voltage at a high AC frequency, said high voltage being supplied across said electrodes and said lower voltage being supplied to said lamp for ballast-free energization of said lamp said high voltage being DC.

4,387,530

FLEXIBLE SHEET CONSTRUCTION SYSTEM

Ross Miller, Cambridge, Mass., assignor to ProCreations, Inc., Brookline, Mass.

Filed Feb. 9, 1981, Ser. No. 232,395

Int. Cl.³ A63H *9/00*

U.S. Cl. 46—1 L **16 Claims**

1. System for constructing a variety of simulated organic forms comprising,

means defining an elongated flexible single sheet of abstract form repeatedly 180° bendable about multiple crossing and spaced axis running through the sheet and with an elongated longitudinal axis of symmetry and an outer edge contour having similar re-entrants along edges of the sheet symmetrically arranged on two sides of said longitudinal axis,

fastening means pairs on said sheet including elements of each pair arranged symmetrically on opposite sides of said longitudinal axis and further constructed in staggered form for transverse axis symmetry reassignment of fastening element pairs,



said fastening elements being constructed and arranged for pair assignment and fastening in multiple combinations to define different simulated organic forms,

the elements of at least one of said fastening means pairs being backed by decorative organic-form-suggesting elements (e.g. eyes) on the reverse of said sheet,

said sheet being sufficiently stiff to produce in at least one of said simulated organic form fastened-together combinations a self-supporting shape.

4,387,531

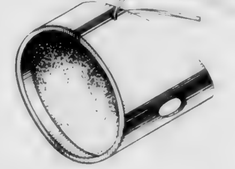
FRICTION TYPE GAME CALL

Bart M. Jacob, Box 184, East Rupert, Vt. 05768

Filed Oct. 5, 1981, Ser. No. 309,199

Int. Cl.³ A63H *5/00*

U.S. Cl. 46—189 **6 Claims**



1. A friction type game call comprising:

a cylindrical wall, having an open, diagonally truncated first end, and a second end,

said cylindrical wall being adapted to be held against the body by a single hand also grasping a striker,

a wall means for closing said second end,

said wall means having an exterior striking surface,

said cylindrical wall having holding means for holding said wall means, and

said cylindrical wall defining at least one hole for the release of sound from said game call.

4,387,532

TOY REMOTE-CONTROL MOTOR BICYCLE

Yoshio Suimon, Tokyo, Japan, assignor to ICD Corporation, Tokyo, Japan

Filed Mar. 16, 1981, Ser. No. 244,407

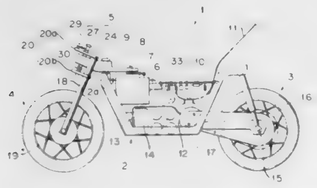
Claims priority, application Japan, Nov. 26, 1980, 55-168388[U]

Int. Cl.³ A63H *17/16, 30/00*

U.S. Cl. 46—254 **6 Claims**

1. In a toy, remote-controlled, motor-driven bicycle including an elongate chassis, a rear wheel rotatably mounted on the

rear portion of said chassis, a steerable front wheel rotatably mounted on the front portion of said chassis, a motor for driving said bicycle, power-supply means for operating said motor, remote control means for receiving external signals and controlling the direction of movement of said bicycle in response thereto, a steerable front-wheel support mechanism rotatably supporting said front wheel, means connecting said front-wheel support mechanism to said chassis and adapted for steering said bicycle by effecting steering movement of said front-wheel support mechanism in unison with said front wheel, the improvement which comprises: said front-wheel support mechanism comprises a steering fork having, at its lower end, an axle on which said front wheel is mounted for rotation; an upper support plate and a lower support plate both fixedly mounted on the upper portion of said steering fork in parallel, vertically spaced-apart relation; said means for effecting steering movement of said front-wheel support mechanism comprising a first, directional steering arm extending forwardly from the upper side of said chassis at the front end thereof, a first support shaft supporting said directional steering arm for pivotal movement with respect to said chassis about a vertical axis, the forward end portion of said directional steering arm extending between said upper and lower support plates, a second support shaft connecting the forward end portion of said directional steering arm to said upper and lower support plates so that said upper and lower support plates can pivot with respect to said directional steering arm about the axis of said second support shaft, the rearward end portion of said directional steering arm extending rearwardly in the lengthwise direction of said chassis and having an elongated guideway therein which guideway is elongated in the lengthwise direction of said chassis, a servomotor mounted on said chassis which servomotor is driven in response to said remote control means, a second arm extending lengthwise of said chassis on the upper side thereof, said second arm having an upwardly projecting pin at the forward end thereof, which pin extends into said elongated guideway in said first, directional steering arm, said servomotor having a drive shaft drivingly connected to the rear end of said second arm for pivotally moving said second arm with respect to said chassis about a vertical axis and thereby causing pivotal movement of said directional steering arm about the axis of said first support shaft, said drive shaft being reversibly rotatable by means of said servomotor.



4,387,533

METHOD AND APPARATUS FOR RETAINING HEAT IN GREENHOUSE AND SIMILAR STRUCTURES

George H. Green, 207 Lake Crescent, Saskatoon, Saskatchewan, Canada (S7H 3A1), and Edward A. Maginnes, 614 Acadia Dr., Saskatoon, Saskatchewan, Canada (S7H 3V9)

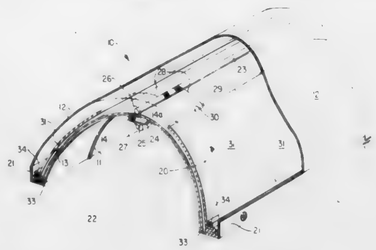
Filed Aug. 1, 1980, Ser. No. 174,512
Int. Cl.³ A01G *9/00*; E04B *1/12*
U.S. Cl. 47—17 **48 Claims**

1. A structure comprising:

(A) an enclosure having an outer light-transparent wall and an inner light-transparent wall spaced apart from said outer wall;

(B) means for charging the space between said outer wall and said inner wall with air under pressure, said air having a dew point so selected that it will not allow condensation to occur;

(C) an insulating layer disposed in, and bathed on both sides by said pressurized air space which is situated between said outer wall and said inner wall, said insulating layer comprising an insulating blanket which is disposed in said pressurized air space which is situated between said outer wall and said inner wall, said insulating blanket having a leading edge and a trailing portion and being movable between an extended covering position and aretracted stored position within an enclosed storage area;



(D) operating means connected to said leading edge of said insulating blanket and positively operable to move said leading edge from its said retracted stored position to its said extended covering position; and

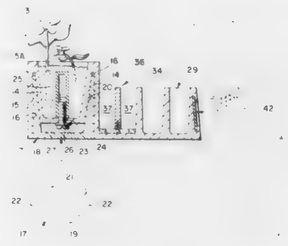
(E) means operatively associated with said trailing portion of said insulating blanket and adapted to draw said insulating blanket from its said extended covering position to its said retracted stored position.

4,387,534

BOOK END PLANTER

Raymond J. Lewandowski, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadwy, both of New York, N.Y. 10007

Filed Aug. 10, 1981, Ser. No. 291,300
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—66 **2 Claims**



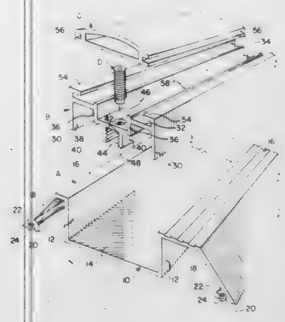
1. A book end planter comprising in combination, a main body member including a plant pot at one end thereof and a pen and pencil caddy at its opposite end, a secret pocket under said pot closed by a downwardly removable cover, a screw vertically movable by a hidden stem in said pot for urging against said cover for removal thereof, and a plurality of mail slots formed between said pot and caddy by means of vertical partitions upon a horizontal base wall of said mail body.

4,387,535

ADJUSTABLE THRESHOLD ASSEMBLY

Thomas A. Corbo, University Heights, Ohio, assignor to Manco Tape, Inc., Cleveland, Ohio

Filed Dec. 7, 1981, Ser. No. 328,200
Int. Cl.³ E06B *1/70*
U.S. Cl. 49—468 **8 Claims**



1. An adjustable threshold assembly comprising an elongated base member adapted to rest upon and be secured to a floor, said base member being provided with an upwardly-opening longitudinal channel comprised of parallel vertical side walls and a connecting horizontal bottom wall, an extruded elongated metal bar insert member extending longitudinally within and vertically adjustable in said channel and having vertical outer side walls connected by a transverse bridge wall, an elongated transversely upwardly-arched sealing strip of resilient deformable material extending along and overlying the bridge wall of and disengageably secured along its opposite side edges to said bar member, said bar member having a pair of longitudinally extending parallel inner walls extending vertically from the bridge wall in spaced side-by-side relationship, and a plurality of height adjusting screws extending vertically downward through openings in said bridge wall and through the space between and in self-tapped screw thread-like engagement with said inner walls at spaced points therealong to bear at their lower ends against the bottom wall of said channel, the facing inner sides of the said inner walls having longitudinally extending extruded serrations therein of a cross-sectional shape approximately matching the cross-sectional shape of the screw threads of said adjusting screws to facilitate the self-tapping of the adjusting screws into said screw thread-like engagement with said inner walls.

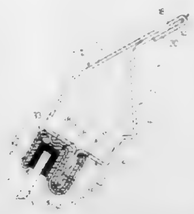
4,387,536

MOTOR VEHICLE DOOR

Luigi Prato, Reano, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Jul. 9, 1981, Ser. No. 281,686
Claims priority, application Italy, Jul. 21, 1980, 53409/80[U]
Int. Cl.³ B60J *5/04*
U.S. Cl. 49—502 **4 Claims**

1. A motor vehicle door (**1**) comprising a window aperture (**9**) closed by a window (**10**) and upperly defined by a tubular frame (**5**) supporting a guide channel (**27**) for said window (**10**) and comprising two curved elements (**12, 13**) of substantially U cross-section disposed with their concavities facing each other, said two elements (**12-13**) being seamed together along their outer peripheral edge, characterized in that said two elements (**12-13**) are seamed together along their inner peripheral edge and define a rib (**23**) extending radially inwards that divides the surface of said frame (**5**) facing said window aperture (**9**) into a first portion (**24**) facing outwards from the motor vehicle and a second portion (**25**) facing the interior of the motor vehicle, said guide channel (**27**) extending along said frame (**5**) substantially in contact with said rib (**23**) and on that side thereof facing outwards from the motor vehicle, support and connection means (**33**) being provided for supporting said channel (**27**) in contact with said frame (**5**) and with said rib (**23**), and with



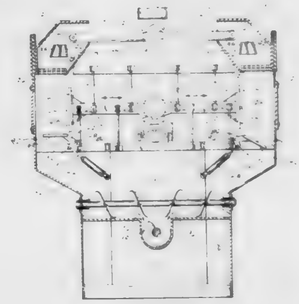
said guide channel (**27**) having a substantially U cross-section and comprising two flanges (**29-30**) parallel to said rib and a web (**28**) extending along said first portion (**24**) and having a width substantially equal to that of this latter.

4,387,537

DEBURRING AND CLEANING MACHINE AND PROCESS

Maurice P. Roach; Russell D. Burkhart, and James B. Meehan, all of Waterloo, Iowa, assignors to Iowa Engineered Processes Corp., Waterloo, Iowa

Filed May 1, 1981, Ser. No. 259,660
Int. Cl.³ A24B *31/00*
U.S. Cl. 51—17 **8 Claims**

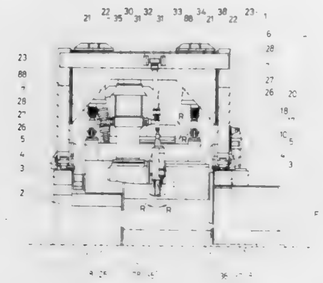


1. A cascading deburring machine, comprising a substantially open framework;

vibratory means comprising a power means driving a shaft connected to a crankshaft which causes reciprocal movement mounted in said framework;

a workpiece mounting plate responsively connected to said vibratory means for responsive movement and reciprocal movement of said mounting plate within said open framework in a predetermined pattern; said workpiece mounting plate being positioned within said framework but in a freely open portion of said framework and cascading means positioned on said framework above said mounting plate to cascade free falling abrasive media within said framework and over, around and through interior portions of any article to be cleaned which might be mounted to said mounting plate.

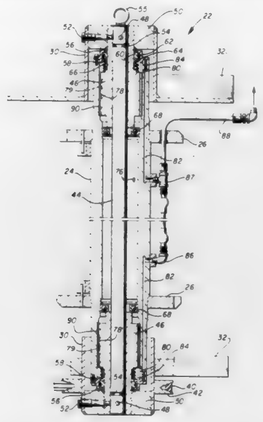
4,387,538
GRINDING MACHINE ASSEMBLY
Oshimi Tetsuro, Nagoya, Japan, assignor to Noritake, Co., Limited, Nagoya, Japan
Filed Oct. 5, 1981, Ser. No. 308,856
Int. Cl.³ B24B *7/02*
U.S. Cl. 51—35 **3 Claims**



1. A grinding machine assembly including a tiltable frame mounted in a machine frame movable back and forth on a machine base by a hydraulic cylinder assembly, a balancing pneumatic cylinder suspended from an upper portion of the machine frame and supporting the tiltable frame for tilting movement, a frame mounted on the tiltable frame for lateral slidable and angular movements, and a rocking cylinder connected between a side bar of the tiltable frame and the frame, characterized in that a lateral positional correction cylinder is connected between a rotative bar in the frame and a support plate, and that a motor for driving a grinding wheel is mounted rearwardly on the frame and is operatively coupled through a bevel-gear mechanism to a grinding head including said grinding wheel and angularly movable in the horizontal plane, there being a hydraulic cylinder pivotally connected to the machine frame at its front, upper portion and having a piston rod pivotally connected at its distal end to said grinding head.

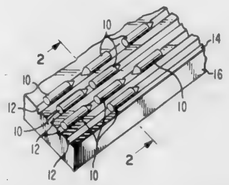
4,387,539
VIBRATORY ACTUATOR
Kenneth J. Fewel, Nacogdoches, Tex., assignor to The Hutson Corporation, North Mansfield, Tex.
Filed Mar. 30, 1981, Ser. No. 248,802
Int. Cl.³ B24B *31/00*
U.S. Cl. 51—163.2 **13 Claims**

1. A vibratory actuator, comprising:
a tubular housing having a predetermined bending stiffness;
a rotatable quill shaft extending longitudinally through said housing, said shaft having a maximum bending stiffness which does not exceed 2% of the predetermined bending stiffness of said tubular housing such that said housing and said shaft have unmatched deflection characteristics;
a pair of journal members secured to said shaft in spaced apart relationshp, said journal members having cylindrical external surfaces dimensioned to define hydrodynamic bearings with adjacent corresponding internal surfaces of said housing;
thrust bearing means positioned inward of each journal member for axially supporting said journal members and said shaft within said housing;
a retainer positioned outward of each journal member and secured to said housing in surrounding spaced apart relationship with said shaft;
seal means positioned between each retainer and corresponding journal member for closing said housing and circumferentially engaging said shaft;
eccentric weight means secured to said shaft and located exterior of said housing centered over each journal member for effecting vibration upon rotation of said shaft; and



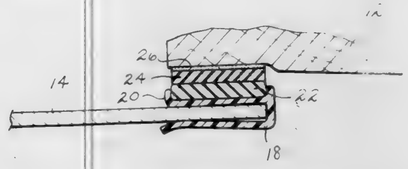
means for directing lubricant to the hydrodynamic bearings between said journal members and said housing.

4,387,540
METHOD OF FORMING REFERENCE FLATS ON STYLI
Robert E. Harwood, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Sep. 2, 1981, Ser. No. 298,587
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—281 R **9 Claims**



1. A method of forming reference flats on a plurality of styli comprising the steps of:
placing the styli lengthwise in parallel grooves disposed adjacent the surface of a first plate, the depth of said grooves allowing the top portions of said styli to project above the surface of said first plate,
applying a coating of adhesive material to the flat surface of a second plate,
pressing the adhesive coating on the surface of said second plate against the surface of said first plate until the top portions of said styli are held firmly against the surface of said second plate,
lifting off said second plate from said first plate, whereby said styli remain adhered to said second plate and separate from the surface of said first plate, and
grinding the exposed portions of said styli to form reference flats by moving an abrasive surface in a direction along the lengthwise orientation of said styli.

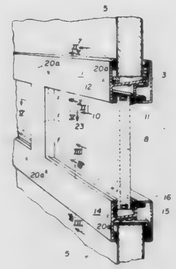
4,387,541
WINDOW ASSEMBLY WITH MAGNETICALLY ATTACHABLE GLAZING PANELS
Norris L. Boomershine, 1612 N. Bay Dr., Elkhart, Ind. 46514
Filed Feb. 12, 1981, Ser. No. 233,893
Int. Cl.³ E06B *3/26*
U.S. Cl. 52—202 **1 Claim**



1. In a window assembly including a peripheral frame defining a window opening, a glazing panel for spanning said window opening, the dimensions of said panel being greater than the dimensions of said opening, a permanent magnetic strip secured about the periphery of said panel, the improvement comprising a compatible permanent magnetic strip having first and second sides, an adhesive binder applied at said first side of said compatible strip, said compatible magnetic strip secured about said peripheral frame by said binder, said panel attached to said peripheral frame by the magnetic attraction of said first mentioned magnetic strip and said compatible magnetic strip along the second side of the compatible magnetic strip

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4,387,542
INTEGRATED WINDOW AND WALL SYSTEM
David M. Wehr, Sewickley, Pa., assignor to Cyclops Corporation, Pittsburgh, Pa.
Filed Apr. 17, 1980, Ser. No. 140,454
Int. Cl.³ E06B *7/14*
U.S. Cl. 52—209 **13 Claims**



1. A window and wall system comprising a horizontally extending, ladder-like outer metal member and a correspondingly shaped ladder-like inner metal member spaced therefrom in confronting relationship, the upper longitudinal portions of said ladder-like metal members comprising head portions, the lower longitudinal portions comprising sill portions, and the vertically extending cross portions bridging said head and sill portions comprising mullion portions, upper insulating wall panel sandwiched between the head portions and lower insulating wall panel sandwiched between the sill portions; the head portion of said ladder-like outer metal member having an inner wall, an integral flange extending from an intermediate portion of said inner wall in a slight angularly upward direction and terminating in a vertically upwardly extending support for the inner lower edge of said insulating wall panels and to form gutters for water drainage, the sill portion of said ladder-like outer metal member having an inner wall, an integral flange emerging from an intermediate portion of said last mentioned inner wall in a slight angularly upward direction and terminating in a vertically upwardly extending support, a plurality of windows sandwiched between said inner metal wall of said ladder-like outer metal member and said vertically upwardly extending support of said outer and inner metal walls in the openings thereof, thermal insulation between said last mentioned support and the lower edges of said windows and between said ladder-like outer and inner metal members to prevent conduction of cold or heat there between and bridging means for bridging together end-to-end lengths of said ladder-like outer and inner metal members to provide an extended horizontal row of windows separated by said mullions.

4,387,543
ANCHOR BRACKET
J. Donald Tschan, Bellevue, and Clifford P. Hatton, Seattle, both of Wash., assignors to P. H. Bowman Co., Inc., Seattle, Wash.
Filed Feb. 5, 1981, Ser. No. 231,630
Int. Cl.³ E04C *5/18;* **E04B** *1/38;* **E02D** *27/00*
U.S. Cl. 52—295 **4 Claims**

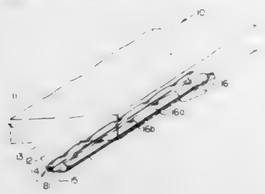


1. A bracket for anchoring a column member in a bed of concrete and supporting the bottom of the member slightly above the concrete, comprising:
a channel shaped upper section with parallel, upwardly extending flanges adapted to be attached to the member to be anchored; and
an elongate lower post section joined to and extending downwardly from substantially the center of said upper section and of generally hollow tubular form with a substantially uniform wall thickness throughout, the upper portion of said post section being centered about a vertical axis substantially coincident with the center of said upper section, and the lower portion of said post section being centered about a vertical axis substantially parallel to and offset from the vertical axis of the post upper portion by an amount approximately one-half the diameter of the post section, said upper and lower post sections being joined by a generally central portion formed by flattening together opposed wall portions of the post section, such central portion as thus formed being characterized by the flattened wall portions being parallel and contiguous to each other and non-parallel to the axes of the upper and lower portions of said post section.

4,387,544
REINFORCING STRIPS FOR PRE-CAST CONSTRUCTION ELEMENTS
Herbert K. Schilger, 916 Thornycroft N.W., Calgary, Alberta, and John S. Hall, 881 Thorndale Dr., Ottawa, Ontario, both of Canada
Continuation-in-part of Ser. No. 42,332, May 25, 1979, abandoned. This application Jul. 3, 1980, Ser. No. 165,772
Int. Cl.³ E04B *5/23*
U.S. Cl. 52—405 **5 Claims**

1. A precast building construction element comprising a panel unit of set cementitious material having at least one integrally formed set cementitious projection extending along

the length thereof and a metal reinforcing strip mechanically embedded in the edge of said projection remote from said panel, said reinforcing strip comprising an elongated unitary strip made from about 14–30 gauge sheet steel having a substantially flat central web portion, with the side edges of said web merging by way of rounded corners of small radius into flanges extending away from said web, at least the free longitudinal edges of said flanges being inclined inwardly, said longitudinal flange edges having longitudinally spaced rounded depressions of small radius pressed downwardly therein, said depressions causing associated deformation of the flanges less



than the full depth of the flanges, leaving substantially undeformed longitudinal portions of the flanges adjacent the central web, and the portions of said longitudinal flange edges between said rounded depressions being outwardly bowed, whereby a double curvature is developed with substantially all the flange areas being curvilinear and more than 50% of a cross-section through the strip being curved, thereby providing maximum membrane resistance within said strip with minimum bending or flexing stresses, and said reinforcing strip being embedded with flanges of the strip embedded in the cementitious material and the central web portion adjacent the element edge face.

4,387,545

PANEL ASSEMBLY AND A METHOD OF CONSTRUCTING SAID ASSEMBLY

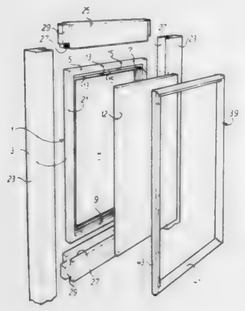
John T. Kern, The Grange, Budworth Rd., Noctorum, Birkenhead, Merseyside, L43 9TL, England

Filed Jul. 23, 1980, Ser. No. 171,650

Claims priority, application United Kingdom, Jul. 26, 1979, 7926021

Int. Cl.³ E06B *3/70*

U.S. Cl. 52—455 **10 Claims**



1. A panel assembly for use as a door or as a section of a planar surface, comprising a plurality of previously formed fixed frames, each fixed frame comprising for integrally interconnected elongate side member which define a beading on an outer surface, an exact rectangular exterior configuration, a rectangular aperture and a plurality of fastener apertures, a main framework formed around said fixed frames, said main framework comprising a plurality of grooved elongated framework members, said fixed frames being provided with flange means adapted to seat in a groove of said elongated framework members, a plurality of cross members, each of said cross members being formed with tongue means adapted to fit into a respective groove of an opposing elongated framework member and defining at least one groove cut therein adapted to receive and hold said flange means of at least one of said fixed frames the prior exact configuration of the fixed frames aiding in the exact construction of the panel assembly, a panel member adapted to be mounted to each of said fixed frames covering said rectangular aperture, a completion frame adapted to be positioned opposite each said fixed frame, said completion frame defining a plurality of apertures which are adapted to be aligned with the fastener apertures of said fixed frame, and fastener means adapted to extend through said completion frame apertures and said fixed frame fastener apertures to hold said panel member in a stationary position therebetween.

4,387,546

STRUCTURAL COLUMN AND METHOD OF MANUFACTURE

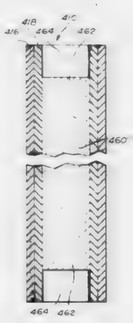
Yukio Kurita, Neyagawashi, and Satoshi Nakagawa, Hirakatashi, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jun. 30, 1980, Ser. No. 164,324

Claims priority, application Japan, Jan. 29, 1980, 55-9146

Int. Cl.³ E04C *3/12*

U.S. Cl. 52—731 **4 Claims**



1. A structural column, comprising:

an outer member composed of a plurality of individual, thin wooden layers laminated together to form a hollow cross-sectional shape, said outer member including two substantially identical, preformed halves joined together to define a closed configuration, each half having formed, marginal shoulder portions terminating at diagonally disposed, longitudinal edges which abut closely against a matching, diagonally disposed edge of the corresponding formed marginal shoulder portion of the opposite outer member half to form a continuous corner joint;

at least one inner member composed of a plurality of individual, thin wooden layers laminated together to form a hollow, cross-sectional shape corresponding to the cross sectional shape of said outer member to closely underlie said outer member, each of said inner members including two substantially identical, preformed halves joined together to form a closed configuration, each inner member half having formed marginal shoulder portions terminating at diagonally disposed, longitudinal edges which abut closely against a matching diagonally disposed edge of the corresponding formed marginal shoulder portion of the opposite inner member half to form a continuous corner joint; and

a center core snugly occupying the hollow interior of said inner member, said core extending longitudinally through said inner member with the ends of said core terminating

a short distance inwardly from each end of said inner member to define a longitudinally open socket within each end portion of said column.

4,387,547

DEVICE FOR MANUFACTURING PACKAGES FILLED WITH LIQUID

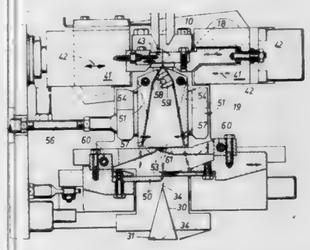
Wilhelm Reil, Bensheim, Fed. Rep. of Germany, assignor to Tetra Pak Developpement S.A., Pully, Switzerland

Filed Oct. 15, 1980, Ser. No. 197,077

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1979, 2946059

Int. Cl.³ B65B *9/08, 51/30*

U.S. Cl. 53—131 **8 Claims**



1. In a packaging device for the manufacture of liquid filled paper packages in which a web of paper is converted into a tube and which is displaced in a step-by-step manner vertically downwardly into a forming device, including longitudinal and transverse embossing apparatus for forming initial bend lines on the web corresponding to the folds of the package, and a pair of sealing jaws which work together for transversely sealing the tube at locations corresponding to the beginning and ending edges of a package formed in the tube, and in which a pair of cutting blades are disposed the length of one of the feeding steps beneath the sealing jaws for separating a formed and filled package from the tube in the region of the transverse welded seam, the improvement comprising:

a forming station including at least one pair of package forming and supporting generally downwardly depending jaws extending in a direction generally longitudinally of a package to be formed in said web, and

said forming jaws mounted on generally transverse axes of rotation one on each side of said web so that the jaws are movable between a first position in which the inner surfaces of the jaws are inwardly inclined toward each other to support the side walls of the package during initial filling and movable to a second spread-apart position accommodating and defining the full width of the package when the package is completely filled.

4,387,548

POWER ASSISTED ROLLER-STRETCH WRAPPING PROCESS

Patrick R. Lancaster, Anchorage, and William G. Lancaster, Louisville, both of Ky., assignors to Lantech, Inc., Louisville, Ky.

Continuation-in-part of Ser. No. 96,384, Nov. 21, 1979, Pat. No. 4,302,920. This application Sep. 8, 1980, Ser. No. 184,787

The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.

Int. Cl.³ B65B *11/04*

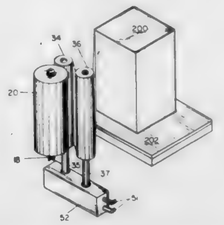
U.S. Cl. 53—399 **18 Claims**

1. A process of making a unitary package by wrapping a plurality of units with a stretched plastic material overwrap forming a unitary load comprising the steps of:

a. transporting a web of plastic film to a stretching means comprising speed connected roller means partially driven by positive torque means;

b. elongating the film in the stretching means over its yield point, thereby gaining substantially in strength per cross-sectional area and modulus;

c. relieving the force on the film web wrapped around the load by applying a positive torque to the speed connected roller means with said positive torque means; and



d. reducing the variations in force and elongation of the film on the load by substantially controlling the positive torque means to a relatively constant level less than that which is required to elongate the film in said stretching means thereby utilizing the connection of the film to the load partially driving said speed connected roller means and transmitting speed changes to the positive torque means; and

e. wrapping said elongated film around the load.

4,387,549

METHOD OF MANUFACTURING A PACK FOR OVOIDAL OBJECTS

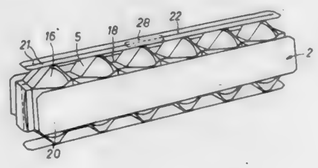
Toni Casutt, Blumenrain 24, CH-8702 Zollikon, Switzerland

Filed Apr. 7, 1981, Ser. No. 251,732

Claims priority, application Switzerland, Apr. 9, 1980, 2714/80

Int. Cl.³ B65B *43/08*

U.S. Cl. 53—456 **2 Claims**



1. A method of manufacturing a packing container, particularly for eggs, comprising the steps of:

(a) production of a first cardboard blank (2) to cut it longitudinally into five lengthwise running strips (3) which are held together at each end by an integral cross strip (4);

(b) production of a second cardboard blank (5) longer than said first cardboard blank (2) and having interrupted lengthwise slits (6) along four parallel lengthwise running lines and formation of transverse bending lines on said second cardboard blank (5) suitable for producing flat-topped transverse corrugations;

(c) forming waves (13) forming transverse corrugations of flat-topped wave form (13) out of said second cardboard blank (5) and adhesively sticking them onto said first cardboard blank (2) along each of the wave bottoms (9);

(d) bending over said waves (13) by tucking in the flat-top portions to form a flattened scale-like structure;

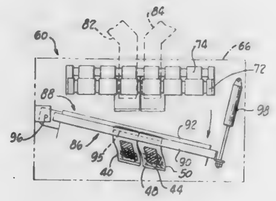
(e) separation of the adhesively-joined places along the boundaries of the already separated lengthwise strips (13) of said first cardboard blank (2), and

(f) cutting off the two cross-strips (**4**) at the ends of said first cardboard blank (**2**).

4,387,550
CONTAINER STRIPS AND METHOD OF MAKING AND USING THE SAME

Bernard Lerner, Hudson, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Continuation of Ser. No. 897,752, Apr. 17, 1978, abandoned, which is a continuation of Ser. No. 749,234, Dec. 10, 1976, which is a division of Ser. No. 612,462, Sep. 11, 1975, Pat. No. 4,041,845. This application Jun. 18, 1980, Ser. No. 160,657
Int. Cl.³ B65B *43/26, 5/04*
U.S. Cl. 53—459 **7 Claims**



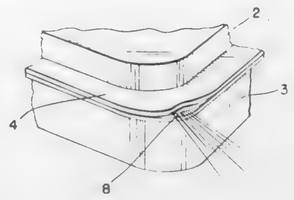
1. A method of packaging with an elongated web having at least two strips of preformed bags which are open in one face, the bags being connected end to end and each open along one end and the strips each having a bead extending longitudinally along a side edge of the strip, two of the beads being side by side and being connected by bridges of strip material which are thinner than the beads and the remainder of the strips, the bags being in aligned sets with each set including one bag from each strip, comprising:
(a) positioning the web at a supply station;
(b) longitudinally feeding the web along a path of travel from the supply to a loading station to position the bags at the loading station one set at a time while maintaining the integrity of the bridges along at least a substantial portion of the path of travel to maintain the strips of the bags of each successive set aligned while at the loading station;
(c) opening the bags of each set at least when that set is at the load station;
(d) loading the bags while at the load station by inserting an object into each open bag;
(e) closing each bag after its object has been inserted and securing such closure;
(f) separating the strips by breaking the bridge of material without affecting the beads; and,
(g) separating the closed bags from the strip in groups of one or more bags.

4,387,551
HEAT-SEALABLE, OVENABLE CONTAINERS AND METHOD OF MANUFACTURE

David A. Cowan, Owings Mills, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Division of Ser. No. 77,548, Sep. 21, 1979, Pat. No. 4,261,504. This application Dec. 31, 1980, Ser. No. 221,908
Int. Cl.³ B65B *7/28, 51/10*
U.S. Cl. 53—478 **13 Claims**

1. A method for heat-sealing an ovenable board container containing a tray portion and a closure portion, one of said tray portion or said closure portion being provided with a thermoplastic polyester coating and the other of said tray portion or said closure portion being provided with a cross-linked, thermosetting polyester-containing coating, which comprises placing said tray portion and said closure portion into mutual contact to form an assembled container, and heat-sealing said assembled container at a temperature of about 496° to 650° F.

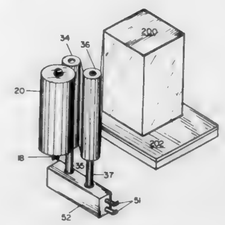


and at a contact pressure of about 108 to 200 psi to form a self-venting, easy-tear seal.

4,387,552
WRAPPING APPARATUS

Patrick R. Lancaster, Anchorage, and William G. Lancaster, Louisville, both of Ky., assignors to Lantech, Inc., Louisville, Ky.

Division of Ser. No. 184,787, Sep. 8, 1980, and a continuation-in-part of Ser. No. 96,384, Nov. 21, 1979, Pat. No. 4,302,920. This application Dec. 12, 1980, Ser. No. 215,684
The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.
Int. Cl.³ B65B *11/04*
U.S. Cl. 53—556 **10 Claims**

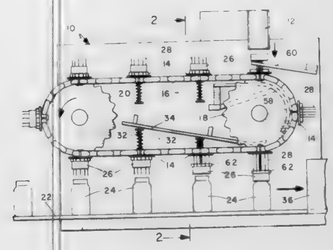


1. An apparatus for making a unitary package from a plurality of units forming a load using a web of stretchable plastic material to form an overwrap, comprising means to provide relative rotation between a dispensing means and a load, a frame mounted adjacent said means to provide relative rotation, plastic material dispensing means mounted to said frame, material elongation means positioned between said dispensing means and means to provide relative rotation adapted to at least partially drive said elongation means via the plastic material web and receive stretchable plastic material pulled from said dispenser means, said elongation means elongating the stretchable plastic material beyond its yield point, said elongation means restricting said plastic material after it has been dispensed from the dispenser means as the material web is pulled from the dispenser means through the elongation means by said relative rotation so that a downstream portion of the material web is transported faster than the upstream portion causing the material web to elongate before it reaches the load, said elongation means comprising a roller means, a positive torque means operatively connected to said roller means and partially driving said roller means for applying a substantially constant positive torque to said roller means to reduce the stretch force on the film web being wrapped on the load to a level less than the force required to pre-stretch the material web in said elongation means, and means to power said positive torque means.

4,387,553
BANDING APPARATUS

Eric W. Strub, and Kenneth M. Strub, both of 235 Rockhill Rd., Vista, Calif. 92083

Filed Jan. 2, 1981, Ser. No. 222,004
Int. Cl.³ B65B *5/00*
U.S. Cl. 53—585 **12 Claims**

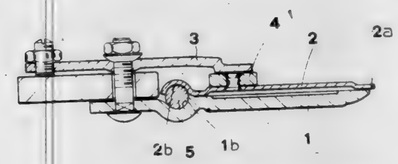


1. A banding apparatus comprising:
a source of endless bands,
gripping means comprising a base member having a central axis,
a plurality of fingers mounted about and extending generally parallel to said axis and movable radially inward toward said axis and radially outward from said central axis for simultaneously gripping and expanding a band to encircle an article,
first means for moving said fingers radially inwardly toward said axis for receiving a band,
second means for moving said fingers radially outwardly for gripping said band, and
transport means for transporting said gripping means from a position at said source of endless bands to a position of encircling an article with said band.

4,387,554
CUTTER BAR

Erminio Bedogni, Via Mascagni 36, Reggio Emilia, Italy (42100)

Filed Oct. 22, 1981, Ser. No. 313,826
Claims priority, application Italy, Dec. 5, 1980, 29065/80[U]
Int. Cl.³ A01D *55/02*
U.S. Cl. 56—296 **5 Claims**

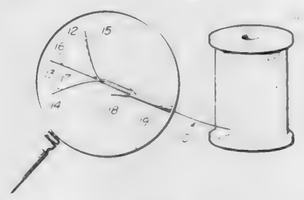


1. In an improved cutter bar arrangement comprising
(a) a stationary comb including a plurality of teeth;
(b) a toothed blade adapted to slide back and forth in an alternating motion upon the teeth of said stationary comb; and a
(c) blade-retaining means for maintaining contact between said stationary comb and said toothed blade, the improvement wherein:
said stationary comb and said blade are provided with respective longitudinally disposed recesses so opposed as to establish an enclosed channel, and wherein said arrangement further comprises a rod of a size corresponding to said enclosed channel and slidably received therein, said stationary comb and said blade being so shaped that, when said rod is removed from said channel, said blade slides freely off of said stationary comb in a direction transverse to said comb.

4,387,555
ORNAMENTAL THREAD AND METHOD OF FORMING SAME

Stuart A. Robinson, Paxton, Mass., assignor to Robinson Thread Company, Worcester, Mass.

Filed Sep. 28, 1981, Ser. No. 305,965
Int. Cl.³ D02G *3/12, 3/34*
U.S. Cl. 57—235 **10 Claims**

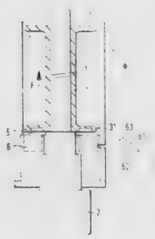


1. Ornamental thread, comprising:
(a) a plurality of strands of polymer material, the strands being twisted together in a first direction, and
(b) a narrow strip of metallic film wrapped around each strand in the other direction.

4,387,556
APPARATUS FOR LIFTING A BOBBIN FROM A SPINDLE

Rainer Studtmann, and Erich Bock, both of Ingolstadt, Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Mar. 6, 1981, Ser. No. 241,217
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1980, 3009275
Int. Cl.³ D01H *9/04*
U.S. Cl. 57—273 **6 Claims**



1. Apparatus for lifting a bobbin set up on a spindle of a textile machine comprising:
a ring of electrically conductive, nonferromagnetic material carried on at least one end of the bobbin remote from a free end of said spindle, and
an electrically excitable magnet coil carried adjacent a base of said spindle;
said ring being arranged on said bobbin with its end face opposite said magnet coil.

4,387,557

FALSE TWISTING APPARATUS AND METHOD

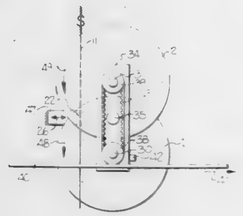
Hellmut Lorenz, Remscheid-Lennep, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Jun. 12, 1981, Ser. No. 272,939

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111245

Int. Cl.³ D02G *1/08*

U.S. Cl. 57—340 **10 Claims**



1. A yarn false twisting apparatus characterized by the ability to readily convert from S to Z twist and vice versa, and comprising

a frame,

a pair of twist imparting discs, with each disc having a yarn engaging friction surface on one face thereof,

means mounting said discs to said frame and including a carrier plate mounting said discs for rotation about essentially parallel, spaced apart axes and such that portions of the respective yarn engaging friction surfaces are disposed in opposing, substantially non-contacting relationship and define a twisting zone therebetween, and including means pivotally mounting said carrier plate to said frame for selective rotation between first and second operative positions disposed about 180 degrees from each other, and

drive means for rotating each of said discs in a common rotational direction at each of said first and second operative positions,

whereby a yarn may be continuously moved through said twisting zone in a direction parallel to and laterally spaced from a line extending perpendicularly between said axes of rotation and so as to have twist imparted thereto by frictional contact between the yarn and the respective opposed friction surfaces, and wherein conversion from S to Z twist or vice versa may be readily effected by pivoting said carrier plate between said first and second operative positions and without changing the direction of rotation of the discs or the yarn path of travel.

4,387,558

METHOD FOR LINING A HOUSING OF A FIBER OPENING DEVICE AND ROLLER

Siegfried Rehm, Westeranger 4, 8071 Stammham, and Kurt Beizinger, Dorflerstr. 10, 8070 Ingolstadt, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 31,224, Apr. 8, 1979, Pat. No. 4,246,745. This application Dec. 16, 1980, Ser. No. 217,108

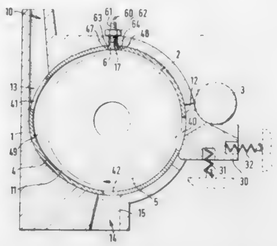
Int. Cl.³ D01H *7/895, 7/892*

U.S. Cl. 57—408 **2 Claims**

1. A method of lining a housing which receives an opening roller of a fiber opening device associated with an open-end spinning apparatus by means of a metal band, wherein the housing comprises apertures surface which connect the interior of the housing to other parts of the spinning apparatus and to which apertures in the metal band correspond, said method comprising:

providing a metal band having free ends defining a joint therebetween;

inserting said metal band in the housing so that said joint as viewed in the direction of conveying of the fiber is between an aperture in the housing leading to a feed passage and an aperture in the housing leading to a delivery device;



tightening the metal band to bear against the inner wall of the housing; and

securing the tightened metal band in the region of the joint in the housing by means of a fixed connection.

4,387,559

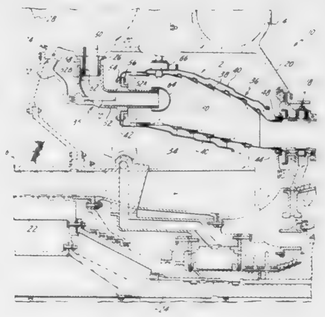
FUEL BURNER AND COMBUSTOR ASSEMBLY FOR A GAS TURBINE ENGINE

Anthony Leto, Franklin Lakes, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed May 13, 1981, Ser. No. 263,288

Int. Cl.³ F02C *7/20, 7/22*

U.S. Cl. 60—39.32 **18 Claims**



1. A fuel burner and combustor assembly for a gas turbine engine having a casing, an air compressor section in said casing, a turbine section disposed within said casing in axial spaced relation to said air compressor section, and at least one fuel supply port means in the casing communicating with a source of fuel and extending radially thereto, the fuel burner and combustor assembly comprising

(a) a housing disposed within the engine casing between the air compressor section and the turbine section and defining therein a combustion chamber;

(b) inlet port means in said housing communicating with the air compressor section and the combustion chamber to receive compressed air from said air compressor section and pass the same into the combustion chamber;

(c) said housing being closed at one end and open at the opposite end to pass gaseous products of combustion from said combustion chamber into the turbine section to drive the latter;

(d) at least one fuel burner attached at one end portion to said closed end of said housing and extending into the combustion chamber to pass fuel into the latter while the opposite end portion slidably engages said radially extending fuel supply port means for receiving fuel from the latter for passage through the fuel burner; and

(e) said fuel supply port means and fuel burner coact to anchor the housing against lateral movement and against movement in one axial direction relative to the casing so that thermal growth of the housing is effect in the opposite direction toward the turbine section and to allow relative movement between the combustor and casing in a radial direction while maintaining fuel flow through the fuel burner.

4,387,560

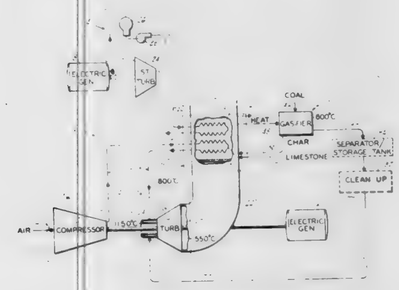
UTILIZATION OF COAL IN A COMBINED CYCLE POWERPLANT

Stuart Hamilton, Glastonbury, and John J. Horgan, Wethersfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 29, 1980, Ser. No. 220,541

Int. Cl.³ F02C *3/28, 7/08*

U.S. Cl. 60—39.02 **4 Claims**



1. A method for producing power from coal in a combined cycle powerplant employing a gas turbine engine formed of a compressor, a combustion chamber, and a turbine connected to a power output device, employing a steam turbine engine including a boiler and a steam turbine connected to a power output device and employing an auxiliary combustor, comprising the steps of:

feeding coal into a partial gasifier;

converting the coal into combustible fluids and combustible char in the partial gasifier such that the amount of char produced has a heating value less than the heating value of the coal fed into the partial gasifier;

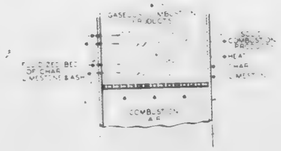
burning the char from the partial gasifier in an auxiliary combustor to produce a high temperature gas containing essentially all of the heating value of all of the char formed in the partial gasifier;

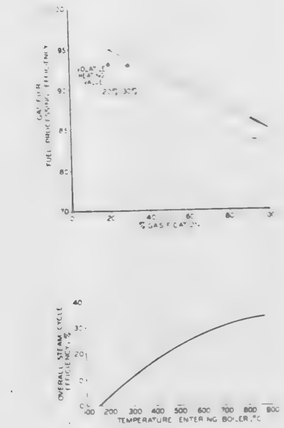
transferring a first portion of the heat from the high temperature gas of the auxiliary combustor to the working medium gas of the gas turbine engine to raise the temperature of the working medium gas;

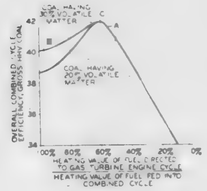
transferring a second portion of the heat from the high temperature gas of the auxiliary combustor to the working medium fluid of the steam turbine engine to raise steam;

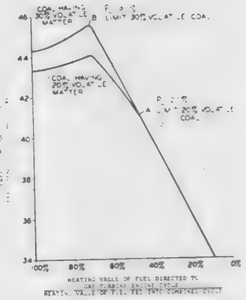
transferring a third portion of the heat from the high temperature gas of the auxiliary combustor to the partial gasifier for converting the coal into combustible char and combustible fluids;

burning the combustible fluid with the working medium gas of the gas turbine engine in the combustion chamber of the gas turbine engine to produce a high temperature working medium gas;









turbine into the auxiliary combustor to provide heat and oxygen to the auxiliary combustor; and

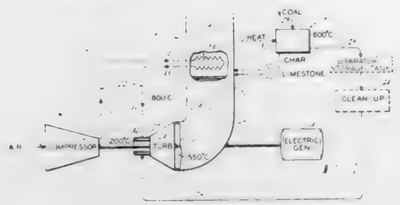
expanding the working medium fluid through the turbine of the steam engine to power the steam turbine engine.

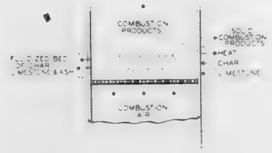
4,387,561

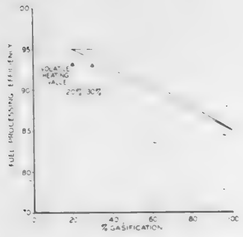
UTILIZATION OF COAL POWERING A GAS TURBINE ENGINE

Stuart Hamilton, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 29, 1980, Ser. No. 220,542
Int. Cl.³ F02C *3/28, 6/18*
U.S. Cl. 60—39.02 **4 Claims**







1. A method for completely consuming the heating value of coal in powering a gas turbine engine by using an auxiliary combustor wherein the gas turbine engine has a working medium gas and is formed of a compressor, a combustion chamber, and a turbine, comprising:

feeding the coal into a coal conversion means;

converting the coal into combustible fluids and combustible char in the coal conversion means;

burning all of the char from the coal conversion means in an auxiliary combustor to produce a high temperature gas;

transferring heat from the high temperature gas of the auxiliary combustor to the working medium gas to raise the temperature of the working medium gas after the working medium gas passes through the compressor;

transferring heat from the high temperature gas of the auxiliary combustor to the coal conversion means for converting the coal into combustible fluids and combustible char;

burning the combustible fluid with the heated working medium gas in the combustion chamber of the engine to produce a working medium gas having a temperature in excess of twelve-hundred degrees Centigrade (1200° C.);

expanding the working medium gases having a temperature in excess of two thousand degrees Fahrenheit through the turbine to power the gas turbine engine;

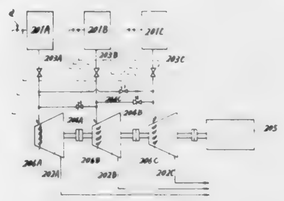
exhausting the working medium gas expanded through the turbine into the auxiliary combustor to provide heat and oxygen to the auxiliary combustor wherein the coal is consumed to produce energy and the turbine is isolated by the auxiliary combustor from harmful particulates produced by burning the char.

4,387,562

SYSTEM FOR GENERATING POWER WITH TOP PRESSURE OF BLAST FURNACES

Kengo Takao, Kitakyushu; Mineo Ohmachi, Mitaka; Hisatsugu Kihara; Kenshiro Toki, both of Sakai; Yukio Tomita, Osaka, and Toshihiro Mizota, Sennan, all of Japan, assignors to Nippon Steel Corporation, Tokyo and Hitachi Shipbuilding & Engineering Company Limited, Osaka, both of, Japan

Filed Aug. 8, 1980, Ser. No. 176,484
Int. Cl.³ F02C *6/02*
U.S. Cl. 60—39.15 **8 Claims**



1. A system for generating power with the top pressure of a plurality of blast furnaces comprising:

a plurality of turbines provided for the plurality of blast furnaces respectively and aligned on an axis with their rotor shafts connected to one another;

a generator connected to the rotor shafts;

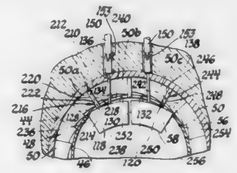
a plurality of main gas channels connecting the blast furnaces to the turbines for leading a gas from the top of the furnaces to the turbines and converting the pressure of the gas into rotational energy to generate power, each main gas channel separately connecting one of the blast furnaces to a corresponding one of the turbines; and interconnecting channel means provided with a flow control valve for connecting optionally selected two of the main gas channels.

4,387,563

ARTICULATED POWER TURBINE GATE

Albert H. Bell, III, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 50,411, Jun. 20, 1979. This application Jun. 23, 1980, Ser. No. 161,744
Int. Cl.³ F02C *3/10*
U.S. Cl. 60—39.25 **8 Claims**



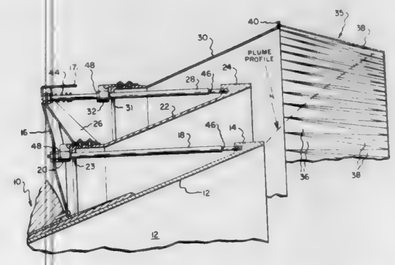
1. A variable area gas turbine engine controller for regulating flow of motive fluid from an outlet transition of an air and fuel burning combustor under part load conditions of operation comprising a nozzle having an annular row of turbine nozzle vanes therein defining flow passages, each of said vanes including a leading edge and a trailing edge joined by suction and pressure surfaces formed thereon and joining said leading and trailing edges thereof, means forming valve seat surfaces on the leading edge of at least two of said vanes, a gate valve having an upstream surface thereon faced toward said outlet transition and further including a downstream surface thereon slidably engageable with said valve seat surfaces, means for storing said gate valve out of flow blockage relationship with exhaust flow through said outlet transition through a full 360° extent of said row of vanes thereby to permit unrestricted flow of motive fluid through said nozzle during a full power mode of engine operation, and means for moving said gate valve into a full blocking alignment with said vane row whereby pressurized gas from said outlet transition holds said downstream surface of said gate valve in sealed engagement with said valve seat surfaces.

4,387,564

EXTENDIBLE ROCKET ENGINE EXHAUST NOZZLE ASSEMBLY

Lee F. Carey, North Tonawanda, N.Y., assignor to Textron Inc., Providence, R.I.

Filed Oct. 3, 1980, Ser. No. 193,610
Int. Cl.³ F02K *1/08*
U.S. Cl. 60—242 **10 Claims**



1. An extendible rocket thruster exhaust plume nozzle assembly comprising, in combination with a thruster casing having a structurally rigid fixed nozzle extending conically therefrom;

one or more truncated-cone-shaped collars of rigid structural forms carried by slide support means arranged concentrically about said fixed nozzle, the outermost collar thereof being thereby furthermost extendible downstream of the thruster exhaust plume upon firing of the thruster and deployment of said assembly;

a further deployable skirt member perimetrically attached to said outermost of said collars, said skirt member comprising an annularly shaped pleat-folded sheet material fabrication of generally planar configuration retracted within the exit profiles of said collars and when so retracted is located out of the plume exhaust profile;

said collar(s) and said skirt member being nested in compacted relation within the requisite overall profile envelope of said thruster casing and fixed nozzle combination;

restraint means locking said outermost collar member against deployment relative to said casing nozzle;

release means operative upon firing of said thruster to unlock said restraint means;

and force supply means operative upon unlocking of said restraint means to propel said outermost collar to slide on its support means in downstream direction relative to the thruster exhaust plume and to move said skirt member into the exhaust plume profile whereupon said skirt member unfolds in response to fluid pressures thereagainst generated by firing of said thruster.

4,387,565

EXHAUST GAS CLEANING SYSTEM FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Junji Otani, Oomiya, and Yasuo Ikenoya, Kawagoe, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1981, Ser. No. 244,828
Claims priority, application Japan, Mar. 24, 1980, 55-38352[U]
Int. Cl.³ F01N *3/22*
U.S. Cl. 60—293 **19 Claims**



1. In a motorcycle having a frame with a longitudinal axis and on which are mounted a fuel tank and a seat; front and rear wheels suspended from said frame and a multi-cylinder internal combustion engine disposed in a space defined by said fuel tank, said seat and said wheels such that a crank shaft of said engine extends at right angles to the longitudinal axis of said frame, said engine including combustion chambers defined in respective cylinders, a plurality of exhaust ports open in the front of said engine and communicating with respective combustion chambers and exhaust means connected to respective exhaust ports;

an improvement comprising an exhaust gas cleaning system for said multi-cylinder internal combustion engine including:

reed valve means on said engine having inlet and outlet ports and operating in response to pulsating exhaust pressure in said engine;

an upstream secondary air passage connected to said inlet port of said reed valve means and adapted to communicate with the atmosphere to supply secondary air to said reed valve means;

and a plurality of downstream secondary air passages of substantially equal length connected between said outlet ports of said reed valve means and corresponding exhaust ports of said engine to supply secondary air to said exhaust ports, said engine further including a cylinder head and a head cover, said reed valve means including a valve housing mounted on said head cover and defining a valve chamber therewith, and a reed valve in said valve housing dividing said valve chamber into an upstream and a downstream chamber which are connected respectively, to said upstream secondary air passage and said downstream secondary air passages.

4,387,566

INDEPENDENTLY VARIABLE PHASE AND STROKE CONTROL FOR A DOUBLE ACTING STIRLING ENGINE

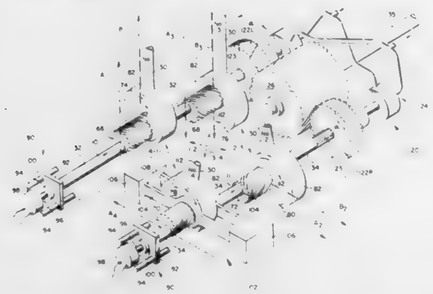
David M. Berchowitz, Scotia, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Mar. 11, 1981, Ser. No. 242,452
Int. Cl.³ F02G *1/06*
U.S. Cl. 60—518 **30 Claims**

1. A stroke control apparatus for a Stirling engine having a plurality of pistons coupled to a driveshaft, comprising:

a plurality of rings, one each operatively connected to each of said pistons and axially movable therewith and laterally movable with respect thereto;

a series eccentric mechanism for each of said pistons, including a first cylindrical eccentric body mounted eccentrically on said driveshaft with an eccentricity of e_1 and rotatable therewith; and a second cylindrical eccentric body mounted eccentrically on said first eccentric body



within said ring with an eccentricity of e_2 and rotatable with respect to said ring and said first eccentric body;

means for changing the relative angular position of said first and second eccentric bodies;

whereby the degree of eccentricity contributed by said first and second eccentrics can be selectively added and subtracted to yield selected piston stroke valves between e_1+e_2 and the absolute value of e_1-e_2.

4,387,567

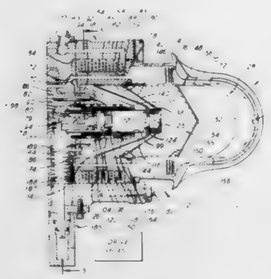
HEAT ENGINE DEVICE

Harlan V. White, El Dorado, Ill., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jul. 14, 1980, Ser. No. 168,714

Int. Cl.³ F02G *1/04*

U.S. Cl. 60—520 **25 Claims**



1. A free-piston Stirling engine having a vessel defining therein a working space; a power piston and a displacer having first and second ends, disposed in said working space for axial reciprocating movement therein; means for heating a working gas in one region of said vessel adjacent said first end of said displacer; and means for cooling the working gas in another region of said vessel adjacent said second end of said displacer to create a periodic pressure wave in the working gas; wherein the improvement comprises:

mounting means including a first portion fixed to said vessel and a second portion associated with the second end of said displacer for slidably supporting said displacer within said vessel;

said mounting means including an enclosed variable volume space containing a gas which functions as a gas spring biased axially between said displacer and said vessel;

means for introducing a non-linearity into said gas spring during operation thereof;

said mounting means causing the effective area of said displacer/exposed to said pressure wave to be smaller on the second end than on the first end of said displacer;

whereby said perodic pressure wave acting on said unequal end areas of said displacer, and said gas spring, constitute a spring-force system to maintain the reciprocating movement of said displacer.

4,387,568

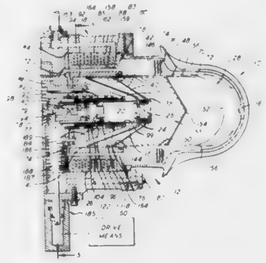
STIRLING ENGINE DISPLACER GAS BEARING

John J. Dineen, Durham, N.H., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jul. 14, 1980, Ser. No. 168,717

Int. Cl.³ F02G *1/04*

U.S. Cl. 60—520 **16 Claims**



1. A Stirling engine having a displacer movable axially in a pressure vessel for shuttling a working gas between a heater and a cooler through a regenerator for creating a pressure wave in the working gas for driving a power piston, wherein the improvement comprises:

means for mounting said displacer in said vessel including a first portion fixed to said vessel and a second portion associated with said displacer;

said first and second portions arranged coaxially adjacent and defining therebetween an annular gap;

a linear hydrostatic gas bearing disposed in said gap for slidably supporting said portion relative to said first portion;

a source of working gas pressure for pressurizing said gas bearing;

high pressure gas plenum means for pressurizing said gas bearing and connected to said source; and

low pressure gas plenum means for draining said gas bearing.

4,387,569

HYDRAULIC BRAKE BOOSTER

Donald M. Flory, Arcanum, and Denny L. Peeples, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

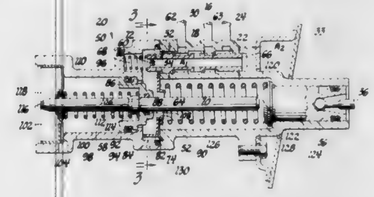
Filed Nov. 6, 1980, Ser. No. 204,464

Int. Cl.³ B60T *13/12*

U.S. Cl. 60—548 **3 Claims**

1. In a hydraulic booster having a housing, an input and reaction piston and a power piston forming portions of walls of a power chamber formed in the housing, a control valve in a control valve chamber formed in the housing, the control valve being hydraulically unbalanced toward the booster release position of control and also being continuously urged toward the booster release position of control by a valve spring, a power piston return spring continuously urging the power piston toward the input and reaction piston, and a control lever operatively engaging the control valve and the input and reaction piston, said improvement comprising:

said control lever having one end in the power chamber and the other end pivotally connected to the control valve and an intermediate portion which when the booster is released engages a shoulder formed on the booster housing between the power chamber and the valve chamber, said control lever one end forming a pivot engaged in pivotal relation with a fixed pivot point on the housing, and a reaction compression spring in the power chamber having one end acting directly on said control lever intermediate



said lever ends and the other end acting on said input and reaction piston so that booster actuating movement of the input and reaction piston toward the power piston transmits force through said reaction spring assuring engagement of said control lever one end pivot with said fixed pivot point and thereafter causes pivoting movement of the control lever about said fixed pivot point to move said control lever other end and said control valve in a booster actuating direction to permit hydraulic pressure to pressurize the power chamber, the pressure fluid in the power chamber acting to move the power piston and also acting on the input and reaction piston to provide feedback.

4,387,570

INTERNAL COMBUSTION ENGINE WITH SUPERCHARGER

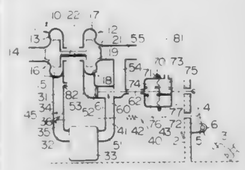
Kenji Iwamoto, Nishio, and Makoto Kuroyanagi, Hekinan, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 9, 1981, Ser. No. 232,968

Claims priority, application Japan, Feb. 13, 1980, 55-16986

Int. Cl.³ F02D *23/00*

U.S. Cl. 60—600 **7 Claims**



1. An internal combustion engine for use in a vehicle having an acceleration pedal movable to take a non-load position, predetermined intermediate-load position and full-load position, comprising:

a supercharger;

an intake system including an intake passage having one end thereof connected to said supercharger and other end connected to the engine for introducing fluid thereinto, and a throttle valve within said intake passage and movable for controlling flow rate of the fluid introduced into the engine through said intake passage;

means for interlocking said acceleration pedal and said throttle valve with each other to move said throttle valve between an idle position when said acceleration pedal is in said non-load position and a full-open position when said acceleration pedal is in said predetermined intermediate-load position;

means for holding said throttle valve in said full-open position when said acceleration pedal is between said predetermined intermediate-load position and said full-load position; and

control means interlocked with said acceleration pedal for controlling the operation of said supercharger so as to cause the same to perform its supercharging only when said acceleration pedal is between said predetermined intermediate-load position and said full-load position,

wherein said supercharger includes a compressor having inlet and outlet, said one end of said intake passage being connected to said outlet of said compressor, and turbine drivingly connected to said compressor, said turbine having an outlet communicating with the engine and being driven by exhaust gas therefrom,

further comprising an exhaust system including an exhaust passage having one end thereof connected to the engine and the other end connected to said inlet of said turbine, and a bypass passage bypassing said turbine and having one end opening to said exhaust passage and the other end communicating with atmosphere, said control means including a control valve in said exhaust passage and movable between a first position where said exhaust passage is closed and said bypass passage is opened and a second position where said exhaust passage is opened and said bypass passage is closed, and second interlocking means for interlocking said acceleration pedal and said control valve with each other to move the latter into said first position when said acceleration pedal is between said non-load position and said predetermined intermediate-load position and into said second position when said acceleration pedal is between said predetermined intermediate-load position and said full-load position,

wherein said control means includes means for sensing the discharge pressure of said compressor to produce a signal when the discharge pressure is higher than a predetermined value, an actuator operative in response to the signal from said sensing means, when said acceleration pedal is between said full-load position and said predetermined intermediate-load position, to actuate said control valve for moving the same between said first and second positions to adjust flow rate of exhaust gas directed toward said turbine, and

wherein said actuator includes a housing connected to said second interlocking means, a diaphragm within said housing to define therein a pressure chamber and an atmospheric chamber, said control valve being connected to said diaphragm, said sensing means including a port opening to a portion of said intake passage between said outlet of said compressor and said throttle valve, said control means further including a conduit having one end thereof connected to said port and the other end connected to said pressure chamber for introducing the discharge pressure of said compressor into said pressure chamber.

4,387,571

KNOCK CONTROL SYSTEM AND METHOD FOR TURBOSUPERCHARGER INSTALLED ENGINES

Masaaki Katsumata, Yokohama, and Kenji Yoneda, Fujisawa, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jul. 29, 1980, Ser. No. 173,433

Claims priority, application Japan, Jul. 30, 1979, 54-96934

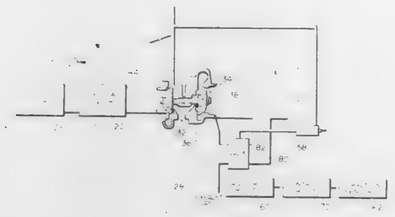
Int. Cl.³ F02B *37/12*

U.S. Cl. 60—602 **9 Claims**

1. A knock control system for use in an internal combustion engine equipped with a supercharger for applying supercharge to said engine, comprising:

(a) first means for detecting the frequency of occurrence of knock in said engine;

(b) second means for varying the degree of supercharge applied to said engine; and
(c) third means for controlling said second means to vary the degree of supercharge in accordance with the detected frequency of occurrence of knock.



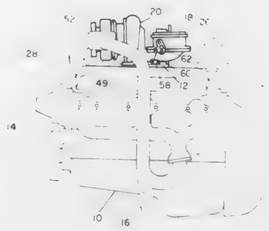
8. A method for controlling knock in an internal combustion engine having a supercharger for applying supercharge to the engine, comprising the steps of detecting the frequency of occurrence of knock in the engine and varying the degree of supercharge applied to the engine in response to the detected frequency of occurrence of knock.

4,387,572
TURBOCHARGER CONTROL SYSTEM
Neil R. Richardson, Palos Verdes Estates, and Bradley A. Woodhull, Fullerton, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.
Filed May 7, 1981, Ser. No. 261,585
Int. Cl.³ F02B *37/12*
U.S. Cl. 60—602 **35 Claims**



1. In an engine system having an engine and a compressor for supplying charge air to the engine, a system for controlling compressor operation, comprising:
valve means for controlling operation of the compressor to control the pressure level of the charge air supplied by the compressor;
first controller means responsive to engine power setting above a predetermined low power setting for controlling the position of said valve means in response to engine power setting;
second controller means for modulating the position of said valve means in response to variations in altitude during engine operation at said low power setting for controlling the compressor to provide charge air having a pressure according to a first functional relationship with altitude up to a predetermined altitude; and
third controller means for modulating the position of said valve means in response to variations in altitude above said predetermined altitude during engine operation at said low power setting for controlling the compressor to provide charge air having a pressure according to a second functional relationship with altitude.

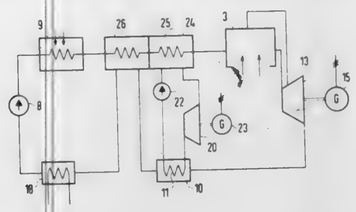
4,387,573
TURBOCHARGER MODULE FOR INTERNAL COMBUSTION ENGINE
Martin G. Parker, 4865 Pasadena Ave., Sacramento, Calif. 95841
Filed Dec. 11, 1980, Ser. No. 215,506
Int. Cl.³ F02B *33/44*
U.S. Cl. 60—611 **2 Claims**



1. A turbocharger for an internal combustion engine comprising:
a one-piece housing;
an upwardly directed intake port and a downwardly directed discharge surface in said housing;
first and second standard carburetor flanges around said intake port and discharge surface, respectively, so that a carburetor may be mounted directly thereon to feed an air/fuel mixture therein, and said housing may be mounted on the intake manifold of an internal combustion engine to discharge therein;
means in said housing forming a flow passage extending downward from said intake port in the configuration of a U-trap terminating in a horizontal outlet duct opening through one end of said housing;
a compressor delivery passageway in said housing extending upward from said outlet duct and then around it to a bottom port opening through said discharge surface;
a wall closure on said one end of the housing;
a horizontal shaft rotatable in said wall;
a turbine compressor on said shaft on the inside of said wall and disposed coaxially within said horizontal outlet duct;
a turbine impeller on said shaft on the outside of said wall;
a turbine housing on the outside of said wall and containing said impeller;
an inlet port in said turbine housing adapted to be connected to the exhaust manifold of an internal combustion engine;
a bypass port in said housing opening from the lowest level of said U-trap flow passage through said discharge surface;
a shut-off valve in said bypass port; and
means operative to open said shut-off valve at low engine loads.

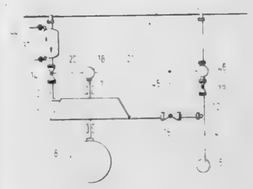
4,387,574
SOLAR POWER PLANT INCLUDING A SOLAR HEATER ON A TOWER
Bernard Becker, Mülheim; Roland Meyer-Pittroff, Eckental, and Günter Fröhlich, Mülheim, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim an der Ruhr, Fed. Rep. of Germany
Filed Apr. 28, 1981, Ser. No. 258,369
Claims priority, application Fed. Rep. of Germany, May 8, 1980, 3017699
Int. Cl.³ F03G *7/02*
U.S. Cl. 60—641.11 **8 Claims**

1. Solar power plant, comprising a tower, a solar heater disposed on said tower, a plurality of reflectors disposed in a given area for irradiating said solar heater, a water-steam circuit connected to said solar heater for conducting working medium thereto, a steam turbine connected in said water-steam circuit, a preheater for the working medium in the form of additional sunlight collectors being disposed outside of said given area and being connected to said water-steam circuit



upstream of said solar heater, and means for adjusting the pressure in said water-steam circuit to cause the pressure of the steam in said solar heater to approximate the atmospheric air pressure outside.

4,387,575
POWER STATION
Joachim O. M. Wenzel, Hauptmannsreute 46, 7 Stuttgart 1, Fed. Rep. of Germany
Division of Ser. No. 822,982, Aug. 8, 1977, Pat. No. 4,220,009. This application Jun. 30, 1980, Ser. No. 164,203
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1977, 2702232; Feb. 17, 1977, 2706702; Mar. 2, 1977, 2709036; Jun. 24, 1977, 2728418
Int. Cl.³ F01K *25/10*
U.S. Cl. 60—648 **9 Claims**



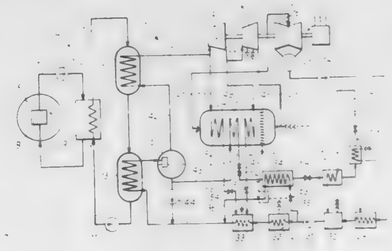
1. A method, of supplying a fluid pressure medium from a supply pipe through a delivery pipe to a utilising device, which comprises the steps of:
(i) determining the output of a prime mover connected through shut-off valve means to said delivery pipe
(ii) closing said shut-off valve means and opening a pressure-reducing valve means in a by-pass pipe connected between said main supply pipe and said delivery pipe, when said output falls below a predetermined rate
(iii) determining the rate of flow of the fluid pressure medium in said by-pass pipe
(iv) when the rate of flow of the fluid pressure medium in said by-pass pipe exceeds a predetermined rate, closing said pressure-reducing valve and opening said shut-off valve means.

4,387,576
TWO-PHASE THERMAL ENERGY CONVERSION SYSTEM
Lawrence E. Bissell, 1242 26th St., Apt. B, Santa Monica, Calif. 90404
Division of Ser. No. 899,791, Apr. 25, 1978, Pat. No. 4,249,385, which is a continuation-in-part of Ser. No. 615,931, Sep. 23, 1975, Pat. No. 4,085,591. This application Nov. 10, 1980, Ser. No. 205,635
Int. Cl.³ F01K *21/04*
U.S. Cl. 60—649 **4 Claims**



1. A two-phase thermal energy conversion system comprising:
(a) a source of hot gas;
(b) a vapor turbine connected to the source;
(c) a rate of flow sensor disposed in the connection between said gas source and said vapor turbine;
(d) a source of water;
(e) a pump connected to said source of water;
(f) a controllable valve connected between said pump and said vapor turbine for feeding a controlled amount of water into said vapor turbine; and
(g) means for coupling said rate of flow sensor to said controllable valve for controlling the volume of water fed into said vapor turbine in accordance with the rate of flow of gas to the vapor turbine, whereby the hot gases are mixed with water in a selected proportion to develop substantially optimum condensation of water vapor in the exhaust of said vapor turbine.

4,387,577
BOILERS
John W. E. Campbell, Maidenhead, England, assignor to Babcock Power Limited, London, England
Filed Aug. 14, 1980, Ser. No. 177,907
Claims priority, application United Kingdom, Aug. 16, 1979, 7928666
Int. Cl.³ F01K *7/22*
U.S. Cl. 60—680 **12 Claims**



1. A forced-flow boiler for a power plant that comprises a main circuit for steam/water working fluid which includes

boiler feedwater heating means, boiler steam generating means, a steam-driven prime mover stage, boiler steam reheating means, a lower-pressure steam-driven prime mover stage, a boiler steam condenser and pumping means for driving the working fluid around the circuit, the boiler including a boiler water letdown sub-circuit including means for continuously separating unevaporated water from the boiler working fluid leaving the boiler steam generating means, means for continuously treating the letdown water and means for allowing the treated letdown water continuously to join feedwater in the main circuit, wherein the said boiler steam reheating means includes a heat exchanger arranged for continuously transferring heat from the letdown water to the steam to be reheated.

4,387,578

ELECTRONIC SENSING AND DISPLAY SYSTEM FOR A REFRIGERATOR

Stephen W. Paddock, Knight Township, Vanderburgh County, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 20, 1981, Ser. No. 255,673
Int. Cl.³ F25B *49/00*; **G05D** *23/00*
U.S. Cl. 62—127 **15 Claims**



1. In a refrigeration apparatus having means defining a refrigerated space and cooling means for cooling the air within said refrigerated space, a sensing and display system comprising:

a plurality of sensors connected to said refrigeration apparatus, each of said sensors arranged to provide an output signal to indicate the existence of a sensed operating condition of said apparatus;

a first series of electrical indicators;

a second series of electrical indicators, at least one indicator of said second series of indicators corresponding to each of said sensed operating conditions; and,

electronic signal processing means coupled to said sensors and to said first and second series of indicators, including means for effecting repetitive sequential energization of said first series of indicators during periods when said sensors indicate that none of said predetermined sensed operating conditions exist; and,

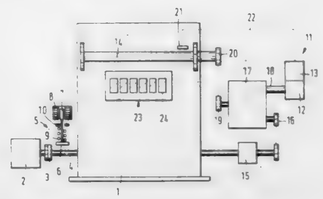
means for terminating sequential energization of said first series of indicators and energizing one of said second series of indicators when one of said sensors indicates the existence of one of said sensed operating conditions.

4,387,579

BRAKE FOR A WARP KNITTING MACHINE

Walter Branke, Rodgau, and Karl Winter, Obertshausen, both of Fed. Rep. of Germany, assignors to Karly Mayer Textilmaschinenfabrik GmbH, Fed. Rep. of Germany

Filed Jul. 7, 1981, Ser. No. 281,080
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1980, 3025782
Int. Cl.³ D04B *35/10*
U.S. Cl. 66—157 **8 Claims**



1. A warp knitting machine having a main shaft driven by an electric motor powered by a main circuit, further comprising:

(a) at least one supplemental, electrically driven regulating motor for influencing the thread takeoff of said machine, said electrically driven regulating motor being connected to said main circuit; and

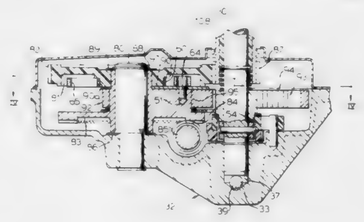
(b) electrically operable brake means coupled to said main circuit operable upon said main shaft for braking in response to interruption of said main circuit.

4,387,580

AUTOMATIC WASHER ENERGY ABSORBING SPIN DELAY MECHANISM

William L. Kennedy, Coloma Township, Berrien County, and Richard L. Fanson, St. Joseph Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbon, Mich.

Filed Dec. 19, 1980, Ser. No. 218,039
Int. Cl.³ D06F *37/40*
U.S. Cl. 68—12 R **7 Claims**



5. In an automatic laundry appliance being a clothes washer of the type including first and second drive means having a cycle of operation controlled by a presettable sequential control means and a delay means for delaying coupling of said second drive means until said first drive means is completely decoupled, the improvement of,

a driver comprising a generally circular shaped open loop made of resilient material and having an eye formed at one end thereof for pivotal mounting on a stud formed on a main drive gear and having an offset shoulder formed at the opposite end thereof providing an abutment surface means for selective engagement with a driven spin gear of said second drive means,

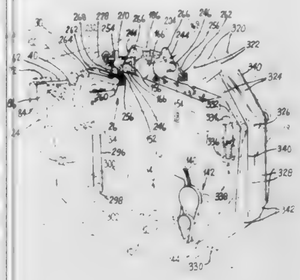
said driver operating to engage said main drive gear and said driven gear with a cushioning action to absorb stress and reduce noise.

4,387,581

MACHINE ADAPTED FOR USE IN THE MANUFACTURE OF SHOES

David C. Reedman, Melton Mowbray, and Kingsley J. Tutt, Birstall, both of England, assignors to USM Corporation, Farmington, Conn.

Filed Jun. 5, 1981, Ser. No. 270,801
Claims priority, application United Kingdom, Jun. 10, 1980, 8019008
Int. Cl.³ C14B *1/44*
U.S. Cl. 69—6.5 **6 Claims**



1. A machine for performing a roughing operation progressively along marginal portions of shoe bottoms, comprising

a shoe support for supporting a lasted shoe, bottom uppermost,

tool supporting means comprising a support on which a sub-frame is mounted for pivotal movement about a transverse axis, a radial roughing tool being supported on said sub-frame with the transverse axis extending tangential, or substantially tangential, to the shoe bottom engaging region of the operating surface thereof,

first, second and third stepping motors for effecting relative movement, respectively lengthwise, widthwise and heightwise of the bottom of a shoe supported by the shoe support, between the shoe support and said support forming part of the tool supporting means,

computer control means by which drive signals are generated and supplied to said stepping motors in accordance with a programmed instruction, including digitised co-ordinate axis values, using three co-ordinate axes, for a plurality of selected points along marginal portions of the bottom of the or a similar shoe, whereby the tool is caused to follow a pre-determined path in relation to the shoe bottom being operated upon, and

a fourth stepping motor for effecting pivotal movement of the sub-frame about said transverse axis in response to drive signals supplied thereto by the computer control means in accordance with said programmed instruction, whereby, as the tool operates as aforesaid, the plane in which its operating surface lies is maintained normal, or substantially normal, to the marginal portion of the shoe bottom.

4,387,582

KEY OPERATED LOCK FOR SECURING A MOVABLE PORTION OF A MOTOR VEHICLE

Pierre Meunier, Plaisir, France, assignor to Sodex-Magister, Croissy, France

Filed Oct. 28, 1980, Ser. No. 201,101
Claims priority, application France, Jan. 14, 1980, 80 00683
Int. Cl.³ E05B *65/12*
U.S. Cl. 70—186 **2 Claims**

1. An anti-theft device for a motor vehicle comprising:

(a) a housing,

(b) means for securing said housing to a relatively fixed part of the vehicle,

(c) a locking bolt movable along a first axis between a locking position where said bolt engages an aperture in a movable portion of the vehicle to be locked and an unlocked position,

(d) a driving pin extending from said locking bolt,

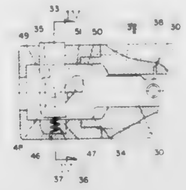
(e) a driving plate slidable along a second axis transverse to said first axis, said driving plate having a slot receiving said driving pin, which slot includes

(i) a first portion inclined to said first axis,

(ii) a second portion contiguous with one end of said first portion extending generally transversely of said first axis, and

(iii) a third portion contiguous with the other end of said first portion extending parallel to said first axis,

(f) a cylinder lock rotatable by means of a key within a bore



in the housing for effecting movement of said bolt between locking and unlocking positions,

(g) a cam fixed to said cylinder lock so as to be rotatable thereby, said cam being in driving engagement with said driving plate, whereby on rotation of said cylinder lock the cam effects movement of said driving plate which in turn by way of the first portion of the slot causes said locking bolt to be driven into its locking position, and

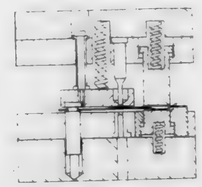
(h) a return spring for urging said driving plate in opposition to its displacement by the cam wherein, due to the second portion of the slot no withdrawal of the locking bolt from its locking position is possible and due to the third portion of the slot movement of said bolt into a fully retracted position without movement of said driving plate for the purpose of assembly of the cylinder is possible.

4,387,583

BENDING AND FORMING TOOL

Earl C. Martin, Dayton; John K. Thompson, West Carrollton, and Robert J. Gargrave, Dayton, all of Ohio, assignors to Ready Systems, Inc., Dayton, Ohio

Filed Aug. 18, 1980, Ser. No. 179,264
Int. Cl.³ B21D *5/01*
U.S. Cl. 72—22 **24 Claims**



21. Bending and forming apparatus comprising an anvil adapted for use in a press in conjunction with a die connected to an opposed portion of the press to form and bend material interposed therebetween as the press closes during its cyclic operation, said anvil being adapted for connection to a base surface and including a plurality of coaxially related elements which are normally fixed to form an extension of one another by locking means internally embodied therein to normally provide them as a rigid unitized structure of substantially fixed length, said coaxially related elements including an inner and

an outer of said elements, said inner of said elements normally projecting outwardly from the outer thereof and mounting an anvil shoe which is peripherally extended, said locking means being constructed and arranged to be released to free said normally fixed coaxially related elements from one another to permit movement of one thereof relative the other, subsequent to application of load thereon, to convert said anvil to hard tooling of reduced length to set the bent and formed configuration of the material worked and said shoe being arranged to bottom on the adjacent extremity of the outer of said elements on release of said locking means.

4,387,584

STEEL PIPE ROLLING MILL

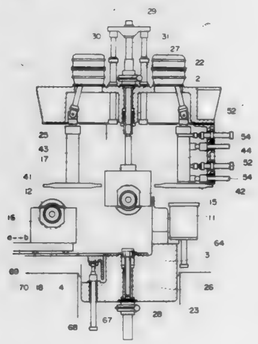
Shinji Akita, and Masayuki Hatanaka, both of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1981, Ser. No. 312,947

Claims priority, application Japan, Oct. 21, 1980, 55-146260; Oct. 31, 1980, 55-152143

Int. Cl.³ B21B *31/08*

U.S. Cl. 72—100 **8 Claims**



1. In a steel pipe rolling mill of the type including a housing, a top and bottom rolling roll, a top and bottom cradle for respectively holding said top and bottom rolling rolls, and a pair of disk shoes, the improvement comprising:

means for raising and lowering said top and bottom cradles; and

a carriage arranged below said bottom cradle and movable transversely,

whereby said top and bottom cradles are successively moved in and out of said housing transversely by said carriage.

4,387,585

SPRING COILING MACHINE WITH IMPROVED COIL STARTER MEANS

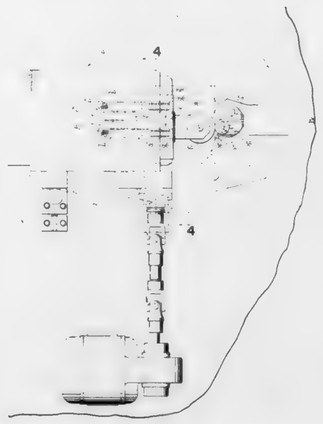
Erman V. Cavagnero, and Stanley M. Waligura, both of Torrington, Conn., assignors to Torin Corporation, Torrington, Conn.

Filed Jan. 13, 1981, Ser. No. 224,813

Int. Cl.³ B21F *3/04, 3/10, 11/00*

U.S. Cl. 72—131 **10 Claims**

1. In a cyclically operable spring coiling machine having a frame and coiling station; the combination of at least one pair of oppositely rotatable feed rolls on said frame for intermittently advancing wire longitudinally to the coiling station, a main drive means for said feed rolls, a relatively fixed coiling arbor at the coiling station, at least one coiling tool at the coiling station arranged to engage the longitudinally advancing wire to obstruct the linear movement thereof whereby progressively to bend the same about the coiling arbor and impart a coiling stress thereto resulting in the formation of a coil spring configuration at a leading end portion thereof, a cut-off tool at said coiling station operable by said main drive means successively to sever coiled leading end portions of the wire whereby to provide individual coil springs, a diameter slide movable by said main drive means longitudinally toward and away from said coiling arbor generally along the line of wire feeding movement but on the side of said arbor opposite said feed rolls, a coil starter slide mounted on said diameter slide adjacent said coiling arbor and movable in one and an opposite direction laterally along a line of movement approximately at right angles to the diameter slide movement and wire feed movement, said coil starter slide carrying said coiling tool,



a small coil starter motor independent of said main drive means mounted on the machine frame, and power transmitting means including universal joint means connected between said coil starter motor and said coil starter slide and operable by said motor to move said coil starter slide and coiling tool between operative wire coiling and coil starting positions, said latter position being spaced laterally from said coiling arbor to allow a short leading end portion of wire to be coiled to project beyond the arbor and to be thereafter engaged by the coiling tool and bent about the arbor for a coil starting operation on lateral movement of the coil starter slide and coiling tool from said starting position to said operative coiling position.

4,387,586

METHOD OF WIDTHWISE ROLLING OF ROLLED MATERIAL AND APPARATUS THEREFOR

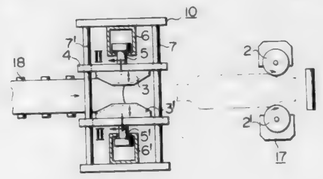
Hiroshi Awazuhara, Katsuta; Sukebumi Tsumura, Mito, and Tomoaki Kimura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 24, 1980, Ser. No. 200,606

Claims priority, application Japan, Oct. 31, 1979, 54-139929

Int. Cl.³ B21B *15/00, 47/00*

U.S. Cl. 72—206 **15 Claims**



1. A method of rolling a rolled material widthwise thereof, comprising the steps of:

shaping a lengthwise end portion of the rolled material by compression working to form therein a progressively reducing width portion in which the width is progressively reduced in going toward the end of the rolled material, and a uniform width portion contiguous with the progressively reducing width portion and having a width equal to the minimum width of the progressively reducing width portion between its end contiguous with the progressively reducing width portion and the end of the rolled material, in such a manner that said uniform width portion has a length at least over ½ the width of the rolled material before having its end portion shaped; and

thereafter rolling the rolled material widthwise thereof.

4,387,587

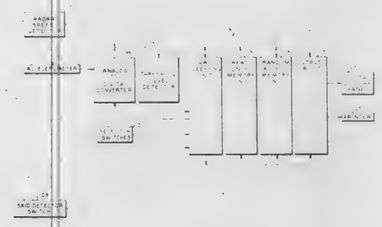
MOTOR VEHICLE DECELERATION DATA ACQUISITION AND PROCESSING APPARATUS AND METHODOLOGY

Boyd M. Faulconer, R.R. #1, Smithville, Mo. 64089

Filed Jun. 17, 1981, Ser. No. 274,416

Int. Cl.³ G01N *19/02*

U.S. Cl. 73—9 **12 Claims**



8. A method for determining coefficient of friction of a surface relative to tires of a vehicle and related information, including the steps of:

(a) operating the vehicle on the surface;

(b) braking the vehicle on the surface such that the wheels of the vehicle are locked and not free to rotate until the vehicle is substantially stopped;

(c) positioning a deceleration determining mechanism in the vehicle so as to determine deceleration rates of the vehicle during braking along a path of motion of the vehicle;

(d) at least periodically sampling deceleration data as determined by the deceleration determining mechanism during braking; and

(e) performing mathematical operations on said data for determining the coefficient of friction and related information.

4,387,588

KNOCKING DETECTOR OF AN INTERNAL COMBUSTION ENGINE

Kiyokane Kaji, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 29, 1981, Ser. No. 258,574

Claims priority, application Japan, May 19, 1980, 55-68572[U]

Int. Cl.³ G01L *23/22*

U.S. Cl. 73—35 **3 Claims**

1. A knocking detector of an internal combustion engine comprising:

a knocking sensor for detecting engine vibrations and generating an output signal related thereto;

an integration circuit for integrating said output signal;

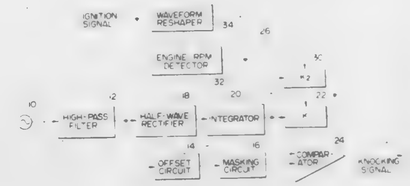
an engine rotation speed detection circuit for generating a speed signal when the engine rotates at a high speed;

an operational amplifier responsive to said integrated output signal;

a first feedback resistor connected between input and output terminals of said operational amplifier;

a second feedback resistor connected in parallel with said first feedback resistor;

a switching transistor having a collector and an emitter connected in series with said second feedback resistor, said switching transistor being responsive to said speed



signal to turn on said transistor when the engine rotates at a high speed to decrease the gain associated with said operational amplifier; and

a knocking detection circuit for comparing the output signal of said knocking sensor with an output signal of said operational amplifier to produce a knocking signal when the output signal of said knocking sensor exceeds the output signal of said operational amplifier.

4,387,589

TEST STAND

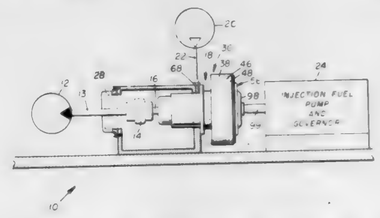
Larry A. Larson, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00780, § 371 Date Jun. 10, 1981, § 102(e) Date Jun. 10, 1981, PCT Pub. No. WO82/04481, PCT Pub. Date Dec. 23, 1982

PCT Filed Jun. 10, 1981, Ser. No. 287,538

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A **8 Claims**



1. In a test stand (**10**) which has a drive shaft (**16**), the improvement comprising:

an inertial weight (**30**);

bearing means (**34**,**36**,**52**,**54**,**55**,**26**) for rotatively mounting said inertial weight (**30**) about said drive shaft (**16**); and

means (**56**) for at least selectively disengaging the inertial weight (**30**) from the drive shaft (**16**) while said drive shaft (**16**) is turning wherein said means (**56**) includes a bellows (**58**), located about said drive shaft (**16**), and a plurality of drive shaft engaging members (**60**) connected to said bellows (**58**).

4,387,590

SWATCH REMOVER AND METHOD

William J. Alexander, III, 41 W. Golden Strip Dr., Mauldin, S.C. 29662

Filed Jun. 2, 1981, Ser. No. 269,678

Int. Cl.³ G01N *1/04*

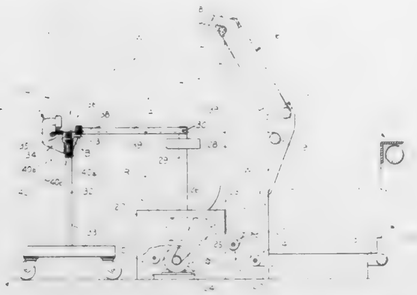
U.S. Cl. 73—159 **4 Claims**

1. For use with a cloth winder and the like, a swatch removing apparatus comprising:

an upright transverse frame member pivoted outboard of

said winder adjacent each end thereof having a bridging member adjacent the top over which cloth passes in open width to said winder;

means limiting downward pivoted movement of said transverse frame member for receiving cloth, a length of which has been pulled outwardly of a path to said winder by



movement of said bridging member as a result of downward pivotal movement of said frame for removal as a swatch; and

means for positioning said cloth for joining ends of cloth resulting from removal of the swatch together after removal of the swatch.

4,387,591

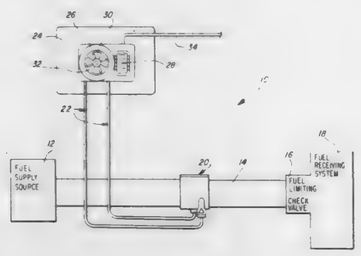
METHOD FOR TESTING FLUID CONTROL VALVES

Gerald G. Corzine, Hazelwood, and Charles E. Hagar, Augusta, both of Mo., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 22, 1981, Ser. No. 256,327

Int. Cl.³ G01F *25/00*; G01M *19/00*

U.S. Cl. 73—168 **1 Claim**



1. A method for determining the operable condition of a fluid level control valve of a fluid receiving system prior to delivery of the fluid through a conduit to a fluid receiving system from a fluid supply source comprising the steps of:

delivering from the fluid supply source a test sample of fluid through the conduit, and

simultaneously determining the flow of the test sample of fluid through the conduit and the pressure of the test sample of fluid in the conduit, the simultaneous indication of fluid flow and fluid pressure within respective predetermined limits determining that the fluid level control valve is not properly operable.

4,387,592

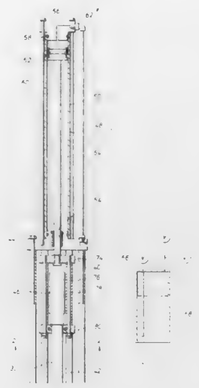
PROBE INSERTION APPARATUS

Robert H. Welker, Sugar Land, Tex., assignor to Welker Engineering Company, Sugar Land, Tex.

Filed Jul. 1, 1981, Ser. No. 279,429

Int. Cl.³ G01F *15/18*

U.S. Cl. 73—198 **9 Claims**



1. An apparatus for mounting an elongate sensor means for insertion into and removal from a pipeline against the pressure acting in the pipeline which apparatus is adapted to connect to the pipeline at a tee on the pipeline and which comprises:

(a) an elongate cylinder having a lower end and adapted to be positioned approximately perpendicular to the axis of a pipeline;

(b) a piston slidably positioned in said cylinder;

(c) means for mounting said cylinder aligned with and above said tee in the pipeline;

(d) a piston rod connected to said piston and extending from said cylinder toward the tee for reciprocation by said piston;

(e) elongate connector means having an exposed portion and also joining said piston rod to said sensor means and aligned therewith at one end thereof which end is inserted into and removed from the pipeline by operation of said piston moving in said cylinder said connector means being adapted to facilitate installation and operation of said sensor means;

(f) a flanged plate joinable to the tee and including seal means adjacent an opening therein, said seal means an opening defining a passage enabling said sensor means to be inserted through the tee and into the pipeline wherein a portion of said sensor means extends from the opening for cooperation with said connector means; and

(g) an open frame member connected between the lower end of said elongate cylinder and said flanged plate, said open frame member aligning said connector means for exposed insertion movement thereof toward said flanged plate.

4,387,593

POWDER LEVEL MEASUREMENT PROBE

Merlin H. Moseman, Omaha, Nebr., assignor to InterNorth, Inc., Omaha, Nebr.

Filed Feb. 19, 1981, Ser. No. 235,851

Int. Cl.³ G08B *21/00*

U.S. Cl. 73—290 R **6 Claims**

1. In combination,

a polypropylene gas phase reactor having an upper end and adapted to contain polypropylene powder therein,

a rigid hollow tube means extending downwardly into said reactor from the upper end thereof,

a powder probe holder mounted on the lower end of said hollow tube means and having upper and lower ends,

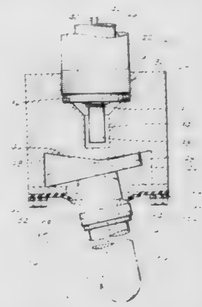
said holder having a cylindrical recess formed in its upper end,

a metal proximity sensor element in said cylindrical recess in said holder and being operatively connected to a signal device remotely from said reactor,

said holder having a recessed area formed in its lower end spaced below said cylindrical recess and positioned below said sensor element,

a metal plate means vertically movable mounted and pivotally movably mounted in said recessed area,

and a rigid powder probe rigidly connected to said plate



means and extending downwardly therefrom for contact with the powder in the reactor,

said metal plate means being either vertically moved or pivotally moved towards said sensor element, to activate the same, when the powder in said reactor sufficiently moves said probe with respect to said holder,

said recessed area having a circular cross-section and said plate means is disc-shaped and has a smaller diameter than said recessed area; and

a support ring secured to the lower end of said holder below said plate means to maintain said plate means in said recessed area, said support ring having a central opening smaller in diameter than said plate means and said probe extending downwardly through said support ring.

4,387,594

WATER LEVEL INDICATOR HAVING A REMOTE AND A LOCAL READOUT DISPLAY

John Berthold, Salem, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 23, 1981, Ser. No. 245,871

Int. Cl.³ G01F *23/00*; G02B *27/14*

U.S. Cl. 73—293 **4 Claims**



1. A liquid level gauge assembly for providing a remote and a local optical display of the liquid level in a boiler comprising:

optical means mounted proximately to the boiler for producing an optical signal indicative of liquid level in the boiler;

a beam splitter located proximate to said optical means to divide the optical liquid level signal of said optical means into a first and second optical signal;

a fibre optic cable having one end located proximately to said beam splitter and being used to transmit said first optical signal from said beam splitter to a boiler control location remote from said beam splitter and the boiler; and

display means located proximately to said beam splitter to display said second optical signal from said beam splitter in the area of the boiler.

4,387,595

FLOAT OF SLURRY PRESSURE FEEDING SYSTEM

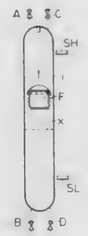
Masakatsu Sakamoto, Matsudo; Kenji Uchida, and Shuichi Nagano, both of Kashiwa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 3, 1981, Ser. No. 250,665

Claims priority, application Japan, Apr. 9, 1980, 55-45590

Int. Cl.³ G01F *23/06*

U.S. Cl. 73—322.5 **10 Claims**



8. A system for pressure feeding of slurry comprising at least one slurry supply chamber provided with a float, the slurry supply chamber being in flow communication with means for delivering a charge of slurry under low pressure to said slurry supply chamber and means for feeding said slurry by a driving liquid under high pressure from said slurry supply chamber to a desired destination, wherein said float comprises:

a float body which has a bellows portion and which encloses a volume, wherein said volume contains a gas and a liquid sealed in said float body, said gas and liquid being sealed in said float body to occupy volume portions of said volume such that the total weight per total volume of the float changes according to the pressure of the driving liquid and slurry.

4,387,596

METHOD OF AND DEVICE FOR ULTRASONICALLY TESTING SPHERICAL BODIES

Max Fenkner, Schweinfurt, and Hilmar Wehner, Schwebheim, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 231,217

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1980, 3004079

Int. Cl.³ G01N *29/00*; G01M *13/00*; G01H *1/00*

U.S. Cl. 73—593 **4 Claims**

1. A device for ultrasonically testing spherical bodies, comprising:

a supporting member with a spherically concave recess accommodating a body to be tested;

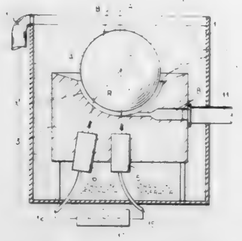
a supply of coupling liquid communicating with said recess for providing a cushion of said liquid between said member and a body seated in said recess;

first ultrasound-generating means trained vertically from below through said member and said cushion upon the center of curvature of said recess;

second ultrasound-generating means trained inclinedly from the vertical at an angle less than 90° from below through said member and said cushion upon a body seated in said recess along at least one line offset from said center of curvature;

drive means for setting a body to be tested in successive

rotation about at least two different axes substantially passing through said center of curvature; and



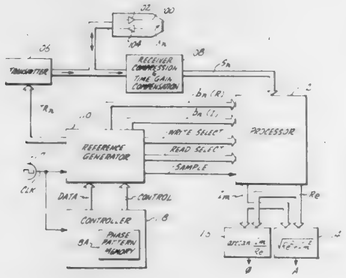
evaluating means connected to said first and second ultrasound-generating means.

4,387,597

BEAMFORMING APPARATUS AND METHOD FOR ULTRASONIC IMAGING SYSTEMS

Marco A. Brandestini, Seattle, Wash., assignor to Advanced Technology Laboratories, Inc., Bellevue, Wash.

Filed Dec. 8, 1980, Ser. No. 214,422
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—626 **25 Claims**



1. A method for steering and focusing the received beam of an array of ultrasonic transducers to an incremental portion of an object, each transducer being adapted to provide a received signal representing returns of ultrasonic energy from object points of the object, said method comprising the steps of:

providing a plurality of first reference signals, each first reference signal being associated with one of the received signals and having a frequency and phase that are matched to the frequency and phase of those components in the associated received signal that represent returns from object points within said incremental portion;

multiplying each received signal by its associated first reference signal so as to develop a plurality of first product signals each related to the product of a received signal and its associated first reference signal;

integrating each of said plurality of first product signals during an associated one of a plurality of resolution windows, the time occurrence of each said resolution window being substantially equal to the time occurrence of those components in the received signal, from which the associated said first product signal has been developed, that represent returns from object points within said incremental portion, so as to develop a plurality of first correlated signals each related to the time integral of at least one of said plurality of first product signals; and,

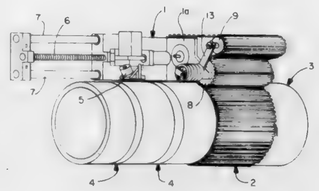
combining said plurality of first correlated signals so as to develop a first output signal representing a first response of the array to returns from object points within said incremental portion.

4,387,598

PIPE SCANNER MECHANISM

John M. Jamieson, Herndon, and Dixon Cleveland, Annandale, both of Va., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Sep. 15, 1981, Ser. No. 302,459
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—637 **2 Claims**



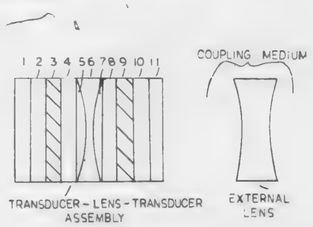
1. A device for total circumferential scanning of pipes and pipe joints comprising a housing accommodating a toothed drive roller, driving means connected to said toothed drive roller, a toothed idler roller and a plurality of smooth idler rollers, wherein at least one of said smooth idler rollers is connected to said housing by pivoting arms adapted for tensioning by spring means, and scanning means for detecting faults and imperfections in said pipes and pipe joints; said device further comprising a flexible belt toothed on one surface thereof and having a length greater than the circumference of the pipe to be scanned and having ends adapted to be securely joined together, said belt adapted to be routed circumferentially around said pipe and through said housing by contacting each of said rollers whereby the toothed surface of said belt contacts said toothed drive roller and toothed idler roller and the smooth surface of said belt contacts said pipe and said smooth idler rollers.

4,387,599

MULTIPLE FIELD ACOUSTIC FOCUSSER

Arthur Samodovitz, 67 Overbrook Dr., Colonia, N.J. 07067

Filed Jan. 6, 1981, Ser. No. 222,947
Int. Cl.³ G10K *11/30*
U.S. Cl. 73—642 **9 Claims**



1. An ultrasonic apparatus for focussing ultrasonic waves comprising the following acoustical lenses and transducing elements located in order along an axis:

a first acoustical lens,

a first transducing element,

a second acoustical lens, and

a second transducing element, and further comprising

means for coupling the first lens to the first transducing element, the first transducing element to the second lens, and the second lens to the second transducing element so that ultrasonic waves can propagate from the first lens, to the first transducing element, to the second lens, and to the second transducing element.

4,387,600

FIBEROPTIC PRESSURE GAUGE

Max L. Kranz, La Habra, Calif., assignor to U.S.D. Corp, Santa Ana, Calif.

Filed Apr. 13, 1981, Ser. No. 253,361
Int. Cl.³ G01L *7/04*
U.S. Cl. 73—714 **22 Claims**



1. A pressure gauge readout for sensing pressures within a body of breathing gas contained within a tank and displaying them comprising:

a pressure gauge readout head having a fitting thereon with an opening adapted for receipt of pressure from a tank of breathing gas;

a bourdon tube having an open end adapted for contact with the opening of said pressure head connection for receipt of pressure within said breathing gas tank;

light means within said pressure sensing head;

means attached to said bourdon tube for controlling the location of light emitted from said light means so that as said bourdon tube moves, said means for controlling the light location will correspond to said bourdon tube movement and analogous pressure within said breathing gas tank;

a plurality of discrete light conducting means in optical relationship to said light means for conducting light therefrom corresponding to the controlled location provided by said light controlling means; and,

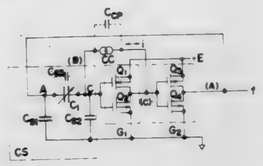
means attached to said light conducting means for indicating the amount of pressure corresponding to the location of light conducted therethrough.

4,387,601

CAPACITANCE TYPE DISPLACEMENT CONVERSION DEVICE

Tadashi Azegami, Inagi, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Jun. 19, 1981, Ser. No. 275,510
Claims priority, application Japan, Jul. 1, 1980, 55-89745; Jul. 24, 1980, 55-101699; Feb. 9, 1981, 56-18406; Feb. 9, 1981, 56-18407; Feb. 12, 1981, 56-19450; Mar. 30, 1981, 56-46738
Int. Cl.³ G01L *9/12*
U.S. Cl. 73—724 **14 Claims**



1. A capacitance type displacement conversion device for measuring a physical displacement by converting a physical displacement detected by a capacitance type sensor into an electrical signal proportionate to the displacement comprising:

a sensor having a movable electrode plate responsive to a physical displacement and a stationary electrode plate, said sensor forming a capacitor having a capacitance value proportionate to the physical displacement to be measured,

an amplification means having an input and two outputs, one of which is in same phase with said input and the other in opposite phase with said input, one of said electrode plates being connected to said input and the other of said electrode plates being connected to said output which is in same phase with said input, and

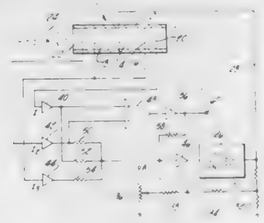
a constant current circuit connected between said input and said output which is in opposite phase with said input and allowing the constant current to flow in both directions.

4,387,602

PRESSURE COMPENSATED CIRCUIT FOR ION MASS AIRFLOW SENSORS

Binneg Y. Lao, Rancho Palos Verdes, Calif., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 4, 1981, Ser. No. 231,634
Int. Cl.³ G01F *1/64, 1/78*
U.S. Cl. 73—861.09 **32 Claims**



1. A pressure compensated detection circuit for an ion mass flow sensor having at least one corona electrode generating ions by corona discharge and at least one ion collector electrode collecting the generated ions to produce at least two collected ion currents, said circuit comprising:

first means for generating a mass flow rate signal in response to the collected ion currents;

second means for generating a total ion current signal indicative of the total number of ions generated in response to said collected ion currents;

third means for generating a pressure compensation signal in response to said mass flow rate signal;

fourth means for summing said pressure compensation signal with said total ion current signal and a reference signal to generate a control signal; and

high voltage generator means for generating a high voltage signal applied to the sensor's corona electrode in response to said control signal, said high voltage signal having a value keeping the relationship of the total ion current to said pressure compensation signal and said reference signal a constant.

27. A method for pressure compensating the output of an ion mass flow rate sensor having at least one corona electrode producing ions by corona discharge and at least one ion collector collecting the generated ions to produce at least two ion currents, comprising the steps of:

amplifying the difference between said two ion currents to generate a mass flow rate signal;

amplifying the sum of said two ion currents to generate a total ion current signal;

generating a reference signal;

correcting said reference signal as a function of said mass

flow rate signal to generate a pressure compensated reference signal; and

summing said pressure compensated reference signal with said total ion input current signal to generate a control signal

controlling a high voltage generator with said control signal to generate a high voltage signal applied to the corona electrode, said high voltage signal activating said corona electrode to generate a corona discharge generating ions at a rate maintaining the relationship of the total ion current to the pressure compensated reference signal a constant.

4,387,603

BOUNCELESS HIGH PRESSURE DROP CASCADE IMPACTOR AND A METHOD FOR DETERMINING PARTICLE SIZE DISTRIBUTION OF AN AEROSOL

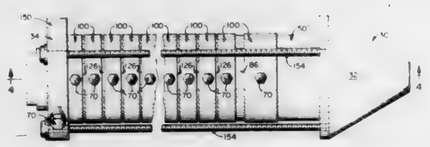
Philip A. Nelson, 326 Ranger Dr., Olympia, Wash. 98503

Continuation of Ser. No. 51,687, Jun. 25, 1979, Pat. No. 4,327,594, which is a continuation-in-part of Ser. No. 821,608, Aug. 3, 1977, Pat. No. 4,189,937, which is a continuation-in-part of Ser. No. 464,158, Apr. 25, 1974, abandoned. This application Sep. 28, 1981, Ser. No. 306,162

The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.

Int. Cl.³ G01N *15/02*

U.S. Cl. 73—863.22 **15 Claims**



1. A cascade impactor for sampling a particle-laden gas for particle size distribution, said impactor comprising:

a. a gas inlet and a gas outlet;

b. a plurality of stages between said gas inlet and said gas exit wherein each stage comprised a jet plate and a collector plate except that the first jet plate may be a part of or may be replaced by the inlet nozzle;

c. a collector plate downstream from each jet plate, and a jet plate upstream from each collector plate;

d. each jet plate having one or more apeture(s) through which the particle laden gas passes wherein said aperture(s) are positioned so that the gas from the jet plate is directed to the collector surface on the respective collector plate downstream from said jet, said aperture(s) being round holes, or rectangular slits, or curved slits;

e. each of said collector plates comprising the upstream surface of the succeeding jet plate and being intregal with said jet plate, except that the downstream-most collector plate will be separate from any jet plate;

f. appropriate sealing means between a jet plate and a collector plate or between adjacent jet-collector plates to cause the gas to flow entirely through the jet aperture(a) or through other designated passageways between a collector plate and succeedingly jet plate; and,

g. and wherein one or more of the jet plates have jet holes less than 0.10 inch in diameter or jet slits less than 0.10 inch in width, as the case may be, and in which the ratio of jet hole diameter to depth of the jet hole, that is the t/D ratio, is greater than 6, or in which the ratio of the jet slit width to jet slit depth, that is the t/Wi ratio, is greater than 6, as the case may be, and where t is defined as the depth of the cylindrical section of the jet hole(s) or t is defined as the depth of that (those) portion(s) of the slit(s) that have parallel sides, and for square-edged holes or slits t equals the thickness of the jet plate, and for holes or slits with rounded, countersunk, or chamfered edges, t is less than the thickness of the jet plate.

4,387,604

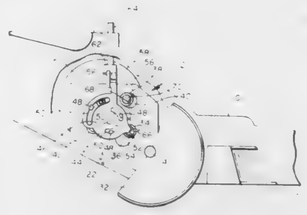
TOY INERTIA MOTOR

William M. Maher, Churchville, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Jan. 27, 1981, Ser. No. 228,779

Int. Cl.³ F16H *3/34;* **A63H** *17/00, 29/20*

U.S. Cl. 74—354 **9 Claims**



1. A toy inertia motor for driving a rotatable drive shaft comprising:

a rotatable flywheel for storing energy when rotated;

a rotatable drive shaft;

a winding gear train for coupling said drive shaft to said flywheel for rotating said flywheel at high speed upon rotation of said drive shaft in one direction by an applied force;

a driving gear train coupling said flywheel to said drive shaft for transmitting the energy of said rotating flywheel to said drive shaft for driving said drive shaft in said one direction;

a first gear of said winding and driving gear trains movable, in response to rotation of said drive shaft in said one direction, from a normal drive position, in which said first gear is a part of said driving gear train and disengaged from said winding gear train, to a wind position, in which said first gear is a part of said winding gear train and disengaged from said driving gear train;

latch means responsive to movement of said first gear to its wind position for latching said first gear in said wind position whereby rotation of said flywheel to a high speed through said winding gear train is possible; and

means for releasing said latch means after said flywheel is rotating at high speed whereby said first gear is disengaged from said winding gear train and returned to its normal drive position in said driving gear train for transmitting the energy from said rotating flywheel to said drive shaft.

4,387,605

METHOD AND APPARATUS FOR MOUNTING AN AUTOMOTIVE AUXILIARY TRANSMISSION

James S. Grey, Box 107A, East Otto, N.Y. 14029; R. Daniel Stuart, 230 S. Central Ave., Springville, N.Y. 14141, and Edwin D. Lake, Zoar Valley Rd., Springville, N.Y. 14140

Filed Nov. 21, 1980, Ser. No. 209,017

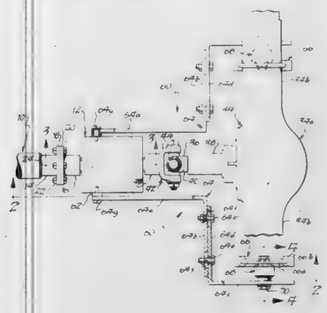
Int. Cl.³ F16M *13/00;* **B60K** *17/00;* **F16H** *37/08*

U.S. Cl. 74—694 **11 Claims**

1. In a vehicle power train including a longitudinal main drive shaft; a differential having a pinion shaft, a differential housing at least partially enclosing said pinion shaft and drive axle housings transversely extending from opposite sides of said differential housing; an auxiliary transmission having an input shaft rigidly coupled to said main drive shaft for rotation therewith, an output shaft coupled to said pinion shaft, via a universal joint, a gear train coupling said input and output shafts, and a casing enclosing said gear train and mounting said

input and output shafts for rotational movement with respect thereto; the improvement of an assembly for supporting said casing, comprising:

a bracket assembly including a pair of spaced legs, removably affixed at one of their ends to said casing and extending therefrom for respective removable attachment at their other ends to said drive axle housings; and



means for removably attaching each of said other ends of said spaced legs to its respective one of said drive axle housings, said means including a resilient member having one portion fixedly mounted to its respective drive axle housing and another portion fixedly secured to its respective leg for exerting an upward, lifting force thereagainst to essentially counterbalance the weight of said auxiliary transmission.

4,387,606

AUTOMATIC TRANSMISSION

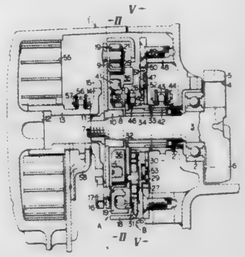
Masumi Hamane, Kawagoe; Akira Shigihara, Asaka, and Masaie Kato, Musashino, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1980, Ser. No. 149,929

Claims priority, application Japan, May 18, 1979, 54-61752; Jul. 6, 1979, 54-86072

Int. Cl.³ F16H *3/74*

U.S. Cl. 74—752 E **6 Claims**



1. An automatic transmission comprising a casing containing a lubricating oil sealed therein, an input member operatively connected to a drive source so as to be rotated thereby, an output member operatively connected to a driven member, a planetary gear mechanism interposed in said casing between said input member and said output member for transmitting power from said input member to said output member, a wet type centrifugally operated clutch means cooperating with said planetary gear mechanism to form a power transmission passage for controlling power transmission between said planetary gear mechanism and said input and output members, and a drive chain transmitting power from said output member to said driven member, said drive chain being sealingly disposed in said casing at a location close to said planetary gear mechanism and having at least a part thereof immersed in the lubricating oil in said casing whereby the lubricating oil is scooped up by said drive chain in accordance with the rotation of said input member so as to be supplied to said planetary gear mechanism.

4,387,607

OVERDRIVE UNIT IN AUTOMATIC TRANSMISSIONS

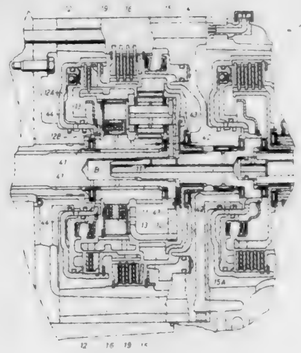
Shiro Sakakibara, Aichi, Japan, assignor to Aisin Warner Kabushiki Kaisha, Aichi, Japan

Filed Aug. 19, 1980, Ser. No. 179,484

Claims priority, application Japan, Aug. 30, 1979, 54-111262

Int. Cl.³ F16H *57/10*

U.S. Cl. 74—781 R **1 Claim**



1. An overdrive apparatus in an automatic transmission comprising:

a planetary gear set including a sun gear, a ring gear and at least one planetary pinon in mesh with the sun gear and the ring gear;

an input shaft concentrically linked with a rotating carrier supporting the planetary pinion;

an output shaft concentrically linked with the ring gear;

a first clutch disengageably coupling the sun gear with the carrier including a first and second clutch hub, said first clutch hub being concentrically linked with the carrier and the second clutch hub being rotatable together with the sun gear;

a brake disposed between the housing of the overdrive apparatus and the second clutch hub;

a one-way clutch between the sun gear and the carrier for overrunning the rotating carrier when the sun gear is braked, said clutch having inner and outer races, one of which being loosely splined with a clutch hub secured to the carrier; and

thrust bearing means interposed between the sun gear and the revolving carrier for supporting any thrust load produced between the sun gear and the revolving carrier wherein a gap is formed between the one-way clutch and the connection portion between the sun gear and the second clutch hub of the brake.

4,387,608

ELECTRONIC CONTROL FOR A STEPLESS VEHICLE TRANSMISSION USING A CONTROL MEMBER RESPONSE TO DYNAMIC PRESSURE

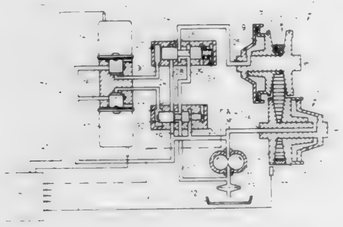
Helmut Mohl, Schwieberdingen; Manfred Schab, Gerlingen; Joseph Sauer, Schwieberdingen, and Alfred Müller, Leonberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 5, 1980, Ser. No. 184,388

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936784; Jan. 9, 1980, 3000544

Int. Cl.[3] **B60K** *41/14;* **F16H** *55/56*

U.S. Cl. 74—866 **4 Claims**



1. Control apparatus for a continuously variable motor-vehicle transmission of the V-belt type having first and second pulleys of variable effective diameter and a belt for transmitting power between them, each of said pulleys having its effective diameter variable by a disk element thereof displaceable by a pressure medium, a first pressure control valve (**27**) responsive to a control signal of a system providing regulation in terms of gear ratio, for controlling the pressure for displacing said disk element (**2**) of said first pulley, a second pressure control valve (**22**) responsive to a control signal representative of engine load of said motor vehicle for controlling the pressure for displacement of said disk element (**4**) of said second pulley, means for supplying the output oil supply pressure of an oil pump (**11**) to said first and second pressure control valves, and further comprising:

electromagnetic pressure controllers (**18,17**) for generating said control signals for application to said first and second pressure control valves in the form of hydraulic pressures, said electromagnetic pressure controllers being connected to the output of said oil pump (**11**) and being controlled respectively by an electronic control circuit (**40**) for setting the gear ratio of said transmission by means of said first pressure control means (**27**) and by the pressure of said disk element (**2,4**) against said V-belt and thereby the efficiency of the transmission (**1**) by means of said second pressure control valve (**22**), in such a way as to reduce to a minimum the fuel consumption of said engine.

4,387,609

PLASTIC CORK LIFTER

Marvin F. Polsfuss, 676 Silver Ave., San Francisco, Calif. 94134

Filed Dec. 28, 1981, Ser. No. 334,632

Int. Cl.[3] **B67B** *7/02*

U.S. Cl. 81—3.36 **4 Claims**

1. A prying device comprising an elongated member and a yoke, said elongated member comprising:

a handle section at one end thereof, said handle section being manually-holdable, and

a prying section at the other end,

said prying section having a narrowed prying edge for insertion in a recess in a workpiece and prying against the opposite walls of said recess to widen same,

said prying section also having a slot elongated parallel to the direction of elongation of said member,

said yoke comprising:

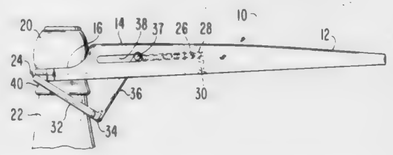
a rigid hoop of a continuous loop of wire extending out from said prying section of said elongated member and back again to said prying section,

said rigid hoop having two free ends positioned in said slot, said free ends of said hoop being pivotable and translatable in said slot such that said wire yoke can pivot in a vertical plane parallel to the direction of elongation of said member,

said hoop having an initial section extending out from the free ends thereof and away from said elongated member in a direction oblique to the direction of elongation of said member and away from said handle section,

said hoop having a rigid bend at the end of said initial section distal from said prying section,

said hoop having a terminal section beyond said bend and oriented such that terminal section and said initial section form a fixed angle when viewed from a direction perpendicular to the direction of elongation of said member,



said terminal section also completing said hoop and having two first portions extending in opposite directions from said bend and perpendicular to said initial portion of said hoop,

said terminal section of said hoop also having a remainder portion joining said two first portions to complete said hoop,

said terminal section being capable of extending from said bend toward said elongated member at an oblique angle and away from said handle section, such that said bend can be braced against said workpiece to serve as a fulcrum when said hoop is placed around said workpiece and said prying section is inserted into said recess in said workpiece,

whereby when said prying edge is inserted in said recess in said workpiece and said yoke is looped around said workpiece with said bend of said hoop against said workpiece, said bend will serve as said fulcrum against said workpiece and said handle can be rotated in said vertical plane about said fulcrum and toward said workpiece to cause said prying edge to widen said recess.

4,387,610

CHORDAL MECHANISM

Ronald G. Sergeant, Winston-Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 314,266, Oct. 23, 1982, abandoned, which is a continuation of Ser. No. 137,035, Apr. 3, 1980, abandoned. This application Jul. 26, 1982, Ser. No. 401,674

Int. Cl.[3] **B25B** *7/00*

U.S. Cl. 81—5.1 R **7 Claims**

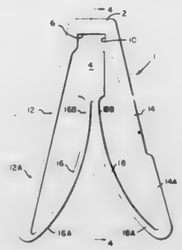
1. A force applying mechanism moulded in one piece of plastics material and comprising:

first and second jaw portions,

a pair of elongate, first chords joined to said first jaw portion and diverging outwardly therefrom, and

a pair of elongate, second chords having first end portions joined to respective first chords and second end portions joined to said second jaw portion,

the second chords having flexible, convex portions which are brought progressively into supporting engagement with each other and flattened on pivotal movement of the first chords towards each other to close the jaw portions relatively together during application of a force, and



said first jaw portion providing a track guiding said second jaw portion during closure of the jaw portions relatively together.

4,387,611

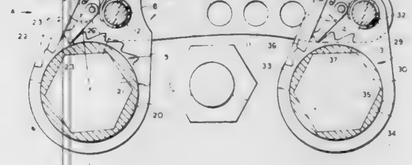
HYDRAULIC WRENCH FOR SIMULTANEOUSLY TIGHTENING OR LOOSENING AT LEAST TWO THREADED CONNECTORS

John K. Junkers, 7 Arrowhead La., Saddle River, N.J. 07458

Filed May 19, 1981, Ser. No. 265,234

Int. Cl.[3] **B25B** *13/00*

U.S. Cl. 81—57.36 **17 Claims**



1. A hydraulic wrench comprising fluid-operated cylinder-and-piston means including a cylinder, a piston reciprocatable in said cylinder between a forward stroke and a return stroke and a piston rod fixed at one end to said piston and projecting at its other end beyond said cylinder; connecting means connected to said cylinder projecting to one side thereof; ratchet lever means pivotally mounted between its ends on said connecting means for tilting movement about a first pivot axis, pivotally connected at one end to said other end of said piston rod and provided in the region of its other end with means for engaging a polygonal member of a first threaded connector to be turned during the active stroke of said piston; ratchet link means pivotally attached at one end to said connecting means for tilting movement about a second pivot axis parallel to said first pivot axis and transversely spaced therefrom, said ratchet link means being provided in the region of the other end thereof with means for engaging the polygonal member of a second threaded connector, whereby during said active stroke of said piston said cylinder and said connecting means will be shifted substantially in the direction of said active stroke to tilt said ratchet link means in the same direction as said ratchet lever means so that the members of two threaded connectors respectively engaged in the engaging means of said ratchet lever means and said ratchet link means will be simultaneously turned.

4,387,612

TURNING HEAD, IN PARTICULAR A FACING HEAD

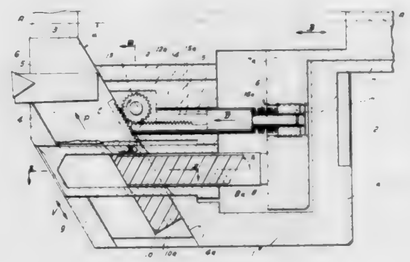
Otto Eckle, and Paul Winger, both of Loechgau, Fed. Rep. of Germany, assignors to Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH, Besigheim, Fed. Rep. of Germany

Filed Nov. 28, 1980, Ser. No. 210,904

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1979, 7936754[U]

Int. Cl.[3] **B23B** *3/26, 29/34*

U.S. Cl. 82—2 E **6 Claims**



1. In an apparatus for supporting a tool on a rotatable spindle of a machine tool, including a frame adapted to be secured to the spindle, a slider supported on the frame for movement radially of the axis of rotation of the spindle, having means for supporting the tool thereon and having a toothed first rack thereon extending in the direction of movement thereof, an adjusting member movably supported on said frame and having teeth thereon which operatively engage the teeth of said first rack, movement of said adjusting member effecting radial movement of said slider and said slider being urged radially outwardly by centrifugal forces generated by rotation of the spindle, and counteracting means for exerting a radially inwardly directed force on said slider to counteract centrifugal forces acting thereon, the improvement comprising wherein said counteracting means includes a toothed second rack on said slider extending in the direction of movement thereof, pinion means rotatably supported on said frame and having teeth operatively engaging the teeth of said second rack, an axially extending third rack having teeth operatively engaging teeth of said pinion means and means supporting said third rack for axial movement relative to said frame, and resilient means cooperable with said third rack and one of said frame and adjusting member for yieldably urging axial and rotational movement of said third rack and pinion means, respectively, in directions which correspond to radially inward movement of said slider.

4,387,613

ENGINE LATHE TAIL STOCK RAM DRIVE

Kenneth C. Blaisdell, 71 Pond St., Georgetown, Mass. 01833

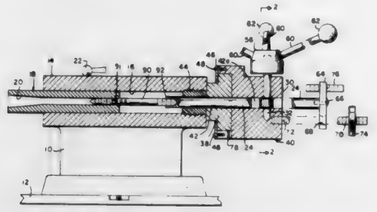
Filed Feb. 2, 1981, Ser. No. 230,439

Int. Cl.[3] **B23B** *23/00*

U.S. Cl. 82—31 **3 Claims**

1. In an engine lathe tail stock having a guide, said guide having attaching means disposed at the rear end, a ram longitudinally movable in the guide, the guide and the ram permitting relative movement therebetween about the axis of the guide, the combination with said tail stock guide and ram of an attachment comprising: an adapter having attaching means cooperable with those of the guide for removably mounting the adapter in a position about the axis of the guide, said adapter having a bore axially aligned with said guide, a housing, means for removably mounting said housing to said adapter in a position about the axis of said adapter, said housing having a bore axially aligned with said guide and said adapter, said housing comprising: a rack mounted for sliding movement

with respect to said adapter and guide for imparting movement to said ram, a pinion in mesh with said rack, means for imparting movement to said pinion, and adjustable means for selectively limiting the movement of said rack, said adjustable means carried by said rack for selectively limiting the move-



ment of said rack comprising a bracket mounted on said rack, an adjustable stop means carried by said bracket for selectively limiting the forward movement of said rack, and other stop means attached to said housing and in slidable engagement with said bracket for limiting the rearward movement of said rack.

4,387,614

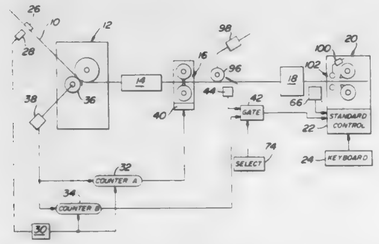
AUTOMATED WEB CHOP-OUT CONTROL FOR CUT-TO-MARK CUT-OFF MACHINE

Donald J. Evans, Cherry Hill, N.J., assignor to Molins Machine Company, Cherry Hill, N.J.

Continuation-in-part of Ser. No. 265,509, May 20, 1981. This application May 21, 1981, Ser. No. 265,890

Int. Cl.³ G05B *19/28*; B26D *5/20*

U.S. Cl. 83—38 **11 Claims**



1. A method of automatically controlling a cut-off machine having knives operable in a cut-to-mark mode wherein the knives cut a moving web divisible into a leader having a first set of registration marks and a trailer having a second set of registration marks, there being a transition between the first and second sets of marks, comprising:

(a) applying a target to the trailer adjacent a first preselected registration mark of the second set;

(b) tracking the target electronically to a shear upstream of the cut-off machine;

(c) automatically and repetitively severing the web transversely at the shear two or more times when the target is tracked to the shear whereby a preselected portion of the web comprising the transition between said registration marks is chopped out of the web;

(d) tracking the leading edge of the trailer electronically from said shear to a position intermediate the shear and said cut-off machine after said preselected web portion has been chopped from the web;

(e) causing the knives to cut the trailer automatically at a second preselected registration mark of the second set following the leading edge of the trailer; and

(f) causing the knives to cut the trailer automatically in the cut-to-mark mode at the registration marks of the second set which follow said second preselected registration mark.

4,387,615

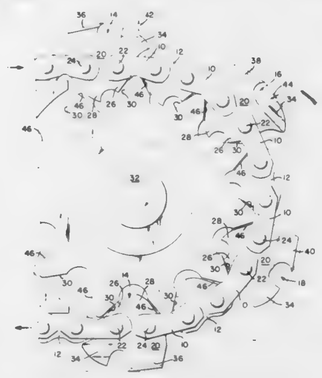
ANTI-KICK SAW CHAIN AND A KICK-REDUCING METHOD

Douglas J. Lemery, Victoria, Canada, assignor to Kolve Sawchain Company, Portland, Oreg.

Filed Nov. 16, 1981, Ser. No. 321,403

Int. Cl.³ B27B *33/14*

U.S. Cl. 83—56 **13 Claims**



1. A method for reducing the possibility of a kick by the saw chain of a chain saw when cutting on the end of the chain saw's bar, wherein the saw chain includes a plurality of cutter elements forming an endlesses belt and wherein the elements each include a leading depth gauge and a trailing tooth, comprising the steps of:

(a) pulling the saw chain to engage a cutter element with a tooth of an idler sprocket on the end of the bar of the chain saw; and

(b) cocking the cutter element as the cutter element begins to move in an arc around the end of the bar to ensure that the distance between the leading depth gauge and trailing tooth is no greater than the distance between the leading depth gauge and trailing tooth when the saw chain is moving in a straight line.

4,387,616

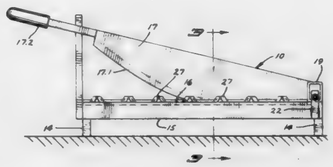
SHEET METAL SHEAR

Ralph Ireland, Mankato, Minn., assignor to Dayton Rogers Manufacturing Co., Minneapolis, Minn.

Filed Jan. 5, 1981, Ser. No. 222,595

Int. Cl.³ B23D *17/08, 23/00*

U.S. Cl. 83—608 **15 Claims**



1. A cutter for ribbed sheet metal building panels, comprising

an elongate base table on which to lay such sheet metal panels and having a shear edge along one side thereof,

an elongate shear blade connected with the base table to move downwardly along the shear edge and cut the sheet metal panel, and

a multiplicity of cutting anvils on the base table and spaced from each other along the shear edge thereof, the anvils having front faces lying flush with the shear edge of the base table, the peripheral edges of the front faces conforming to the shape of the ribs of the sheet metal panels, the anvils also having fore and aft side faces adjoining the front faces in sharp-cornered relation whereby the peripheral edges define cutting edges for cooperating with the blade in cutting the ribbed portions of the panels, and releasable securing means anchoring the anvils on the base table.

4,387,617

ASSIGNER FOR ELECTRONIC MUSICAL INSTRUMENT

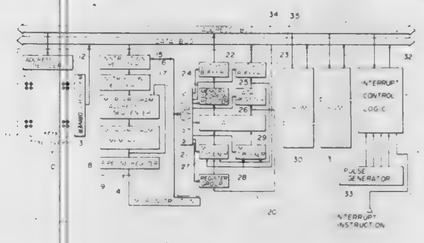
Hirokazu Kato, and Akinori Endo, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

Continuation-in-part of Ser. No. 865,357, Dec. 28, 1977, abandoned. This application Feb. 25, 1980, Ser. No. 124,006

Claims priority, application Japan, Dec. 29, 1976, 51-158950; Dec. 29, 1976, 51-158951

Int. Cl.³ G10H *1/18, 1/24, 7/00*

U.S. Cl. 84—1.01 **21 Claims**



1. An assigner for an electronic musical instrument having keyboard's keys and tone levers, which comprises: a microprogram section storing a microprogram; memory means storing frequency information corresponding to the respective keys and tone data corresponding to the respective tone levers and having storing positions which define tone producing channels, and an arithmetic section which is controlled by said microprogram in such a manner that the frequency information and the tone data requested for a keyboard's key being operated and the tone lever being operated are assigned to the tone producing channels specified by said arithmetic section.

4,387,618

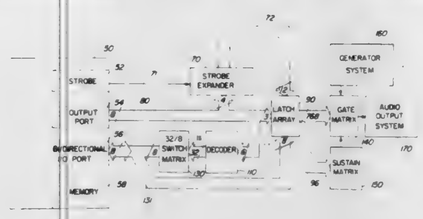
HARMONY GENERATOR FOR ELECTRONIC ORGAN

Carlton J. Simmons, Jr., Florence, Ky., assignor to Baldwin Piano & Organ Co., Cincinnati, Ohio

Filed Jun. 11, 1980, Ser. No. 158,585

Int. Cl.³ G10F *1/00*; G10H *3/06*

U.S. Cl. 84—1.03 **22 Claims**



1. A harmony generator for an electronic organ having at least one keyboard, a generator system, and an audio system, comprising:

storage means for storing data identifying all notes to be sounded by the organ;

input means for loading the storage means with played key data identifying the played keys of a keyboard;

fill-in means, responsive to at least one played key for identifying the nomenclatures of the fill-in notes and responsive to at least a second played key for identifying the octave in which the fill in notes are to be sounded, for generating fill-in data identifying notes to be filled in, and loading the fill-in data into the storage means; and

output means for controlling the transmission of signals from the generator system to the audio system in accordance with the played key data and the fill-in data in the storage means.

16. A harmony generator for an electronic organ having a solo keyboard, an accompaniment keyboard, a generator system, and an output system, comprising:

storage means for storing data identifying the notes to be sounded by the organ;

input means for scanning the keyboards and loading the storage means with data identifying the played keys of the keyboards;

fill-in means responsive to the highest solo note played for generating fill-in data identifying at least one fill-in note which corresponds to the nomenclature of at least one played key of the accompaniment keyboard, and which is located in the octave above the highest played note of the solo keyboard, and for loading the fill-in data into the storage means; and

output means for controlling the transmission of signals from the generator system to the audio system in accordance with the played key data and the fill-in data in the storage means.

4,387,619

SYSTEM FOR GENERATING SAMPLE TONES ON AN ELECTRONIC MUSICAL INSTRUMENT

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

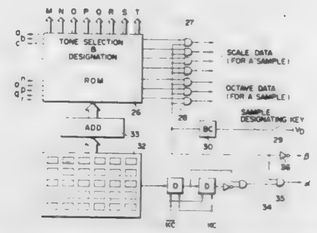
Continuation of Ser. No. 114,571, Jan. 23, 1980, which is a continuation of Ser. No. 950,512, Oct. 11, 1978. This application Aug. 13, 1981, Ser. No. 292,697

Claims priority, application Japan, Oct. 15, 1977, 52-123695

The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.

Int. Cl.³ G10F *1/00*

U.S. Cl. 84—1.03 **5 Claims**



1. A sample tone-generating system for an electronic musical instrument for generating one sample tone corresponding to a selected musical tone color out of a plurality of different types of musical tone colors comprising:

specifying means for selectively specifying a given one of said different types of musical tone colors,

means for setting respective different types of said musical tone colors in response to said specifying means;

performance keys for playing a musical performance in accordance with the specified type of musical tone color,

tone producing means coupled to said setting means for producing said specified type of musical tone color which corresponds to the tone color specified by said specifying means by operation of said performance keys, and

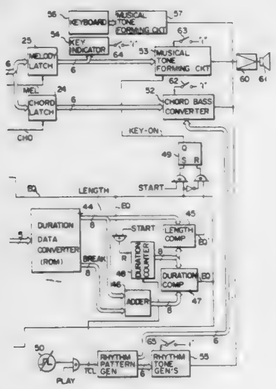
sample tone generating means coupled to said specifying means and responsive only to the operation of said specifying means for generating a sample tone having a prescribed pitch, said sample tone corresponding to the specified tone color which corresponds to said given one of the different types of musical tone colors.

4,387,620

AUTOMATIC PERFORMING APPARATUS FOR MUSICAL PERFORMANCE DATA WITH MAIN ROUTINE DATA AND SUBROUTINE DATA

Eisaku Okamoto, and Kotaro Mizuno, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

Filed Nov. 13, 1981, Ser. No. 320,933
Claims priority, application Japan, Nov. 19, 1980, 55-162024
Int. Cl.³ G10H *1/42, 3/06, 7/00*
U.S. Cl. 84—1.03 **5 Claims**



1. An automatic performing apparatus comprising:

a first memory or storing note pitch data representing pitches of musical notes constituting progression of a music to be played;

musical tone forming circuit means coupled to said first memory or forming musical tone signals in response to note pitch data read out of said first memory;

a second memory for storing note duration data representing the durations of the musical notes, the note duration data having duration main routine data and duration subroutine data, the duration main routine data containing instruction data for calling the duration subroutine data, and the duration subroutine data containing instruction data for the return to the duration main routine data;

duration measuring circuit means coupled to said second memory for measuring a time length represented by note duration data read out of said second memory;

first readout control circuit means for sequentially reading the note pitch data of musical notes out of said first memory at time intervals corresponding to the durations of the musical notes in response to said duration measuring circuit means;

second readout control circuit means for sequentially reading the note duration data of musical notes out of said second memory at time intervals corresponding to the durations of the musical notes in response to said duration measuring circuit means; and

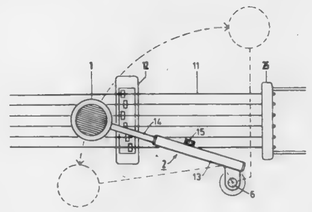
subroutine control circuit means coupled to said second memory and responsive to the instruction data for calling the duration subroutine data read out during the readout of the main routine data from said second memory to cause said second readout control circuit means to read the duration subroutine data out of said second memory, and responsive to the instruction data for the return to the duration main routine data read out from said second memory to cause said second readout control circuit means to read said duration main routine data out of said second memory.

4,387,621

MANUAL CONTROL LEVER FOR STRINGED INSTRUMENTS

Ranier Franzmann, Rehhagweg 9, 7800 Freiburg, Fed. Rep. of Germany

Filed Sep. 3, 1980, Ser. No. 183,695
Int. Cl.³ G10H *3/00*
U.S. Cl. 84—1.16 **15 Claims**



1. A stringed musical instrument having a body, strings extending over a portion of said body and arranged to be engaged by fingers on a hand of a person to vibrate the strings to produce sound, a control lever mounted on said instrument body,

(a) said control lever having a hand rest portion on which a player's hand may rest while the fingers of such hand engage said strings,

(b) said lever being swingably mounted on said instrument body for swinging movement of said hand rest portion both in a direction across said strings at an elevation above them and in a direction upwardly farther above and downwardly closer to said strings,

(c) the upward and downward swinging movement of said lever being through a first range from an uppermost unoperated position to an intermediate normal position and a second range from said normal position farther downwardly to a lowermost maximum position,

(d) means tending to raise said lever to said unoperated position and resisting downward motion from such position,

(e) motion-resisting stop means determining said normal position and providing additional resistance to downward motion when said lever reaches said normal position, so that greater downward pressure on said hand rest portion is required to move said lever downwardly through its second range than the pressure required to move it downwardly through its first range, and

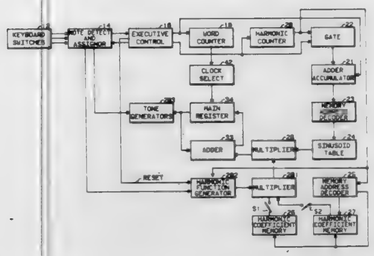
(f) electronic sound converter means responsive to said upward and downward swinging movement of said lever for controlling an element of the sound heard as a result of playing said strings.

4,387,622

MUSICAL TONE GENERATOR WITH INDEPENDENT TIME VARYING HARMONICS

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Jul. 20, 1981, Ser. No. 284,744
Int. Cl.³ G10H *1/06*
U.S. Cl. 84—1.22 **11 Claims**



1. In a keyboard musical instrument having a number of tone generators, in which a plurality of data words corresponding to the amplitudes of a corresponding number of evenly spaced points defining the waveform of a musical tone are computed during a sequence of computation cycles and are transferred sequentially to a digital-to-analog converter at a rate proportional to the pitch of the tone being generated, apparatus for generating tones having independent time-varying harmonic components comprising:

a coefficient memory for storing a set of harmonic coefficient values,

a first addressing means for reading out harmonic coefficient values from said coefficient memory,

a formant clock for providing a sequence of format timing signals

a curve memory for storing a plurality of sets of curve parameter values wherein each set of said sets of curve parameter values corresponds to one of said harmonic coefficient values,

a first addressing means wherein a harmonic address signal is generated and whereby a harmonic coefficient value corresponding to said address signal is read out from said coefficient memory,

a parameter addressing means responsive to said harmonic address signal whereby a plurality of curve parameter values is read out sequentially from said curve memory in response to said sequence of formant timing signals wherein said read out plurality of curve parameter values are from a set of curve parameter values corresponding to said harmonic address signal,

a harmonic scale factor generation means whereby a sequence of harmonic scale factors are computed recursively in response to said parameter values read out sequentially from said curve memory to produce a sequence of time variant harmonic scale factor values corresponding to said harmonic address signal,

a first multiplier means wherein said read out harmonic coefficient value is multiplied by said sequence of time variant harmonic scale factor values thereby producing a sequence of time variant harmonic coefficient values corresponding to each harmonic coefficient value read out from said coefficient memory,

a means for computing, responsive to said sequence of time variant harmonic coefficient values corresponding to each harmonic coefficient value read out from said coefficient memory, whereby a master data set defining said waveform of a musical tone is generated during each one of said sequence of computation cycles, and

a means for producing musical tones from said master data set having said independent time-varying harmonic components.

4,387,623

PARALLEL MOTION LINKAGE FOR THE SLIDING KEYBOARD COVER OF A PIANO

Thomas E. Kimble, Covington, Ky., assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Sep. 11, 1981, Ser. No. 301,384
Int. Cl.³ G10C *3/02*
U.S. Cl. 84—179 **8 Claims**



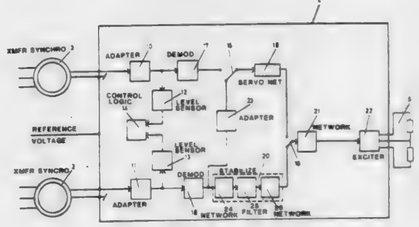
1. In a piano of the type having a piano case, a keyboard and an elongated sliding keyboard cover extending transversely of said piano case and being shiftable between an open (key exposing position) and a closed (key covering) position, the improvement comprising a parallel motion linkage assembly to assure that said sliding keyboard cover shifts in a direction perpendicular to its long axis to prevent skewing or jamming of said cover in said case; said parallel motion linkage comprising a pair of identical, oppositely oriented bell cranks rotatively affixed to the underside of said sliding keyboard cover near the ends thereof, said bell cranks each having a short arm and a long arm oriented at about 90° to each other, a tie rod, said short arms of said bell cranks being connected together by said tie rod pivotally affixed to the ends thereof, a pair of connecting rods having first and second ends, said first end of each of said connecting rods being pivotally affixed to the end of said long arm of one of said bell cranks, and means to adjustably secure each of said connecting rods near said second end thereof to said piano case.

4,387,624

DEVICE FOR INCREASING THE TRACKING ACCURACY OF AN AIMING SYSTEM

Lennart Bjurström, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Oct. 1, 1980, Ser. No. 192,658
Claims priority, application Sweden, Oct. 2, 1979, 7908148
Int. Cl.³ F41G *5/14;* **G05B** *13/00*
U.S. Cl. 89—41 LE **6 Claims**



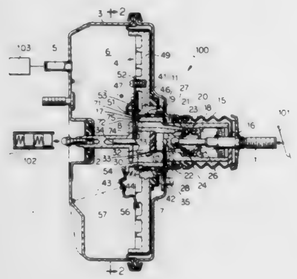
1. A device for increasing the tracking accuracy of a gun aiming servo system for a moving target comprising:

a stabilizing and accuracy increasing network for processing a signal in said servo system, said network including an integrating second order filter having a transfer function of

$$\frac{1 + 2\rho_1 \frac{s}{\omega_1} + \frac{s^2}{\omega_1^2}}{1 + 2\rho_2 \frac{s}{\omega_2} + \frac{s^2}{\omega_2^2}}$$

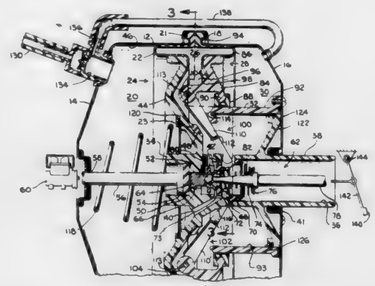
where ρ_1 and ρ_2 are damping factors, and ω_1 and ω_2 are angular frequencies of the gun base movements and target and said transfer function has a maximum amplitude for signals which have a frequency of substantially ω_1 and ω_2.

4,387,625
BRAKE BOOSTER
Masayoshi Katagiri, Toyota, and Osamu Ogura, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisin Seiki Kabushiki Kaisha, both of Aichi, Japan
Filed Jan. 8, 1981, Ser. No. 223,565
Claims priority, application Japan, Feb. 9, 1980, 55-15002
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—369 B **10 Claims**



1. A brake booster comprising:
a casing;
a power piston disposed in said casing to divide an area within said casing into two chambers for being moved in accordance with the difference of pressure in the two chambers;
a control piston, having therein a control valve for controlling the difference of pressure in said two chambers and a transmission mechanism for transmitting an input force of an input member, being coaxially fitted into a central bore of said power piston relatively movable thereto;
at least one ball accommodating recess formed on the external peripheral surface of said control piston, whose bottom surface includes a portion progressively deepened along the forward direction;
at least one ball movably accommodated in said ball accommodating recess so as to partly protrude from the external peripheral surface of said control piston;
at least one ball driving surface formed on the internal peripheral surface of said power piston for advancing said ball together with said power piston when the same is advanced;
said ball driving surface including an acute slope portion and a gentle slope portion, said gentle slope portion being located at the rear side of said acute slope portion and being formed to contact with said ball which has been accommodated in a deep portion of said ball accommodating recess when said power piston has relatively been advanced to said control piston as far as the forwardmost position;
a ball retainer movably retaining said ball in the radial direction; and
at least one reaction lever abutted at an output portion in the middle thereof by an output member and at a first input portion on a first side thereof and a second input portion on a second side thereof by said ball retainer and said transmission mechanism respectively.

4,387,626
TANDEM BRAKE BOOSTER
Lawrence R. Myers, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.
Filed Mar. 9, 1981, Ser. No. 242,087
Int. Cl.³ F15B *9/10*; **F01B** *19/00, 7/04*
U.S. Cl. 91—376 R **14 Claims**

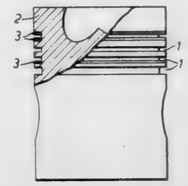


1. In a tandem brake booster having a housing with a cavity therein divided into a first chamber and a second chamber by a wall arrangement and a valve mechanism responsive to an input signal for interrupting communication of a first fluid between said first and second chambers and thereafter allowing a second fluid to be communicated to said second chamber and permit a pressure differential to develop across said wall arrangement, said pressure differential acting on said wall arrangement to create an output force corresponding to said input signal, said wall arrangement being characterized by a first member connected to a second member by lever means, said first and second members responding to said pressure differential by moving in opposite directions to develop first and second forces, respectively, said lever means engaging a fulcrum to transfer said second force to said first member and combined therein with said first force to produce said output force.

4,387,627
PISTON RING GROOVE REINFORCEMENT
Jean-Claude Avezou, Poitiers, France, assignor to Associated Engineering France, S.A., France
Filed Jul. 18, 1980, Ser. No. 170,176
Claims priority, application United Kingdom, Jul. 19, 1979, 7925234
Int. Cl.³ F16J *1/04*
U.S. Cl. 92—222 **6 Claims**

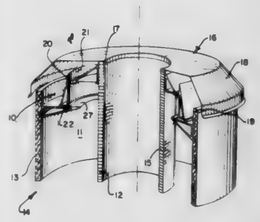
1. A piston comprising
a piston body of a material selected from the group of aluminium and aluminium alloys,
a plurality of piston ring grooves formed in the piston body and having substantially uniform depth around the piston,
two side surfaces included in each piston ring groove,
an annular reinforcing ring received within one of said piston ring grooves and having a substantially uniform radial width equal to the radial depth of the piston ring groove,
a first surface included on the reinforcing ring and forming one side surface only of the piston ring groove,

a second surface included on the reinforcing ring and forming an interface with one piston ring groove side surface, and
means on the piston ring groove surface and means on the



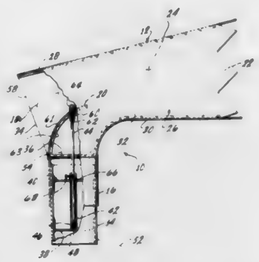
reinforcing ring surface defining a mechanical interlock therebetween at said interface including material of said piston penetrating recesses in said ring whereby the reinforcing ring is retained in the piston ring groove by a mechanical bond.

4,387,628
CHIMNEY SEAL
Dennis H. Sapp, Terre Haute, Ind., assignor to Research-Cottrell, Inc., Somerville, N.J.
Filed Oct. 10, 1980, Ser. No. 196,112
Int. Cl.³ F23J *11/00*
U.S. Cl. 98—58 **15 Claims**



1. In a chimney structure having a radially inner tubular liner and a radially outer tubular wall defining a tubular space therebetween wherein a pressurized fluid is provided to prevent flow of gaseous products of combustion from within said liner into said space, improved means for sealing an upper end portion of the liner to an upper end portion of the outer wall to retain the pressurized fluid in said space, said improved sealing means comprising:
a first, annular seal;
means for sealingly mounting said seal to one of said liner or outer wall at the upper end portion thereof;
a movable seal support defining a cylindrical sealing surface; and
means for sealing said seal support to the other of said liner or outer wall including cooperating radially sliding seal means including a second, annular seal, permitting sealed radial movement of said second seal toward and from said other of the liner or outer wall to which it is mounted, said seal support sealing surface having longitudinally slidable sealed engagement with said first seal permitting longitudinal movement between said liner and outer wall while maintaining sealed engagement of said second seal with said first seal.

4,387,629
DEVICE FOR EXTRACTING AIR FROM THE INTERIOR OF A STRUCTURE
Ross A. Bolton, 72 Cook St., North Ward, Townsville-4810, Queensland, Australia
Filed Oct. 26, 1981, Ser. No. 315,176
Claims priority, application Australia, Jan. 8, 1981, 66087/81
Int. Cl.³ F23L *17/02*
U.S. Cl. 98—78 **12 Claims**



1. A device for extracting air from the interior of a structure which comprises:
a housing having a hollow interior and including a front opening and a rear opening, each of which opens into said interior of said housing, said front and said rear openings allowing for air flow into said front opening through said interior of said housing and exiting out of said rear opening, said housing including a shell at least a portion of which is formed as an elongated chamber, said front opening and said rear opening of said housing located at respective front and rear ends of said chamber;
baffle means positioned within the interior of said housing, said baffle means forming a constricted cross sectional area within the interior of said housing and capable of creating an area of reduced air pressure within the interior of said housing in response to air moving through said interior of said housing;
port means formed in said housing and located in association with said baffle means and said area of reduced air pressure and including said port means comprising a bottom opening located on the bottom surface of said chamber adjacent to said front opening;
connecting means associated with said port means and rotatably connecting said housing to said structure such that said housing can freely rotate on said structure about an axis of rotation, said connecting means in association with said port means further connecting said area of reduced air pressure within the interior of said structure to allow said air to move from the interior of said structure into said housing in response to a pressure differential between the interior of said structure and the area of reduced air pressure;
orientation means associated with said housing and capable under the influence of moving air of causing said housing to rotate about said axis of rotation to orient said front opening of said housing in a direction pointing into said moving air, said orientation means comprising said housing being elongated in shape and said connecting means and said port means both being located proximal to said front opening and said portion of said housing located between said rear opening and said axis of rotation being of a substantially greater elongated dimension than said portion of said housing located between said front opening and said axis of rotation such that said axis of rotation of said housing is positioned proximal to said front opening and the portion of said housing located between said axis of rotation and said rear opening is capable of being contacted by said moving air whenever said front opening is

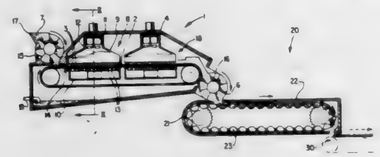
not oriented in a direction pointing into said moving air and when said portion of said housing located between said axis of rotation and said rear opening is contacted by said moving air, the force of said moving air against said portion rotates said housing about said axis of rotation until said front opening is oriented in a direction pointing into said moving air.

4,387,630

FOOD PROCESSING WITH STEAM

Gordon E. Timbers, Nepean; Robert Stark, Centreville; Jacques C. Caron, Orleans; Daniel B. Cumming, Summerland; Richard R. Cowmeadow, Halifax, and Alexander W. Gingell, Bridgewater, all of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Jun. 8, 1982, Ser. No. 386,309
Claims priority, application Canada, Aug. 20, 1981, 384276
Int. Cl.³ A23L *3/04*
U.S. Cl. 99—348 **10 Claims**



1. An apparatus for processing food products with steam comprising a heating module and a holding module;

said heating module comprising a pervious conveyor, a plurality of upwardly directed steam emitting nozzles positioned below the conveyor for agitating and heating food products on the conveyor, an outer enclosure enclosing the conveyor and nozzles, a feed valve defining the inlet to the enclosure and for depositing a multilayer of food products on the conveyor, and a transfer valve for transferring heated food products from the heating module to the holding module;

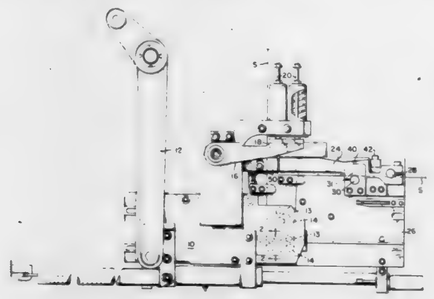
said holding module comprising a holding conveyor having receptacle means for receiving heated food products from the heating module, and holding the heated food products for a period of time at an elevated temperature.

4,387,631

STRAP TENSIONING APPARATUS

James A. Pasic, Montesano, Wash., assignor to Ovalstrapping, Inc., Hoquiam, Wash.

Filed May 11, 1981, Ser. No. 262,301
Int. Cl.³ B65B *13/22*
U.S. Cl. 100—32 **4 Claims**



1. In a machine for applying from a strap supply a flexible strap or other binding material having a supply end and an object end through a feed path to form a loop around an object, a strap tensioning mechanism for pulling the strap around the object to remove slack and then tightening the loop around the object as the object end of the strap is held, comprising:

strap gripping means for releasibly gripping the supply end of the strap against longitudinal movement at a holding location as the strap is pulled around the object at a first tension,

means for varying the gripping pressure on the strap by said gripping means at said holding location for allowing longitudinal movement of the strap toward the object relative to the gripping means at a desired final tension greater than said first tension, and

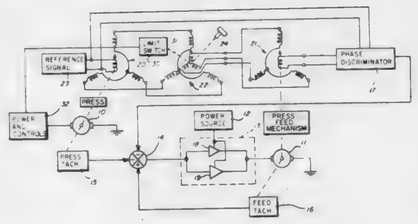
means for laterally deflecting the strap out of said feed path while the object and supply ends of the strap are held for pulling the strap and tightening the loop around the object at said first tension and then at said greater final tension while the supply end of the strap remains free to move longitudinally from the supply at said final tension.

4,387,632

CONTROL SYSTEM FOR SYNCHRONIZING POWER PRESSES AND ASSOCIATED FEED MECHANISM WITH INTERLOCK FEATURES

Francis E. Heiberger, Elmhurst, Ill., assignor to Danly Machine Corporation, Chicago, Ill.

Filed Jul. 20, 1981, Ser. No. 284,940
Int. Cl.³ B30B *15/30*
U.S. Cl. 100—45 **7 Claims**



1. A control system for a press having a synchronized feed mechanism, said control system comprising

a first drive motor for the press and a second drive motor for the feed mechanism,

means responsive to the positions of the press and the feed mechanism for producing an output signal representing any change in the positional relationship between the press and the feed mechanism,

control means responsive to said output signal for controlling the speed of the drive motor for the feed mechanism,

means for adjusting said position responsive means to simulate a change in the press position and thereby effect a movement of the feed mechanism, and

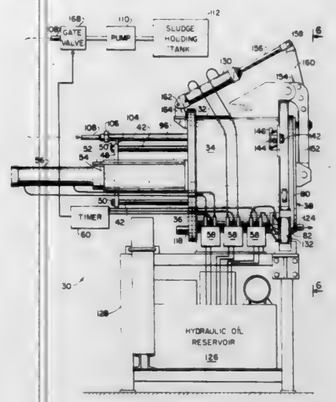
interlock means responsive to adjustments of said position responsive means for enabling the startup of the press when said position responsive means is in a preselected position representing a desired positional relationship between the press and the feed mechanism, and for disabling the startup of the press when said position responsive means is in any position representing an undesired positional relationship between the press and the feed mechanism, so that the press can be started only when the feed mechanism is in the desired position relative to the startup position of the press.

4,387,633

SLUDGE PROCESSING SYSTEM

James Ballantyne, 25 Cornish Dr., Westfield, Mass. 01085

Filed Feb. 6, 1981, Ser. No. 232,404
Int. Cl.³ B30B *9/06*
U.S. Cl. 100—48 **15 Claims**



13. A system for the compaction of sludge material held within a chamber, said system comprising:

piston means in said chamber for exerting a succession of compaction strokes on a block of said sludge material supported within said chamber;

means within said chamber which permit the egress of fluid from the sludge upon compression thereof by said piston;

conduit means opening into said chamber for injecting further sludge into said chamber between said compaction strokes for enlargement of said block from stroke to stroke;

means including a door operatively connected to said chamber for extraction of said block upon the occurrence of the last of said succession of strokes to permit expulsion of said block from said chamber by said last stroke;

a door operatively connected to said chamber which opens for extraction of said block, said door having outwardly extending projections about the outer periphery with spaces therebetween; and

a ring rotatably connected to said chamber and positioned about the outer periphery of said door having inwardly extending projections with spaces therebetween, wherein rotation of said ring in one direction brings said projections into registration with one another for securing said door to said chamber when said piston is compressing the sludge into a block, and wherein rotation of said ring in the other direction brings said projections into registration with said spaces for unlocking and opening said door to permit expulsion of said block.

4,387,634

DIAPHRAGM PRESS FOR AGRICULTURAL PRODUCTS, SUCH AS GRAPES, FRUITS AND OTHER FRUIT-LIKE PRODUCTS

Valentin Balass, Zürich, Switzerland, assignor to Bucher-Buyer AG, Niederwenigen, Switzerland

Filed Nov. 16, 1981, Ser. No. 321,678
Claims priority, application Switzerland, Nov. 25, 1980, 8691/80
Int. Cl.³ B30B *5/02*
U.S. Cl. 100—211 **7 Claims**

1. A diaphragm press for agricultural products, especially grapes, fruits and fruit-like products, comprising:

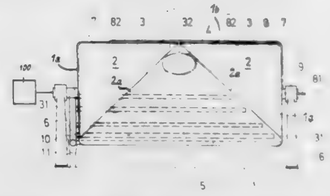
a press container having opposed end walls and intermediate thereof a container jacket and a substantially horizontal lengthwise axis;

means mounting said press container for rotation about said lengthwise axis;

means for driving said container to be rotatable about said lengthwise axis;

two diaphragms provided internally of said press container;

each of said diaphragms, in an unloaded state thereof, bearing against a portion of a related one of the end walls of the container and against a region of the container jacket neighboring the related one of said end walls;



said container being provided with means defining a product throughpass opening;

attachment means provided for each of said two diaphragms for mounting same within said press container;

said attachment means for each diaphragm extending essentially in a plane positioned at an inclination with respect to the lengthwise axis of the press container;

each of said diaphragms having attachment surfaces; and

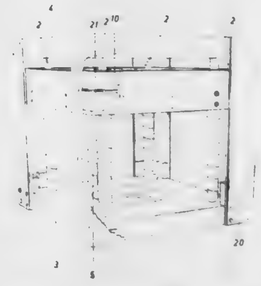
said attachment surfaces of said two diaphragms extending in opposite inclination towards said product throughpass opening.

4,387,635

MACHINE TOOL

Kaj Abbestam, Bollebygd, and Göran Palmers, Askim, both of Sweden, assignors to Institutet for Verkstadsteknisk Forskning, Gothenburg, Sweden

Filed May 5, 1981, Ser. No. 260,729
Claims priority, application Sweden, May 6, 1980, 8003365
Int. Cl.³ B30B *1/18, 15/04*
U.S. Cl. 100—214 **5 Claims**



1. In a machine tool for pressing and cutting operations having a bottom plate and a top plate arranged in spaced relationship, a plurality of upright externally screw threaded spindles non-rotatably mounted at their ends in said bottom and top plate, and a yoke member for supporting tools to perform said operations moveably mounted on said spindles for reciprocating movement between said bottom and top plates, the improvement comprising non self-braking drive nuts rotatably mounted in said yoke member and operably coaxially engaging said screw-threaded spindles so that rotation of said nuts moves said nuts and said yoke along said

spindles, drive means mounted on said machine tool operably connected to said nuts to simultaneously and synchronously rotate said nuts, elongated reinforcing guide members extending substantially along and adjacent to said spindles and attached at their ends to said bottom and top plates, and slide bearings mounted on said yoke and slidably engaging said guide members to guide and laterally support said yoke during its reciprocating movement.

4,387,636

APPARATUS FOR CRUSHING AND REMOVING RIMS FROM WHEELS

Dean A. Depew, and Harold K. Murphy, both of Fort Wayne, Ind., assignors to Harold K. Murphy, Fort Wayne, Ind.

Filed May 22, 1981, Ser. No. 266,793
Int. Cl.³ B30B *7/04*
U.S. Cl. 100—232 **11 Claims**



1. An apparatus for crushing wheel rims to facilitate removing the rims from the wheels comprising a generally horizontally disposed bed plate for placement within a metal compactor having two oppositely disposed, hinged crushing pads and between said crushing pads,

a wheel carriage having an upstanding crushing surface securely mounted upon said bed plate for supporting a wheel comprised of a tire and rim,

said carriage having a front wheel support and a rear wheel support upstanding therefrom on opposite sides of said crushing surface supporting said wheel vertically, and

two crushing pad points securely mounted on said pair of crushing pads,

said metal compactor having means for operating said crushing pad points downward and into said wheel and rim generally radially thereof, whereby said rim is crushed between said crushing pad points and crushing surface.

4,387,637

CONTAINER CRUSHING DEVICE

Leonard B. Baird, 505 Highland Ave. N., Jasper, Ala. 35501

Filed Aug. 14, 1981, Ser. No. 292,955
Int. Cl.³ B30B *9/32*
U.S. Cl. 100—264 **8 Claims**

1. A device for crushing containers comprising:

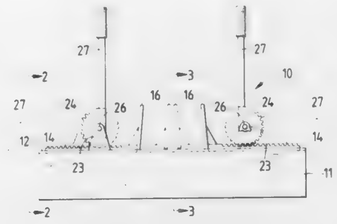
(a) a base having a supporting surface adapted to receive a container to be crushed,

(b) a pair of upstanding oppositely disposed crushing members mounted for rectilinear movement along said supporting surface selectively to a first position with said upstanding members being spaced from each other for receiving the container to be crushed and to a second position with said upstanding members being juxtaposed relative to each other to crush said container,

(c) an upwardly opening longitudinally extending recess in said supporting surface,

(d) a pair of elongated power transmitting members mounted for sliding movement within said recess with the innermost end of each said power transmitting member secured to the upstanding crushing member adjacent thereto, and

(e) a power transmitting element mounted for rotation above and operatively connected to each said elongated power



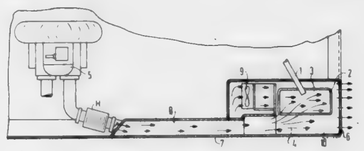
transmitting member and adapted to impart rectilinear movement thereto to move its upstanding crushing member selectively to said first position and to said second position.

4,387,638

DEVICE FOR REMOVING WATER FROM THE SOLVENT RECOVERY SYSTEM OF A FAST PRINTER

Gerhard H. Mueller, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 18, 1982, Ser. No. 340,293
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1981, 3107279
Int. Cl.³ B41F *7/30*; B01D *47/00*
U.S. Cl. 101—1 **12 Claims**



1. Apparatus for removing water from a solvent recovery system of a printer assembly comprising an evaporation chamber contained within a printer assembly frame having a water evaporation tank means, a discharge pipe leading to said tank means for conducting a flow of recovered water from said solvent recovery system, a blower means in said printer assembly for generating a pressurized flow of dry air, air channel means in said printer assembly for conducting said pressurized flow through said evaporation chamber, and openings in said assembly frame leading from said evaporation chamber to ambient, whereby said pressurized flow is mixed with recovered water vapor in said evaporation chamber and this air-water vapor mixture passes through said openings to ambient.

4,387,639

MULTI-FUNCTION FINANCIAL DOCUMENT PROCESSOR

Charles R. Brown, Rosendale, N.Y.; Theodore J. Kohne, Uithoorn, Netherlands, and Donald C. Laneto, Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 83,494, Oct. 10, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 280,723
Int. Cl.³ B41L *47/46*
U.S. Cl. 101—2 **8 Claims**

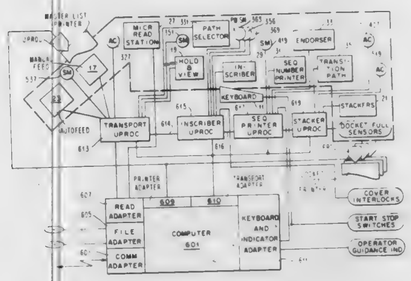
1. A multi-function document processor comprising:

a keyboard,

a document feed station substantially at the left of said keyboard;

a stacker substantially at the right of an operator seated before said keyboard and oriented at substantially 90 degrees in the horizontal plane with respect to a row of keys of said keyboard;

a document path from said feed station to a read station, said read station being located substantially behind said keyboard;



a print document path from said read station through a hold and view station positioned substantially between said read station and said keyboard;

a print station in said print document path between said hold and view station and said stacker; and

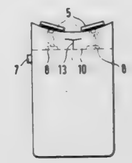
a sort document path between said read station and said stacker.

4,387,640

DEVICE FOR MARKING ARTICLES BY BRANDING

Dietmar Viol, Utting, Fed. Rep. of Germany, assignor to Fireprint AG, Heiden A-R, Switzerland

Filed Oct. 29, 1981, Ser. No. 316,284
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041964
Int. Cl.³ B44B *7/00*
U.S. Cl. 101—9 **5 Claims**



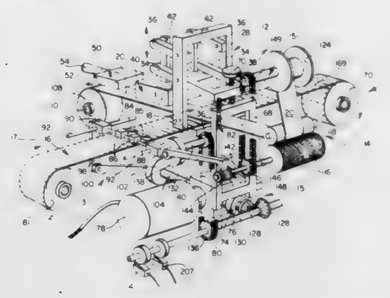
1. A hand holdable vapor fuel device for marking articles by branding, particularly for marking the fibrous surface coat of a tennis ball, by means of at least one metallic symbol corresponding to the desired marking, the symbol being supported by holding means and adapted to be heated to the branding temperature by heating means, comprising: a casing having an open end face with edges, at least one symbol disposed at an open end face of said casing, the symbol projecting beyond two opposed casing edges, in a direction away from said casing, by an amount corresponding to the desired depth of branding, said casing being provided with a transverse wall, spaced from said open end face of said casing, said wall being provided with at least one nozzle aperture, comprising a burner of said heating means, directed towards said symbol, said casing containing a liquified gas tank and valve means in communication with said nozzle aperture, and an igniting mechanism for igniting gas issuing from said nozzle aperture and means for actuating said valve means and igniting mechanism from the exterior of the device.

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LABEL PRINTING APPARATUS

Morris Kortick, Cranston, R.I., assignor to A & H Mfg. Co., Johnston, R.I.

Filed Sep. 3, 1981, Ser. No. 299,002
Int. Cl.³ B41F *1/06*
U.S. Cl. 101—27 **6 Claims**



1. An apparatus for printing a succession of labels, tags or the like comprising:

a. a base;

b. a printing pad mounted on said base;

c. a printing frame attached to said base and extending substantially upwardly therefrom;

d. a primary linkage arm pivotally attached to said frame, said primary arm including front and rear arm portions which extend forwardly and rearwardly respectively, the forwardly extending portion of said primary arm extending generally above said pad;

e. a secondary linkage arm pivotally attached to said frame, said secondary linkage arm being pivotal in substantially the same plane as said primary linkage arm and including a front arm portion that extends forwardly and that extends generally above said pad in substantially parallel spaced relation to said primary arm;

f. a print head;

g. means pivotally attached to the front arm portions of said primary and secondary arms and disposed generally above said pad for mounting said print head so that upward and downward pivotal movement of the rear portion of said primary arm moves said print head correspondingly to and from said pad in substantially parallel relation thereto;

h. a type element on said head directed toward said pad;

i. means attached to said head for heating said type element;

j. a cam element rotatably mounted on a substantially horizontal axis in the rear portion of said apparatus;

k. driven means for rotating said cam element;

l. a substantially vertically disposed cam follower frame which travels in a substantially vertical plane to provide mechanical communication between said rear arm portion and said cam element to cyclically move said rear arm portion up and down upon rotation of said cam element and to thereby cyclically reciprocate said head to and from said pad, said frame having a central aperture therein which is disposed in substantially aligned relation behind said pad;

m. means mechanically connected to said drive means for stepwisely advancing a succession of labels, tags or the like in aligned relation to said pad during the cyclical periods of said print head when said head is in spaced relation to said pad;

n. a thermographic strip interposed between said type element and the label, tag or the like at said pad; and

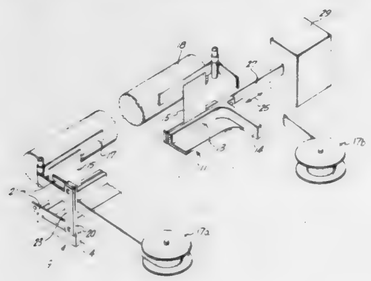
o. a strip feed assembly mounted in said apparatus to the rear of said frame and mechanically connected to said drive means for stepwisely advancing said thermographic strip rearwardly in substantially perpendicular relation to the movement of said labels, tags or the like, said strip feed assembly advancing said strip so that it moves rearwardly in said apparatus from said pad through the aperture in said frame without interference from said frame as it is reciprocated.

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BI-DIRECTIONAL, CONSTANT VELOCITY, CARRIAGE SHUTTLING MECHANISMS

Edward D. Bringhurst, Seattle, and Swend L. Miller, Kent, both of Wash., assignors to Mannesmann Tally Corporation, Kent, Wash.

Filed Jul. 17, 1980, Ser. No. 169,595
Int. Cl.³ B41J *5/08*
U.S. Cl. 101—93.04 **32 Claims**



1. A carriage shuttling mechanism comprising:
a first bi-lobed, second order elliptical element;
rotation means connected to said first bi-lobed, second order elliptical element for rotating said first bi-lobed, second order elliptical element at a constant speed;
a second bi-lobed, second order elliptical element identical in size to said first bi-lobed, second order elliptical element;
elliptical element connecting means for connecting said first and second bi-lobed, second order elliptical elements together such that said first and second bi-lobed, second order elliptical elements are 90° out-of-phase with one another; and
eccentric connecting means for eccentrically connecting said second bi-lobed, second order elliptical element to a carriage to be shuttled.

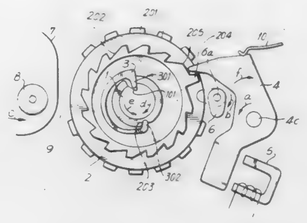
4,387,643

SMALL PRINTER

Hitoshi Mikoshiba; Kazuyoshi Fujimori; Kenji Ōnodera, and Shin Takeuchi, all of Shiojiri, Japan, assignors to Shinshu Seiki Kabushika Kaisha and Kabushiki Kaisha Suwa Seikosha, both of Tokyo, Japan

Filed Dec. 28, 1981, Ser. No. 334,628
Claims priority, application Japan, Dec. 29, 1980, 55-187622
Int. Cl.³ B41J *1/44*
U.S. Cl. 101—110 **11 Claims**

1. A small printer for printing characters in a row on a printing paper, comprising:
a plurality of character wheels positioned to provide column positions in said row, each said character wheel having characters on its peripheral surface,
a shaft rotatably supporting said character wheels thereon;
means for releasably engaging said character wheels individually with said shaft for rotation therewith;
means for selecting a character on each said wheel individually for printing, said selected characters being locked in a rotated position of said wheels for printing, locking a character in position for printing causing release of the associated character wheel from said rotational engagement with said shaft;
a plurality of actuating means, each said actuating means, when actuated, being capable of simultaneously operating



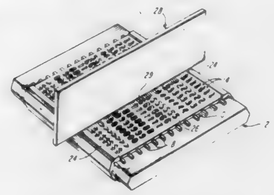
an associated group of at least two said selecting and locking means;
blocking means for intermittently preventing rotation with said shaft of all but one of said characters wheels in said associated group, said blocking means causing release of said all but one character wheels from said rotational engagement with said shaft.

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FLEXIBLE ENDLESS PRINTING BAND

William A. Jenkins, Englewood, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 189,672, Sep. 22, 1980, abandoned, which is a division of Ser. No. 951,342, Oct. 16, 1978, Pat. No. 4,263,242. This application May 20, 1982, Ser. No. 380,158
Int. Cl.³ B41J *1/20*
U.S. Cl. 101—111 **9 Claims**



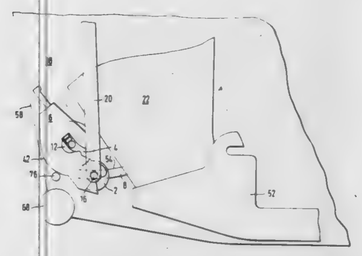
1. An endless printing band adapted to having a coating of color contracting material removed from visually readable characters by means of a wiping member, the printing band comprising a molded endless body of flexible material, said body including a first portion with a series of peripherally spaced and outwardly projecting printing characters and a second portion with a series of visually readable characters having outer surfaces, said second portion having a coating of a color contrasting with the color of the flexible material, said body further including a set of peripherally spaced guide bars positioned with said visually readable characters spaced between said guide bars, the guide bars extending in a lateral direction that crosses the peripheral direction, and said guide bars having flat outer surfaces free of characters and being coplanar with said outer surfaces of said visually readable characters when said body is mounted on a flat core blade for continuously guiding and supporting a wiping member during removal of the coating from said outer surfaces of said visually readable characters.

4,387,645

PRINTING MECHANISM

Günter Holland-Letz, Hirschhorn, and Klaus Dasting, Neckarsteinach, both of Fed. Rep. of Germany, assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,802
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008165; Jun. 30, 1980, 3024800
Int. Cl.³ B41F *31/32*
U.S. Cl. 101—327 **19 Claims**



1. Printing apparatus for labelling devices and the like comprising a printing means movable between a retracted and a printing position, a roller holder means movable between an operable and a withdrawn position, said roller holder means comprising a holder structure having side walls and mounting a transfer roller and a supply roller, said roller holder means having a first spindle for said transfer roller and a second spindle for said supply roller, said side walls having slot means in which said second spindle is rotatably mounted, said slot means including a lower inner wall, a rocker arm pivotally connected to said roller holder means, said rocker arm being operable to move said roller holder means between said operable and said withdrawn positions as said printing means moves between said retracted to said printing positions, a casing having guide rails disposed adjacent to said roller holder means, and projections on said holder structure adapted to engage said guide rails as said roller holder means is moved from its operable towards its withdrawn position by said rocker arm, said projections being provided on said side walls approximately level with said slot means, said projections having planar surfaces aligned with said lower inner wall of said slot means.

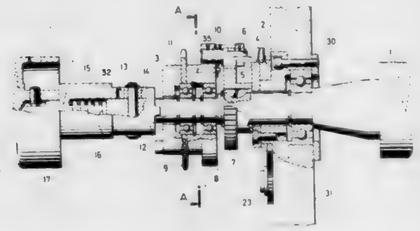
4,387,646

DEVICE FOR INCREASING THE INK SUPPLY TO THE INKING UNIT OF A PRINTING MACHINE

Karel Hynst, Adamov, and Mojmir Travnicek, Blansko, both of Czechoslovakia, assignors to ZVS-Adamovske strojirny, koncernovy podnik, Prague, Czechoslovakia

Filed Jul. 29, 1981, Ser. No. 287,875
Claims priority, application Czechoslovakia, Jul. 31, 1980, 5351-80
Int. Cl.³ B41F *31/14, 31/12*; B41L *27/16*
U.S. Cl. 101—350 **6 Claims**

1. Apparatus for transferring ink from a doctor roller to an ink distributing roller in a printing machine, comprising:
a first rotatable shaft for rotating said doctor roller;
stationary cam means surrounding said first shaft and including a rotationally adjustable cam;
a ratchet wheel secured to and coaxial with said first shaft adjacent said stationary cam means;
a first hub rotatably mounted on and coaxial with said first shaft;
a pawl disk coaxial with said first shaft and secured to said first hub for rotation therewith, said pawl disk having a relatively large radius circumferential portion and a relatively small radius circumferential portion;
a second shaft parallel to said first shaft;
a rocking bent lever mounted on said second shaft and having a follower roller engaging the circumferential portions of said pawl disk, to cause said lever to oscillate when said first hub is continuously rotated;
an ink feed roller coupled to said rocking bent lever for oscillatory movement between contact with said doctor roller and contact with said ink distributing roller in response to the oscillation of said rocking bent lever;
a pawl for intermittently rotating said doctor roller, said pawl being secured to a peripheral part of said pawl disk via a pin for continuous rotation about the axis of said first shaft when said first hub is continuously rotated;
said pawl being rotatable about the axis of said pin and having (i) a cam folower portion riding on said cam means to cause said pawl to rotationally oscillate about said pin axis, and (ii) a ratchet wheel engaging part for



intermittently engaging the teeth of said ratchet wheel to rotate said ratchet wheel, first shaft and doctor roller as said pawl oscillates rotationally in accordance with the overall contour of said cam means, to intermittently rotate said doctor roller when said first hub is continuously rotated;
a second hub coaxial with and rotationally coupled to said first shaft for selectively engaging said first hub to couple said first hub to said first shaft, to cause said first shaft and said doctor roller to continuously rotate when said first hub is continuously rotated;
a first spring for biasing said second hub out of engagement with said first hub; and
manually operable means for moving said second hub into engagement with said first hub.

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OFFSET PRINTING MACHINE INKING SYSTEM WITH SELECTIVELY ENGAGEABLE BYPASS ROLLERS

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 186,532, Sep. 12, 1980, abandoned. This application Feb. 3, 1982, Ser. No. 345,227
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1979, 2942750
Int. Cl.³ B41F *31/30*
U.S. Cl. 101—350 **12 Claims**



1. An ink supply system for a rotary offset printing machine having

a plate cylinder (**1**),
means (**3**, **4**) for furnishing printing ink;
an ink transfer roller train (**2**, **5**, **6**, **7**) including a forme roller (**2**) in ink transferring engagement with the plate cylinder (**1**), an ink milling roller (**6**) and at least one ink transfer roller (**5**, **7**) transferring ink between the ink furnishing means and the forme roller, and comprising
an additional ink transfer roller train unit (**8**, **10**) having
a holder structure (**8'**, **10**);
an input roller (**8***a*, **12**);
an output roller (**8***a*, **13**);
and a plurality of intermediate rollers (**8***b*–**8***d*; **11**) retained on the holder structure, the ink output roller (**13**) being in frictional engagement with and in ink transfer relation to the forme roller;
and means (a, b, **11'**) for moving the holder structure (**8'**, **10**) and with it the ink input roller (**8***a*, **12**) and the intermediate rollers, selectively, between a position in which the input roller is in or out of engagement with another one of the rollers (**6**, **7**) of the ink transfer roller train, as a unit, the output roller (**8***a*, **13**) remaining in frictional engagement with the forme roller to provide, selectively,
(a) a second path of ink from the ink furnishing means to the forme roller, or
(b) a plurality of rollers in engagement only with the fluid from the forme roller.

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INK METERING WITH INDIVIDUAL INK KNIVES RESPECTIVELY EXTENDING OVER THE ENTIRE WIDTH OF THE INKING ZONES

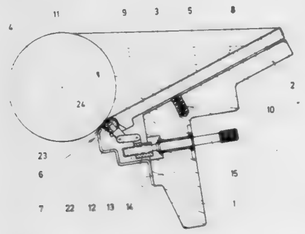
Willi Jeschke, Heidelberg; Rudi Junghans, Wilhelmsfeld; Hermann Beisel, and Günther Hofmann, both of Walldorf, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jun. 12, 1980, Ser. No. 158,785

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1979, 2923678

Int. Cl.³ B41F *31/02*

U.S. Cl. 101—365 **10 Claims**



1. Ink duct for offset or letterpress printing machines with an ink metering unit formed of a plurality of zone-wide metering elements disposed closely adjacent one another and adjustable to zonally varying ink-gap thicknesses, and an ink duct roller forming part of the ink duct, comprising means for providing a support and means for metering formed on the metering elements, said support means being constantly in at least indirect contact under spring pressure with the ink duct roller, said support means also being formed with an ink flow-through passage of a size affording adequate flow of ink therethrough even for an adjusted maximum ink-gap thickness, each of the metering means of the respective metering elements extending over the entire respective zone width, the respective metering means being connected to said support means and, as viewed in rotary direction of the ink duct roller, being disposed downstream from said ink flowthrough passage and at such a spacing behind said support means that ink located between said support means and said metering means can spread axially and distribute uniformly over the entire zone width, respectively.

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ELECTRICAL PROJECTILE DETONATOR

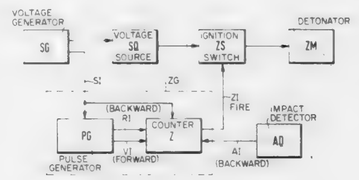
Peter Weidner, Breitenbrunn, and Harald Wich, Kulmbach, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Fed. Rep. of Germany

Filed Oct. 3, 1980, Ser. No. 193,828

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940227

Int. Cl.³ F42C *9/00, 11/06*

U.S. Cl. 102—215 **6 Claims**



1. In an electrical projectile detonator including a voltage source, an impact detector, a timing circuit, and an ignition switch coupled between said voltage source and a detonator, said timing circuit being coupled to said impact detector and said ignition switch, said timing circuit including a forward-backward counter and a pulse generator coupled to said counter for generating forward and backward counting pulses, with the frequency of the forward counting pulses being less than the frequency of the backward counting pulses, said counter being activated in the forward counting mode upon firing of the projectile and generating a firing signal to said ignition switch to detonate said detonator upon the counter reaching a given high count, said impact detector activating said counter in a backward counting mode upon the occurrence of an impact by the projectile to cause the counter to count backward, from the count previously reached in the forward counting mode, at the higher frequency of the backward counting pulses to generate a firing signal to said ignition switch to detonate said detonator upon the counter reaching a given low count.

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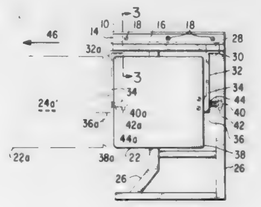
STORABLE TABLE

Domenico Pizzi, 18 Kashey St., Clifton, N.J. 07013

Filed Feb. 5, 1981, Ser. No. 231,650

Int. Cl.³ A47B *3/00*

U.S. Cl. 108—40 **4 Claims**



1. A storable table comprising a longitudinal track fastened horizontally to a supporting vertical structure, a longitudinal slot extending the entire length of the lowermost surface of a cavity in said track, said cavity extending the length of said track, a slideable support member within said cavity substantially shorter than the entire length of said track, and L-shaped bracket having a leg depending vertically downwards from the lowermost surface of said slideable support member, a shelf member, detenting means to removeably detentingly engage said shelf member to said L-shaped bracket in a selected one of a plurality of positions wherein a lateral surface of said shelf member is disposed in one of a plurality of planes, biasing means for urgingly and disengageably engaging a portion of said detenting means in any of said plurality of postions including detenting means whereby said lateral surface of said shelf is free to rotate in any plane when said biasing means are overcome wherein said detenting means comprises a plurality of pins, said pins being secured to said shelf in uniform spaced apart relationship about a bolt circle, a plurality of pin receiving holes, said pin receiving holes located in said leg and spaced apart uniformly about another bolt circle, said bolt circle and said another bolt circle having the same diameter, wherein said biasing means comprise a rod, a helical spring, said helical spring being disposed about a first portion of said rod, a second portion of said rod being disposed engaged with said leg, a block, said block being disposed secured to said shelf, a third portion of said rod being disposed secured to said block whereby said spring urges an adjacent surface of said block towards an adjacent surface of said leg, wherein said second portion of said rod is slideably and rotationally engaged with said leg, wherein said plurality of pins includes four pins, each of said pins being disposed defining the four corners of a square and wherein said four pins engage all of said pin receiving holes when said block is detentingly engaged with said adjacent surface of said leg.

4,387,651

REMOVABLE SEAL PLATES

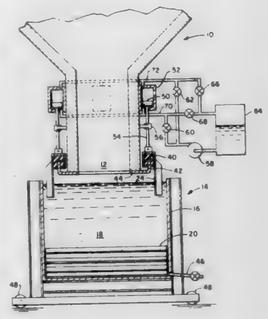
Richard F. Moore, Tolland, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

PCT No. PCT/US81/00012, § 371 Date Jan. 2, 1981, § 102(e) Date Jan. 2, 1981, PCT Pub. No. WO82/02425, PCT Pub. Date Jul. 22, 1982

PCT Filed Jan. 2, 1981, Ser. No. 273,891

Int. Cl.³ F23J *1/02*

U.S. Cl. 110—171 **4 Claims**



1. An ash-disposal system for ashes discharged from a coal-fired or other ash-bearing fuel-fired combustion chamber, including opening means in the furnace bottom, a tank opened at its upper end and containing water positioned beneath the opening means, into which the ash from the combustion chamber falls, means for removing the ash from the tank, a water seal between the furnace bottom and the tank for sealing the furance interior from exposure to the atmosphere, the water seal including plate means movably attached to and extending down from the furnace bottom, which plate means completely surrounds the opening means, said plate means having first and second positions, the first position being such that the plate means extend down into the water within the tank at their lower ends, said opening means in the furnace bottom having an annular ring attached to it, and said plate means having a resilient seal attached to it, which resilient seal is in sealing contact with the ring when the plate means is in its first position, and the second position being such that the tank is located beneath the plate means and the resilient seal is not in sealing relationship at the upper end with the opening means ring in the furnace bottom, and means for moving the plate means between the first and second positions.

4,387,652

FURNACE

Jeremy C. R. Cooke, Edgbaston, and Frederick H. Tilley, Broxbourne, both of England, assignors to Foster Wheeler Power Products Limited, London, United Kingdom

Continuation of Ser. No. 147,592, May 7, 1980, abandoned. This application Feb. 11, 1982, Ser. No. 347,936

Claims priority, application United Kingdom, May 9, 1979, 7915987

Int. Cl.³ F23G *5/04*

U.S. Cl. 110—224 **14 Claims**



8. A furnace for heating pieces of solid material, comprising:
(a) a vertically extending housing having a longitudinal axis,
(b) a closure portion disposed on the lower end of said housing,
(c) means for feeding solid material into an upper portion of said housing,
(d) means for supplying a heating gas to the interior of said housing to heat solid material disposed within the housing,
(e) and means assisted by gravity for removing heated solid material from said housing and downwardly through said closure portion,
(f) said last-named means including at least one screw conveyor extending from the exterior of said furnace and upwardly at an incline to said axis and through said closure portion so that the inner conveyor end is disposed at a higher location within said housing than the part of said conveyor which passes through said closure portion, and a trough disposed below said screw conveyor and inclined at substantially the same angle as said screw conveyor, said trough having a pair of edges which converge upwardly to an apex.

4,387,653

LIMESTONE-BASED SORBENT AGGLOMERATES FOR REMOVAL OF SULFUR COMPOUNDS IN HOT GASES AND METHOD OF MAKING

Kenneth E. Voss, Somerville, N.J., assignor to Engelhard Corporation, Edison, N.J.

Division of Ser. No. 175,227, Aug. 4, 1980, Pat. No. 4,316,813. This application Oct. 5, 1981, Ser. No. 308,868

Int. Cl.³ F23B *7/00*

U.S. Cl. 110—342 **6 Claims**

1. In a process for fluidized bed combustion of sulfur containing fuel such as coal or heavy oil, wherein said fuel generates sulfur oxides in the flue gas stream upon combustion, and limestone is added to said bed to react with said sulfur oxides to remove them from the flue gas stream, the improvement which comprises enhancing the removal of sulfur oxides by utilizing said limestone in the form of agglomerates comprising

fine grains of naturally occurring, uncalcined limestone and a cementitious clay selected from the group consisting of attapulgite, sepiolite, smectite and mixtures thereof in binder-effective amount.

4,387,654

METHOD FOR FIRING A ROTARY KILN WITH PULVERIZED SOLID FUEL

Chester S. Binasik, Palo Alto, and Louis D. Siegert, Burlingame, both of Calif., assignors to Coen Company, Inc., Burlingame, Calif.

Division of Ser. No. 146,810, May 5, 1980, Pat. No. 4,310,299. This application Sep. 2, 1981, Ser. No. 298,825
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—347 **15 Claims**



1. A method for firing a coal burner for a kiln comprising the steps of: providing pulverized coal at a predetermined rate which corresponds to the desired rate with which pulverized coal is combusted in the kiln; pneumatically transporting the pulverized coal to the burner with an amount of primary combustion air of at most about 5% of the theoretical amount of air needed to combust the pulverized coal; forming a supplemental primary combustion airflow measured so that the primary combustion airflow and the supplemental primary combustion airflow comprise at most about 20% of the theoretical amount of air needed to combust the pulverized coal; heating the supplemental primary air to a temperature of at least about 600° F.; combining the primary combustion airflow and the pulverized coal entrained therein with the supplemental primary combustion airflow to form a coal-airstream at the burner; flowing the coal-airstream over a sufficient distance so that volatiles in the pulverized coal in the stream are driven off; thereafter igniting the coal-airstream to form a flame directed into the kiln; generating a secondary combustion airstream for providing the balance of combustion air required for fully combusting the pulverized coal in the stream; heating the secondary combustion air with product discharged from the kiln to a temperature of at least about 800° F.; and mixing the secondary combustion air with pulverized coal discharged into the kiln to effect the full combustion of the pulverized coal.

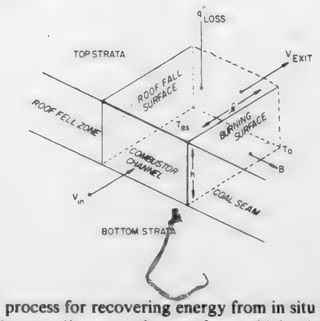
2. A method for firing a coal burner for a kiln comprising the steps of: providing pulverized coal; establishing an airflow of not substantially more than 5% of the theoretical amount of air needed to combust the pulverized coal in the kiln; entraining pulverized coal in the airflow at a predetermined rate which corresponds to the desired rate with which pulverized coal is combusted in the kiln to thereby form a pulverized coal flow; mixing the coal flow with an amount of supplemental, primary air to establish a coal-airstream having no more than about 20% of the theoretical amount of air needed to combust the pulverized coal in the kiln; directing the coal-airstream through a burner tube; heating the supplemental primary air to a sufficient temperature and retaining the coal-airstream in the burner tube for a sufficient length of time to vaporize in the coal-airstream volatiles present in the coal; thereafter discharging the stream from the burner tube into the kiln; igniting the stream; and introducing sufficient secondary air having a temperature of at least about 800° F. into the kiln and in substantially surrounding relationship to the stream discharged into the kiln so as to substantially completely combust the pulverized coal in the kiln.

4,387,655

METHOD FOR CONTROLLED BURNOUT OF ABANDONED COAL MINES AND WASTE BANKS

Robert F. Chaiken, Pittsburgh, Pa., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation-in-part of Ser. No. 209,173, Nov. 21, 1980, abandoned. This application May 10, 1982, Ser. No. 376,852
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—347 **5 Claims**



1. A process for recovering energy from in situ wasted coal located at or adjacent to the area from which mined comprising the steps of:

(a) creating at least one channel through the in situ wasted coal without removing the wasted coal from its location at or adjacent to the mining area;

(b) igniting the wasted coal in said channel while at the same location to cause subsurface in situ combustion to occur;

(c) activating gas control means to subject said wasted coal, at least in said channel, to a controlled negative gaseous pressure drop relative to ambient gaseous pressure applied to a preselected zone;

(d) connecting said wasted coal, at least in said channel, to a source of air remote from said preselected zone to induce the air to permeate through the wasted coal to the channel and thereby in step (b) produce hot gaseous products of combustion, said products being drawn to said zone;

(e) drawing the hot gaseous products of combustion through an afterburner from the preselected zone, air and fuel being added thereto in said afterburner in an amount sufficient to produce essentially complete stoichiometric combustion of the gaseous products of combustion; and

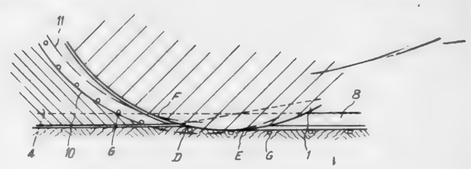
(f) thereafter utilizing said hot gaseous products of combustion in a heat exchange relationship to recover the heat energy therefrom.

4,387,656

PRECISION SOWING SEED DRILL

Paul Herriau, Cambrai, France, assignor to Societe Sogefina, Societe de Gestion Financiere Armoricaine, Paris, France

Filed Mar. 31, 1981, Ser. No. 249,363
Claims priority, application France, Mar. 31, 1980, 80 07189
Int. Cl.³ A01C *5/00*
U.S. Cl. 111—86 **4 Claims**



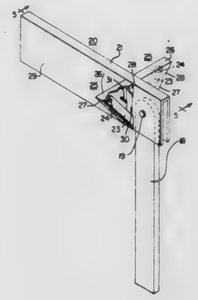
1. A seed distributor of the type comprising for each furrow a ploughshare for opening the furrow, a pneumatic transport channel for seeds ending in the furrow, and a setting wheel sinking the seeds distributed in the furrow, the terminal part of the pneumatic transport channel being directed toward the apex of the dihedral formed by the lower forward peripheral surface of the setting wheel with the bottom of the furrow and terminating within the furrow adjacent the bottom of the furrow and directly beneath a portion of the periphery of the setting wheel that is within the furrow, whereby when seeds are released under the action of air pressure from the pneumatic transport channel they are immediately captured in the nip formed by the setting wheel periphery and the bottom of the furrow to be depressed into the bottom of the furrow in spaced relation.

4,387,657

CENTERBOARD SNUBBER

Bayard K. Saunders, 2685 Woodside Rd., Bethlehem, Pa. 18017

Filed Jul. 27, 1981, Ser. No. 287,292
Int. Cl.³ B63B *41/00*
U.S. Cl. 114—132 **4 Claims**



1. A centerboard snubber for use with a weighted centerboard or swing keel equipped sailboat, the centerboard snubber being equally effective with both weighted centerboards and swing keels for blocking retraction of said weighted centerboard or swing keel into its trunk only upon excessive heeling of the sailboat comprising

a pair of snubbers one on each side of said trunk and pivotally mounted at one end,

said snubbers being transversely disposed with respect to said trunk and each of said snubbers being swingable upon excessive heeling of said sailboat to a position to block said centerboard or swing keel from retracting into said trunk,

said snubbers being mounted within snubber housings,

said snubber housings having members for limiting outward swinging movement of said snubbers,

said snubber housings having members for limiting inward swinging movement of said snubbers.

4,387,658

WHEEL STEERING APPARATUS FOR BOATS

Theodore Elliott, 384 Summer St., Manchester, Mass. 01944

Continuation of Ser. No. 863,061, Dec. 21, 1977, abandoned, which is a continuation of Ser. No. 700,878, Jun. 29, 1976, abandoned. This application Jan. 19, 1982, Ser. No. 340,667
Int. Cl.³ B63H *25/10*
U.S. Cl. 114—144 R **1 Claim**

1. A wheel steering apparatus to be mounted to the cockpit sole of a sailboat in which the sailboat includes a rudder, a rudder post with one end connected to the rudder and means on the cockpit sole for supporting, in an exposed position above the cockpit sole, the other end of said rudder post, said apparatus comprising:

A. sheave means including a sheave mounted to the exposed end of the rudder post in a plane that is normal thereto;

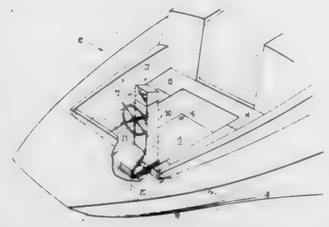
B. a housing mounted to the cockpit sole, said housing having a base portion for enclosing said sheave means and an upstanding hollow pedestal portion;

C. a shaft mounted in said pedestal portion of said housing;

D. a steering wheel mounted to said shaft for rotating said shaft;

E. drive means connected to said shaft for rotation with said steering wheel and shaft;

F. linkage means partially located in said pedestal portion for interconnecting said drive means and said sheave means,



said sheave means including connection means for affixing said linkage means to said sheave in a positive driving relationship, and

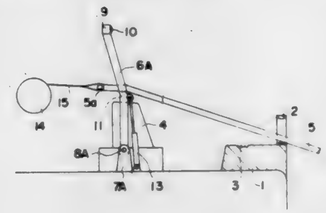
G. directing means mounted to said housing for orienting said linkage means to lie substantially normally to said shaft and to lie substantially in the plane of said sheave at said sheave means, said directing means maintaining said linkage within a beam dimension that is a maximum across said sheave whereby said housing encloses said sheave means and said linkage means thereby to provide a completely enclosed, compact steering apparatus for the sailboat.

4,387,659

DEVICE FOR ENGAGING AND DISENGAGING CABLE

Kazuo Terauchi, Sakai, and Masatoshi Fukata, Ohtsu, both of Japan, assignors to Hitachi Shipbuilding & Engineering Co., Ltd., Osaka, Japan

Filed Jun. 24, 1981, Ser. No. 277,059
Claims priority, application Japan, Jul. 18, 1980, 55-102566
Int. Cl.³ B63B *21/08*
U.S. Cl. 114—199 **1 Claim**



1. A device for engaging and disengaging a line comprising a pair of pivotal arms turnable to an upright position and to a horizontal position and supported at a location close to a line engaging bitt opposed to and a distance away from a line guiding member, a pressing traverse arm extending between the free ends of the pivotal arms, a disengaging traverse arm extending between intermediate portions of the pivotal arms for disengaging the line from the bitt, means for turning the pivotal arms to the upright position and to the horizontal position, and a pressing bed positioned to oppose the pressing

traverse arm when the pivotal arms are turned to the horizontal position, the disengaging traverse arm being positionable above the bitt when the pivotal arms are in the upright position, the traverse arms and the pivotal arms defining a space for inserting the line therethrough.

4,387,660

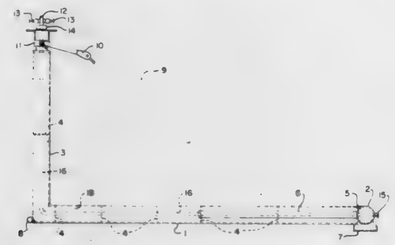
SINGLE POINT MOORING

Rene Loire, San Francisco, Calif., assignor to Morrison-Knudsen Company, Inc., Boise, Id.

Continuation of Ser. No. 58,305, Jul. 17, 1979, abandoned. This application Jul. 10, 1981, Ser. No. 281,988

Int. Cl.³ B63B *21/00*

U.S. Cl. 114—230 **9 Claims**



1. A single point mooring comprising a tubular base member which rests on the ocean bottom along its length and consists essentially of a plurality of floodable compartments, a tubular cross member rigidly joined to one end of the base member in the plane of the base member at a point intermediate the ends of the cross member and consisting essentially of a plurality of separately floodable compartments, and which rests on the ocean bottom along its length, and a mooring post member rigidly joined to the end of the base member remote from the cross member and projecting upward perpendicular to a plane intersecting the base member and cross member.

8. The method of positioning a single point mooring structure including an elongated keel-like member having two ends which comprises floating the structure, adjusting the bouyancy of the structure to sink the elongated keel-member into the water, towing the structure to a point short of the point of use, ballasting the structure to cause the rear end of the keel-like member to touch lightly on the bottom of the ocean while maintaining the forward end of the keel-like member clear of the bottom, continuing to tow the structure to the point of use, and then ballasting the structure further such that both ends of the keel-like member rest on the bottom.

4,387,661

AMPHIBIOUS MOTOR-DRIVEN CYCLE

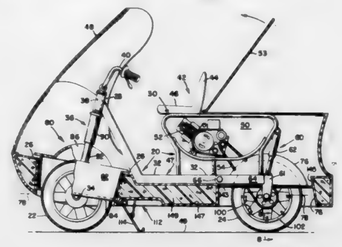
Kenneth R. Duff, 7729 Dolly Dr., Lorton, Va. 22079

Continuation of Ser. No. 109,226, Jan. 3, 1980, abandoned. This application Oct. 19, 1981, Ser. No. 312,842

Int. Cl.³ B63B *35/00*

U.S. Cl. 114—270 **23 Claims**

1. A two-wheeled amphibious cycle adapted for both land and water travel and comprising a frame, a vehicle steering front wheel unit supported by said frame and including (a) means rotatably mounting said front wheel and supported on said frame for manual rotation about a steering axis for steering the cycle on land, a motor-driven ground-engaging rear wheel rotatably supported from said frame, a floatation hull rigid with said frame, and seat means mounted on the assembly of said hull and said frame for occupancy by the driver of the amphibious cycle, said front and rear wheels being disposed one behind the other and protruding below the bottom of said hull for engagement with a ground surface during land travel, said hull being provided with downwardly opening front and rear wheel wells which define substantially watertight continuations of the bottom of said hull at least below the water line of said hull, and said front and rear wheels being partially received in said front and rear wells, respectively, said front wheel extending freely through an opening in the bottom of said hull, and said front wheel well being formed by a unit



which is carried by a part of said front wheel mounting means and which provides a substantially watertight seal opposing entry of water into the hull through said opening, but allows unimpeded turning movement of the front wheel for steering the amphibious cycle on land.

4,387,662

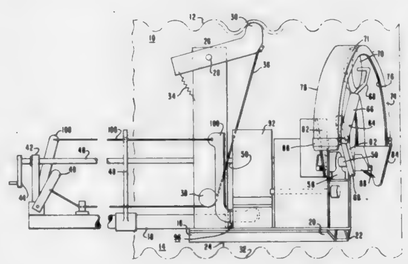
CORRUGATED PIPE ADHESIVE APPLICATOR APPARATUS

Ray A. Shirey, North Grafton, Mass., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 3, 1982, Ser. No. 354,486

Int. Cl.³ B05C *7/08*

U.S. Cl. 118—105 **10 Claims**



1. Apparatus for coating selected portions of the troughs of a corrugated pipe with an adhesive comprising:

a support disposed in said pipe;

a reservoir containing said adhesive disposed on said support;

pump means including a spout for supplying said adhesive from said reservoir to a trough of said pipe, said pump means being disposed on said support with said spout being aligned with said trough;

a rotatable applicator supported by said support and contacting said trough, said applicator being sized so as to fit within said trough, said applicator contacting said adhesive in said trough and spreading said adhesive in said trough upon rotation;

means for rotating said applicator;

shield means supported by said support and disposed in the path of rotation of said applicator for preventing said applicator from contacting selected portions of said trough; and

locator means disposed on said support for aligning said spout, said applicator, and said shield means with said trough.

4,387,663

BLADE TYPE FOUNTAIN COATER METERING DEVICE

Robert J. Alheid, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 7, 1981, Ser. No. 309,189

Int. Cl.³ B05C *3/02*

U.S. Cl. 118—413 **10 Claims**



1. In a fountain coating applicator especially suitable for paper web coating and including a generally upwardly projecting doctor blade having an upper edge for coating nip relation across the width of a web travelling continuously on backing surface means, means for delivering coating material, and means extending across the width of the web for supplying the coating material from said delivering means under hydraulic pressure to said coating nip within a coating application pond chamber defined in part by said doctor blade and said web running on said backing surface means and in addition by an application chamber floor area of substantial length spaced below said nip, the improvement comprising:

pond pressure controlling means mounted on said floor area intermediate upstream and downstream edges of said floor area and adjustably moveable from and relative to said floor area for providing an adjustable outlet orifice for said chamber, said controlling means being spaced from said blade at an upstream location relative to the direction of travel of said web;

and pressure fluid responsive means for selectively adjusting said pond pressure controlling means for attaining a desired orifice dimension.

4,387,664

DEVELOPING APPARATUS FOR ELECTROSTATIC IMAGE

Nagao Hosono, Shizuoka; Koichi Kinoshita, Narashino, and Toru Takahashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 267,771, May 28, 1981, which is a continuation of Ser. No. 938,494, Aug. 31, 1978, abandoned. This application Jan. 18, 1982, Ser. No. 340,298

Claims priority, application Japan, Sep. 10, 1977, 52-109240; Sep. 10, 1977, 52-109241

Int. Cl.³ G03G *15/09*

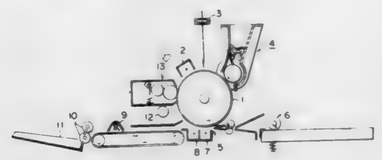
U.S. Cl. 118—658 **17 Claims**

1. A developing apparatus for forming a developed image, comprising:

developer supporting means having a support surface upon which developer may be moved to a developing zone at which said developer supporting means faces a member to which developer is to be transferred for developed image formation;

means for supplying magnetic developer to said support surface;

magnetic field producing means so arranged that in use a portion of the developer supporting means lies between said magnetic field producing means and said developer carried on said support surface, and a stationary magnetic field produced thereby extends across said portion of said developer supporting means through said support surface to attract developer to said support surface; and



magnetic means closely spaced from said support surface and disposed within the stationary magnetic field, said magnetic means being adapted and arranged to cooperate with said magnetic field produced by said magnetic field producing means to limit the thickness of the developer carried on said support surface to the developing zone.

4,387,665

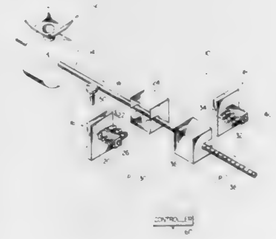
ELECTRONIC BAND MARKING CONTROLLER

Henry H. Clinton, 10 Shore Rd., Clinton, Conn. 06413

Filed Aug. 10, 1981, Ser. No. 291,612

Int. Cl.³ B05B *3/14*

U.S. Cl. 118—674 **14 Claims**



1. In an apparatus for producing marking bands at spaced intervals along a wire or like object and including cyclically driven dispensers for applying marking material to different sides of the wire and at longitudinally spaced stations along the wire and speed sensing means for sensing the speed of movement of the wire longitudinally relative to the dispensers and generating a synchronous speed signal for operating the dispensers, an improved controller responsive to the speed signal and connected in driving relationship with the cyclically driven dispensers comprising:

phasing circuit means connected with the speed sensing means for generating from the synchronous speed signal two additional speed signals synchronous with the speed signal and fixed in phase relationship with each other;

adjustable phase selecting means connected with the phasing circuit means and having two inputs respectively receiving the additional speed signals and two outputs providing respectively two further synchronous speed signals of selected phase relationship; and

two drive amplifiers connected respectively in driving relationship with two cyclically driven dispensers and responsive respectively to the two further synchronous speed signals of selected phase relationship.

4,387,666

PIG BOX GRATING

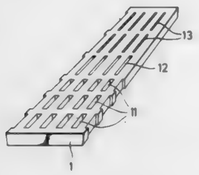
Heinrich Thye-Lokenberg, D-2845 Neuenkirchen i.Old., Fed. Rep. of Germany

Continuation of Ser. No. 75,632, Sep. 14, 1979, abandoned. This application May 15, 1981, Ser. No. 263,951

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840395; Jun. 23, 1979, 2925464

Int. Cl.³ A01K *1/02*

U.S. Cl. 119—28 **10 Claims**



1. A base for resting on spaced supports for the accommodation of suckling sows and piglets, comprising a plurality of grids each made in one piece, said grids each including a plurality of apertures spaced from each other along the entire length and width thereof, the apertures being arranged in at least three groups distributed in the lengthwise direction of the grids, the width of all of the apertures within each group being the same for that group, the width of the apertures of each group being different from the width of the apertures of each other group, the grid having apertures of relatively larger width within the range 20 to 30 millimeters in the location of the base to be occupied by sows so that faeces and urine can readily pass through the grid apertures, the grid having apertures of relatively lesser width in two groups in the location of the base to be occupied by piglets, a first of said groups of the piglet location having an aperture width of about 6 millimeters, and a second of the said groups of the piglet location having an aperture width of about 9 millimeters.

4,387,667

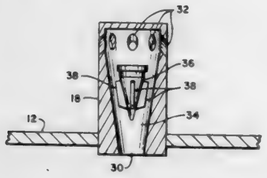
FLUIDIZED BED DISTRIBUTOR PLATE ASSEMBLY

Stephen L. Goodstine, Windsor, and Glen D. Jukkola, Wethersfield, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 14, 1981, Ser. No. 330,291

Int. Cl.³ F22B *1/00;* **F26B** *3/08, 17/00;* **F16K** *15/04*

U.S. Cl. 122—4 D **4 Claims**



1. In combination, a fluidized bed including a housing, an air distributor extending across the housing, means for introducing particulate matter onto the upper surface of the air distributor, the air distributor including a flat plate, a plurality of nipples extending upwardly from the upper surface of the plate with passage means extending up through each nipple, each passage means having inner walls forming a frustoconical passage, larger at its upper end, restriction means within each passage means, which restriction means floats freely within the passage in such a manner that as the flow velocity of the air therethrough increases, the restriction means is automatically forced higher in the passage thus increasing the flow area therearound, and keeping the pressure drop across the restriction means fairly constant, each restriction means having a plurality of ribs attached to its outer surface, and the lower inlet walls of each passage means is sized such that the ribs seat in the inlet on point contact therewith.

4,387,668

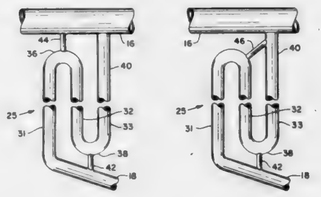
TUBE ARRANGEMENT FOR FURNACE WALL

Edward L. Kochey, Jr., Colebrook, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 28, 1981, Ser. No. 335,005

Int. Cl.³ F22B *37/00*

U.S. Cl. 122—6 A **3 Claims**



1. A furnace wall tubing arrangement for the upper end of a spiral wound boiler furnace comprising: an outlet header; a vertically sinuous tube extending upwardly in the furnace wall from each spiral wound tube to said outlet header, and including an upper return bend and a lower return bend; a first flow connecting means fluidly connecting the bottom of each lower return bend to the respective spiral wound tube, said first flow connecting means having substantially less flow area than said sinuous tube; and a second flow connecting means fluidly connecting the top of each upper return bend to said header, said second flow connecting means having substantially less flow area than said sinuous tube.

4,387,669

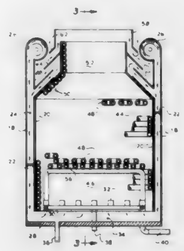
HEATER

Billy G. Brown, Levelland, Tex., assignor to Murrell's Welding Works, Inc., Levelland, Tex.

Filed Mar. 29, 1982, Ser. No. 362,913

Int. Cl.³ F22B *29/02*

U.S. Cl. 122—235 A **12 Claims**



1. An oil field heater for heating produced liquid comprising in combination:

a. a housing having

(i) a closed floor, joined to

(ii) four closed side walls, which are joined to

(iii) a top with

(iv) a short stack thereon,

b. tubing forming a single path for liquids within the housing, said path being

(i) from an inlet near the juncture of the floor and one of the side walls, into a primary coil which is

(ii) helically around the side walls up to the stack,

(iii) and from the top of the primary coil into the top of a secondary coil which is a bundle formed of

(iv) a series of spaced apart horizontal layers,

(v) each layer including a series of spaced apart tubes, and

(vi) from the bottom of the secondary coil to an outlet near the junction of the floor and one of the side walls,

c. said primary coil spaced from each of the four side walls thus forming four air passageways, one passageway between the primary coil and each of the four walls, and

d. a blower at the top of each air passageway to blow combustion air to

e. a burner located in

f. a fire box above the floor and below the bottom of the secondary coil,

g. so that the four side walls are separated from the fire box by the primary coil and the air passageways.

4,387,670

COOLING SYSTEMS FOR INTERNAL COMBUSTION ENGINE COMPRISING A RADIATOR EQUIPPED WITH AN EXPANSION-TANK

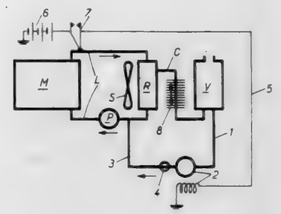
Roger Robin, Elencourt, and Ngy S. Ap, Montfermeil, both of France, assignors to Valeo, Paris, France

Filed May 19, 1981, Ser. No. 265,253

Claims priority, application France, May 20, 1980, 80 11227

Int. Cl.³ F01P *7/16*

U.S. Cl. 123—41.08 **8 Claims**



1. Method for preventing overheat of relatively hot coolant liquid of an automobile engine upon sudden drop of ventilation due to either slow down or stop of the automobile after intense running, which coolant liquid is contained in a cooling hydraulic circuit comprising on the one hand a loop including in series flow relationship a circulating pump, said engine and a ventilated radiator and on the other hand an external expansion tank in a hydraulic circuit branch extending from said loop and containing an amount of relatively cold coolant liquid, said method comprising the steps of:

sucking relatively cold coolant liquid from the expansion tank externally of said loop; and

pumping the sucked relatively cold coolant liquid into the relatively hot coolant liquid in the loop of the hydraulic circuit at an injection location thereof between the radiator and the engine.

4,387,671

AIR FILTER FOR A COOLING SYSTEM OVERFLOW CONTAINER

Robert D. Jarvis, 5747 S. 148th Ct., Omaha, Nebr. 68137

Filed Jul. 13, 1981, Ser. No. 283,068

Int. Cl.³ F01P *11/02;* **B01D** *46/10*

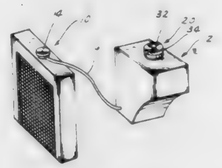
U.S. Cl. 123—41.27 **1 Claim**

1. In combination with a vehicle engine cooling system containing a coolant,

an overflow container fluidly connected to the cooling system, said container having a fill opening formed therein adjacent the upper end thereof which is in communication with the atmosphere to permit air in the container to pass outwardly therethrough when coolant from the cooling system is overflowing thereinto and to permit air to pass inwardly therethrough when the coolant in the container is being drawn into the cooling system,

and an air filter means extending across said opening whereby the air entering said container will pass through said filter means and will be filterd to remove foreign substances carried thereby,

a closure means removably mounted on said fill opening to close the same, said filter means being operatively mounted on said closure means, said closure means having air openings formed therein to permit the air to pass therethrough,



said closure means comprising an annular skirt portion which is threadably mounted on said container, a top portion extending over said skirt portion, said top portion having a plurality of the said air openings formed therein to permit air to pass therethrough, said filter means being positioned over said top portion, and means maintaining said filter means on said top portion,

said closure means having an upstanding annular ridge extending therearound which partially embraces said filter means,

said annular ridge having a plurality of slits formed therein to permit coolant to pass outwardly therethrough in the event that coolant should overflow from said container.

4,387,672

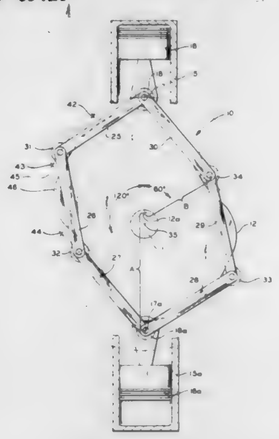
ENERGY TRANSFER APPARATUS

Alfred J. Crocker, 4906 Naomi Dr., Toledo, Ohio 43623

Filed Oct. 8, 1981, Ser. No. 309,824

Int. Cl.³ F02B *75/22*

U.S. Cl. 123—55 AA **3 Claims**



1. An apparatus for transferring energy, comprising:

(a) at least two cylinders;

(b) a piston reciprocably mounted within each of said cylinders;

(c) a rotary shaft;

(d) cam means connected to said shaft for rotation therewith, said cam means having a profile defined by a major and a

minor diameter having coincident centers, said coincident centers displaced from the axis of said rotary shaft, said cam profile having at least two identical profiles for reciprocating said pistons at least twice in one revolution of said shaft;

(e) follower means following the profile of said cam means, said follower means including at least six equally spaced rollers and six equal length links with adjacent rollers being interconnected by one of said links, at least two of said links being elongatable in length and including a pair interconnected members having overlapping portions movable relative to each other and a spring member coupled to the overlapping portions tending to resist elongation of said pair of interconnected members; and

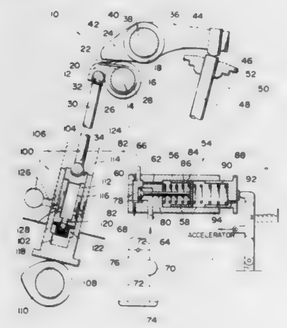
(f) means connecting said pistons to said follower means whereby one of said pistons is juxtaposed the top of its associated cylinder by one of said identical profiles and another of said pistons is displaced from the top of its associated cylinder by another of said identical profiles.

4,387,673

VALVE OPENING CONTROL DEVICE

Shunichi Aoyama, Yokohama, and Eiji Murata, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 13, 1980, Ser. No. 159,324
Claims priority, application Japan, Jun. 14, 1979, 54-74994
Int. Cl.³ F01L *1/34*
U.S. Cl. 123—90.16 **5 Claims**



2. A system for regulating the opening of an internal combustion engine cam-operated cylinder valve in response to the position of an external actuator, said system comprising:

(a) a fluid pump;

(b) a fluid pressure regulating valve for regulating the the fluid pressure from said fluid pump in response to the position of an external actuator, said valve comprising:

(I) a body having

A. a first chamber,

B. a second chamber,

C. a passageway providing communication between said first and second chambers,

D. an inlet port communicating with said second chamber and with said fluid pump,

E. an outlet port communicating with said second chamber, and

F. a return port communicating with said second chamber;

(II) a valve element positioned within said second chamber for regulating communication between said second chamber and said inlet port;

(III) a first piston positioned within said first chamber for controlling the operation of said valve element;

(IV) a second piston positioned within said first chamber for controlling the operation of said first piston;

(V) a first spring positioned within said first chamber for urging said first piston in a direction to cause said valve element to close said inlet port; and

(VI) a second spring positioned between said first and second pistons to urge said pistons in opposite directions,

whereby a force applied to said second piston increases the second spring compressive force tending to urge said first piston in a direction to cause said valve element to open said inlet port, against the action of said first spring, for introducing a pressurized fluid into said second chamber, whereupon such fluid pressure acts via said body passageway against said first piston to urge said first piston in a direction to close said inlet port, against the action of said second spring;

(c) a cam-actuated valve lifter for transmitting a cylinder valve opening force from the engine cam, such force being variable in response to the magnitude of fluid pressure from said fluid pressure regulating valve; and

(d) a cylinder valve opening control device for transmitting the opening force from said cam-actuated valve lifter to the cylinder valve, said device comprising:

(I) a shaft; and

(II) a cam-like member, rotating about said shaft and having

A. an outer surface concentric with said shaft along a first section thereof, and

B. a second section thereof extending from said outer concentric surface and defining:

(i) a first cam-like surface formed integrally with said outer concentric surface and extending tangentially therefrom, and

(ii) a second engaging surface,

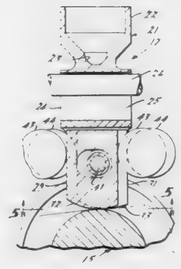
whereby a higher fluid pressure from said fluid pressure regulating valve to said valve lifter causes said lifter to transmit an opening force to said cylinder valve opening control device, the amount of rotation of said device being proportional to said fluid pressure, and whereby the amount the cylinder valve is opened is progressively proportional to the amount of rotation of said cylinder valve opening control device.

4,387,674

VALVE TRAIN

Calvin C. Connell, 1618 Twelve Oaks Way, North Palm Beach, Fla. 33408

Filed May 28, 1981, Ser. No. 267,745
Int. Cl.³ F01L *1/14, 1/24*
U.S. Cl. 123—90.16 **4 Claims**



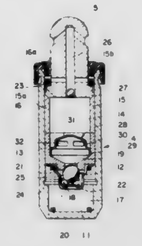
1. In an internal combustion engine comprising a poppet valve supported for movement between an opened position and a closed position, an output shaft and valve actuating means including a cam and follower for controlling the opening and closing movement of said poppet valve in response to changes in the angular position of said output shaft, the improvement comprising means for varying the duration of the opening of said poppet valve in relation to output shaft rotation during the running of the engine comprising a member carried by said follower and movable therewith along a fixed path of movement as said follower moves to open and close said valve, and means for adjusting said member relative to said follower to adjust said valve duration without altering the path of movement of said member upon the opening and closing of said valve.

4,387,675

ENGINE VALVE ACTUATING MECHANISM HAVING A HYDRAULIC FULCRUM LIFTING DEVICE

Takanobu Hori, Toyota; Fuminao Arai, Kariya; Hisashi Kodama, Nagoya, and Yoshio Okabe, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 23, 1981, Ser. No. 227,919
Claims priority, application Japan, Jan. 28, 1980, 55-8608; Mar. 1, 1980, 55-25637
Int. Cl.³ F01L *1/24*
U.S. Cl. 123—90.58 **1 Claim**



1. A hydraulic fulcrum lifting device for a valve actuating mechanism of an internal combustion engine, said device comprising:

a hollow housing having a bottom wall and an open top end;

a plunger disposed in said housing for reciprocating movement, said plunger having an outer end extending outwardly through the open end of the housing and providing a fulcrum for a rocker arm of the valve actuating mechanism, said plunger being subjected to an outward biasing force of a spring;

a pressure chamber in the housing defined between said bottom wall and an inner end of the plunger;

a reservoir chamber in said plunger communicated with said pressure chamber through port means in said inner end of the plunger;

check valve means provided in said port means and adapted to open only toward said pressure chamber;

passage means formed in said plunger for opening the reservoir chamber to the atmosphere;

an annular stop member disposed proximate the open end of said housing and adapted to engage a shoulder portion of said plunger so as to limit the outward stroke of said plunger and to close said passage means when the device is not installed in the engine; and

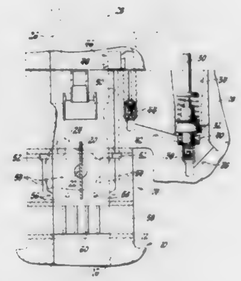
deflector means provided in said reservoir chamber to encircle said port means and adapted to be fitted to the inside wall surface of said reservoir, said deflector means including a stop wall spaced from said port means, an annular side wall substantially parallel to and spaced from the inside wall surface of said reservoir, and opening means in said annular side wall permitting fluid communication between said reservoir and said port means.

4,387,676

COLD STARTING SYSTEM FOR ALCOHOL FUELED ENGINE

Nuno P. Couceiro, Indianopolis, Brazil, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 4, 1980, Ser. No. 184,047
Int. Cl.³ F02M *1/08*
U.S. Cl. 123—179 H **2 Claims**



1. A cold starting system for an engine having an induction passage for air flow to the engine and a throttle in said induction passage for controlling flow therethrough, said system comprising an accelerator pump connected to said throttle and having upper and lower discharge nozzles for delivering a measured amount of liquid ethanol to said induction passage as said throttle is opened, said upper nozzle delivering liquid ethanol into said induction passage upstream of said throttle and said lower nozzle delivering liquid ethanol into said induction passage downstream of said throttle, a body defining a grid having a plurality of surfaces disposed in said induction passage downstream of said throttle at a location for intercepting substantially all liquid ethanol delivered from said lower nozzle before such liquid ethanol can impinge upon other surfaces in said induction passage, said grid being connected in an electric circuit and formed of a positive temperature coefficient thermistor material which limits current through said grid to maintain said grid at a substantially constant temperature suitable for evaporating liquid ethanol without unduly heating said air flow, a valve controlling flow through said lower nozzle, and means effective at temperatures below a selected value to cause said valve to permit flow through said lower nozzle and to energize said grid to evaporate the liquid ethanol delivered through said lower nozzle, thereby providing sufficient ethanol vapor to start the engine, said means being further effective when the engine is running to cause said valve to inhibit delivery through said lower nozzle and to deenergize said grid.

4,387,677

FUEL, MORE ESPECIALLY AUXILIARY STARTING FUEL, INJECTORS FOR INTERNAL COMBUSTION ENGINES AND TO AUXILIARY CARBURETORS ASSOCIABLE WITH SUCH INJECTORS

Jean Guerrier, Nesles la Vallee, France, assignor to Holt Lloyd S.A., Paris, France

Filed Jun. 23, 1981, Ser. No. 276,460
Claims priority, application France, Jun. 24, 1980, 80 14039
Int. Cl.³ F02N *17/00*
U.S. Cl. 123—179 L **5 Claims**

1. An auxiliary starting carburetor for internal combustion engines, arranged so as to deliver to the engine, through at least one injector, an auxiliary fuel from a reservoir containing said fuel in liquid form and under pressure, the reservoir being removable and having an expulsion port with a back-pressure valve normally maintained in the closed position, said auxiliary carburetor being arranged so that said reservoir is situated at its

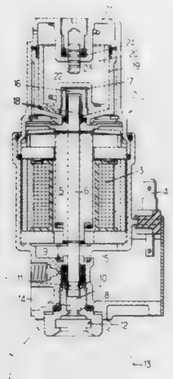
lower part, an electromagnetic coil being provided for controlling the opening or the shutting of said valve of said expulsion part, characterized in that it comprises the combination of following component parts arranged, respectively from bottom to top of the auxiliary carburetor disposed in its operating position:

a lower chamber in communication with the expulsion port of the reservoir,

an outlet port communicating with the lower chamber,

closure means adapted to selectively close off said outlet port under the action of control means,

a mobile pipe whose lower end opens into the lower chamber and is arranged to form said means for controlling the closure means, said pipe being arranged to occupy at least two operational positions, namely a first position which is a rest position, in which its lower end does not cooperate with the back-pressure valve of the reservoir and a second position in which it acts on said back-pressure valve so as to open the port of the reservoir,



a port for the intake of fuel carried by the lower end of the pipe and arranged to cooperate with the port of the reservoir when the pipe occupies its second operational position,

said electromagnetic coil for controlling the movement of the pipe from its first to its second operational position, said coil having a core integral with the pipe which passes therethrough,

first return means for returning the pipe from its second to its first operational position when the electromagnetic coil is not energized,

a closed enclosure,

a piston movable inside said enclosure for defining therein an upper variable volume chamber, in which the upper end of the pipe emerges,

and second return means acting on the piston so that the variable volume of the upper chamber is at a minimum when the carburetor is not operating,

the whole of the above-mentioned component parts, with the exception of the outlet port of the auxiliary carburetor, being coaxially disposed.

4,387,678

LIGHT METAL CYLINDER HEAD FOR INTERNAL COMBUSTION ENGINES

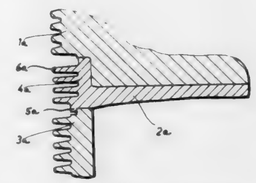
Paul Tholen, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 187,519

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1979, 2937788

Int. Cl.³ F02F *1/26*

U.S. Cl. 123—193 H **3 Claims**



1. A light metal cylinder head arrangement for internal combustion engines, comprising in combination:

a cylinder head having a bottom portion directed toward an associated combustion chamber; and defining an axially extending, radially inwardly recessed, circular shoulder;

a cylinder barrel;

an annular insert of a ferrous metal interposed as well as geometrically adapted in a location directly between said cylinder head and said cylinder barrel said annular insert having an axially extending radial surface in direct engagement with the circular shoulder; and

a ferrous metal metal plate arranged on said cylinder head bottom, said annular insert adjoining the outer periphery of said metal plate; whereby without any fastening function of said metal plate and said annular insert and as a result of different heat stresses arising during combustion operation, forces are created which cause said metal plate to expand freely and to engage said cylinder head bottom as the metal plate distorts, due to combustion heat effecting deformation especially in a middle region thereof, easily toward said cylinder head so that said metal plate with increasing combustion-heat-caused expansion of the cylinder head due to combustion heat is pressed more strongly against said cylinder head bottom to assure sealing against leakage between said cylinder head and said cylinder barrel.

4,387,679

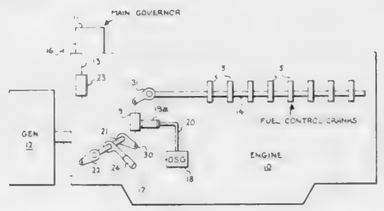
OVERSPEED PROTECTIVE SYSTEM FOR INTERNAL COMBUSTION ENGINES

Philip M. Folger, and Bobby L. Johnson, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Sep. 5, 1980, Ser. No. 184,494

Int. Cl.³ F02D *1/04;* **F02B** *77/08*

U.S. Cl. 123—198 D **8 Claims**



1. In an overspeed protective system for an internal combustion engine having a movable fuel control shaft, a speed responsive governor, a movable governor layshaft coupled to said governor for actuation thereby, throttle means for selecting the setting of said governor thereby to maintain a desired constant speed within a normal range of speeds, manually operable means connected to actuate said layshaft independently of said throttle means, a connecting link of variable length coupling said layshaft to actuate said fuel control shaft, said link having a predetermined normal length and being abruptly changeable to a different length which forces said fuel control shaft to move in a fuel reducing direction independently of the position of said layshaft, and means responsive to engine overspeed above the maximum of said normal speed range for causing said link to change its length, whereby engine speed is reduced upon actuation of said link independently of said governor and of said manually operable means.

4,387,680

MECHANISM FOR STOPPING VALVE OPERATION

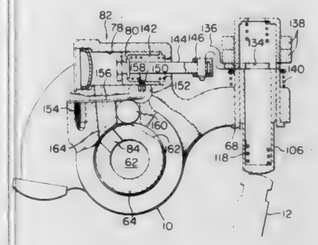
Katashi Tsunetomi; Akira Takahashi, and Katsuyuki Tsuji, all of Kyoto, Japan

Filed Apr. 21, 1981, Ser. No. 256,024

Claims priority, application Japan, Apr. 23, 1980, 55-52837; Nov. 11, 1980, 55-160741; Nov. 14, 1980, 55-159402

Int. Cl.³ F02D *13/06*

U.S. Cl. 123—198 F **12 Claims**



1. A mechanism for stopping operation of a valve comprising a plunger slidably mounted in a portion of a valve actuating system for actuating the valve used as an intake valve, an exhaust valve or the like of an internal combustion engine, a stopper engageable and disengageable with said plunger, an actuator for actuating said stopper, said stopper being engaged with said plunger to prevent sliding motion of the plunger thereby operating said valve, said stopper being disengaged from said stopper to allow sliding motion of the plunger thereby stopping the operation of said valve, and controlling means detecting phases of a valve actuating cam for actuating said valve to set commencement of operation of said actuator at the time just after a cam lift by said valve actuating cam ends.

4,387,681

FUEL SUPPLY CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Kenji Ikeura, and Tatsuo Morita, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jan. 30, 1981, Ser. No. 230,289

Claims priority, application Japan, Jan. 31, 1980, 55-10499

Int. Cl.³ F02D *33/00*

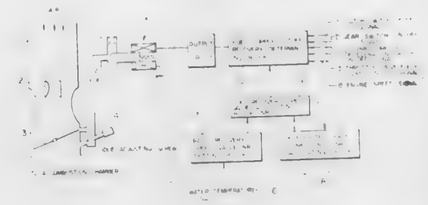
U.S. Cl. 123—325 **26 Claims**

1. A fuel supply control system for an internal combustion engine for driving an automotive vehicle, a fuel supply to the engine being cut off when the engine speed decreases from above a first predetermined value NRJ, the fuel supply being resumed when the engine speed, after being decreased from the first predetermined value NRJ is less than a second predetermined value NR, the fuel supply system comprising:

(a) first detecting means for signalling that the engine is decelerated and is under noload condition;

(b) second detecting means, responsive to the first detecting means signalling that the engine is not decelerated and is under noload condition, for signalling that a brake pedal of the vehicle is abruptly actuated; and

(c) means for calculating the second predetermined speed value NR and correcting the calculated second predetermined speed value so as to lower the second predetermined speed value NR when said second detecting means signals that the brake pedal is not actuated abruptly as compared with the speed value calculated either in the case when said second detecting means signals that the brake pedal is actuated abruptly or in the case when said first detecting means signals that the engine is decelerated under no-load condition within a region where engine stalling does not occur.



4,387,682

METHOD AND APPARATUS FOR CONTROLLING THE AIR INTAKE OF AN INTERNAL COMBUSTION ENGINE

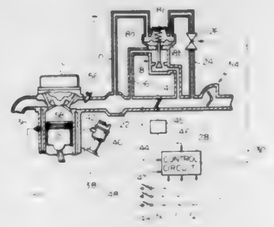
Hideo Miyagi, Okazaki, and Masaomi Nagase, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 23, 1981, Ser. No. 304,872

Claims priority, application Japan, Sep. 26, 1980, 55-133010

Int. Cl.³ F02D *9/00*

U.S. Cl. 123—339 **14 Claims**



1. A method of controlling the air intake of an internal combustion engine having an intake passage, a throttle valve disposed in the intake passage, and an air bypass passage which communicates the intake passage at a position located upstream of the throttle valve with the intake passage at a position located downstream of the throttle valve, said method comprising the steps of:

detecting the actual rotational speed of the engine to produce a rotational speed signal which represents the detected rotational speed;

detecting at least one of the operating conditions and the load condition of the engine to produce at least one engine condition signal which represents at least one of the detected operating condition and the detected load condition;

determining, in response to said at least one engine condition signal, a reference rotational speed which corresponds to

a desired rotational speed for at least one of the detected operating condition and the detected load condition;

calculating, by using the detected rotational speed signal and a signal indicative of the determined reference rotational speed, the difference between the actual rotational speed of the engine and the reference rotational speed to produce a control output signal which is determined by the calculated difference;

detecting whether the engine is in the starting condition to produce a starting condition signal;

increasing, in response to the starting condition signal, when the engine is in the starting condition, the reference rotational speed from said determined reference rotational speed by an incremental value;

calculating, in response to the starting condition signal, when the engine is in the starting condition, by using the detected rotational speed signal and a signal indicative of the increased reference rotational speed, the difference between the actual rotational speed of the engine and the increased reference rotational speed to produce a control output signal which is determined by the calculated difference; and

adjusting, in response to the control output signal, the sectional area of the air bypass passge to control the flow rate of air passing through the air bypass passage so as to reduce the difference between the actual rotational speed and the reference rotational speed.

8. An apparatus for controlling the air intake of an internal combustion engine having an intake passage, a throttle valve disposed in the intake passage, and an air bypass passage which communicates the intake passage at a position located upstream of the throttle valve with the intake passage at a position located downstream of the throttle valve, said apparatus comprising:

means for detecting the actual rotational speed of the engine to produce a rotational speed signal which represents the detected rotational speed;

means for detecting at least one of the operating condition and the load condition of the engine to produce at least one engine condition signal which represents at least one of the detected operating condition and the detected load condition;

means for determining, in response to said at least one engine condition signal, a reference rotational speed which corresponds to a desired rotational speed for at least one of the detected operating condition and the detected load condition;

means for calculating, by using the detected rotational speed signal and a signal indicative of the determined reference rotational speed, the difference between the actual rotational speed of the engine and the reference rotational speed to produce a control output signal which is determined by the calculated difference;

means for detecting whether the engine is in the starting condition to produce a starting condition signal;

means for increasing, in response to the starting condition signal, when the engine is in the starting condition, the reference rotational speed from said determined reference rotational speed by an incremental value;

said means for calculating, in response to the starting condition signal, when the engine is in the starting condition, by using the detected rotational speed signal and a signal indicative of the increased reference rotational speed, calculating the difference betwen the actual rotational speed of the engine and the increased reference rotational speed to produce a control output signal which is determined by the calculated difference, and

means for adjusting, in response to the control output signal, the sectional area of the air bypass passage to control the flow rate of air passing through the air bypass passage so as to reduce the difference between the actual rotational speed and the reference rotational speed.

4,387,683

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

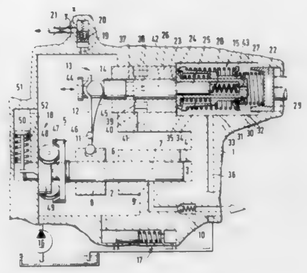
Franz Eheim, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 22, 1980, Ser. No. 123,608

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1979, 2909558

Int. Cl.³ F02D *1/06*

U.S. Cl. 123—387 **6 Claims**



1. A fuel injection pump for internal combustion engines having a pump housing a cam drive to effect rotational and reciprocal movement for the supply movement of at least a pump piston, said pump including a portion supported in said pump housing which is adjustable relative to its rotating portion counter to a restoring force for the purpose of adjusting the onset of injection by means of a displaceable adjusting piston in a working cylinder, said working cylinder being at least indirectly connected to receive fuel from a fuel supply pump, the supply pressure of said fuel supply pump being controllable in proportion to the rpm by means of a pressure control valve and said supply pressure being further controllable by means of the supplementary discharge of a partial quantity of fuel through a discharge channel including an overflow valve, characterized in that said injection pump is controlled by means of a hydraulic rpm governor, said rpm governor including a governor piston extending into said pump housing having opposite end portions one of which is exposed to the supply pressure of said fuel supply pump and adjustable counter to the force of governor springs within said pump housing, a bushing surrounding a portion of said governor piston and fixed in a bore in said pump housing, one end of said governor piston extending into a pressure-relieved chamber which encompasses said governor springs, and further that said governor piston at least controls a relief channel in said housing, said bushing and said governor piston which indirectly effects pressure in said working cylinder of said adjusting piston, said relief channel including mouth portions in said bushing and said governor piston arranged to overlap one another to a greater or lesser extent during movement of said governor piston for controlling the cross section of said mouth portions in said bushing in said pump housing for controlling discharge of fuel from said injection pump.

4,387,684

IGNITION ADVANCE CIRCUIT WITH SENSOR INPUTS

Rupin J. Javeri, Elk Grove, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Oct. 13, 1981, Ser. No. 310,004

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—416 **12 Claims**

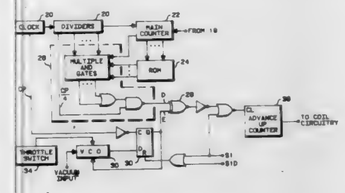
1. An ignition advance control circuit as for a spark ignition engine having a crankshaft and comprising:

first input means for supplying a first input signal in response to crankshaft rotation;

counter means coupled to the first input means and having an output count which is inversely proportional to crankshaft velocity;

first pulse providing means coupled to the counter means output for providing a first output signal wherein the number of pulses per crankshaft rotation is a predetermined function of said output count;

second input means for providing a second input signal whose amplitude is a function of an engine characteristic other than velocity;



second pulse providing means coupled to the second input means for providing a second output signal whose frequency is a function of the amplitude of the second input signal;

adder means coupled to the first and second pulse providing means for providing a third output signal which is substantially the sum of the first and second output signal pulse rates; and

means coupled to the adder means for controlling spark timing in an engine in response to the adder means output signal under at least some engine conditions.

4,387,685

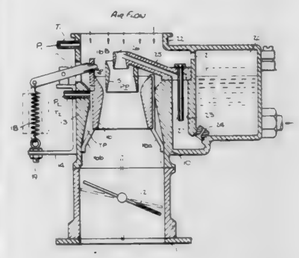
FLUIDIC CONTROL SYSTEM INCLUDING VARIABLE VENTURI

Harold G. Abbey, 11 Goldsmith Dr., Holmdel, N.J. 07733

Continuation-in-part of Ser. No. 214,626, Dec. 10, 1980, Pat. No. 4,308,835. This application Oct. 2, 1981, Ser. No. 307,956

Int. Cl.³ F02M *9/14*

U.S. Cl. 123—439 **15 Claims**



1. A variable structure which provides throughout an extended range the characteristics of a Venturi whose differential velocity-pressure output is proportional to the mass-volume of a fluid stream passing therethrough, said structure comprising:

A. a tubular casing into which the fluid stream is admitted;

B. a cylindrical spool supported within the casing for free axial movement therein, said spool having an interior flow passage, said spool defining an exterior flow passage in the annular space between the spool and the casing which exterior passage is always open in the course of said movement whereby the stream admitted into the casing is divided and flows through the interior and exterior passages, said spool having a Venturi-contoured surface lying in at least one of said passages, causing said stream to exert a hydrodynamic force on the spool which acts to displace the spool axially in the downstream direction; and

C. means imposing a countervailing force on the spool whereby the extent of spool displacement is the resultant of the hydrodynamic and countervailing forces, said displacement providing a differential velocity-pressure output proportional to the mass volume of the admitted fluid stream throughout an extended range.

4,387,686

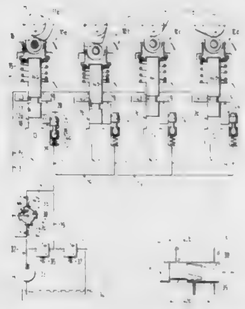
FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES, IN PARTICULAR FOR DIESEL ENGINES

Jean Leblanc, Lyons; Jean Pigeroulet, Villeurbanne, both of France; Max Straubel, and Konrad Eckert, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 27, 1981, Ser. No. 223,954

Int. Cl.³ F02M *41/02*

U.S. Cl. 123—446 **18 Claims**



1. A fuel injection apparatus for internal combustion engines, in particular for Diesel engines, having per engine cylinder one mechanically driven pump piston of an injection pump and a pump work chamber in said injection pump supplied with fuel under supply pressure by a supply pump and preferably combined with an injection nozzle into a pump/nozzle unit, each apparatus having one control slide, said slide being limited by a pressure chamber and actuatable by the control pressure of a source of control fuel which is common to all the injection pumps counter to the force of at least one restoring spring, said control slide further being inserted into a discharge channel in permanent communication with said pump work chamber and arranged to close this discharge channel at will in order to initiate the variable onset of injection and further arranged to open said channel again in order to terminate the injection, said apparatus further including a control apparatus whereby pressure can be exerted via control lines upon said pressure chambers of said control slides, characterized by the following characteristics:

(a) said control fuel source is embodied by said supply pump dimensioned by a control pressure (p_S) increased severalfold over the supply pressure (p_V) of said injection pumps and by a first pressure limitation valve limiting the control pressure (p_S) in a control pressure line capable of being connected with said control lines;

(b) said first pressure limitation valve being correlated with a second pressure limitation valve, said second pressure limitation valve arranged to determine the supply pressure (P_V) prevailing in filling lines separate from said control lines;

(c) said control apparatus comprises a valve assembly common to all of said injection pumps said assembly arranged to determine the onset and duration of pressure upon said pressure chambers of said control slide, and a distributor means separate from said valve assembly arranged to communicate with said control lines leading to said pressure chambers of said control slides said means arranged to be connected at a predetermined time to said control pressure line in synchronism with said injections and further wherein;

(d) said control pressure (p_S) required for actuation of said control slides and exerted via said distributor means upon one of said pressure chambers at a time established by means of said valve assembly which blocks the discharge of control fuel out of said control pressure line into a low-pressure line and is subsequently relieved toward said low-pressure line for the purpose of effecting the return stroke of said control slide.

(e) said filling lines are connected to a supply line which is under supply pressure (p_V) and which is common to all of said injection pumps; and

(f) said pump work chamber can be made to communicate with said filling line by means of an overflow channel controlled by a control location provided on said control slide.

4,387,687

CONTROL APPARATUS FOR A FUEL METERING SYSTEM IN AN INTERNAL COMBUSTION ENGINE

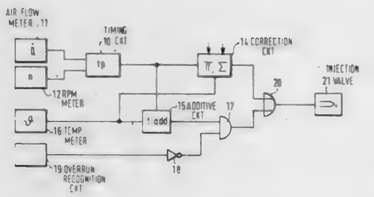
Rainer Höppel, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 21, 1980, Ser. No. 209,346

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1979, 2948867

Int. Cl.³ F02B *3/02*; F02D *5/00*

U.S. Cl. 123—493 **5 Claims**



1. In a control apparatus for a fuel management system of an internal combustion engine having pulse operated fuel control means, pulse generating means for generating pulses for operating the fuel control means, and first correction circuit means connected to the pulse generating means for lengthening the pulses, during engine warm-up, the improvement comprising:

second correction circuit means connected to the pulse generating means for lengthening the pulses to a greater extent than said first correction circuit means, during engine warm-up;

means for detecting an engine overrunning condition; and a third circuit means in response thereto for applying only the pulses from the first correction circuit means to the fuel control means during the engine overrunning condition.

4,387,688

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Franz Eheim, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 124,886, Feb. 26, 1980, abandoned. This application Aug. 18, 1982, Ser. No. 409,248

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1979, 2909559

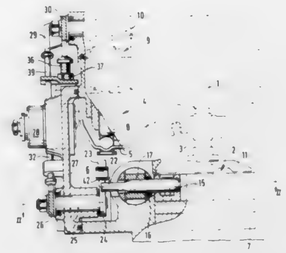
Int. Cl.³ F02D *1/06*

U.S. Cl. 123—502 **11 Claims**

1. A fuel injection pump for internal combustion engines comprising

(A) a housing, a cam drive in said housing which effects the supply movement of at least one pump piston, said cam drive having a housed rest portion and a revolvable portion, said rest portion being adjustable relative to said revolvable portion to adjust the onset of injection via means responsive at least in accordance with rpm, said means having a stop, and an intervention lever means disposed exteriorly of said housing adapted to cooperate with said stop;

(B) a fuel control member, an rpm governor operating to control said fuel control member which determines injection quantity, an arbitrarily actuatable adjusting lever which varies the rpm of said governor, with an outset position of said governor being determined by means of an adjustable idling stop; and



(C) a coupling means between said intervention lever and said adjusting lever;

characterized in that said coupling means includes a displaceable rod supported exteriorly of said housing and a spring surrounding said rod which reacts relative to said rod to force said rod in constant contact with said intervention lever, said spring cooperating with an end of said rod remote from said intervention lever to act as an idling stop for said adjusting lever.

4,387,689

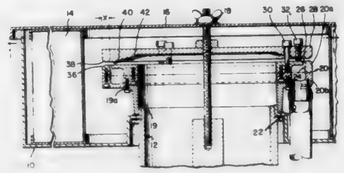
APPARATUS FOR CONVERTING A CARBURETOR FOR GASEOUS FUEL

William J. Brown, Whatcom County, Wash., assignor to Bureau of Faculty Research of Western Washington University, Bellingham, Wash.

Filed May 15, 1981, Ser. No. 263,922

Int. Cl.³ F02M *21/04*

U.S. Cl. 123—525 **11 Claims**



1. A gaseous and liquid-fuel carburetor for an internal-combustion engine having a liquid-fuel carburetor with an inlet flange, an air cleaner housing, and an air cleaner, comprising:

an adapter member for coupling to said carburetor inlet flange, and

mixing means within said air cleaner housing coupled to said adapter member, said mixing means including an air inlet venturi nozzle for guiding air into said inlet flange, and means within said venturi nozzle for introducing gaseous fuel into the venturi for mixing with air, said air inlet venturi including a pair of upper and lower spaced plates defining a substantially continuous, circumferential venturi passage, said passage converging from an outer large entrance opening defined by smooth curved opposed corners on said plates to an intermediate narrow neck portion defined by elongated substantially parallel opposed surfaces on said plates, said surfaces downstream of said narrow neck portion smoothly diverging for a substantial length to an inner larger discharge opening, said means for introducing gaseous fuel being located at the closest spacing between said substantially parallel surfaces in said intermediate narrow neck opening, and downstream of said corners sufficient to be in substantially laminar flow, and wherein said smoothly curved corners, said substantially parallel surfaces of said narrow neck portion with the means for introducing the gaseous fuel located therein, and said smooth divergence to the discharge opening being capable of providing a low air pressure at the gaseous fuel introduction location but only a small total pressure drop across the entire venturi thereby maximizing fuel input and air input to the carburetor.

4,387,690

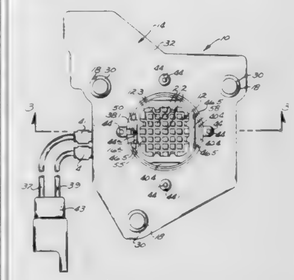
FUEL EVAPORATION DEVICE

Donald J. Chiavaroli, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 12, 1981, Ser. No. 320,274

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—549 **8 Claims**



1. A fuel evaporation device for use in a fuel supply system having an air-fuel passage for directing an air-fuel mixture into an intake manifold of an engine where fuel condensation may occur on the walls of the passage, said device comprising a self regulating electrical resistance heater to be suspended in the intake manifold to enhance fuel evaporation without interfering excessively with the flow of the air-fuel mixture into the manifold and tube means arranged to intercept fuel condensed on the walls of the air-fuel passage and to extend into the manifold to direct such condensed fuel onto the heater, characterized in that electrically insulating gasket means are adapted to be mounted on the engine for locating the device to receive an air-fuel mixture from the passage, a pair of terminal means are mounted in electrically insulated relation to each other on the gasket means, the tube means are electrically connected at one end to one of the terminal means and at an opposite end to the heater to dispose the heater within the manifold in the path of the air-fuel mixture directed into the manifold, and conductor means connect the heater to the other of said terminal means for electrically connecting the heater in an energizing circuit.

4,387,691

DIESEL FUEL FILTER SYSTEM

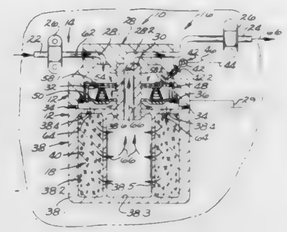
Leo Marcoux, Rehoboth, Mass., and Youn Ting, Lexington, Ky., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 7, 1980, Ser. No. 204,965

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **13 Claims**

1. A fuel filter system for a diesel engine having a housing means with inlet and outlet means, having filter means detachably mounted on the housing means to pass diesel fuel therethrough to remove extraneous material from the fuel as the fuel passes to the engine, and having electrical resistance heater means for heating the fuel to deter clogging of the filter means by components of the fuel which tend to solidify at relatively lower temperatures, characterized in that said outlet means includes a centrally disposed outlet port open at one end for receiving fuel from the filter means and said inlet means includes an inlet port which opens at one end in surrounding relation to said outlet port for furnishing fuel to the filter means, the filter means comprises a can open at one end having a central chamber connected to said outlet port and having a filter media arranged inside the can around the central chamber so that an edge of the filter media is aligned with said open end of the inlet port surrounding said outlet port to receive fuel directly from the inlet port, and a plurality of self-regulating electrical resistance heater elements of positive temperature coefficient of resistivity are disposed in said inlet port spaced around the central outlet port immediately adjacent to the filter media in the filter means to facilitate increase in temperature of fuel at the moment it passes into the filter media of the filter means.



4,387,692

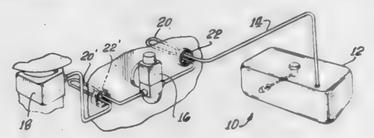
PETROLEUM PREHEATING DEVICE FOR ENGINES

Douglas H. Blackschleger, 304 W. Allen Ave., San Dimas, Calif. 91773

Filed Jan. 19, 1981, Ser. No. 226,234

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **2 Claims**



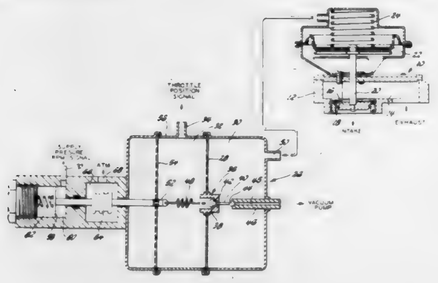
1. In an internal combustion engine system having, inter alia, an engine block containing a coolant cavity which surrounds the cylinder walls of such an engine system, and which engine block contains a plurality of openings through the block walls or base into the said coolant cavity, each of said openings being normally sealed by freeze plugs forced fit and welded or braised in place, the improvement of the introduction, in series, of a plurality of generally elongated U-shaped extensions into the fuel line between the fuel reservoir and the carburetor of such an engine system, such that each such U-shaped extension is situated so as to pass into the coolant cavity of the engine block and returning therefrom through specially adapted freeze plugs, each such U-shaped extension utilizing a different one of the freeze plug openings as its access to said coolant cavity, and each such U-shaped extension being welded or braised into the central portion of such specially adapted freeze plugs to provide sealing for the coolant cavity when installed.

4,387,693

EXHAUST GAS RECIRCULATION CONTROL

Edward R. Romblom, DeWitt, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 18, 1981, Ser. No. 322,527
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—569 **4 Claims**



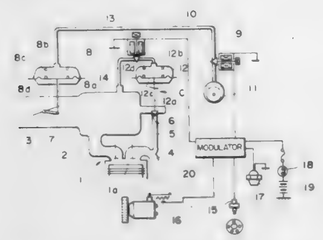
1. An exhaust gas recirculation control assembly for a diesel engine having a throttle member controlling fuel flow to the engine, means for generating a pressure which varies with the position of said throttle member, means for generating a pressure which varies with engine speed, and a diaphragm operated valve controlling recirculation of exhaust gases in response to variations in a control pressure, said assembly comprising a diaphragm assembly including a first diaphragm portion sensing said control pressure and a second diaphragm portion sensing said throttle position related pressure, a valve mechanism connected to said diaphragm assembly for varying said control pressure in proportion to said throttle position related pressure, a spring biasing said valve mechanism to maintain said control pressure offset from said throttle position related pressure, and a pressure responsive member connected to said spring and responsive to said speed related pressure for increasing the bias to thereby increase the offset of said control pressure as engine speed increases.

4,387,694

EGR CONTROL SYSTEM FOR DIESEL ENGINE

Yasutaka Yoshiba, Chiba, and Masaji Shiobara, Chigasaki, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 11, 1981, Ser. No. 262,788
Claims priority, application Japan, May 12, 1980, 55-61676
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **12 Claims**



1. An EGR control system for a diesel engine having an intake passageway and an exhaust passageway, comprising:

means defining an EGR passageway interconnecting the intake and exhaust passageways to recirculate engine exhaust gas therethrough back to the engine;

an EGR control valve operatively disposed in said EGR passageway to control the flow of the recirculated exhaust gas passing through said EGR passageway, said EGR control valve including a first diaphragm actuator having a diaphragm member which defines a vacuum operating chamber, and a valve head connected to said diaphragm member and disposed in the EGR passageway so that said EGR passageway is closable with said valve head in response to the movement of said diaphragm member;

a throttle valve pivotally disposed within the intake passageway;

means for detecting at least one of engine speed, engine load and engine coolant temperature to generate at least a signal dependent thereon, said deteeting means including at least one of an engine speed sensor for sensing engine speed of the engine, an engine load sensor for sensing engine load of the engine, and an engine coolant temperature sensor for sensing the temperature of engine coolant of the engine, said sensors generating respective information signals representative of an engine operating condition;

means for controlling the operation of said EGR control valve in response to the signal from said detecting means so as to control the amount of the recirculated exhaust gas in accordance with engine operating conditions, said EGR control valve operation controlling means including a modulator electrically connected to at least one of said engine speed sensor, said engine load sensor, and said engine coolant temperature sensor, said modulator being constructed and arranged to generate at least a command signal in response to at least one of said information signals supplied thereto, and a first electromagnetic valve electrically connected to said modulator to control vacuum supply to the vacuum operating chamber of said first diaphragm actuator in response to said command signal; and

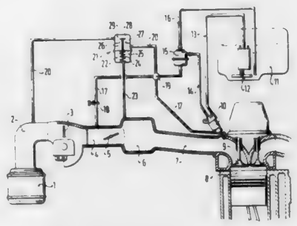
means for controlling the operation of said throttle valve in response to the signals from said detecting means, said throttle valve operation controlling means including a second diaphragm actuator having a diaphragm member which defines a vacuum operating chamber, said throttle valve being connected to said diaphragm member, and a second electromagnetic valve electrically connected to said modulator to control vacuum supply to the vacuum operating chamber of said second diaphragm actuator in response to said command signal.

4,387,695

FUEL INJECTION APPARATUS

Rainer Höppel, Stuttgart, and Heinrich Knapp, Leonberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,125
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1980, 3033644
Int. Cl.³ F02B *3/00*; F02M *23/04*
U.S. Cl. 123—585 **2 Claims**



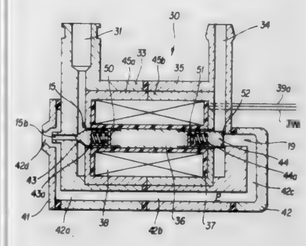
1. A fuel injection system for mixture-compressing internal combustion engines with externally supplied ignition, said system having an intake tube in which a flow rate meter and an arbitrarily actuatable throttle device are disposed in sequence and the flow rate meter is moved counter to a restoring force in accordance with the quantity of air flowing therethrough further wherein said flow rate meter influences the quantity of the fuel to be injected at least through one injection valve into the intake tube, further wherein said system includes an air preparation line which branches off from said intake tube section between the flow rate meter and the throttle device and leads to the injection valve, said injection valve arranged to effect preparation of said fuel by means of the air delivered downstream of the valve seat of the injection valve, characterized in that said air preparation line includes a throttle restriction and further that a full-load air line is arranged to discharge into said air preparation line between said throttle restriction and said injection valve, further wherein said full-load air line branches off from said intake tube section upstream of said flow rate meter said last named line further including a blocking valve provided with a movable valve member which is controllable in accordance with the intake tube pressure downstream of said throttle device.

4,387,696

ELECTROMAGNETICALLY CONTROLLED FUEL INJECTION SYSTEM

Kenji Yogo, Nagoya, and Isshi Nomura, Aichi, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 9, 1982, Ser. No. 356,404
Claims priority, application Japan, Mar. 9, 1981, 56-33526
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—585 **4 Claims**



1. An electromagnetically controlled fuel injection system, comprising:

means for sensing a plurality of operating conditions of a combustion engine and for generating a plurality of electric signals corresponding to said conditions;

an electrical control unit receiving said first electric signals to thereby generate a second electric signal in response thereto;

electromagnetically controlled fuel injection valve means controlled by said second signal from said electrical control unit and having a fuel injection port; and

electromagnetically controlled air supply valve means provided with an air supply port around said fuel injection port of said fuel injection valve means and controlled by said second signal from said electric control unit.

4,387,697

ARROW POINT PULLER AND BOW STABILIZER

J. Douglas Duke, 7010 Ficken Rd., Cedar Hill, Mo. 63016

Filed Nov. 28, 1980, Ser. No. 211,240
Int. Cl.³ B23P *19/04*
U.S. Cl. 124—89 **9 Claims**

1. An arrow point puller and stabilizer device for use in extracting arrow points embedded in objects comprising an elongated shaft member having spaced first and second opposite end portions, means attached to the first end portion of the shaft member forming an outwardly extending anvil portion adjacent thereto, means adjacent the second shaft end portion for attaching to an arrow point, and other means including a hammer member of relatively compact construction to form a weight releasably attached adjacent to said second shaft end portion in spaced opposed relation on the shaft member from the anvil portion, said hammer member having spaced opposed end surfaces and between the end surfaces a bore therethrough for slideably receiving the shaft member, the end surfaces of the hammer member being spaced apart substantially less than the first and second end portions of the shaft member, said hammer member having means thereon for detachably connecting the hammer member to the shaft member adjacent to the second end portion thereof, said hammer member being



detachable from the second shaft end portion and thereafter being slideably positioned on the shaft member so that the hammer member can be slideably movable along the shaft member for engagement with the anvil surface whereby a portion of one of the opposed end surfaces of the hammer member can be controllably impacted against the anvil portion to apply force longitudinally of the shaft member and in a direction to extract the arrow point from its embedded position, said shaft member being substantially longer than the hammer member so that a substantial portion of the shaft member is exposed in all positions of the hammer member thereon.

4,387,698

SLURRY SAW BLADE HEAD ASSEMBLY

Samir T. Bustany, Morris Township, Morris County, N.J., assignor to Allied Corporation, Morris Township, N.J.

Continuation of Ser. No. 67,571, Aug. 17, 1979, abandoned. This application Mar. 20, 1981, Ser. No. 245,774
Int. Cl.³ B28D *1/06*
U.S. Cl. 125—18 **13 Claims**



1. A blade head assembly for a slurry saw for slicing hard bodies of crystalline material comprising a plurality of elongated thin blades in spaced parallel relationship characterized in that the blades are non-sharpened, have a thickness of from about 0.02 to 0.14 mm, and are of a metal which is at least about 50 percent amorphous.

4,387,699

SPACE HEATING STOVE

Charles J. Murch, Jr., Box 77, Franklin, Me. 04634

Filed May 6, 1981, Ser. No. 261,046
Int. Cl.³ F24C *1/14*
U.S. Cl. 126—61 **12 Claims**

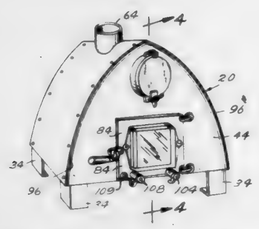
1. A space heating stove, comprising:

a combustion chamber defined by a floor, a pair of opposed end walls projecting upwardly from said floor, and a pair of opposed side walls projecting upwardly from said floor and in cooperation with said end walls to enclose said chamber;

said floor, said end walls and said side walls formed by heat resistant and heat insulating ceramic material;

means in operative relationship with said floor and said walls for supporting said floor and said walls;

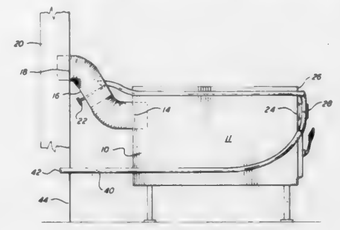
each of said end walls defining a first opening therein, and a perforated, heat and oxidation resistant, cylindrical member extending through said combustion chamber and positioned within said openings;
a front plate member projecting upwardly from said support means and in spaced apart relationship with respect to a front one of said end walls;
a rear plate member projecting upwardly from said support means and in spaced apart relationship with respect to a rear one of said end walls;
a front baffle member located adjacent to said front end wall between said front end wall and said front plate member and projecting beyond an upper edge of said front end wall along said upper edge to a predetermined location above said support means;
a rear baffle member located adjacent to said rear end wall between said rear end wall and said rear plate member and projecting beyond an upper edge of said rear end wall along said upper edge to a predetermined location above said support means;



first and second plate members positioned in contacting relationship with said front and rear plate members and with said front and rear baffle members and in spaced apart relationship from said side walls;
an exhaust port attached to said first and second plate members and in fluid communication with said combustion chamber;
a shroud attached to and in spaced apart relationship from said first, second and rear plate members;
said front end wall further defining a second opening for enabling loading of fuel into said combustion chamber, wherein said front plate member also defines an additional opening in substantial alignment with said second opening, and further including panel members connecting said second opening and said additional opening to form a passage for receiving fuel into said combustion chamber; and
a door hinged to said front plate member for closing said second opening and said passage.

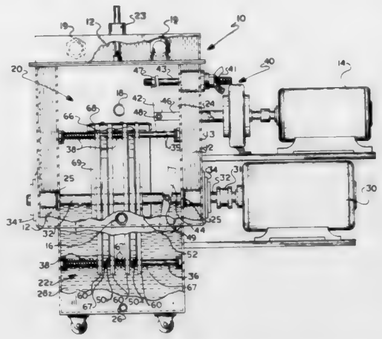
4,387,700
WOODSTOVE HAVING EXHAUST FLOW COMPENSATION AND A METHOD FOR PROVIDING SAME
Merritt J. Eggleston, Sears Hill Rd., Richford, N.Y. 13835
Filed May 21, 1981, Ser. No. 265,852
Int. Cl.³ F24C *1/14*
U.S. Cl. 126—77 **6 Claims**

1. Apparatus for compensatory control of air flow to a wood stove having a combustion chamber, at least one inlet port for admitting air from a main source therefor into said combustion chamber, an exit port for exhausting the byproducts of combustion therefrom, a chimney and an exhaust pipe coupling said exit port to said chimney, said apparatus comprising:
(a) conduit means for heating and conveying auxiliary air, positioned in contact with the stove, connected between a source of auxiliary air and said chimney, for exhausting heated auxiliary air into said chimney; and
(b) damper means, for controlling the flow of air into the stove and within said conduit means, having first and second ganged sections, mounted in movable relationship within said conduit means and to said inlet port, with said first section positioned to slide in front of said inlet port and said second section positioned to slide within said conduit means, said first and second sections each having an aperture portion and a blocking portion, said blocking portion of said first section being positioned in said



damper means to block said inlet port at the same time that said aperture portion of said second section permits the flow of auxiliary air within said conduit means and section blocking portion of said second section being positioned in said damper means to block the flow of air in said conduit means at the same time that said aperture portion of the first section permits the flow of air into said combustion chamber through said inlet port.

4,387,701
FLUID FRICTION FURNACE
Edwin E. Gibbons, R.D. #3, Beech St., Newton Falls, Ohio 44444
Filed Feb. 11, 1980, Ser. No. 120,365
Int. Cl.³ F24C *5/00*
U.S. Cl. 126—247 **10 Claims**



1. An apparatus for the generation of heat, comprising:
(a) an enclosed container assembly having side walls;
(b) a rotatable shaft mounted through said side walls of said container assembly;
(c) an upper stationary shaft and a lower stationary shaft extending within said container assembly between two said side walls;
(d) a plurality of stationary plates having a recess about said rotatable shaft and slidably engaged to both said stationary shafts;
(e) a plurality of rotating discs having radial surfaces and interspaced in proximity to said stationary plates, each said rotating disc slidably engaged to and rotatable with said rotatable shaft and having a plurality of fluid induction grooves on said radial surfaces;

(f) pressure means for placing said stationary plates near to said rotating discs, both said stationary shafts having tension means for restraining said slidable engagement of said stationary plates on both said stationary shafts;
(g) a volume of heat transfer fluid in communication with the lower extremities of said stationary plates and said rotating discs and inducible into said fluid induction grooves of said rotating discs and from said grooves in frictional, pressured communication between said discs and said plates, and wherein each said disc is separated from adjacent said plates at a distance from about 0.001 to about 0.010 inch; and
(h) a deflection plate mounted on the outer perimeter of all said stationary plates.

6. A method for the production of heat, comprising:
(a) tensionally placing a plurality of rotating discs within 0.001 to about 0.010 inch to a plurality of stationary plates interspaced therewith, each said stationary plate having a deflection plate mounted on the outer perimeter thereof, each said rotating disc having radial surfaces and slidably secured to a rotating shaft rotatably secured to an enclosed container, and each said rotating disc having a plurality of fluid induction grooves on said radial surfaces;
(b) rotating said shaft and all said rotating discs, the lower extremities of said rotating discs in a pool of heat transfer fluid in said enclosed container;
(c) inducing said heat transfer fluid into said fluid induction grooves in said rotating discs tensionally proximal with said stationary plates;
(d) forcing said fluid from between said rotating discs and said stationary plates along said radial surfaces in a pressured, frictional manner during said rotation of said rotating discs; and
(e) transferring the heat from said heat transfer fluid to said container.

4,387,702
SOLAR TRACKING SYSTEM
Jack P. Murphy, deceased, late of Huntington Beach, Calif. (by James P. Murphy, administrator), and Steven D. Kimmell, Granada Hills, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Mar. 16, 1981, Ser. No. 244,515
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—424 **5 Claims**



1. A tracking device comprising a fixed support; means for directing the sun's rays movably attached to the fixed support; means for applying a force to tend to move the means for directing the sun's rays; and means responsive to heat produced by the sun's rays for braking and releasing the means for directing the sun's rays, including a heat conductive bar coupled to the means for directing the sun's rays, a heat sensitive coil wrapped tightly around and in thermal contact with the bar and fixed to preclude movement of the bar in the normal ambient temperature range of operation of the tracking device, the coil being adapted to permit movement of the bar when the coil is heated, and means for applying heat to the coil.

4,387,703
SOLAR HEATING DEVICE
Lee H. Poole, 34 North St., Washingtonville, N.Y. 10992
Filed May 13, 1981, Ser. No. 263,201
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **3 Claims**



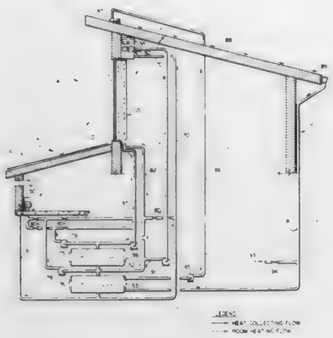
1. A solar collector for directly heating the air going to a building comprised of frame means including side and bottom walls for enclosing the collector along those wall areas, said bottom wall including means defining two spaced apart openings adjacent one end for allowing air to respectively enter and exit the collector, a first insulation layer engaging the interior of said bottom wall and provided with means defining two spaced apart openings in alignment with each of the openings in the bottom wall, a second insulation layer positioned on said first insulation layer having means defining two spaced apart openings at one end in alignment with each of the openings in said first insulation layer, one of said openings aligned with the entrance opening being enlarged to form a gradually enlarging area extending along the length and width of said second insulation layer so that the opening extends to and substantially across the width of the opposite end thereof, a third insulating layer covering said second insulating layer and having first means at one end defining an opening aligned with the exit opening and second means at the opposite end defining a slit type opening extending substantially across the width of said opposite end, a permeable adsorber layer positioned above said third insulation layer, a transparent cover layer extending across said collector and sealed to said side walls, and mounting means positioned about the exterior of the entrance and exit openings for connecting said collector directly to the atmosphere in the building, said mounting means including air circulation means for circulating air from the building through the collector and back to the building.

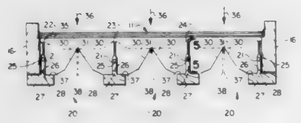
4,387,704

MULTI-MODE SOLAR HEAT RECOVERY DEVICE

Carl S. Minden, 314 Federal Heights Cir., Salt Lake City, Utah 84103

Filed Jul. 6, 1981, Ser. No. 280,777
Int. Cl.[3] F24J 3/02
U.S. Cl. 126—435 21 Claims





1. A multi-mode solar heat recovery device for use at an interior surface of a window whose opening permits high transmittance of sunlight while otherwise providing an effective weather barrier, said device including a radiant heat collector, comprising:

a. at least one heat conductive plate adapted at one edge for fixation near said window, said plate being positioned such that its principal surface would be substantially perpendicular to said window, at least a portion of said surface being adapted with means to provide a high degree of heat absorbtion when exposed to sunlight;

b. at least one heat conductive tube in thermal contact with said plate, said tube being adapted with means for receiving a fluid therein for removing heat from said plate and with means for fluid conveyance to a point of heat utilization;

c. a light reflective surface having a variable orientation with respect to and an exposure toward the treated surface of said plate and including means at one edge thereof for pivotal mounting at an axis whose orientation is substantially parallel to and is displaced from said treated surface; and

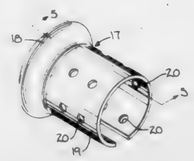
d. said light reflective surface, including means for adjustment (i) from a closed position wherein said device is adapted for placement of the reflective surface approximately parallel to said window opening, thereby shielding said treated surface from exposure to sunlight and reflecting substantially all transmitted light back through the window opening, (ii) through an intermediate position wherein the reflective surface is adapted for diagonal placement with respect to said window for reflection of the transmitted light toward the heat conductive plate, (iii) to a fully open position wherein the reflective surface is adapted for substantial perpendicular orientation to said window opening, providing for relatively unobstructed transmittance of said light.

4,387,705

PENILE IMPLANT

Roy P. Finney, Tampa, Fla., assignor to Medical Engineering Corporation, Racine, Wis.

Continuation-in-part of Ser. No. 169,174, Jul. 15, 1980. This application Dec. 9, 1981, Ser. No. 328,826
Int. Cl.[3] A61B 19/00; A61F 5/00
U.S. Cl. 128—1 R 5 Claims



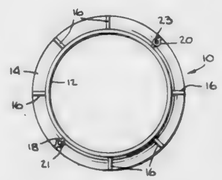
1. A penile implant comprising an implant of biocompatible material including a ring with a generally D-shaped cross section with the belly of the D extending outwardly and an anchoring sleeve connected to the ring, said ring and sleeve being shaped and sized to be positioned circumferentially about a penis and implanted beneath the penile skin to provide a circumferential outwardly extending protuberance which assists in retaining a urinary collection device upon said penis.

4,387,706

IRIS RETRACTOR

Robert M. Glass, 1173 Staffler Rd., Bridgewater, N.J. 08807

Filed Apr. 10, 1981, Ser. No. 252,951
Int. Cl.[3] A61B 17/02
U.S. Cl. 128—20 6 Claims



1. An iris retractor for use during eye surgery, comprising:

a substantially circular, resilient ring, said ring having an arcuate flange co-extensive therewith extending outwardly therefrom;

a plurality of transverse, reinforcing struts extending from said ring across said arcuate flange; and

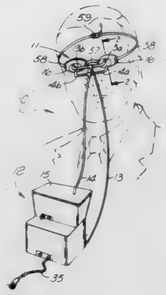
a pair of opposing pinions situated on the flange of the substantially circular, resilient ring and co-linear with the center of said ring, wherein said retractor, prior to being placed within the pupil, may be contracted into a substantially oval configuration by means of suitable forceps engaging said opposing pinions, and wherein said retractor, when placed within the pupil, may be expanded back into its circular configuration by means of the resiliency within said retractor.

4,387,707

EYE TREATMENT DEVICE AND METHOD

Lawrence A. Polikoff, 2831 Medill Pl., Los Angeles, Calif. 90064

Filed May 14, 1981, Ser. No. 263,852
Int. Cl.[3] A61H 1/02
U.S. Cl. 128—25 A 9 Claims



1. An eye treatment device comprising:

a unit to be placed against the eye and forming a chamber containing a liquid under pressure;

said chamber having a flexible wall exposed at one side to the pressure of said liquid and whose opposite side is adapted to be received adjacent the eye and to communicate the pressure of said liquid thereto; and

means for applying to said liquid in the chamber a pressure which fluctuates to exert a fluctuating massaging force to the eye through said flexible wall;

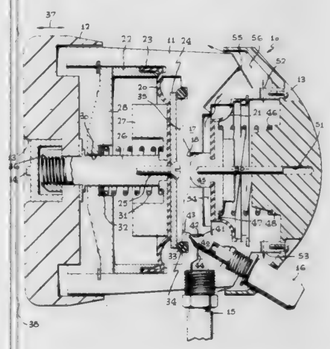
said flexible wall being constructed and adapted, when said opposite side thereof is placed against the eye, to assume a concave curvature at said opposite side conforming to the eye to apply said massaging force over a substantial area of the eye.

4,387,708

PNEUMATIC PERCUSSOR

James E. P. Davis, 2510-8 Arizona Ave., Santa Monica, Calif. 90404

Filed May 18, 1981, Ser. No. 264,970
Int. Cl.[3] A61H 1/00
U.S. Cl. 128—55 7 Claims



1. A pneumatic percussive apparatus comprising the combination of:

a cylindrical body having a central bore;

a front and a rear diaphragm means coaxially disposed in said body central bore;

a partition disposed between said diaphragm means across said body central bore defining a pressure chamber and a relief chamber between its opposite sides or faces and an associated one of said diaphragm means;

means for pressuring said pressure chamber with a compressed gas so as to actuate said first diaphragm means;

valve means operably carried by said rear diaphragm means in cooperation with said body partition to relieve excessive pressure in said pressure chamber via said relief chamber by venting to atmosphere;

a weighted applicator pad secured to said front diaphragm means for imparting oscillatory impacting force via said partition and ultimately to a patient in response to cyclic changes of pressure in said pressure chamber;

said front diaphragm means includes a hammer carried on one side of said front diaphragm means and a front plate carried on the other side of said front diaphragm means;

an impact resilient ring carried on said partition;

an impact spring operably coupled to said first diaphragm means for urging said front diaphragm means including said hammer against said impact ring;

spring biasing means yieldably urging said valve means via said rear diaphragm means to close communication between said pressure chamber and said relief chamber;

a dome shaped, hand fitting cover carried on said body for covering said rear diaphragm means and said valve means; and

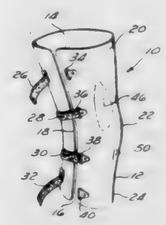
silencing vent means in fluid communication with said relief chamber through said rear cover.

4,387,709

KNEE BRACE

C. Anthony Shen, 13800 Arizona St., Suite 101, Westminster, Calif. 92683

Filed Jul. 13, 1981, Ser. No. 282,432
Int. Cl.[3] A61F 5/04
U.S. Cl. 128—87 R 6 Claims



1. A device for immobilizing an individual's knee comprising:

an open-ended integral body formed into a substantially cylindrical tubular shell of semi-rigid material to provide substantial structural strength and secure immobilization, said shell having thigh, knee, and calf portions shaped to cover an individual's lower thigh, knee, and upper calf, respectively;

said body having a narrow longitudinal opening extending the length of said shell for permitting said shell to be slipped on and off the individual;

said tubular shell, at said thigh and calf portions including indentations which provide flat areas to prevent rotation of an individual's leg within the device; and

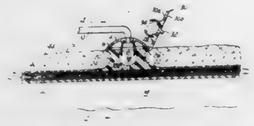
said thigh portion extending at a sufficient angle from the calf portion to produce ligament relaxation of the individual's knee in a flexed position.

4,387,710

VENTILATED CAST STRUCTURE AND METHOD OF PRODUCING THE SAME

John C. Beatty, III, 2755 Parkridge Dr., Ann Arbor, Mich. 48103

Filed Sep. 21, 1981, Ser. No. 304,151
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—91 R **12 Claims**



1. A structural assembly providing a flow path for temperature and humidity controlled gas between a body member and a cast located thereon to effect ventilation therebetween, comprising a first relatively thick porous layer supported by a body member and providing a plurality of uninterrupted flow paths for randomly distributing gas flowing between said member and a cast located thereon, a second porous layer immediately adjacent said first layer providing a barrier against ingress of cast material during molding of said material to the body member; a passaged socket member adapted to be located in contact with said first and second porous layers for directing temperature and humidity controlled gas from a source through said first porous layer to effect ventilation between said body member and said cast; and a cover member adapted to be seated upon said socket member for directing gas from a source through said socket member and through said first porous layer at controlled temperature and humidity.

4,387,711

MEDICAL DEVICE WITH INFLATABLE CUFF

Jack D. Merry, Queensbury, N.Y., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Jan. 27, 1981, Ser. No. 228,978
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—207.15 **1 Claim**



1. A medical device comprising:
(a) an elongated tube;
(b) an inflatable cuff surrounding said tube, said cuff being inflatable by air supplied thereto to engage the wall of a body cavity; said cuff being formed of polyvinylidene chloride-polyvinyl chloride copolymer.

4,387,712

SURGICAL COLLECTION BAGS

Peter J. Briggs, Sompting, and Steven Carpenter, Chichester, both of England, assignors to Matburn (Holdings) Limited, London, England

Filed Jul. 16, 1979, Ser. No. 57,700
Claims priority, application United Kingdom, Jul. 19, 1978, 30349/78; Nov. 16, 1978, 44769/78
Int. Cl.³ A61F *5/44*
U.S. Cl. 604—333 **4 Claims**

1. A surgical collection bag having two opposed walls secured together at their perimeter, one of said walls having a first opening in the surface thereof to provided an inlet into said bag, a second opening in said one of said walls spaced above said first opening to provide a vent for the passage of gases to the environment, a weld positioned between said first and second openings and connecting together said opposed walls to provide a seal interposed between said first and second openings, said seal having at least two spaced openings therein of preselected length to substantially prevent the passage of solid and liquid material therethrough, and a deodorizing filter



covering said vent said opposed walls being secured together by a perimeter weld, a first internal weld extends across the bag between the inlet and the vent to secure the opposed walls together, the said first weld having ends spaced from the perimeter weld to provide at each end of the weld a gateway through which gases may pass, further internal welds running from the first internal weld towards the perimeter weld with the vent between them, the said further welds having ends spaced from the perimeter weld to provide additional gateways through which gases may pass before reaching the vent.

4,387,713

DISPOSABLE DISCHARGE COLLECTOR FOR A DRAINABLE STOMA POUCH WITH WIPER

John R. Calanni, 413 S. Diamond St., Ravenna, Ohio 44266

Filed Jul. 17, 1981, Ser. No. 284,409
Int. Cl.³ A61F *5/44*
U.S. Cl. 604—333 **10 Claims**



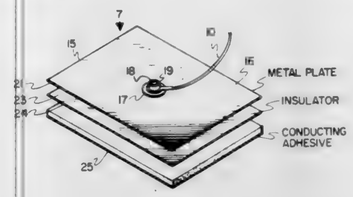
1. A disposable discharge collector for a stoma pouch having a drain opening therein, comprising:
bag body means for receiving the discharge from the stoma pouch and permitting the sanitary disposal thereof, said bag body means having flexible walls and an opening therein suitable to receive the drain opening end of the stoma pouch,
locking means adjacent said bag body opening for providing a liquid-tight closure of said bag body, and
wiper means in fixed, proximate spatial relation to said locking means for forcing with a continuous manual stroke over the stoma pouch substantially all discharge in the stoma pouch into the discharge collector without spillage.

4,387,714

ELECTROSURGICAL DISPERSIVE ELECTRODE

Leslie A. Geddes; Joe D. Bourland, both of West Lafayette, and John A. Pearce, Battleground, all of Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed May 13, 1981, Ser. No. 263,212
Int. Cl.³ A61B *17/39*
U.S. Cl. 128—303.13 **4 Claims**



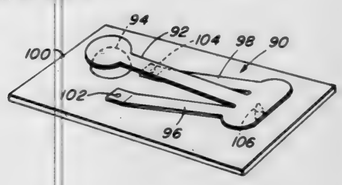
1. A hybrid capacitively-conductively coupled dispersive electrode, comprising:
an electrically conductive element adapted to be electrically connected with an electrosurgical unit capable of providing a therapeutic signal to a patient, said conductive element having an inner portion;
an insulating element having inner and outer portions with said outer portion of said insulating element engaging and covering said inner portion of said conductive element to prevent ohmic contact of said inner portion of said conductive element with the skin of a patient during normal use of said electrode; and
an electrically conductive adhesive having inner and outer portions with said outer portion of said adhesive engaging said inner portion of said insulating element and said inner portion of said adhesive being formed so as to be engageable with the skin of a patient receiving said therapeutic signals from said electrosurgical unit to effectively enable uniform contact of said skin with said conductive adhesive to provide electrolytic communication through the skin to the patient and to establish capacitive-coupling between said conductive element and said conductive adhesive when said inner portion of said adhesive is engaged with said skin with said established capacitive-conductive coupling providing low impedance while retaining the uniform temperature distribution of capacitively-coupled electrodes.

4,387,715

SHUNT VALVE

Salomon Hakim, Bogota, Colombia, and Carlos A. Hakim, Fort Lauderdale, Fla., assignors to Hakim Company Limited, Saint Vincent, British West Indies

Continuation-in-part of Ser. No. 190,018, Sep. 23, 1980, Pat. No. 4,332,255, which is a continuation-in-part of Ser. No. 2,354, Jan. 10, 1979, abandoned. This application Apr. 28, 1982, Ser. No. 372,813
Int. Cl.³ A61M *27/00*
U.S. Cl. 604—9 **9 Claims**



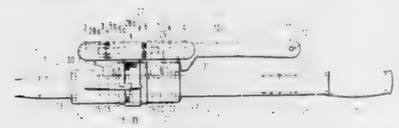
1. In a surgically implantable shunt system in which cerebrospinal fluid is vented from a cerebroventricular catheter to a drainage catheter, a valve for presenting a precisely controllable back pressure to the ventricles, said valve comprising:
an elongate, hollow valve body;
a flat plate partitioning said valve body so as to form an inlet chamber and an outlet chamber, said ventricular catheter being coupled to said inlet chamber and said drainage catheter being coupled to said outlet chamber, said plate being provided with a circular aperture connecting said inlet and outlet chambers;
a spherical ball of diameter larger than said aperture for controllably restricting flow through said aperture;
a spring including a cantilevered flat portion overlying said ball and biasing it against the circular periphery of said aperture whereby a circular seal is selectively effected between said ball and said plate, providing a precisely defined back pressure with low hysteresis and low susceptibility to bridging by debris;
wherein said spring comprises a central portion extending from a rear end thereof and adapted for overlying said ball and a pair of arms flanking said central portion and extending from said rear end, the ends of said arms adapted for attachment to said flat plate.

4,387,716

APPARATUS FOR USE IN LIVESTOCK OBSTETRICS

Georg Uhlmann, Koblenz, Fed. Rep. of Germany, assignor to Rheintechnik, Weiland & Kaspar KG, Neunkirchen, Fed. Rep. of Germany

Filed Apr. 16, 1981, Ser. No. 254,623
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014301
Int. Cl.³ A61D *1/08*
U.S. Cl. 128—352 **8 Claims**



1. An apparatus for use in livestock obstetrics, comprising: means adapted to bear against the body of the dam, and comprising a rod, two slides on the rod with means for alternately displacing and locking the slides along the rod, said slides having means for progressive tensioning of a sling for the offspring, a tensioning lever hinged to one slide, a two part intermediate lever having one part hinged to the tensioning lever at a location different than said one slide, the other part of the intermediate lever being hinged to the other slide, and resilient means actuated by said tensioning lever for allowing the parts of the intermediate lever to pull apart at a predetermined load, said tensioning lever being hinged to the slide that is remote from the dam when the apparatus is in use, and means actuatable by said tensioning lever for unlocking the slides from said rod, said tensioning lever becoming ineffective at said predetermined load and being thereupon able to actuate said resilient means, said resilient means being adjustable to a desired load and providing a force against which the two parts of said intermediate lever can be pulled apart.

4,387,717

PACER INTERNAL CARDIAC ELECTROGRAM SENSING SYSTEM

Robert R. Brownlee, State College; Howard C. Hughes, Jr., Cornwall; Paul H. Neff, Bellefonte, all of Pa., and G. Frank O. Tyers, Vancouver, Canada, assignors to Research Corporation, New York, N.Y.

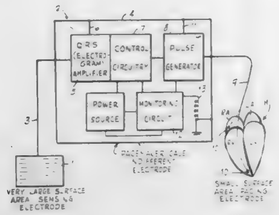
Filed Oct. 3, 1980, Ser. No. 193,746
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **10 Claims**

1. A system, usable with a pacemaker containing heart-

stimulating pacing circuitry including a QRS amplifier circuit, for sensing the cardiac electrical activity of a patient in whom the pacemaker is implanted to obtain an optimum cardiac electrogram signal and comprising:

casing means for housing said heart-stimulating pacing circuitry within the patient, at least a portion of the exterior of said casing means being electrically conditioned to act as an indifferent electrode;

pacing electrode means, implanted in the patient and operatively connected between said heart-stimulating pacing circuitry and the patient's heart, for conducting stimulating electrical pulses from said pacing circuitry to the heart; and



a sensing electrode means, operatively connected to said indifferent electrode and to said QRS amplifier circuit of the pacing circitry and implanted in the patient at a selected position relative to the heart and said indifferent electrode and spaced from said pacing electrode means, for sensing cardiac electrical signal vectors with ventricular and atrial depolarization signals of comparable magnitude with respect to each other as in the patient's cardiac electrogram and conducting the sensed signals to said QRS amplifier circuit with minimized cross coupling of said stimulating electrical pulses and after potentials from said pacing electrode means.

4,387,718

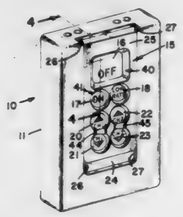
CONTROL COVER FOR NERVE STIMULATOR

Mark R. Bilitz, Minneapolis, and Dale A. Dickson, Fridley, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 30, 1981, Ser. No. 259,100

Int. Cl.³ A61N *1/00*

U.S. Cl. 128—419 R **10 Claims**



1. A tissue stimulator, comprising:

a housing adapted to be worn or carried by a user of the stimulator;

circuit means contained within said housing for producing output stimulating pulses;

user operated controls mounted to said housing and electrically connected to said circuit means for controlling the operating thereof; and

a control cover having apertures through which said controls may be accessed, and means for moveably connecting said cover to said housing with said apertures aligned with the positions of said controls when the control cover is in one position to permit access to the controls, and with the apertures out of alignment with the controls when the control cover is in a second position so that the cover blocks access thereto.

4,387,719

CONTROL CIRCUIT OF A THERAPEUTIC STIMULATOR FOR THE URINARY INCONTINENCE

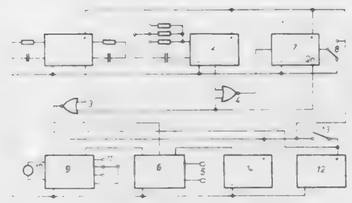
Stanislav Plevnik, Brezovica pri Ljubljani; Peter Vrtacnik, Kamnik; Matija Malezic, Ljubljana; Marino Lukezic, Portoroz; Uros Stanic, and Pavel Oblak, both of Ljubljana, all of Yugoslavia, assignors to Gorenje Tovarna Gospodinjske Opreme N.Sol.O. Velenje, Valenje, Yugoslavia

Filed Oct. 23, 1981, Ser. No. 314,455

Claims priority, application Yugoslavia, Oct. 23, 1980, 2725/80

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—421 **1 Claim**



1. Control circuit of a therapeutic stimulator for the urinary incontinence, characterized in that the output of the pulse generator (**1**) is connected to the first input of the NOR gate (**3**), the second input of which is connected to the output (Q_n) of the binary counter (**7**), the output thereof being connected to the input of the final stage (**6**) provided with stimulation electrodes (**5**), and that the output of the fundamental frequency generator (**2**) is connected to the first input of the NOR gate (**4**), the output thereof being connected to the input of the binary counter (**7**), the "reset" input of which is over the switch (**8**) connected to the positive or negative pole of the supply and the output (Q_n) being connected to the second input of the NOR gate (**4**).

4,387,720

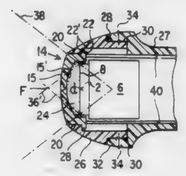
TRANSDUCER ACOUSTIC LENS

David G. Miller, Andover, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 29, 1980, Ser. No. 221,080

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—660 **5 Claims**



1. A transducer for use in transmitting acoustic signals into a body of a patient to be examined and translating reflections thereof into electrical signals, comprising

a base,

an array of crystals mounted on said base,

a metal shield covering the ends of the said crystals remote from said base and in electrical contact therewith,

a first lens element comprised of electrically insulating material having an acoustic impedance approximating that of the tissue under examination and an acoustic propagation velocity greater than that of the tissue under examination, said first element having a concave inner surface and an outer surface, said surfaces being shaped so that parallel rays approaching said inner surface are focussed on the other side of said outer surface,

means for mounting said first lens element with its concave inner surface facing said metal shield and on the side of said shield opposite said crystals, and

a second lens element comprised of electrically insulating material contained between the inner concave surface of said first lens element and said metal shield, said latter material having an acoustic impedance and propagation velocity approximating those of the tissue under examination.

4,387,721

ULTRASONIC PROBE HAVING MEANS FOR RECEIVING A PUNCTURING CANNULA THERETHROUGH

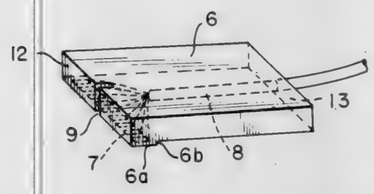
Susumu Enjoji, Ootawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 8, 1981, Ser. No. 252,239

Claims priority, application Japan, May 30, 1980, 55-71539

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—660 **4 Claims**



1. An ultrasonic probe for insertion substantially wholly into the human abdomen, and having means for receiving a puncturing cannula therethrough, the probe comprising:

a substantially rectangular parallelepiped-shaped support member, the height of said member being relatively much less than the length or width, thus forming top and bottom surfaces of the member of much larger area than any other surfaces;

a plurality of ultrasonic transducer elements arranged in at least one row in, and closely adjacent to one edge of, the bottom surface of the support member, said row extending substantially the length of said edge but being of relatively short width for occupying only a relatively small portion of said bottom surface;

cable means for individually connecting said transducer elements to an external processing unit; and

a narrow slot for guiding the puncturing cannula, said slot opening into a first face of said parallelepiped-shaped member perpendicular to said bottom surface and adjoining said row of transducer elements, said slot being centrally positioned relative to said row of transducer elements and permitting substantially no lateral movement of the cannula parallel to said row.

4,387,722

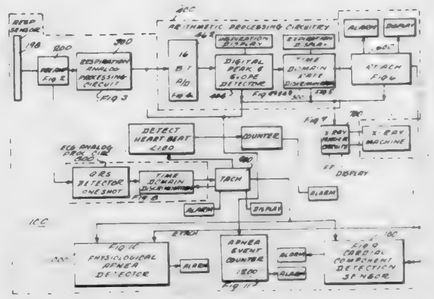
RESPIRATION MONITOR AND X-RAY TRIGGERING APPARATUS

Kenneth L. Kearns, 12822 N. 26th Dr., Phoenix, Ariz. 85029

Division of Ser. No. 963,352, Nov. 24, 1978, Pat. No. 4,289,142. This application Apr. 6, 1981, Ser. No. 251,713

Int. Cl.³ A61B *5/08*

U.S. Cl. 128—716 **8 Claims**



1. Apparatus for generating a triggering signal to an X-ray machine comprising:

operator actuated means for selectively generating an ARM signal indicative of a desired armed condition;

means for generating an analog respiration signal directly representative of the respiration of a subject;

means, responsive to said analog respiration signal, for periodically sampling said analog respiration signal and generating sample indicative of said samples;

amplitude discriminator means, responsive to said sample signal, for generating a signal indicative of the difference between the instantaneous sample and a mean sample, said mean sample being the last preceding sample differing from the preceding mean sample by a predetermined value;

means, cooperating with said amplitude discriminator means for generating a signal change signal indicative of a change in sign of said difference in a predetermined direction;

means for storing indicia of the modified value of the next successive sample occurring after generation of said sign change signal, the value of said next successive value being modified by said predetermined value;

time discriminator means, responsive to said sign change signal, for generating an extrema signal, said time discriminator means including means for inhibiting generation of said extrema signal in response to sign change signals within a prescribed time period after a preceding sign change signal, said first prescribed time period being in accordance with the maximum rate of physiological respiration of said subject;

means, responsive to said extrema signal, for generating a signal indicative of a second prescribed time period after generation of said extrema signal, said second prescribed period being in accordance with the inspiratory to expiratory action of said subject;

means, responsive to said sample signal and a signal indicative of said stored indicia of modified value, for generating an actuation signal when the value of the instantaneous sample approximately equals said modified value; and

logic means, responsive to said actuation signal, for selectively generating, if not inhibited, said triggering signal;

first inhibit means, responsive to said arm signal, for inhibiting said logic means with respect to any actuation signal generated in the absence of said desired armed condition; and

second inhibit means, responsive to said signal indicative of said second prescribed period, for inhibiting said logic

means with respect to any actuation signal generated during said second prescribed time period after generation of a preceding sign change signal.

4,387,723

METHOD AND APPARATUS FOR DETERMINING THE LEVEL OF NEUROMUSCULAR BLOCK IN A PATIENT

John L. Atlee, III, Deforest, Wis., and Maximillian D. Fiore, Livermore, Calif., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Dec. 9, 1980, Ser. No. 214,783
Int. Cl.³ A61B 5/05
U.S. Cl. 128—734 **14 Claims**



1. Apparatus for determining the level of neuromuscular blockage in a patient, comprising:

(a) stimulator means responsive to a control signal for supplying an electrical pulse to electrodes attachable to a patient in response to the control signal received by the stimulator means;

(b) force transducer means attachable to the thumb of a patient for measuring the adduction of the patient's thumb evoked in response to a stimulus applied by the electrodes, the force transducer means providing electrical output signals proportional to the magnitude of the thumb adduction;

(c) controller means for comparing the output of a signal from the force transducer means with a threshold value, selected to be greater than background noise and unstimulated, random thumb movements, to determine if a significant response is present and for providing a magnitude output signal indicative of whether the magnitude of the signal from the force transducer means is less than or greater than the selected threshold value, the controller means also providing a control signal to the stimulator means to initiate stimulation of the patient; and

(d) display means receiving the magnitude output signal from the controller means for providing a visual display to the operator in response to the magnitude output signal to indicate to the operator whether the magnitude of the transducer means output signal is less than or greater than the selected threshold value.

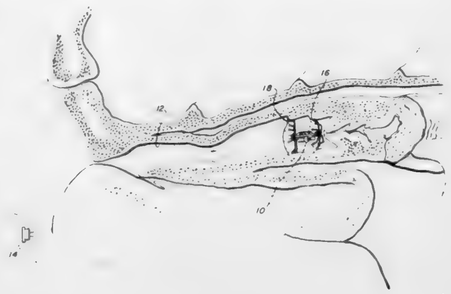
4,387,724

METHOD FOR REMOTELY MONITORING THE LONG TERM DEEP BODY TEMPERATURE IN FEMALE MAMMALS

David L. Zartman, Las Cruces, N. Mex., assignor to New Mexico State University Foundation, Inc., Las Cruces, N. Mex.

Filed May 12, 1980, Ser. No. 149,250
Int. Cl.³ A61B 10/00
U.S. Cl. 128—736 **5 Claims**

1. The improved method for detecting a feverish condition in mammalian females which comprises the steps of: attaching a battery powered radio telemetric temperature measuring device of a size adapted for insertion into the uterine canal to an expandable anchor of approximately the same size in collapsed condition as said telemetry device, collapsing the anchor and inserting it while thus collapsed along with the telemetry device attached thereto the vagina to a depth where the assembly thus formed lies adjacent the cervix, expanding the anchor "in situ", monitoring the temperature daily from a remote external location at approximately the same time each day for a period not less than approximately one complete estrous cycle, and comparing the temperature each day with



the average temperature over the immediately preceding approximately ten day period to detect any abrupt changes therein of a magnitude several tenths of a °C. higher than the deviation in temperature upon which said average temperature was determined.

4,387,725

DEVICE FOR USE IN THE COLLECTION AND TRANSPORTATION OF MEDICAL SPECIMENS

John D. Mull, 4088 Lakeshore Rd., E., Burlington, Ontario, Canada (L7L 1A1)

Filed Feb. 10, 1981, Ser. No. 233,273
Int. Cl.³ A61B 10/00; A12K 1/00
U.S. Cl. 128—759 **4 Claims**



1. A device for use in the collection and transportation of medical specimens comprising:

a receptacle in the form of an elongate transparent tube having a closed and an open end;

a swab comprising an elongate element having an absorbent pad at an outer end thereof, and a cap at its opposite end, the cap being adapted to be fitted to said tube so as to close said open end and the element being arranged to extend outwardly from the cap into the tube when the cap is in place on the tube;

a body of media material disposed in said tube adjacent the closed end thereof; and,

a penetrable septum positioned in the tube at a spacing from said closed end selected so that said media material substantially fills the space between the septum and said closed end, the swab being dimensioned so that its said outer end will penetrate the septum when the cap is in its said position closing the open end of the tube, whereby the absorbent pad with the specimen thereon will become immersed in the media material;

said septum comprising a sleeve retained inside said tube and defining an internal passageway and a diaphragm normally closing said passageway, said passageway being dimensioned to permit the swab to pass therethrough when the cap is moved to said position closing the open end of the tube, and said diaphragm being received in an internal annular recess in side sleeve defined at the side of

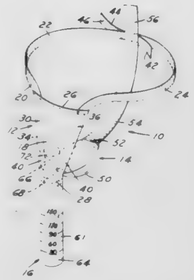
the diaphragm remote from the media material by an annular lip adapted to prevent dislodgement of the diaphragm in a direction away from the media material, and at the opposite side of the diaphragm by portions of the sleeve adapted to permit the diaphragm to be displaced from said recess by said swab in penetrating the septum.

4,387,726

DISPOSABLE URINE COLLECTION DEVICE FOR HUMAN MALES

Ruthie Denard, 74 Garfield, Detroit, Mich. 48201

Filed Jun. 18, 1981, Ser. No. 274,879
Int. Cl.³ A61F 5/44
U.S. Cl. 128—760 **11 Claims**



1. A disposable urine collection device for human males comprising:

(a) a combined pubic arch support and belt adapted to fit and to be worn around the waist and the lower part of the male abdomen and including an arch support for covering the pubic area and a belt, said arch support being in the form of a trapezoid, having upper and lower horizontal edge portions of varying lengths, with the longest length located at the upper edge portion of the support, said arch support including a pair of vertically extending and converging edge portions between said upper and lower horizontal edge portions, said belt including a pair of strands having end portions secured to said arch support and to said upper edge thereof, the other end portions of said strands including fastening means for removably securing the strands together around the waist of the user;

(b) a combined scrotal support and belt including an opened scrotal support having one edge secured to said arch support, said last mentioned belt being connected on one end to the opposite edge of said scrotal support and adapted to extend the buttock of the user, said last mentioned belt having on the other end thereof means for removably connecting same to said first mentioned belt;

(c) a urine collecting structure carried by, secured to and depending from said lower edge portion of said arch support, said structure including an inner container into which the penis is adapted to extend, the inner structure having a relatively small opening in the bottom thereof; said structure having an outer container into which said inner container extends, said outer container having a length greater than the length of said inner container whereby when the device is in use the urine discharged through the penis will drain through said small opening into said outer container which collects and stores same; the upper edge portion of said inner container being sealingly secured to the upper edge portion of said outer container to provide a fluid tight seal adjacent said arch support which prevents leakage of urine from said outer container;

(d) said inner and outer containers being in the form of cylinders, with the outer cylinder being closed and sealed through its entire extent and said inner cylinder being opened at the top and otherwise closed except for said small opening;

(e) the bottom of said inner container being provided with a flap valve which prevents reverse flow of the urine from the outer container into the inner container via said small opening;

(f) a first relatively thin adjustment disc having a center opening sleeved over the upper end portion of said inner cylinder to permit the length of said inner cylinder to be adjusted to fit the length of the penis, with the excess length of the inner cylinder at the upper end portion thereof being adjusted and folded upon itself in layers and held in an adjusted position by said first disc;

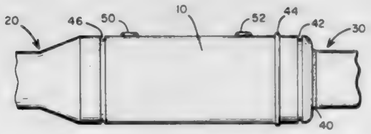
(g) and a second relatively thin disc having a center opening and adapted to be placed over the penis prior to the insertion of same into said inner cylinder to provide a cushion or pad for the scrotal area of the user to avoid contact with the folded upper end portion of said inner cylinder; said second disc overlying and contacting the folded upper end portion of said inner cylinder.

4,387,727

COAXIAL SERVICE KIT

Richard D. Sandstrom, Scandia, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 30, 1981, Ser. No. 248,735
Int. Cl.³ A61N 1/04
U.S. Cl. 128—784 **16 Claims**



1. Apparatus for splicing the cut end of a body implantable lead of the type comprising:

an outer insulating sheath having a cut end and a lumen open to said cut end;

an outer conductor coil having a cut end and a lumen open to said cut end, mounted within the lumen of said outer insulating sheath;

an inner insulating sheath having a cut end and a lumen open to said cut end, mounted within the lumen of said outer conductor coil; and

an inner conductor coil having a cut end and a lumen open to said cut end, mounted within the lumen of said inner insulating sheath;

said apparatus comprising:

a conducting pin for insertion into the lumen of said inner conductor coil;

insulating sleeve means located coaxial to said conducting pin for preventing said conducting pin from contacting said outer conductor coil;

first means for electrically coupling to said conducting pin; and

second means for electrically coupling to said outer conductor coil.

4,387,728

CIGARETTE FILTER

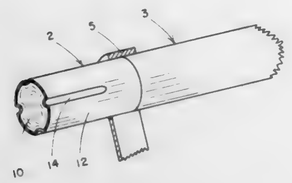
Martin L. Reynolds, and Robert R. Johnson, both of Louisville, Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Mar. 19, 1981, Ser. No. 245,428
Int. Cl.³ A24D 3/04, 3/18
U.S. Cl. 131—336 **5 Claims**

1. In a cigarette having a filter attached thereto wherein said filter and said cigarette are attached by a small strip of material,

comprising: said filter being a porous rod of cylindrical configuration;

a smoke impervious wrapper extending longitudinally along said rod from at least one end thereof and circumscribing said rod leaving flow-through opposed ends of said rod, said wrapper having a plurality of longitudinally extending grooves circumferentially spaced therearound embedded into the filter rod and that portion of the wrapper defining the grooves remaining smoke impervious, said



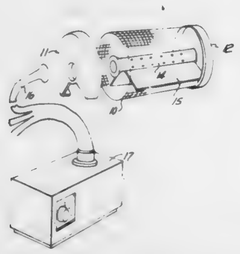
grooves being open ended at and extending from at least one of said ends a distance less than the length of the filter rod, the improvement being characterized in that for lowering the "tar" by ventilation the filter is connected with a cigarette or tobacco column only with said small strip of material, when attached to said filter, said strip has a width less than the distance between the groove and the tobacco column whereby said strip does not interfere with ventilating air flowing along said groove when in use.

4,387,729

EGYPTIAN HAIR DRYER

Lawrence H. Abdalla, P.O. Box 3078, Center Line, Mich. 48015

Filed Feb. 15, 1979, Ser. No. 12,572
Int. Cl.³ A45D *2/12*
U.S. Cl. 132—33 R **4 Claims**



1. A hair dryer and curler comprising an elongated perforated tube upon which a lock of hair may be wound;

first and second impervious caps, each having an annular flange snugly anchored over the ends of said tube;

said first cap having a central aperture adapted to snugly receive a pressurized heated air supply conduit;

an elongated air delivery tube at one end centrally secured to said second cap and closed thereby, coaxial to and spaced radially inward of said perforated tube, having an open end connected to said first cap in registry with its aperture, for receiving pressurized heated air;

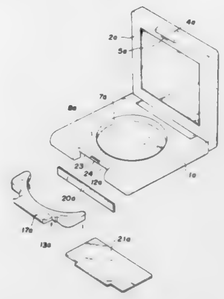
said air delivery tube having a plurality of apertures therethrough arranged in a pattern along its length over the top of said perforated tube, portending an arc in the range of 180 degrees to 270 degrees, whereby the heated air flows outwardly of the air delivery tube and said perforated tube away from the users scalp.

4,387,730

VANITY CASE

Yuji Shioi, Tokyo, Japan, assignor to Yoshida Industry Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1981, Ser. No. 290,968
Claims priority, application Japan, Mar. 23, 1981, 56-38911
Int. Cl.³ A45D *33/00*
U.S. Cl. 132—83 R **4 Claims**



1. A vanity case comprising:

a receptacle member for containing cosmetic material;

a cover member;

said receptacle and cover members being hinged together at respective rear ends thereof;

a latch tongue integrally and unitarily formed with one of said cover and receptacle members;

a recess formed in the other of said cover and receptacle members and extending therein from the front end thereof;

said recess being partially defined by an arc-shaped wall which is curved outwardly toward said front end;

a slider element slidably disposed in said recess and having a pair of arc-shaped arms and an outer end portion, said outer end portion being positioned closely adjacent to the front end of said one member when said cover member is in a closed position over said receptacle member, said outer end portion including means for, upon inward movement of said slider element, forcing said one member away from said other member;

said slider element having therein an inwardly extending cavity, said latch tongue of said one member being received in said cavity for engagement therewith when said slider element is in an outermost position thereof, and said latch tongue being moved out of said cavity by said inward movement of said slider element; and

a leaf spring provided between said arms of said slider element and bent by said arc-shaped wall for urging said slider element outwardly to normally hold the same in said outermost position.

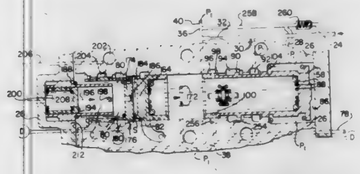
4,387,731

MODULATED TRANSMISSION WITH MODULATOR-LOAD-PISTON LOADING AT LINEAR RATE AFTER FULL RESET

Probir K. Chatterjea, Mt. Prospect, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 37,596, May 10, 1979, Pat. No. 4,311,068, which is a continuation-in-part of Ser. No. 890,002, Mar. 24, 1978, Pat. No. 4,216,851, which is a division of Ser. No. 693,469, Jun. 7, 1976, Pat. No. 4,135,610. This application Oct. 29, 1981, Ser. No. 316,005
Int. Cl.³ F16H *47/06;* **F16D** *33/06*
U.S. Cl. 137—115 **7 Claims**

1. In a rate of rise valve assembly (**26**) for applying clutch engagement pressure (**P1**) in the clutch-connected line (**24**) of a power shift transmission, said line extending upstream and downstream of a fill orifice (**32**) included therein for transmitting the clutch pressure (**P1**) on the downstream side, and susceptive of causing an unwanted substantial drop in clutch pressure (**P1**) upon a substantial increase in fill orifice flow, said assembly having a signal pressure chamber (**82**) spaced from a bore end (**86**) in said assembly, and a modulating valve (**58**) in said bore end (**86**) in said assembly connected to said line and having a load piston (**164**) movably mounted in said chamber in the space intermediate to said modulating valve, and operatively connected for loading the latter under load of signal pressure (**S**), and a rate of rise orifice (**186**) effective to communicate flow into the signal chamber (**82**) at a relatively reduced signal pressure (**S**) therein in response to an excess of



pressure being fed to the rate of rise orifice (**186**), said modulating valve operating under a modulating pressure and on the bleed hole principle to bleed off less and less pressure from said line into the bleed hole by controlled modulation so as to raise pressure more and more in said line, the improvement comprising:

means (**212**) of feeding-back clutch-pressure (**P1**) connected to the rate of rise orifice, for delivering clutch pressure as the excess pressure fed thereto and connected to the modulating valve as the operating pressure thereon modulated thereby; and

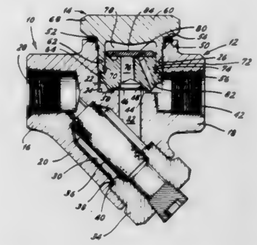
flow means (**28**) connecting said line (**24**) to the bleed hole (**254**) in a path including the modulating valve (**58**) to modulate the flow means and the pressure as accordingly modulated in said line.

4,387,732

STEAM TRAP INCLUDING INTERCHANGEABLE BODY MEMBER AND INSERT ASSEMBLY

Heinz K. Hetz, Holicong, Pa., assignor to YWHC, Inc., Wilmington, Del.

Division of Ser. No. 829,008, Aug. 30, 1977, Pat. No. 4,288,032, which is a continuation-in-part of Ser. No. 629,649, Nov. 6, 1975, abandoned. This application May 7, 1981, Ser. No. 261,089
Int. Cl.³ F16T *1/16*
U.S. Cl. 137—183 **7 Claims**



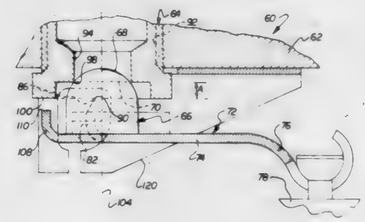
1. An insert assembly located to be utilized with a valve body member to form a steam trap, said insert assembly comprising an insert member and a bonnet member joined together to form a control chamber, one of said members including a threaded portion and a wrenching configuration for cooperation with a tool to effect threaded engagement between said threaded portion and a threaded portion on said valve body member; a first bearing surface formed on said insert member; a skirt depending from said insert member about and below said first bearing surface, a first sealing ring held by said depending skirt, a second bearing surface formed adjacent said wrenching configuration for seating on a second sealing ring carried on an outer surface of said valve body member, an inlet passageway formed in said insert member for communicating between said first bearing surface and said control chamber, an outlet passageway formed in said insert member for communicating between said control chamber and an outer surface thereof, and valve means carried in said control chamber for controlling flow.

4,387,733

DUAL FULCRUM STEAM TRAP

Les Balazs, Brecksville, and Michael E. Winiasz, Lorain, both of Ohio, assignors to The Clark Reliance Corp., Cleveland, Ohio

Filed May 19, 1981, Ser. No. 265,340
Int. Cl.³ F16T *1/30*
U.S. Cl. 137—185 **9 Claims**



1. A steam trap comprising a housing, a valve seat disposed in said housing and having a first circular orifice therethrough, a valve member having a hemispherical surface, said valve member being movable between a first position in which said hemispherical surface of said valve member sealingly engages said first orifice in said valve seat to block the flow of fluid through said first orifice and a second position in which said valve member is free of contact with said valve seat, said valve seat having a second circular orifice concentric with said first orifice and axially spaced therefrom, and said valve seat including pivot surface means integral with said valve seat and disposed in the diametrical plane of said hemispherical surface of said valve member which plane when said hemispherical surface of said valve member sealingly engages said first orifice passes through said second orifice, float means movable in response to changing condensate level, pivotable dual fulcrum lever means connecting said valve member and said float means for providing a relatively high mechanical advantage during initial movement of said valve member away from said valve seat and relatively lower mechanical advantage during subsequent movement of said valve member away from said valve seat, said dual fulcrum lever means including first fulcrum surface means for contacting said pivot surface of said valve seat during initial movement of said valve member away from said valve seat and second fulcrum surface means for contacting said pivot surface of said valve seat during movement of said valve member away from said valve seat subsequent to said initial movement.

4,387,734

APPARATUS AND METHOD FOR SPONTANEOUS MENISCUS GENERATION

Alexander S. Borsanyi, Corona del Mar, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jul. 16, 1981, Ser. No. 283,984
Int. Cl.³ A61M *5/14*
U.S. Cl. 137—206 **31 Claims**

1. An apparatus for converting a stream of fluid into a suc-

cession of discrete fluid segments with leading and trailing menisci, comprising a segment generator having a wall defining an elongated and downwardly-extending capillary passage having an inlet at one end and an outlet at the other end thereof, conduit means for conducting a generally continuous



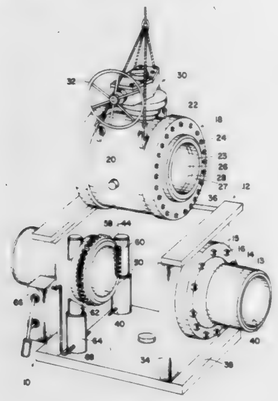
stream of fluid to said inlet, said wall of said generator having at least one longitudinally-extending slit therethrough, said slit having one end disposed adjacent said inlet for initiating the generation of fluid segments and extending along said capillary passage to said outlet, said capillary passage being provided with a non-wettable surface.

4,387,735

LINE REMOVABLE VALVE STRUCTURE WITH EXTENSIBLE SEAL RINGS ON PIPELINE SUPPORT STRUCTURE

Roger L. Ripert, Concord, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Feb. 16, 1982, Ser. No. 348,832
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—315 **7 Claims**



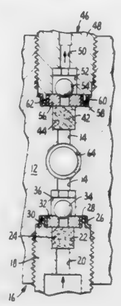
1. In a line-removable valve structure comprising:
a pipeline-support structure; and
a valve cartridge received in said structure;
said valve cartridge including:
a body containing a movable valve closure member and end closures with flow openings therein;
said support structure comprising:
a pair of opposing end plates with flow passageways therethrough;
means on the outboard sides of said end plates for connection thereof into a pipeline; and
rigid steel side members interconnecting said end plates;
means for sealing said valve cartridge between said end plates comprising:
a support structure seat ring carried on the inner surface of an end plate;
annular sealing means around the inwardly directed annular face of said seat ring;
an opposing sealing surface on one of said cartridge end closures around a flow opening;
complementary thread means on said seat ring and said end plate to move said seat ring along the axis of said flow passageway upon turning said seat ring through a rotational increment;
selectively operable means for producing said rotational increment of said seat ring, said selectively operable means including:
gear teeth at least partially around said seat ring; and
complementary gear teeth on said support structure for movement thereon so as to enable removal of said valve cartridge.

4,387,736

FLUID CONTROL APPARATUS

Emery Major, 1210 Brickyard Cove Rd., Point Richmond, Calif. 94801

Division of Ser. No. 91,726, Nov. 6, 1979. This application Oct. 26, 1981, Ser. No. 314,703
Int. Cl.³ F04B *11/00*
U.S. Cl. 137—550 **4 Claims**



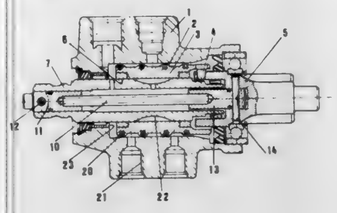
1. In fluid control apparatus including mounting means defining a throughbore therein and at least one check valve assembly mounted on said mounting means, said check valve assembly including a valve assembly body portion defining an interior, the improvement comprising:
an annular boss comprising a portion of at least one of said mounting means and said valve assembly body portion;
a resilient annular valve assembly seal positioned between said mounting means and said valve assembly body portion, said annular valve assembly seal having a central opening, an annular recess formed therein spaced from said central opening for receiving said annular boss and a radially outwardly projecting flange spaced outwardly from said annular recess and positioned between and in engagement with said mounting means and said check valve assembly body portion; and
a valve seat supported by said valve assembly seal and positioned within said central opening of said valve assembly seal, said valve seat defining a fluid flow passageway between said mounting means throughbore and said valve assembly body portion interior.

4,387,737

HYDRAULIC ASSISTED STEERING DEVICE FOR A MOTOR VEHICLE

André Tobiasz, Boulogne-Billancourt, France, assignor to Societe Anonyme DBA, Paris, France

Filed Jan. 12, 1981, Ser. No. 224,361
Int. Cl.³ B62D *5/08*
U.S. Cl. 137—625.21 **8 Claims**



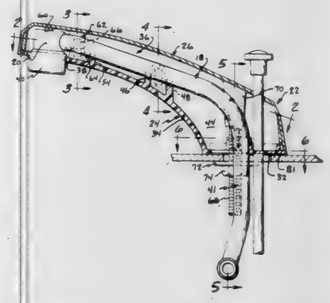
1. A hydraulic assisted steering device for a motor vehicle, of the type including a rotary distributor comprising a distribution sleeve extending from a steering control member, a rotor of generally tubular shape which is rotatably disposed within said sleeve, a torsion bar which is housed within said rotor and which has one end fixed to said rotor and the other end fixed to said steering control member, and a hydraulic circuit for producing a control value in response to an angular movement imparted to said rotor, characterized in that said torsion bar comprises an active portion of constant section made of high-resiliency steel and two end members made of ordinary steel, the ends of said active portion being respectively fixed in a blind bore formed in each of said end members and fixed thereto, said end members being respectively fixed with respect to said rotor and said steering control member.

4,387,738

SPREAD CENTER FAUCET

Rudy Y. Bisonaya, Oaklawn, and Gerald J. Farrell, Elmhurst, both of Ill., assignors to Elkay Manufacturing Company, Oak Brook, Ill.

Filed Mar. 30, 1981, Ser. No. 249,227
Int. Cl.³ E03C *1/02*
U.S. Cl. 137—801 **2 Claims**



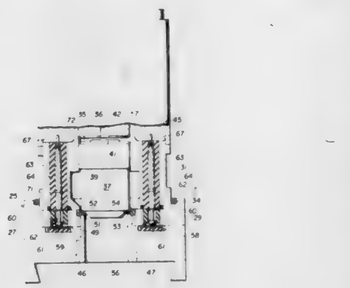
2. A spread center faucet for mounting on a sink between spaced hot and cold water valves, each having a supply conduit for connection to the faucet, said faucet comprising:
a continuous, curved spout tube having an inlet fitting at the end of a lower portion and a discharge head at the upper end of a terminal portion,
a hollow housing having a base member with a flat base section and an arched section leading therefrom to a discharge tip, and a spout cover removably secured to said base member by fasteners and defining with said base member an enclosed, elongated curved housing cavity extending from said flat base section to said discharge tip,
locking means within said cavity for securing and for orienting said spout tube in said housing cavity including means carried by said base member providing a longitudinally extending seat at an intermediate point of said spout tube,
a screw socket on said base member adjacent said seat,
a screw received in said socket for rigidly clamping said spout tube in said seat against longitudinal movement,
second means carried by said base member adjacent said opening in said discharge tip and defining a saddle for said spout tube aligning said discharge head with said discharge opening,
means including said cover for clamping said spout tube in said saddle,
means defining an opening in said flat base section receiving and limiting movement of said lower portion of said spout tube, and
said lower portion of said spout tube projecting from said flat base section of said base member for connection of said inlet fitting beneath said sink to said supply conduits.

4,387,739

VALVE MODULE FOR DIGITAL COOLANT CONTROL SYSTEM

Edward J. Schaming, P.O. Box 1070, Butler, Pa. 16001

Filed Sep. 22, 1981, Ser. No. 304,674
Int. Cl.³ B05B *1/16*
U.S. Cl. 137—884 **12 Claims**



1. In a valve module for a coolant system or the like, a head structure adapted for sealed attachment to a header, plural remotely controlled solenoid valves on the head structure, a single electrical receptacle common to the plural valves on the head structure, a printed circuit element common to the valves in the head structure and having electrical terminals adapted for connection with terminals of said receptacle on the head structure and having conducting strips defining separate circuits for said valves leading from the terminals of the printed circuit element, and each solenoid valve of the valve module having a pair of spring contacts connected with the coil of the valve and being biased into electrical engagement with terminal points on said conducting strips defining said separate circuits on the printed circuit element.

4,387,740

CAM-FLANGE

Hershel Vanzant, Tulsa, Okla., assignor to T. D. Williamson, Inc., Tulsa, Okla.

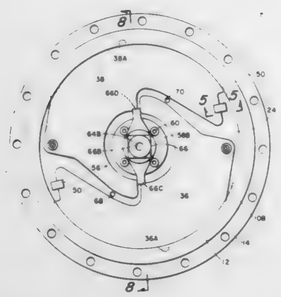
Filed May 15, 1981, Ser. No. 263,999
Int. Cl.³ F16L *55/10*
U.S. Cl. 138—89 **11 Claims**

1. A flange and closure therefore comprising:
a flange body having a cylindrical opening therethrough and

having in the cylindrical opening a concentric internal groove;

a cylindrical closure plate for removably closing the opening in said flanged body, the closure plate having an external cylindrical surface the diameter of which is less than said opening in said flange, the closure plate being removably and sealably positionable in said flange opening;

a plurality of cam plates each hingeably affixed to said closure plate, each said cam plate having an outer semi-circular peripheral edge portion configured as the segment of a circle of diameter substantially equal the diameter of said flange internal groove, each such edge portion being of thickness less than the length of said groove in said flange and each cam plate having an integral inner portion defining an inner edge which is non-concentric with respect to said outer semi-circular peripheral edge, the inner edge providing a cam surface for hingeably displacing the cam plates inwardly and outwardly;



a cam plate actuator pivotally and coaxially affixed to said closure plate having an arm portion engaging each said cam plate's inner edges to forcibly retract said cam plates whereby the portions having said segmental circular edges are within the diameter of said closure plate when said actuator is rotated in one direction and to hingeably extend said cam plates whereby said semi-circular edges thereof extend within said flange groove when said actuator is rotated in the other direction to retain said closure plate in position within said flange opening.

4,387,741

ROTARY DOBBIES FOR WEAVING LOOMS

Joseph Palau, Duingt, and Pierre Bourgeaux, Poisy, both of France, assignors to S.A. des Etablissements Staubli, Faverges, France

Filed Mar. 16, 1981, Ser. No. 244,483

Claims priority, application France, Mar. 20, 1980, 80 06545

Int. Cl.³ D03C *1/00*

U.S. Cl. 139—66 R **5 Claims**

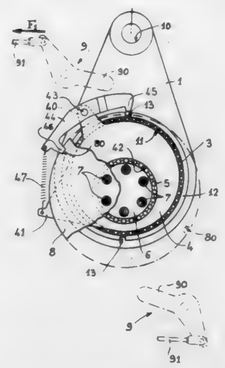
1. In a dobby of the rotary type having a dobby element for actuating each heddle frame of a weaving loom, the loom having a main shaft driven with intermittent rotational motion and having a reading device having control members located at element control stations adjacent to the shaft, each heddle frame actuating element comprising:

a connecting arm operative to actuate a heddle frame, the arm having a central opening loosely surrounding the shaft;

an eccentric member between the shaft and the connecting arm and having an outer surface on which the connecting arm is journaled at its central opening, and having an inner opening surrounding the shaft and journaled thereon, the inner opening being disposed eccentrically with respect to said outer surface, and the eccentric member having a pivot lug extending radially therefrom and offset laterally from said bead on the arm;

a driving disc carried by the shaft adjacent to the eccentric member and of diameter larger than the shaft, and the outer periphery of the driving disc having annularly spaced notches thereon; and

a rocking hook pivotally supported by the lug on the eccentric member and having a notch-engaging nose on one side



of the pivot disposed opposite the periphery of the disc, the rocking hook when located at a control station of the reading device being disposed to be selectively rocked by a control member to engage its nose into a notch of the periphery of the disc in order to couple the main shaft with the eccentric member.

4,387,742

WEAVING HEDDLE FRAME

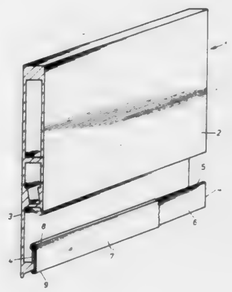
Martin Graf, Wuhrenbach, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

Filed Jul. 11, 1980, Ser. No. 167,484

Claims priority, application Switzerland, Jul. 13, 1979, 6547/79

Int. Cl.³ D03D *9/00*

U.S. Cl. 139—92 **2 Claims**



1. A heddle frame including frame staves of lightweight construction and of a predetermined hardness, each said frame stave having a front wall and having a back wall which includes an extension beyond a side edge of said front wall, a heddle carrying rod integrally connected with said back wall and being of the same lightweight construction and predetermined hardness as said frame stave, said rod having a longitudinal edge confronting said side edge of said front wall and having an outwardly facing front side, and said rod being disposed on one surface of said back wall extension for supporting heddles with laterally open end loops, a removable cover comprising a thin flexible plate of sheet metal in contact with said front side of said rod and engaging said longitudinal edge thereof, said cover having a hardness greater than the hardness of said rod and having a substantially U-shaped rim overlapping said longitudinal edge of said rod and engaging a back side of said rod, said cover having an angled rim in engagement with an edge o. aid rod lying opposite said longitudinal edge for permitting said cover to be snapped in place on said rod upon engagement of said U-shaped rim with said back side of said rod, whereby said cover provides resistance to rod wear caused by the heddles.

4,387,743

APPARATUS FOR REGULATING TENSION IN WARPS OF A WEAVING MACHINE

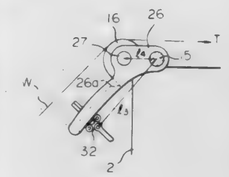
Hajime Suzuki, Anjo; Yoshifumi Umemura, Toyoake, and Masahiko Kimbara, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Apr. 8, 1981, Ser. No. 252,041

Claims priority, application Japan, Jun. 20, 1980, 55/84185

Int. Cl.³ D03D *49/04, 49/06*

U.S. Cl. 139—110 **8 Claims**



1. An apparatus for regulating tension in warps of a weaving machine comprising a tension lever swingably supported on said weaving machine and having a roller supported thereon for regulating the tension in warps delivered from a warp beam, a weight lever swingably supported on said weaving machine and having a load at one end thereof, and a link means operatively connecting said tension lever and said weight lever in such a manner that lever ratio in a system between said weight lever and said tension lever can be varied by displacing the connecting positions, characterized in that a guide roller means disposed at a place, where said link means is connected to said tension lever, and serving to guide relative movement between said link means and said tension lever while lever ratio varying operation takes places.

4,387,744

THREAD SEVERING MECHANISM ASSOCIATED WITH SHUTTLELESS LOOM

Kermit T. Newcomb, South Hill, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Apr. 1, 1981, Ser. No. 249,867

Int. Cl.³ D03D *47/36*

U.S. Cl. 139—429 **13 Claims**

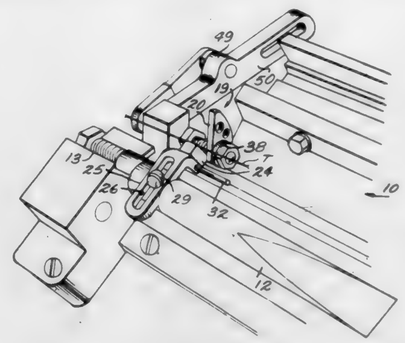
1. A thread severing mechanism comprising:

a cutting blade having a razor edge;

an anvil having a thread supporting surface, said thread supporting surface including a block of material having the blade-protection and thread-severing-facilitating properties of rubber;

means for effecting movement of said blade with respect to said anvil thread supporting surface so that said blade razor edge comes in contact with said thread supporting surface, severing any thread supported thereon;

means for mounting said anvil so that its position with respect to said cutting blade may be varied, said mounting means comprising an elongated slot formed in a portion of said anvil, and a threaded fastener extending through said slot and positioned and dimensioned so that when it is tightened down to a supporting surface the anvil is held in place with respect to the supporting surface, and when it is not tightened down the anvil is movable with respect to the supporting surface, with the fastener sliding within said elongated slot; and



wherein said anvil block thread supporting surface is mounted on a portion of said anvil generally perpendicular to said anvil portion having said elongated slot.

4,387,745

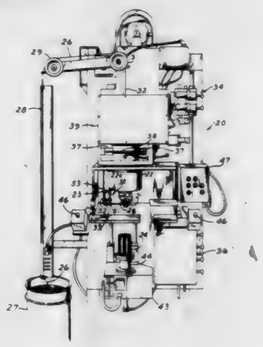
APPARATUS AND METHODS FOR HANDLING AND CONTROLLING WIRE IN WINDING APPLICATIONS

Ronald H. Brown, Hamilton, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 114,880, Jan. 24, 1980, abandoned. This application Oct. 27, 1980, Ser. No. 201,220

Int. Cl.³ B21F *3/00*

U.S. Cl. 140—92.1 **3 Claims**



1. In a dynamoelectric machine coil winding machine, of the type having a flyer arm rotatable about a stationary, multi-sized turn position coil form, the improvement comprising: a wire tensioning device mounted for rotation with the flyer arm and being in contact with the wire, between the flyer arm and the form to create a preselected degree of tension on the wire as it is being wound on the form, the tension being established after the wire exits the flyer arm and being sufficient to stabilize the wire to avoid inadvertent jumping of the wire to an undesired turn form position during the coil forming process and wherein the tensioning device comprises U-shaped bracket having parallel arms straddling the wire as it exits the flyer arm; at least one fixed wire bearing surface spanning the parallel arms at the open end of the bracket; a movable pressure block channelled between the parallel arms and having at least another wire bearing surface on the opposite side of the wire from said one surface; and means for applying a force to the

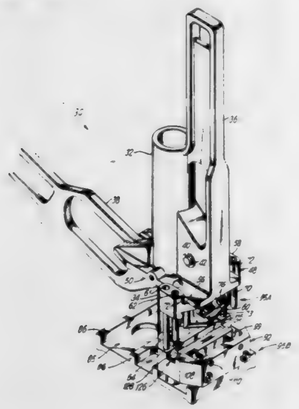
pressure block in a direction to bring said surfaces into contact with said wire with a magnitude sufficient to create said preselected degree of tension in the wire during the winding process.

4,387,746

WIRE SEPARATION TOOL AND METHOD OF PREPARING MULTICONDUCTOR CABLE

James E. Meehan, Levittown, N.Y., assignor to Slater Electric Inc., Glen Cove, N.Y.

Filed Mar. 14, 1980, Ser. No. 130,223
Int. Cl.³ B21F *1/00*; B26B *17/00*
U.S. Cl. 140—105 **22 Claims**



1. A method of preparing an insulated multi-conductor electrical cable for termination to a self-contained electrical wiring device, comprising the steps of:

moving the cable onto a pair of cutting blades to slice into the cable insulation, each blade slicing between individual conductors within the cable;

separating the individual conductors from each other by further advancing the cable onto spreader means in association with said blades to spread apart the sliced cable conductors, said steps of advancing the cable and separating the conductors being carried out generally simultaneously by a single tool member by closing a pair of pivotally connected handle members one of which directly causes advancement of the cable by vehicle fulcrum means adapted to enable application of a generally uniform force to said tool during said advancing and separating steps; and

supporting each cable conductor during said separating step.

4. A tool for slicing through the insulating sheath on a multi-conductor electrical cable and spreading apart the cable conductors, comprising:

an anvil assembly having cutting blade means thereon for slicing the cable sheath and spreader means adapted to spread conductors of the cable after the sheath is sliced;

a cable advance assembly adapted to locate the cable prior to slicing and to support the conductors in generally the same plane as the cable while the cable sheath is being sliced and the conductors are being separated; and

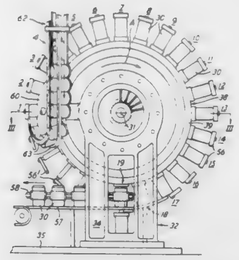
tool frame means operatively coupling said cable-advance and anvil assemblies, said tool frame means including a pair of handle members operable in generally scissor-like manner to move said cable-advance assembly towards said anvil assembly when said handle members are urged towards each other, one of said handle members of said tool frame means being operably coupled to said cable-advance assembly by variable fulcrum means adapted to achieve maximum mechanical advantage at a point of closure of said handle members towards each other corresponding to maximum resistance to slicing the cable, such that operation of the tool requires exertion of a generally uniform force during slicing of the sheath and spreading of the conductors.

4,387,747

FILLING OF CONTAINERS

Josef T. Franek, Chorleywood; Paul Porucznik, St. Albans, and Alan E. Styles, Wantage, all of England, assignors to Metal Box Limited, Reading, England

PCT No. PCT/GB80/00140, § 371 Date Jun. 17, 1981, § 102(e) Date Jun. 17, 1981, PCT Pub. No. WO81/01138, PCT Pub. Date Apr. 30, 1981
PCT Filed Sep. 10, 1980, Ser. No. 276,360
Claims priority, application United Kingdom, Oct. 27, 1979, 7937323
Int. Cl.³ B65B *3/04*, *1/14*
U.S. Cl. 141—1 **11 Claims**



1. A method of filling a succession of substantially identical containers (**30**) with a flowable product, in which: (a) whilst each container is being rotated non-intermittently along a circumferential path (**1–19**) about a horizontal axis of rotation (**31**), the container being at the same time held with its axis (**44**) radial with respect to said path and with its open end facing radially inwards, the product is introduced into the container through said open end radially outwardly via a filling valve (**43**) rotating therewith, and (b) each filled container in succession is transferred, at a release position (**19**) in which its open end is generally uppermost, from the circumferential path to a linear path (**57**) tangential thereto, characterised in that: (c) flowable product is led to each filling valve in a generally radially outward direction; (d) the containers are rotated at a velocity such that, over the whole of an arc of the circumferential path followed by each container as it receives said product, a resultant force on said product due to centrifugal and gravitational accelerations of the product itself is always in a direction generally toward the closed end of the container, the product being caused to flow through the filling valve into the container by said resultant force (with or without the assistance of internal pressurization of the product) and the resultant force alone retaining the product in the container with a free surface perpendicular to the direction of said force; and (e) each filled container is transferred to said linear path with substantially no change in its linear velocity.

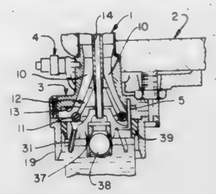
4,387,748

CAN FILLING NOZZLE HEAD

Hugh L. White, Rte. 3, Box 51, Warrenton, Mo. 63383

Filed Oct. 29, 1981, Ser. No. 316,218
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—57 **10 Claims**

1. In a high production can filling machine nozzle head, the improvement comprising an annular nose, adapted to extend within a can to be filled, said nose having a leading surface with an exterior, peripheral chamfer convergent in a direction toward a can to be filled, a multiplicity of liquid passages extending through the nose and opening at one end through



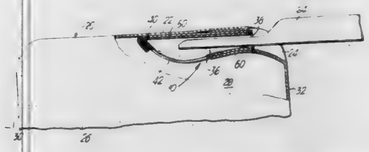
said chamfered surface area of said leading surface, and communicating at another end with the interior of a filler bowl, and means for permitting snifting of the head space of said can.

4,387,749

FILLER SLEEVE FOR USE IN CONJUNCTION WITH A BAG ADAPTED TO CONTAIN A GRANULAR PRODUCT

Frederick A. Donisi, Trenton, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 8, 1981, Ser. No. 300,038
Int. Cl.³ B65B *1/04*
U.S. Cl. 141—68 **14 Claims**



10. A filler sleeve for use in conjunction with a bag adapted to contain a granular-type product, said bag having an elongated tubular configuration including top and bottom ends, with the bottom end of said bag being closed and with the top end thereof including a filler opening, said filler sleeve comprising:

and elongated tubular member formed from a stretchable material, said tubular member being disposed within said bag and connected to the top end thereof, said tubular member having an open end contiguous with said filler opening in said top end of said bag, and with the opposed end of said tubular member being closed, said tubular member further including a longitudinally extending slit running from said closed end of said tubular member to a point intermediate the length thereof, said slit being disposed on the bottom surface of said tubular member opposed to the top end of said bag, whereby when said bag is filled by introducing said products, through said filler opening into said tubular member under pressure, said tubular member stretches, and simultaneously permits the deflection of the product downwardly into said bag through said slit, and wherein when the filling of said bag is completed, the bag may be inverted such that the portions of said tubular member defining said slit overlap and the weight of said product on said tubular member functions to securely close said slit thereby preventing unwanted escape of said product from said bag.

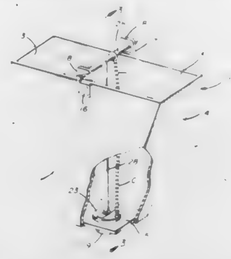
4,387,750

SEWER CLEAN OUT DEVICE

Robert McNerney, P.O. Box 166, Sharpsville, Pa. 16150

Filed Oct. 22, 1981, Ser. No. 313,968
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—331 **5 Claims**

1. A clean out device for communication with a sewer pipe opening in a sewer line comprising a storage tank, a sleeve in communication with said storage tank and said sewer pipe opening, said sleeve having an inner diameter equal to that of said sewer line so that a large volume of liquid inside said tank can flow through said sleeve, a valve stopper engaging said sleeve, said valve stopper formed of resilient material, a rubber body secured to said valve stopper, means for holding said valve stopper against said sleeve arranged to distort said valve



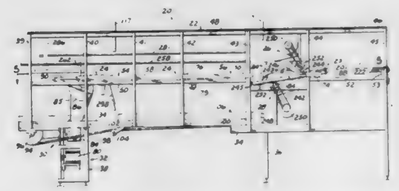
stopper and rubber body, fasteners secured to said storage tank for engagement with said holding means, means for sealing said sleeve in an opening in a sewer line to be cleared, means for moving said valve stopper from said sleeve.

4,387,751

AUTOMATIC FENCE PICKET POINTING MACHINE

Charles P. Carter, 301 SW. 46, Oklahoma City, Okla. 73109

Filed Mar. 3, 1981, Ser. No. 239,965
Int. Cl.³ B27M *3/00*
U.S. Cl. 144—30 **9 Claims**



1. An automatic picket pointing machine, comprising:

an elongated upright open frame having spaced-apart sides defining a vertical workpiece passage path intermediate its ends and open toward one end of the frame for receiving horizontally disposed workpieces from a supply conveyor;

carriage means having opposite end portions intersecting the vertical workpiece path and horizontally reciprocable between the ends of said frame;

drive means operatively connected with said carriage for reciprocating the latter;

retractable carriage movement operated shelf means projecting inwardly from one said frame side for horizontally supporting an elongated workpiece in the plane of said carriage;

rotary cutter means supported by said frame above and below the carriage travel path;

workpiece clamp means supported by said carriage for gripping opposing lateral sides of and moving the workpiece with said carriage;

clamp opening and closing means for closing said clamp means in response to carriage movement in one direction and for opening said clamp means in response to carriage movement in the opposite direction;

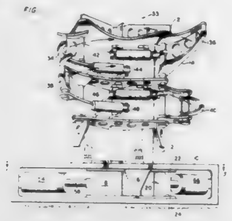
cam means cooperating with said clamp means for sequentially moving opposing edge surfaces of one end portion of the workpiece into contact with said rotary cutter means; and,

discharge conveyor means for moving the workpiece out of said frame.

4,387,752
TREE SHEARING APPARATUS

Robert C. Tyer, Baldwin, Fla., assignor to Rockland Manufacturing Co., Inc., Bedford, Pa.

Filed Aug. 27, 1981, Ser. No. 296,576
Int. Cl.³ A01G 23/08
U.S. Cl. 144—34 E 28 Claims



1. A tree shearing apparatus comprising a main frame mountable on support arms of a machine, a pair of pivot pins mounted on said main frame, a blade support arm mounted on each of said pivot pins for pivotal movement about the axis of said pivot pin, a cutting blade having a leading cutting edges mounted on each of said blade support arms, means mounted on said main frame for pivoting said blade support arms for moving said leading cutting edges toward and away from each other, causing said leading cutting edges to sever a tree trunk or the like positioned therebetween, and means mounted on said main frame and operatively connected to at least one of said pivot pins for adjusting the attitude of said pivot pin and correspondingly adjusting the interrelationship of the positions of said leading cutting edges of said blades.

4,387,753
SPLITTING DEVICE WITH VARYING CROSS SECTIONS

Michael J. Reynolds, Gladstone, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Filed May 1, 1981, Ser. No. 259,535
Int. Cl.³ B27L 7/00
U.S. Cl. 144—193 D 20 Claims

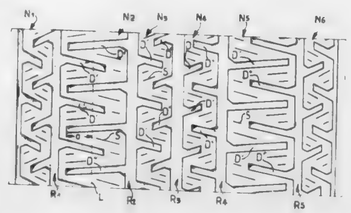


2. An elongate unitary splitting device comprising
a substantially pointed first end,
a lower portion adjacent and extending upwardly from said first end, said lower portion being multiangular with a plurality of edges, at least a pair of opposed edges thereof diverging from each other at a first angle on progressing upwardly from said first end, and
an upper portion having a pair of generally planar, oppositely facing side surfaces, said side surfaces being intersected intermediate the ends of said device by said opposed edges, with said side surfaces diverging on progressing upwardly from the region of intersection at a second angle at least as great as said first angle, a side surface being bordered by a pair of substantially parallel, oppositely facing side margins extending longitudinally of said device.

4,387,754
TIRE TREAD PATTERN

Henri J. Mirtain, Compiegne, France, and Norbert Zinnen, Aachen, Fed. Rep. of Germany, assignors to Pneu Uniroyal Englebert, Clairoix, France and Uniroyal Englebert Reifen GmbH, Aachen, Fed. Rep. of Germany, a part interest

Filed May 19, 1980, Ser. No. 151,463
Claims priority, application France, Aug. 20, 1979, 79 21013
Int. Cl.³ B60C 11/00
U.S. Cl. 152—209 R 7 Claims



1. A tire tread pattern, which comprises in combination:
a plurality of circumferential ribs spaced from one another with each rib extending laterally from a circumferential center line of the tire, each rib further having a fixed maximum width defined by two adjacent parallel circumferential lines, each of which lines lies completely within a single plane extending radially with respect to the tire and within which lines the lateral extent of the rib is confined; the parallel circumferential lines within which each rib is confined opposing the adjacent parallel circumferential lines defining the respective adjacent rib edge, to further define between the ribs a plurality of substantially rectilinear, circumferential grooves of substantially constant width; the grooves being free of any portions of said ribs in the area between the circumferential parallel lines defining the grooves;
laterally extending notches distributed around the circumference of each rib and each notch center line being inclined with respect to the circumferential center line and axial width of each rib;
each rib having two groups of notches with one group along each edge of the rib, and the notches of each group extending inwardly from their respective rib edge toward the interior of the rib a predetermined distance beyond the center line of the rib;
the notches in a given rib and the notches in an adjacent rib edge which open into a common groove being shifted in the circumferential direction, wherein the notches of said given rib open into said common groove at a different location than the notches of the adjacent rib, when viewed in the circumferential direction; the location of each notch in the given rib being displaced from half the distance between two adjacent notches in the adjacent rib; and
the notches of one group of notches of a given rib extending in a first direction with respect to the circumferential direction, and the other notches of the given rib extending in a second direction opposite to the first direction.

4,387,755
PNEUMATIC TIRES

Masaki Kato, Isehara; Tuneo Morikawa, and Kazuyuki Kabe, both of Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 220,913
Claims priority, application Japan, Dec. 28, 1979, 54-170396
Int. Cl.³ B60C 11/00, 9/00
U.S. Cl. 152—209 R 4 Claims

1. A pneumatic tire with improved durability comprising: a tread having a surface including from 3 to 5 circumferential grooves and a tread surface width, a distance between the

center of the outermost circumferential groove and the center of an adjacent circumferential groove being greater than 15% of said tread surface width; a radial carcass under said tread having cords arranged at an angle of 75° to 90° to a circumferential direction of the tire; and a reinforcement layer disposed between said tread and said carcass; said reinforcement layer consisting of a single steel cord strip layer adjacent said carcass and a single aromatic polyamide cord strip layer adjacent the tread surface, exhibiting substantially no thermal shrinkage and the polyamide cords having a tensile strength of at least 10 g/d and a Young's modulus of at least 1500 kg/mm², said steel cord strip layer and said aromatic polyamide cord strip layer being superposed one on the other in a parallel side-by-side relationship to each other, said aromatic polyamide cord strip layer



being folded at its both edges toward the center such that the folded portions contact the central main portion in a parallel side-by-side relationship, said main portion having a width falling between 100 and 110% of said tread surface width, each of said folded portions having a width falling between 30.0 and 32.5% of the width of said main portion; the free edge of each folded portion being positioned at a free-edge distance from the center of the outermost circumferential groove in said tread surface, said free-edge distance amounting to 25 to 75% of said distance between the center of said outermost circumferential groove and the adjacent circumferential groove, said single steel cord strip layer being unfolded and having a width smaller than the width of said main portion of said aromatic polyamide cord strip layer.

4,387,756
PNEUMATIC TIRES

Masaki Ogawa, Sayama, and Mikihiko Ikegami, Tokorozawa, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,536
Claims priority, application Japan, Sep. 10, 1980, 55-124662
Int. Cl.³ B60C 11/00, 1/00
U.S. Cl. 152—209 R 3 Claims

1. A pneumatic tire having a tread, which comprises using in said tread a rubber composition comprising
(1) a styrene-butadiene copolymer rubber as defined below alone or a blend rubber of not less than 30 parts by wt. of said styrene-butadiene copolymer rubber and not more than 70 parts by wt. of a diene rubber, and containing
(2) 10 to 120 parts by wt. of carbon black based on 100 parts by wt. of said styrene-butadiene copolymer rubber or said blend rubber, and
(3) 0.5 to 5 parts by wt. of a vulcanizer based on 100 parts by wt. of said styrene-butadiene copolymer rubber or said blend rubber,
said styrene-butadiene copolymer rubber being obtained by random copolymerization of styrene with 1,3-butadiene and satisfying the following requirements:
(a) the content of bound styrene is 12 to 35% by weight;
(b) the content of 1,2-bond in the butadiene portion is 30 to 40% by weight,
(c) the content of trans-1,4 bond in the butadiene portion is not less than 42% by weight;
(d) the value obtained by subtracting the content of cis-1,4 bond in the butadiene portion from said content of trans-1,4 bond is not less than 8% by weight;
(e) the relation between said content of bound styrene and said content of 1,2-bond is $65 \leqq 1.7$ times the content of bound styrene in % by weight plus the content of 1,2-bond in % by weight $\leqq 100$; and
(f) the ratio of weight mean molecular weight ($\bar{M}_w$) to number mean molecular weight ($\bar{M}_n$) is not more than 2.3.

4,387,757
PNEUMATIC TIRES

Masaki Ogawa, Sayama, and Mikihiko Ikegami, Tokorozawa, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Sep. 16, 1981, Ser. No. 302,937
Claims priority, application Japan, Sep. 20, 1980, 55-130077
Int. Cl.³ B60C 11/00, 1/00
U.S. Cl. 152—209 R 3 Claims

1. A pneumatic tire having a tread, which comprises using in said tread a rubber composition containing 10 to 120 parts by weight of carbon black and 0.5 to 5 parts by weight of a vulcanizer based on 100 parts by weight of a novel styrene-butadiene copolymer rubber as defined below alone or a blend rubber of not less than 30 parts by weight of said copolymer rubber and not more than 70 parts by weight of another diene rubber, said styrene-butadiene copolymer rubber being obtained by random copolymerization of styrene with 1,3-butadiene and satisfying the following requirements:
(1) a content of bound styrene is 10 to 30% by weight;
(2) a content of 1,2-bond in butadiene portion is 42 to 70% by weight;
(3) a content of trans-1,4 bond in butadiene portion is not less than 25% by weight;
(4) a value obtained by subtracting a content of cis-1,4 bond in butadiene portion from said content of trans-1,4 bond is not less than 8% by weight;
(5) a relation between said content of bound styrene and said content of 1,2-bond is $65 \leqq 1.7 \times$ the content of bound styrene (% by weight) + the content of 1,2-bond (% by weight) $\leqq 100$;
(6) a weight mean molecular weight ($\bar{M}_w$) is 35×10^4 to 65×10^4;
(7) a ratio of weight mean molecular weight ($\bar{M}_w$) to number mean molecular weight ($\bar{M}_n$) is not more than 2.3;
(8) the number of peaks in molecular weight distribution curve is not less than 2; and
(9) a relation between said weight mean molecular weight and said content of trans-1,4 bond is $75 \leqq \bar{M}_w \times 10^{-4} + 1.3 \times$ the content of trans-1,4 bond (% by weight) $\leqq 120$.

4,387,758
HEAVY DUTY PNEUMATIC LOW-SECTIONAL RADIAL TIRE

Hideki Matsuda, Higashimurayama; Shigeo Makino, Tokorozawa, and Noboru Sugimura, Kodaira, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Aug. 26, 1981, Ser. No. 296,408
Claims priority, application Japan, Sep. 5, 1980, 55-123231
Int. Cl.³ B60C 3/00, 9/08
U.S. Cl. 152—353 R 5 Claims

1. In a heavy duty pneumatic low-sectional radial tire having an aspect ratio of $H/S \leqq 0.8$ where H is a tire height and S is a maximum tire width and comprising a pair of bead portions, a pair of side portions, a tread portion extending across said side portions, and a reinforcement for a tire casing composed of at least one carcass ply extending across two bead cores embedded in said bead portions and turning up around said bead core and containing cords embedded therein in a substantially radial direction of the tire, each cord having a modulus of not less than 4,000 kg/mm², and a belt of at least two layers, each layer

containing metal cords embedded therein, superimposed around a crown portion of said carcass and crossing with each other at a relatively small angle with respect to the equatorial line of the tire, the improvement wherein a carcass line of said tire casing at a temporarily mounted posture of the tire on a normal rim under an internal pressure of 0.5 kg/cm^2 depicts a bow-shaped profile in tire section defined by a curved line, whose curvature being smaller with distance from a chord $\overline{PQ}$ at the outside of the chord $\overline{PQ}$, where the chord $\overline{PQ}$ is a line segment connecting a point P to a point Q, the point P is an intersection of said carcass line and a normal line of said carcass line passing an alienating point of said bead portion from a rim flange or an inflection point of said carcass line when said intersection is located inside said inflection point and the point



Q is an intersection of said carcass line and a radial line of the tire passing said point P; said bow-shaped profile is substantially symmetrical with respect to a substantially perpendicular bisector of said chord $\overline{PQ}$ as a symmetrical axis inside and outside thereof; and a distance w_0 between said chord $\overline{PQ}$ and said carcass line as measured along said perpendicular bisector is 0.25–0.35 times a distance w between the chord $\overline{PQ}$ and an equatorial plane of the tire, whereby deformations at the vicinity of side edges of said belt as well as the turnup end of said carcass and upper end of bead reinforcing layer, which may be arranged along the turnup portion of said carcass, when the width of the tire is enlarged by inflation with a normal internal pressure, are minute as compared with the deformation produced at said side portion.

4,387,759

PNEUMATIC RADIAL TIRE

Kazuo Obata; Yutaka Yamaguchi; Kojirou Yamaguchi, and Akio Sato, all of Higashimurayama, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

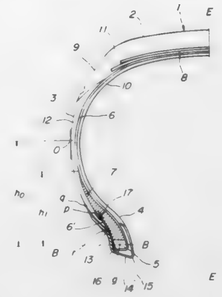
Filed Oct. 5, 1981, Ser. No. 308,644

Claims priority, application Japan, Oct. 16, 1980, 55-143687

Int. Cl.^{3} B60C *15/06, 9/08*

U.S. Cl. 152—353 R **2 Claims**

1. A pneumatic radial tire for passenger cars comprising; a cylindrical tread portion, side portions located at both sides of the tread portion and extending inwardly in the radial direction, bead portions located at radially inner edge portions of the side portions and having a bead wire; said tread, side and bead portions being reinforced with a carcass comprising at least one radially arranged fiber cord layer and turned up around the bead wire from the inside to the outside; the turn-up end of the carcass being substantially terminated in the bead portion; said bead portion being reinforced by arranging a tapered hard rubber filler having a Shore A hardness of 75°–97° between the carcass and the turn-up portion thereof to extend from the upper portion of the bead wire towards the side portion beyond the turn-up end of the carcass; a soft side rubber having a Shore A hardness of 30°–60° located on each outer side of the carcass adjacent thereto and extending from the side portion to a position beyond the end of the turn-up portion of the carcass in the bead portion, and a hard rubber chafer having a Shore A hardness of 60°–80° located on a surface of each bead which at least contacts a rim flange when the tire is mounted on a rim, the upper end of said hard rubber chafer extending towards the side portion to a position beyond the end of the turn-up portion of the carcass, the radially



innermost portion of said soft side rubber directly sandwiched between and in contact with the upper portion of said rubber chafer and said turn-up portion of the carcass and the end of the turn-up portion of the carcass sandwiched directly between and in contact with said soft side rubber and said hard rubber filler.

4,387,760

SLIDING FOLDING DOOR

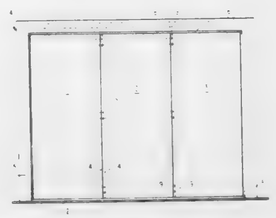
Manfred Greschbach, Eisenbahnstrasse 44, D-7834 Herbolzheim, Fed. Rep. of Germany

Filed Feb. 1, 1980, Ser. No. 117,624

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1979, 2903745

Int. Cl.^{3} E06B *3/48*

U.S. Cl. 160—229 R **13 Claims**



1. A sliding folding door comprising a plurality of door leaves, each of said door leaves being of a double-walled construction and including inner and outer walls, shaped connecting rail means connecting adjacent door leaves to each other by way of vertically extending pivot means disposed in the connecting rail means, said pivot means enabling the respective leaves to be pivotable relative to one another about two laterally spaced vertical pivot shafts, wherein each connecting rail means includes a pair of laterally spaced cylindrical first walls which are nonrotatably connected to said connecting rail means, each of the cylindrical first walls having an arcuate length of approximately a quarter-circle and a radius of curvature having a center point arranged in the pivot means, and in that a pair of first crosspieces are connected to and extend along a long side of the respective leaves of the door from one of said inner and outer walls, one of said first crosspieces is disposed opposite one of the first cylindrical walls in close spaced relationship and the other of the first crosspieces is disposed opposite the other of the first cylindrical walls in close spaced relationship so that any gaps between the pivot means and the adjacent door leaves remain small in any position of pivoting of the door leaves whereby there is an excellent seal as well as avoidance of risk of accidental injury.

4,387,761

NOZZLE FOR ROTARY CONTINUOUS CASTER

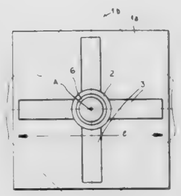
Paul Metz, Brasseur, Luxembourg, assignor to Arbed S.A., Luxembourg, Luxembourg

Filed Dec. 15, 1980, Ser. No. 216,539

Claims priority, application Luxembourg, Dec. 17, 1979, 82001

Int. Cl.^{3} B22D *11/10*

U.S. Cl. 164—437 **9 Claims**



1. In a continuous-casting system wherein molten metal is introduced downward into a mold through a nozzle opening downward into said mold at an axis to form in said mold a body of said molten metal having an upper surface carrying impurities above the mouth of said nozzle, and wherein said body of molten metal is rotated about said axis in said mold, the improvement wherein said nozzle is provided generally at the level of said upper surface of said body with radially outwardly projecting vanes that prevent said body from rotating about said axis at said upper surface, the vanes each having a horizontal upper edge and a concave lower edge.

4,387,762

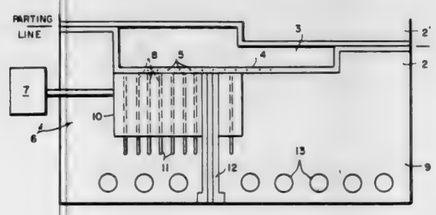
CONTROLLABLE HEAT TRANSFER DEVICE

James R. Rinderle, Watertown, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 22, 1980, Ser. No. 152,382

Int. Cl.^{3} F28D *15/00*

U.S. Cl. 165—1 **2 Claims**



1. A method of controlling the thermal conductance of a heat pipe which includes a sealed chamber having an evaporator portion to which heat to be conducted is supplied, fluid contained within said sealed chamber, and wicking means within said sealed chamber for transporting the liquid phase of said fluid to said evaporator portion, said method comprising controllably changing the total volume of said sealed chamber so that the volume within said chamber available for holding said fluid in the evaporated phase, and thus correspondingly the portion of the fluid in said chamber in the evaporated phase, as opposed to the liquid phase, changes sufficiently to vary said heat pipe between a condition in which said wicking means supplies fluid in said liquid phase to said evaporator portion and a condition in which a lack of said fluid in said liquid phase causes said wicking means to substantially cease supplying said fluid in said liquid phase to said evaporator portion.

4,387,763

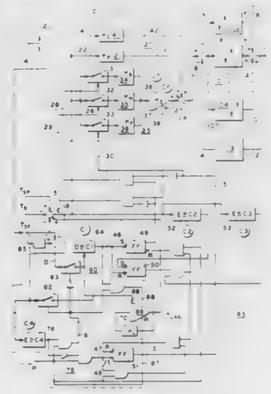
MULTISTAGE THERMOSTAT USING MULTIRATE INTEGRAL ACTION AND EXPONENTIAL SETPOINT CHANGE

Ronald Benton, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 14, 1981, Ser. No. 301,679

Int. Cl.^{3} F25B *29/00*

U.S. Cl. 165—29 **19 Claims**



2. Multistage thermostat means adapted to operate a heating plant having primary heating means and secondary heating means, including: temperature sensing means having an output signal responsive to an ambient temperature to be controlled by the operation of said heating plant; variable temperature setpoint means having an output signal to set said thermostat means to control said ambient temperature by the operation of said heating plant; temperature setup and setback means to generate a temperature offset signal; clock means to provide a continuous series of timed intervals; fist summing means having inputs connected to receive said sensing means signal, said temperature offset signal, and to receive said setpoint means signal with said summing means including output means having a signal representative of a current temperature error; previous offset temperature means connected to said offset signal and having a new output signal equal to said offset signal at an interval of time prior to a current interval of time; signal processing means including at least a proportional constant signal processing channel, and an integrating signal processing channel connected in parallel to said first summing means and to a second summing means with said second summing means having an output providing a continuous composite error signal; said integrating signal processing channel including a plurality of gain constants selectively connected to integrator means to provide said integrating signal processing channel with a selectable gain constant; integrator gain control logic means having comparator means and switching means with input means of said integrator gain control logic means connected to respond to said current temperature error and having output means connected to said integrating signal processing channel to operate switch means to select a gain constant for said integrating signal processing channel; exponential decay bias means with said exponential decay bias means having

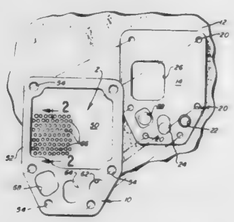
input means including said previous offset temperature means connected to said temperature offset signal, and to said current temperature error signal to cause said exponential decay bias means to generate an exponentially decaying output signal; said exponentially decaying output signal being connected to said first summing means to alter said current temperature error signal when said exponentially decaying output signal is generated; and multistage cycler means having input and output means; said multistage cycler input means connected to receive said continuous composite error signal; said cycler output means adapted to be connected to said heating plant and having a staged output signal responsive to said continuous composite error signal from said signal processing means to progressively stage said primary heating means and said secondary heating means of said heating plant.

4,387,764

GASKET SCREENING ASSEMBLY FOR AN INTERNAL COMBUSTION ENGINE HAVING AN AUXILIARY OIL COOLER

Marc D. Lister, Wilmette, Ill., assignor to Felt Products Mfg. Co., Skokie, Ill.

Filed Dec. 3, 1981, Ser. No. 327,259
Int. Cl.³ F28F *19/00*; B01D *29/04*
U.S. Cl. 165—119 **6 Claims**



4. Means sealing an internal combustion engine block to an associated oil cooler assembly for screening particles from the coolant passing through the oil cooler comprising

a screening gasket assembly having an expansive metallic core having a pair of major surfaces, a compressible facing layer secured to each major surface of said core about the periphery of each said major surface thereby to surround a central core zone of each major surface, a first clear-through opening for coolant, a second clear-through oil exit, and a third clear-through oil inlet, each in the zones of said facing layers for providing flow-paths between said engine block and said oil cooler, said central core zone defining a multiplicity of closely adjacent, substantially circular perforations for providing a fourth, water inlet path through said central core zone in said gasket screening assembly between said engine block and said oil cooler,

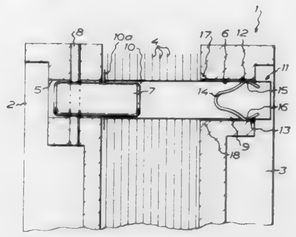
flanges defined by each of said engine block and oil cooler assembly for clampingly and sealingly gripping said screening gasket assembly, and each said flange defining bores in line with and in flow communication with said first through fourth openings, whereby particles in water passing through said multiplicity of perforations are adapted to be screened from liquid passing through said multiplicity of perforations against return through said first clear-through coolant opening.

4,387,765

ARRANGEMENT FOR LOCATING THE PLATES INCLUDED IN A PLATE HEAT EXCHANGER

Ingmar Kristoffersson, Rönninge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Dec. 21, 1981, Ser. No. 332,877
Claims priority, application Sweden, Dec. 22, 1980, 8009081
Int. Cl.³ F28F *3/08*
U.S. Cl. 165—166 **7 Claims**



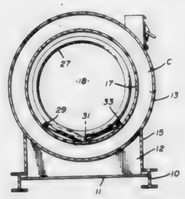
1. Arrangement in heat exchangers, comprising a large number of heat exchange plates (**14**) which, in compressed position, form throughflow passages for the heat exchange media, a first preferably stationary end wall (**2**) situated on one side of the heat exchange plates (**4**) and a second end wall (**3**) situated on the opposite side of said plates and adapted to be displaced by clamping means towards said first end wall in order to sealingly compress the heat exchange plates, said preferably stationary end wall (**2**) supporting a bar (**10**) projecting therefrom and extending through recesses arranged in the heat exchange plates in order to locate said plates mutually and relative to the end walls against displacement in the plane of the plates when the clamping means are disconnected and/or the second end wall is removed, said bar having a length exceeding the distance between the end walls in the position where they compress the plates, wherein the bar (**9**), which is detachably fitted to the first end wall (**2**), has close to said wall a stationary abutment (**10**) serving as an end stop for the plates in one direction and at its opposite end wall a means (**15, 16**) being withdrawable against spring action and serving as an end stop, said means being spaced from said first abutment (**10**) at a distance exceeding the total thickness of the heat exchange plates.

4,387,766

HOT OIL HEATER WITH HELICAL COIL BAFFLE

John H. Miller, Youngstown, Ohio, assignor to Hy-Way Heat Systems, Inc., Youngstown, Ohio

Division of Ser. No. 89,255, Oct. 29, 1979, Pat. No. 4,299,194.
This application Jan. 21, 1981, Ser. No. 226,893
Int. Cl.³ F28D *7/02*; F28F *9/00*
U.S. Cl. 165—172 **5 Claims**



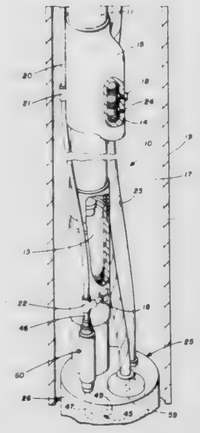
1. A horizontally disposed cylindrical shaped baffle for use in a heater and the like in which liquids are heated, said baffle comprising a single helical coil of tubing, the convolutions of which are vertically arranged in side by side engaging relation and having straight sections of tubing communicating with said helical coil of tubing at the opposite ends thereof and extending in spaced parallel relation to one another on the outer side of and in supporting relation to said engaging convolutions of tubing forming said helical coil.

4,387,767

SUBSURFACE SAFETY VALVE SYSTEM WITH HYDRAULIC PACKER

Norman W. Read, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 13, 1980, Ser. No. 206,595
Int. Cl.³ E21B *33/122*
U.S. Cl. 166—72 **15 Claims**



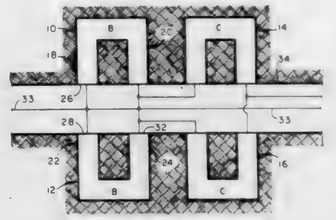
1. A well production apparatus for fluid production through safety valve means acting both in well tubing and the annulus between the tubing and casing in a well, said apparatus including a packer with a head connected to the lower end of the tubing and having dual bores extending therethrough for communicating separately with the tubing and the annulus, primary and secondary packer mandrels communicating with said bores and depending from connections with said head, said primary packer mandrel serving as a conduit for directing production fluid to the safety valve means and said secondary packer mandrel serving as a second conduit through which a power conductor extends for connecting with a motor beneath said packer, a set of hydraulically movable slips slidable between retracted and deployed positions, a packing element surrounding said primary and secondary mandrels beneath said head, a setting cylinder secured to one of said packer mandrels and defining a pressure chamber, a setting piston movable on one of said packer mandrels within said pressure chamber from a retracted position to an extended position to compress said packing element and deploy said slips for anchoring said packer in the casing, and a control pressure passage extension with one end connecting to said pressure chamber exteriorly of said primary packer mandrel and an opposite end for connection to a control pressure line leading to the safety valve means, said passage extension serving to deliver pressure fluid to said chamber to set said slips when installing the apparatus in the well.

4,387,768

MODIFIED IN SITU RETORTING OF OIL SHALE

John J. Reagan, Parma, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Apr. 13, 1981, Ser. No. 253,987
Int. Cl.³ E21B *43/243, 43/263*
U.S. Cl. 166—256 **8 Claims**



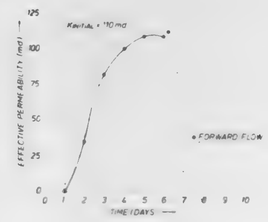
1. In a process for the in situ recovery of shale oil from an oil shale formation in which a first gas is charged into a rubblized bed in said formation and a second gas is removed from said bed, the improvement wherein said bed is U-shaped and defines an inlet leg and an outlet leg, said inlet and outlet legs communicating with a common channel in said formation.

4,387,769

METHOD FOR REDUCING THE PERMEABILITY OF SUBTERRANEAN FORMATIONS

Steven R. Erbstoesser, Missouri City; Claude E. Cooke, Jr., Houston, both of Tex.; Richard G. Sinclair, and Michael M. Epstein, both of Columbus, Ohio, assignors to Exxon Production Research Co., Houston, Tex.

Filed Aug. 10, 1981, Ser. No. 291,200
Int. Cl.³ E21B *33/138, 43/22*
U.S. Cl. 166—295 **11 Claims**



1. A method for reducing the permeability of a subterranean formation penetrated by a wellbore comprising:

dispersing discrete solid structures comprising a polyester polymer into a wellbore fluid, said polymer being substantially insoluble in said wellbore fluid and degradable in the presence of water at the formation temperature to oligomers which are at least partially soluble in a formation fluid and

placing said wellbore fluid containing said structures dispersed therein into said wellbore.

10. A method for reducing the permeability of a subterranean formation penetrated by a wellbore comprising:

dispersing discrete solid structures comprising a polyester polymer into a wellbore fluid, said polymer being substantially insoluble in said wellbore fluid and degradable in the presence of water at an elevated temperature to oligomers which are at least partially soluble in a formation fluid,

placing said wellbore fluid containing said structures dispersed therein into said wellbore, and

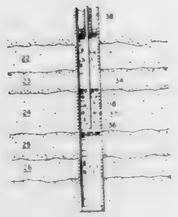
placing a hot fluid into said wellbore to raise the temperature of said formation to said elevated temperature.

4,387,770

PROCESS FOR SELECTIVE INJECTION INTO A SUBTERRANEAN FORMATION

Alfred D. Hill, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Nov. 12, 1980, Ser. No. 206,124
Int. Cl.³ E21B *43/16*
U.S. Cl. 166—305 R **7 Claims**



1. A process for selectively injecting a fluid into a subterranean formation having at least one porous, hydrocarbon-containing zone vertically bounded by substantially impervious zones, said subterranean formation penetrated by a well bore which is in fluid communication with each of said at least one porous zone, wherein formation fluids which are immiscible with said injected fluid and which have a density substantially greater than the density of said injected fluid are initially present within said well bore, said process comprising:

creating at least one fluid interface between fluids having differing densities at a vertical location within said well bore adjacent one of the porous zones by injecting into said well bore a preflush fluid having a density substantially less than the density of said injected fluid, said preflush fluid being injected at a volume sufficient to establish a fluid interface with said formation fluids at a vertical location within said well bore adjacent to said one of the porous zones; and

injecting a fluid having a density intermediate the densities of said preflush fluid and said formation fluids into said well bore and into said one porous zone at a pressure less than the formation fracturing pressure, said injected fluid being vertically located within said well bore and injected into said one porous zone at said at least one fluid interface.

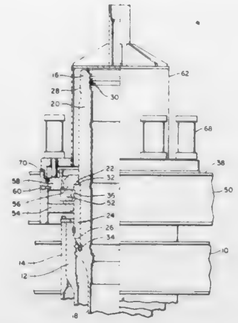
4,387,771

WELLHEAD SYSTEM FOR EXPLORATORY WELLS

Darrell L. Jones, 1991 Foster Ave., Ventura, Calif. 93001

PCT No. PCT/US80/01359, § 371 Date Feb. 17, 1981, § 102(e) Date Feb. 17, 1981
PCT Filed Oct. 14, 1980, Ser. No. 261,091
Int. Cl.³ E21B *33/035, 33/038, 43/01, 43/013*
U.S. Cl. 166—341 **10 Claims**

1. A wellhead system for an exploratory subsea well adapted to accept accessory modules comprising: a wellhead housing; a generally cylindrical wellhead body supported and cemented within said housing, and extending above said housing; a first latch profile located on the outer periphery of said wellhead near the upper end for alternatively attaching a blowout preventer and production apparatus; a guide base attached to said wellhead housing; a plurality of vertical guide posts located on said guide base a preselected distance from said wellhead housing; a separate profile ring of larger diameter than said body; means for retaining said profile ring on a lower portion



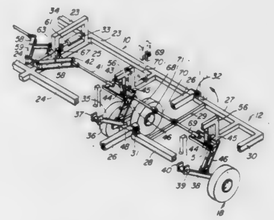
of said body; and a second latch profile located on said profile ring substantially below said first latch profile.

4,387,772

FARMING IMPLEMENT AND ELEVATION CONTROL THEREFOR

Joseph L. Bourgault, P.O. Box 202, Barbier Dr., St. Brieux, Saskatchewan, Canada (S0K 3V0)

Filed Sep. 14, 1981, Ser. No. 302,055
Claims priority, application Canada, May 25, 1981, 378252
Int. Cl.³ A01B *63/16, 73/00*
U.S. Cl. 172—311 **10 Claims**



1. A farming implement of the type including a frame supported on ground wheel assemblies and having elevation control means for selectively raising or lowering the ground wheel assemblies relative to the frame in response to the actuation of drive means, to thus selectively adjust the spacing of the frame above the ground, each of said ground wheel assemblies being mounted at one end of a respective swing arm means, the other end of the swing arm means being pivotally secured to the frame for pivoting movement about a normally horizontal swing axis extending transversely of the frame, wherein said elevation control means includes:

(a) connection means operatively associated with said drive means for reciprocating movement generally transversely of said frame, said connection means being further associated with ground wheel lifting and lowering means to transmit the movement of the drive means to the wheel lifting and lowering means, said wheel lifting and lowering means including:

(b) two-arm dependent link means pivotally secured at one end to said connection means for relative movement about a normally generally horizontal first longitudinal axis, the other end of the two-arm link means being pivotally secured to said swing arm means for relative pivotal movement about a normally generally horizontal second longitudinal axis and about a generally horizontal second transverse axis;

(c) dependent strut link means whose one end is pivotally secured to the frame by way of a universal-type joint allowing the pivoting of the strut link means about a normally generally horizontal first joint axis extending longitudinally of the frame, and about a generally horizontal joint axis extending transversely of the frame, the other end of the strut link means being secured to said two-arm link means for relative pivotal movement about a generally horizontal and longitudinal intermediate axis;

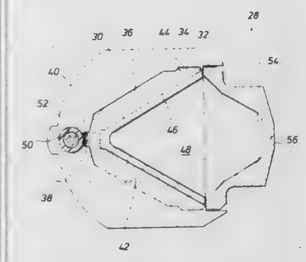
(d) the intermediate axis being equidistantly spaced from said longitudinal axes at the ends of the two-arm link means, and from said first joint axis; whereby a generally horizontal transverse movement of the connection means is transmitted to a raising or lowering movement of respective ground wheels relative to said frame.

4,387,773

SHAPED CHARGE WELL PERFORATOR

William A. McPhee, Jersey Village, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 13, 1981, Ser. No. 311,105
Int. Cl.³ E21B *43/117*
U.S. Cl. 175—4.6 **14 Claims**



1. An explosive shaped charge comprising:

a housing having a forwardly opening cavity formed therein, said cavity including a generally cylindrcial frontal portion having a channel formed therein, a tapered intermediate portion and a rearwardly located apex;

a charge of high explosive material within said cavity, the outer surface of said explosive material conforming to the inner surface of said cavity; and

a forwardly diverging conical liner having an apex in alignment with the apex of said cavity, said liner cooperatively arranged to retain said explosive material in said cavity.
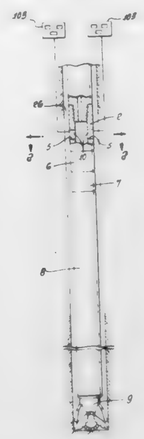
4,387,774

TIME RECORDER FOR IN-HOLE MOTORS

Roger P. Herbert, Lake Forest, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed May 4, 1981, Ser. No. 260,269
Int. Cl.³ E21B *45/00*
U.S. Cl. 175—40 **12 Claims**

1. In combination with an in-hole motor, means responsive to the circulation of fluid to said motor, said means comprising: a time recorder adjacent the entrance to the motor, a power source to activate the time recorder and a switch positioned



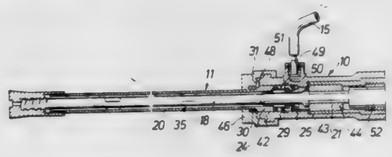
adjacent to said motor and electrically connected between said power source and said time recorder.

4,387,775

ROCK DRILLING APPARATUS

Ebbe S. Adolfsson, Handen; Kurt H. Andersson, Tyresö, and Carl G. B. Ekwall, Saltsjöbaden, all of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Mar. 24, 1981, Ser. No. 247,067
Claims priority, application Sweden, Apr. 3, 1980, 8002589
Int. Cl.³ E21B *17/00*; E21C *3/06, 7/08*
U.S. Cl. 175—135 **11 Claims**



1. Rock drilling apparatus comprising:

a pressure fluid driven rock drilling machine (**10**) having a percussive motor and a rotation chuck (**44**) arranged in a housing (**43**);

a drill rod (**18**) connectable to said housing (**43**) and having a drill bit (**16**) at one end of said drill rod (**18**) and a shank (**21**) at the other end of said drill rod (**18**), said drill bit (**16**) being spaced from said housing;

a tube (**20**) surrounding said drill rod (**18**) and extending from said drill bit (**16**) to said housing (**43**), said tube (**20**) having a rear adapter (**24**) nonrotatably attached to said tube (**20**);

the percussive action needed for the drilling being transmitted from said percussive motor to said drill bit (**16**) by said drill rod (**18**);

a collar (**22**) projecting from said drill rod (**18**) in front of said shank (**21**), said tube (**20**) extending between said collar (**22**) and said drill bit (**16**);

guiding means (**33**) on said drill bit (**16**) for maintaining said tube (**20**) rotatably between said drill bit (**16**) and said collar (**22**);

socket means (**42**) on said drilling machine (**10**) for receiving said rear adapter (**24**) therein with said rear adapter centered in a position radially spaced around said drill rod (**18**);

said shank (21) non-rotatably extending into said rotation chuck (44);

a disconnectable coupling device (46; 57) for maintaining said rear adapter (24) in said socket means (42); and

means (31; 55) for preventing relative rotation between said socket means (42) and said rear adapter (24) during operation of said percussive motor.

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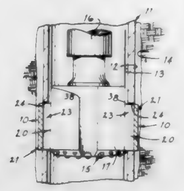
WELL CASE DRIVING ANVIL

Gerald L. Adcock, 2033 3rd Ave. North, Lewiston, Id. 83501

Filed Nov. 24, 1980, Ser. No. 209,652

Int. Cl.³ E21B *4/06, 7/20*

U.S. Cl. 175—293 **12 Claims**



1. A well casing anvil device for attachment to a hollow well casing having cylindrical exterior and interior walls, mountable through a preformed aperture of a prescribed width through the walls for engagement by an axial impact device within the casing to drive the hollow well casing axially further into a well hole, said anvil device comprising:

a rigid anvil body;

said body having a mounting plate having a width greater than the width of the preformed aperture with a convex surface formed thereon to fit flush against the cylindrical exterior wall of the casing on opposite sides of the preformed aperture, covering the aperture;

said body having an anvil shoulder projecting outwardly from the mounting plate surface and adapted to extend through the casing aperture from the exterior wall and into the casing interior;

said anvil shoulder having an axially facing striking surface to be engaged within the casing by the impact device.

4,387,777

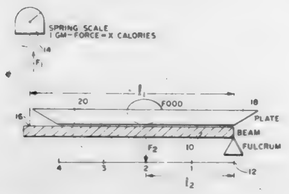
CALORIE COUNTING METHOD AND APPARATUS

Stephen R. Ash, LaFayette, Ind., assignor to Willo Partners, Aurora, Ill.

Filed Oct. 26, 1981, Ser. No. 315,246

Int. Cl.³ G01G *23/22, 23/14, 3/00, 1/18, 21/22*

U.S. Cl. 177—43 **15 Claims**



1. Apparatus for determining the caloric content of an entire meal comprising:

(a) a base support structure;

(b) a common planar support structure adapted to support a plurality of food components of different caloric density and including means pivotally mounted on said base support structure; and

(c) scale means connected to said pivotally mounted means at a point remote from said pivotal mounting thereof for weighing said plurality of food components which are positioned on said planar support structure, said scale means including means for indicating the total caloric content of said plurality of food components.

4,387,778

FLUID WEIGHING DEVICE AND METHOD FOR ITS CALLIBRATION AND TESTING

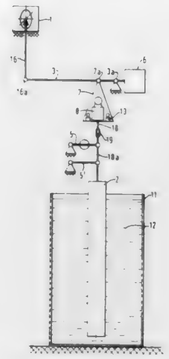
Josef Wohrl, 7114 Pfedelbach, Stuttgart, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 298,276

Claims priority, application United Kingdom, Feb. 25, 1981, 8105957

Int. Cl.³ G01G *5/02, 19/52;* **G01L** *25/00;* **G01F** *23/06*

U.S. Cl. 177—207 **11 Claims**



1. A fluid weighing device comprising:

a tank for receiving the fluid to be weighed;

a plunger positioned within the tank and extending between minimum and maximum fluid weighing levels, the horizontal cross-sectional area of the plunger at any intermediate fluid level being a constant ratio to the horizontal cross-sectional area of the tank at that level, and the weight of the plunger being greater than the weight of displaced fluid at the maximum weighing level;

a load measuring cell;

an adjustable counterpoise weight;

a lever means interconnecting the plunger, the load measuring cell and the counterpoise weight such that, when the fluid is at the maximum weighing level, the counterpoise weight will exert a moment on the lever means which will be equal but opposite to the moment exerted by the plunger, and the load measuring cell will be under zeror load;

the load measuring cell being adjusted so that the application of zero load will produce a signal equivalent to the fluid upthrust on the plunger when the fluid is at the maximum weighing level, and so that the load applied to the load measuring cell when the fluid is at a lower level will produce a signal equivalent to the fluid upthrust on the plunger at that fluid level;

a weight indicator operated by the load measuring cell and programmed to take account of the constant ratio so that the true weight of the fluid above the minimum weighing level will be indicated;

means for disconnecting the plunger from the lever means during callibration or testing of the fluid weighing device;

a weight for connection to a predetermined position on the lever means after the disconnection of the plunger, the weight and predetermined position being such that a moment will be applied to the lever means which will be equal to the moment which would be applied by the plunger when the fluid is at the maximum weighing level, and

a series of callibrated weights for sequential attachment to a predetermined attachment position on the lever means after disconnection of the plunger and connection of the weight, the callibrated weights and their attachment position being such that they will apply respective test moments to the lever means corresponding with predetermined fluid levels.

4,387,779

SIDEBOOM CRAWLER SUSPENSION

Marino J. Pisani, North Riverside, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

PCT No. PCT/US81/00409, § 371 Date Mar. 30, 1981, § 102(e) Date Mar. 30, 1981, PCT Pub. No. WO82/03363, PCT Pub. Date Oct. 14, 1982

PCT Filed Mar. 30, 1981, Ser. No. 280,951

Int. Cl.³ B62D *55/06*

U.S. Cl. 180—9.5 **8 Claims**



3. In a crawler having a main frame, and a laterally spaced pair of vertically disposed track frames at either side thereof, improved means providing connections of the main frame to separate mounting points on the respective track frames, comprising:

a cross bar providing rigid mounting connections to the forward ends of the track frames;

shaft structure including stress relieved mounting connections to the rear end portions of the track frames allowing slight deflections of the shaft structure without consequent twist force exerted in the rear end portions of the track frames; and

braces having stress relieved mounting connections to both the main frame and to the top of the track frames so as to accommodate, without exerting a consequent twist force, deflections of the shaft structure while cooperating therewith as a guide linkage to prevent the rear end portions of the track frames from twisting out of the vertical plane.

4,387,780

APPARATUS FOR COOLING AN ENGINE

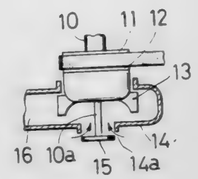
Tetsuzo Fujikawa, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Division of Ser. No. 158,440, Jun. 11, 1980, Pat. No. 4,340,123. This application Jan. 7, 1982, Ser. No. 337,582

Claims priority, application Japan, Jun. 13, 1979, 54-74899

Int. Cl.³ F01P *7/02*

U.S. Cl. 180—54 A **3 Claims**



1. Variable air supply apparatus for cooling an engine having a belt speed converter connected to an output shaft of the engine, the converter including a fixed sheave secured to the output shaft and a movable sheave axially movable relative to said fixed sheave and rotatable therewith said movable sheave responding to changes in the engine speed and having an axial position which is related to the rotational speed of the engine, the sheaves forming a space therebetween that receives a belt, said apparatus comprising a fan adapted to be attached to said movable sheave and to produce positive air flow when said engine rotates, a casing around said fan and having an air inlet opening, an air outlet duct communicating with said casing and mounted to convey air to cool the engine, and a valve member adjacent said inlet opening and axially movable with said movable sheave to substantially close said air inlet opening of said casing as said movable sheave moves toward said fixed sheave.

4,387,781

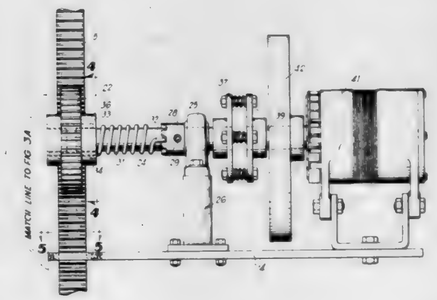
ELECTRICAL GENERATING SYSTEM FOR VEHICLES

Harry E. Ezell, and Norwood B. Ezell, both of P.O. Box 9008, Mobile, Ala. 36691

Filed Feb. 2, 1981, Ser. No. 230,866

Int. Cl.³ B60K *25/10*

U.S. Cl. 180—65 B **9 Claims**



1. In a system for generating electrical power for a vehicle having a relatively movable frame member and axle connected by a resilient suspension, a pair of opposing rotary current generating devices mounted in coaxial relationship on said frame member, flywheel means connected directly to and rotatable respectively with said generating devices for respectively maintaining the rotation of said devices during periods in which no external force is applied thereto, direct driving means including an alternately oppositely rotating element common to the generating devices connected with and driven by said axle during the rise and fall thereof relative to the frame member, and oppositely active and inactive one-way rotational drive means respectively connected between said generating devices and said alternately oppositely rotating element.

4,387,782

HYDRAULIC POWER STEERING SYSTEM

Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 62,595, Jul. 31, 1979, abandoned. This application Mar. 23, 1981, Ser. No. 246,797

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1978, 2838417

Int. Cl.³ B62D *5/06*

U.S. Cl. 180—132 **7 Claims**

1. A hydraulic power steering parking system for motor vehicles including wheels thereon and provided with power steering means comprising

a multiple-position final valve control element;

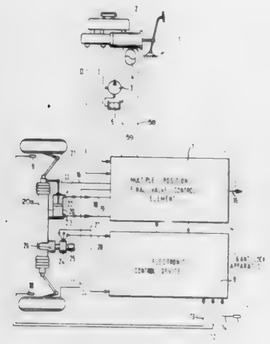
a hydraulic brake system having means connected for sup-

plying amplified energy impulses thereof coupled to said multiple-position final valve control element,

said multiple-position final valve control element having a plurality of final control elements and a slide valve for control of each of the plurality of final control elements, two of said final control elements receiving pressure medium selectively from said slide valves for actuation of the final control elements,

a plurality of sensors for detecting the rotational speed of said wheels,

a power steering transducer for sending out signals in accordance with the rotational position of a steering mechanism,



a magnetic valve for controlling anti-lock means for the wheels,

an electronic control means responsive to signals received from said plurality of sensors and said power steering transducer effective for sending signals only during predetermined speed ranges to said magnetic valve which controls by means of said slide valve one of the two final control elements,

at least four of said plurality of final valve control elements constituting an anti-lock control valve means for each wheel brake, and

said electronic control means, said magnetic valve and said two final control elements jointly performing control of said power steering means.

4,387,783

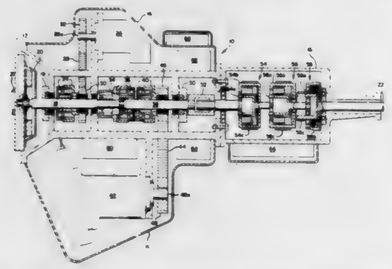
FUEL-EFFICIENT ENERGY STORAGE AUTOMOTIVE DRIVE SYSTEM

Vincent E. Carman, Portland, Oreg., assignor to Advanced Energy Systems Inc., Portland, Oreg.

Filed Sep. 4, 1980, Ser. No. 184,103

Int. Cl.³ B60K *9/00;* **F15B** *1/02*

U.S. Cl. 180—165 **6 Claims**



1. In a wheeled vehicle having an engine, a vehicle drive system comprising:

(a) energy storage means for collecting and storing energy;

(b) power transmission means mechanically coupled to at least one wheel of said vehicle for driving said wheel;

(c) transmission mode selection means for selecting connection of said power transmission means to said energy storage means and to said engine respectively, alternatively either in a first mode wherein said power transmission means receives more energy to drive said wheel from said energy storage means than from said engine, or in a second mode wherein said power transmission means receives more energy to drive said wheel from said engine than from said energy storage means;

(d) means for coupling said engine to said energy storage means for transmitting energy from said engine to said storage means for storage therein;

(e) energy sensor means connected to said energy storage means for sensing the amount of energy stored therein;

(f) engine starting means automatically responsive to said energy sensor means and to said transmission mode selection means for alternatively starting said engine in response to a drop in the energy in said storage means to a predetermined minimum value automatically in response to selecting connection of said power transmission means in said first mode, or starting said engine, although the energy in said storage means is above said predetermined minimum value, automatically in response to selecting connection of said power transmission means in said second mode.

4,387,784

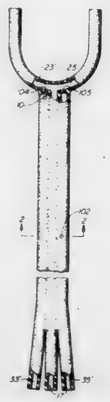
STETHOSCOPE WITH IMPROVED RESONANT CAVITY AMPLIFICATION

Raymond R. Hill, 310 Diogenes Dr., Angwin, Calif. 94508

Filed Oct. 6, 1981, Ser. No. 309,030

Int. Cl.³ A61B *7/02;* **H04R** *25/00*

U.S. Cl. 181—131 **14 Claims**



1. In a stethoscope having a sound pick-up head and at least one ear piece that are connected at opposite ends of an enclosed sound transmission passage therebetween, a sound amplifying structure comprising an elongated resonant cavity connected at one end to said enclosed sound transmission passage in the vicinity of said pick-up head, thereby allowing soundwaves from said pick-up head to simultaneously pass into both the resonant cavity and enclosed passage, a vent of said cavity to the atmosphere being provided through a side wall thereof, whereby an unvented length of said cavity from its connection with said sound transmission passage to said vent determining the range of sound frequencies detected at the pick-up head that are amplified at the ear piece.

4,387,785

OPTICAL DEVICE FOR MONITORING CRITICAL SPEEDS OF A ROTATING MEMBER

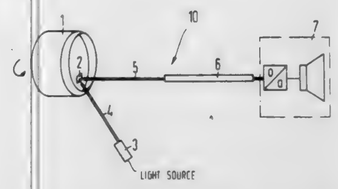
Ingrid Fromm, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 27, 1980, Ser. No. 181,695

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936893

Int. Cl.³ G01P *1/08, 3/48*

U.S. Cl. 181—142 **12 Claims**



1. An optical device for monitoring critical speeds of a rotating member having a periphery, said device including at least one reflector being arranged on a surface of the rotating member near the periphery of the member to rotate in a circular path, a light source producing an input beam, means for directing the input beam toward a point of the circular path of the reflector at a given angle of incidence, a light waveguide being arranged at a suitable interval from the circular path and at a suitable angle to receive a reflected beam from said reflector which occurs when the input beam is reflected by said reflector, and an opto-acoustical transducer being connected to said light waveguide to receive the reflected beam and convert light pulses into sound, said opto-acoustical transducer being provided with a resonator, which exhibits a natural resonance which is matched to a pulse frequency of the reflected beam produced by the reflector when the rotating member is at a critical speed so that when the rotating member reaches the critical speed, the transducer with the resonator emits an acoustical alarm.

4,387,786

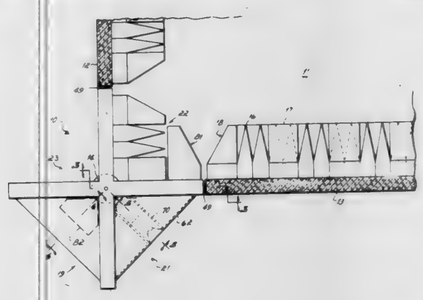
ANECHOIC CHAMBER ARRANGEMENT

Paul W. Klipsch, and James R. Hunter, both of Hope, Ark., assignors to Klipsch and Associates, Inc., Hope, Ark.

Filed Jun. 8, 1981, Ser. No. 271,514

Int. Cl.³ H05K *5/00;* **E04B** *1/82;* **A47B** *81/06*

U.S. Cl. 181—150 **4 Claims**



1. An anechoic chamber arrangement for testing different types, or operational modes, of sound generating devices comprising:

an enclosed chamber having a plurality of sound absorbent interior surfaces and including two substantially vertical walls having such interior surfaces extending toward one another at an angle and terminating to define an open corner;

a rotatable door mounted for rotation about a substantially vertical axis at the open corner and having at least three substantially vertical wall vanes meeting to form at least two rotatable corners at said axis, the rotatable door being located such that rotation of the door may position a selected one of said rotatable corners in the open corner with a wall vane extending toward and substantially parallel to each of the two said vertical walls; and

means for sealing the space between the enclosed chamber and the door vanes when the wall vanes are aligned with the walls of the chamber, the interior surfaces of one pair of vanes defining a rotatable corner being sound absorbent whereby, when this pair of wall vanes is sealed into position as a corner of the closed chamber, the enclosed chamber serves as a conventional anechoic chamber, the interior surfaces of a second pair of vanes defining a rotatable corner which is enclosed by a substantially flat panel attached to the vanes and lying in a generally vertical plane inwardly toward the interior of the chamber with the panel including means for mounting loudspeakers therein for tests.

4,387,787

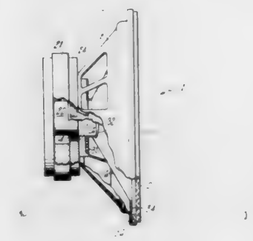
LOUDSPEAKER HAVING ACOUSTIC IMPEDANCE FRONTAL LOADING ELEMENT

John A. King, Martinsville, Ind., assignor to Harman International Industries, Northridge, Calif.

Filed Apr. 20, 1981, Ser. No. 255,401

Int. Cl.³ H04R *1/28*

U.S. Cl. 181—155 **11 Claims**



1. A direct radiating dynamic loudspeaker of the type having low mass diaphragm and magnet means, the improvement comprising:

a substantially planar acoustic impedance means positioned in front of and covering the projected frontal area of the diaphragm;

said acoustic impedance means being nonrigid and being supported only at the periphery thereof; and

said acoustic impedance means composed of fibrous material having an airflow resistance providing a Q less than about 1.2.

4,387,788

DIAPHRAGM PRESSURE RING FOR TONE GENERATORS

Michael Slavin, Troy, and Irvin B. Rea, Royal Oak, both of Mich., assignors to Lectron Products, Inc., Rochester, Mich.

Filed Jan. 21, 1982, Ser. No. 341,442

Int. Cl.³ H04R *7/00*

U.S. Cl. 181—171 **7 Claims**

1. A diaphragm pressure ring for tone generators of the type having a housing provided with a sound cavity, an annular supporting surface adjacent to said cavity, and a diaphragm

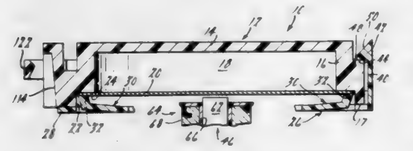
closing said cavity disposed with the outer marginal portion thereof seated on said supporting surface, said ring comprising

an annular member,

a plurality of flexible and resilient cantilevers on said annular member, and

pressure applicator members on the free ends of said cantilevers,

said cantilevers being spaced substantially equidistantly around and disposed substantially in the same plane as and at one side of said annular member,



said pressure applicators extending axially in the same direction from said cantilevers and collectively lying in a circular path of substantially the same diameter as said supporting surface; and

means for fastening the annular member of said pressure ring to the tone generator housing with said cantilevers disposed free from engagement with said housing and said diaphragm with said pressure applicator members overlying and in pressed engagement with the seated marginal portion of said diaphragm and with said cantilevers stressed to maintain said pressed engagement.

4,387,789

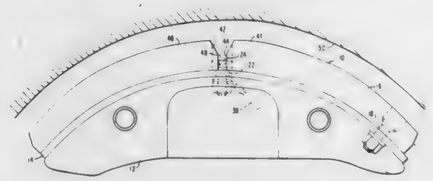
ELECTRICAL BRAKE LINING WEAR INDICATOR

Dennis A. Borugian, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 86,218, Oct. 18, 1979, abandoned, which is a continuation of Ser. No. 934,570, Aug. 17, 1978, abandoned, which is a continuation of Ser. No. 827,997, Aug. 26, 1977, abandoned, which is a continuation of Ser. No. 707,435, Jul. 21, 1976, abandoned. This application Nov. 7, 1980, Ser. No. 205,029

Int. Cl.³ B60T *17/22*; F16D *66/02*

U.S. Cl. 188—1.11 **1 Claim**



1. An indicator for indicating a predetermined amount of wear of a brake lining comprising: a brake lining support member adapted for assembly in a brake mechanism to be supported thereby, said brake lining being mechanically fastened to said brake lining support member by a plurality of bolts, said brake lining adapted to frictionally engage a rotating member associated with said brake mechanism, an electrical contact resiliently disposed on said brake lining support member and insulated therefrom by a shouldered resilient insulating bushing, said electrical contact comprising a threaded bolt attached to said brake lining support member and held thereon by a threaded nut, said insulating bushing completely surrounding said threaded bolt and extending through said support member to insulate said threaded bolt from said brake lining support member, a resilient annular insulating washer surrounding said bolt and disposed between said brake lining support member and said nut to further insulate said nut and bolt combination from said brake lining support member, said nut capturing an electrical connector on said bolt to electrically connect it thereto, said electrical connector electrically connected to an insulated wire member, said brake lining support member being a brake shoe comprising a brake shoe table supported by and attached to a brake shoe web and said rotating member being a brake drum, said brake lining being provided in two, separate longitudinal segments on said brake shoe table and said threaded bolt having a head disposed within a groove formed in a longitudinal end of each of said lining segments and within an opening separating said two segments of said lining midway from the end of said table, the threaded shank of said bolt being disposed in an aperture in said brake shoe table offset on said table from an intersection of said brake shoe table and said brake shoe web, said head of said threaded bolt having a cylindrical head portion which engages the groove in each of said lining segments and acts as said electrical contact, said threaded bolt being of brass and which material is a softer material than said drum and of a greater height than the bolt heads of the bolts that mechanically fasten said brake linings to said brake shoe table and said insulating bushing being provided with an annular shoulder seated directly on said brake shoe table and disposed adjacent to said head portion to insulate said portion from said brake shoe table, said insulating washer disposed on the side of said brake shoe table opposite said annular shoulder, said resilient insulating bushing and said annular insulating washer maintaining said threaded bolt and said nut in spaced relation from said brake shoe table and said threaded bolt and nut assembly floating with respect to said brake shoe table to accommodate rotating irregularities in alignment between said drum and said brake shoe table.

4,387,790

WEBBING LOCKING DEVICE

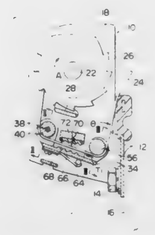
Jun Yasumatsu, Toyota; Hiroshi Tsuge, Chiryu, and Takashi Kawaharazaki, Toyoake, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, both of Aichi, Japan

Filed Mar. 16, 1981, Ser. No. 243,695

Claims priority, application Japan, Mar. 21, 1980, 55-37613[U]; Mar. 21, 1980, 55-37614[U]

Int. Cl.³ A62B *35/00*

U.S. Cl. 188—65.3 **7 Claims**



1. A webbing locking device used in a seatbelt system for clamping an intermediate portion of an occupant restraining webbing in a vehicular emergency, comprising:

a frame secured to a vehicle body;

a lock lever pivotally supported on said frame by a support shaft;

lock means for clampingly locking the intermediate portion of the webbing when said lock lever pivots during a vehicular emergency;

a first roller rotatably supported on said lock lever, and placed in a position remote from said support shaft, around which the intermediate portion of the webbing is guided, so that said lock lever is pivoted by said first roller when the tension in the webbing increases;

supporting means between said lock lever and axially opposite ends of said first roller for rotatably supporting said first roller on said lock lever and enabling said first roller to move in a radial direction with respect to said first roller;

contact means for contacting the outer periphery of said first roller only when said first roller moves in said radial direction, to give a frictional resistance to the rotation of said first roller; and

the supporting means comprising a first portion secured to the lock lever, a separate second portion secured to the first roller, and resilient biasing means, the first and second portions normally being resiliently urged by the biasing means toward each other into contact so as to maintain the periphery of the roller away from the contacting means, whereupon when the tension in the webbing exceeds a predetermined value the first and second portions are caused to move relative to each other in a direction that brings the periphery of the first roller toward the contacting means,and the first and second portions are caused to move further apart in opposition to the resilient biasing means;

whereby, in the vehicular emergency, the tension in a portion of the webbing clamped by said lock means is reduced by said frictional resistance to rotation of said first roller.

4,387,792

MECHANICAL PARKING BRAKE MECHANISMS

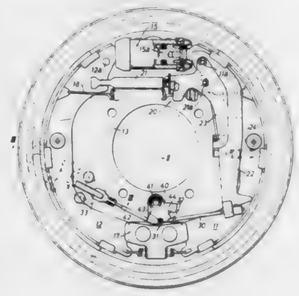
Noriaki Imamura, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 2, 1981, Ser. No. 269,598

Claims priority, application Japan, Jul. 31, 1980, 55-106622

Int. Cl.³ F16D *51/00*

U.S. Cl. 188—328 **4 Claims**



1. A mechanical parking brake mechanism including a parking lever assembled within a drum brake assembly and connected with a parking brake wire to be manually operated, said parking lever being arranged to cooperate with a strut of said drum brake assembly so as to displace a pair of brake shoes outwardly toward the inner periphery of a brake drum, said parking brake mechanism comprising:

a sector pulley pivoted to the backing plate of said brake drum and having a semi-circular guide face for guiding an intermediate portion of said parking brake wire, said semi-circular guide face being formed with at least two radial recesses spaced from each other at a predetermined interval; and

at least two projections integrally provided on the intermediate portion of said parking brake wire and arranged to be selectively engaged with the respective radial recesses in accordance with the length of pulling stroke of said wire to rotate said sector pulley in response to the movement of said parking brake wire.

4,387,791

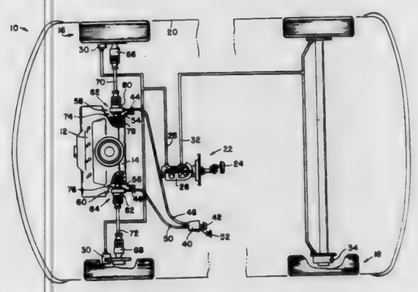
PARKING BRAKE FOR FRONT WHEEL DRIVE VEHICLE INCLUDING BRAKE BAND FOR UNIVERSAL JOINT

Irving R. Ritsema, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 2, 1981, Ser. No. 239,298

Int. Cl.³ F16D *51/00*

U.S. Cl. 188—77 R **4 Claims**



1. In a brake system for a front wheel drive vehicle having an engine coupled to a transmission which imparts movement to a pair of front wheels via universal joints, a first pair of brake assemblies cooperting with the pair of front wheels during a service brake application to stop the vehicle, a second pair of brake assemblies cooperating with a pair of rear wheels during a service brake application to also stop the vehicle, and a parking brake assembly operable during a parking brake application to substantially prevent movement of the vehicle, characterized by said parking brake assembly comprising a pair of bands which are contracted during the parking brake application to frictionally engage a pair of said universal joints.

4,387,793

CLUTCH MOTOR ARRANGEMENT

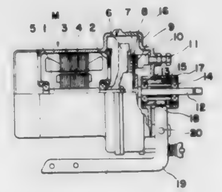
Nobukazu Sugano, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 26, 1980, Ser. No. 210,571

Claims priority, application Japan, Nov. 26, 1979, 54-153322; Feb. 12, 1980, 55-16265

Int. Cl.³ B60K *41/02*

U.S. Cl. 192—0.02 R **8 Claims**



1. A clutch motor arrangement including an electric motor equipped with a fly wheel mounted on a motor output shaft of the electric motor and a clutch mechanism movably supported

so as to reciprocate in an axial direction of said electric motor to be selectively brought into contact with and spaced from said fly wheel through operation of a clutch operating lever so as to intermittently transmit torque of the electric motor to a clutch output shaft of said clutch mechanism by operating said clutch operating lever, said clutch motor arrangement further comprising a detection device operatively positioned for detecting functioning of said clutch mechanism, and control means for controlling voltage applied to said electric motor and including a control device connected between said detection device and said electric motor and responsive to said detection device to apply to said electric motor full power source voltage and voltage close thereto during an operative ON state of said clutch mechanism, and to apply to said electric motor voltage lower than the power source voltage during an inoperative OFF state of said clutch mechanism.

4,387,794

SINGLE-SURFACE ELECTROMAGNETICALLY OPERATED CLUTCH/BRAKE UNIT

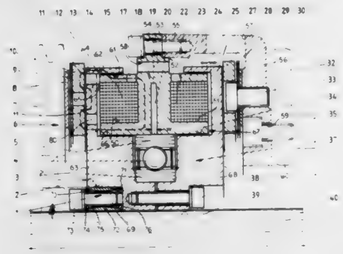
Rudolf Schneider, and Siegfried Winkelmann, both of Tettnang, Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,637

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948728

Int. Cl.³ F16D *67/06*

U.S. Cl. 192—18 B **6 Claims**



1. An electromagnetically operable clutch and brake device for braking rotation of a shaft relative to a housing and coupling said shaft to a driven element, said device comprising:

an annular magnetic body having

an outer flange for attachment to said housing,

a pair of pole-forming portions inwardly of said flange and having opposite axially open recesses,

a pair of respective annular coils received in said recesses, and

an inner surface defining the inner diameter of said body;

a rotor assembly receiving said body and comprising

a clutch disc juxtaposed with said element, a brake disc juxtaposed with said housing,

means fastening said discs axially together, each of said discs reaching around and enclosing a respective one of said pole portions, said assembly being received on said shaft with freedom of axial and angular displacement, and

a roller bearing having an inner race clamped between said discs and an outer race radially abutting said surface but axially shiftable relative thereto;

respective armatures between said housing and said brake disc and between said element and said clutch disc; and

means for locking said assembly to said shaft.

4,387,795

INTER-AXLE TRANSMISSION APPARATUS

Otto Mueller, 13 Byfield La., Dearborn, Mich. 48120

Filed Jan. 14, 1977, Ser. No. 759,340

Int. Cl.³ F16H *37/06*

U.S. Cl. 192—60 **10 Claims**

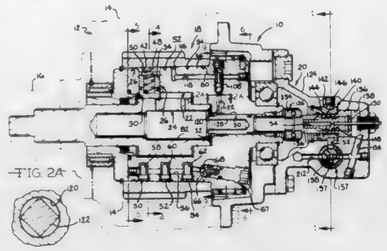


FIG. 2A

1. In an inter-axle transmission having a rotary input member and a rotary output member, apparatus comprising a torque transmitting mechanism operatively connected between said input member and said output member, said torque transmitting mechanism being connected between said members for actuation to a first position of operation for transmitting substantially no torque from said input member to said output member and wherein substantially free-wheeling of the output member relative to the input member can occur and to a second position of operation for transmitting torque from said input member to said output member and wherein a limited slippage of the output member relative to the input member can occur, and an actuator means associated with said torque transmitting mechanism and actuable to place said torque transmitting mechanism selectively in either said first position or said second position, said actuator means including an assembly hydraulically actuable to move to a retracted position or to an extended position to maintain said torque transmitting mechanism in its first or its second position, valve means for directing hydraulic fluid under pressure to said assembly for moving said assembly either to said retracted position or to said extended position, and a remote control means for actuating said valve means for directing the hydraulic fluid to the assembly for moving said assembly to the selected position, said remote control means being a push-pull cable, and said valve means includes a movable spool to which said cable is connected to enable the spool to be moved from a remote location, said spool being rotatable about its axis to two separate positions for directing fluid to move said assembly respectively either to its retracted position or to its extended position, said spool also being movable axially in one direction to enable fluid under pressure to be directed to said assembly and movable axially in the other direction to block fluid pressure to said assembly.

4,387,796

APPARATUS FOR FEEDING BILLETS OR THE LIKE INTO A FORGING PRESS OR THE LIKE

Satoru Enomae, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 220,980

Claims priority, application Japan, Dec. 27, 1979, 54-169145; Dec. 27, 1979, 54-180210; Dec. 27, 1979, 54-180211

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—374 **8 Claims**

1. Apparatus for feeding articles to a desired destination in either of two different attitudes, comprising:

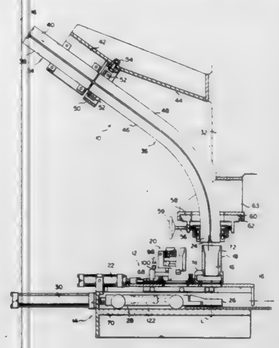
(a) chute means for conveying successive articles therethrough, the chute means having an exit end;

(b) infeed means for transporting the articles from a loading position to the desired destination; and

(c) selective loading means comprising:

(1) first loading means for loading each article coming out of the exit end of the chute means onto the infeed means in a first upstanding attitude;

(2) second loading means for loading each article coming out of the exit end of the chute means onto the infeed means in a second recumbent attitude by changing its orientation; and



(3) changeover means for selectively moving the first and second loading means to and from a working position between the chute means and the infeed means.

4,387,797

METHOD AND DEVICE FOR TRANSMITTING CROWN CORKS

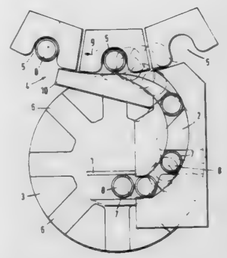
Friedrich Rademacher, Kamen-Südkamen, Fed. Rep. of Germany, assignor to Holstein und Kappert GmbH, Dortmund, Fed. Rep. of Germany

Filed Aug. 8, 1980, Ser. No. 176,573

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932339

Int. Cl.³ B65G *47/31, 47/80*

U.S. Cl. 198—461 **6 Claims**



2. Arrangement for transferring crown corks from a supply source to a capping location comprising a capping device movable along a circular path and having individual receiving pockets spaced angularly apart along the circular path, means forming an aligning track and arranged for moving a row of crown corks from the supply source to a rectilinearly extending outlet opening from said aligning track, means forming a horizontally arranged stationary spirally extending shaped guide track located in a single plane for receiving individual crown corks from the outlet opening of said aligning track and for guiding the crown corks individually and in spaced relation to the receiving pockets in said capping device, a horizontally arranged rotatable conveying disk vertically spaced from said guide track and having a central axis of rotation and a conveying surface extending radially outwardly from and transversely of the central axis, said conveying surface having a circular circumferential periphery, said rectilinearly extending outlet opening spaced between said central axis and said circumferential periphery, said conveying disk having generally radially outwardly extending guide surfaces extending to the circumferential periphery and arranged to engage the crown corks for adjusting the spacing of the crown corks, said conveying surface arranged to rotate passing in a plane generally parallel and adjacent to the plane of said guide track so that said conveying surface contacts the crown corks in said guide track and moves the crown corks individually along said guide track from said aligning track to said capping device and at the same time adjusting the spacing of the crown corks to correspond to the spacing of the receiving pockets in said capping device.

4,387,798

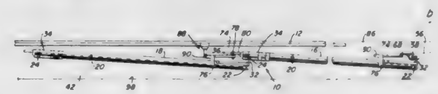
CASCADING CONVEYOR SYSTEM

Will B. Jamison, Bethel Park, and David R. Hazen, McMurray, both of Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Continuation of Ser. No. 809,858, Jun. 24, 1977, abandoned, which is a continuation of Ser. No. 679,007, Apr. 21, 1976, abandoned. This application Jul. 3, 1978, Ser. No. 921,710

Int. Cl.³ B65G *21/10*

U.S. Cl. 198—587 **5 Claims**



1. A conveyor system for transporting mined material in a mine comprising,

a plurality of longitudinally extending conveyor assemblies each having an independent endless conveyor,

said endless conveyor assemblies each having a receiving end portion and a discharging end portion,

said receiving end portion of each of said endless conveyor assemblies having an enlarged surface area maintained in underlying relation with said discharging end of an adjacent endless conveyor assembly for receiving the mined material discharged therefrom,

drive means positioned on each conveyor assembly for rotating said endless conveyor at a preselected speed to transport the mined material from said receiving end portion to said discharging end portion,

said discharging end portion of each of said conveyor assemblies arranged in overlapping relation with said receiving end portion of an adjacent conveyor assembly,

said receiving end portion pivotally connected to said discharging end portion to permit conveyance of mined material along a curved path formed by said endless conveyors,

a roof engaging member for supporting each of said conveyor assemblies for longitudinal movement adjacent the mine roof,

ground engaging means for securing said roof engaging member to the mine roof,

each of said endless conveyor discharging end portions having a yoke member extending from said respective conveyor discharging end portion into overlying relation with said receiving end portion of an adjacent conveyor assembly,

each of said endless conveyor receiving end portions having an upwardly extending bracket member with a pivot plate extending forwardly therefrom,

said pivot plate being secured at one end to said upwardly extending bracket member and extending above said endless conveyor receiving end portion into underlying relation with said yoke member,

a conveyor support member secured at one end to said roof engaging member and detachably secured at the other end to said upwardly extending bracket member,

said conveyor support member arranged to connect said endless conveyor receiving end portion to said roof engaging member and support said endless conveyor receiving end portion in an elevated position for longitudinal movement on said roof engaging member,

said conveyor support member having connecting members rotatably supported on said roof engaging member and extending vertically downward toward each of said conveyor assemblies,

a pivot support extending upwardly from said receiving end portion of each of said conveyor assemblies adjacent to the lower end portion of said connecting members,

means for connecting said pivot support to said connecting members and thereby suspend each of said conveyor assemblies from the mine roof for longitudinal movement relative thereto,

a vertical pivot pin connecting said pivot plate to said yoke member, and

said yoke member being pivotally connected to said pivot plate by said pivot pin to permit horizontal pivotal movement of the adjacent end portion of said endless conveyor assembly about a vertical axis and support said adjacent endless conveyor discharging end portion from a common conveyor support member.

4,387,799

TAPERED BED FEEDER

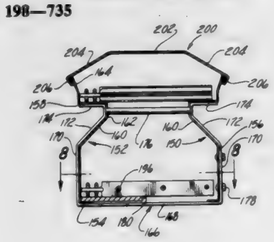
Raymond G. Sweeney, Little Chute, and William L. Rammer, Kaukauna, both of Wis., assignors to Badger Northland, Inc., Kaukauna, Wis.

PCT No. PCT/US80/00906, § 371 Date Jul. 14, 1980, § 102(e) Date Jul. 14, 1980, PCT Pub. No. WO82/00283, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 14, 1980, Ser. No. 273,883

Int. Cl.³ B65G *19/28*

U.S. Cl. 198—735 **9 Claims**



1. A tapered bed feeder conveyor including an elongated center section, a tapered bed secured to the center section, an idler shaft rotatably journaled on the idler shaft support, at least one conveyor sprocket secured to the idler shaft, a drive shaft support secured to the other end of the center section, a drive shaft rotatably journaled on the drive shaft support, at least one conveyor sprocket secured to the drive shaft, at least one endless chain trained around the sprockets on the idler shaft and the drive shaft, conveyor flats extending from the endless chain operable to convey material along the upper surface of the tapered bed and a conveyor drive operable to drive the drive shaft characterized by the elongated center section including two reversible and identical side panel members formed from sheet metal with an integral tapered bed support ledge and an integral endless chain return support ledge, each side panel member including upper and lower edges and at least one sloping section intermediate the edges enabling the side panels to nest together while disassembled with one of the side panels turned end for end and corresponding upper and lower edges on adjacent nested panel members being vertically and horizontally offset from each other; and a plurality of spacer bracket assemblies connecting one panel member to the other panel member in a parallel spaced apart relationship.

4,387,800

WALKING-BEAM CONVEYOR

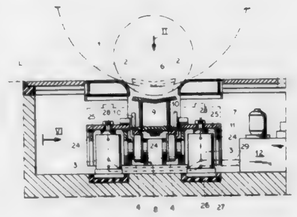
Oskar Noe, Mühlheim am Ruhr, Fed. Rep. of Germany, assignor to BWG Bergwerk- Und Walzwerk- Maschinenbau GmbH, Duisburg, Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 197,168

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016158

Int. Cl.³ B65G *23/00*

U.S. Cl. 198—750 **8 Claims**



6. A walking-beam conveyor comprising:

a pair of horizontally and longitudinally extending and parallel fixed beams;

a central movable beam between and parallel to said fixed beams;

means for vertically reciprocating said movable beam;

a housing suspended from said movable beam;

means for preventing said housing from moving longitudinally relative to said fixed beams;

a rack mounted on and extending longitudinally along said movable beam;

a pinion mounted on said housing and in mesh with said rack; and

a motor carrying said pinion and mounted on said housing.

4,387,801

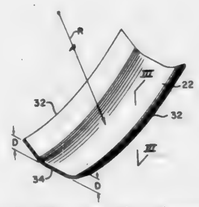
CONVEYOR BELT

Merle L. Hoover, deceased, late of Franklin, Pa. (by Nancy S. Hoover, executrix), assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Continuation of Ser. No. 69,664, Aug. 24, 1979, abandoned. This application Jan. 12, 1981, Ser. No. 224,419

Int. Cl.³ B65G *15/08, 15/34*

U.S. Cl. 198—821 **19 Claims**



1. In an endless flexible conveying element adapted to be mounted on a carrier means to conform with a generally curvilinear endless path for orbital traverse of such endless path and wherein an elongated resiliently deformable portion of said conveying element includes a longitudinally extending central portion located laterally intermediate longitudinally extending side portions thereof and said resiliently deformable portion laterally flexes to permit traverse thereby of laterally curvilinear portions of said path in an upright orientation, the improvement comprising:

said resiliently deformable portion having an innate tendency to spontaneously assume a natural form thereof which is configured such that said resiliently deformable portion, when mounted on such carrier means, is deformed from said natural form in a manner to provide in said side portions a condition of relative longitudinal tension with respect to said central portion which is substantially continuously maintained throughout such lateral flexing of said resiliently deformable portion.

4,387,802

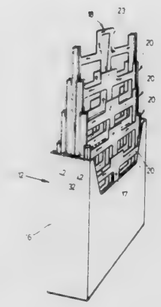
CONTAINER FOR THIN FLAT ARTICLES

Scott J. G. Shearing, 16 Waterfield Dr., Scarborough, Ontario, Canada (M1P 3W5), and Ronald R. Bache, 14 Queensdale Ave., Toronto, Ontario, Canada (M4J 1X9)

Filed Jul. 24, 1981, Ser. No. 286,329

Int. Cl.³ B65D *5/50*

U.S. Cl. 206—45 **8 Claims**



1. A container for thin, flat articles comprising a box-like housing having an opening through which each article can be inserted into the housing and removed therefrom in a direction lying in the plane of the article, and a series of article support members within the housing in side-by-side parallel relationship to enable each article to be received between a respective adjacent pair of support members, the housing having internal grooves extending inwardly from the opening and at least some of the support members having side edges slidably received in said grooves, one of the support members being a primary support member having manually grippable means to enable the primary support member to be at least partially pulled out of the container through the opening, the other support members being secondary support members, means interconnecting each adjacent pair of support members to cause manual pulling of the primary support member at least partially out of the container through the opening to successively pull the secondary support members at least partially out of the container through the opening in a telescopic manner by successive operation of respective interconnecting means after each successive support member has been pulled a predetermined distance, and each support member having article support means to cause each article to be at least partially pulled out of the container through the opening with its associated support member thereby displaying the articles in staggered relationship.

4,387,803

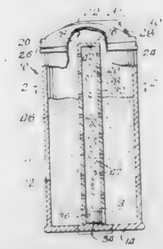
ABSORBENT DEVICE FOR CONTAINERS FOR SUGAR, SALT, ETC.

Robert A. Mercil, Star Rte., Box 315, Wetmore, Mich. 49895

Filed Nov. 21, 1980, Ser. No. 208,884

Int. Cl.³ B65D *81/24, 83/06*

U.S. Cl. 206—204 **4 Claims**



1. A container for condiment, comprising,

a main container generally closed, having an imperforate bottom element, a surrounding wall defining a top opening, and a removable perforated cover, and

an inner container of tubular form having an open lower end and a closed upper end, the bottom element and the inner container including interconnecting elements capable of releasably mounting the inner container on the bottom element in response to manipulating the inner container by manually grasping it at its upper end, the inner container being of such length as to terminate closely adjacent the top opening of the main container, the inner container being made of material that is rigid and generally continuous but with dimensionally defined holes therethrough spaced apart substantial distance relative to the size of the holes, the holes being of such size as to confine granular material of relatively large size such as rice against escape therethrough, but to enable granular material of relatively small size such as sugar and salt to pass therethrough.

4,387,804

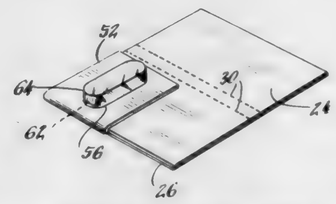
CONVERTIBLE PILL CUP PACKAGE

John J. Austin, Elkhart, Ind., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 171,392, Jul. 23, 1980, abandoned. This application Feb. 8, 1982, Ser. No. 346,512

Int. Cl.³ B65D *77/00*

U.S. Cl. 206—218 **1 Claim**



1. A package comprising paperboard and adapted for containing a preselected amount of a product therein, said package being usable as a cup and comprising:

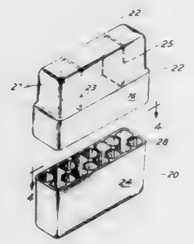
(a) a pair of side walls joined along mutual edges thereof to define a cup;

(b) a top edge of each of said side walls being unattached to each other to define an open mouth for said cup;

(c) a support flap connected along a first fold line to one of said top edges of said side walls and extending therefrom;

(d) packaging means secured to one face of said support flap for containing said product;
(e) a pair of closely spaced additional parallel fold lines laterally traversing each of said side walls to divide said side walls into equal portions thereby dividing said cup into opposite halves;
(f) said support flap being folded about said first fold line against one of said side walls; and
(g) said side walls being folded about said additional fold lines so as to sandwich said support flap and said packaging means between said opposite halves of said cup.

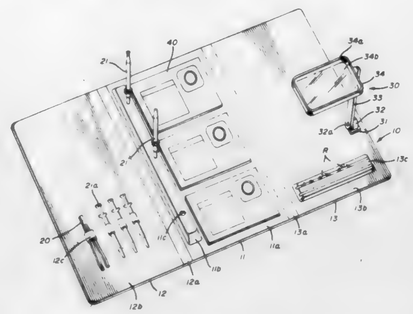
4,387,805
ARROWHEAD CASE AND ARROWHEAD WRENCH
Charles A. Lanius, Prairie du Sac, Wis., assignor to Flambeau Corporation, Baraboo, Wis.
Filed May 6, 1981, Ser. No. 260,895
Int. Cl.³ B65D *81/36, 85/20*
U.S. Cl. 206—230 **6 Claims**



1. A protective case for arrowheads, each arrowhead having a central shank, a plurality of radially-extending blades and a tip, comprising, in combination:
a base adapted to receive said arrowheads, said base having
a bottom wall,
a side wall, defining a rim,
an internal wall dividing said base into arrowhead compartments, and
two pairs of opposed rib members within each of said compartments, each rib being disposed at approximately 90° to adjacent ribs and terminating in an inner edge to grippingly engage said shank of said arrowhead between said blades, whereby said arrowhead is retained within said compartment, isolated from other arrowheads in the case thereby avoiding dulling of said tip and said blades; and
a cover adapted to receive and enclose said base and the arrowheads therein, said cover including
an offset peripheral portion defining an interior ledge, said rim of said base abutting said interior ledge when the case is closed to resist a compressing force applied to said case, and
a transverse rib which is aligned and abuts said internal dividing wall, thereby further increasing the resistance of the case to compression forces.

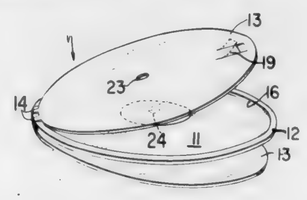
4,387,806
GEM STORAGE, DISPLAY AND INVENTORY CONTROL SYSTEM
Michael M. Poole, 19565 Applebrook Creek, Strongsville, Ohio 44315; Samuel G. Solitt, 2121 Brookshire Rd., Akron, Ohio 44313, and Jerry Shaw, 50 W. Fairlawn Blvd., Akron, Ohio 44313
Filed Jun. 15, 1981, Ser. No. 273,623
Int. Cl.³ B65D *51/24*
U.S. Cl. 206—232 **4 Claims**

4. A gem storage, display, and inventory control system, comprising:
(A) a storage container;
(B) a display unit;
(C) a control package;
(D) said display unit and said control package being normally removably received in said storage container;



(E) said control package including a pair of temporarily interconnected cards bearing indicia related to a particular gem; and
(F) one of said cards containing means for releasably holding a gem.

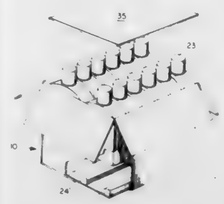
4,387,807
RING COVER PROTECTOR FOR RECORDS
Jorge de la Rosa, 239 Beacon Ave., Jersey City, N.J. 07306
Filed Oct. 2, 1981, Ser. No. 308,416
Int. Cl.³ B65D *85/30*
U.S. Cl. 206—312 **2 Claims**



1. A protective cover for phonograph records comprising a circular ring provided with a groove about its inner circumference adapted to snap fit about a record, a flexible cover adjacent each side of the record being hinged to the ring with a stiff wire pin passing through hinge ears and accommodated in a groove in each side of the ring each cover being provided with a hole aligned with the central hole of the record.

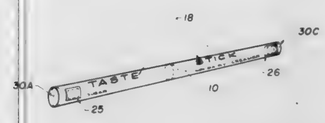
4,387,808
SHIPPING DEVICE
Arthur H. Dornbusch, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed May 11, 1981, Ser. No. 262,721
Int. Cl.³ B65D *81/00, 85/62*
U.S. Cl. 206—432 **9 Claims**

1. A shipping package comprising:
(a) an array of identical articles to be shipped in a set spacial relationship with one another;
(b) upper and lower article contacting surfaces separated by the approximate height of the articles;
(c) a discontinuous layer of foam thermoplastic material extending across and supported by said lower article contacting surface and comprising a pattern of spaced configurations corresponding to the arrangement of the articles in said array, said thermoplastic material having a thickness in the range of from about ⅛" to about ½"; and
(d) pockets formed in said discontinuous layer of thermoplastic material to the shape of at least part of the lower portions of said articles and designed to maintain said



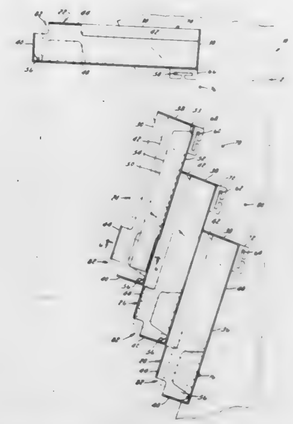
relationship of all the articles of the array, the pockets being located in positions which correspond with at least certain of said articles in said array and having the lower portions of such articles resting therein;
(e) said thermoplastic material being firmly bonded to said lower article contacting surface, but not to said articles.

4,387,809
MULTI-COMPARTMENT COMBINATION PACKAGE AND STIRRER DEVICE
Paul C. Botzler, 11548 Glenn Arm Rd., Glen Arm, Md. 21057
Filed May 1, 1981, Ser. No. 259,576
Int. Cl.³ B65D *77/08, 25/04;* **B67D** *5/56*
U.S. Cl. 206—526 **7 Claims**



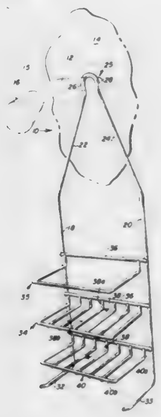
1. An integral multi-compartment combination package and stirrer device of flexible material comprising:
A hollow tubular body having opposed elongated sides bonded together to form said tubular body,
two end caps each having the cross sectional shape of the finished combination package and stirrer device with a flanged lip around the perimeter at a right angle to the flat surface of said end cap,
one or more compartment separators similar to said end cap,
one said end cap inserted into said tubular body with end cap positioned with flat surface of end cap at right angle to long axis of said tubular body with outside surfaces of flanged lip of said end cap bonded to inside surface of said tubular body at one end or tubular body,
said compartment separators inserted into said tubular body with compartment separators positioned with flat surface of compartment separators at right angle to long axis of said tubular body with outside surface flanged lip of said compartment separators bonded to inside surface of said tubular body at a distance from first bonded end cap to form a compartment within the said tubular body,
second end cap inserted into tubular body at remaining open end of said tubular body and affixed to tubular body indentical to first bonded end cap,
said hollow tubular body having a die cut slot removed or perforated compartment emptying slot cut at one end of each compartment formed in said tubular body for removal of compartment contents,
perforated or tear-away sealable tabs affixed atop of each said compartment emptying slot and said tabs are removable from said tubular body to empty contents of compartment.

4,387,810
SHINGLED RACK DISPLAY DEVICE
Louis J. Crosslen, Grafton, Wis., assignor to Frank Mayer & Associates, Inc., Grafton, Wis.
Filed Oct. 27, 1980, Ser. No. 201,121
Int. Cl.³ A47F *3/00*
U.S. Cl. 211—49 D **3 Claims**



1. A point of purchase merchandise display assembly comprising a pair of generally vertical support walls spaced laterally apart from one another, a plurality of generally rectangular one piece, molded plastic merchandise supporting racks arranged in shingled relationship with one another and each having an upper and lower end, each of said racks also having an open side for access to and loading of said merchandise, a closed side opposite to said open side, and two opposite side walls joining said open and closed sides and further having a plurality of vertically disposed dividers parallel to and between said opposite side walls and integrally molded with said closed side and to form a vertical compartment between adjacent dividers to insure vertical stacking of said merchandise therein, said closed side having a plurality of apertures therein, said apertures being generally between said dividers and for receiving a removable and vertically disposed tongue means therethrough, said tongue means centrally positioned between adjacent dividers to thereby divide said vertical compartment in two, and displacement means at said lower end of said racks to cause said merchandise to be moved outwardly a small extent at said lower end of said racks to facilitate grasping and removal of said merchandise from said racks, each of said racks having a plurality of retaining means adjacent said lower end and abutting said vertically stacked merchandise above said outwardly moved item of said merchandise, means pivotally mounting said upper end to and between said support walls for permitting swinging of said racks between a lower display position and an upper generally horizontal loading position for racks located beneath said generally horizontally disposed racks, said mounting means including pin and bracket means between said racks and said walls to pivotally mount said racks on said walls to permit said swinging thereof, said pin and bracket means including a pin and further including a bracket with a generally T-shaped slot with two opposite ends along its length and which is open intermediate its length to permit removal of said racks from said pin, said racks being swingable to said upper position wherein said pin is located in one of said ends of said T-shaped slots and other means on said walls and engageable by said rack to hold the latter in said upper position, said rack being shiftable to a display position wherein said pin means are located in an opposite end of said T-shaped slot to permit said racks to hang downwardly from said walls and in said shingled relation.

4,387,811
SHOWER SHELF
Meyer J. Ragir, and Joseph B. Mayer, both of Chicago, Ill., assignors to Selfix, Inc., Chicago, Ill.
Filed Mar. 23, 1981, Ser. No. 246,727
Int. Cl.³ A47F 5/08
U.S. Cl. 211—119 **7 Claims**



1. A shelf support structure adapted to be suspended from a shaft extending out from the surface of a wall comprising:

a frame comprised of a pair of spaced-apart generally vertical legs, the upper ends of which taper towards each other and merge into the lower ends of a pair of arms of a generally inverted U-shaped gripping portion adapted to be received over said shaft and to retain said shelf structure in place thereon, said vertical legs and said U-shaped gripping portion being formed from a single continuous member to provide the uppermost portion of said shelf structure with an uninterrupted closed configuration;

said arms of said gripping portion tapering towards each other from the base of the inverted U-shaped gripping portion to define at their lower ends a throat at which the spacing between said arms is less than the diameter of said shaft; and

at least one shelf extending between and attached to said vertical legs for supporting articles thereon;

the configuration of said gripping portion coacting with said shaft to retain said structure in position and inhibit both displacement thereof along the axis of said shaft and rotation thereof about the axis of said shaft;

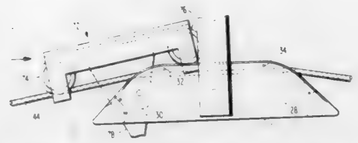
the configuration of the upper ends of said vertical legs and of said pair of arms acting to facilitate guided positioning of said shelf structure on said shaft so that said shaft is guided by said upper ends into said gripping portion when said shelf structure is positioned in relation to said shaft so that said shaft is disposed between said upper ends of said vertical legs, and said shelf structure is moved downwardly with respect to said shaft.

4,387,812
INTERMEDIATE CABLE SUPPORT
Cleveland J. Biller, Morgantown, and David D. Johnson, Booth, both of W. Va., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Mar. 10, 1981, Ser. No. 242,513
Int. Cl.³ B63C 19/00
U.S. Cl. 212—176 **8 Claims**

1. A skyline intermediate support for use in a skyline logging system, which system includes a carriage having sheave wheels which travel over a skyline cable, and means to slacken the skyline cable to allow attachment and removal of logs, comprising in combination:

(a) first means for allowing said carriage to disengage said cable and to pass on the intermediate support;

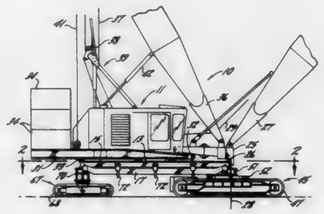
(b) sheave wheel means mounted on said first means for allowing said skyline cable to pass freely through the



intermediate support and below said carriage as it passes on the intermediate support; and

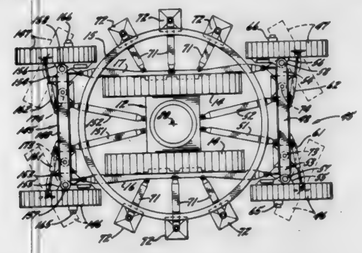
(c) cable retention means attached to said first means for preventing said cable from disengaging the intermediate support when said cable is slackened and tightened during logging operations.

4,387,813
MOVABLE RING SUPPORTED LIFT CRANE
Daniel E. Beduhn, and James G. Morrow, Sr., both of Manitowoc, Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.
Continuation of Ser. No. 58,284, Jul. 17, 1979, abandoned. This application Sep. 8, 1981, Ser. No. 300,016
Int. Cl.³ B66C 23/73, 23/78
U.S. Cl. 212—195 **4 Claims**



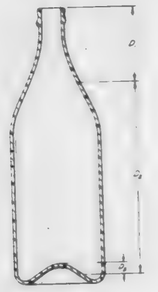
1. In a crane assembly having an upper structure pivoted on a lower car body, the combination comprising, a pair of support beams secured to and forming a part of said lower car body, a track-like ring secured to said beams and horizontally surrounding said lower car body, said beams extending fore and aft beneath and beyond the periphery of said ring, a boom carrier pivoted for vertical movement on said upper structure and riding for rotation on said ring, a boom mounted on said boom carrier for lifting a load, a counterweight carrier pivoted for vertical movement on said upper structure and riding for rotation on said ring, means interconnecting said counterweight carrier and said boom for counteracting a heavy load, and a traveling support for said ring and crane assembly including front and rear pairs of laterally spaced crawler assemblies respectively attached outboard of said ring to the projecting ends of said pair of beams and means including respective frame elements interconnecting the crawler assemblies of each of said front and rear pairs and for supporting said ring between the ends of said support beams, a turntable mounted on the frame element of said front crawler assemblies, a second frame element mounted on the upper portion of said turntable, means for attaching at least a portion of said ring to said second frame element, and said pair of front crawler assemblies each including an endless track and hydraulic motor means for selectively and reversibly driving said tracks to permit movement of said crane and ring over the ground while said boom is lifting a heavy load.

4,387,814
TRAVELING ATTACHMENT FOR RING SUPPORTED LIFT CRANE
Daniel E. Beduhn, and James G. Morrow, Sr., both of Manitowoc, Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.
Continuation-in-part of Ser. No. 300,016, Sep. 8, 1981, which is a continuation of Ser. No. 58,284, Jul. 17, 1979, abandoned, and a continuation-in-part of Ser. No. 305,519, Sep. 25, 1981, which is a continuation-in-part of Ser. No. 58,285, Jul. 17, 1979, abandoned. This application Feb. 1, 1982, Ser. No. 344,388
Int. Cl.³ B66C 23/78, 23/73
U.S. Cl. 212—195 **5 Claims**



1. In a crane having an upper structure mounted for rotation on a lower carbody including crawler means for moving the crane over the ground, the combination comprising, at least a pair of support beams secured to said lower carbody, a track-like ring secured to said beams and horizontally surrounding said lower carbody and said crawler means, said beams extending fore and aft beneath and beyond the periphery of said ring, a boom carrier pivoted for vertical movement on said upper structure and riding for rotation on said ring, a boom mounted on said boom carrier for lifting a load, a counter-weight carrier mounted for vertical movement on said upper structure and riding for rotation on said ring, means interconnecting said counterweight carrier and said boom for counteracting a heavy load, a first traveling support attachment including a pair of laterally spaced crawler assemblies respectively attached outboard of said ring adjacent the forward ends of said pair of beams by means including a cross frame interconnecting said crawler assemblies and a plurality of frame elements interconnecting said crawler assemblies and said lower carbody for supporting said ring; a second traveling support attachment including a pair of laterally spaced crawler assemblies respectively attached outboard of said ring adjacent the rearward ends of said pair of beams and means including a cross frame interconnecting said crawler assemblies and a plurality of frame elements interconnecting said crawler assemblies and said lower carbody for supporting said ring; said crawler assemblied of said first and second travelling support attachments being connected to said frame elements through vertical pivot posts with means being provided for pivoting said crawler assemblies about the axes of said posts; and said cross frame including jack means mounted thereon to permit movement of said crane and ring over the ground while said boom is lifting a heavy load.

4,387,815
PLASTIC CONTAINERS FOR STORAGE OF GOODS UNDER PRESSURE
Kjell M. Jacobsen, Hjallese, Denmark, assignor to PLM Aktiebolag, Malmo, Sweden
Division of Ser. No. 22,320, Mar. 20, 1979, Pat. No. 4,264,558, which is a continuation of Ser. No. 831,785, Sep. 9, 1977, abandoned, which is a continuation of Ser. No. 614,430, Sep. 18, 1975, abandoned. This application Oct. 14, 1980, Ser. No. 196,373
Claims priority, application Sweden, Sep. 24, 1974, 7411960
Int. Cl.³ B65D 23/00
U.S. Cl. 215—1 C **7 Claims**



1. A form-retaining container made of a thermoplastic polymer material selected from the group consisting of polyethylene terephthalate, polyhexamethylene adipamide, polycaprolactam, polyhexamethylene sebacamide, polyethylene 2,6 and 1,5 naphthalate, polytetramethylene-1,2-dioxybenzoate, and copolymers of ethylene terephthalate and ethylene isophthalate; said container comprising in succession a mouth, a neck, a main body portion, and a bottom including a central portion and a peripheral portion, said container having a first region inclusive of said mouth and part of said neck, a second region inclusive of the remainder of said neck, said main body portion and said peripheral portion of said bottom, and a third region constituted by said central portion of said bottom, said polymer material being selectively heated, cooled and inflated so that said second region is obtained by stretching said material in said second region in more than one direction to achieve biaxial stretching and orientation of the material while the material in said first and third regions is substantially unoriented, whereafter the material is treated at a temperature above the crystallization temperature, while being internally pressurized to effect thermal crystallization and release of internal stresses of said regions such that the first and third regions are in a thermocrystallized state and provide an opaque appearance while the second region has only a small crystallization to provide a transparent appearance, whereby the container is form stable when reheated to a temperature above the glass transition temperature of the material.

4,387,816
COLLAPSE RESISTANT CONTAINER
Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jan. 18, 1982, Ser. No. 340,567
Int. Cl.³ B65D 1/02
U.S. Cl. 215—1 C **10 Claims**

1. A unitary container made from an organic thermoplastic material comprising:

an upstanding neck portion terminating in a finish portion defining an opening into said container;

a pair of spaced apart sidewall panels connected to and depending downwardly from said neck portion;

a bottom portion connected to said spaced apart sidewall panels and providing a base for said container; and

a pair of spaced apart label panels connected to said neck portion, said sidewall panels and said bottom portion to thereby define an enclosed volumn for said container,



each of said label panels including a centrally located collapsible label area, a peripherally located, upstanding rim portion and a flexible hinge portion inward of and adjacent to said upstanding rim portion and extending around the entire intersection of said upstanding rim portion and said collapsible label area.

4,387,817

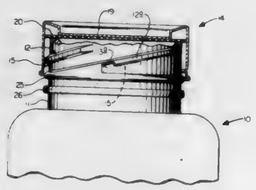
CHILD RESISTANT CONTAINER COVER

Laurence E. Wiles; Frank C. Page, III, both of Cheshire, and Bruno A. Eibensteiner, Waterbury, all of Conn., assignors to Ethyl Products Company, Richmond, Va.

Continuation-in-part of Ser. No. 161,130, Jun. 19, 1980, abandoned. This application Oct. 19, 1981, Ser. No. 312,804

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—217 **34 Claims**



1. A child-resistant package comprising a closure and container, said package characterized by:

a. said container having a threaded neck portion;

b. said closure being provided with a multiplicity of threads having arrowhead-shaped portions on one end thereof;

c. means connected to said threaded neck portion for stopping the threading rotation of said closure onto said threaded neck portion at a predetermined position, said means including a gap in at least two of said threads on said neck portion adapted for receipt of said arrowhead-shaped portion therein, said gap being defined by

i. a raised stop at the end of at least two of said threads on said neck portion against which the end of at least two of said threads on said closure strikes when said closure is threaded onto said neck portion, and

ii. the end of said threads on said neck portion; and

d. resilient liner means interposed between the underside of the top of said closure and the top of said neck portion.

4,387,818

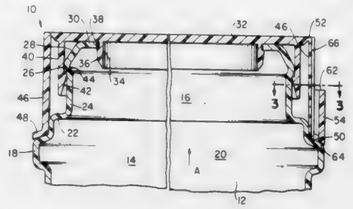
SNAP-ON TAMPER-PROOF CLOSURE

Vincent N. Conti, West Hempstead, N.Y., assignor to Itnoc Dairy Cap Co. Inc., Jamaica, N.Y.

Filed Nov. 7, 1980, Ser. No. 204,858

Int. Cl.³ B65D *41/46*

U.S. Cl. 215—256 **10 Claims**



1. A snap-on cap for use with a container having a neck and a mouth defining an upper opening communicating with the interior of the container, the neck having an annular ring extending therearound and positioned below the mouth, comprising:

(a) a top wall configured and diminished such that at least a portion of said top wall is capable of contacting at least an uppermost outer surface portion of said container mouth so as to seal the container mouth;

(b) a first annular sealing wall extending downwardly from said top wall, said first annular sealing wall having an outer configuration capable of snap-fitting sealing engagement with at least an inner surface portion of the container mouth;

(c) a second annular sealing wall extending downwardly from said top wall and being spaced radially outwardly from said first annular sealing wall and inwardly from the periphery of said top wall, said second annular sealing wall having an inner configuration capable of snap-fitting sealing engagement with at least an outer surface portion of the container mouth; and

(d) an outer wall extending downwardly from the periphery of said top wall a greater length than said second annular sealing wall, said outer wall being easily separable from said top wall so as to provide evidence of unauthorized tampering with said snap-on cap.

4,387,819

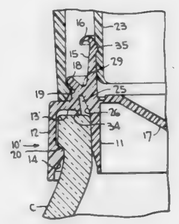
SEALING MEANS FOR A SNAP-ON FITMENT

Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045

Filed Dec. 23, 1981, Ser. No. 333,749

Int. Cl.³ B65D *47/14*

U.S. Cl. 215—273 **9 Claims**



1. Sealing means for a snap-on fitment, comprising a body member having spaced apart inner and outer skirts engageable with opposite sides of the neck of a container, an annular wall interconnecting said skirts and overlying a terminal end of the container neck, an extension provided on said annular wall forming a tubular engaging portion and having an inner sealing surface, and an outwardly extending annular snap bead on said wall to facilitate a snap fit for the fitment, said wall having an annular relieved section therein adjacent said inner skirt and opening into the space between said skirts, said relieved section having opposed side walls and a bottom wall, one of said side walls forming an extension of the outer surface of said inner skirt, said bottom wall extending radially outwardly from said engaging portion, an outer surface of said interconnecting wall defining a first wall section with said bottom wall, said annular wall including a second wall section spaced apart from said first wall section and extending inwardly from said outer skirt, said snap bead extending from an outer end of said first wall section, whereby any distortions imposed on said snap bead and on said sealing surface as occasioned by any dimensional and/or shape irregularities in the container neck are reduced by the relief between inner and outer engagements with the container neck thereby resulting in an isolation of any distortions of said skirts relative to one another, an isolation of any outer skirt distortion relative to said snap bead, an isolation of any inner skirt distortion relative to said sealing surface and the maintenance of dimensional stability between said snap beam and said sealing surface.

4,387,820

CLOSING ARRANGEMENT FOR PACKING CONTAINERS

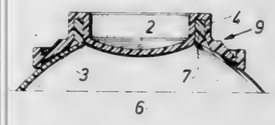
Rolf L. Ignell, Grilly Divonne-les-Bains, France, assignor to Tetra Pak Developpement SA, Pully-Lausanne, Switzerland

Filed Jul. 2, 1981, Ser. No. 279,945

Claims priority, application Sweden, Jul. 16, 1980, 8005182

Int. Cl.³ B65D *41/02*

U.S. Cl. 215—320 **10 Claims**



1. A closure cap for a packing container of the type which has a flanged mouth portion, said cap comprising:

a cap body of flexible material;

a jacket integral with said body and cooperating therewith to form a channel for receiving the flanged mouth portion of a container;

a plurality of levers spaced around said jacket and integral with said jacket, said levers each including a first lever arm positioned to engage under said flanged mouth portion when said levers are lowered and positioned out of engagement with said mouth portion when said levers are raised, each of said levers further including:

first pivoting means around which said lever is pivotable, said first lever arm being disposed on a first side of said first pivoting means and said first lever arm cooperating with the flanged mouth portion of the packing container,

a second lever arm disposed on a second side of said first pivoting means, said second lever arm serving as a stiffening element, and

second pivoting means around which said lever is pivotable; and

ring means for moving said levers in unison between said lowered and raised positions, said second pivoting means joining each of said levers to said ring means.

4,387,821

STOPPING DEVICE FOR BOTTLE

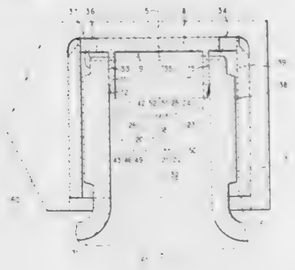
Reinold Geiger, Neuilly, France, assignor to A.M.S. (Ateliers de Moulage Specialise), Saint-Ouen, France

Filed Dec. 3, 1980, Ser. No. 212,440

Claims priority, application France, Dec. 20, 1979, 79 31317

Int. Cl.³ B65D *41/06*

U.S. Cl. 215—330 **12 Claims**



1. A stopping apparatus for a bottle having a neck portion formed with a cylindrical throat in a body without symmetry of revolution, said stopping apparatus comprising:

(a) a cylindrical hollow body, one end of which is open, the other end having a radial end wall;

(b) a stopper cap devoid of rotational symmetry;

(c) a cylindrical elastic skirt extending substantially perpendicular to and downwardly from the inner surface of said radial end wall, said cylindrical elastic skirt being positioned concentrically with said radial end wall and being adapted to seal the cylindrical throat of the bottle;

(d) at least one protrusion extending radially inwardly from the inner wall of said cylindrical hollow body;

(e) an annular ring, said annular ring having an upper radially extended edge portion adapted to be spaced downwardly from the upper end of the neck portion of the bottle, said upper radially extended edge forming a bearing surface for slidably receiving the lower end of said at least one protrusion;

(f) at least one groove formed in said annular ring and bordered by radial edges, one end of said groove interrupting said radially extended edge of said annular ring, the other end of said groove opening into a lodging adapted to receive and hold at least one protrusion of said cylindrical hollow body;

(g) two diametrically opposed protrusions extending radially inward from the inner wall of said cylindrical hollow body; and

(h) two diametrically opposed grooves adapted to receive, respectively, said two protrusions;

whereby when said stopping apparatus is placed concentrically on the neck portion of the bottle so that the lower end of said at least one protrustion abuts said radially extended edge portion of said annular ring whereby upon rotation of said stopping apparatus, said at least one protrusion is inserted into said at least one groove formed in said annular ring, said radial edges of said at least one groove cooperating with said at least one protrusion to introduce said at least one protrusion into said lodging thereby sealing said bottle when said stopper cap has a predetermined orientation relative to the bottle; and

wherein each of said protrusions comprises a prismatic lug having a convex polygonal periphery, each lug having an inwardly facing surface substantially concentric with the inner surface of said cylindrical hollow body, at least one upper facet, at least one lower facet and at least one planar facet facing into the direction of rotation for closure, said at least one planar facet extending substantially parallel to

the axis of rotation of said stopping apparatus and said upper and lower facets extending substantially perpendicular thereto.

4,387,822

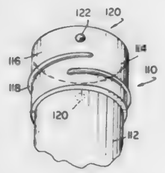
CONTAINER AND CLOSURE ASSEMBLY HAVING INTERMEDIATE POSITIONING MEANS

Robert W. Lynn, Oxnard, Calif., assignor to Becton, Dickinson and Company, Paramus, N.J.

Division of Ser. No. 84,883, Oct. 15, 1979, Pat. No. 4,289,248. This application May 11, 1981, Ser. No. 262,079

Int. Cl.³ B65D *41/04*

U.S. Cl. 215—330 **1 Claim**



1. In combination, a container having an open neck portion formed with threadable engaging means and a removable closure formed with mating threadable engaging means, said closure including an end covering said neck portion for sealing said container closed, at least one projection on said neck portion, at least one protuberance on the wall of said closure, said projection being shaped to allow said protuberance to pass thereover in either direction when said closure is threaded on or off of said neck portion, said projection being formed above said threadable engaging means, said protuberance requiring an applied force to enable same to pass over said projection so that said closure can be partially unthreaded from said neck portion but yet remain connected thereto.

4,387,823

MAGNETIC TAPE CASSETTE

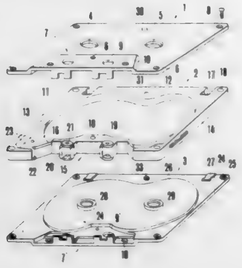
Haruo Shiba, Sakushi, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,884

Claims priority, application Japan, Mar. 25, 1980, 55-38215[U]

Int. Cl.³ B65D *6/00*; G03B *1/04*; G11B *15/32*

U.S. Cl. 220—4 R **15 Claims**



1. A magnetic tape cassette including an intermediate frame having flat upper and lower parallel surfaces providing sufficient space therein to hold a length of magnetic tape, and substantially flat top and bottom plates fastened, respectively, to the flat upper and lower surfaces of the intermediate frame, characterized in that said intermediate frame comprises a composite resin material containing an unsaturated polyester resin and a thermoplastic polymer containing from 50 to 75% by weight of calcium carbonate and glass fiber on the basis of the total resin weight.

4,387,824

DIVIDABLE BOTTLE CONTAINER

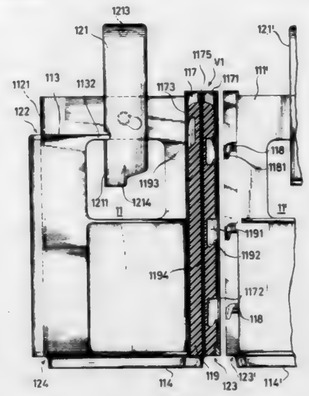
Werner Wefers, Dortmund, Fed. Rep. of Germany, assignor to Peter Cremer, Dortmund, Fed. Rep. of Germany

Filed Oct. 7, 1981, Ser. No. 309,176

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034650

Int. Cl.³ B65D *21/02*

U.S. Cl. 220—23.4 **8 Claims**



1. A two-part synthetic bottle container, comprising: an outer wall; a division wall extending parallel to said outer wall, dividing elements and interengaging locking elements in form of a plurality of hooks projecting in the region of one corner of an abutment surface past the dividing elements, said locking elements having recesses located in the region of the other corner and corresponding to the hook cross-section, a slider having surface portions which in a locking position extend behind hooks of a corresponding container part, carrying brackets pivoted with pivot means on parts of the container at narrow sides thereof, and pivotable relative to the container parts, said carrying brackets having free end projecting past said pivot means, said carrying brackets having an abutment at the free end thereof; said carrying brackets, when pivoted against the container parts, extending with said abutment through a recess in the wall of a corresponding locking compartment and engaging in a recess in said slider to lift said slider to a latching position.

4,387,825

CONTRACTABLE CLOSURE MEMBER

Daniel Parent, St-Hyacinthe, Canada, assignor to Produits Menagers Coronet (1980) Inc., Quebec, Canada

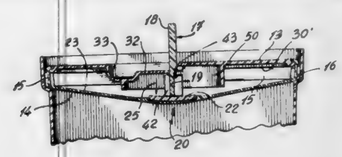
Continuation-in-part of Ser. No. 128,452, Mar. 10, 1980, Pat. No. 4,295,578. This application Aug. 17, 1981, Ser. No. 293,307

The portion of the term of this patent subsequent to Oct. 20, 1998, has been disclaimed.

Int. Cl.³ B65D *53/00*

U.S. Cl. 220—234 **17 Claims**

1. A contractable closure member for sealing an open-ended container, said closure member comprising a top wall, a bottom wall formed from an elastic material and having an integral continuous side wall, seal means in said side wall, said side wall being securable to said top wall with said bottom wall held in spaced relationship therewith, a retracting lever pivotally secured below said top wall and having an engagement end and a pusher end, said pusher end being arcuately displaceable against a central portion of said bottom wall to distend said bottom wall whereby at least a portion of said side wall will be drawn inwardly to remove sealing pressure by said seal means when said closure member is positioned for sealing engagement with an open-ended container.



4,387,826

CLOSURE FOR CANS PROVIDED WITH BEADED EDGE

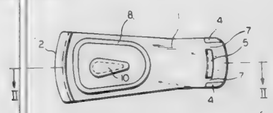
Walter Heubl, Bergstr. 7, 8901 Aystetten, Fed. Rep. of Germany

Filed Jul. 31, 1981, Ser. No. 288,700

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1980, 8020985[U]; European Pat. Off., Jul. 21, 1981, 81105748.8

Int. Cl.³ B65D *45/00*

U.S. Cl. 220—243 **11 Claims**



1. A closure device for cans having a beaded edge and a cover having a pouring opening formed by removal of a tear-off portion thereof, said closure device comprising:

a unitary synthetic resin elongated planar body having a length at least as great as the diameter of said can;

an edge web formed at one end of said body and having a curvature equal to the curvature of said beaded edge, said edge web being formed with an inwardly projecting flange for gripping the underside of said beaded edge;

a tensioning element formed at the other end of said body opposite said edge web and spaced therefrom at a distance substantially equal to the diameter of said beaded edge, said tensioning element having a formation adapted to engage the underside of said beaded edge and being deflectable for releasing same;

a flat extension formed on said body beyond said tensioning element and projecting over said edge of said can;

a pair of rigid formations on said body spaced to either side of said tension element and engaging the outer periphery of said beaded edge to cause tension between said rigid formations and said first mentioned edge web; and

a seal mounted on said body and adapted to engage said cover around said opening.

4,387,827

CONTAINER CLOSURE

John Ruemer, Jr., Baltimore, Md., assignor to Crown Cork & Seal Company, Incorporated, Philadelphia, Pa.

Filed Nov. 27, 1981, Ser. No. 325,462

Int. Cl.³ B65D *17/34*

U.S. Cl. 220—269 **5 Claims**

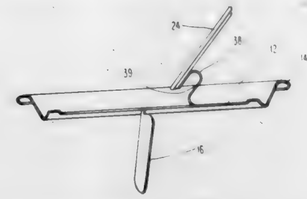
1. In an end closure of the type having a wall with a peripheral edge;

a pour opening panel in said wall, said panel being defined by a primary score line, said primary score line circumscribing said pour opening panel except at a hinge area;

an opening tab attached to said wall at a fulcrum adjacent said primary score line, said opening tab having a handle portion and a forward portion, said forward portion being adapted to depress said pour opening panel to expose a pour opening when said opening tab is pivoted about said fulcrum; and

a fastening means at said fulcrum for securing said opening tab to said wall, the improvement comprising:

one secondary score line contiguous with the said primary score line and projecting away from said pour opening panel, said one secondary score line being adjacent to said fulcrum on one side of said fastening means;



another secondary score line contiguous with said primary score line and projecting away from said pour opening panel, said another secondary score line being adjacent said fulcrum on the other side of said fastening means, said one and said another secondary score lines defining a means for retracting said opening tab from said pour opening after said pour opening panel has been depressed.

4,387,828

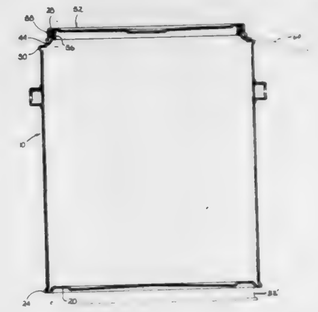
PLASTIC CONTAINER AND LID

George Yates, Jr., 151 Cumberland Rd., Glendale, Calif. 91202

Continuation of Ser. No. 120,717, Feb. 11, 1980, abandoned. This application Oct. 2, 1981, Ser. No. 307,807

Int. Cl.³ B65D *41/18*

U.S. Cl. 220—284 **3 Claims**



1. A plastic container and detachably disposed lid in combination,

(a) said container including a middle section having a cylindrical shape with a generally constant wall thickness; a bottom section integral with said middle section and including a projection defining the bottom part of said middle section;

an upper section integral with said middle section and including a projection defining the top part of said middle section wherein said middle section and the first and second mentioned projections are congruent with the outer dimensions of the wall and the location of the upper and lower beads of a conventional one-gallon metal paint container; said upper section also includes an integral neck having a wall portion directed upwardly and inwardly and a straight vertical wall portion in which the inner surface of the vertical wall portion is cylindrical having no projections, recesses or

slanted surfaces, said neck terminating with an annular bead, wherein said upwardly and inwardly directed wall portion and said vertical wall portion have a constant wall thickness of approximately the same dimension as the wall thickness of said middle section; and

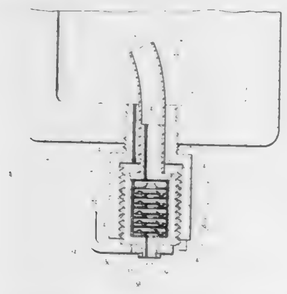
(b) said lid having an annular, generally flat surface, a recessed middle portion, and a perimetral flexible leg including an internal lip for engaging the bead of said upper section, said lid when placed on the container being disposed such that the end of the leg at the lowest portion of the lid is spaced above and substantially inwardly of the projection defining the top part of the middle section so that the major portion of said upwardly and inwardly directed wall portion below said leg is viewable when viewing said upwardly and inwardly directed wall portion in a horizontal plane when said container is in an upright position, said projection of said upper section serving as a fulcrum for a tool used to remove the lid from the container by inserting an end of the tool under the leg and pivoting the tool at the projection, said leg being spaced from said vertical wall portion below the engagement of said internal lip and said bead with the spacing gradually increasing as the distance from said engagement increases.

4,387,829

COMBINATION BREATHER-DRAIN

Richard C. Berry, Camillus, N.Y., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Jan. 6, 1982, Ser. No. 337,555
Int. Cl.³ B65D *51/16*
U.S. Cl. 220—374 **7 Claims**



1. A combination breather-drain comprising hollow cylindrical plug means having external threads for threaded engagement with a threaded aperture in the bottom wall of an explosion proof housing, said threaded engagement having sufficient clearance to allow the passage of water therethrough and a sufficient number of turns to render the threaded connection explosion proof and air passage means located within said hollow cylindrical plug means permitting the passage of air from the exterior of the housing to the interior of the housing while maintaining said housing explosion proof.

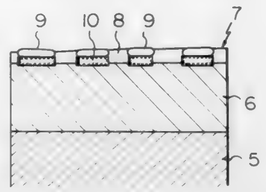
4,387,830

SIDE SEAM-COATED TINPLATE WELDED CAN

Yoichi Kitamura; Seishichi Kobayashi, both of Yokohama, and Hiroshi Ueno, Yokosuka, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jun. 5, 1981, Ser. No. 271,238
Claims priority, application Japan, Jun. 12, 1980, 55-78347
Int. Cl.³ B65D *7/34*
U.S. Cl. 220—456 **8 Claims**

1. A welded tinplate seam can having a side seam formed by welding, wherein the inner and outer surface portions of said side seam comprise an outermost layer formed of an oxide, which has a thickness of 50 to 400 Å, and an intermediate layer formed mainly of an iron-tin alloy layer, which has a thickness corresponding to 5 to 100% of the thickness of the total tin layer, and a resin or resin composition containing a polar group selected from the group consisting of carbonyl, hydroxyl,



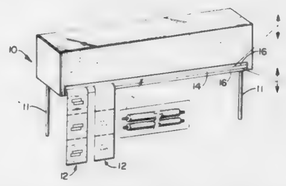
ether and epoxy groups at a concentration of 10 to 2000 millimoles per 100 g of the resin is coated on at least one of said inner and outer surface portions of said side seam.

4,387,831

CONTAINER FOR DISPENSING ARTICLES CARRIED ON A WEB

John F. McNally, 60 Venetian Dr. N101, Delray Beach, Fla. 33444, assignor to Claire O. McNally, Delray Beach, Fla.

Filed Dec. 17, 1980, Ser. No. 217,552
Int. Cl.³ B65H *5/28*
U.S. Cl. 221—25 **6 Claims**



1. An improved point-of-sale article display and dispensing device for small easily pilfered articles comprising

an elongate boxlike receptacle having a front wall available for the display of promotional material,

means for mounting said receptacle at a predetermined elevation above and closely adjacent a checkout counter at a retail store,

an elongate article delivery slot in the lower portion of said front wall of said boxlike receptacle to effect article delivery without impairment of visual access to said front wall,

a plurality of article storage and dispensing containers sized to be removably disposed in side-by-side relation within said boxlike receptacle for point of sale presentation of variegated articles,

each of said article storage and dispensing containers containing an elongate web having a series of articles to be dispensed mounted in longitudinal spaced relation thereon and an aperture adjacent one corner thereof for progressive lineal removal of said article supporting web therefrom,

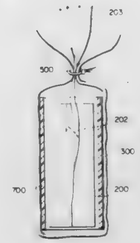
said apertures in said article storage and dispensing containers being selectively located for disposition in aligned abutting relationship with the article delivery slot in said boxlike receptacle when said article storage and dispensing containers are disposed in operative article dispensing relation therewithin, and resiliently deformable means associated with said elongate delivery slot in said receptacle for selectively compressively engaging said article supporting webs to resiliently restrain web passage therethrough.

4,387,832

PRE-MOISTENED TOWELETTE DISPENSING PACKAGE INCLUDING FLEXIBLY ADJUSTABLE TIE DEVICE

Herman Margulies, South Orange, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Filed Feb. 24, 1981, Ser. No. 237,585
Int. Cl.³ A47K *10/38*
U.S. Cl. 221—63 **9 Claims**



1. A package for dispensing and separating single sheets from a continuous web of pre-moistened sheets, said package comprising:

a continuous web of pre-moistened sheets which are joined at perforations;

bag means surrounding the web and being open at a top end portion thereof, and an end sheet of the web extending through the open top end portion; and

flexible tie means surrounding the end sheet of the web and the top end portion of the bag means, the tie means gathering and substantially sealing the top end portion of the bag means around the end sheet of the web and forming a dispensing opening at the top end portion of the bag means for dispensing the end sheet therethrough, the tie means providing sufficient friction at the dispensing opening between the top end portion of the bag means and the web to cause the end sheet of the web to automatically tear above the dispensing opening from the next sheet of the web at the perforations therebetween when the end sheet is drawn through the dispensing opening, the tie means being accessible to be flexibly adjustable to enable selective alteration of the size of the dispensing opening at the open top end portion of the bag means and selective adjustment of the friction.

4,387,833

APPARATUS FOR CONTAINING AND DISPENSING FLUIDS UNDER PRESSURE AND METHOD OF PRODUCING SAME

Frank Venus, Jr., Merrimack, N.H., assignor to Container Industries, Inc., Londonderry, N.H.

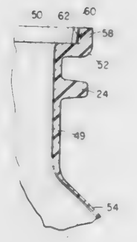
Filed Dec. 16, 1980, Ser. No. 216,191
Int. Cl.³ B65D *37/00*
U.S. Cl. 222—95 **46 Claims**

1. An apparatus for containing and dispensing a fluid medium under pressure comprising:

(a) substantially inert flexible means defining an inner region for containing the fluid medium under pressure and capable of being folded about one axis in its empty condition and expanded at least in directions substantially transverse to said axis when filled with the fluid medium under pressure, said substantially inert flexible means having relatively rigid means integral therewith for connecting valve means thereto;

(b) a resilient tubular member positioned so as to extend at least over the length of said substantially inert flexible means and being expandable in directions substantially transverse to said axis when said flexible container means is filled with the fluid medium under pressure such that frictional interaction between said substantially inert flexible means and said resilient tubular member at least in longitudinal directions prevents substantial elongation of said resilient tubular member when said substantially inert flexible means is filled with the fluid medium under pressure but permits expansion of said resilient tubular member in radially outward directions substantially uniformly along its length; and





(c) valve means connected to said valve connecting means and adapted to substantially prevent evacuation of said flexible container means under normal conditions and capable of selectively providing communication between said inner region of said flexible container means and the outside atmosphere thereby to permit selective amounts of the pressurized fluid medium to exit said flexible container due to the generally inward forces provided by said resilient member in its generally expanded condition.

4,387,834

COMBINATION THERMOPLASTIC AND GLASS LOADED THERMOSETTING INJECTION MOLDING MACHINE AND METHOD FOR OPERATING SAME

Thomas G. Bishop, Mount Gilead, Ohio, assignor to HPM Corporation, Mount Gilead, Ohio

Division of Ser. No. 80,486, Oct. 1, 1979, Pat. No. 4,280,972.
This application Oct. 20, 1980, Ser. No. 199,077
Int. Cl.³ G01F *11/00*
U.S. Cl. 222—278 **7 Claims**

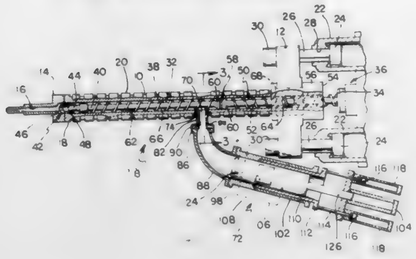
5. An injection molding machine comprising:

an elongate barrel having a generally cylindrical bore therein, said barrel having a forward end and a rear end and a side wall,

an elongate screw rotatably and axially reciprocably received within the bore of said barrel,

a first feed opening near the rear end of said barrel extending into the bore through the side wall,

a second feed opening intermediate the first feed opening in the forward end of the barrel extending into the bore through the barrel side wall, and



a plug means attachable to said barrel for alternatively closing and opening said second feed opening, said plug means being insertable into said second feed opening and including a concave inner surface contoured to conform to said bore.

4,387,835

BICYCLE PANNIER

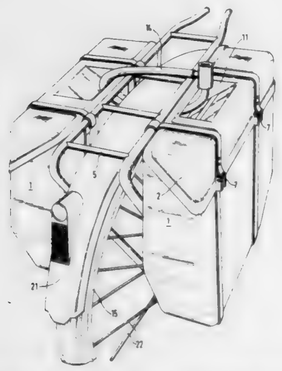
Siegbert Gölzer, Am Mühlberg 30, D-6780 Pirmasens, Fed. Rep. of Germany

Filed Apr. 2, 1981, Ser. No. 250,382

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1980, 3013593

Int. Cl.³ B62J *9/00;* **B65D** *25/30*

U.S. Cl. 224—32 A **10 Claims**



1. A bicycle pannier adapted to be securably fastened to the luggage rack of a bicycle, said pannier having a container open at the top end thereof and a lid hinged to said container and adapted to sealably enclose the top end thereof, wherein said container and said lid each include complimentary oblique passages adapted to permit a locking ring to be inserted

therethrough for locking said lid in a closed position to said container, for locking said pannier to a wheel of said bicycle and for locking the wheel itself, said container having a front wall and a rear wall opposed thereto adapted to be positioned adjacent the bicycle, said rear wall extending higher than said front wall with the top end of the connecting side walls sloping downwardly from said rear wall to said front wall, said lid having a substantially horizontal top wall, a substantially vertical forward wall adapted to be substantially aligned with said front wall, and sides interconnecting the top and forward walls, said lid being attached to said container at the bottom of said forward wall to said front wall, the bottom edge of said sides sloping downwardly from said top wall to said forward wall when said lid closes said top end of the container to correspondingly mate with said sloping walls of said container, the oblique passage of said container extending at a slope upwardly from said rear wall and the oblique passage of said lid extending at a slope downwardly from said top wall to correspondingly mate with said oblique passage of said container.

4,387,836

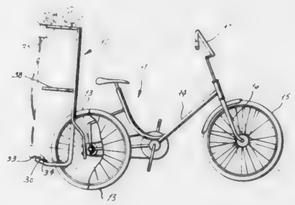
GOLF BAG CARRIER

Daniel A. Laesch, 212 Greenwood Ave., R R. 7, Bloomington, Ill. 61701

Filed Jul. 9, 1981, Ser. No. 281,888

Int. Cl.³ B62J *7/02*

U.S. Cl. 224—32 A **6 Claims**



1. A golf bag carrier for an adult-style pedal cycle or the like having a pair of rear wheels connected by a pedal-driven axle and having at least one axle housing, characterized by said carrier comprising at least one elongated, generally upright main frame member, said main frame member being of L-shape having an upstanding rectilinear portion for lying adjacent said bag and a rearwardly extending supporting portion for extending under and supporting said bag, means carried at an outer end of said rearwardly extending portion for defining a pedestal for supporting the weight of a golf bag, and a plurality of lateral support members carried upward from said pedestal for laterally securing said golf bag, said lateral support members extending laterally with respect to said rectilinear portion for surroundingly cradling said bag, said lateral support members having horizontal rectilinear portions and arcuate terminal portions for extending around the sides of said golf bag, and frame support members interconnected with said lateral support members including lower ends remote from said lateral support members for securement to said cycle, said frame support members each including a rectilinear portion parallel to and substantially co-extensive with the rectilinear portion of said main frame member and located on a respective side thereof and interconnected with the horizontal rectilinear portions of said lateral support members, said frame support members each including an offset portion extending forwardly toward said axle housing and with said lower end extending below said offset portion, each said offset portion providing offset mounting of said golf bag rearwardly of said axle housing, and clamp means at the lower ends of each of the offset portions of said frame support members for clampingly engaging said axle housing, and said clamp means engaging said rear axle housing for locating said main frame therebehind with said rectilinear portion angled slightly forward with respect to vertical.

4,387,837

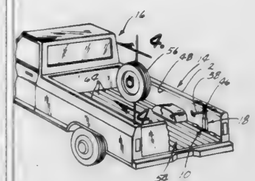
VEHICLE SPARE TIRE CARRIER

Marvin K. Carr, and Cheryl D. Smith, both of Hampton, Iowa, assignors to Diane Kenneth Ltd., Hampton, Iowa

Filed Aug. 24, 1981, Ser. No. 295,703

Int. Cl.³ B65D *43/08*

U.S. Cl. 224—42.21 **4 Claims**



1. In combination with a vehicle having a box including a floor, an adjacent sidewall and a ledge extending horizontally inwardly from said sidewall and spaced over said floor and including a downwardly extending flange inwardly spaced from said sidewall, said floor including an outwardly facing shoulder in adjacent spaced relation from said sidewall and a generally horizontal portion between said shoulder and sidewall, a tire carrier comprising,

a vertically disposed frame member including a pair of telescopically extendable channel portions and means for selectively locking said portions together at a desired length to provide said frame member with rigidity,

an elongated head means on the upper end of said frame member including forwardly and rearwardly extending horizontally disposed head elements positioned between said downwardly extending flange and said sidewall to distribute the pressure on said flange over an area thereof,

said head elements having opposite ends laterally offset, towards said flange, from a central portion of the elongated head means and sleeve means extending over said ends to provide cushioned engagement between said flange and said head ends,

an elongated foot means on the lower end of said vertically disposed frame member including forwardly and rearwardly extending horizontally disposed foot elements with cushion sleeve means extending over said foot elements, said sleeve means engaging said horizontal portion of the floor and the outwardly facing shoulder thereof to distribute the pressure on said floor over an area and to increase the friction between said foot elements and said floor, said head elements and foot elements thereby cooperating to give the carrier stability against both rotational and inward displacement, and

bolt means connected to said frame member medially thereof and extending laterally inwardly into engagement with the wheel of a tire with said tire engaging at its lower end said floor and its outer side engaging the inner side of said flange whereby said flange is clamped between said tire and said head means.

4,387,838

GLOVE-MOUNTED WRIST WATCH

Patrick L. Jackson, 4211 Forest Rd., St. Louis Park, Minn. 55416

Filed Sep. 18, 1981, Ser. No. 303,201

Int. Cl.³ A44C *5/14;* **A41D** *19/00*

U.S. Cl. 224—170 **7 Claims**

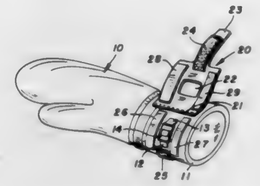
1. In combination:

a garment including a gauntlet wrist portion having a wrist watch receiving area;

a pair of spaced members secured to the outer surface of said gauntlet at opposite sides of said area for receiving the telescopic bracelet pins of a wrist watch, whereby to secure a wrist watch in said area;

a flap, having a central observation aperture smaller than the face of a wrist watch, secured to said gauntlet to fold over a wrist watch, secured in said area by pins in said members, so that said observation aperture may become aligned with said area to enable observation of a watch therein;

a first plurality of strips of resilient material secured to said gauntlet to abut said area;



a second plurality of strips of resilient material secured to the inside of said flap to engage the strips of said first plurality when said flap is folded, for closely surrounding a watch in said area, the combined thickness of said straps being less than the thickness of a watch so that when said flap is folded, the rim of said aperture may engage the face of a watch in said area to prevent the passage of undesired matter into said area;

and further means secured to said gauntlet and said flap for holding said flap in folded position over said area.

4,387,839

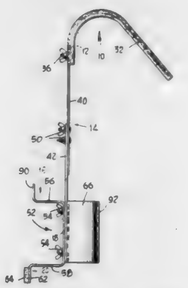
DRUM SUPPORTING HARNESS

John S. Dranchak, 15 Jog Hill Rd., Trumbull, Conn. 06611

Filed May 29, 1981, Ser. No. 268,568

Int. Cl.³ G10G *5/00*

U.S. Cl. 224—265 **10 Claims**



1. As a new article of manufacture, a harness intended to be worn by a marching drummer for supporting a drum of the type having on the outside of its body a spaced, horizontal hanger strip, said harness comprising in combination:

(a) a pair of shoulder hooks adapted to rest on the shoulders of the drummer,

(b) a breast plate secured to and extending between said shoulder hooks at the chest of the drummer, said breast plate maintaining a predetermined spacing between the shoulder hooks,

(c) a hanger structure attached to the breast plate and depending therefrom,

(d) upwardly-facing hook means comprising a horizontal leg having a vertical bill portion extending upward from the end of the leg, said hook means being carried by the lower portion of the hanger structure and being adapted to fit

under the hanger strip on the drum and the bill portion thereof being adapted to extend upward in the space between the drum body and the hanger strip,

(e) a spacer bar extending downward from the hook means, and

(f) a spacing leg carried by the lower end of the spacer bar and extending forwardly therefrom, having an abutment at its forward end, said abutment being spaced from the spacer bar and adapted for engagement with a side wall of the drum to maintain the latter in playing position while being supported by said hook means,

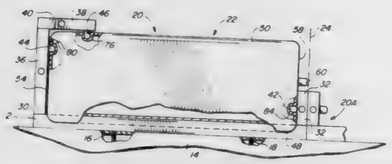
(g) all portions of the abutment on the spacing leg being disposed forwardly with respect to the hook means.

4,387,840

VEHICLE WITH IMPROVED LUGGAGE AND RACK ASSEMBLY

Harry V. Popeney, 18136-45 Oxnard St., Tarzana, Calif. 91356

Filed Dec. 10, 1981, Ser. No. 329,288
Int. Cl.³ B60R *9/04*
U.S. Cl. 224—314 **8 Claims**



1. A vehicle with an improved luggage and rack assembly, said vehicle comprising, in combination:

(a) a vehicle having a generally flat horizontal luggage support portion;

(b) a luggage retainer sub assembly, said sub assembly comprising

i. a spaced parallel pair of substantially horizontal rails secured to the upper surface of said luggage support portion,

ii. a first end plate disposed between and hinged to one end of said pair of rails, and movable between an operative, about vertical, luggage support position and a collapsed stored position between said rails,

iii. a second end plate disposed between and hinged to the opposite end of said pair of rails and including a first section movable between a collapsed stored position between said rails and an operative, about vertical, luggage support position, and a second section hinged by connecting to the free end of said first section and movable between a collapsed stored position between said rails and an operative, about horizontal, luggage support position spaced above said rails and about perpendicular to said first section, said first and second plates defining a space therebetween and including detents facing said space; and,

c. an item of luggage having a top, bottom and sides disposed in said space and defining a hollow closed interior, said bottom including a groove releasably receiving said pair of rails, and said top and two opposite sides defining recesses releasably receiving said detents, whereby said luggage is releasably secured in said assembly.

4,387,841

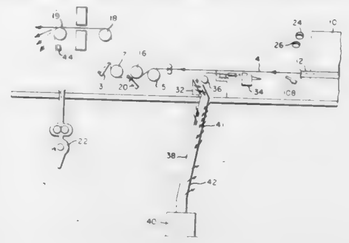
FILM DIVERSION APPARATUS

William E. Hawkins, Circleville, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 20, 1981, Ser. No. 252,520
Int. Cl.³ B65H *17/32*
U.S. Cl. 226—97 **8 Claims**

4. In a machine including equipment for transferring film through a path of advance to a windup, an apparatus for diverting broken film, said apparatus comprising:

an elongated, hollow element having a tubular surface and a slot-jet opening onto said surface, said element being located beneath and adjacent said path with the slot-jet extending transversely through the width of the path;



a waste collector beneath said element; and

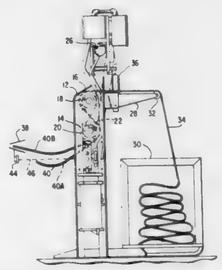
means mounting said element for rotation about its axis between a normal first position in which the slot-jet is directed along said path and a second position in which it is directed toward the waste collector.

4,387,842

BULK MATERIAL HANDLER AND FEEDER

Samuel B. Stevens, Pekin, and James R. Lytle, Sr., Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00350, § 371 Date Mar. 31, 1980, § 102(e) Date Mar. 31, 1980, PCT Pub. No. WO81/02879, PCT Pub. Date Oct. 15, 1981
PCT Filed Mar. 31, 1980, Ser. No. 245,552
Int. Cl.³ B65H *17/42, 25/00*
U.S. Cl. 226—113 **18 Claims**



4. A handler (**10**) for directing and feeding strip material (**34**) to subsequent processing operations, a support (**38**) horizontally spaced from said handler (**10**), said handler comprising:

a frame (**16**);

upper and lower rollers (**12,12',14**) mounted on and vertically spaced along said frame (**16**) such that said rollers (**12,12',14**) are separated a distance greater than the thickness of said material (**34**); and

means (**22,24,20**) for rotating the lower of said rollers (**14**);

means (**18**) for rotating the upper roller (**12**) simultaneously with the lower roller (**14**), said lower roller (**14**) rotated faster than the upper rollers (**12**);

said strip material (**34**) being around the upper roller (**12,12'**) in a direction toward said support (**38**), between said rollers (**12,12',14**), around said lower roller (**14**) in a direction away from said support (**38**), and to said support;

said strip material (**34**) and said lower roller (**14**) being frictionally engaged along an arc sufficient to maintain driving force on said material (**34**) as said material is fed toward said support (**38**);

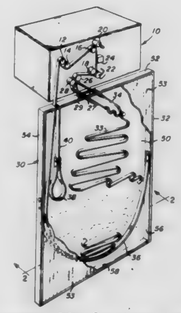
said material (**34**) being driven toward said support (**38**) at a higher rate than said material is removed from said support by said subsequent processing operations thereby producing a depending loop (**40**) of material (**34**) between said lower roller (**14**) and said support (**38**).

4,387,843

LOOP BIN FOR MAGNETIC TAPE RECORDING APPARATUS

George D. Rehklau, Los Altos, Calif., assignor to Electro-Sound Inc., Sunnyvale, Calif.

Filed May 5, 1980, Ser. No. 146,295
Int. Cl.³ B65H *17/42;* **G11B** *15/56*
U.S. Cl. 226—118 **10 Claims**



1. A loop storage bin for tape transport apparatus and through which a continuous loop of magnetic recording tape or the like may be continuously input and withdrawn, comprising:

means forming a generally rectangular body having front and rear walls disposed in parallel spaced apart relationship, said front and rear walls being spaced apart a distance slightly larger than the width of the tape to be stored therein;

means defining a tape entry opening at the top of said body for receiving incoming tape;

distributor means disposed proximate said opening and including a flexible arm, the distal end of which is caused to periodically engage a surface of said incoming tape so as to create waves therein;

means forming a compliant bottom surface for said bin and upon which said incoming tape is caused to stack; and

resilient shock absorbing means disposed within said bin on one side thereof and defining an exit passageway for said tape, said resilient means being engageable by said tape as it is withdrawn from the bottom of the stack and operative to damp lateral motion of said tape as it is withdrawn.

4,387,844

METHOD AND APPARATUS FOR RADIAL INERTIA WELDING OF DISSIMILAR METALS

Everett S. Frank, Waterloo, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 1, 1981, Ser. No. 269,139
Int. Cl.³ B23K *20/12*
U.S. Cl. 228—113 **8 Claims**

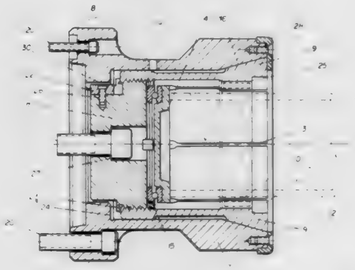
7. A headstock collet assembly for radial inertia welding of two cylindrical metallic elements, which comprises:

(a) a collet having an internally threaded rear end and a front end having jaws therein, a portion of the external surface of the jaws forming a truncated cone with the large diameter at the front end of the collet;

(b) a flange having a threaded portion threadably engaging the threaded rear end of the collet, a key attached to an external cylindrical surface of the flange rearwardly of the collet, a centered countersunk bolt hole, including a bolt to attach the flange to a headstock, a shoulder facing in the direction of the headstock;

(c) a thrust bearing located inside the collet, having the back race attached to a face of the flange and the front race facing the jaw end of the collet; and

(d) a collet housing ring inside of which is placed the threadably attached flange and collet, the end away from the collet jaws having an outward flange with bolt holes for attachment of the housing ring and therefore the entire collet assembly to the headstock, an inward flange at the same end forming a seat opposite the shoulder on the flange, a key way for engaging the key attached to the flange, a portion of the interior surface adjacent to the face of the collet jaws forming a truncated cone, complementing the truncated cone exterior surface of the collet jaws; whereby as the assembly is rotating, when attached to the headstock, a rotationally fixed axial force against the



front race of the thrust bearing will cause the collet jaws to move radially inward.

8. A method for radial inertia welding of two cylindrical metallic elements which comprises:

(a) assembling a collet inside a ring housing;

(b) rotatably attaching the collet and ring housing assembly to a headstock;

(c) placing a first cylindrical element inside the jaws of the collet;

(d) mounting a rotationally fixed second cylindrical element to a tailstock;

(e) rotating the collet and ring assembly to a predetermined speed and allowing it to free-wheel;

(f) rapidly advancing the second cylindrical element through the first element while the collet and ring housing assembly is free-wheeling at the predetermined rate of speed; and

(g) activating a means causing the collet jaws to move radially inwardly compressing the first cylindrical element onto the second cylindrical element, resulting in a radial inertia welding action.

4,387,845

METHOD AND APPARATUS FOR HOLDING AND COOLING A METAL TUBE DURING WELDING

Roy J. Mefferd, 219 W. Myrtle St., Laurens, Iowa 50554

Filed Oct. 30, 1980, Ser. No. 202,129
Int. Cl.³ B23K *31/06*
U.S. Cl. 228—222 **7 Claims**

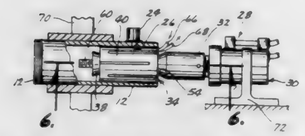
1. An apparatus for holding and cooling a metal tube having a cylindrical tube bore of predetermined diameter extending therethrough, said apparatus comprising:

a cylindrical mandrel having an external cylindrical surface of a diameter slightly less than said predetermined diame-

ter of said tube bore so as to permit slidable insertion of said mandrel into said tube bore;

said mandrel having a mandrel bore extending axially therethrough, said mandrel bore having a central portion of reduced diameter and having tapered portions at its opposite ends, said tapered portions commencing at said central portion and tapering radially outwardly towards the opposite ends of said mandrel;

said mandrel having a first set of elongated slots formed therein and extending axially inwardly from one of said opposite ends of said mandrel, a second set of elongated slots being formed in said mandrel and extending axially inwardly from the other of said opposite ends, each of said



slots having a length slightly less than the axial length of said mandrel,

cam means for creating a radial outward pressure against said tapered portions of said mandrel bore for spreading said slots and increasing the diameter of said mandrel, said cam means comprising first and second tapered wedges each engaging one of said tapered portions of said mandrel bore, and power means connected to said tapered wedges for forcing them towards said central portion of said mandrel bore; and

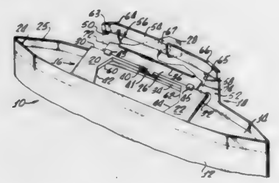
at least one coolant passageway extending internally through the walls of said mandrel, said passageway having an inlet opening and an outlet opening.

4,387,846

BAG HANDLE

Gerard M. DuCorday, 10871 Thorley Rd., Santa Ana, Calif. 92705

Filed Mar. 30, 1981, Ser. No. 249,160
Int. Cl.³ B65D *33/06*
U.S. Cl. 229—54 R **16 Claims**



1. A bag handle having mutually complimentary primary and secondary handle parts, each adapted to be connected to a bag section,

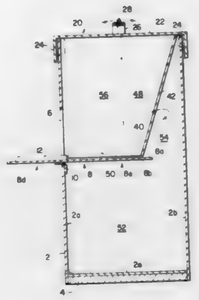
each said handle part comprising a pair of mutually spaced legs and a bail extending between and secured to said legs, the bail of said primary part having a length less than the distance between the legs of said secondary part at the bail of said secondary part, whereby the bail of said primary part can pass through said secondary part to position the outside surface of said primary part bail against the outside surface of said secondary part bail, said primary part legs extending beyond said primary part bail and having end portions mutually spaced by a distance greater than the distance between the legs of said secondary part, whereby said primary part legs cannot pass through said secondary part, and a hanger secured to one of said handle parts.

4,387,847

CONTAINER FOR STORING PARTICULATE MATERIALS

Donald O. Downey, 207 Sharp St., Strasburg, Va. 22657

Filed Jun. 19, 1980, Ser. No. 160,925
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—43.1 **8 Claims**



1. A container for loading, storing and/or transporting particulate material such as ashes, coals or similar materials while preventing airborne contaminants such as smoke escaping therefrom, said container comprising:

(a) a container body comprising a front wall, a back wall, a pair of sidewalls, a bottom and an open top, said bottom wall being connected with the lower portions of said front, back and sidewalls to form the bottom of said container body, said container body being provided with an opening in said front wall having a generally horizontal lower edge;

(b) a removable cover member which closes said open top of said container body;

(c) deflection means attached to the lower surface of said cover member having a lower extremity which converges downward within said container body;

(d) a door member pivotally connected intermediate its ends along said lower edge of said front wall opening, to divide said door member into an outer portion larger than said front wall opening and an inner portion, said door member being pivoted from an open loading position wherein the outer portion of said door is substantially horizontal such that said particulate material can be disposed on said outer portion, said door member in said open loading position together with said deflection means dividing said container body into a loading chamber, a collection chamber and a deflection chamber, to a dumping position wherein said particulate material is dumped into said collection chamber, to a closed position wherein said outer portion of said door member closes said front wall opening.

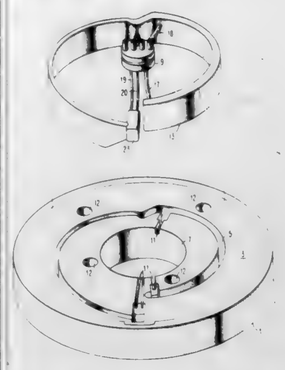
4,387,848

CENTRIFUGE ASSEMBLY

Robert M. Kellogg, Endwell, and Alfred P. Mulzet, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1977, Ser. No. 839,156
Int. Cl.³ B04B *1/00*
U.S. Cl. 494—81 **13 Claims**

1. A centrifuge assembly comprising a rotor, means providing a two portion channel in said rotor, a first portion of said channel being circular-like and having a constant radius extending from the true center of said rotor, and a second portion of said channel being spiral-like and having a plurality of segments having different radiuses extending from centers displaced from said true center,



a disposable elongated container of semirigid material contained in and conforming to said channel, and

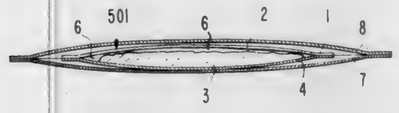
fluid connections to each end of said elongated container.

4,387,849

METHOD FOR DISPENSING AT A VISIBLY DETECTABLE RATE, CONTINUOUSLY OR DISCONTINUOUSLY, FOR DISCRETE PERIODS OF TIME AT A STEADY RATE, A VOLATILE COMPOSITION OF MATTER FROM A CONTAINER INTO THE ATMOSPHERE AS WELL AS THE CONTAINER USED IN THE METHOD

Augustinus G. Van Loveren, Rye; Marina A. Munteanu, New York, both of N.Y., and Geoffrey B. Seaber, Ijsselstein, Netherlands, assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Mar. 19, 1981, Ser. No. 245,542
Int. Cl.³ A61L *9/04, 9/01, 9/12*
U.S. Cl. 239—6 **20 Claims**



1. A hollow totally enclosed structure comprising a thin shell totally enclosing an inner void, said thin shell having a base portion and an upper portion, said base portion having an inner surface:

(i) at least a finite portion of said thin shell being transparent whereby that portion of said inner void which is located proximate to the base portion of said totally enclosed structure is visible from without said thin shell, in the presence of visible wavelengths of light;

(ii) contained totally within the said inner void of said thin shell and in place on said inner surface of said base portion, a volatile composition temporarily entrapped and totally entrapped at least at the instant in time of commencement of functional operation of said structure, in an entrapment material, said volatile composition being selected from the group consisting of perfume compositions, herbicide compositions, insecticide compositions, animal repellant compositions, air freshener compositions, pheremone compositions, odor maskant compositions, deodorant compositions and insect repellent compositions;

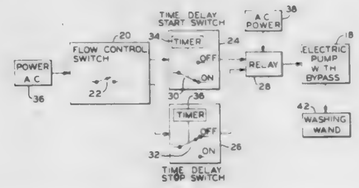
(iii) at least a finite section of said thin shell comprising a microporous polymer and termed "a microporous polymer shell section" having a porosity such that when said hollow totally enclosed structure is located in an inert gas at a pressure of less than or equal to about 1 atmosphere, said volatile material molecule are transported at a constant linear velocity and at a constant tofal derivative of concentration of volatile substance with respect to time onto the inner surface of said microporous polymer section via an adsorption mechanism and from the outer surface of said microporous polymer section to the surrounding atmosphere via a desorption mechanism.

4,387,850

REMOTE CONTROL APPARATUS FOR POWER WASHERS

Paul E. Gerber, Decatur, Ind., assignor to Modern Mill, Inc., Bluffton, Ind.

Filed Dec. 29, 1980, Ser. No. 220,379
Int. Cl.³ B05B *9/04*
U.S. Cl. 239—124 **9 Claims**



1. Remote control apparatus for power washers comprising a water line having a flow control switch device in series therewith, said water line having input and output ends, the input end being adapted to be connected to a source of water, the output end being adapted to be connected to the input side of a motor operated water pump, said flow control switch device including an electrical flow responsive switch which is actuated in response to water flow through said line and is deactuated in response to the absence of such flow, a time-delay starting switch device connected to said flow responsive switch and including a starting timer switch which is actuated after a predetermined period of time in response to actuation of said flow responsive switch and is deactuated directly in response to deactuation of said flow responsive switch, said starting switch device further including a timer for operating said starting timer switch which is actuated in response to actuation of said flow responsive switch and is reset upon deactuation of said flow responsive switch, control means responsive to actuation and deactuation of said starting timer switch for controlling correspondingly an energizing circuit for an electric pump motor, a time-delay stopping switch device connected to said flow responsive switch and including a stopping timer switch which is actuated after a predetermined period of time in response to deactuation of said flow responsive switch and is deactuated directly in response to actuation of said flow responsive switch, said stopping switch further including a timer for operating said stopping timer switch which is activated in response to deactuation of said flow responsive switch and is reset upon actuation of said flow responsive switch, said control means being responsive to actuation and deactuation of said stopping timer switch for controlling correspondingly said pump motor energizing circuit.

4,387,851

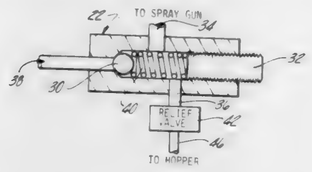
APPARATUS FOR HEATING AND SPRAYING VISCOUS COATING MATERIAL

Edward R. Dick, 13609 Larner Rd., Chesanning, Mich. 48616

Filed May 18, 1981, Ser. No. 264,278
Int. Cl.³ B05B *1/24*
U.S. Cl. 239—135 **3 Claims**

1. A self-contained mobile apparatus for distributing a viscous coating material onto a surface to be coated, comprising:

a supply reservoir for holding said material, heating means for heating said material and decreasing its viscosity, a gear pump having an intake communicating with said supply reservoir and an outlet communicating with said heating means, said heating means including a high pressure relief valve having a moveable ball valve and spring action on said ball valve to urge said ball valve toward a closed position, screw means acting on said spring for adjusting the tension and the load exerted by said spring to a predetermined value, said valve



means being moveable from a closed position in response to fluid pressure at said pump outlet exerting a force in excess of the opposing force exerted on said ball by said spring whereby the heat of friction due to the flow of the viscous material through the open valve reduces the viscosity of said material, said heating means including an outlet downstream of said valve means communicating with a flexible conduit connected to a selectively operable spray gun to dispense material to the surface to be coated.

4,387,852

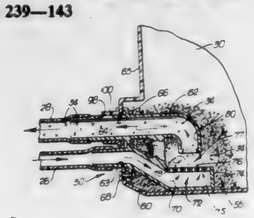
FERTILIZER SPREADER

Charles A. Mattson, Woodland Hills; James Michel, Agoura, and Anthony Domagalski, Moorpark, all of Calif., assignors to Allegretti & Co., Chatsworth, Calif.

Filed Sep. 11, 1981, Ser. No. 301,404

Int. Cl.³ B05B *11/06*

U.S. Cl. 239—143 **39 Claims**



1. Apparatus for entraining particulate material within a discharge air stream of an air blower, comprising:

an adapter nozzle having a Venturi throat formed therein for passage of the discharge air stream;

a container for receiving a supply of the particulate material;

first means including a pressure tube extending into said container for coupling a portion of the discharge air stream to the interior of said container and a diffuser for separating said air stream portion into a plurality of relatively turbulent air flows for agitating and fluidizing a localized region of the particulate material within said container; and

second means including a suction tube extending into said container and terminating with an open end disposed generally adjacent said localized region for coupling said localized region to said Venturi throat for drawing of the fluidized particulate material from said container into said adapter nozzle for entrainment with the discharge air stream.

4,387,853

WASHING LIQUID INJECTION DEVICE FOR THE REAR WINDOW GLASS OF A VEHICLE

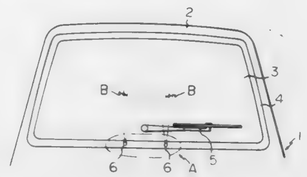
Hiroshi Sarai, Toyota, and Gosaku Terabayashi, Okazaki, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 8, 1981, Ser. No. 281,375

Claims priority, application Japan, Jul. 25, 1980, 55-104437[U]

Int. Cl.³ B05B *1/10*

U.S. Cl. 239—284 R **7 Claims**



1. A device for injecting a washing liquid onto a rear window glass which is fixed onto a vehicle body and has a lower peripheral edge covered by a window molding, said device comprising:

a nozzle apparatus fixed onto said window molding which covers the lower peripheral edge of the rear window glass and having a washing liquid inlet and a washing liquid outlet which is directed to a predetermined area on the rear window glass; and

a washing liquid conduit apparatus arranged under the window molding and having a washing liquid inlet and a washing liquid outlet which is fluidly connected to the washing liquid inlet of said nozzle apparatus, said washing liquid conduit apparatus comprises a molding retainer having a washing liquid feed bore therein, and a washing liquid conduit supported by said molding retainer and connected to said washing liquid feed bore, said molding retainer comprises a bolt integrally formed thereon and passing through an opening formed on the vehicle body and is fixed onto the vehicle body by means of a nut screwed onto said bolt, said washing liquid feed bore being formed in said bolt.

4,387,854

NON-RETURN VALVE WITH A DIRECTIONAL INJECTOR

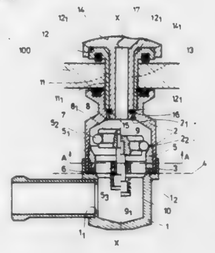
Robert Dupont, 7, rue Mirabeau, Paris, France

Filed Nov. 10, 1980, Ser. No. 205,507

Claims priority, application France, May 19, 1980, 80 11132; May 20, 1980, 80 11277

Int. Cl.³ B05B *1/22*

U.S. Cl. 239—570 **10 Claims**



1. A fluid injector apparatus for a bath enclosure, comprising:

a check valve which includes a body having an outlet, a truncated cone-shaped valve seat and a ring member with a bottom portion which defines apertures for the passage of fluid and an axial aperture, said valve further including a disc defining a peripheral groove and having a seal seated therein for sealing engagement with the valve seat, and a rod slidably received in the axial aperture for carrying the disc; and

a swiveling injector which includes a sleeve having an end flange at one end, said sleeve being threadably received in the valve body outlet, said injector further including a tube rotatably carried within the sleeve and having a head member adapted to substantially cover and bear against the sleeve end flange, said head member defining an oblique aperture, and said tube defining a conduit fluidically coupling the valve outlet to the head member aperture, and an external seal groove around the periphery of the tube, and said injector further including a seal received in the tube seal groove and bearing against the sleeve.

4,387,855

SALT AND/OR GRAVEL SPREADER

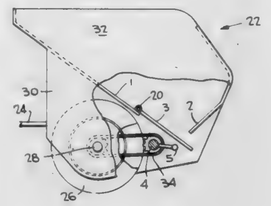
Niels J. O. Nielsen, Karolinegade 6, DK-6000 Kolding, Denmark

Continuation-in-part of Ser. No. 943,776, Sep. 20, 1978, abandoned. This application Feb. 10, 1981, Ser. No. 233,088

Claims priority, application Denmark, Oct. 11, 1977, 4498/77; Feb. 13, 1978, 648/78

Int. Cl.³ A01C *3/06*

U.S. Cl. 239—659 **12 Claims**



1. Salt and/or gravel spreader comprising a container having side walls and two oppositely situated bottom walls transverse to the direction of travel inclined downwards towards an oblong slot defined between the lower ends of said walls, and a mechanism for discharging salt and/or gravel through said slot comprising at least one slat pivotably mounted on the lower part of one of said inclined bottom walls as an extension thereof protruding below the other inclined bottom wall, a rotatable shaft rotatably mounted on said container below said slat, a cam for each slat mounted on said shaft to revolve therewith to engage said slat during part of its revolution to move said slat in an oscillating motion into and away from engagement with the lower edge of said other inclined bottom wall to respectively close and open said slot, and means to rotate said shaft.

4,387,856

METHOD FOR OPERATING AN INSTALLATION FOR PROCESSING WASTE PAPER

Harald Selder, Schlier, Fed. Rep. of Germany, assignor to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Sep. 2, 1980, Ser. No. 183,086

Claims priority, application Switzerland, Oct. 10, 1979, 9135/79

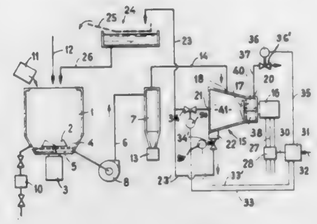
Int. Cl.³ B02C *23/38*

U.S. Cl. 241—28 **4 Claims**

1. A method of operating an installation for the processing of waste paper comprising the steps of:

providing a stock pulper and a device arranged after the stock pulper, with respect to the direction of flow of the stock suspension, this device having a housing in which there is arranged a closed defiberizing chamber, a rotor driven by a drive motor and a sieve at which merges a good stock chamber from which there outwardly leads a good stock line, as well as at least one reject line leading towards the outside from the defiberizing chamber for contaminants which are to be separated;

measuring the rotational moment of the rotor; and



controlling the separation of the suspension through the reject line as a function of the rotational moment of the rotor such that upon increase of the rotational moment of the rotor there is intensified the separation of the suspension through the reject line and upon decrease of the rotational moment of the rotor there is reduced the separation of the suspension through the reject line.

4,387,857

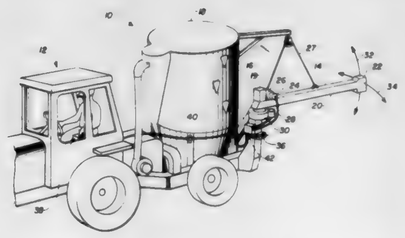
GRINDER-MIXER CONTROLS

Terry A. Young, Lititz; William W. Mann, Leola; Charles M. Kline, Reinholds, and Ernest A. Schoeneberger, New Holland, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Jan. 14, 1981, Ser. No. 225,068

Int. Cl.³ B02C *25/00*

U.S. Cl. 241—101 B **4 Claims**



1. In combination with a power source, a grinder-mixer including a mixing tank and an auger for unloading said mixing tank, the improvement comprising:

(a) a first hydraulic motor for moving said auger in a generally vertical path;

(b) a second hydraulic motor for moving said auger in a generally horizontal path;

(c) a first pair of electric solenoid valves for operating said first hydraulic motor in order to move said auger in said generally vertical path;

(d) a second pair of electric solenoid valves for operating said second hydraulic motor in order to move said auger in said generally horizontal path;

(e) a first and a second electrical switch for controlling said first pair of electric solenoid valves;

(f) a third and a fourth electrical switch for controlling said second pair of electric solenoid valves;

(g) said first and third electrical switches being located on said grinder-mixer; and

(h) said second and fourth electrical switches being located remote from said grinder-mixer on said power source.

4,387,858

MACHINE FOR THE COMMINUTING OF BULK MATERIAL

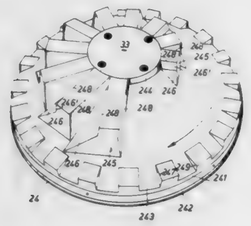
Kurt Rössler, Belm, Fed. Rep. of Germany, assignor to Osnabrücker Metallwerke J. Kampschulte GmbH & Co. KG, Osnabrück, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,287

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928471

Int. Cl.³ B02C *18/12*

U.S. Cl. 241—152 A **2 Claims**



1. In a comminution apparatus, the combination comprising a housing for receiving material to be comminuted, a stator mounted in said housing, said stator having stator cutting edge means, a rotor rotatably mounted in said housing, said rotor having rotor cutting edge means, said stator cutting edge means and said rotor cutting edge means each having a plurality of cutting edges which cooperate during rotation of said rotor to effect comminution of said material, at least one of said cutting edge means having the cutting edges thereof constructed with progressively longer cutting edges considered in the direction of rotation of said rotor such that the material being comminuted is progressively engaged by said progressively longer cutting edges, said stator cutting edge means and said rotor cutting edge means each comprising a plurality of second cutting edges disposed generally radially outwardly of the first said respective cutting edges thereby providing for two-step comminution, said second rotor cutting edges being at an outer peripheral portion of said rotor, said second stator cutting edges cooperating with said second rotor cutting edges to define the second step for said two-step comminution, the first said rotor cutting edges being disposed in a first plane perpendicular to the axis of rotation of said rotor, said second rotor cutting edges being disposed in a second plane perpendicular to the axis of rotation of said rotor, said first plane being spaced from said second plane.

4,387,859

RESONANTLY-POWERED CRUSHER

Raymond A. Gurries, Reno, Nev., assignor to Resonant Technology Co., Sparks, Nev.

Filed May 15, 1981, Ser. No. 263,848

Int. Cl.³ B02C *1/04, 19/18*

U.S. Cl. 241—262 **9 Claims**

1. An apparatus for crushing large masses, the apparatus comprising:

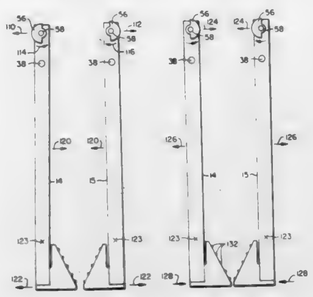
a supporting frame;

a pair of resonant beams with similar resonant characteristics having anti-nodes at each end and nodes spaced inward from the ends,

said beams being suspended from the frame at a location on each beam substantially coincident with the node proximate the upper end of the beam;

means for inducing a standing lateral wave in each of the beams at or near the resonant frequency of the beams so that the lower ends of the beams move toward and away from each other in a synchronous manner;

means mounted on the lower ends of the beams for striking the masses as they are fed to the apparatus and for imparting opposed compressive forces to the masses which result in the masses being crushed;



means for engaging the beams at the nodes proximate their lower ends to bias said beams toward one another at said lower nodes to counteract the reaction forces of the beams striking the masses.

4,387,860

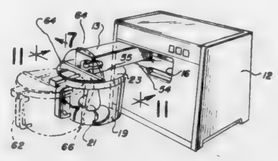
FOOD PROCESSOR

Donald E. Necas, Lincoln Township, Berrien County, and Aman U. Khan, Stevensville, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 3, 1980, Ser. No. 203,712

Int. Cl.³ B02C *18/10, 18/18*

U.S. Cl. 241—282.1 **5 Claims**



1. A multipurpose culinary food processor comprising:

a housing defining an outwardly opening recess;

a drive mechanism;

an enclosure having a bottom and a side wall;

means on the drive mechanism for removably suspending the enclosure from the drive mechanism;

food processing means including food cutting blades;

means for supporting the food processing means on the bottom of the enclosure;

connecting means for removably driving the processing means from the drive mechanism; and

means for selectively positioning the drive mechanism and said enclosure suspending means in a retracted inoperative disposition within said recess separately of said processing means with said enclosure and food processing means removed therefrom, and in an operative disposition extending from said housing with said enclosure and food processing means removably installed thereon.

4,387,861

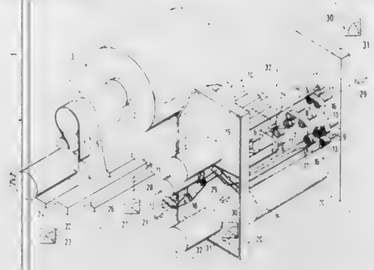
MACHINE FOR SEPARATING DOUBLE-ROLLED ALUMINUM SHEET

Eberhard Kampf, Wiehl, Fed. Rep. of Germany, assignor to Erwin Kampf GmbH & Co., Wiehl, Fed. Rep. of Germany

Filed Aug. 5, 1981, Ser. No. 290,669

Int. Cl.³ B65H *23/20, 35/02*

U.S. Cl. 242—75.47 **3 Claims**



1. A machine for separating double-rolled thin aluminum sheet into two separate sheets and for winding the sheets onto two winding shafts, the machine comprising in combination:

a supply shaft adapted to carry a supply coil of double-sheet;

a supply shaft drive, including a motor-generator operating as a motor for the acceleration of the supply coil from standstill to operating speed and as a regenerative braking generator for the application of a braking torque to the supply shaft following acceleration;

a sheet processing section arranged in parallel alignment with the supply shaft to receive the double-sheet from the supply coil, said section including a sheet separating roll, a plurality of sheet deflecting rolls and a winding shaft for each of the two separate sheets with a variable-speed winding motor connected thereto;

circuit means for controlling the torque output of the motor-generator in such a way that the speed at which the double-sheet is unwound from the supply coil is maintained substantially constant; following acceleration of the supply coil; and

circuit means for controlling the torque output of the two winding motors in such a way that the tension at which the separate sheets are wound onto their winding shafts is maintained substantially constant, independently of the sheet speed.

4,387,862

SEAT BELT RETRACTOR

Kenichi Sakurada, Yokohama; Hiroyuki Yoshida, Tokyo, and Tadahiko Ozaki, Kosai, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 6, 1981, Ser. No. 241,131

Claims priority, application Japan, Mar. 8, 1980, 55/29354

Int. Cl.³ A62B *35/00;* **B65H** *75/48*

U.S. Cl. 242—107.6 **1 Claim**

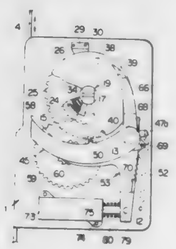
1. A seat belt retractor for a safety belt arrangement having a seat belt attached with a buckle and a tongue engageable with each other for reliably restraining and safely protecting a seat occupant against serious injury in the case of emergency as in a collision or sudden stop of passenger vehicle, comprising;

belt retracting means comprising a retractor housing, a winding reel received in said retractor housing so as to be rotatable in directions to wind and unwind said seat belt, a return spring for biasingly urging said winding reel to rotate in the direction to wind said seat belt, a cap member securely mounted on said retractor housing, and stationary shaft member extending between said winding reel and said cap member and fixedly supported on said cap member;

signal emitting means comprising an electric switch mounted in said buckle so as to be closed and opened for respectively emitting said operative and inoperative signals when said tongue is engaged with and disengaged from said buckle;

clutching means comprising a drive gear fixed to said winding reel so as to be rotatable together therewith, a driven gear rotatably supported on said shaft member, a trigger member pivotally mounted on said retractor housing and having a pivotal axis, a pair of idler gears rotatably supported on said trigger member and engageable with said drive and driven gears, respectively, and an electromagnetic actuator connected to said trigger member and actuated in response to said operative and inoperative signals from said electric switch for making said idler gears engaged with and disengaged from said drive and driven gears, respectively, through rotation of said trigger member around said pivotal axis thereof;

belt slackening means comprising a disc member rotatably supported on said shaft member and formed on its circumference with a cut-away recess, a first stop projection fixed to said disc member, a biasing member for biasing said disc member into frictional contact with said driven gear, a second stop projection fixed to said cap member to be engageable with said first stop projection when said disc member is rotated in the direction to wind said seat belt, a spear headed stop projection fixed to said disc



member between said first stop projection and said cut-away recess, a stopper arm pivotally mounted on said retractor housing to be engageable with said spear headed stop projection, and a biasing member for biasing said stopper arm into engageable with said spear headed stop projection;

tension eliminating means comprising a ratchet wheel securely mounted on said winding reel, a swing arm pivotally mounted on said retractor housing and having a pawl engageable with said ratchet wheel and a protrusion engageable with said cut-away recess of said disc member, and a swing arm biasing member for biasing said swing arm to bring said pawl into engagement with said ratchet wheel; and

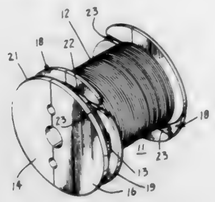
tensionless belt position memorizing means comprising an additional ratchet wheel rotatable supported on said shaft member between said drive and driven gears, a stopper fixed to said retractor housing for preventing said additional ratchet wheel from being rotated in the direction to wind said seat belt, a pawl member secured to said driven gear for preventing said additional ratchet wheel from being rotated in the direction to wind said seat belt, and a spiral spring having an inner end fastened to said shaft member and an outer end fastened to said additional ratchet wheel for biasingly forcing said additional ratchet wheel to be rotated in the direction to wind said seat belt.

4,387,863

SPOOL ASSEMBLY

Donald R. Edmonston, Atlanta, and Frederick R. Weaver, Snellville, both of Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 17, 1981, Ser. No. 331,715
Int. Cl.³ B65H *75/12, 75/28*
U.S. Cl. 242—118.4 **8 Claims**



1. A spool adapted to hold one or more windings of an elongated material having at least one end terminated with a connector, said spool comprising:

a circular hub having a first circular flange at one end thereof and a second circular flange at the other end thereof, each of said flanges comprising first and second peripheral rims, one of said rims being of greater diameter than the other rim, means forming a channel between said rims comprising a region of lesser diameter than said rims; and

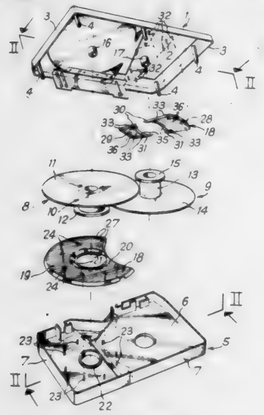
the rim closer to the hub in each of said flanges having a flared groove therein extending from said channel to a point tangent to the hub, the groove in the rim of said first flange extending in a direction opposite to the groove in the rim of said second flange.

4,387,864

VIDEO CASSETTE

Patrick P. Posso, Lausanne, Switzerland, assignor to Gefitec S.A., Lausanne, Switzerland

Filed Mar. 16, 1981, Ser. No. 244,271
Claims priority, application France, Mar. 26, 1980, 80 06756
Int. Cl.³ G03B *1/04;* **G11B** *15/32*
U.S. Cl. 242—199 **4 Claims**



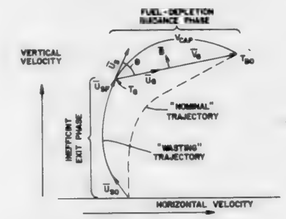
1. A video cassette structure comprising a casing; two spools, each spool having a hub and a single disk thereon, said hubs being rotatably mounted on said casing and positioned to enable substantially the minimum possible distance between the axes of rotation of said spools, said disks being respectively contiguous to a first and second base of said casing; first and second molded parts of polyacetal resin respectively fixed to said first and second bases opposite the non-contiguous disk by non-deformable securing means, each said molded part projecting from its base toward the non-contiguous disk and forming a fixed guiding surface extending in the same plane as the internal face of the contiguous disk on said base.

4,387,865

METHOD FOR STEERING A SOLID PROPELLANT BALLISTIC VEHICLE

Peter B. Howard, Arlington; Martin V. Boelitz, Watertown, and Thomas W. De Swarte, North Reading, all of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 25, 1980, Ser. No. 181,023
Int. Cl.³ F42B *13/28*
U.S. Cl. 244—3.1 **5 Claims**



1. A method for steering a solid propellant ballistic vehicle during powered flight which eliminates the requirement for cutoff control in booster stages, said method comprising the step of steering said vehicle along a fuel-inefficient trajectory such that at engine burnout (T_{BO}) said vehicle has obtained a velocity vector which will enable said vehicle to reach the desired target at a desired time, said fuel-inefficient trajectory including:

(a) an exit phase which is a function of vehicle launch parameters;

(b) a fuel-depletion guidance (FDG) phase taking place in a plane perpendicular to a predetermined read-vector ($\overline{D}$), said FDS phase comprising an arc circle whose chord is $\overline{V}_G$ at transition from said exit phase to said FDG phase, said arc being defined by the equation

$$\frac{\sin\theta}{\theta} = \frac{|\overline{V}_G|}{V_{CAP}}$$

where θ is the angle between the vehicle thrust vector ($\overline{U}_S$) and $\overline{V}_G$, V_{CAP} is the remaining vehicle velocity capability and, $\overline{V}_G$ is the remaining velocity-to-be-gained vector, and;

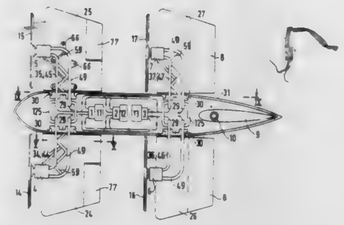
(c) a guidance freeze phase just prior to said T_{BO} to prevent guidance instabilities at said T_{BO}.

4,387,866

FLUID MOTOR DRIVEN PROPELLER-AIRCRAFT FOR VERTICAL TAKE OFF AND LANDING WITH A MULTIPURPOSE PIPE STRUCTURE

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan (240-01)

Division of Ser. No. 973,780, Dec. 27, 1978, which is a continuation-in-part of Ser. No. 760,006, Jan. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 487,272, Jul. 10, 1974, Pat. No. 4,009,849, said Ser. No. 487,272, is a continuation-in-part of Ser. No. 104,672, Mar. 8, 1971, Pat. No. 3,825,698. This application Jan. 30, 1981, Ser. No. 229,910
Int. Cl.³ B64C *29/00*
U.S. Cl. 244—7 C **1 Claim**



1. In an aircraft in combination;

a body, at least one power plant, at least four propellers, at least two pairs of wing-portions, hydrostatic fluid transmission means including a pump arrangement and fluid motors between said power plant and said propellers to drive said propellers by rotors of said motors with one propeller each fastened to at least one rotor of one of said motors, means to varify the angles of said wing-portions and propellers relatively to the ground, synchronization means in said hydrostatic transmission means to synchronize the rotary velocities of said propellers and a novel structure in a plurality of such novel structures;

wherein said novel structure includes at least three pipes;

wherein one of said three pipes is located laterally of the other two of said at least three pipes;

wherein said structure includes ribs between said at least three pipes to prevent deformation and dislocation of said pipes relatively to each other;

wherein said pipes and said ribs are forming a rigid structure of a capability to carry a multi-directional load of at least two components of directions of load whereof one of said components is substantially normal to the other of said components of directions of load;

wherein said pipes with the exception of a probable slight inclination relatively to each other are substantially parallel to each other and are of diameters of a fraction of the distances of their axes from each other;

wherein the outer ends of at least two of said at least three pipes are connected to ports of one of said motors;

wherein said structure carries and holds on said outer ends of said pipes at least one motor of said motors;

wherein at least two of said pipes are utilized as hydrostatic fluid delivery - and fluid return - lines to lead fluid from said pump arrangement to said motor and from said motor at least insdirectly back to said pump arrangement;

wherein holding means are provided on said structure;

wherein said holding means are utilized to hold and carry at least one portion of said wing-portions;

wherein said structure includes a pivotable bearing means;

wherein said bearing means is pivotably borne in a bearing housing which is provided on said body;

wherein said pump arrangement delivers plural separate fluid pressure flows of proportionate rates of flow equal in number to the number of said motors and equal to the number of said propellers;

wherein each of said delivery fluid lines passes one of said separate flows of proportionate rate of flow to one of said motors to assure by said proportionate rates of flows proportionate angular rotary velocities of the rotors of said motors and thereby of said propellers;

wherein the inner ends of at least two of said at least three pipes are movably connected to ports of a pump means of said pump arrangement in said transmission to lead fluid from said pump arrangement to said pipes and vice - versa;

whereby said structure provides in combination;

a; the holding of said motor;

b; the holding of said wing-portion;

c; the temporary varification of the relative angle of said propeller and of said wing-portion relatively to the ground and to said body;

d; the transfer of motor-driving pressure fluid of a rate of flow proportionate to the respective rate of flow of fluid in an other structure of said plurality of structures to and from said motor to drive said propeller with a rotary angular velocity proportionately relatively to the rotary angular velocity of an other of said propellers and whereby said structure also provides

e; the carrying of said body by said wing - portion and said propeller during operation of said aircraft in the air;

wherein two of said structures are combined together on their inner portions to form a common structure with oppositionally directed outer portions,

wherein connecters which include at least three medial connection pipes are provided on the inner portions of said structures to connect said structures rigidly;

wherein each of said inner portions of said structures is provided with one of said bearing means and

wherein said bearing means are pivotably borne in a pair of bearing housings of aid body; and;

wherein said medial pipes of said connecters are fastened to said pipes of said two of said structures in a small distance from the said inner ends of said pipes of said structures and said medial connection pipes of said connecters include laterally bent portions on the ends of said medial connecter pipes to permit open inner ends of said pipes of said structures for cleaning of the interiors of said pipes and for smooth connection of said pipes to at least partially movable fluid lines between said inner ends of said pipes of said structures and said pump means of said pump arrangement, while said medial connection pipes form between said bended portions on their ends medial connecter portions of substantially parallel axes and one of said medial connecter portions laterally to others of said medial connector portions.

4,387,867

FLYING CRAFT

Heinz Jordan, Carinthia, Austria, assignor to Technische Gerate-u Entwicklungsgesellschaft m.b.H., Wolfnitz/Klagenfurt, Austria

Continuation-in-part of Ser. No. 956,005, Oct. 30, 1978, Pat. No. 4,273,302. This application May 27, 1981, Ser. No. 267,493
Claims priority, application Austria, Oct. 31, 1977, 7749/77; Jun. 13, 1978, 4309/78; Jun. 13, 1978, 4310/78; Feb. 1, 1980, 537/80
Int. Cl.³ B64C *29/00, 39/06*
U.S. Cl. 244—12.2 **5 Claims**



1. A flying craft, comprising, an outer supporting means which has an annular airflow opening extending vertically therethrough, at least one driving means supported on the

supporting means for propelling a stream of air downwardly through the opening, a carrier supported by the supporting means, an upper set and a lower set of air deflecting vanes, each set of vanes having at least two adjustable pitch vanes, said sets of vanes being spaced apart and located in the stream of air produced by the driving means, and a supporting member, said driving means being mounted on the supporting member, said upper set of vanes being fixed only to the driving means, said lower set of vanes each having one end attached to the supporting means and one end attached to the supporting member, said supporting member being rotatably mounted relative to the driving means.

4,387,868

METHOD AND APPARATUS FOR LAUNCHING AND INFLATING A SPACE BALLOON

Robert Regipa, Toulouse, France, assignor to Centre National d'Etudes Spatiale, Paris, France

Filed Dec. 22, 1980, Ser. No. 218,728
Claims priority, application France, Jan. 4, 1980, 80 00344
Int. Cl.³ B64B *1/40*
U.S. Cl. 244—31 **12 Claims**



12. A carrier balloon for launching and inflating a load-carrying space balloon, said carrier balloon having a generally elongated cylindrical shape and having upper and lower poles, tie means connecting said poles and passing through said carrier balloon, a plurality of longitudinally extending gores, said gores being of substantially constant width over a major portion of the length thereof, longitudinally extending reinforcing tapes connecting the edges of adjacent gores so as to form said carrier balloon, said reinforcing tapes extending below the lowermost edge of said gores and being attached to said tie means so as to form an opening at the lower pole of said carrier balloon, and the upper pole of said carrier balloon being closed.

4,387,869

MONO-ELEMENT COMBINED SUPERCRITICAL HIGH LIFT AIRFOIL

Robert J. Englar, Derwood, and Gregory G. Huson, Gaithersburg, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 25, 1981, Ser. No. 238,265
Int. Cl.³ B64C *21/04*
U.S. Cl. 244—207 **3 Claims**

1. A mono-element airfoil for providing high lift generation, drag reduction and high cruise performance at subsonic and transonic speeds, comprising:

a supercritical airfoil means having a large leading edge radius and a relatively blunt trailing edge, said trailing edge having a thickness of about 2% of the chord length of said airfoil means;

a plenum inside said wing having an inlet connected to a source of gas pressure and an outlet in the trailing edge of said airfoil means;

said outlet being formed as a slot means between an upper portion and a lower portion;

said upper portion being a part of the upper surface of said wing and having a reduced thickness near the rear edge;

said lower portion forming the rear wall of said plenum, the lower edge of said slot and the trailing edge of said airfoil



COMBINED SUPERCRITICAL/CCW HIGH LIFT AIRFOIL

means, said lower portion being circular in cross section and having a constant radius of no greater than 1% of the chord length of said supercritical airfoil means;

said slot means having a smoothly converging nozzle with the portion of said nozzle having the minimum height being at the rear edge of said upper portion;

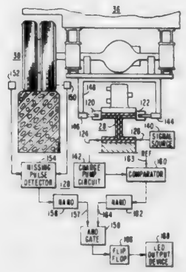
said outlet forming a circulation control device wherein gas from said source of gas pressure is controlled to travel through said plenum, escape through said converging nozzle and slot means and travel along the trailing edge of said airfoil to deflect the air traveling over the top surface of said airfoil means downwardly.

4,387,870

TRANSIT VEHICLE SHUNT DETERMINATION

Thomas C. Matty, North Huntingdon; James H. Franz, Jr., Murrysville, and Carol D. Parham, Jefferson Borough, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 29, 1981, Ser. No. 258,508
Int. Cl.³ B61L *1/20, 23/00*
U.S. Cl. 246—122 R **5 Claims**



1. In shunt determination apparatus operative with a vehicle including a conductive shunt circuit, said vehicle being operative with a roadway track including first and second conductive rail members, the combination of,

a first electrically isolated rail provided as a section of said first rail member,

a second electrically isolated rail provided as a section of said second rail member,

means providing a first output signal in response to the presence of said vehicle at a predetermined location in relation to the first and second isolated rails along the length of said roadway track,

means supplying a control signal to the first isolated rail,

means coupled with the second isolated rail and providing a second output signal in relation to said control signal being conductive through said shunt circuit to establish that said shunt circuit is conductive between said first and second isolated rails, and

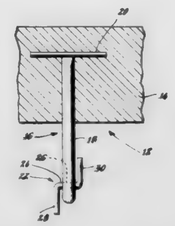
indication means energized in response to the first output signal and the second output signal being provided to indicate the operation of said shunt circuit.

4,387,871

INSULATING MODULE INCLUDING A HEATER ELEMENT SUPPORT

Peter J. Loniello, Watertown, Wis., assignor to General Signal Corporation, Stamford, Conn.

Division of Ser. No. 931,757, Aug. 7, 1978. This application May 21, 1981, Ser. No. 265,775
Int. Cl.³ E21F *17/02*
U.S. Cl. 248—58 **5 Claims**



1. A method of supporting a rod overbend heating element from an insulated roof, comprising the steps of:

forming an insulating body with a plurality of support rods extending outwardly therefrom and with each of said support rods having an element-supporting keeper associated therewith which is rotatable between first and second positions about an axis transverse to said support rod, each of said keepers being formed with fingers extending in opposite directions from said transverse axis with said fingers lying in a vertical plane when said keeper is in its first position and lying in a horizontal plane when said keeper is in its second position;

placing said keeper in its first vertical position;

moving said heating element towards said body with sections of the element straddling said support rods until the heating element has reached a position between the keepers and the body;

placing the keepers in their second positions; and

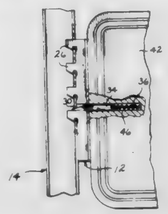
resting the heating element on the fingers of the keepers.

4,387,872

LATCH FOR A TAB AND SLOT MOUNTING BRACKET

Norman E. Hogue, Niles, Mich., assignor to Packard Industries, Inc., Niles, Mich.

Filed Jan. 17, 1981, Ser. No. 274,435
Int. Cl.³ A47B *57/00*
U.S. Cl. 248—221.3 **5 Claims**



1. In combination a mounting bracket and latch, said mounting bracket including a base plate and receiver having a slot therein, said base plate including a hooked tab means extending therefrom, said tab means for insertion into said receiver slot and interlocking with the receiver upon vertical movement relative to the receiver with a space being provided between the top of said tab means and the upper end of the receiver slot, said base plate carrying a positionable object, the improvement wherein said object includes a bore formed in general alignment with the top of said tab means, said latch including a plunger slidably positioned within said object bore, said plunger including a front end portion and a rear end portion, a spring contacting said plunger rear end portion and normally urging said plunger into an extended position with said plunger front end portion located over said tab means, said plunger front end portion contacting said receiver above said receiver slot and shifting said plunger into a retracted position when said tab means is inserted into said receiver slot, said spring urging said plunger into its said extended position with said plunger front end portion projecting into said receiver slot between said slot upper end and said tab means top upon said vertical movement of the tab means relative to the receiver whereby disengagement of the tab means from the receiver is prevented, rotatable cam means carried by said object and contacting said plunger at its rear end portion for urging said plunger into its retracted position upon rotation of the cam means to allow for withdrawal of the tab means from said receiver slot.

4,387,873

DEVICE FOR SUSPENSION OF A SOLUTION CONTAINER

John A. Pavlo, Hanover Park, and Ronald C. Stauber, Hawthorne Woods, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 16, 1981, Ser. No. 244,188
Int. Cl.³ E04G *5/06*; F16L *3/08*
U.S. Cl. 248—226.4 **5 Claims**



1. A device for suspension of a solution container which comprises:

(a) an elongated, flexible, foldable strap;

(b) said strap attached at one end to a C-clamp type bracket, said bracket adapted to be secured to an elevated surface;

(c) adjusting means integral with said bracket to enable attachment and detachment of said bracket to said elevated surface; and

(d) hook means for suspension of said solution container, said support means adjustably engagable with said strap at any desired location on said strap said hook further comprising: a Velcro type material strip integral with said hook, said Velcro type material strip attachable and detachable from

said strap, said strap made of a Velcro type material suitable to mate with said Velcro type material strip.

4,387,874

ADJUSTABLE VEHICLE SEATS AND THEIR ADJUSTMENT MECHANISMS

Bernard Boisset, Etampes, France, assignor to Societe Industrielle Bertrand Faure, Etampes, France

Filed Nov. 6, 1980, Ser. No. 204,698
Claims priority, application France, Nov. 14, 1979, 79 28119
Int. Cl.³ A47D *19/04;* **B60N** *1/06*
U.S. Cl. 248—396 **10 Claims**



1. An adjustable vehicle seat, comprising:
a base including means for mounting the base to a vehicle;
a sitting portion and a seat back carried on said base by a mechanism including means for reversably adjusting at least part of at least one of the sitting portion and seat back relative to at least another of the seat back, the sitting portion and the base to provide at least a first adjustment, of which each adjustment has two opposite extremes;
said sitting portion having a front end and two opposite sides extending to said front end;
said mechanism means including a system of mechanical linkages including a first bar located with its own longitudinal axis disposed horizontally, transversally of the vehicle seat near said front end of said sitting portion and so as to have an end thereof accessible at one of said sides of said sitting portion;
a rotatable control member mounted on said end of said bar, beside said sitting portion adjacent the front end of said sitting portion and rotatably incorporated in said system of mechanical linkages;
said system of mechanical linkages being constructed and arranged so that rotation of said control member about said transverse axis in one angular sense produces said first adjustment toward one extreme thereof; and rotation of said bar about said transverse axis in an opposite angular sense produces said first adjustment to the opposite extreme thereof.

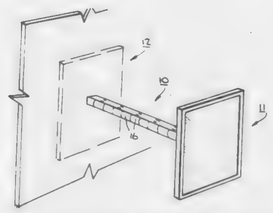
4,387,875

ADJUSTABLE SUPPORT

Hiroshi D. Ohori, 20 Bay View Dr., Toms River, N.J. 08753

Filed Dec. 23, 1980, Ser. No. 219,229
Int. Cl.³ A47G *1/24*
U.S. Cl. 248—480 **14 Claims**

1. An adjustable support comprising
a pair of elongated flexible members for disposition in an interlocked relation to define a relatively rigid structure; each said flexible member including a flat strip having a plurality of apertures and two parallel rows of spaced apart blocks disposed along one surface of said strip to define a channel-shaped cross section with said strip; each said block of one member being sized to fit into a space between a pair of adjacent blocks of the other member and having a projecting tab in a respective aperture and wherein each block of one member has an inwardly curved forward face with a groove therein and an outwardly curved rear face with a groove therein and each block of the other member has an inwardly curved forward face with a projection thereon for reception in a groove of an outwardly curved rear face of one block of said one member and an outwardly curved rear face with a projection thereon for reception in a groove of an inwardly curved forward face of another block of said one member.

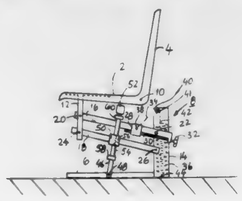


4,387,876

CONSTANT FORCE GENERATOR MECHANISM AND ADJUSTABLE SEAT CONSTRUCTED THEREWITH

Roger H. Nathan, Beersheba, Israel, assignor to Advanced Products Beer-Sheva Ltd., Beer Sheva, Israel

Continuation of Ser. No. 37,172, May 5, 1979, abandoned. This application Jul. 1, 1981, Ser. No. 279,408
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—571 **9 Claims**



1. A constant force generator mechanism, comprising: a rigid first link adapted to be fixed to a support; a rigid second link mounted for pivotable movement to said first link by a first hinge joint; and a spring link hingedly mounted to said first link by a second hinge joint, and hingedly mounted to said second link by a third hinge joint; said spring link having a linear spring rate and zero free length whereby, upon pivoting the second link with respect to the first link, the spring link generates a force whose component parallel to the first link at any given point on the second link is constant through the entire range of pivotable movement of the second link, said second hinge joint being adjustable on said first link to vary the magnitude of the generated force.

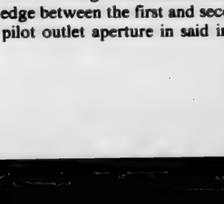
4,387,877

APPARATUS FOR FORMING POOL DECK AND COPING

Max W. Deason, 1818 W. Price St., Tucson, Ariz. 85705

Filed Nov. 17, 1981, Ser. No. 322,390
Int. Cl.³ E04G *11/02*
U.S. Cl. 249—9 **11 Claims**

1. An apparatus for forming a deck and coping thereof for said pool, said apparatus comprising,
(a) a continuous strip of semirigid material including
(i) a facing surface generally free of adhesive and positioned below said horizontal edge against said upper portion of said pool wall,
(ii) a front form surface extending upwardly from said facing surface to form a contoured surface for temporarily supporting concrete poured above said horizontal edge onto said bond surface of said pool, said concrete forming a pool deck and coping thereof contiguous to said pool wall when set, and
(iii) a back wall surface generally opposed to said front form surface and facing said central area of said pool;
(b) an elongate support member having a first end, a second end, and a middle section, said support member being shaped such that at least one of said ends can be passed through said continuous strip such that
(i) a portion of said middle section is positioned in said continuous strip between said front form surface and back wall surface thereof,
(ii) said first end is positioned outside said continuous strip adjacent said back wall surface and is adapted to receive and carry a securing member having a surface contoured to fit against said back wall surface of said continuous strip, and



(iii) said second end is positioned outside of said continuous strip adjacent to said horizontal bond surface, and is adapted to be fixedly secured to said bond surface such that at least a portion of said elongate member is in tension when said securing member is carried by said first end thereof and presses against said back wall surface of said continuous strip,
said elongate member and securing member holding said facing surface of said continuous strip in fixed position against said pool wall; and
(c) a supplemental elongate strip positioned on said bond surface along said horizontal termination edge between said bond surface and said upper portion of said pool wall, said supplemental edge strip including an elongate upstanding panel member extending along said bond surface generally parallel to said pool wall, said upstanding panel member including a plurality of spaced apertures formed therethrough,
said middle section of said elongate support member passing through one of said spaced apertures of said supplemental strip.

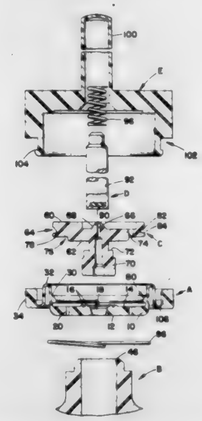
4,387,878

PILOT OPERATED VALVE ASSEMBLY

Keith E. Zukausky, St. Charles, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 13, 1981, Ser. No. 282,970
Int. Cl.³ F16K *31/04, 31/40*
U.S. Cl. 251—30 **5 Claims**

1. A diaphram assembly for a pilot operated valve comprising:
a diaphragm insert having a first side, a second side, and a peripheral edge between the first and second sides, means defining a pilot outlet aperture in said insert and a pilot supply aperture extending between the first and second sides; and,
a flexible diaphragm including an annular seat portion having first and second sides, said diaphragm further including a peripheral rim portion and an interconnecting relatively flexible web portion, means defining a shouldered sealing retention surface interconnected between said annular seat portion and said web portion and configured to complement and interengage with said peripheral edge, said first side of said diaphragm disposed adjacent the



insert and said second side of said diaphragm defining a valving surface for engaging a valve seat, at least one fluid supply aperture through said diaphragm and in fluid communication with said pilot supply aperture, means defining a fluid seal radially inwardly of said fluid supply aperture, the interengagement of said shouldered sealing retention surface and said peripheral edge serving to define a seal between said diaphragm and said insert peripheral edge whereby passage of fluids between said insert and said diaphragm is precluded.

4,387,879

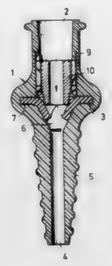
SELF-SEALING CONNECTOR FOR USE WITH PLASTIC CANNULAS AND VESSEL CATHETERS

Stefan Tauschinski, Vienna, Austria, assignor to Eduard Fresenius Chemisch Pharmazeutische Industrie KG, Bad Homburg von der Hohe, Fed. Rep. of Germany

Continuation of Ser. No. 30,390, Apr. 16, 1979. This application Jul. 16, 1981, Ser. No. 284,136
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2817102
Int. Cl.³ F16K *37/28*
U.S. Cl. 251—149.1 **11 Claims**

1. A connector consisting essentially of a hollow longitudinal passage, a hollow body portion containing a chamber, a hollow inlet portion and a hollow outlet portion, said connector containing a longitudinally slidable member, having a central opening, disposed within said longitudinal passage, and slidable within limits in said longitudinal passage, said member contacting and cooperating with a deformable elastomeric disc, having a central slit, disposed and held in place within the chamber of said body portion transversely across said longitudinal passage to close off the passage, said inlet portion having a hollow conical portion adapted to be connected to a parenteral solution supply needle or hose having a cone fitting, said outlet portion having a hollow passage and being adapted to be connected to a cannula, catheter or hose; said longitudinally slidable member cooperating with said cone fitting such that when said cone fitting is inserted into said inlet hollow conical portion the cone fitting contacts and causes the longitudinal

slidable member to advance and protrude at least through part of the elastomeric disc to open the slit in the disc and provide communication between the hollow inlet portion, the chamber in the body portion and the hollow outlet portion, the elasto-



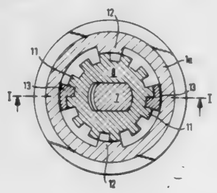
meric disc providing resilient means such that when the cone fitting is withdrawn from the inlet portion of the connector the disc springs back to its original position closing the slit and sealing the disc and thereby forceably urging the longitudinally slidable member to retract to its original position.

4,387,880

SINGLE-GRIP MIXING VALVE

Risto A. Saarisalo, Kuolimaa, and Jorma T. Koppanen, Rauma, both of Finland, assignors to Oras OY, Rauma, Finland

Filed Oct. 29, 1981, Ser. No. 316,527
Claims priority, application Finland, Oct. 30, 1980, 803407
Int. Cl.³ F16K *51/00*
U.S. Cl. 251—285 **4 Claims**



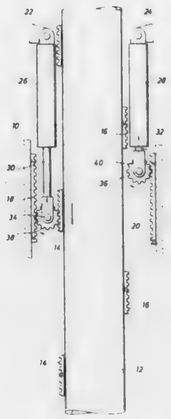
1. A single-grip mixing valve, which comprises
a first part comprising a valve body;
inlets for hot and cold water and an outlet for mixed water in said body;
ceramic discs fitted inside the body and having openings therein cooperating with the inlets and outlet in the body and with each other in order to regulate the mixing ratio of cold and hot water;
a second part comprising a turning piece fitted for limited turning movement inside the body;
a lever attached with bearings to said turning piece and engaging one of said discs in order to move the same;
axial protrusions provided in the turning piece and in the surrounding body respectively, there being at least one protrusion in one of said parts and several protrusions in the other part, respectively, and the protrusions facing each other radially in a non-overlapping manner; and
at least one detachable limiting piece being inserted between said parts and engaging the protrusions of one part while radially overlapping the protrusions of the other part in order to provide a selectable limit for the turning movement of the turning piece and, hence, of the lever.

4,387,881

BARGE JACKING APPARATUS

Thomas F. McDuffie, 11926 Taylorcrest, Houston, Tex. 77024

Filed Jul. 2, 1981, Ser. No. 280,062
Int. Cl.³ E02B *17/04*
U.S. Cl. 254—89 H **11 Claims**



1. For use in a barge having a jack-up leg passing through a guide which secures the leg for movement toward or away from the underlying ground support beneath a body of water to raise or lower the barge relative to the body of water, the improved jack-up apparatus comprising:
(a) an elongate rack extending along a barge leg, said rack being intermittently interrupted and having two or more segments which are spaced from one another along the leg and which rack segments are aligned lengthwise with one another with a space between said segments;
(b) a stationary rack segment affixed to said barge, said stationary segment and leg segments being sized and arranged so that a pinion fits therebetween and engages both;
(c) a movable pinion having teeth with a pitch thereon to enable said pinion to engage said stationary segment and said rack segments; and
(d) motor means connecting to said pinion for movement approximately parallel to the axis of said leg to move said pinion while engaging the teeth of said stationary rack to impart relative movement to said segmented rack.

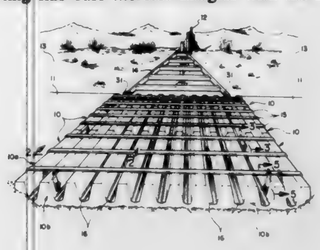
4,387,882

CATTLE GUARD CONSTRUCTION AND METHOD

Alex E. Mansour, 320, Casa Loma La., and Jon D. Bridgwater, 530 S. Casa Loma La., both of Cedar City, Utah 84720

Filed Apr. 27, 1981, Ser. No. 257,888
Int. Cl.³ E01B *17/00*; E01C *5/22*
U.S. Cl. 256—17 **21 Claims**

1. A highway cattle guard, comprising precast, individual, concrete slab sections aligned in end-to-end relationship across a highway as an extension of cattle-confining fencing, each of said sections comprising a side-by-side series of individually formed, trough-like lengths of structural sheet material, each of which is formed to provide an elongate valley member; elongate structural sheet material interconnecting the trough-like lengths as ridges between the valleys thereof and providing up-facing traction surfaces for vehicles crossing the cattle guard transversely of the valleys and ridges; a structural concrete base for each of said sections precast integrally into the reverse valleys formed along the underside of the interconnected lengths and extending thickly below the valleys as a supporting slab base therefor integral with the remainder of



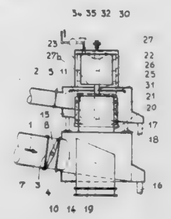
said concrete base; and means securing the interconnecting sheet material in place.

4,387,883

CHANGEOVER DEVICE FOR AN INSTALLATION FOR RECOVERY OF THE GASES AND FUMES PROCEEDING FROM A CONVERTER

Marc Leveques, Moint-par-Montbrison, France, assignor to Clesid S.A., Saint-Chamond, France

Filed Oct. 15, 1981, Ser. No. 311,720
Claims priority, application France, Nov. 21, 1980, 80 24741
Int. Cl.³ C21C *5/40*
U.S. Cl. 266—158 **6 Claims**



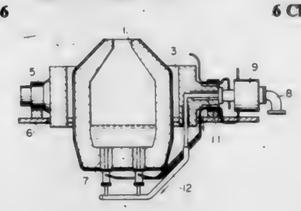
1. A changeover device for an installation for recovery of the gases and fumes proceeding from a tilting converter, including an enclosure of dimensions sufficient to accommodate the tilting movements of said converter and enveloping the latter about at least that portion of it which is situated above the horizontal plane containing the axis of tilt when the converter is in its vertical position, a first fixed suction duct called the main suction duct, joined to said enclosure and connected to a suction device enabling suction to be exerted in the enclosure in which the gases escape from said converter, and a second fixed suction duct called the secondary duct for suction above said converter during its pouring or charging phase, connected to the same suction device as the main duct by way of the changeover device which comprises
(a) a suction chamber having two superposed upper and lower portions (**10** and **11**) connected only through a vertical junction duct (**20**) projecting into said upper portion (**11**) of said chamber, an annular tank (**21**) containing water being arranged about said junction duct (**20**), said main suction duct (**1**) opening out into said lower portion (**10**) of said chamber and said secondary duct (**2**) opening out into said upper portion (**11**) of said chamber;
(b) a cylindrical bell (**22**) movable inside said upper portion (**11**) of said chamber between a low position in which said bell (**22**) is plunged into said annular tank (**21**) surrounding said junction duct (**20**) and isolates completely said upper portion (**10**) from said lower portion (**11**) of said chamber, and a high position in which said bell (**22**) is disengaged from said annular tank (**21**), said upper and lower chambers (**10** and **11**) then being in communication;
(c) means (**30**) for moving said bell between its low position and its high position; and
(d) a closure valve (**8**) in said main suction duct (**1**) before said chamber the lower portion (**10**) of which is connected to said suction device.

4,387,884

STRUCTURE OF OXYGEN PASSAGE IN STEEL CONVERTER VESSEL SUPPORTING TRUNNION

Masahiko Seki; Koji Wada, and Yukito Io, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jan. 20, 1982, Ser. No. 341,151
Claims priority, application Japan, Jan. 21, 1981, 56-5779[U]; Jan. 22, 1981, 56-6511[U]; Jan. 22, 1981, 56-6512[U]; Feb. 4, 1981, 56-13654[U]
Int. Cl.³ C21C *5/50*
U.S. Cl. 266—246 **6 Claims**



1. An oxygen passage structure in a supporting trunion for a steel converter vessel, which trunion has a trunion ring with a trunion shaft projecting radially and said shaft having a horizontal opening therein opening out of the end surface thereof, said horizontal opening extending parallel with the axis of the trunion shaft, said trunion further having a vertical opening opening out of the bottom surface of the trunion and having the axis intersecting the axis of said horizontal opening, and said trunion having a hollow chamber therein into which said horizontal and said vertical openings open and which chamber is open through the wall of said trunion ring toward the converter vessel, said oxygen passage structure comprising:
a horizontal pipe inserted in said horizontal opening and being adapted to be connected with a supply pipe;
a vertical pipe inserted in said vertical opening, the vertical pipe being adapted to be connected with an oxygen tuyere in the converter vessel;
a hollow pipe connecting member having a shape complementary to the shape of said hollow chamber and positioned in said hollow chamber, the end of said horizontal pipe which is toward said chamber being welded to said pipe connecting member and the end of said vertical pipe which is toward said chamber being welded to said hollow pipe connecting member; and
a pipe connector means mounted in said hollow pipe connecting member and having a passage therethrough extending from said horizontal pipe to said vertical pipe for connecting said pipes, said pipe connector means having support means thereon engaged with the inner surfaces of the walls of said hollow pipe connecting member for supporting said passage in a position in said pipe connecting member in which the ends of said passage are aligned with said horizontal and vertical pipes.

4,387,885

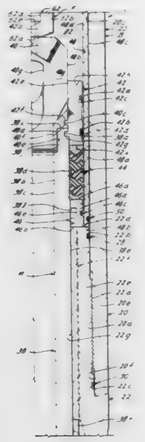
SHOCK ABSORBER ASSEMBLY FOR ABSORBING SHOCKS ENCOUNTERED BY A DRILL STRING

Thomas R. Bishop; Roger D. Chancey, and Wayne A. Kovar, all of Houston, Tex., assignors to Bowen Tools, Inc., Houston, Tex.

Continuation of Ser. No. 130,983, Mar. 17, 1980, abandoned. This application May 7, 1982, Ser. No. 375,962

Int. Cl.³ F16F *9/18*; E21B *17/00*

U.S. Cl. 267—125 **11 Claims**



1. A shock absorber assembly for use with a drill string having working fluid therein, comprising:

a body member affixed to the drill string and in communication with the working fluid, said body member formed having a central bore therethough, said body member including a top sub, a middle body, and a spline body;

a mandrel mounted for reciprocal longitudinal movement with respect to said spline body of said body member and for directing the working fluid outwardly from said body member, said mandrel formed having a central bore therethrough;

fluid dampening means floated within said central bore of said body member wherein the working fluid flows about said fluid dampening means;

a mandrel adapter removably mounted with an upper end of said mandrel for engaging said fluid dampening means;

at least two retainer body parts, each of said retainer body parts being formed having at least two retainer rings, at least one of said retainer rings is receivably mounted within a retainer detent formed in said mandrel adapter and at least one of said retainer rings is receivably mounted within a retainer detent formed in said mandrel, said retainer body parts securing said mandrel adapter with said mandrel; and,

said fluid dampening means engaging said mandrel for movement thereof in response to movement of said mandrel for absorbing shocks transmitted between said mandrel and said body member.

4,387,886

VISE WITH ROTATABLE AND VERTICAL ADJUSTMENT

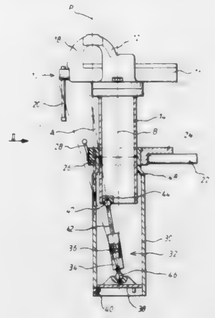
Wolfgang Schlegel, Oehringen; Arthur Wilke, Bad-Friedrichshall-Jagstfeld, and Rolf Birkert, Pfedelbach, all of Fed. Rep. of Germany, assignors to Schlegel GmbH, Oehringen, Fed. Rep. of Germany

Filed Aug. 7, 1981, Ser. No. 290,950

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 8113061[U]

Int. Cl.³ F16F *9/02*; B23Q *1/04*

U.S. Cl. 269—71 **7 Claims**



1. A vise comprising a fixed jaw and a movable jaw, a cylindrical support secured to the fixed jaw and depending therefrom, a mounting for attaching the vise to a bench, said mounting comprising a clamping device, a tube accommodating said cylindrical support for rotational and vertical adjustment, said tube being supported and engaged by said clamping device whereby tightening of said clamping device clamps said cylindrical support and vise in place, a gas spring within said tube and acting between said tube and said cylindrical support for exerting an upwardly directed force on said cylindrical support, the portion of the tube engaged by the clamping device having a reduced internal diameter and being slotted in longitudinal direction whereby the cylindrical support engages the tube along this portion of reduced internal diameter only, said portion of reduced internal diameter being formed by a slotted cylindrical insert secured to projecting from the upper end of the tube.

4,387,887

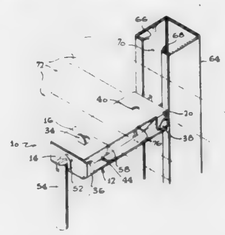
STRUT CLAMP AND TEMPORARY SUPPORT

James C. Gentry, 21461 Encina Rd., Topanga, Calif. 90290

Filed Dec. 8, 1980, Ser. No. 214,081

Int. Cl.³ B23Q *3/02*

U.S. Cl. 269—100 **2 Claims**



1. A strut clamp comprising:

a frame, a front wall on said frame, an opening in said front wall so that a clamp face is defined by said front wall on each side of said opening in said front wall, said clamp faces facing in a first direction and being for engagement on a strut on opposite sides of an opening in the strut;

a clamp hook assembly movably mounted with respect to said frame, said clamp hook assembly having first and second clamp arms, first and second clamp hooks mounted on said first and second clamp arms, said first and second clamp hooks extending between said clamp faces and facing away from each other, said clamp hooks being positioned so that said first clamp hook faces said first clamp face and said second clamp hook faces said second clamp face so as to clamp a strut against both of said clamp faces, said arms each having an angularly oriented wing thereon so that said first and second clamp hooks are moved closer together as said clamp assembly is moved in said first direction;

tightening means engaged between said frame and said clamp hook assembly for moving said clamp hook assembly in said second direction with respect to said frame to clamp a strut between said clamp hooks and said clamp faces; and

means on said strut clamp for supporting structures which are to be supported with respect to said strut.

4,387,888

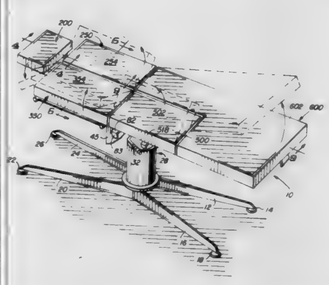
TABLE APPARATUS

James Marinakis, 1703 Wilshire Blvd., Santa Monica, Calif. 90403

Filed Jan. 29, 1981, Ser. No. 229,325

Int. Cl.³ A61G *13/00*

U.S. Cl. 269—324 **15 Claims**



1. Table apparatus for supporting a body, comprising, in combination:

frame means, including a central rod;

support means for supporting the frame means;

head supporting means adjustably secured to the frame means for supporting the head portion of the body;

thoracic leaf means, including a first leaf and a second leaf pivotally secured to the central rod and independently movable on the rod to a plurality of positions;

first lock means for locking the first thoracic leaf in any of the plurality of positions and for releasing the first thoracic leaf from a locked position;

second lock means for locking the second thoracic leaf in any of the plurality of positions and for releasing the second thoracic leaf from a locked position;

first release means connected to the first and second lock means for substantially simultaneously releasing the first and second thoracic leaves from their locked positions;

rear frame means secured to and movable on the frame means between an up position and a down position;

third lock means for locking the rear frame means in its up and its down positions;

second release means for releasing the rear frame means from its locked positions;

inomate plate means secured to and movable with the rear frame means and pivotable thereon between a closed position and an open position;

fourth lock means for locking the inomate plate means in the open and in the closed positions; and

third release means for releasing the inomate plate means from its locked positions.

4,387,889

COPYING APPARATUS PROVIDED WITH A CASSETTE-TYPE PAPER FEEDING MECHANISM

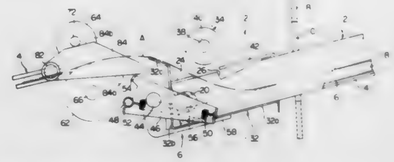
Shigeo Koyama, Toyonaka; Ryutaro Yamagata, Nishinomiya; Nobuhiko Kozuka, Suita, and Hiromi Sakata, Neyagawa, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Jul. 29, 1981, Ser. No. 287,834

Claims priority, application Japan, Aug. 18, 1980, 55-116087[U]

Int. Cl.³ B65H *5/06*

U.S. Cl. 271—10 **5 Claims**



1. A copying apparatus including

a cassette-type paper feeding mechanism having a cassette-receiving section disposed at an upstream end of a copying paper transfer passage defined within a housing and a copying paper cassette to be mounted to the cassette-receiving section through an opening formed in a side wall of the housing, said paper feeding mechanism being constructed such that when the paper cassette is inserted into the cassette-receiving section through the opening of the housing to set it at an inoperative position and further moved in a predetermined direction to set it at an operative position, a paper feeding member provided in the cassette-receiving section acts on a copying paper in the paper cassette to render it ready for feeding into the paper transfer passage, and

a pair of paper transfer rollers provided at that position of the paper transfer passage which is in proximity to the cassette-receiving section, at least one of said paper transfer rollers being mounted movably relative to the other;

said apparatus being characterized in that when the paper cassette is set at the operative position, said one transfer roller is in contact with said other transfer roller, but when the paper cassette is moved from the operative position to the inoperative position, the movement of the cassette is transmitted to said one transfer roller through a motion-transmitting member thereby to separate said one transfer roller from said other transfer roller.

4,387,890

APPARATUS FOR CHANGING THE ORIENTATION OF STACKED PAPER SHEETS OR THE LIKE

Seigfried Lampe, Ellerbek, Fed. Rep. of Germany, assignor to E.C.H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Jul. 13, 1981, Ser. No. 282,923

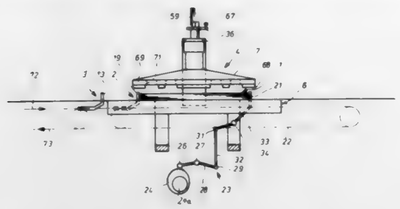
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1980, 3026634

Int. Cl.³ B65H *5/00*

U.S. Cl. 271—225 **14 Claims**

1. Apparatus for changing the orientation of sheets, particularly of stacks of overlapping sheets, comprising a support; first conveyor means for supplying sheets to said support; second conveyor means for removing sheets from said support; an orientation changing device mounted at a level above said support and rotatable about a substantially vertical axis; and

means for pneumatically lifting a sheet off said support and for urging the thus lifted



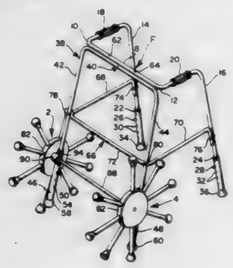
sheet can share the rotary movements of said device about said axis.

4,387,891

WALKER

E. Stanley Knochel, 4202 Glenmore Ave., Baltimore, Md. 21206

Filed Dec. 2, 1980, Ser. No. 212,113
Int. Cl.³ A61H *3/00*
U.S. Cl. 272—70.3 8 Claims



1. A walker comprising

(a) an upstanding frame including right and left hand support portions

(b) each of said support portions comprising front and rear ground-engaging members for stabilizing the walker

(c) bearing means associated with the lower part of each of said right and left hand support portions

(d) an axle rotatably carried by said bearing means spanning said support portions, and

(e) a hub fixedly secured to each end of said axle

(f) said front ground-engaging members including a plurality of equally spaced spokes extending radially outwardly from said hub

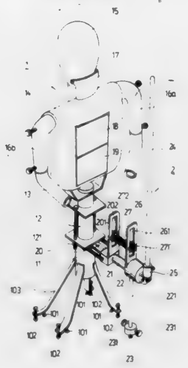
(g) the spokes on one hub being substantially one-half step out of phase with the spokes on the other hub, whereby, when one of the spokes of said one hub is substantially perpendicular to, and in engagement with the ground, two of the spokes of said other hub are angularly disposed to, and in engagement with, the ground so that the walker can be stably advanced in stepwise increments in response to downward forces alternately applied by the patient to the right and left hand support portions of the frame.

4,387,892

KENDO DUMMY WITH OSCILLATING SWORD

Cheng C. Wen, No,. 653, Ta Kan Liau, North Area, Tainan City, Taiwan

Filed Sep. 28, 1981, Ser. No. 306,109
Claims priority, application Taiwan, Jul. 17, 1981, 7012136
Int. Cl.³ A63B *69/00*
U.S. Cl. 272—76 6 Claims



1. A kendo dummy comprises

a trunk means provided with a throat piece, a breast plate and a stomach plate

a supporting frame to support a trunk means thereon; and

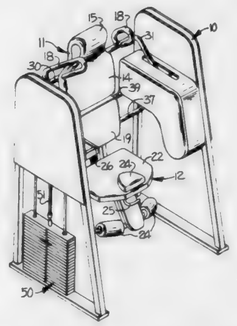
an oscillating means connected to said trunk means by means of a stationary member, said oscillating means comprising a shaft secured to said stationary member, an oscillating arm pivotally mounted on said shaft, a suspending bar extending downward from said oscillating arm, a weight fastened to said suspending bar, a torsion spring extending from said stationary member to said oscillating arm, and a bamboo sword connected to said oscillating arm.

4,387,893

ABDOMINAL WEIGHT LIFTING APPARATUS

Dan D. Baldwin, Independence, Va., assignor to Nautilus Sports/Medical Industries, Inc., Lake Helen, Fla.

Filed May 6, 1981, Ser. No. 261,260
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—118 10 Claims



1. Apparatus for exercising abdominal muscles and comprising:

means for supporting a user's body and including upper torso engaging means and lower torso engaging means,

means mounting said body supporting means for pivotal movement of said upper torso engaging means and said lower torso engaging means ne relative to the other about an axis extending transversely of the user's body along a line passing through the user's body below and adjacent the sternum and forward of and adjacent the spine, and

resistance means operatively connected to said body supporting means for imposing force resisting movement to said upper torso engaging means and said lower torso engaging means when one of said upper torso engaging means and said lower torso engaging means moves away from the other,

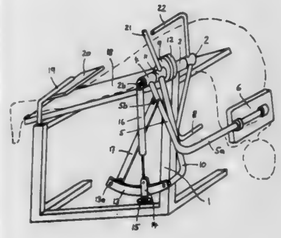
said body supporting means and said mounting means cooperating for isolating the abdominal muscles of the user's body and for exercising such abdominal muscles against the force imposed by said resistance means.

4,387,894

BENCH-TYPE EXERCISER DEVICE

Rene Baumann, Lucerne, Switzerland, assignor to Wiba AG, Kriens, Switzerland

PCT No. PCT/CH80/00108, § 371 Date May 29, 1981, § 102(e) Date May 29, 1981, PCT Pub. No. WO81/00967, PCT Pub. Date Apr. 16, 1981
PCT Filed Sep. 18, 1980, Ser. No. 269,022
Claims priority, application Switzerland, Oct. 3, 1979, 8892/79
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—130 5 Claims



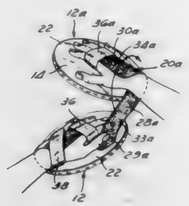
1. A bench-type exerciser device particularly useful in exercising the back muscles of a user, said exerciser device including a frame means; a support means mounted on the frame means on which a user can lie; a bearing fixedly mounted on the frame means near a first end of the support means; a shaft rotatably mounted in the bearing; a first lever rotatably mounted on the shaft, said first lever including an arm portion which is positionable beyond said first end of the support means; a pad swivelably mounted on the arm portion of the first lever for contact with the back of a user; a second lever, a first end of said second lever being mounted on the shaft; a connecting member, a first end of said connecting member being rotatably connected to said first lever; an arcuate lever arm, one end of said arcuate lever arm being rotatably connected to the second end of said second lever and the opposite end of said arcuate lever arm being rotatably connected to the second end of said connecting member; an elongated resisting means, one end of said elongated resisting means being rotatably connected to the shaft and the opposite end of said elongated resisting means being adjustably connectable along the length o the arcuate lever arm, said elongated resisting means acting to resist movement of said arcuate lever arm; and means for locking said second lever with respect to rotation about the shaft, its angular position about the shaft altering the initial positioning of said first lever and thus the location of the pad relative to said first end of the support means.

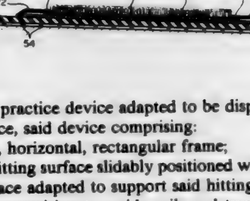
4,387,895

HAND RACKET

Charles F. Steel, 17202 Sandree Lee La., Huntington Beach, Calif. 92649

Filed Sep. 25, 1981, Ser. No. 305,495
Int. Cl.³ A63B *59/00*
U.S. Cl. 273—67 B 8 Claims





8. A hand racket adapted to be easily secured to the hand even when a similar racket is secured to the opposite hand, comprising:

a concave base for engagement with the palm of the hand, the rear surface of said base being provided with a non-slip material and the rim of said base forming a mouth;

a racket face attached to said base and covering said mouth for resilient contact with a ball; and

a strap attached to said base for securing said racket to the hand, said strap comprising:

a first portion including means for securing the racket to the middle fingers of the hand while leaving the thumb and small finger free to grip said base;

a second portion including means for adjustably securing the racket to the base of the hand or wrist; and

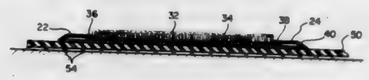
a third portion interconnecting said first and second portions of said strap and including means for adjustably achoring said second portion to said base.

4,387,896

SLIDABLE GOLF PRACTICE DEVICE

John P. O'Brien, 175 E. Delaware Pl., Chicago, Ill. 60611

Continuation-in-part of Ser. No. 195,403, Oct. 9, 1980, Pat. No. 4,311,312, which is a continuation-in-part of Ser. No. 35,605, Apr. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 932,563, Aug. 10, 1978, abandoned. This application Jul. 21, 1981, Ser. No. 285,585
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—195 A 9 Claims



1. A golf practice device adapted to be disposed on a horizontal surface, said device comprising:

a stationary, horizontal, rectangular frame;

a golf ball hitting surface slidably positioned within said frame;

a static surface adapted to support said hitting surface;

said frame comprising two side rails and two end rails, with

said hitting surface disposed therebetween but spaced from said end rails;

said side rails spaced apart from said static surface thereby forming slot means generally aligned with the direction of the line of flight of the golf ball to be struck from said hitting surface; and

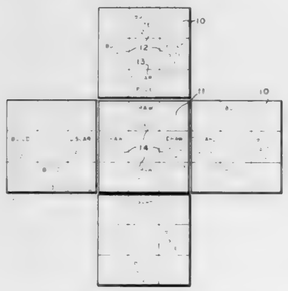
said slot means adapted to cooperate with and frictionally engage the sides of said hitting surface to retain said hitting surface within said frame and to permit said hitting surface to slide horizontally over said static surface within said frame and provide a uniform resistance against displacement when a golf ball is struck from the hitting surface and thereafter permit said hitting surface to be manually returned to its original position.

4,387,897

GAME APPARATUS

Cyrll F. Andersen, 1491 Ute Dr., Salt Lake City, Utah 84108

Filed Apr. 14, 1978, Ser. No. 896,608
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—276 **15 Claims**



1. Game apparatus, comprising a set of a plurality of playing pieces for each player, each piece of the set being of similar geometric shape in one plane but each being of different perimetral size in that plane so that beginning with the piece of largest perimetral size, all of the individual pieces of a set can be stacked to form a shape of progressively diminishing cross section, said pieces of one set being interchangeable with similarly sized pieces of each of the other sets; means for holding all playing pieces so that they may be drawn individually from such means to be placed into play; and playing board means having thereon for each of a plurality of players four designated sites for placement of playing pieces, three of which sites are labeled to indicate they are construction sites and the fourth of which is labeled to indicate that it is a discard site.

4,387,898

BALL GAME APPARATUS AND METHOD

U. Stancel Mangum, 838 E. 6600 South, Murray, Utah 84107

Filed Jul. 28, 1981, Ser. No. 287,868
Int. Cl.³ A63B *71/02, 59/02, 63/04*
U.S. Cl. 273—411 **14 Claims**

1. Ball game apparatus comprising

a generally horizontally disposed playing floor having first and second oppositely located ends,

at least two self-propelled vehicles for operating on the playing floor by at least two players of opposite teams, each vehicle including

a frame having a front end,

one or more wheels mounted to support the front end of the frame and to contact and roll along the playing floor, said one or more wheels being pivotable about a generally vertical axis to guide the vehicle, and

crank means rotatably mounted in the frame and coupled to said one or more wheels to cause the wheel to pivot as the crank means is rotated, said crank means including a handle for grasping by one hand of a player to rotate the crank means,

first and second target means positioned above the playing floor at the first and second ends thereof respectively, each target means including

a generally flat, rigid sheet of material having an opening located therein, said opening being large enough to allow passage of at least a portion of a ball therethrough, said sheet of material being mounted above and generally perpendicularly to the floor at a respective end thereof,



a target element positioned behind the opening in the sheet of material so that the target element is contacted when at least a portion of a ball passes through the opening, and

means for producing a visual or audible signal, or both, in respose to the target element being contacted by a ball,

at least two scoop means for use by at least two corresponding players for catching and throwing a ball, each scoop means including a handle portion by which the scoop means may be held, and a cup portion for receiving and holding a ball, and from which a ball may be thrown, and

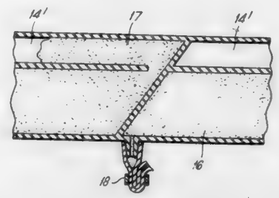
a ball for use by players in attempting to hit the targets to thereby score points.

4,387,899

DUAL CHAMBER SEALING ELEMENT WITH HARDENING FILLER

Anders I. Dahlberg, Flyghamnsvägen 22, S-183 64 Täby, Sweden

PCT No. PCT/SE80/00276, § 371 Date Jul. 7, 1981, § 102(e) Date Jul. 7, 1981, PCT Pub. No. WO81/01452, PCT Pub. Date May 28, 1981
PCT Filed Nov. 6, 1980, Ser. No. 285,073
Claims priority, application Sweden, Nov. 15, 1979, 7909418
Int. Cl.³ F16J *15/46;* F16L *17/02*
U.S. Cl. 277—34.3 **8 Claims**



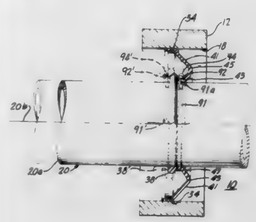
1. A sealing element comprising a flexible member adapted to be desposed in a slit-shaped, preferably annular space, which member comprises an internal gas-filled cavity with an inlet on one end for a hardening filling medium intended to be introduced into said cavity under pressure so that the cavity is filled and the member expands so that the gap is sealed, characterized in that the cavity (2) in the flexible member extends from the inlet (10) such as to embrace the space (24, 30, 42) which shall be sealed and thereafter continues in a closed chamber (14) adapted to receive the gas which is driven out of said cavity (2) in the flexible member when the cavity (2) is filled with filling medium (16), so that the displaced gas can be compressed in the closed chamber (14') and exert a counter pressure on the filling medium (16') in the flexible member while the filling medium is hardening.

4,387,900

METHOD AND APPARATUS FOR PROVIDING WATERTIGHT SEAL FOR MANHOLE PIPE CONNECTION

Jack Ditcher, Langhorne, and James A. Westhoff, Huntington Valley, both of Pa., assignors to A-Lok Products, Inc., Tullytown, Pa.

Filed May 5, 1982, Ser. No. 375,181
Int. Cl.³ F16J *15/52*
U.S. Cl. 277—101 **25 Claims**



1. A gasket assembly for resiliently supporting a pipe within an opening and for sealing the annular region between the outer surface of the pipe and the surface of the opening, comprising:

a gasket formed of a resilient, compressible material and having an outer flange adapted to be positioned against the opening in which the gasket is placed;

said gasket having a central opening defined by an annular shaped peripheral portion of substantially circular cross-section;

an intermediate, substantially V-shaped, folded section comprised of first and second webs joined to one another along a common annular fold and further integrally joined respectively to said outer flange and said inner annular portion;

an annular clamping band formed of a plastic material substantially impervious to corrosive influences normally encountered in sewage systems and arranged to be positioned against the inner periphery of said flange;

said clamping band having a discontinuity and including an insertable segment positioned within the gap formed by said discontinuity when the clamping band is expanded against said outer flange to lock said clamping band and maintain said outer flange under compression, the interactive forces between the compressed flange and the clamping band serving to retain the clamping band and insertable segment in a locked position against the inner periphery of said flange, the outer periphery of said flange being pressed into intimate engagement with the surface of said opening.

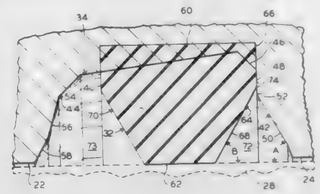
4,387,901

RETRACTION SEAL FOR A DISC BRAKE WITH ANTI-NIBBLING FEATURE

Irving R. Ritsema, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 8, 1982, Ser. No. 355,999
Int. Cl.³ F16J *15/18, 9/20*
U.S. Cl. 277—165 **8 Claims**

1. A retraction seal for a disc brake wherein a caliper defines a bore for receiving a piston, the bore includes a groove for receiving the retraction seal in an installed condition so that the latter sealingly engages the caliper and the piston, characterized by said retraction seal defining an outer diameter in its free state which is greater than an outer diameter defined by the groove, said retraction seal defining an inner diameter in its free state which is substantially equal to an outer diameter defined by the piston, the groove including a forward surface having a first portion extending substantially normal to the direction of movement for the piston during braking and a second portion extending substantially from an inner diameter of the groove to define a first angle relative to the normal direction, said retraction seal including a forward wall facing said forward surface, said forward wall including an inner section opposite said second portion which defines a second



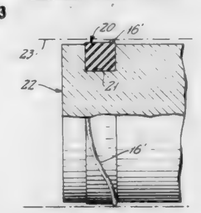
angle relative to the normal direction and said first angle is substantially equal to said second angle which is about, the bore receiving the piston to deform said retraction seal into the groove whereby said inner section and said second portion cooperate to define a spacing which permits deformation of said retraction seal into said space during braking in order to generate a resilient restoring force biasing the piston into the bore upon termination of braking, said retraction seal being deformed during braking to move axially into said spacing which is large enough to receive said deformed retraction seal and prevent full engagement between said inner section and said second portion.

4,387,902

ELASTOMERIC SEAL RING WITH SELF-LUBRICATING WEAR-REDUCING FEATURE

Charles E. Conover, Mountain Lakes, N.J., assignor to C. E. Conover & Co., Inc., Fairfield, N.J.

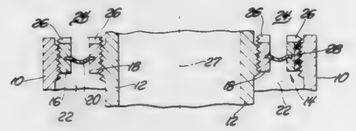
Filed Oct. 19, 1981, Ser. No. 312,775
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—203 **11 Claims**



1. An elastomeric seal ring adapted for stressed retention in a conventional O-ring circumferential groove in one of two relatively rotatable members and for establishing a sealed interface to a circumferentially continuous wiping-contact area of the other rotatable member in the course of relative rotation, said ring comprising an integral annular body containing elastomeric material as an essential ingredient and configurated for substantially complete conformance with the walls of the groove, said body having a uniform rectangular radial-section profile throughout the region thereof which is adapted for retained reception in the groove of the one member thus exposing a body surface of substantially groove width for circumferentially continuous confronting relation to the wiping-contact area of the other member, said body surface being characterized by a rib of width substantially less than the groove width,

said rib continuously undulating as a function of azimuth about the body axis and between limits established by the overall width of the groove, and said rib projecting radially from the exposed body surface as the sole feature of said ring in contact with the wiping-contact area of the other rotatable member.

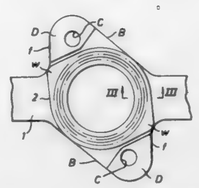
4,387,903
ANNULAR SEAL
Roger R. Smith, Lapeer, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Apr. 6, 1981, Ser. No. 251,610
Int. Cl.³ F16J *15/32*; B23Q *17/00*
U.S. Cl. 277—212 FB **1 Claim**



1. In the combination comprising a first hollow cylindrical member having a relatively large inner diameter, and a second cylindrical member having a relatively small outer diameter; said second member being disposed within the first member: the improvement comprising an improved sealing assembly for the annular joint between the two members; said sealing assembly comprising first screw threads formed on the inner surface of the outer member, and second screw threads formed on the outer surface of the inner member; a first annular ring having threads on its outer surface for meshed engagement with the first screw threads, a second annular ring having threads on its inner surface for meshed engagement with the second screw threads; and an annular flexible membrane having its outer and inner edges permanently affixed respectively to the first and second rings; the pitch of the first and second screw threads being the same; the first and second rings having their thread lead-in surfaces arranged so that the rings can be simultaneously screwed onto the threads on the outer and inner cylindrical members; both of said rings having wrench-engagement indentations in their corresponding end faces for simultaneous interaction with a turning implement, whereby the rings are turned together through similar angular distances during installation or removal of the sealing assembly to or from the defined annular joint; the inner diameter of the first ring being substantially greater than the outer diameter of the second ring, whereby the second cylindrical member can have substantial radial play within the first cylindrical member; said first and second screw threads being formed on radially-aligned areas of the cylindrical members whereby the first and second rings are in substantial radial alignment with one another, to thus minimize axial space required to mount the sealing assembly.

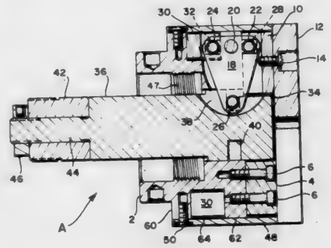
4,387,904
GASKETS
Terence P. Nicholson, Calf Hall, Muggleswick, Derwentside, County Durham, England
Filed Feb. 26, 1981, Ser. No. 238,616
Int. Cl.³ F16J *15/08*
U.S. Cl. 277—235 B **4 Claims**

1. A gasket for sealing a joint between a cylinder head and an exhaust manifold, comprising a sheet metal base layer having openings therein corresponding to the number of cylinder head and exhaust manifold exhaust ports around which a seal is required, a second layer applied to the base layer having a radially corrugated metal annulus for each opening, with the radially inner parts of each annulus spaced apart from the base layer around the corresponding opening, and a sheet metal layer effectively increasing the thickness of the base layer in



regions of the base layer surrounding securing stud apertures therein.

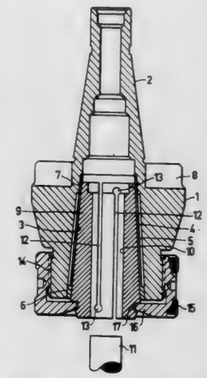
4,387,905
MACHINE TOOL CHUCK
Ivan R. Brown, Breesport, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.
Filed Nov. 28, 1980, Ser. No. 211,339
Int. Cl.³ B23B *31/14*
U.S. Cl. 279—1 C **9 Claims**



1. A multi jaw rotary chuck for lathes and the like, comprising:
a. a body having front and rear portions and including a bore;
b. a plurality of spaced jaw guides in said front portion of said body;
c. a plurality of moveable master jaw supports for the jaws of said chuck;
d. said jaw guides each having one of said master supports slideably guided thereby;
e. a plurality of actuator plates in said body each mounted in spaced radial planes intersecting and parallel to the axis of said bore and each actuator plate having first, second and third apexes;
f. said first apex of each plate having a hole and including a first dowel pin mounted in said hole and extending outwardly on either side thereof transverse to the plane of its respective plate;
g. said second apex of each plate having a hole and including a second dowel pin mounted in said hole and extending outwardly on either side thereof transverse to the plane of its respective plate and generally parallel to said first dowel pin;
h. pivot means on each of said actuator plates journaled in said body and positioned between its respective first and second dowel pins;
i. a moveable arcuate counterweight for each of said actuators operably connected to said first dowel pin and supported on the rear portion of said body;
j. said second dowel pins each operably connected to one of said master jaw supports;
k. a moveable draw plug extending into said central bore and including actuator plate engaging means;

l. said third apex of each of said actuator plates operably connected to said actuator plate engaging means;
m. said draw plug includes an inner end portion;
n. said inner end portion positioned within said body;
o. said inner end portion includes an annular slot;
p. said inner end portion includes arcuate longitudinal slots intersecting said annular slot for receiving the third apex of each of said actuator plates; and,
r. whereby upon moving said draw plug rearwardly relative to said body, said actuator plates pivot about said pivot means and simultaneously shift said master jaw supports and said counterweights to maintain positive grip on work when said body is rotated.

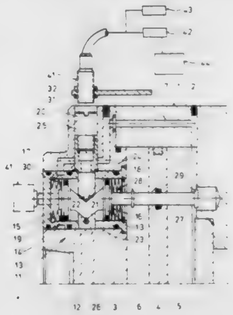
4,387,906
TOOL OR WORKPIECE CHUCKING DEVICE
Curt Nicolin, Grödinge, Sweden, assignor to Eminentverktyg A.B., Eskilstuna, Sweden
Filed Oct. 17, 1980, Ser. No. 197,934
Claims priority, application Sweden, Oct. 19, 1979, 7908691
Int. Cl.³ B23B *31/20, 31/30, 31/40*
U.S. Cl. 279—2 A **5 Claims**



1. A chucking device for a tool or workpiece having a cylindrical or slightly conical chucking surface comprising (a) a body, which is provided with a truncated cone-shaped surface, (b) a cavity located in said body inside of said cone-shaped surface of said bodies and along a substantial portion of the axial extension of said cone-shaped surface of said body and (c) a fluid-utilizing pressurizing member located in said body, by means of which member said cavity can be subjected to pressure as desired by means of said fluid, and (d) a holder for the tool or workpiece which is provided with a surface having a cone-shaped shape substantially corresponding to that of said body, a cylinder-shaped surface concentric with said cone-shaped surface of said holder, and with slits open at one end and extending through the wall of said holder, and (e) a clamp ring, which can be screwed on threads arranged in said body concentrically with said cone-shaped surface of said holder for causing said cone-shaped surface of said holder to contact said cone-shaped surface of said body.

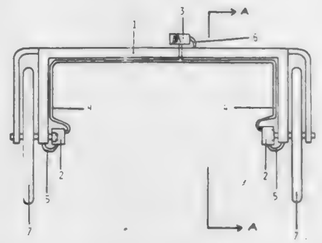
4,387,907
DEVICE FOR CONTROLLING A WORKING MACHINE
Karl Hiestand, Pfullendorf, Fed. Rep. of Germany, assignor to SMW Schneider & Weishaupt GmbH, Fed. Rep. of Germany
Filed Jun. 13, 1980, Ser. No. 159,384
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924111
Int. Cl.³ B23B *31/28, 31/30*
U.S. Cl. 279—4 **11 Claims**

1. In combination with a working machine of the type having a chuck body including a rotary chuck cylinder closed by a cylinder cover to define a substantially closed pressure space, and a chuck piston slidably disposed in the pressure space for displacement responsive to a fluid pressure in the pressure space, a source of fluid under pressure, and means for providing fluid communication between the source and the pressure space, an improved device for controlling the working machine, comprising: a pulse generator member axially guided within the chuck body in communication with the pressure space for movement responsive to the fluid pressure at a predetermined level and axially displaceable into an end position; switching means provided outside of the chuck body at a spaced location therefrom for switching the machine off; stop



means connected to said pulse generator and engageable by the chuck piston near end position of the chuck piston so that said pulse generator is also responsive to chuck piston position; and a control member displaceably mounted in the chuck body operative to interconnect said pulse generator member and said switching means, whereby, the control member is displaceable upon movement of said pulse generator member into said end position to actuate said switching means to switch off the machine; said pulse generator member including piston means having a piston portion slidably guided in the cylinder cover operatively loaded by the fluid pressure in the pressure space and spring means for biasing said piston portion into an equilibrium position.

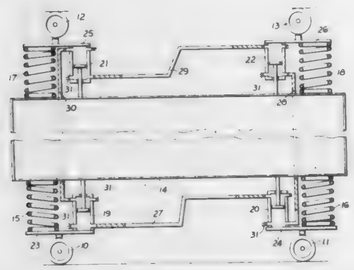
4,387,908
TROTTER EXERCISING CART
Tapani Kroger, 79899 Liukonpelto, and Raimo Luostarinen, 79330 Naadanmaa, both of Leppavirta, Finland
Filed May 1, 1981, Ser. No. 259,405
Int. Cl.³ B62C *1/08*
U.S. Cl. 280—63 **1 Claim**



1. A trotter exercising cart braking system comprising:
an oil-tight hollow cart frame;
a pair of cart wheels having axles rotatably attached to said frame;
a pair of hydraulic pumps fixedly attached to said frame and operably connected to a respective axle;

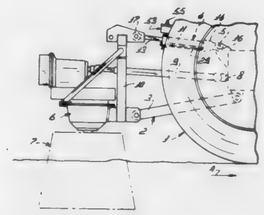
a pair of supply pipes connected between respective pumps and said frame;
an adjustable hydraulic valve;
a pressure pipe connected between said pumps and said valve; and
a return pipe connected between said valve and said frame, whereby oil circulating through said system presents a resistance to said wheels turning, depending on the adjustment of said valve.

4,387,909
SUSPENSION SYSTEMS
Murashiki-Job C. Takavarasha, 24 Carlyle Rd., Edgbaston, Birmingham B16 0BJ, England
Filed Jan. 7, 1981, Ser. No. 222,983
Claims priority, application United Kingdom, Jan. 10, 1980, 8000845
Int. Cl.³ B60G *11/26*
U.S. Cl. 280—104 **9 Claims**



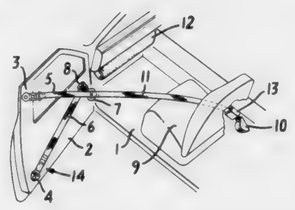
1. A suspension system for a member which is supported at a number of spaced locations by fluid actuated units at each of said locations, each unit defining a pair of chambers to contain fluid, with changes in volume in said chambers under changing load conditions resulting in an element of said unit moving relative to said member, said element being connected to means for supporting member, and the chambers of the units at the respective positions being interconnected so that fluid acting in one unit to move said element thereof in one direction produces movement of an element in an adjacent or opposite unit in the same direction, said interconnection existing between the units in a closed circuit, characterized by each of said units including a cylinder and first sealing means secured therein,
said each unit further including a piston rod slidably engaged within said first sealing means and carrying thereon spaced apart second and third sealing means, said second and third sealing means each slidably engaging the inner wall of said cylinder at locations above and below, respectively, said first sealing means to thereby define a pair of fluid-containing chambers within said cylinder separated by said first sealing means,
said piston rod passing through both said chambers and extending from one of said second or third sealing means outward from said cylinder through an open end thereof on one side of said one sealing means secured in said cylinder,
the volumes of said chambers changing inversely equally as the piston rod moves relative to said cylinder in response to said changing load conditions,
said interconnection between the units comprising pipe means, a first chamber on one side of said first sealing means in one cylinder being connected by said pipe means to a second chamber on the correspondingly opposite side of said first sealing means in the cylinder of an adjacent unit, said second chamber on said correspondingly opposite side of said adjacent unit being connected by said pipe means to a third chamber on the correspondingly opposite side of said first sealing means in the cylinder of another adjacent unit, said fluid in said chambers being incompressible.

4,387,910
COUPLING MEMBER
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland
Continuation of Ser. No. 910,903, May 30, 1978, abandoned. This application Oct. 15, 1980, Ser. No. 197,341
Int. Cl.³ B60D *7/02*
U.S. Cl. 280—449 **11 Claims**



1. An overload strut member adapted to be connected between two elements, said member comprising a cylinder, means adapted to connect said cylinder to one of said elements, a solid piston received within said cylinder that defines two fluid spaces within said cylinder, means adapted to connect said piston to the second of said elements, hydraulic means retaining said piston and cylinder in a relatively fixed position to establish the overall set length of said strut member until overload, said hydraulic means including a hydraulic passageway interconneeting said spaces and a one way pressure relief valve in said passageway, said piston having a rod that extends through a first of said spaces and a reservoir being in communication with said first space, said relief valve opening responsive to a predetermined hydraulic pressure in said second space to permit the sliding movement of said piston within said cylinder and change in the length of said member, and bypass valve means for selectively allowing hydraulic flow between said spaces to vary the overall set length of said member when open and to lock said cylinder at a fixed length when closed, said relief valve allowing movement only when said predetermined pressure is exceeded.

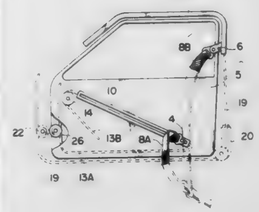
4,387,911
SEAT BELT SYSTEM USING LAP BELT HAVING ENERGY ABSORPTION CAPACITY
Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo-to, Japan
Filed Jan. 28, 1980, Ser. No. 115,783
Claims priority, application Japan, Mar. 8, 1979, 54-27372
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—802 **6 Claims**



1. In a three-point passenger restraint belt system supported by anchor means at upper and lower locations outboard of a vehicle seat and a location inboard of the seat, said system

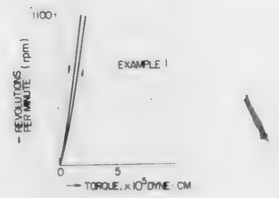
comprising a continuous belt passed through a coupling ring at an intermediate portion of said belt, one side of said coupling ring being slidable on the continuous belt and defining the juncture of a waist belt portion and a shoulder belt portion, the other side of said coupling ring being attached to a retractile belt wound on an emergency locking retractor attached to said inboard anchor means, the improvement wherein the waist belt includes means for absorbing the kinetic energy of the occupant during an initial part of the time of a vehicle collision for initially restraining the waist of the passenger until a predetermined load is exerted on the waist belt, for thereupon permitting the waist portion of the passenger to move forwardly in the vehicle a predetermined distance, and for thence again restraining the waist of the passenger, said energy absorption means comprising a portion of the waist belt that passes through the lower outboard anchor means and is superposed upon and attached to an incoming portion to form a double-belt portion, a portion of each belt length of said double-belt portion being unattached to the other such portion, and each of the unattached belt portions of the double-belt portion being folded into a U-shaped loop and stitched by rows of stitching which break at said predetermined waist belt load and thereby permit each said loop to unfold and extend the length of the waist belt.

4,387,912
SEATBELT SYSTEM
Shigeru Moriya; Akio Yoshida, both of Toyota; Koichi Tanaka, and Yuji Nishimura, both of Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho, both of Aichi, Japan
Filed Oct. 5, 1981, Ser. No. 308,939
Claims priority, application Japan, Oct. 14, 1980, 55-145863[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 **14 Claims**



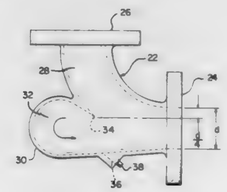
1. A seatbelt system comprising:
a first guide rail provided on a roof side;
a first sliding member slidably secured to said first guide rail and connected thereto with one end of a shoulder webbing;
a second guide rail provided on the inner side surface of a door;
a second sliding member slidably secured to said second guide rail and connected thereto with one end of a lap webbing;
a first rotatable member secured to a vehicle body and rotatable in operational association with the movement of said first sliding member;
a second rotatable member rotatable in operational association with said second sliding member and provided on the door so as to engage said first rotatable member when the door is closed whereby movement of said first sliding member requires movement of said second sliding member; and
driving means for moving said first and second sliding members.

4,387,913
NO-CARBON COPYING PAPER
Takahiro Torii, Hyogo, and Hideaki Senoh, Takasago, both of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan
Filed Sep. 3, 1981, Ser. No. 299,225
Claims priority, application Japan, Sep. 9, 1980, 55-125014
Int. Cl.³ B41M *5/22*
U.S. Cl. 282—27.5 **7 Claims**



1. Pressure sensitive no-carbon copying paper composed fundamentally of a color former sheet produced by coating a support with microcapsules containing a colorless electron-donative organic compound as a color former and a color developer sheet produced by coating a support with a coating color containing activated clay as a color developer which adsorbs the aforesaid electron-donative organic compound to develop color, wherein the aforesaid activated clay-containing coating color is prepared by adding a polyvinyl alcohol, a styrene-butadiene latex and an emulsion of wax which is solid at room temperature to activated clay.

4,387,914
SHORT RADIUS, LOW WEAR ELBOW
Jerome I. Paulson, Landisville, and Larry W. Hess, Harrisburg, both of Pa., assignors to Hammertek Corporation, Harrisburg, Pa.
Filed Jun. 8, 1981, Ser. No. 271,122
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—119 **10 Claims**



1. In a fluent material handling system, an elbow means for effecting small radius turns without excessive wear, velocity reduction and particle breakage, said elbow means comprising:
an annular entry port;
an annular exit port;
a continuous annular channel extending between said ports in an arc; and
a chamber formed on the outer wall on the outer arc of said channel opposite said entry port, said chamber opening into said channel on one side tangential to said channel wall with the other side of said chamber merging with said outer wall at a point outwardly offset parallel to the central axis of said inlet port by one quarter the diameter of said channel.

4,387,915
EXHAUST SYSTEM PIPE AND EXHAUST SYSTEM WITH SUCH A PIPE

Henning Adickes, Heidelberg, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Continuation of Ser. No. 164,364, Jun. 30, 1980, abandoned. This application Jun. 1, 1982, Ser. No. 383,677
Claims priority, application United Kingdom, Jul. 26, 1979, 7926043
Int. Cl.³ F16L *9/22, 27/12*
U.S. Cl. 285—330 10 Claims

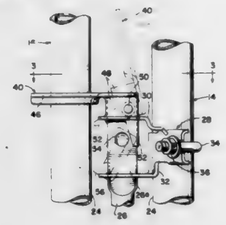


1. An exhaust pipe assembly comprising:
a first pipe;
a second pipe receiving the first pipe and having an inner diameter larger than the outer diameter of the first pipe;
a separate tubular member disposed within and attached to the second pipe, the tubular member having an abutment surface for engaging a corresponding abutment surface of the first pipe, the first pipe abutting the abutment surface of the tubular member; and
a spacer member fixed to the second pipe in a spaced apart relationship to the tubular member and engageable with the first pipe, the spacer member and the tubular member cooperating with the pipes to prevent contact therebetween.

4,387,916
GATE LATCH ASSEMBLY

George O. Lening, 4535 Elm St., Chino, Calif. 91710, and James B. Lening, 705 Locust, Ontario, Calif. 91761

Filed Jun. 26, 1980, Ser. No. 163,095
Int. Cl.³ E05C *3/06*
U.S. Cl. 292—5 3 Claims

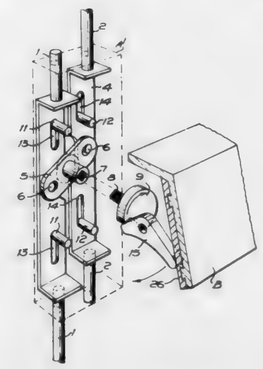


1. A latch assembly for a hinged double gate structure including a pair of hinged gates swingable to and from a closed position wherein the gates are disposed in substantially coplanar relationship with a vertical edge of a first gate adjacent to a vertical edge of a second gate, comprising:
a normally generally vertical latch rod having a normally upper generally planar end portion,
mounting bracket means slidably receiving said rod including means for attaching said bracket means to said vertical edge of the first gate with said rod extending along said vertical edge of the first gate, said mounting bracket means including first and second members each having portions disposed about said generally planar upper end portion of said rod at axially spaced sections thereof, each of said members defining a slot dimensioned and configured for engagement with the upper end portion of said rod,
anti-rotation means for restraining said rod against rotation on its longitudinal axis relative to said bracket means,
a latch yoke having a tongue portion and a pair of spaced yoke arms extending from the tongue portion,
means pivotally connecting said yoke tongue to said rod on a pivot axis which is transverse to said rod for pivotal motion of said yoke between a gate latching position wherein said yoke arms extend transversely of said rod and straddle said edge of the second gate and a gate releasing position wherein said yoke arms extend generally longitudinally of said rod,
means for latching said latch yoke and latch rod in latching position, said yoke latching means comprising at least one elongated bifurcated arm extending from said latch yoke, and disposed in one of said mounting bracket member slots, and
said yoke latching means including a hole in the normally upper end portion of said rod for receiving a lock over which said one elongated arm passes when said yoke tongue is moved between the gate latching position and the gate releasing position, said bifurcated arm being pivotally connected to said upper end of the rod and having elements on opposite sides thereof extending at least partly therearound.

4,387,917
PANIC BOLT UNITS

Michael J. Cocker, Stockport, England, assignor to Peter George Legg and Melvyn Alan Tindall, both of Lancaster, England

Filed Dec. 26, 1979, Ser. No. 107,434
Int. Cl.³ E05C *15/02*
U.S. Cl. 292—40 5 Claims



1. A door lock and panic bolt unit release mechanism comprising a box section member mounted in a door and housing two vertically sliding bolts adapted to move in opposite directions, a pair of U-shaped slotted plates to which the bolts are respectively secured, pegs extending from the box section

member and passing through the slots in the slotted plates, a T-member on pins projecting from the slotted plates a spindle non-rotatably connected to the T-member, a cam onto the spindle, and a lever engaging the cam and by which the cam is rotated by pressure to release the bolts from a door.

4,387,918
DEADLOCK MECHANISM

Gerald F. Dunphy, Glen Waverley, and Hans J. Esser, Keysborough, both of Australia, assignors to Ogden Industries Pty. Ltd., Huntingdale, Australia

Continuation-in-part of Ser. No. 123,068, Feb. 20, 1980, abandoned. This application Feb. 28, 1980, Ser. No. 126,948
Claims priority, application Australia, Feb. 28, 1979, PD7850
Int. Cl.³ E05C *3/16;* E05B *65/06*
U.S. Cl. 292—224 7 Claims



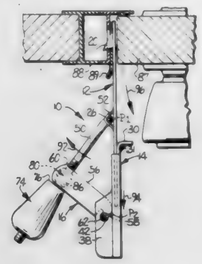
1. Deadlock mechanism including a housing, a deadbolt pivotally mounted on said housing for movement between an operative position and an inoperative position, a front portion of said deadbolt projecting out of said housing in said operative position and being substantially contained within said housing in said inoperative position, a cavity formed in a rear portion of said deadbolt, two side walls of said deadbolt each defining a respective side of said cavity, a slot formed in each said side wall and extending from an edge thereof towards said deadbolt pivotal mounting, a drive arm mounted on said housing for rotation about an axis substantially parallel to the pivotal axis of said deadbolt and projecting into said cavity, a coupling pin extending from each of two opposite sides of said drive arm and slidably located within a respective one of said slots each said coupling pin remaining within its respective slot in both said positions of the deadbolt, and actuator means operable to cause rotation of said drive arm in either of two directions whereby each said coupling pin is engaged with a side of the respective said slot to urge said deadbolt to move about said pivotal mounting, further comprising a biasing spring which is substantially located within said cavity and acts between said deadbolt and said drive arm in a manner such that during movement of said deadbolt from one said position to the other, said spring first functions to resist movement of said drive arm in the direction corresponding to the movement of the deadbolt and subsequently functions to assist movement of said drive arm in that direction.

4,387,919
PORTABLE AUXILIARY DOOR LOCK

Laythol W. Quaintance, Rte. 1, Box 20, Florence, Ariz. 85232, and Dennis W. Quaintance, 714 Francis King St., Greensboro, N.C. 27410

Filed Sep. 8, 1981, Ser. No. 300,435
Int. Cl.³ E05C *19/18*
U.S. Cl. 292—296 14 Claims

1. A portable auxiliary door lock adapted for use with a door and an assoicated door jamb having a striking plate opening and comprising:
a relatively thin, elongate locking plate including a protruding portion proximate one end thereof defining an anchor to be received in the striking plate opening;
a main body portion having a first end formed with a door-engaging face adapted to bear against a marginal portion of a door, said main body portion including a sleeve slidably receiving said locking plate for reciprocal movement thereof with respect to said body portion;
means for controlling the relative reciprocal movement between said locking plate and main body portion and for applying a force to place the door-engaging face and anchor in locking engagement with the door and striking plate, said means comprising:
an elongate member having first and second ends, the first end thereof being pivotably mounted to said locking plate for pivotal movement about a first pivot axis and in a pivot plane substantially normal to the plane of the locking plate;
a connector member having first and second ends, the first end thereof being pivotably mounted to said main body portion for pivotal movement about a second pivot axis such that said connector member pivots in substantially the same plane as the pivot plane of said elongate member, the second end of said connector member being connected to said elongate member adjacent said second end thereof to define a connection point;
said first and second axes being respectively positioned such that pivotal movement of said elongate member and connector member in a direction to move said door engaging face and anchor into locking engagement with the door and striking plate, results in said connection point passing through a dead center position to lock the same while permitting the quick release thereof.



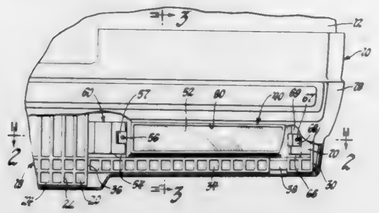
4,387,920
CELLULAR ENERGY ABSORBING BUMPER AND LAMP ASSEMBLY MOUNTED THERETO

Ronald W. Slaughter, Pendleton, and David L. Carpenter, Anderson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 6, 1981, Ser. No. 260,882
Int. Cl.³ B60R *19/08*
U.S. Cl. 293—117 5 Claims

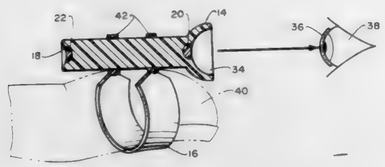
1. A bumper assembly for a wheeled vehicle comprising energy absorbing media having at least two laterally spaced sections and each section having a plurality of walls of a resilient plastic material that cooperate to form a plurality of cells of a predetermined depth for deflecting and dissipating impact loads applied thereto, said sections being separated from one another to provide a spacing of predetermined dimension therebetween, a frangible lamp assembly adapted to be mounted within said space and directly to said sections of said media, first live hinge means of resilient plastic material securing one end of said lamp assembly to said first section of said media, second live hinge means of resilient plastic material

securing another end portion of said lamp assembly to said second section of said media, at least one of said live hinge means having spaced first and second leg portions respectively joined to said one of said sections and to said lamp assembly



which close toward one another in response to an impact load directed onto said cells of at least one of said sections of said media to permit the movement of said lamp assembly and thereby prevent portions of said media from contacting and damaging said lamp assembly.

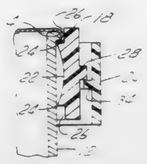
4,387,921
CONTACT LENS APPLICATION
Joseph G. Licata, 2495 Queensbury, Pasadena, Calif. 91104
Continuation of Ser. No. 101,428, Dec. 10, 1979, abandoned.
This application May 18, 1981, Ser. No. 264,836
Int. Cl.³ A61F *9/00*
U.S. Cl. 294—1 CA **11 Claims**



1. A contact lens applicator comprising:
an elongated shaft;
a first concave cup on one end of said elongated shaft; said first concave cup being substantially larger than the average contact lens;
a second concave cup on the other end of said elongated shaft; said second concave cup being substantially smaller than the average contact lens;
target means centrally located in each of said first and second concave cups;
said elongated shaft and said first and second concave cups being constructed of a stiff material;
whereby said first concave cup can be used with a wetting solution to remove a contact lens from the eye, said second concave cup can be used with a wetting solution to place a contact lens in the eye, said target means serving as a focal point during the removal or placement of a contact lens so that removal or placement can be accomplished without the use of a mirror.

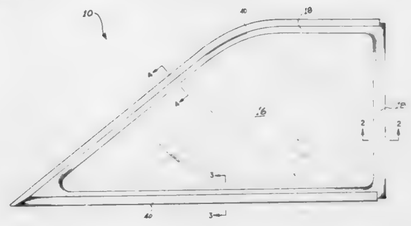
4,387,922
CARRYING HANDLE
Wolfgang G. Geisinger, 352 Rosemere Blvd., Rosemere, Quebec, Canada (J7A 2T5)
Filed Jun. 4, 1981, Ser. No. 270,648
Claims priority, application Canada, Mar. 23, 1981, 373599
Int. Cl.³ A47J *45/00*; **B65D** *25/28*; **A47G** *29/02*
U.S. Cl. 294—31.2 **7 Claims**

1. A handle structure comprising a continuous band adapted to be stretched to extend circumferentially of a container, a handle member integrally connected to said band at a pair of spaced locations and extending part way around the circumference of said band a projection in the form of a rib extending radially outwardly and circumferentially of said band, a tab projecting inwardly from said handle at a position between



said locations located to cooperate with said projection, said projection being radially spaced inwardly of said tab when said band is in a relaxed condition prior to being applied to said container and, said tab being in a position to engage said projection when said band is in stretched condition encircling said container.

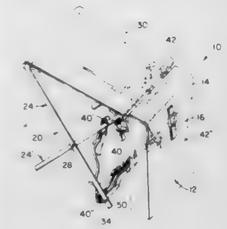
4,387,923
VEHICLE WINDOW ASSEMBLY
David Choby; James Crawford, and James Mariel, all of Elkhart, Ind., assignors to Excel Industries, Inc., Elkhart, Ind.
Filed Oct. 26, 1981, Ser. No. 315,248
Int. Cl.³ B60D *27/04*
U.S. Cl. 296—201 **1 Claim**



1. A window assembly used in a vehicle window opening defined by a peripheral flange forming a part of the vehicle body, said window assembly comprising a glazing panel and a resilient enclosing frame, said frame having a recess in one side, said glazing panel at its peripheral edge fitting into said frame recess, said frame including three fingers, each finger separated by a channel at the opposite side of the frame from said recess therein, a first and second of said fingers being flexible and separated by first said channel, said second and a third of said fingers being separated by a second said channel, said window opening flange fitting into said first channel of the frame with said second finger thereof being flexed into liquid sealing contact with said vehicle body, said third finger including a decorative trim piece embedded in said frame at one end and extending downwardly and below said third finger and bearing against said vehicle body at its other end, said trim piece contacting said body at a location spaced from the place of contact of said body and second finger.

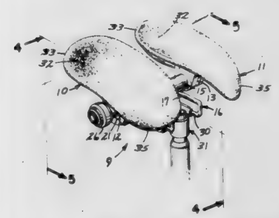
4,387,924
COMBINATION BACK PACK AND SEAT
Frank J. Fernandez, P.O. Box 348, Sound Beach, N.Y. 11789
Filed Nov. 3, 1980, Ser. No. 203,648
Int. Cl.³ A47C *9/10, 7/62*
U.S. Cl. 297—188 **7 Claims**

1. The combination back pack and seat comprising, in combination, a back pack portion comprising receptacle means for storing items therein; a seat portion fixedly connected to said back pack portion; and means for fixedly connecting said back pack and said seat portion to each other, whereby two modes of operation are provided, the first as a back pack and the second as a seat, said seat portion comprising first and second bent-leg portions, each being pivotally connected to the other to pivot in a scissor-like manner, each said bent-leg portions being U-shaped and having a pair of vertical legs interconnected by a horizontal bight portion, the horizontal bight portion of said first bent-leg portion being coupled to the rear surface of said back pack portion, first and second shoulder



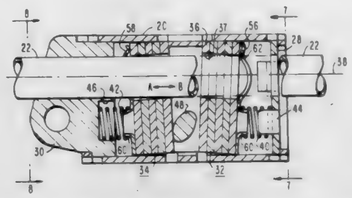
straps for use during the back pack mode of operation of the combination, said first shoulder strap having a first end fixedly connected to one vertical leg of said first bent-leg portion adjacent to its interconnection to its horizontal bight portion, and a second end connected to its pivotally connected vertical leg of said second bent-leg portion adjacent the free end thereof, and said second shoulder strap having a first end fixedly connected to the other vertical leg of said first bent-leg portion adjacent to its interconnection to its horizontal bight portion and a second end connected to its pivotally connected leg of said second bent-leg portion adjacent to the free end thereof, whereby the back pack may be carried by a person.

4,387,925
BICYCLE SEAT
Joel A. Barker, West St. Paul, Minn., and Jeffrey Birch, Charlotte, N.C., assignors to J. B. Two Corporation, Minneapolis, Minn.
Filed Jun. 30, 1980, Ser. No. 164,697
Int. Cl.³ B62J *1/00*
U.S. Cl. 297—201 **3 Claims**



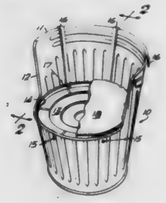
1. A bicycle seat including a pair of support platforms and means for mounting said support platforms on a bicycle, each of said platforms being a mirror image of the other, each of said support platforms including an upwardly facing cup-like portion for supporting engagement with one of a bicycle rider's buttocks and a convex downwardly and forwardly extending portion for supporting engagement with the upper leg portion of the rider, said support platforms being pivotable with respect to each other, whereby a person riding a bicycle including said seat may sit with one buttock resting in each cup-like portion and one upper leg portion resting on each of said convex portions and whereby the rider may pedal the bicycle with the rider's weight consistently and uniformly distributed along each of said cup-like portions and convex portions.

4,387,926
SEAT POSITIONER
Richard L. Van Eerden, Ann Arbor; Norman D. Vial, Jr., Brighton, and Irvin L. Slane, Chelsea, all of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.
Filed Jun. 26, 1981, Ser. No. 277,776
Int. Cl.³ A47C *1/027*
U.S. Cl. 297—375 **9 Claims**



1. A seat-positioning mechanism of the type including an elongated housing having a rod slidably received therein for movement in either direction with respect to said housing with friction lock means received in said housing, said friction lock means having a locked position canted about a fulcrum to be in frictional engagement with said rod, thereby frictionally restraining said rod against movement in at least one direction with respect to said housing, and an unlocked position wherein said friction lock means is disposed substantially perpendicular to said rod and out of frictional engagement therewith to permit free movement of said rod with respect to said housing to any selected position and biasing means operatively connected to said friction lock means to urge said friction lock means toward the locked position and cam means capable of canting said friction lock means into said unlocked position; wherein the improvement comprises a positioning element located between said friction lock means and said biasing means, said positioning element capable of preventing movement of said friction lock means along said rod in said canted position upon actuation of said cam means.

4,387,927
CHAIR MADE FROM A GARBAGE CAN
Robert E. Fahey, 5248 Raintree La., Naples, Fla. 33942
Filed Feb. 23, 1981, Ser. No. 236,666
Int. Cl.³ A47C *1/12*
U.S. Cl. 297—445 **5 Claims**



1. A novel chair made from a conventional garbage can comprising:
a frustoconical metal can having a flat circular bottom, upwardly flaring frustoconical sides and an open top and having an original capacity in the order of 30 gallons, said can being modified by cutting away a portion of its upper half and leaving at least 50% of the upper half of said can to form the curved back of said chair,
a circular member mounted in a horizontal plane within said

can just below the cut-away portion of the can to support the seat of said chair, and

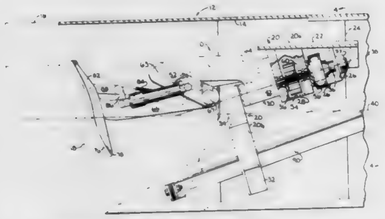
a cushion of substantially the same diameter as said circular member positioned upon said member to serve as the seat of said chair.

4,387,928

TUNNEL EXCAVATOR

Richard W. Stevens, Milwaukee, Wis., assignor to Milwaukee Boiler Manufacturing Co., Milwaukee, Wis.

Filed Mar. 27, 1981, Ser. No. 248,328
Int. Cl.³ E21D *9/08*
U.S. Cl. 299—33 **14 Claims**



1. An excavator for excavating the work face of a tunnel, said excavator being suitable for use in a tunneling shield having a hull locatable in the tunnel, said excavator comprising:

support means mountable on said hull for positioning the excavator therein;

an excavating implement appliable to the work face of the tunnel;

a frame having a rearward end mounted on said support means, said frame having portions extending toward the work face of the tunnel, said portions being spaced from, but lying generally parallel to, the axis of the tunnel and terminating in a forward end of said frame;

a link having a first end pivotally mounted on the forward end of said frame, said link being pivotable between first and second positions, in said first position a second end of said link lies adjacent said frame member portions intermediate said forward and rearward ends of said frame and between said frame member portion and the tunnel axis, in said second position said second end of said link extends in front of said forward end of said frame;

a dipper arm having one end pivotally mounted on said second end of said link and the other end pivotally mounting said excavating implement; and

drive means for pivoting said link, dipper arm, and excavating implement.

4,387,929

MILLING ROLLER MOUNTING SUPPORT ON MILLING MACHINES FOR MILLING ROAD SURFACES

Reinhard Wirtgen, Hohner Strasse, 5461 Windhagen, Fed. Rep. of Germany

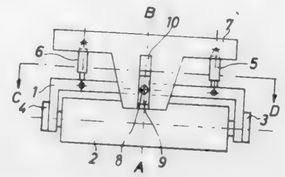
Filed Feb. 26, 1981, Ser. No. 238,378
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1980, 3049318
Int. Cl.³ E01C *23/09*
U.S. Cl. 299—39 **8 Claims**

1. A milling roller mounting support for milling machines used for milling road surfaces, said milling roller having an axis and spaced opposite axial ends and said mounting support comprising

a chassis having two substantially parallel guide surfaces located behind each other in the direction of movement, said chassis having a substantially vertical groove formed in a surface thereof;

a pair of vertically adjustable supports mounted on said chassis; and

a frame positioned at substantially right angles to the direction of movement and supported in said chassis by said supports in a manner whereby said frame is guided by said guide surfaces, wherein said milling roller is tiltingly



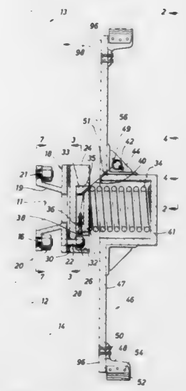
supportable at its end via said supports, said frame having a nose extending substantially at right angles to the axis of said milling roller and extending into said groove of said chassis for guiding said frame.

4,387,930

VEHICLE TRACTION DEVICE

Milby N. Hunt, 19 Manor Way, Galveston, Tex. 77550

Filed Oct. 14, 1980, Ser. No. 196,346
Int. Cl.³ B60B *15/00*
U.S. Cl. 301—46 **13 Claims**



10. A removable traction device for mounting on the wheel of a vehicle, comprising:

a disc;

means for mounting said disc to the wheel of a vehicle comprising adapter means for attachment to the wheel, and a horizontally disposed, cylindrical coil spring extending between and attached to said adapter means and the central portion of said disc, said spring being aligned generally coaxially and longitudinally with the rotational axis of said wheel and permitting said disc to cant relative to said wheel:

traction means mounted on said disc, and traction means having a first flexible terrain engaging position and a second rigid terrain engaging position, said traction means having a generally flat, terrain-engaging surface in said second position;

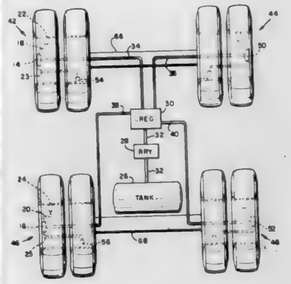
means for conveniently moving said traction means between said first and second positions.

4,387,931

TIRE PRESSURE CONTROL IN A VEHICLE

William M. Bland, Willingboro, N.J., assignor to The Budd Company, Troy, Mich.

Filed Apr. 13, 1981, Ser. No. 253,703
Int. Cl.³ B60T *7/12*; B60C *23/10*
U.S. Cl. 303—1 **12 Claims**



1. In combination with a vehicle having a plurality of rotatable wheels with air pressurized tires thereon,

means for equalizing and maintaining a predetermined level of uniform air pressure in said tires comprising:

(a) a source of pressurized air;

(b) a pressure regulator for regulating air pressure at said predetermined level of uniform air pressure,

(c) said pressure regulator having inlet means and a plurality of outlet means;

(d) means for applying pressurized air from said source of pressurized air to said inlet means of said regulator to provide said predetermined level of uniform air pressure at said plurality of outlet means; and

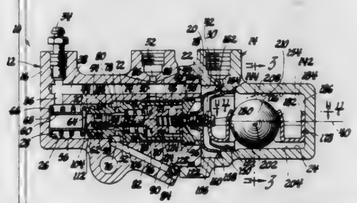
(e) means for applying said predetermined level of uniform air pressure through said outlet means to said tires of said vehicle to maintain the pressure in said tires at said predetermined level of uniform air pressure.

4,387,932

PRESSURE PROPORTIONER

Ronald L. Shellhause, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 17, 1981, Ser. No. 255,100
Int. Cl.³ B60T *8/26*
U.S. Cl. 303—24 F **9 Claims**



1. A brake fluid pressure proportioner having a housing with a brake actuating pressure inlet and a brake actuating pressure outlet, said proportioner comprising:

a pressure proportioning section having at least one pressure proportioning device normally positioned in a non-proportioning mode, and means responsive to brake actuating pressure to move said at least one proportioning device into its proportioning mode;

normally open valve means including a valve and a valve seat, brake actuating fluid under pressure flowing from said inlet to said outlet through said valve means when brake actuating pressure is supplied at said inlet while no proportioning action of said proportioning device is required, so as to bypass the proportioning mode of said at least one proportioning device and deliver the inlet brake actuating pressure to said outlet;

means moving said valve into engagement with said valve seat to close said valve means when proportioning action of said at least one proportioning device is to be initiated, said means including an inertia sensitive device causing initial movement of said valve toward said valve seat, and means directing fluid flow energy in brake fluid under brake actuating pressure flowing toward said valve seat to accelerate movement of said valve to close said valve means by engaging said valve seat, said valve being moved by the flow energy only after said valve has been moved toward said valve seat in response to inertia;

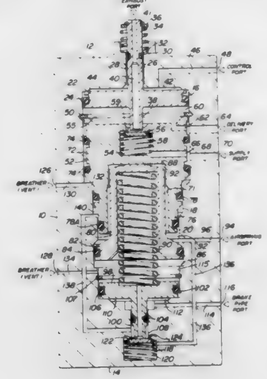
and means directing brake actuating pressure from said inlet to said at least one proportioning device when said valve means is closed, said at least one proportioning device then proportioning brake actuating pressure to said outlet at at least one predetermined proportioning ratio.

4,387,933

RELAY-LOAD/RATIO VALVE FOR USE IN BRAKE APPLICATIONS ON AIR-SPRING EQUIPPED VEHICLES

Christopher A. Cripe, Coatesville, Pa., assignor to The Bi-Modal Corporation, Greenwich, Conn.

Filed Oct. 5, 1981, Ser. No. 308,378
Int. Cl.³ B60T *8/18*
U.S. Cl. 303—22 A **12 Claims**



1. In a vehicle having air spring wheel suspensions and pneumatic brake cylinders, a control valve to limit maximum brake cylinder pressure in accordance with vehicle load comprising a casing having upper and lower closures, a bore therein and control, delivery, supply, and air spring ports and breather vent, a relay piston slidable in the upper end portion of the bore having a hollow valve stem extending through the upper closure to exhaust, a first chamber above said relay piston communicative with said control port, a load-limiting piston slidable in said bore beneath said relay piston, the space between said pistons constituting a second chamber communicative with said delivery port, a third chamber within said load-limiting piston including a spring-urged check valve therein, means forming communication between said third chamber and said supply port, said hollow valve stem of said relay piston including a portion extending inwardly into said second chamber adapted to engage said check valve, return spring means normally pulling said hollow stem and relay piston upwardly so that said inwardly extending portion of said hollow stem is disengaged from said check valve to allow air present in said second chamber to vent to atmosphere upon

brake release, said load-limiting piston including a hollow center beneath said third chamber including an upper surface and opening through the lower end of said load-limiting piston and forming a fourth chamber communicative with said air spring port, a minimum application bias piston in said hollow center, spring means normally urging said bias piston upwardly towards said upper hollow center surface, and a fifth chamber beneath said bias piston communicative with said breather vent, whereby on service brake application in a fully loaded vehicle, air spring pressure enters said fourth chamber exerting a downward force on said bias piston against action of its spring means to move said bias piston out of contact with said load-limiting piston and supply air stops in said third chamber, and upon brake application in said fully loaded vehicle control pressure via said control port enters said first chamber above relay piston moving said relay piston and its hollow stem downward to contact and unseat said check valve allowing supply air in said third chamber to enter said second chamber and out said delivery port to said vehicle brake cylinders, and for service application in an empty vehicle; the air spring pressure in said fourth chamber is lower and the upward force on said load-limiting piston is proportionally lower so that should control pressure in said first chamber above said relay piston cause delivery pressure in said second chamber below said relay piston to exceed a predetermined pressure, pressure in said second chamber will exert a force downwardly on said load-limiting piston and move it away from said relay piston and its hollow stem closing said check valve to prevent the control valve from responding to further increase in control pressure.

4,387,934

ANTI-SKID BRAKING SYSTEMS FOR VEHICLES

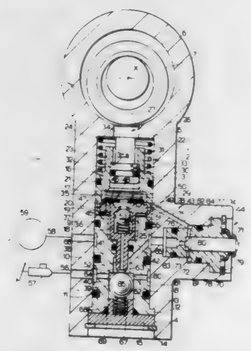
Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries, Limited, Birmingham, England

Filed Jun. 22, 1981, Ser. No. 275,669

Claims priority, application United Kingdom, Jul. 8, 1980, 8022282

Int. Cl.³ B60T *8/087*

U.S. Cl. 303—116 **14 Claims**



1. An anti-skid braking system for a vehicle comprising a brake circuit including a wheel brake, an hydraulic master cylinder connected to said brake circuit, a modulator assembly comprising a housing having a first bore, a reservoir piston, a reservoir space bounded by said reservoir piston, and a dump valve responsive to a skid signal for dumping fluid from said brake circuit to said reservoir space, a pump for recovering fluid from said reservoir space and comprising a pump displacement member, a pump chamber bounded by said pump displacement member, and driving means for said pump displacement member, an inlet passage to said pump chamber from said reservoir space, and an outlet passage from said pump chamber to said brake circuit, said reservoir piston being slidable in said first bore and being provided with a second bore, said pump chamber being provided in said second bore in said reservoir piston, and said pump displacement member being sealed to the wall of said second bore.

4,387,935

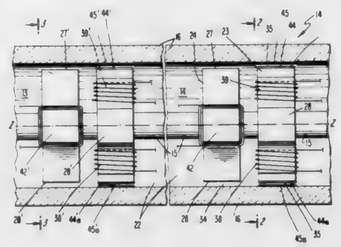
LINEAR MAGNETIC BEARING

Philip A. Studer, Silver Spring, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 8, 1980, Ser. No. 214,361

Int. Cl.³ F16C *39/00*

U.S. Cl. 308—10 **52 Claims**



1. A linear magnetic bearing or an electromotive machine including a linear magnetic bearing, said bearing having mutually orthogonal x, y and z axes and comprising a stator member stationary relative to said axes and having a longitudinal axis on the z axis, a member movable relative to said axes, said members being mechanically free of each other, said movable member adapted to have a longitudinal axis along the z axis, permanent magnet means on one of said members for positioning the movable member in a plane defined by the x-y axes relative to the stationary member, means for sensing the position of the movable member relative to the stationary member in the plane defined by the x-y axes, electro-magnet means on one of said members responsive to the sensing means for centering the longitudinal axis of the movable member on the z axis, a radial air gap being established between said members in the plane defined by the x-y axes, said members including means for establishing first low reluctance magnetic flux paths for the permanent magnet means through both of the members and the air gap and second low reluctance magnetic flux paths for the electro-magnets through both of the members and the air gap so that no net force is applied to the movable member in the direction of the z axis by either the permanent magnet means or the electromagnet means, said permanent magnet means having high magnetic reluctance compared to the flux paths, said first and second low reluctance flux paths being arranged so that flux from the electro-magnet means do not pass through the permanent magnet means.

4,387,936

MAGNETIC BEARING FOR HIGH-SPEED ROTATION

Tadao Ishizawa, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

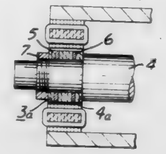
Filed Sep. 24, 1981, Ser. No. 305,364

Claims priority, application Japan, Oct. 9, 1980, 55-144183[U]

Int. Cl.³ F16C *39/00*

U.S. Cl. 308—10 **6 Claims**

1. A rotor armature assembly for an electromagnetic radial bearing for use in high rotational speed applications, the rotor armature assembly comprising: a rotary shaft, a plurality of annular magnetic plates each comprised of soft magnetic material and disposed in axial alignment on the rotary shaft, and means including a plurality of annular steel reinforcing plates each comprised of material having greater mechanial strength than the soft magnetic material of said magnetic plates and disposed on the rotary shaft between some of the annular magnetic plates and in frictional engagement therewith for



frictionally restraining radial outward deformation of the annular magnetic plates due to centrifugal force during high speed rotation of the rotor armature assembly.

4,387,937

BEARING ASSEMBLY FOR ROTOR CENTERING DEVICE

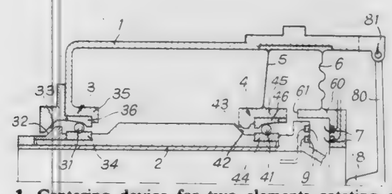
Jean-Pierre Fournier, Ecos, and Jacques Cabillic, Gaillon, both of France, assignors to Societe Europeenne de Propulsion, Puteaux, France

Filed Feb. 12, 1981, Ser. No. 233,905

Claims priority, application France, Feb. 19, 1980, 80 03624

Int. Cl.³ F16C *21/00, 39/02*

U.S. Cl. 340—682 **11 Claims**



1. Centering device for two elements rotating one with respect to the other, comprising first and second radial bearings, both situated at a distance from one another along the axis of the rotor and each constituted by first and second opposing centering members with angular contact between inner and outer faces, device wherein for each radial bearing the first and second opposing centering members with angular contact between inner and outer races, adapted to exert by their opposing opposite forces along the rotation axis, are mounted with axial clearance so that when one of said members is in abutment, the other member has a radial clearance and reciprocally the first angular contact centering members of the first and second bearings are also opposing, and the second angular contact centering members of the first and second bearings are likewise opposing, so that by relative axial movement of the inner and outer contact races of both first and second centering means belonging to the two bearings, simultaneous contact of the inner and outer races is achieved either with the first centering members or with the second centering members which happen to be opposing on the two bearings, thereby transferring all the load either on the first centering members or on the second centering members.

4,387,938

ROLLING BEARING INCORPORATING DAMPING MEANS

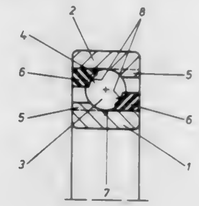
Manfred Brandenstein, Eusenheim; Horst M. Ernst, Eltingshausen, and Lothar Walter, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 19, 1981, Ser. No. 245,278

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 8008532

Int. Cl.³ F16C *27/04, 33/60, 33/76*

U.S. Cl. 308—184 R **3 Claims**



1. A rolling bearing assembly comprising at least a pair of race rings having confronting spaced raceways and a plurality of rolling elements in the annular space between the race rings and a plurality of elastically flexible discrete damping elements mounted at circumferentially spaced locations in at least one of the race rings, each damping element anchored against rotation in a recess in an annular radially projecting shoulder of said one ring defining the raceway, said damping elements projecting a predetermined distance into the area of the raceway to frictionally engage the rolling elements and provide a predetermined resistance to rolling.

2. A rolling bearing assembly comprising at least a pair of race rings having confronting spaced raceways and a plurality of rolling elements in the annular space between the race rings and elastically flexible damping means comprising a plurality of elastic damping elements projecting a predetermined distance into the area of the raceway to frictionally engage the rolling elements and provide a predetermined resistance to rolling, said damping elements being anchored against rotation in axially extending recesses formed in an annular radially projecting shoulder of at least one of the rings defining the raceway providing a positive locking of the damping elements against movement circumferentially relative to the ring and wherein said damping elements are interconnected to form a continuous annular member having a projection engaging the opposing ring to provide a seal.

4,387,939

MULTI-PART ROLLING BEARING CAGE WITH SNAP FIT INTERCONNECTION

Lothar Walter; Armin Olschewski; Klaus Kispert, all of Schweinfurt, and Hans Meining, Dittelbrunn, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 29, 1981, Ser. No. 287,900

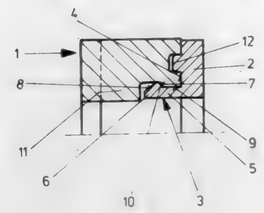
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1980, 8020776[U]

Int. Cl.³ F16C *33/46*

U.S. Cl. 308—217 **9 Claims**

1. A multi-part cage for the rolling elements of a rolling bearing, comprising first and second adjoining cage parts having central bores, said first part having axially extending recesses at its inner surface, said second part having axially extending projections received in said recesses, said recesses and projections having engaging radially extending surfaces inhib-

iting separation of said first and second parts, said first and second parts having further mutually engaging axially extend-



ing recesses and projections spaced from the inner circumference thereof.

4,387,940

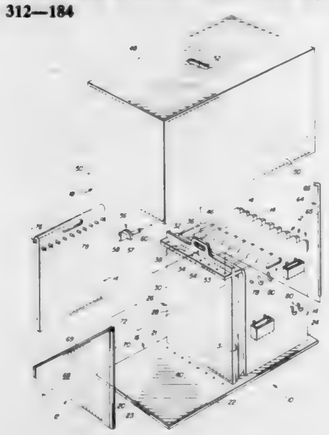
APPARATUS FOR SUPPORTINGLY ORGANIZING AND DISPLAYING MISCELLANEOUS ARTICLES

Earl E. Chandler, P.O. Box 1624, Coolidge, Ariz. 85228

Continuation-in-part of Ser. No. 123,387, Feb. 21, 1980, Pat. No. 4,273,394, which is a continuation-in-part of Ser. No. 937,543, Aug. 28, 1978, Pat. No. 4,225,202. This application Jan. 29, 1981, Ser. No. 229,339

Int. Cl.[3] **A47B** *63/00;* **A47F** *5/08;* **A47B** *96/06*

U.S. Cl. 312—184 **8 Claims**



1. An apparatus for supportingly displaying miscellaneous articles in organized arrays comprising:

(a) a box including,

I. a base having a floor with a transverse upstanding central wall,

II. a cover demountably mounted on said base for enclosing said base,

(b) at least a pair of cantilever arm means each having an elongated horizontal top edge and an elongated vertical side edge;

(c) means on the upstanding central wall and in the floor of said base and on said pair of cantilever arm means for demountably and pivotably mounting said pair of cantilever arm means in said box so that the elongated vertical side edge of one of said pair of cantilever arm means lies along a first vertical axis which is adjacent one side of the upstanding central wall of said base and the elongated vertical side edge of the other of said pair of cantilever arm means lies along a second vertical axis which is adjacent the other side of the upstanding central wall of said base, said pair of cantilever arm means being pivotably movable about their respective ones of said first and said second vertical axes;

(d) a display panel means demountably suspended from each of said pair of cantilever arm means; and

(e) fastener means on said display panel means for demountably supporting miscellaneous articles thereon in organized arrays.

4,387,941

WORK PLACE ARRANGEMENT

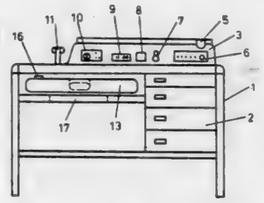
Klaus Maier, Heidenheim, Fed. Rep. of Germany, assignor to Strohm & Maier Labormobel GmbH, Heidenheim, Fed. Rep. of Germany

Filed Oct. 10, 1980, Ser. No. 196,151

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1979, 2944671

Int. Cl.[3] **A47B** *77/08*

U.S. Cl. 312—194 **8 Claims**



1. In a work place arrangement which comprises a workbench including at least one attached board, at least one drawer, at least one arm rest, at least one working instrument or tool, and supply lines for said working instruments or tools, the improvement wherein:

(a) said attached board is adapted to receive said working instruments or tools and to incorporate supply lines for said working instruments or tools, so received

(b) said arm rests comprise a left half and a right half which together form a counter portion firmly affixed on the front side of said bench at ergonomic height below the bench top main work surface, and including

(c) a suction device having a suction opening located in said arm-rests unit, centrally thereof, between said left and right arm rest halves of said counter portion and a push-button control located on the top side of said counter portion for actuating said suction device,

(d) a metal plate on said counter portion adjacent said suction opening, and

(e) a trash bin disposed beneath said counter portion,

(f) wherein the top side of said attached board is forwardly inclined relative to said workbench front side

(g) wherein the top side surface of said attached board has a depression for accommodating the handle of a work tool.

4,387,942

DRAWER SLIDE ASSEMBLY

Robert F. Lense, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

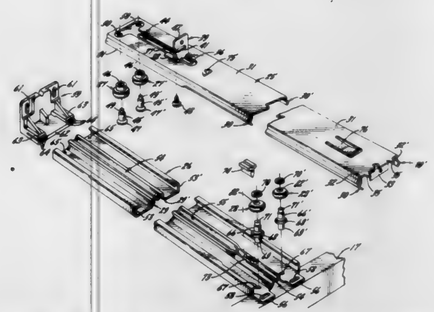
Filed Nov. 28, 1980, Ser. No. 211,089

Int. Cl.[3] **A47B** *88/10;* **F16C** *21/00*

U.S. Cl. 312—334 **9 Claims**

1. In a slide assembly for a drawer sliding in a frame, the combination of, first and second elongated parallel members spaced apart and opposing each other and adapted to extend lengthwise of a panel of the drawer, one of said members adapted to be attached to said panel and the other of said members adapted to be attached to said frame, and a roller journaled on said first member to turn about an axis perpendicular to said panel and disposed between said members, said

second member having a track portion extending substantially throughout the length of said second member and projecting toward said first member for engagement with said roller, said track portion being inclined relative to the axis of said roller at a first acute angle, the peripheral surface of said roller opposing said track portion being generally frusto-conical and at a second acute angle relative to the axis of the roller, said second



acute angle being slightly smaller than said first acute angle whereby said surface of said roller rolls on said track portion and the force between the surface and the track portion is generally perpendicular to the surface and whereby said track portion engages said surface of said roller at substantially a succession of points forming a circle around the surface and said force acts substantially along a line through said points.

4,387,943

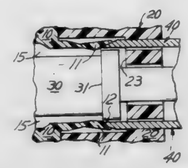
ELECTRICAL CONNECTOR HAVING FRONT OR REAR RELEASABLE AND REMOVABLE CONTACTS

Dee A. Werth, Nineveh; Alan L. Schildkraut, Sidney, and David W. MacAvoy, Bainbridge, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 30, 1981, Ser. No. 279,143

Int. Cl.[3] **H01R** *13/42*

U.S. Cl. 339—59 R **3 Claims**



1. In combination with an electrical connector having front and rear releasable and rear removable contacts, said connector of the type having: a housing; a plurality of contacts, each contact having a rear portion, a forward mating portion, and an enlarged middle portion having a forwardly facing shoulder and a rearwardly facing shoulder; and means for releasably mounting said contacts in said housing including a rear insert having a plurality of bores each having the rear portion of a respective contact therein, a plurality of resiliently and radially deflectable members extending from the forward portion of each of said bores, and a forward insert having a plurality of bores each having a portion of the forward portion of a respective contact therein, and a rearwardly facing surface adapted to engage the forwardly facing shoulder of each of said contacts, the improvement wherein:

each of said members of said rear insert, includes at the forward end of said member a radially inwardly chamfered surface and, rearwardly adjacent to the chamfered surface, a forwardly facing shoulder engaging the rearwardly facing shoulder of a respective contact; and

said forward insert includes a plurality of passages annularly arranged around each of said bores, each of its passages axially aligned with a respective forwardly facing shoulder of the deflectable members of said rear insert, whereby a tool may be inserted into the passages to engage and radially deflect said deflectable members at the end of that passage thereby releasing the contact for removal from the rear of the connector.

4,387,944

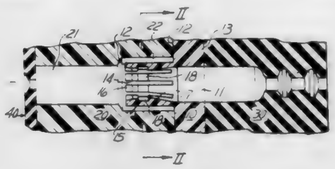
ELECTRICAL CONNECTOR INSERT

David L. Frear, Afton, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 30, 1981, Ser. No. 279,149

Int. Cl.[3] **H01R** *13/42*

U.S. Cl. 339—59 R **4 Claims**



1. In combination with an electrical connector insert of the type having a body of insulation material having a plurality of passages therethrough from a front face to a rear face and respective electrical contact members therein which are insertable from the rear and which have an enlarged portion defining a rearwardly facing shoulder and a forwardly facing shoulder, the improvement comprising:

a plurality of tubular contact retention towers integral with the body and coaxial with the respective passages therein, each of said towers having an internal annular groove therein that includes a forwardly facing wall and an opposing rearwardly facing wall, the surfaces on opposite sides of said groove tapered radially outwardly, each tower being resiliently radially expandable to permit the enlarged section of a respective contact member to pass into the tower upon insertion of the contact member into a respective passage from the rear of the body, said tower contracting when the enlarged portion of the contact members enters the annular groove, the forwardly and rearwardly facing walls of the groove engaging the forward and rearward shoulders of the enlarged portion of the contact member to limit forward and rearward movement of the contact member in the passage, said tapered surfaces on both sides of said groove adapted to receive an appropriate tool from the rear or the front of said passage to radially expand the towers and disengage the enlarged portion of the contact from the groove, whereby the contact may be released from either the front or rear of the passage for removal from the body.

4,387,945

ELECTRICAL CONNECTOR INSERT

David W. MacAvoy, Bainbridge, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 30, 1981, Ser. No. 279,275

Int. Cl.[3] **H01R** *13/42*

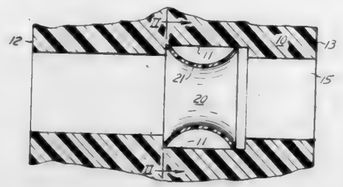
U.S. Cl. 339—59 R **2 Claims**

1. In combination with an electrical connector having removable contacts, said connector of the type having: a housing; a plurality of contacts, each contact having a rear portion, a forward mating portion, and a middle portion; and means for releasably mounting said contacts in said housing, the improve-

ment wherein the means for releasably mounting said contacts includes:

an annular groove in the middle portion of each of said contacts;

an insert having a plurality of bores each having a respective contact therein said insert including an annular groove in each of said bores; and



an annular member mounted in each of said grooves in said insert bore, each of said members extending radially inwardly and having an annular arcuate surface extending around the groove in a respective bore and axially of said passage, said member resiliently and radially deflectable and adapted to snap into the groove in a respective contact whereby, when a contact is inserted into said passage said annular member snaps into the groove in said contact to retain said contact in said insert.

4,387,946

MULTIPIN COUPLER

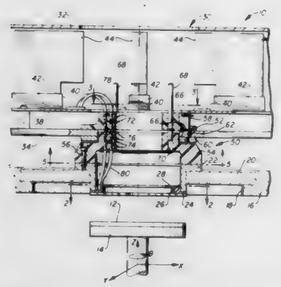
Alfred F. Lauriello, Plano, and Steven D. Swendrowski, The Colony, both of Tex., assignors to Mostek Corporation, Carrollton, Tex.

PCT No. PCT/US80/01726, § 371 Date Dec. 24, 1980, § 102(e) Date Dec. 24, 1980, PCT Pub. No. W082/02286, PCT Pub. Date Jul. 8, 1982

PCT Filed Dec. 24, 1980, Ser. No. 273,843

Int. Cl.³ H01R *13/631, 13/631*

U.S. Cl. 339—66 M **3 Claims**



1. A multipin coupler for releasably connecting test circuitry to an IC chip probe card, comprising:

an upper ring member having a central opening therethrough;

a lower ring member having a central opening therethrough;

a plurality of pin connections with opposite mating portions mounted in said ring members around the openings therein;

means for aligning said ring members before engagement of said pin connections;

means for adjustably supporting said upper ring member for limited movement relative to said lower ring member; and

a plurality of leads of substantially equivalent lengths interconnecting the test circuitry and probe card through said pin connections;

wherein said supporting means comprises:

a plate with an opening therein aligned with the openings in said ring members;

at least a portion of the test circuitry being supported on said plate;

a plurality of pins secured to said plate; and

a pair of spaced apart stops secured to each pin on opposite sides of said upper ring member to allow axial movement thereof relative to the lower ring member.

4,387,947

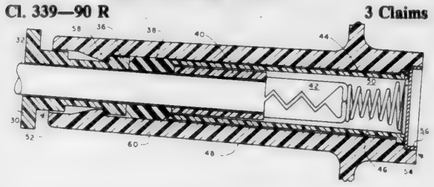
HIGH VOLTAGE CONNECTOR

Arthur J. Lostumo, Franklin Park, and Steven J. Pulchinski, Northbrook, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Jun. 29, 1981, Ser. No. 278,160

Int. Cl.³ H01R *13/625*

U.S. Cl. 339—90 R **3 Claims**



1. A disconnect plug for coupling a high voltage conductor to a high voltage receptacle having a bore for receiving the plug and a high voltage contact therein, comprising:

a lock nut having a central aperture for receiving the conductor and a mechanism for locking the nut to the high voltage receptacle;

a deformable annular ring adapted to slip over the conductor in a position adjacent the lock nut;

a generally cylindrical, hollow sleeve adapted to slide over the conductor for pressing the ring against the lock nut;

an electrical contact on an end of the conductor which extends through the sleeve;

an electrically conductive spring carried within the sleeve for engaging the conductor's contact such that, when the plug is inserted into the bore in the high voltage receptacle, the spring engages the high voltage contact therein and is compressed between the latter contact and the conductor's contact, and when the lock nut is locked to the high voltage receptacle, the sleeve deforms the ring into a tight fit with an inner surface of the bore.

4,387,948

SPARK PLUG WIRE TERMINAL AND METHOD FOR ATTACHING TERMINAL

Arthur D. Johnson, Muskego, Wis., assignor to Wells Manufacturing Corporation, Fond du Lac, Wis.

Filed Mar. 3, 1981, Ser. No. 240,133

Int. Cl.³ H01R *11/20*

U.S. Cl. 339—97 R **5 Claims**

1. A combination comprising

a spark plug wire having a central electrically conductive core and a layer of insulative material surrounding said core, said spark plug wire having a free end, and

an electrically conductive connector member adapted to be fixedly connected to said free end of said spark plug wire, said connector member including opposite ends, one of said ends including means for releasably clampingly engaging a spark plug and the other of said ends comprising a body adapted to house said free end of said spark plug wire, said body including a pair of spaced apart apertures, and means for securing said other end of said connector

member to said free end of said spark plug wire, said means for securing including a metal staple having a pair of legs and a transverse member joining said legs, said legs being adapted to extend through said apertures and through a central portion of said spark plug wire, and said body being generally cylindrical and including a web portion, and a pair of legs extending from said web portion



and adapted to surround said wire, said pair of legs of said body including ends which are spaced apart and define a gap therebetween, said gap being elongated and being generally parallel to said longitudinal axis of the wire, and wherein said legs of said metal staple can extend through said gap when said staple is forced through the spark plug wire.

4,387,949

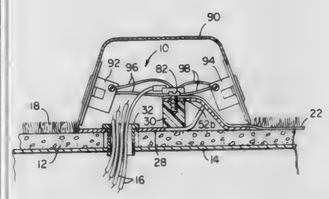
TRANSITION CONNECTION APPARATUS HAVING GROUNDING FEATURE

Louis F. Haitmanek, Florham Park, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Mar. 12, 1981, Ser. No. 243,042

Int. Cl.³ H01R *9/24*

U.S. Cl. 339—125 R **22 Claims**



1. A transition connection apparatus for making electrical interconnection between electrical conductors, comprising:

an insulative member having a plurality of mounting surfaces for joining a plurality of conductors thereon, such mounting surfaces being electrically insulated from each other;

a conductive base member supporting said insulative member;

a conductive plate member secured to said base member and having a portion adjacent to and in registry with one of said mounting surfaces; and

means for fastening a conductor and said plate member portion to said one of said mounting surfaces.

4,387,950

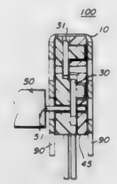
SOCKET ASSEMBLY FOR ACCOMMODATING HORIZONTAL INSERTED COMPONENTS

Andrzej T. Guzik, Ft. Lauderdale, and Lynn T. Gill, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 10, 1981, Ser. No. 233,224

Int. Cl.³ H01R *13/11, 23/02, 25/02*

U.S. Cl. 339—136 M **6 Claims**



1. An improved connector socket assembly for accommodating a plurality of keyed, vertically stacked components which may be horizontally inserted from either side of the socket assembly, including in combination:

a plastic housing of interfitting connector halves wherein one of said housing halves includes at least one cavity in the interior thereof and further wherein a plurality of laterally extending boss members are arranged in first and second horizontal rows in a desired keyed arrangement;

said plastic housing further having first and second rows of apertures located to receive leads of said components extending through both housing halves and which are aligned and associated with each said boss members;

a plurality of performed wire contacts each positioned about a respective boss member and having parallel portions extending across an associated aperture, each of said wire contents having a further portion extending beyond the bottom edge of said housing member; and

a U-shaped resilent bracket for slidably overfitting said plastic housing for the securing of said housing halves together, said bracket having apertures on respective sides thereof coinciding with said housing apertures.

4,387,951

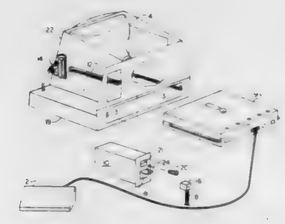
CATHODE RAY TUBE DISPLAY TERMINAL WITH A REMOVABLE POWER SUPPLY

Roger L. Hall, Nashua, N.H., and Walter J. Conroy, Acton, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jun. 29, 1981, Ser. No. 278,244

Int. Cl.³ H01R *13/00*

U.S. Cl. 339—193 R **3 Claims**



1. A cathode ray tube display terminal includes a power supply mounted to a chassis of said terminal by means of a slide, said power supply including connector fingers for engaging a fixed connector when said power supply is fully inserted into said fixed connector, said power supply being coupled to

a power source through an electrical plug, said power supply comprising:

a molded plate having a plurality of openings;

a handle pivotally mounted to said molded plate within a first opening; and

an electrical receptacle accessible through said first opening for receiving said electrical plug for applying electrical power to said power supply, thereby trapping said handle between said molded plate and said electrical plug;

said handle being freed to pivot when said electrical plug is removed from said electrical receptacle for removing said electrical power from said power supply,

said handle being accessible for unplugging said power supply from said terminal.

4,387,952

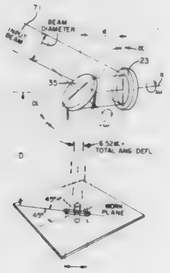
SINGLE AXIS BEAM SCANNER

Robert B. Slusher, San Jose, Calif., assignor to Spectra-Physics, Inc., San Jose, Calif.

Filed Mar. 27, 1981, Ser. No. 248,105

Int. Cl.³ G02B *27/17*; B23K *26/00*

U.S. Cl. 350—6.9 **15 Claims**



1. A method of scanning a high power laser beam onto a metal workpiece surface to distribute power substantially uniformly over a selected area of the workpiece surface for metallurgically heat treating the selected area of the surface, said method comprising:

directing an input high power laser beam at a first mirror at an average angle beta to its surface, the first mirror rotating about an axis passing centrally through the mirror's surface, the mirror being tilted such that a perpendicular to the surface is at an angle alpha from the axis of rotation;

positioning a second mirror in the path of the reflected beam from the first mirror, such that the beam from the first mirror strikes the second mirror at the same average angle beta to its surface, while rotating the second mirror in the opposite direction and at the same angular speed as the first about an axis passing centrally through the second mirror's surface, the second mirror being tilted such that a perpendicular to its surface is at approximately the same angle alpha from its axis of rotation;

selecting the mirror positions and adjusting the phase of the two rotating mirrors such that the resulting beam scan reciprocates substantially in a straight line on the metal workpiece surface, and

effecting a metallurgical change in the selected area of the workpiece surface scanned by the beam through the heating produced by the high power scanned beam.

4,387,953

OPTICAL WAVEGUIDE DEVICE WITH PHASE MATCHING LAYERS

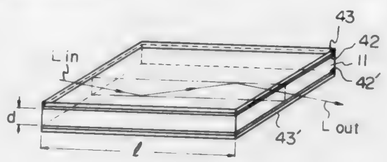
Masataka Shirasaki, Kawasaki, and Takeshi Obokata, Sagamihara, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 30, 1981, Ser. No. 249,014

Claims priority, application Japan, Mar. 28, 1980, 55-40776; May 7, 1980, 55-60129; Aug. 30, 1980, 55-120192; Aug. 30, 1980, 55-120193

Int. Cl.³ G02B *5/172*

U.S. Cl. 350—96.14 **21 Claims**



1. An optical waveguide device, comprising:

an optical waveguide member having a predetermined length and thickness, the thickness being far smaller than the length, said optical waveguide device operating so that light to be processed is illuminated onto an input surface of the optical waveguide member, the light issuing from an output surface, and the light travelling from the input surface to the output surface with a plurality of reflections from top and bottom surfaces of said optical waveguide member; and

phase-matching layers mounted on each of the top and bottom surfaces of the optical waveguide member, the phase-matching layers functioning to substantially decrease the difference between a first phase shift of a first polarized component of the light and a second phase shift (δ_s) of a second polarized component of the light each phase shift being created every time each of said reflections takes place.

4,387,954

METHOD FOR FABRICATING AN OPTICAL WAVEGUIDE EVANESCENT WAVE COUPLER HAVING AN INTERLEAVED FILM

J. Donald Beasley, Arlington Heights, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jan. 19, 1981, Ser. No. 225,893

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.15 **1 Claim**



1. A method for fabricating an optical waveguide evanescent wave coupler, from optical waveguides of the type having a core concentrically surrounded by a cladding material, said method comprising the steps of:

a. transmitting optical energy through the core of a first optical waveguide thus illuminating the core;

b. removing a portion of the cladding from said first optical waveguide;

c. detecting when there is an increase in scattered light from the illuminated core of said first optical waveguide;

d. stopping the removal of the cladding material when said increase in scattered light is detected;

e. performing the steps of transmitting, removing, detecting and stopping for a second optical waveguide;

f. placing said first and said second optical waveguides with the removed cladding surfaces in juxtaposition with an interleaf of material between said first and said second optical waveguides such that evanescent wave coupling occurs.

4,387,955

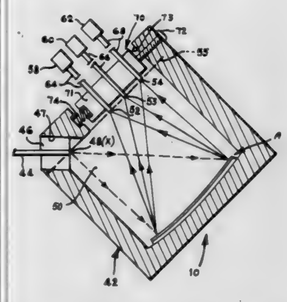
HOLOGRAPHIC/REFLECTIVE GRATING MULTIPLEXER/DEMULTIPLEXER

Jacques E. Ludman, Westford; Joseph L. Horner, Cambridge, and Thomas L. Mikes, Harvard, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 3, 1981, Ser. No. 231,074

Int. Cl.³ G02B *5/32*

U.S. Cl. 350—96.19 **8 Claims**



1. A multiplexer/demultiplexer comprising:

a holographically formed, spherically curved reflective grating, said holographically formed grating being configured to diffract only one first order beam;

means located substantially at a first preselected point adjacent said holographically formed reflective grating for directing into or receiving from said holographically formed reflective grating a single beam of electromagnetic radiation having a plurality of different wavelengths; and

means located at a plurality of positions substantially along a line extending through said first preselected point and a second preselected point adjacent said holographically formed reflective grating for receiving from or directing into said holographically formed reflective grating a plurality of beams of electromagnetic radiation, each of said beams being at a different wavelength.

4,387,956

FIBER OPTIC INTERLOCK

Charles D. Cline, Dallas, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

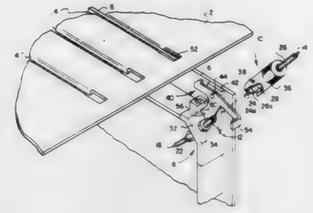
Filed Jun. 9, 1981, Ser. No. 271,909

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.20 **10 Claims**

1. A retaining device for preventing removal of a fiber optic connector module from a card cage when a fiber optic cable and mating connector is attached to said module, comprising:

a release lever pivotally mounted to said module and having a hook portion engaging said card cage upon insertion of said module into said card cage to prevent withdrawal of said module, said lever being manually pivotable to a release position to disengage said hook portion from said card cage to permit removal of said module, said lever having an interference stop portion which strikes said mating connector of said fiber optic cable when the latter is attached to said module, to prevent pivoting of said



lever to said release position and hence prevent disengagement of said hook portion from said card cage, whereby to prevent removal of said module.

4,387,957

CONNECTOR FOR OPTICAL FIBRES

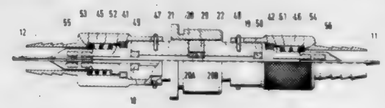
Georges Mignien, Meyzieu, France, assignor to Societe Anonyme dite: Compagnie Lyonnaise de Trandmissions Optiques, Clichy, France

Filed Nov. 10, 1980, Ser. No. 205,546

Claims priority, application France, Nov. 8, 1979, 79 27543

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.21 **4 Claims**



1. A connector for optical fibres, said connector including two groups of three cylindrical support rods all of the same diameter and guide means to keep said two groups of three rods side by side and in contact with each other so as to provide a central passage to house the optical fibres, said passage being delimited by the adjacent side surfaces of the three rods, the improvement wherein said guide means includes a group of at least three bearings which are held coaxially including two end bearings, at least one of said three bearings being sized to and surrounding the two groups of three rods on either side of their plane of contact with very little play and forming a central bearing, said end bearings surrounding each group of three rods with the same or a slightly greater play, said bearings being fitted in housings in a coaxial sleeve, the central bearing being in the plane of symmetry of the sleeve and the end bearings being located at the ends of the sleeve, and wherein said coaxial sleeve consists of two symmetrical end portions having outer ends of each end portion forming a housing for a respective end bearing, and an intermediate sleeve component whose inside bore diameter is larger than that of the bores of the end portions, said intermediate component housing said central bearings.

4,387,958

LONGITUDINALLY WATER-TIGHT CABLES AND METHOD OF PRODUCING THE SAME

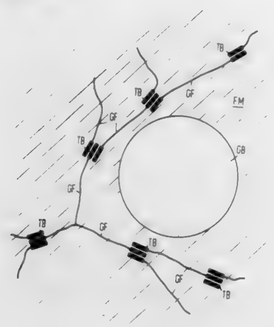
Guenter Zeidler, Germering; Gerhard Lange, and Helmut Saller, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 261,786, May 8, 1981, abandoned. This application May 18, 1982, Ser. No. 379,368

Claims priority, application Fed. Rep. of Germany, May 12, 1980, 3018141; Dec. 19, 1980, 3048074

Int. Cl.³ B32B *27/00;* **G02B** *5/16;* **H02G** *15/20*

U.S. Cl. 350—96.23 **9 Claims**



1. In a longitudinally water-tight communication cable structure having at least one signal-carrying element therein and a jacket for sealing the interior of such structure off from the outside and having in the interior thereof a filling material containing a water-repellant substance and relatively small-diameter gas bubbles embedded in such filling material, the improvement comprising:

wherein said filling material is comprised of a rubber-like network formed from a polyolefin powder;

said polyolefin powder having a crystalline melting point lower than the processing temperature of the remaining constituents of said filling material;

said polyolefin powder having an average grain size in the range of about 20 to 600 μm; said polyolefin powder having a density in the range of about 0.915 to 0.96 g/ml; and

said polyolefin powder being present in said filling material in an amount in the range of about 5 to 30 weight percent, based on the total weight of said filling material; and

wherein said gas bubbles have an average diameter in the range of about 1 to 1500μ, said gas bubbles being maintained in their respective spatial positions within said filler material by said rubber-like network.

4,387,959

REAR PROJECTION SCREEN

Howard G. Lange, Prospect Heights, and Ronald Schulman, Northfield, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Jan. 6, 1981, Ser. No. 222,836

Int. Cl.³ G03B *21/60*

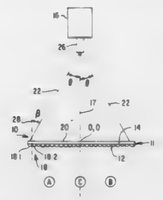
U.S. Cl. 350—128 **9 Claims**

1. A projection screen for use with projection means located rearwardly of said screen for displaying an image to a plurality of observers located at viewing positions which are on the front side of said screen and dispersed in a direction parallel to said screen;

said projection means defining an axis;

said screen including at least one array of substantially rectilinear lenticules having respective light-refracting cross-sectional shapes adapted to redirect light arriving from the rear side of said screen so that an image formed on said screen by said light is visible at said dispersed positions;

said respective cross-sectional shapes of said lenticules varying as a function of their distance from said axis in such manner that, for each said position within a selected angular viewing range, a greater fraction of the incident image light is directed to that viewing position from those lenticules which are further from said axis than is directed to that viewing position from those lenticules which are



closer to said axis, so as to at least partially compensate for the image light rearward reflection loss gradient;

said lenticule cross-sectional shapes being defined by a succession of lenticule profile elements;

the slope angle, length and position of each of said lenticule profile elements being determined by an algorithm which calculates the light transmission provided by each of said lenticule profile elements, and adjusts said slope angles, lengths and positions thereof to achieve said reflection loss gradient compensation.

4,387,960

MULTI-LAYER ANTI-REFLECTION COATING

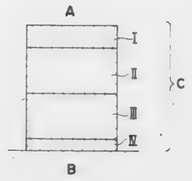
Hakuzo Tani, Sakai, Japan, assignor to Minolta Camera Co. Ltd., Sakai, Japan

Filed Mar. 17, 1981, Ser. No. 244,342

Claims priority, application Japan, Mar. 31, 1980, 55-42629

Int. Cl.³ G02B *1/10*

U.S. Cl. 350—164 **24 Claims**



1. A multi-layered anti-reflection coating for use with a glass substrate to reduce reflectance of light comprising four layers, the first layer furthest from the substrate having a refractive index, N_1 and an optical thickness N_1d_1, the second layer having a refractive index N_2 and an optical thickness N_2d_2, the third layer having a refractive index N_3 and an optical thickness N_3d_3 and the fourth layer closest to the substrate having a refractive index N_4 and an optical thickness N_4d_4, wherein the refractive indices and the optical thicknesses are related as follows with respect to a preselected design wavelength, λo:

$N_1d_1 \cong 0.25\ \lambda o$;

$N_2d_2 \cong 0.50\ \lambda o$;

$0.50\ \lambda o \leqq N_3d_3 \leqq 0.75\ \lambda o$;

$N_4d_4 < 0.25\ \lambda o$;

$1.35 \leqq N_1 \leqq 1.62$;

$1.90 \leqq N_2 \leqq 2.30$;

$1.90 \leqq N_4 \leqq 2.30$;

$1.56 \leqq N_3 \leqq 1.80$; and

$N_1 < N_3$

4,387,961

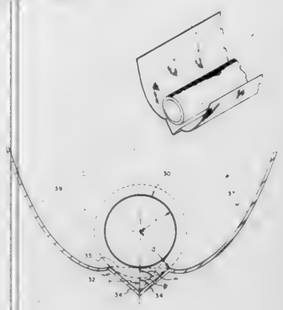
COMPOUND PARABOLIC CONCENTRATOR WITH CAVITY FOR TUBULAR ABSORBERS

Roland Winston, 5217C S. University Ave., Chicago, Ill. 60615

Continuation of Ser. No. 113,169, Jan. 18, 1980, abandoned. This application Jan. 30, 1981, Ser. No. 230,137

Int. Cl.³ G02B *5/10;* **F24J** *3/02*

U.S. Cl. 350—296 **4 Claims**



1. In combination with a tubular energy receiver, a Compound Parabolic Concentrator trough having an opening adapted to be oriented toward a source of radiant energy, said trough provided with reflective concave sidewalls, a portion of each of which is shaped to assume the maximum possible slope consistent with reflecting maximum angle energy rays onto said energy receiver, each of said sidewalls terminating and joined to a reflective trough-shaped cavity, said cavity comprising: a pair of substantially planar walls joined at an apex and arranged in a V-shape wherein the mouth of said V forms an aperture; said tubular energy receiver being placed no further from said apex than tangent to said aperture.

4,387,962

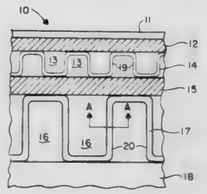
CORROSION RESISTANT LASER MIRROR HEAT EXCHANGER

John G. Gowan, London, England, and Roy A. Hamil, Tijeras, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 6, 1981, Ser. No. 308,976

Int. Cl.³ G02B *7/18*

U.S. Cl. 350—310 **4 Claims**



1. An improved laser mirror comprising:

a. a mirrored surface;

b. a faceplate supporting said mirrored surface;

c. a heat exchanger, adjacent said faceplate, having internal wall surfaces defining a plurality of passageways for passage therethrough of fluid coolant for cooling said faceplate;

d. means for protecting said wall surfaces from the corrosive effect of said coolant, said means including a thin, substantially uniform metallic coating deposited on said wall surfaces.

4,387,963

TEMPERATURE COMPENSATION FOR A LIQUID CRYSTAL DISPLAY VIA CAPACITANCE COMPENSATION OF THE LIQUID CRYSTAL MATERIAL

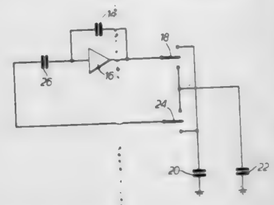
Martin J. Brennan, Blackpool, England, assignor to Racal Research Limited, Bracknell, England

Filed Oct. 14, 1980, Ser. No. 196,917

Claims priority, application United Kingdom, Nov. 17, 1979, 7939824

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—331 T **3 Claims**



1. An electrical circuit arrangement responsive to a transducer whose capacitance varies with a particular ambient parameter and also with applied voltage, comprising

a high input impedance amplifier,

means connecting the transducer to produce negative feedback across the amplifier,

two output capacitors,

an input capacitor having a predetermined capacitance and connected to the input of the amplifier, and

switch means arranged to connect each of the output capacitors alternately to the output of the amplifier and to connect the other of them to the input of the amplifier through the input capacitor,

whereby the circuit arrangement is stable when the charge on each of the output capacitors is such that the voltage across the transducer controls it to have a capacitance equal to that of the input capacitor so that the gain of the amplifier and the transducer is unity, and any changes in the capacitance of the transducer caused by variations in the said parameter produce a change in voltage across the transducer in a sense and by an amount so as to produce a substantially equal and opposite change in its capacitance whereby the said voltage is a measure of the parameter.

4,387,964

ELECTRON ADDRESSED LIQUID CRYSTAL LIGHT VALVE

Ignacio M. Arrazola, Kirkwood; Raymond E. Brown, Florissant, and Homer E. Dillard, Bridgeton, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Oct. 21, 1980, Ser. No. 199,292

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—331 R **10 Claims**

1. A light valve comprising:

means for producing a focused scanning electron beam;

a liquid crystal cell comprising:

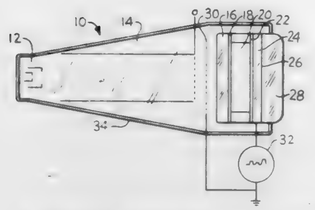
a liquid crystal disposed between two parallel alignment surfaces, the alignment of one such surface being rotated relative to the other such surface,

a thin optical flat having one surface as one of said alignment sufaces and the other surface as a dielectric mirror such that the dielectric mirror faces the electron beam producing means;

a thin film of insulating material serving as the second alignment surface

a transparent electrode disposed adjacent to the thin film of insulating material, and

a faceplate disposed adjacent the transparent electrode;



an effectively electron-transparent electrode comprising a fine conducting mesh disposed parallel to and spaced from about one to about 50 microns from the dielectric mirror; and

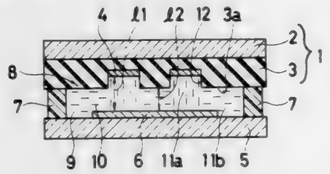
circuit means to apply a video signal between the transparent electrode and the electron transparent electrode in synchronization with the electron beam producing means.

4,387,965

GUEST HOST TYPE, POSITIVE AND NEGATIVE RECESSED LIQUID CRYSTAL DISPLAY DEVICES

Yoshiyuki Hara, Kishiwada, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 6, 1981, Ser. No. 222,920
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—349 **6 Claims**



1. A liquid crystal display device comprising:

first and second substrates having opposed inward facing surfaces;

first electrode means formed on the inward facing surface of said first substrate;

a plurality of second electrode means formed on the inward facing surface of said second substrate, thereby forming electrode-less areas on said second substrate;

said substrates being spaced apart with a first distance between said first and second electrode means being greater than a second distance between said electrode-less areas on said second substrate and said first electrode means;

a pleochroic guest dye material contained between said substrates, said dye material having a maximum absorption spectrum in the direction of its longitudinal axis; and

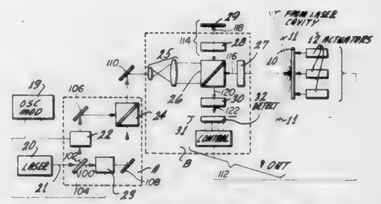
means for activating selected ones of said second electrode means whereby the area defined by said activated second electrode means forms a desired display.

4,387,966

WIDE BANDWIDTH OPTICAL MODAL DEFORMATION SENSOR

Sandor Holly, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 9, 1980, Ser. No. 167,265
Int. Cl.³ G02F *1/29*
U.S. Cl. 350—360 **2 Claims**



1. A wide bandwidth optical modal deformation sensor, comprises:

a deformable mirror for reflecting a laser beam;

a plurality of actuators incorporated in said deformable mirror and designed to control surface deformation;

a detector point electronically connected to each actuator;

means for directly measuring the optical path difference at each of said detector points, comprising:

a measuring laser beam capable of being split into two orthogonally polarized components;

a polarization cube for splitting said measuring laser beam;

means for generating a frequency difference between said orthogonally polarized components;

means for recombining said two orthogonally polarized components into a composite beam having two orthogonally polarized components differing by said frequency difference;

means for directing said composite beam to a polarization interferometer;

means for expanding and polarization splitting said composite beam into a test beam and a reference beam;

means for conveying said test beam to said deformable mirror;

means for conveying said reference beam to a highly planar reference mirror;

means for returning and recombining said test and reference beams to form a two-component resultant beam;

means for extracting components of polarization which are polarized in the same direction from said two-component resultant beam such that said extracted components of parallel polarization are caused to interfere with each other and generate a dynamic interference pattern, fringes of which move at the rate of the frequency difference of said test and said reference beam;

an intercepting plane having a plurality of said detector points located therein for detecting interference pattern and generating an output signal;

an electronic phase detector for measuring phase or optical path difference between each of said detector points and its respective reference point;

means for generating a signal proportional to the optical path difference at each of said detector points; and

arithmatic circuits for converting optical path difference signals to modal representations of wave front aberrations and generating output signals indicating the presence and strength of said aberrations; and

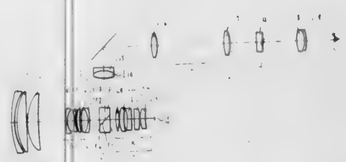
means for energizing said actuators by conveying said output signals indicating the presence and strength of said aberrations from said arithmatic circuits to said actuators.

4,387,967

OPTICAL SYSTEM FOR USE IN SINGLE LENS REFLEX CAMERAS

Yasuo Yamazaki, Kawachinagano; Kazuo Kimura, and Tetuyuki Tanimoto, both of Sakai, all of Japan, assignors to Minolta Camera Co., Ltd., Sakai, Japan

Filed Mar. 26, 1980, Ser. No. 134,218
Claims priority, application Japan, Mar. 27, 1979, 54-36553
Int. Cl.³ G02B *15/00*
U.S. Cl. 350—423 **19 Claims**



1. An optical system for use in single lens reflex cameras comprising:

an objective lens system consisting of an object side part with its longitudinal chromatic aberration of F-line to d-line being overcorrected to provide a negative value in diopters, and an image side part of a positive refractive power with its longitudinal chromatic aberration of F-line to d-line being undercorrected to provide a negative value in millimeters, an image forming light path being passed through the object side and image side parts toward the image, whereby the undercorrected longitudinal chromatic aberration of the image side part is substantially cancelled with the overcorrected longitudinal chromatic aberration of the object side part;

means for branching the image forming light path between the object side part and the image side part of the objective lens system; and

a branch optical system of a positive refractive power with its longitudinal chromatic aberration of F-line to d-line left in an undercorrected condition, to provide a positive value in diopters, the branch optical system receiving the branched light path to form a finder system in combination with the object side part of the objective lens system, whereby the undercorrected longitudinal chromatic aberration of the branch optical system is predetermined in a complimentary manner to be substantially cancelled by the overcorrected longitudinal chromatic aberration of the object side part of the objective lens system.

4,387,968

ZOOM LENS MOUNT BARREL

Tetsuo Sekiguchi, Kumagaya, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1980, Ser. No. 195,681
Claims priority, application Japan, Oct. 22, 1979, 54/146051[U]
Int. Cl.³ G02B *7/10*
U.S. Cl. 350—429 **6 Claims**

1. A zoom lens mount barrel, comprising:

a zooming operational sleeve (**4**);

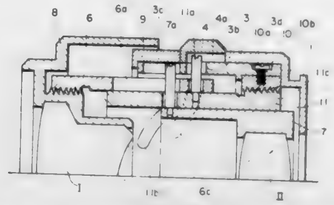
a support sleeve (**11**) having inner and outer peripheries and having a rear lens group moving cam slot (**11***b*) formed therein;

a fixed connecting sleeve (**3, 10**) threadingly engaging said support sleeve;

a rear lens support frame (**7**) slidable with respect to said inner periphery of said support sleeve;

a front lens support frame (**6**) slidable with respect to said outer periphery of said support sleeve and having a front lens group moving cam slot (**6***c*) formed therein;

a first pin (**7***a*) at a fixed circumferential position and secured to said rear lens support frame, said first pin engaging said rear lens group moving cam slot; and



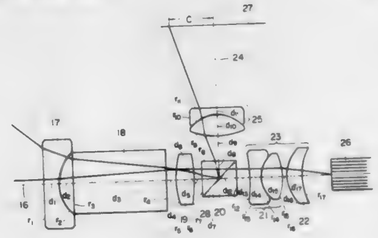
a second pin (**11***a*) rotatable with said zooming operational sleeve around the circumferential direction of said zoom lens mount barrel, said second pin engaging said front lens group moving cam slot.

4,387,969

SINGLE-LENS REFLEX OPTICAL SYSTEM FOR ENDOSCOPES

Kimihiko Nishioka, and Nobuo Yamasita, both of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1981, Ser. No. 222,874
Claims priority, application Japan, Jan. 7, 1980, 55-429
Int. Cl.³ G02B *5/17*
U.S. Cl. 350—462 **4 Claims**



1. A single-lens reflex optical system for endoscopes comprising an observing optical system, a light-splitting means and a photographing optical system, said observing optical system comprising a diverging front lens group arranged on a first optical axis extending in parallel with the longitudinal direction of an endoscope and having negative refractive power, a positive lens group arranged on said first optical axis, a first converging rear lens group arranged on said first optical axis and having positive refractive power, and a first aperture stop arranged between said positive lens group and said first converging rear lens group and on said first optical axis, said light-splitting means being arranged between said positive lens group and said first converging rear lens group, said photographing optical system comprising said diverging front lens group, said positive lens group, a second converging rear lens group arranged on a second optical axis split by said light-splitting means and having positive refractive power, and a second aperture stop arranged between said positive lens group and said second converging rear lens group, said optical system satisfying the following conditions:

$$\frac{1}{f_1} \leq \frac{1}{\frac{1}{\frac{1}{f_2}-\frac{1}{f_2}}+A-t_2}-\frac{1}{f} \quad \text{(I)}$$

$$f_2 \leq A - t_2 - f_1 \quad \text{(II)}$$

-continued

$$\frac{k}{F\tan\omega}\left(1+\frac{A-t_2}{-f_1}\right) \leq 1 \quad \text{(III)}$$

wherein reference symbol f represents the focal length of the photographing optical system, reference symbol f_1 represents the focal length of the diverging front lens group, reference symbol f_2 represents the focal length of the positive lens group, reference symbol A represents the distance between the diverging front lens group and the second aperture stop, reference symbol t_2 represents the distance between the positive lens group and the second aperture stop, reference symbol F represents the F-number of the photographing optical system, reference symbol ω represents a half field angle of the photographing optical system, and reference symbol k represents the ratio between the height of marginal ray in the photographing optical system at the front of the light-splitting means and the height of marginal ray in the observing optical system at the front of the light-splitting means.

4,387,970

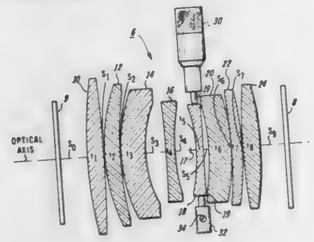
PROJECTION LENS ASSEMBLY

Harry P. Brueggemann, San Marino, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 24, 1980, Ser. No. 133,220

Int. Cl.³ G02B *7/02, 9/64*

U.S. Cl. 350—463 **6 Claims**



1. A projection lens assembly along an optical axis from front to rear comprising a double convex element, a first positive meniscus element convex to the front, a negative meniscus element convex to the front, a double concave element, a plano-concave element, a second positive meniscus element concave to the front, a third positive meniscus element concave to the front, and a double convex element.

4,387,971

DYNAMIC DAMPING SYSTEM

Charles F. Grove, Costa Mesa, and David A. Rodriguez, Capistrano Beach, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 30, 1980, Ser. No. 192,406

Int. Cl.³ G02B *23/00*

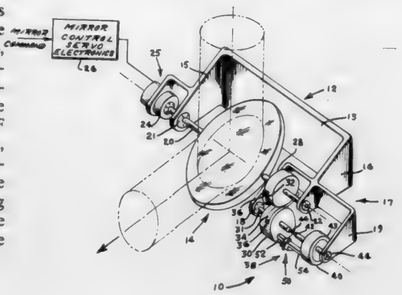
U.S. Cl. 350—500 **10 Claims**

1. A dynamic damping system for stabilizing the motion of an object with respect to inertial space, comprising:

means for supporting said object for rotation about an axis;

means operably attached to said object for rotating said object in either of two directions about said axis to a predetermined position; and

means operably attached to said object for substantially maintaining said object in said predetermined position, wherein said means for substantially maintaining said object in said predetermined position includes a rotatable inertia balancer, said inertia balancer being supported by a first rod positioned within said object support means, said first rod lying along an axis parallel to said object axis, means operably attached to said object for interconnecting said object to said inertia balancer, a rotatable damper mass, said damper mass being supported by a second rod positioned within said object support means, said second



rod lying along said inertia balancer axis, means interconnecting said first rod and said second rod for permitting said damper mass to aid in substantially eliminating undesirable movement of said object thereby maintaining said object in said predetermined position.

4,387,972

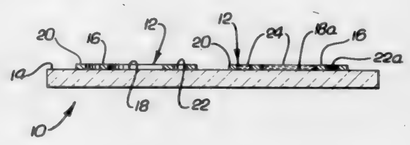
MICROSCOPE SLIDE WITH CONFIRMING WELLS

Donald W. Valencia, El Dorado Hills, Calif., assignor to Immuno Concepts, Inc., Sacramento, Calif.

Filed Feb. 26, 1981, Ser. No. 238,472

Int. Cl.³ G02B *21/34*

U.S. Cl. 350—536 **9 Claims**



1. A microscope slide for use in diagnostic procedures of liquid specimens, said slide comprising a substantially flat base layer and a substantially flat overlay layer adhered thereto and having on one surface at least one structurally defined area for retaining liquid specimens during preparation for subsequent microscopic analysis, said area having a first boundary forming a well with a flat bottom defined by a surface of the base layer, and a second boundary forming a channel outside said first boundary, each of said boundaries being formed by the edges of openings through said overlay layer, whereby fluid spilled from said well during specimen preparation is retained in said channel.

4,387,973

APPARATUS FOR MAINTAINING CLEAN OPTICAL SURFACES IN PROCESS ENVIRONMENTS

John R. Martin, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed Apr. 30, 1981, Ser. No. 258,983

Int. Cl.³ G02B *7/18*

U.S. Cl. 350—582 **6 Claims**

1. A self-cleaning optical device, suitable for use in a dirty environment, comprising:

a multi-layered composite optical surface including

a sheet of semi-rigid piezoelectric backing material,

a thin, flexible, light-interactive first metallized electrode deposited on one side of said piezoelectric backing material,

a second metallized electrode deposited on the opposite side of said piezoelectric backing material, and

a protective layer of transparent plastic film disposed on the outer surface of said light-interactive first metallized



electrode, said plastic film being resistant to adhesion of particles thereto;

means for supporting said composite optical surface to permit vibratory movement thereof; and

a source of electrical energy of varying intensity connected across said first and second metallized electrodes, for inducing vibratory movement of said optical surface, whereby particles deposited on said plastic film are removed.

4,387,974

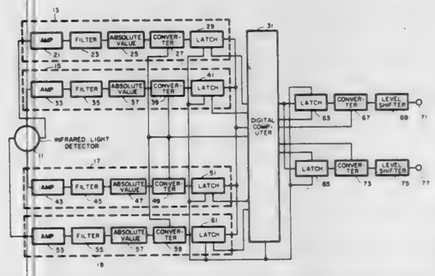
CIRCUIT FOR CALCULATING THE POSITION OF THE EYE

Albert H. Marshall, and Gary M. Bond, both of Orlando, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 11, 1981, Ser. No. 262,152

Int. Cl.³ A61B *3/14*

U.S. Cl. 351—210 **13 Claims**



1. A circuit for calculating the position of the cornea of a human eye comprising in combination:

detecting means having a field of view and a quartet of outputs for sensing a pulsed infrared light reflected from the cornea of said human eye and for providing a quartet of square wave signals indicative of the X coordinate position and the Y coordinate position of the cornea of said human eye within the field of view of said detecting means;

a quartet of filtering means, each of which has an input connected to one of the outputs of said detecting means and an output, and each of which is adapted for removing from one of said quartet of square wave signals any extraneous noise so as to provide at the output thereof a sinusoidal waveform signal;

a quartet of absolute value circuit means, each of which has an input connected to the output of one of said quartet of filtering means and an output, and each of which is adapted for rectifying one of said sinusoidal waveform signals so as to provide at the output thereof a full wave rectified signal;

a quartet of analog-to-digital converting means, each of which has a data input connected to the output of one of said quartet of absolute value circuit means, and an output, and each of which is adapted for producing digital signals in response to one of said full wave rectified signals;

a quartet of latching means, each of which has a data input connected to the output of one of said analog-to-digital converting means, a select input, and an output, and each of which is adapted for storing therein the digital signals produced by one of said analog-to-digital converting means;

computing means having a data input effectively connected to the outputs of said quartet of latching means, first, second, third and fourth select outputs respectively connected to the select inputs of said quartet of latching means, a fifth select output, and a sixth select output, and a data output for providing first, second, third and fourth select signals for effecting the transfer of the digital signals stored within said latching means from said latching means to the data input of said computing means, for calculating, in accordance with an eye position measurement program, the X and Y coordinate positions of the cornea of said human eye within the field of view of said detecting means, for providing at the data output thereof digital signals indicative of the X coordinate position of the cornea of said human eye within the field of view of said detecting means and for providing at the data output thereof digital signals indicative of the Y coordinate position of the cornea of said human eye within the field of view of said detecting means; and

a pair of digital-to-analog converting means, each digital-to-analog converting means of which has an input connected to the data output of said computing means and an output, the first digital-to-analog converting means of which is adapted for producing analog signals in response to said digital signals indicative of the X coordinate positions of the cornea of said human eye within the field of view of said detecting means, and the second digital-to-analog converting means of which is adapted for producing analog signals in response to said digital signals indicative of the Y coordinate positions of the cornea of said human eye within the field of view of said detecting means.

4,387,975

AUTOMATIC FOCUSING POSITION DETECTION APPARATUS

Kunihiko Araki, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Oct. 28, 1980, Ser. No. 201,528

Claims priority, application Japan, Oct. 31, 1979, 54-141107; Nov. 26, 1979, 54-152731; Nov. 26, 1979, 54-152732; Dec. 3, 1979, 54-156657

Int. Cl.³ G03B *3/00;* **G01J** *1/44*

U.S. Cl. 354—25 **8 Claims**

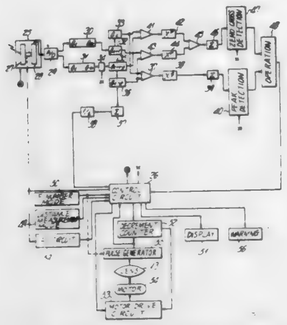
1. An automatic focusing position detection apparatus including a plurality of photoelectric element groups, each photoelectric element group capable of separately detecting light from an object, which is capable of detecting the focusing position by the output of said plurality of photoelectric element groups, comprising:

shift means for shifting the output signals from a first photoelectric element group of said photoelectric element groups relative to the output signals of a second photoelectric element group of said photoelectric element groups; and

defocusing distance calculation means for calculating a defocusing distance from the correlation degree between the output signals of said first photoelectric element group and the output signals of said second photoelectric element group, which are relatively shifted to each other by

said shift means, and from the relative shift distance of said two photoelectric element groups,

wherein said defocusing distance calculation means comprises an integration device for multiplying the difference



between the outputs of each pair of photoelectric elements of said first photoelectric element group and said second photoelectric element group which are relatively shifted to each other and integrating said difference.

4,387,976

LIGHT QUANTITY INDICATING CIRCUIT FOR AN ELECTRONIC FLASH DEVICE

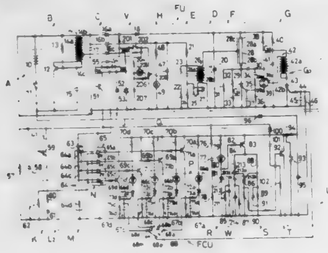
Yoshiyuki Takematsu, 38-1 Komaba 1 Chome, Meguro-ku, Tokyo, Japan

Filed Jun. 24, 1981, Ser. No. 276,818

Claims priority, application Japan, Jun. 25, 1980, 55-086264

Int. Cl.³ G03B *7/16, 15/03*

U.S. Cl. 354—33 **18 Claims**



1. A light quantity indicating circuit for an electronic flash unit comprising means for boosting the voltage of a direct current power source and for storing electric energy, flash light generating means including a flash tube energized by said electric energy for generating a flash of light, trigger signal generating means for triggering said flash tube, flash stopping means for stopping the flash of said flash light generating means when the quantity of said flash of light attains a predetermined value, a first light receiving means for receiving reflected light which is produced from said flash tube and reflected from an object to be photographed, said receiving means generating a signal in response to the quantity of the received light, said stopping means being operative to terminate the energy supplied to said flash tube when said quantity reaches a predetermined level, gate means responsive to light emissions from said flash tube for enabling said first light receiving means during the flashing of said flash tube, detecting means for detecting the quantity of the light from said flash tube by comparing the voltage of an electric signal obtained by integrating said signal with a reference voltage, indicating means responsive to said detecting means for indicating a light quantity, and a second light receiving means for actuating said gate means in response to receiving light from a light source other than said flash tube whereby said first light receiving means activates such that said indicating means indicates the light quantity in the presence of other light sources.

4,387,977

POWER SUPPLY DEVICE FOR CAMERA

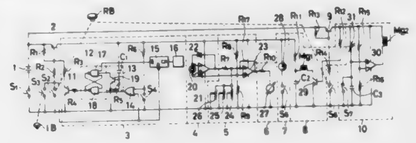
Masanori Uchidoi, Yokohama; Hiroshi Aizawa, Kawasaki; Kazunobu Urushihara, Yokohama; Nobuyuki Suzuki, and Masami Shimizu, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1979, Ser. No. 85,230

Claims priority, application Japan, Oct. 23, 1978, 53-130828

Int. Cl.³ G03B *7/26*

U.S. Cl. 354—60 R **4 Claims**



1. A camera, comprising:

(a) a movable release member;

(b) a first switch for actuation in response to a first movement of the release member from its rest position;

(c) shutter means actuated in response to a second movement of the release member;

(d) a first circuit including at least a photographic information forming circuit for producing a photographic information signal and an indicator for indicating photographic information on the basis of the photographic information signal;

(e) power applying means for applying power from a power source to said first circuit when the first switch is actuated;

(f) a timer circuit connected to said power applying means to perform a time counting operation in response to the operation of said first switch;

(g) a holding circuit for holding said power applying means operative independent of the state of the first switch in response to an output of the timer circuit and for causing said power applying means to continue to supply the power to the first circuit during a period of time defined by said timer circuit even after the release member has returned to the rest position thereof;

(h) illuminating means for illuminating said indicator from said power applying means when said power applying means is operative; and

(i) selecting means for selecting an operation of said illuminating means so that said illuminating means becomes operative only when said selecting means selects the operation of the illuminating means.

4,387,978

FOLDING CAMERA WITH PIVOTALLY MOUNTED VIEWFINDER

Donato F. Pizzuti, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 28, 1981, Ser. No. 334,981

Int. Cl.³ G03B *13/02, 17/04*

U.S. Cl. 354—187 **8 Claims**

1. A folding camera including a self-erecting and folding viewfinder, said camera comprising:

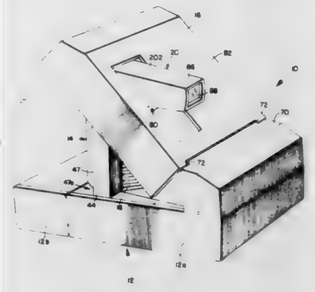
a base housing section including means for supporting a film unit at a film plane within said base section;

a lens housing section mounting an objective lens and including means configured to be engaged by a viewfinder for locating the viewfinder in a predetermined operative orientation with respect to said objective lens, said lens housing section being pivotally coupled to said base section, adjacent one end thereof, for movement between an upstanding operative erected position and a folded storage position wherein it is folded back over said base housing section in overlying relation to at least a portion of said film plane;

a mirror assembly including a mirror pivotally coupled to said base section, adjacent an opposite end thereof, for movement between an operative erected position for reflecting image-forming light rays from said lens onto said film plane to expose a film unit thereat and a folded storage position overlying at least a portion of said film plane;

a foldable bellows coupled to said base and lens housing sections and said mirror assembly for movement between an erected position for light shielding the exposure optical path extending between said objective lens, mirror and film plane, and a flat storage position wherein at least a portion of said bellows overlies said film plane;

a cover housing section pivotally coupled to said base section adjacent said opposite end thereof for movement between an erected position providing clearance for said lens housing section, mirror assembly and bellows to assume their respective erected positions and a folded storage position overlying said base section and protec-



tively covering said folded lens housing section, mirror assembly and bellows;

first erecting means interconnecting said lens and cover housing sections for coordinated movement between their respective erected and storage positions;

second erecting means interconnecting said lens housing section and said mirror assembly for coordinated movement between their respective erected and storage positions;

a viewfinder pivotally mounted on said cover section for movement between an operative erected position wherein at least a portion of said viewfinder engages said locating means on said lens housing section to locate said viewfinder in said predetermined orientation for viewing and framing a scene in the field of view of said objective lens and a folded storage position wherein at least a portion of said viewfinder overlies a portion of said lens housing section located in its said storage position; and

third erecting means, including said locating means, responsive to movement of said cover section from its said storage position to its said erected position for effecting movement of said viewfinder from its said storage position to its said erected position and also responsive to movement of said cover section from its said erected position to its said storage position for effecting movement of said viewfinder from its said erected position to its said storage position.

4,387,979

COPYING OPTICAL SYSTEM

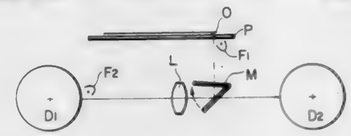
Michiro Ohishi, Hatoyama; Ryota Ogawa, Kawagoe, and Yasunori Arai, Asaka, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1981, Ser. No. 242,737

Claims priority, application Japan, Mar. 24, 1980, 55-37289

Int. Cl.³ G03G *15/00, 15/30*

U.S. Cl. 355—3 R **8 Claims**



1. A copying machine in which an original image is formed as a visible image on a first drum, said visible image is used as a secondary original image which is focused on a second drum and is transferred from said second drum to a recording sheet to thereby provide copies, a copying optical system characterized in that a single projecting lens is used commonly in a first optical path through which said original image is projected onto said first drum and in a second optical path through which said secondary original image is projected onto said second drum.

4,387,980

CHARGING DEVICE FOR ELECTRONIC COPIER

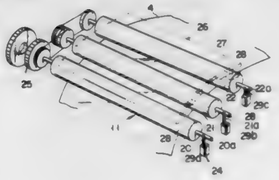
Tsuyoshi Ueno, Fujisawa; Hideo Mukai, Yokohama; Yoshitsugu Nakatomi, Yokohama; Hiroshi Saito, Yokohama; Koichi Kinoshita, Narashino, and Takaaki Konuma, Shizuoka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 19, 1980, Ser. No. 218,444

Claims priority, application Japan, Dec. 25, 1979, 54-168535; Jan. 23, 1980, 55-6658[U]; Jan. 24, 1980, 55-7349; Jan. 24, 1980, 55-7350; Jan. 24, 1980, 55-7493[U]; Jan. 24, 1980, 55-7494[U]

Int. Cl.³ G03G *15/00, 15/16*

U.S. Cl. 355—3 CH **14 Claims**



1. An electronic copier comprising:

a light-sensitive medium,

charging means including a plurality of contact charging elements in contact with said light-sensitive medium for charging said medium;

voltage supply means for supplying different voltages to said contact charging elements, the voltages applied to said contact charging elements being made successively higher in accordance with the order of arrangement of the contact charging elements in the direction of movement of said light-sensitive medium;

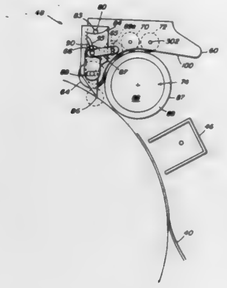
exposure means for forming an electrostatic latent image on said light-sensitive medium;

means for developing said electrostatic latent image to form a visible image on said light sensitive medium;

means for transferring said visible image formed on said light-sensitive medium onto a recording sheet;

means for fixing the visible image transferred onto said recording sheet, and
means for cleaning said light-sensitive medium.

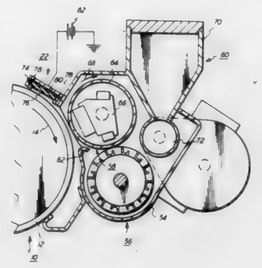
4,387,981
SHEET STRIPPING APPARATUS AND METHOD
Raymond G. Cormier, Nashua, N.H., assignor to Nashua Corporation, Nashua, N.H.
Filed Dec. 23, 1980, Ser. No. 219,511
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 SH **19 Claims**



1. In a photocopying apparatus having
a movable member having a photosensitive surface,
means for forming a developed latent image on said photosensitive surface,
means for feeding a copy sheet material for contact with said photosensitive surface at a transfer station for transferring said developed image onto said copy sheet material, and
means for removing said copy sheet from said photosensitive surface,
the improvement wherein said sheet removing means comprises
a sheet stripping element having an operative portion resiliently biased against said photosensitive surface for contacting a leading edge of said copy sheet as it moves toward said sheet stripping element for detaching said leading edge of said copy sheet from said photosensitive surface,
a moving roller member deflection surface positioned adjacent said operative portion of said sheet stripping element and moving in a direction, at a closest approach position to the photosensitive surface, opposite to the direction of movement of the photosensitive surface, for substantially immediately deflecting said detached leading edge away from said sheet stripping element and toward an exit path, said moving surface thereby maintaining said copy sheet out of contact with said sheet stripping element,
means for driving said moving surface for deflecting said copy sheet material toward said exit path and away from said photosensitive surface,
a driven roller member is driving contact with said roller member surface, and
a resilient element for biasing the sheet stripping element operative portion toward and in engagement with said photosensitive surface.

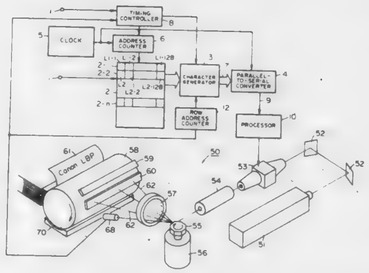
4,387,982
CHARGED PARTICLE CONTAINMENT APPARATUS
Michael R. Stanley, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jul. 1, 1981, Ser. No. 279,415
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—3 DD **26 Claims**

1. An apparatus for developing an image voltage region recorded on a photoconductive member having a non-image voltage region and an image voltage region thereon, including:
a housing defining a chamber for storing charged particles therein;
means, positioned interiorly of the chamber of said housing, for transporting the charged particles from the chamber of said housing to the photoconductive member so as to deposit charged particles onto the image voltage region to form a particle image;
means, positioned exteriorly of the chamber of said housing, for holding charged particles scattered from the chamber of said housing; and



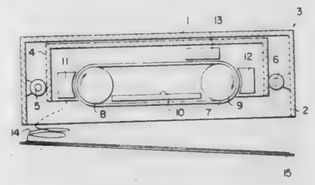
means for electrically biasing said holding means to a voltage level having a magnitude intermediate the magnitude of the image voltage level and the magnitude of the non-image voltage level so as to form an electrical field between the non-image voltage region and said holding means which attracts charged particles of one polarity to said holding means and an electrical field between the image voltage region and said holding means which repels the charged particles from said holding means to the image voltage region of the photoconductive member.

4,387,983
SCAN TYPE IMAGE RECORDING APPARATUS
Koichi Masegi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 1, 1980, Ser. No. 165,139
Claims priority, application Japan, Jul. 3, 1979, 54/84180; Jun. 19, 1980, 54/83066
Int. Cl.³ G03G *15/28*; G01D *15/14*
U.S. Cl. 355—8 **15 Claims**



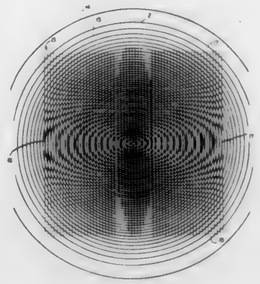
15. A scanning type image recording apparatus comprising:
means for producing a recording signal variable between a first level and a second level;
means for forming from said recording signal a modulation signal variable between one level and a different level corresponding to said first level and said second level of said recording signal such that the width of said modulation signal at said one level is enlarged from the width of said recording signal at said first level by a predetermined width;
beam forming means responsive to said modulation signal to emit a beam of light;
beam deflecting means for deflecting the beam of light emitted from said beam forming means;
photosensitive means positioned to be irradiated by the beam of light deflected by said beam deflecting means, to form a latent image thereon in accordance with the beam irradiation; and
developing means for developing the latent image on said photosensitive means to be visualized.

4,387,984
HANDY COPYING SYSTEM
Masamichi Sato, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 1, 1982, Ser. No. 344,725
Claims priority, application Japan, Feb. 6, 1981, 56-16703; Feb. 6, 1981, 56-16704; Feb. 6, 1981, 56-16705; Feb. 6, 1981, 56-16707
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—12 **18 Claims**



1. A portable electrophotographic copying system for transferring an image of an original to a transfer medium comprising,
a contact reflection exposure type electrophotographic photosensitive member which is enclosed in an outer casing and is movable between an outer position in which it is adapted to be brought into contact with the original and an inner position in which it is inwardly retracted from the outer position,
charging means for charging an exposure surface of the electrophotographic photosensitive member,
exposing means for projecting light onto the electrophotographic photosensitive member from the side thereof remote from the original when the electrophotographic photosensitive member is in said outer position, thereby forming an electrostatic latent image on said exposure surface of the electrophotographic photosensitive member by exposing the surface to the imagewise light reflected from the original,
developing means for developing the electrostatic latent image with toners to form a toner image, and
light shielding means for preventing the electrophotographic photosensitive member from being exposed to external light while the photosensitive member is charged and exposed to the light from the exposing means and while the electrostatic latent image is developed, said charging means, exposing means and developing means all being enclosed in said outer housing.

4,387,985
UNIQUE COPYBOARD HAVING UNIQUE LIGHT ATTENUATOR
Irving J. Magin, and Erik K. Nelson, both of Fairport, N.Y., assignors to Itek Corporation, Lexington, Mass.
Filed Oct. 5, 1981, Ser. No. 308,329
Int. Cl.³ G03B *27/72*
U.S. Cl. 355—71 **7 Claims**



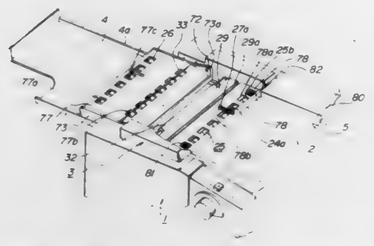
1. In a process camera having a bank of fluorescent lamps for illuminating a subject to be photographed, including a flat light diffuser plate positioned over said bank of lamps:
a transparent cover plate positionable over said light diffuser plate to maintain said subject to be photographed flat against the upper surface of said light diffuser plate;
a lens system for projecting images of said subject upon a photosensitive surface; the improvement comprising:
a flat light attenuator positioned between said bank of fluorescent lamps and said light diffusion plate, said attenuator having a large plurality of light attenuating, constant density, circular lines thereon, concentric with a central point upon said attenuator, the spacing between said circular lines continuously increasing along radial paths emanating from said central point.

5. In a process camera having support means for supporting a subject to be photographed together with subject illuminating means for illuminating said subject and a lens system for projecting images of said subject upon a photosensitive medium, the improvement comprising:
a light attenuator positioned between said subject illumination means and said subject, said attenuator having a plurality of light attenuating, constant density, circular lines, concentric with a central point upon said attenuator, the spacing between said circular lines continuously increasing along radial paths emanating from said central point, said light attenuator further including a plurality of constant density, light attenuating straight lines overlaying a major portion of said attenuator, and wherein said subject illumination means comprises elongated light emitting elements having longitudinal axes, said straight lines being oriented parallel to said longitudinal axes of said elongated light emitting elements.

4,387,986
MANUSCRIPT FEED DEVICE FOR AN ELECTROPHOTOGRAPHIC APPARATUS
Hiroshi Tsuda, Mitaka; Kiyoshi Miyashita; Masaji Nishikawa, both of Hachioji; Akira Shimizu, Fuchu, and Muneo Kasuga, Hachioji, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan
Continuation of Ser. No. 29,461, Apr. 12, 1979, abandoned. This application Oct. 1, 1980, Ser. No. 192,925
Claims priority, application Japan, Apr. 18, 1978, 53-46184
Int. Cl.³ G03B *27/62*
U.S. Cl. 355—75 **3 Claims**

1. In a manuscript feed device for an electrophotographic

apparatus comprising an elongated manuscript tray for defining a sheet manuscript feed path, upper and lower side feed mechanisms arranged at a front end of said manuscript tray above and below said manuscript feed path with said sheet manuscript feed path interposed therebetween, said upper side feed mechanism being disposed so as to be aligned with said lower side feed mechanism thereby constituting a thick manuscript feed path together with the manuscript tray, a sheet manuscript driving means, and a thick manuscript driving means for feeding a thick manuscript carriage and located at



the outside of the maximum width position of the sheet manuscript, the improvement comprising a sheet manuscript guide means which is movably connected at one edge of said manuscript tray to prevent the sheet manuscript from passing over said thick manuscript driving means when feeding the sheet manuscript, and a thick manuscript guide means arranged at an outer position relative to the sheet manuscript guide means viewed along the width of the manuscript, the thick manuscript guide means being exposed when said sheet manuscript guide means is moved so as to guide the thick manuscript carriage along the manuscript tray.

4,387,987

METHOD OF PRODUCING SOLID-STATE COLOR IMAGING DEVICES

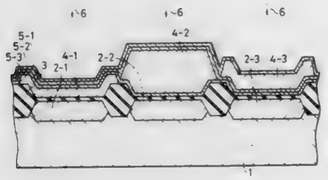
Norio Koike, Tokyo; Akira Sasano, Hinodemachi; Yoshio Taniguchi, Hino; Toshio Nakano, Hinodemachi; Masakazu Aoki, Kodaira, and Iwao Takemoto, Hindoemachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 22, 1981, Ser. No. 266,191

Claims priority, application Japan, May 26, 1980, 55-68968

Int. Cl.³ G03B *27/32, 27/02*

U.S. Cl. 355—133 **11 Claims**



1. A method of producing a color solid-state imager comprising the steps of integrating in the shape of a matrix on an identical semiconductor substrate a number of picture elements, each consisting of a photoelectric conversion element and a scanning element for addressing the photoelectric conversion element, and forming, by photoetching a film of material of which color filters are made, mosaic color filters stacked on the picture elements, characterized in that the color filters are formed by the use of at least one photoetching mask having filter patterns arrayed in the shape of a matrix for manufacturing said color filters, said filter patterns having dimensions that are reduced relative to dimensions of the picture elements.

4,387,988

AUTOMATIC DISTANCE MEASURING DEVICE

Motonobu Matsuda, Kawachinagano, and Yoshihiro Tanaka, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

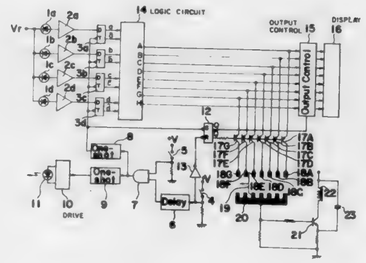
Continuation of Ser. No. 65,747, Aug. 10, 1979, Pat. No. 4,303,335. This application Jul. 23, 1981, Ser. No. 285,878

Claims priority, application Japan, Aug. 21, 1978, 53/102180

The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.

Int. Cl.³ G01C *3/10, 3/05*

U.S. Cl. 356—1 **11 Claims**



1. A distance measuring device which comprises:

means for directing a beam of light towards a target object;

means for receiving the beam of light reflected by the target object, said receiving means having a plurality of at least three light sensing portions, the optical axes of which intersect the path of travel of said beam of light in different ranges of distance from said directing means;

means responsive to said receiving means for signaling whether conditions of the respective light sensing portions are light sensing or non-light sensing;

means for determining a target object distance in response to said signaling means;

first means responsive to said signaling means for detecting when the light sensing portions, the optical axes of which intersect the path of travel of the beam of light in non-neighboring ranges of distance, are in the light receiving condition; and

means connected to said first means for producing an output in response to the detection by said first detecting means for indicating that the distance measurement is in an abnormal condition.

4,387,989

COHERENT OPTICAL FEATURE IDENTIFIER APPARATUS

Andrew R. Pirich, Marcy, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 23, 1980, Ser. No. 171,614

Int. Cl.³ G06K *9/58, 9/76*

U.S. Cl. 356—71 **8 Claims**

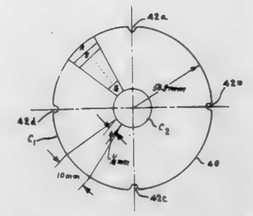
1. An optical correlator for identifying features on a photographic film comprising in combination:

means for generating a source of coherent light, said coherent light being non-divergent,

means for focusing said coherent light through said photographic film, said photographic film including an index of refraction matching means attached to said photographic film,

a spatial filter disk in alignment with and interacting with said focusing means, said spatial filter disk comprises a glass disk with a plurality of wedge sections inscribed thereon, each wedge section of said plurality of wedge sections being divided into a plurality of linearly decreasing sub-regions, each sub-region having a discrete emulsion deposition that is characteristic of a particular feature,

a Fourier Transform lens between said means for focusing coherent light and said spatial filter disk, said spatial filter disk having a Fourier Transform power spectra emulsion



deposited thereon, said spatial filter disk providing an optical correlation signal in response to the coincidence of a photographic film feature and a corresponding filter disk Fourier Transform power spectra feature, and,

means for detecting said optical correlation signal positioned in alignment with said spatial filter disk, said detecting means providing an analog signal in response to said optical correlation signal.

4,387,990

CHEMICAL ANALYSIS SLIDE FRAME ASSEMBLY

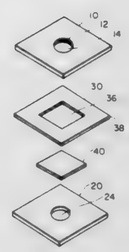
Kenichiro Yazawa; Masao Kitajima, and Asaji Kondo, all of Asaka, Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Mar. 26, 1981, Ser. No. 247,677

Claims priority, application Japan, Mar. 28, 1980, 55/41787[U]

Int. Cl.³ G01N *21/01, 21/27*

U.S. Cl. 356—244 **31 Claims**



1. A chemical analysis slide frame assembly comprising: first and second slide frames each of which has an opening whose area is smaller than the area of a chemical analysis film which said frame assembly is adapted to receive; and a third slide frame disposed between said first and second slide frames, said third slide frame having an opening adapted to receive said chemical analysis film and said third slide frame being shaped so as to substantially prevent the displacement of said chemical analysis film, said third slide frame having a thickness which is equal to or larger than the thickness of said chemical analysis film, and a side wall of the opening in said first slide frame having a small optical reflection factor.

4,387,991

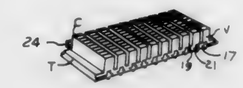
AUTOMATIC MONOCHROMATIC LIGHT ABSORBANCE MEASUREMENT ANALYZER

Saul R. Gilford, Oberlin; Robert J. Emary, Wakeman, and Glen A. Carey, North Ridgeville, all of Ohio, assignors to Gilford Instrument Laboratories, Inc., Oberlin, Ohio

Continuation-in-part of Ser. No. 929,987, Aug. 1, 1978, Pat. No. 4,236,825. This application Oct. 14, 1980, Ser. No. 196,995

Int. Cl.³ G01N *1/10*

U.S. Cl. 356—246 **3 Claims**



1. A cuvette for carrying a fluid sample for use in apparatus for analyzing said sample and wherein said apparatus has conveying means movable along a testing path and connector means on said conveying means for moving said cuvette along said path; said cuvette comprising: a vessel of generally rectangular parallelepiped configuration; a plurality of separate chambers in said vessel, each adapted to hold a separate fluid sample under test, each chamber being open at its top to permit the placement of a fluid sample therein and each said chamber being provided with a window to permit monochromatic light to pass undistorted optically therethrough and into said chamber; and coupling means on one end of said vessel engageable with said connection means to enable said vessel to be movable to a plurality of positions along said path as defined by each of said chambers.

4,387,992

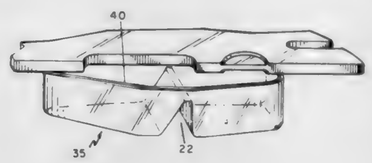
ROTATABLE CUVETTE ARRAY

Peter J. Swartz, 33 Pine Ave., Randolph, Mass. 02368

Filed May 22, 1981, Ser. No. 266,137

Int. Cl.³ G01N *21/07*

U.S. Cl. 356—246 **4 Claims**



1. An improved cuvette array comprising:

a. means defining a rigid planar member component thereof with upper and lower faces and a center of rotation having defined therein analyzer readable indicator means in a circular array about said center of rotation and further having defined therein substantially along radial lines with reference to said center of rotation a plurality of substantially radially elongated reagent/sample access apertures arrayed in a circular fashion with their long axes defined on said radii of the planar member and further having, concentric and outward of the reagent/sample access apertures, a plurality of first analyzer-readable windows defined in said planar member, each associated with one of said reagent/sample access apertures and located respectively on the same radii of said reagent/sample access apertures' axes;

b. means defining as further components of the cuvette array a plurality of boat members, each having elongated opposing side walls, an outer end wall and an inner end wall joined to said side walls, all said walls having upper rims joined in a fluid-tight fashion to said planar disk, and a base having

integrally formed therein an in said adjoining side walls a divider of ramp form defining with said walls and base a reagent chamber on a radially inner side thereof and a sample chamber on the radially outer side thereof, each boat member located beneath a reagent/sample access aperture having its reagent chamber directly below said reagent/sample access aperture and its sample chamber accessible through said reagent/sample aperture and below said first clear optical window, each of said boats having a a clear section in its base below its respective optical window;

c. the said planar member and boat components being constructed and arranged for weldability at the upper walls of the rim of each boat to the planar member; and

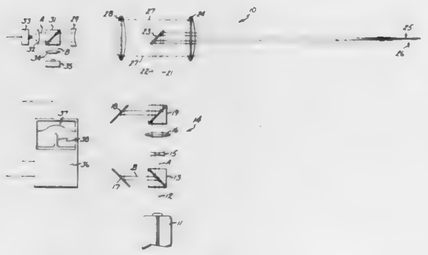
d. the thickness of each of the planar members to boat walls being in ratio between 1:2 to 2:1 and each of the planar members and walls being within 0.020 to 0.070 inch average thickness.

4,387,993

PARTICLE SIZE MEASURING METHOD AND APPARATUS

Ronald J. Adrian, Champaign, Ill., assignor to TSI Incorporated, St. Paul, Minn.

Filed Jun. 25, 1981, Ser. No. 277,150
Int. Cl.³ G01N *15/02*
U.S. Cl. 356—336 **26 Claims**



1. An apparatus for measuring particle size of particles moving with a fluid comprising: a laser unit operable to generate a collimated light beam, first means for separating the light beam into a plurality of separate different light beams and arranging the light beams in relative colinear relationship, said first means including means to expand one of said light beams to provide an expanded first light beam, and a second light beam, and means to colinearly arrange the expanded first light beam with said second light beam, lens means to focus the colinearly related first and second light beams in a common focus area having concentrically positioned focused light, said fluid and particles moving through the center of said focus area whereby the particles moving through the focus area scatter light, means to collect and recollimate the scattered light, means for separating the collected scattered light into a plurality of scattered light beams, photodetector means for sensing the separate plurality of scattered light beams and producing electrical signals corresponding to the amount of sensed light, and means for receiving said electrical signals and producing readable information as to the size of the particles moving with the fluid through the focus area.

4,387,994

OPTICAL SYSTEM FOR SURFACE TOPOGRAPHY MEASUREMENT

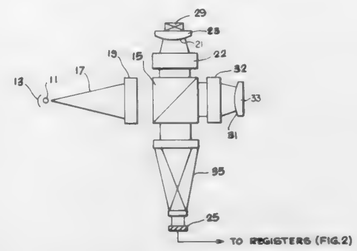
N. Balasubramanian, 20361 Chalet La., Saratoga, Calif. 95070

Continuation-in-part of Ser. No. 117,855, Feb. 4, 1980, Pat. No. 4,340,306. This application Jul. 19, 1982, Ser. No. 399,520
Int. Cl.³ G01B *11/24*
U.S. Cl. 356—360 **3 Claims**

1. A non-contacting method for measuring deviations between a reference wavefront representing a reference surface and a test wavefront representing a test surface comprising,

establishing a white light interference pattern on a detector between two wavefronts, one wavefront from at least one point on a reference surface of known topography and another wavefront from a corresponding point on a test surface of unknown topography,

repeatedly translating one of the wavefronts from said surfaces by known incremental distances relative to the detector from a starting position and establishing other white light interferences patterns, one for each translation, while establishing zero optical path differences between wavefronts from locations on the reference surface and corresponding locations on the test surface of unknown topography,



reading light intensity levels at a number of sample points of the interference pattern for each translation,

calculating a statistical function indicative of the contrast maximum for each of the sample points of the interference pattern over the range of wavefront translation,

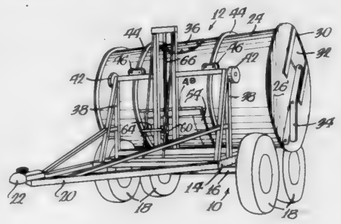
recording the positions of calculated maximum fringe contrast and the corresponding incremental distance of surface translation relative to the starting position for each sample point, whereby the points of maximum fringe contrast at a given step represent points, the locus of which defines contours for which there is zero optical path difference between the test surface and the reference surface.

4,387,995

PORTABLE CONCRETE MIXING AND TRANSPORT APPARATUS

Edwin J. Routson, 135 N. Oakwood, West Chicago, Ill. 60185

Filed May 7, 1981, Ser. No. 261,579
Int. Cl.³ B28C *5/22, 5/42, 7/16*
U.S. Cl. 366—2 **10 Claims**



1. Apparatus for mixing and transporting concrete comprising:

a trailer with a longitudinal axis;

a pair of wheels rotatably mounted on said trailer and supporting said trailer for transport, said pair of wheels having a coincident axis of rotation perpendicular to the longitudinal axis of said trailer;

a rotatable drum for holding concrete and having an axis of rotation parallel to the axis of rotation of said pair of wheels;

support means mounted on said trailer for receiving and rotatably supporting said drum and for holding said drum in contact with said pair of wheels for rotation by said wheels;

means between said trailer and said drum for raising and lowering said drum out of and into driving engagement with said wheels; and

means for lifting one side of said drum to tilt said drum and discharge the concrete therefrom.

9. A method of transporting and mixing concrete, which comprises:

placing a predetermined amount of dry concrete mix into a cylindrical drum which is mounted on a trailer having four wheels;

towing the trailer to the site where the concrete is to be used with the drum out of engagement with the wheels;

placing a predetermined amount of water into the drum at the site where the concrete is to be used; and then

engaging the drum into rotatable contact with said wheels and

towing the trailer so that the wheels rotate the drum and mix the concrete mix with the water; and then

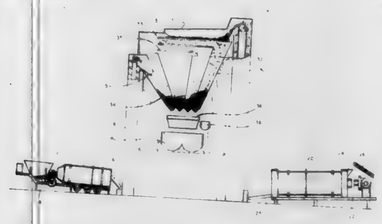
tilting the drum to one side of the trailer to discharge desired quantity of mixed concrete.

4,387,996

BATCH METHOD OF RECYCLING ASPHALTIC CONCRETE

Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 139,640, Apr. 14, 1980, Pat. No. 4,326,809, and a continuation-in-part of Ser. No. 180,297, Aug. 22, 1980, each is a continuation-in-part of Ser. No. 1,051, Jan. 28, 1979, Pat. No. 4,219,278, which is a continuation-in-part of Ser. No. 871,351, Jan. 23, 1978, Pat. No. 4,208,131, and a continuation-in-part of Ser. No. 906,734, May 17, 1978, Pat. No. 4,240,754. This application May 11, 1981, Ser. No. 262,553
Int. Cl.³ B28C *5/04, 5/20*
U.S. Cl. 366—4 **8 Claims**



1. A batch method of producing an asphalt-aggregate composition at a temperature of at least about 200° F. and having at least 50% used asphaltic concrete comprising:

(a) heating particles of 100% used asphaltic concrete to a temperature of at least about 150° F. in a first drum by directly exposing said particles to hot gases of combustion,

(b) heating virgin aggregate to a temperature of less than about 400° F. in a second drum, and

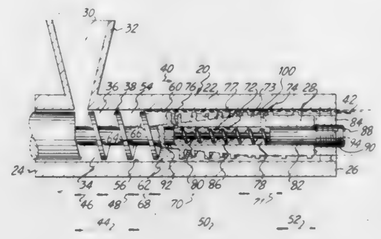
(c) mixing the heated particles of used asphaltic concrete, virgin aggregate, and liquid asphalt to achieve said asphalt-aggregate composition.

4,387,997

PLASTICATING EXTRUDER SCREW CONVEYORS

Reuben Klein, Edison, and Imrich Klein, Highland Park, both of N.J., assignors to Scientific Process & Research, Inc., Somerset, N.J.

Continuation-in-part of Ser. No. 104,094, Dec. 17, 1979, Pat. No. 4,290,702. This application Sep. 16, 1981, Ser. No. 302,512
Int. Cl.³ B29B *1/10*
U.S. Cl. 366—79 **8 Claims**



1. Apparatus for use in a plasticating extruder of the type having an axially extending elongate barrel for preparing a plasticated material from solids introduced into the extruder, said apparatus comprising:

a first screw conveyor for placement in the barrel, said first screw conveyor including a main flight defining a channel for continuously conveying the material in a downstream direction as the material is melted within the channel, said flight having a leading face facing downstream and a trailing face facing upstream, said channel extending between the leading face and the trailing face;

a backfeed passage within the first screw conveyor, said backfeed passage communicating with the channel at a downstream location and at an upstream location to establish an extended flow circuit along which the material will move through the channel and the backfeed passage, the downstream location being in position to receive at least some unplasticated material from the channel, and the upstream location being spaced axially upstream of the downstream location a distance sufficient to enable plastication within the backfeed passage of at least some of the unplasticated material admitted to the backfeed passage;

a drainage opening interconnecting the channel and the backfeed passage at the downstream location for enabling the flow of unplasticated material into the backfeed passage at the downstream location;

a melt-return aperture interconnecting the backfeed passage and the channel at the upstream location for enabling the flow of plasticated material from the backfeed passage to the channel at the upstream location;

a second screw conveyor located in said backfeed passage and arranged to convey material from the downstream location to the upstream location so as to enable recirculation of material along the extended flow circuit through the backfeed passage; and

a solids-directing flight on the first screw conveyor extending along the channel between the melt-return aperture and the drainage opening, the axial distance between the solids-directing flight and the main flight being varied along the first screw conveyor for directing unplasticated material into the drainage opening while diverting unplasticated material away from the melt-return aperture for unobstructed return of plasticated material from the backfeed passage to the channel and segregation of at least some of the returned plasticated material from the unplasticated material in the channel such that the segregated already plasticated material will not flow through the extended flow circuit.

4,387,998

DEVICE FOR MIXING AND DISTRIBUTING A TWO-CONSTITUENT PRODUCT

Elemer Szigeti, 1, Place Eugene Mo, Nice (Alpes Maritimes), France

Filed May 20, 1981, Ser. No. 265,511
Claims priority, application France, Dec. 12, 1980, 80 26087
Int. Cl.³ B01F *13/00;* **B65D** *25/08*
U.S. Cl. 366—130 **5 Claims**



1. Mixing and distributing device for a two-constituent product, notably for the formation of a foam in situ, comprising, first and second interfitted compartments each having an inner end and an outer end, the inner ends facing each other and being separated by a web and means for tearing said web under the action of the axial approach movement of said compartments through their inner ends, the walls of the inner ends including complementary threads designed to cooperate to bring about said approach, each of said compartments comprising a solid portion and a hollow portion in the form of a substantially semi-cylindrical trough bounded by a longitudinal surface, the first compartment comprising a removable plug at its outer end and said web at its inner end, said second compartment being closed at its outer end and provided at its inner end with both a peripheral projection forming a cutting-out knife for the web and an axial tit projecting with respect to the inner end of its solid portion.

4,387,999

ELECTRONIC SUNDIAL APPARATUS

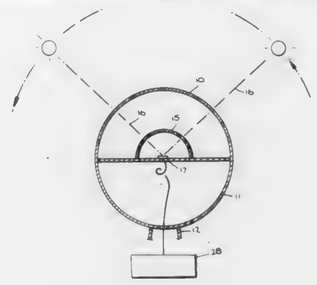
Edwin F. Shelley, 339 Oxford Rd., New Rochelle, N.Y. 10804

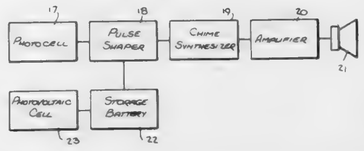
Filed Aug. 25, 1981, Ser. No. 296,161
Int. Cl.³ G04B *19/26*
U.S. Cl. 368—15 **7 Claims**

1. An electronic sundial apparatus responsive to changes in the position of the sun in the sky for signaling, on an hourly basis, the passage of time, comprising:

a first hemisphere having an elongated, vertically-disposed aperture and a plurality of elongated generally vertically extending diverging apertures disposed in the surface of said hemisphere at predetermined locations thereon, said diverging apertures being configured so as to diverge at the uppermost ends thereof in opposite directions away from said vertically-disposed aperture, said vertically-disposed and diverging apertures having a predetermined location and a predetermined length and shape corresponding to the azimuths and the distance between the maximum and minimum altitudes of the sun in the sky at each hour throughout the year for a predetermined, selected latitude;

a second hemisphere disposed concentrically within said first hemisphere, said second hemisphere also including an elongated vertically-disposed aperture and a plurality of elongated, generally vertically extending diverging apertures disposed in the surface of said hemisphere at predetermined locations thereon, said diverging apertures being configured so as to diverge at the uppermost ends thereof in opposite directions away from said vertically-disposed aperture, said vertically-disposed and diverging apertures having a predetermined location and a predetermined length and shape corresponding to the azimuths and the distance between the maximum and minimum altitudes of the sun in the sky at each hour throughout the year for a predetermined, selected latitude, said apertures function-





ing in conjunction with said apertures in said first hemisphere to collimate, once each hour, sunlight and cause said collimated sunlight to pass through the concentric radial center of said hemispheres;

detector means, disposed at said concentric center of said hemispheres, for detecting the presence of said sunlight collimated by said hemispheres; and

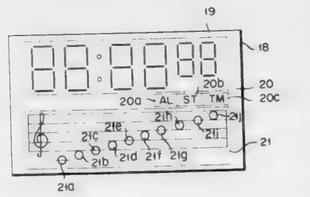
means, coupled to said detector means, for signaling the detection of collimated sunlight by said detector means.

4,388,000

ELECTRONIC APPARATUS HAVING A MUSICAL ALARM FUNCTION AND A DISPLAY

Touru Hagihira, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 31, 1980, Ser. No. 202,800
Claims priority, application Japan, Nov. 7, 1979, 54-153675[U]
Int. Cl.³ G04C *21/00, 19/00*
U.S. Cl. 368—72 **4 Claims**



1. An electronic apparatus having a musical alarm function, a function other than said musical alarm function and a display, comprising:

a source of reference clock signals;

time counting means for counting said reference clock signals to form time data;

means for generating alarm time data;

time display means coupled to said time counting means for displaying said time data;

alarm function circuit means coupled to said time counting means and to said alarm time data generating means, said alarm function circuit means including:

alarm time detection means for determining whether said time data coincides with alarm time data;

note code memory means for storing note codes for a melody;

note code readout means coupled to said note code memory means for sequentially reading out said note codes from said note code memory means when said time data is determined to coincide with said alarm time; and

melody generating means coupled to said note code readout means for generating a melody according to said readout note codes;

a plurality of optical display elements provided on and between lines of the five-line musical staff;

scale display control means coupled to said optical display elements for selectively driving said optical display elements to display the notes of said melody when said melody is generated by said melody generating means; and

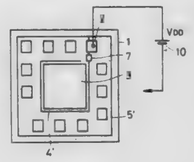
function display control means coupled to said optical display elements for selectively driving said optical display elements to produce a display of said function other than said musical alarm function which the apparatus performs when said melody is not generated.

4,388,001

ELECTRONIC TIMEPIECE

Yasuhiko Nishikubo, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1980, Ser. No. 192,714
Claims priority, application Japan, Oct. 9, 1979, 54-139154[U]
Int. Cl.³ G04C *19/00;* **B01J** *17/00*
U.S. Cl. 368—87 **5 Claims**



1. A CMOS integrated circuit including a logic circuit for an electric timepiece comprising:

an N-type substrate;

a connecting portion provided on said N-type substrate for connecting a high potential side of a voltage supply to said N-type substrate;

a plurality of N^+ impurity regions of high impurity concentration formed in said N-type substrate;

a first aluminum lead connected to said impurity regions formed in said N-type substrate, and to said connecting portion for decreasing resistance between said voltage supply and said substrate;

a second aluminum lead provided on said N-type substrate for supplying a voltage to said logic circuit; and

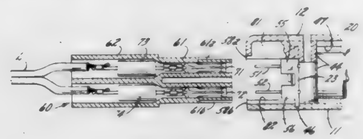
a resistor provided between said second aluminum lead and said connecting portion.

4,388,002

CONNECTOR FOR ARRANGEMENT FOR A-C. CLOCK MECHANISM

Anthony W. Rigazio, Oglesby; Donald E. Mathieson, Peru, both of Ill., and Paul E. Hawkinson, Louisville, Miss., assignors to Spartus Corporation, Skokie, Ill.

Filed Dec. 3, 1980, Ser. No. 212,356
Int. Cl.³ G04C *10/00*
U.S. Cl. 368—88 **2 Claims**



1. In a synchronous a-c. clock the combination comprising a housing, the housing being formed of a plastic base plate and plastic cover member of shallow cup shaped mated together about the periphery to form an enclosed space having side walls, a drive coil having a core and bobbin mounted in the enclosed space, a drive train mounted in the enclosed space, a permanently magnetic rotary armature cooperating with the core at the front end of the bobbin for driving the drive train, embossments at least on the base plate for securing the bobbin in a position in which the rear end of the bobbin is spaced from the adjacent side wall and parallel thereto to form a wide access space, a pair of spaced axially extending prongs mounted on the edge of the bobbin and projecting into the access space, the ends of the drive coil being connected to the respective prongs, means defining an access opening in the adjacent side wall of the housing alined with the prongs on the bobbin for providing communication with the access space, the access opening being of arbitrary cross sectional shape and of such small size as to preclude entry of an a-c. connector of conventional design, a line cord having a connector, the connector having a tip portion cross sectionally fitted for snug reception in the access opening and having a a handle portion, female electrical connections in the tip portion for engaging the prongs of resistor means in the handle portion in series with the line cord, the length of the tip portion being greater than the width of the access space so that the handle portion of the connector remains outside of the housing when the connector is plugged into the access opening for dissipation of the heat of the resistor means to the ambient atmosphere.

4,388,003

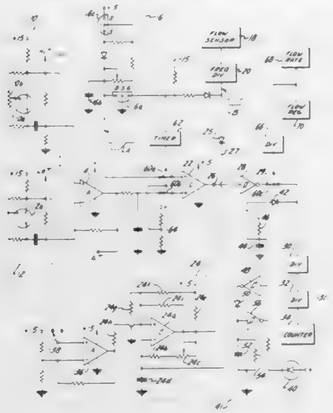
HEAT-METER AND FLOW-METER APPARATUS

Murray F. Feller, Dunnellon, Fla., assignor to Wilgood Corporation, Dunnellon, Fla.

Filed Apr. 29, 1981, Ser. No. 258,521
Int. Cl.³ G01F *1/86;* **G01K** *17/16*
U.S. Cl. 374—41 **6 Claims**

1. Heat metering apparatus for a system having a heat exchanger, an inlet passage, an outlet passage and means for moving fluid through said inlet passage, said heat exchanger and said outlet passage serially, said heat metering apparatus including a flow sensor at one of said passages operative to produce a series of pulses in response to fluid flow, a pair of temperature sensors located at said inlet and outlet passages, respectively, temperature difference means for taking the difference between the outputs of said temperature sensors, an oscillator, a heat meter, product-taking means responsive to both said flow sensor and said temperature difference taking means for enabling the oscillator to supply trains of pulses to the heat meter at intervals determined by said flow sensor for durations determined by said temperature difference taking

means, and compensating means controlled by the one of said temperature sensors for causing the oscillator frequency to



vary to compensate for temperature-related deviations in the response of the flow sensor to the mass-rate of fluid flow.

4,388,004

SHAFT BEARING ARRANGEMENT

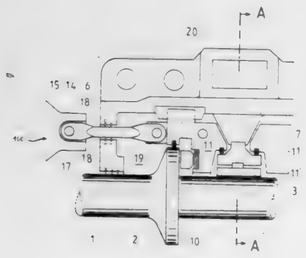
Hans Bellati, Wettingen, Switzerland, assignor to BBC Brown, Boveri & Co. Ltd., Baden, Switzerland

Filed Jun. 4, 1981, Ser. No. 270,553

Claims priority, application European Pat. Off., Jun. 16, 1980, 80200559

Int. Cl.³ F16C *35/02*

U.S. Cl. 384—397 **7 Claims**



1. A bearing arrangement for rotating machines, especially for the shafts of multi-stage turbines, comprising:

at least one support bearing;

at least one thrust bearing;

a respective bearing support in which there are arranged the related support bearing and thrust bearing;

means defining a common bearing housing for the support bearing and the thrust bearing and the related bearing supports; and

the bearing support of the thrust bearing surrounding the bearing support of the support bearing and being supported at the bearing housing.

4,388,005

METHOD AND APPARATUS FOR PRINTING PARTIALLY OVERLAPPING CHARACTERS

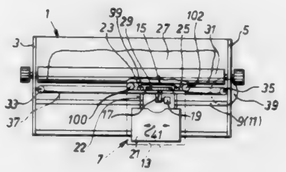
Hans Wehking, Jerxheim; Detlef Eichler, Braunschweig, and Wolfgang Klingenberg, Lahstedt, all of Fed. Rep. of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Apr. 17, 1981, Ser. No. 257,479

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014769

Int. Cl.³ B41J *1/30, 29/36*

U.S. Cl. 400—144.2 **7 Claims**



1. A method for generating plural imprints of a selected character on a record carrier medium, which imprints are close together, mutually offset and partially overlapping, in an office machine printer equipped with a typing element, the printer being arranged to produce lines of typed characters, in which method a relative movement takes place along a typing line between the typing element and the record carrier medium, said method comprising, in the order recited:

effecting an initial relative movement between the typing element and the record carrier medium in a first direction along the typing line to an initial position, and generating at least one imprint of the selected character;

effecting a second relative movement between the typing element and the medium by a given number of elemental steps, which number is equal to at least one, each having a length which is a fraction of the spacing between successive characters on a typed line, in the first direction from the initial position to a second position; and

effecting a third relative movement between the typing element and the medium by the same number of elemental steps as said second movement, in a second direction, opposite to the first direction, along the typing line, from the second position to a third position, and generating at least one further imprint of the selected character.

4,388,006

PRINTING RIBBON CARTRIDGE

Helmut K. Waibel, Fremont, Calif., assignor to Durango Systems, Inc., San Jose, Calif.

Filed Mar. 3, 1981, Ser. No. 239,981

Int. Cl.³ B41J *32/00, 32/02*

U.S. Cl. 400—195 **10 Claims**

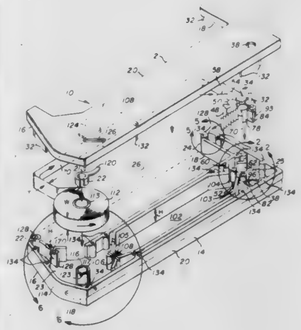
1. An improved, U-shaped printing ribbon cartridge for use with printing ribbons, the cartridge being adapted to enclose the entire length of a printing ribbon other than a length exposed over an open end for printing, the cartridge including a ribbon feed aperture located at a first terminal end of a base of the U-shaped cartridge near said open end and a ribbon return aperture located at a second terminal end of the base near said open end for guiding a length of ribbon along a path across said open end, and a cartridge cover secured to said cartridge base by a plurality of pins distributed about a periphery of said cover, said base adapted to receive said pins by means of an equal plurality of mating apertures formed about said base periphery, said cover and said base mating surfaces meeting along a planar surface located partially across the cartridge height, and a ribbon storage compartment located within the base and having a ribbon entry aperture formed about a third terminal end of said ribbon storage compartment for admitting a length of ribbon thereto wherein the improvement comprises:

a toothed, ribbon driving wheel for advancing a ribbon under tension, the driving wheel being located within the cartridge intermediate said ribbon return aperture and said third terminal end of said ribbon storage compartment, the driving wheel being rotatable about an axis fixed with respect to the cartridge;

mechanical means directly engaged to the cartridge and a driving wheel chamber and manual means connected to the driving wheel to permit rotation of the driving wheel from outside the cartridge;

a spring loaded, toothed pinch wheel rotatably supported within the cartridge and urged into meshing engagement with the driving wheel; and

a mobius forming means for guiding a length of ribbon along a path comprised of a Z-shaped mobius guide formed by a rectangular shaped ribbon guide bar aligned essentially parallel to said ribbon path spanning said open end of said U-shaped cartridge and a triangularly-shaped ribbon tilting guide secured to each opposite terminal end of a common edge of said guide bar, wherein said opposing tilting guides are shaped as isosceles right triangles with triangular surfaces aligned essentially perpendicular to the length of said ribbon guide bar and altitudes of said triangles aligned essentially parallel to the width of said guide bar and bases of said triangles aligned essentially perpendicular to the width of said guide bar wherein said isosceles right triangles each have a hypotenuse which forms one arm of a "V" having a junction at said common edge of said guide bar causing said hypotenuses, to cross diagonally between opposing interior surfaces and further the mobius guide positioned transversely across a direct path between said ribbon exit aperture of the ribbon storage compartment and said ribbon feed aperture with an edge of said ribbon disposed immediately adjacent to one wall of the cartridge at an entry to said mobius forming means and disposed immediately adjacent to an opposing wall of said cartridge upon exit therefrom, said mobius forming means being rigidly but removably secured to a ribbon pin within the cartridge outside of a fourth terminal end of the ribbon storage compartment.



4,388,007

LINE FEED CARRIER RETURN MECHANISM FOR MOVABLE PRINTING POINT TYPEWRITER

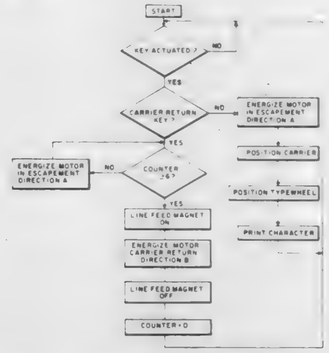
Heinz Meier, and Egon Zurawski, both of Berlin, Fed. Rep. of Germany, assignors to Triumph-Adler A.G. fur Buro- und Informationstechnik, Nuremberg, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,579

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1980, 3034836

Int. Cl.³ B41J *19/70, 19/72*

U.S. Cl. 400—314 **3 Claims**



1. A typewriter having a frame,

a platen rotatably mounted on said frame,

a single element type carrier mounted for movement in escapement and carriage return directions relative to said frame between established left and right margins,

a bidirectional motor,

carrier drive means connected to said motor for moving said carrier in escapement and return directions according to the direction of energization of said motor,

platen indexing means,

a normally disengaged half revolution clutch coupled to said carrier drive means and operable when energized to couple said carrier drive means to said platen indexing means to effect upon energization of said motor over the full cycle of the engaged clutch, a line indexing movement during the return of said carrier to said left margin,

means for generating a carrier return command,

control means for energizing said bidirectional motor to move said carriage and said clutch in response to said carrier return command,

means responsive to said carrier return command for determined the distance of said carrier from said established left margin;

said control means energizing said motor in escapement direction if the determined distance is less than a predetermined number of spaces and then energizing said motor in carrier return direction and said clutch when the determined distance is greater than said predetermined number of spaces.

4,388,008

AUTOMATIC PAPER FEEDER

Jay R. Greene, Middleville; James W. Windecker, Jr., Ilion; James H. Roberts, West Winfield, and Harold F. Wood, Herkimer, all of N.Y., assignors to Advanced Terminals, Inc., Mohawk, N.Y.

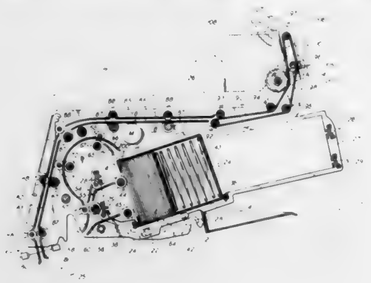
Filed Feb. 23, 1981, Ser. No. 237,516

Int. Cl.³ B41J *13/00;* **B65H** *3/44*

U.S. Cl. 400—578 **17 Claims**

1. An automatic paper feeder for use with a character printer having a platen, the feeder comprising an interface unit mounted on the printer and a paper cartridge-guide unit

mounted on the interface unit, a cartridge cradle assembly mounted in the cartridge-guide unit, the cradle assembly being adapted to receive paper containing cartridges of different types, one type of cartridge being adapted to contain cut paper and another type of cartridge being adapted to contain envelopes, scrub roll and guide means for removing paper from either type of cartridge and guiding it to the printer platen, a receiving station forming a part of the cartridge-guide unit for



receiving paper that has left the platen, and a paper guide assembly for guiding paper leaving the printer platen to the receiving station, the guide assembly having a terminal portion movable between a first and second position, the terminal portion in its first position being operable to deliver cut paper to the receiving station in a first in-first out arrangement, and the terminal portion in its second position being operable to deliver envelopes to the receiving station in a first in-first out arrangement.

4,388,009

COOLING SYSTEM FOR A LINE PRINTER

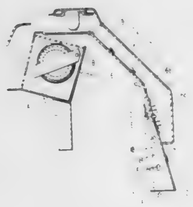
Ikuo Kumagai; Yukiaki Koyanagi, and Hiroshi Hidaka, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed May 30, 1980, Ser. No. 154,666

Claims priority, application Japan, Jun. 1, 1979, 54-69085; Jun. 1, 1979, 54-69086; Jun. 1, 1979, 54-74955[U]; Jun. 1, 1979, 54-74960[U]

Int. Cl.[3] **B41J** *29/00*

U.S. Cl. 400—679 **5 Claims**



1. A line printer assembly comprising: a line printer, including:

a plurality of type characters;

a plurality of individually actuatable hammers, said type characters being impacted by said hammers;

a hammer actuator arrangement including a plurality of hammer actuators for individually actuating said hammers; and

a cross flow fan placed above said hammer actuator arrangement such that said cross flow fan longitudinally extends over an entire length of said hammer actuator arrangement, cooling air from said cross flow fan being directed to said hammer actuator arrangement from its upper side down to a bottom of said printer; and paper ejector means having a perforated paper guide plate provided at a rear of said printer; and an air inlet duct for said fan provided adjacent to said guide plate, air flowing into said inlet duct flowing into said fan via said perforations substantially vertical to said guide plate.

4,388,010

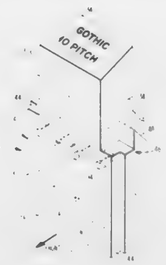
FONT MODULE FOR MATRIX PRINTER

William E. Mott, Versailles, and Iraj D. Shakib, Lexington, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,694

Int. Cl.[3] **B41J** *29/02;* **H05K** *1/00, 5/00;* **G11C** *5/02*

U.S. Cl. 400—692 **14 Claims**



1. For use in a matrix printer, a font storage module comprising:

a data storage device having at least one external communication port capable of transferring electrical signals, said storage device including stored information defining a set of printing patterns;

a generally rectangular housing enclosing said storage device, said housing having two generally parallel major surfaces that are spaced apart to define a first and a second set of relatively narrow opposing sides;

one of said major surfaces having defined therein a set of openings at which contact pads are located corresponding to said ports, said first set of sides including an insertion end surface which is opposite a side having a handle section said second set of opposing sides including at least one camming section that projects to define a rigid ramplike camming surface which terminates at one end in a surface that is sharply angled to said camming surface to define a latchable surface transition; and

connection means for coupling said contact pads to said ports.

4,388,011

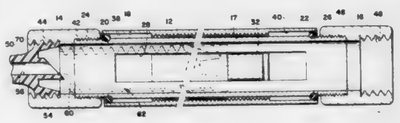
MATERIAL DISPENSER TOOTHBRUSH

Donald R. Smith, 1601 Knoxville, Broken Arrow, Okla. 74012

Continuation-in-part of Ser. No. 77,342, Sep. 20, 1979, Pat. No. 4,277,194. This application Apr. 13, 1981, Ser. No. 253,178

Int. Cl.[3] **A46B** *11/02*

U.S. Cl. 401—173 **8 Claims**



1. A material dispenser apparatus comprising an elongated cylindrical hollow handle, a central portion thereof being

internally threaded, an elongated sleeve member disposed with in the handle for carrying material to be dispensed and independently rotatable with respect to the handle, a pair of oppositely disposed longitudinal slots provided in said sleeve member, a dispenser drive member transversely disposed through said slots and having outer threaded ends in cooperative engagement with the internal threading of the handle, operator means at a first end of the handle operably connected to the sleeve member to impart said independent rotation of said sleeve member thereby causing the drive member to rotate and translate along said longitudinal slots for forcing material out of the opposite end thereof, and including a second operator means at a second opposite end of the handle which is operably connected to the sleeve member to impart said independent rotation thereto, each said operator means being provided with a longitudinal aperture for permitting selective dispensing of material through either end of the sleeve, and in combination with a disposable collapsible cartridge for carrying paste material to be dispensed, said cartridge being disposed within the sleeve member, a first end thereof being in contact with the dispenser drive member, a second opposite end thereof being provided with an opening alignable with the aperture of the second operator means.

4,388,012

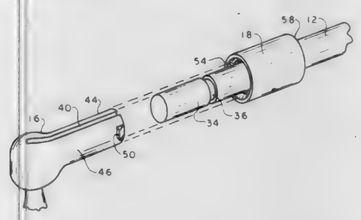
SWIVEL CONNECTOR

David A. Erickson, Hinsdale, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 23, 1980, Ser. No. 171,503

Int. Cl.[3] **F16B** *3/00;* **F16C** *11/00;* **F16D** *1/12*

U.S. Cl. 403—142 **9 Claims**



1. A swivel connector assembly pivotally connecting an elongated member having a head defined at one end to a substantially spherical pivot comprising: a deformable connector body having a first socket which releasably receives said defined head and a second socket having a bearing seat which confines said pivot, slot means in said body intersecting said first socket and a portion of said second socket permitting expansion of said first and second sockets enabling insertion and removal of said head portion from said first socket and said pivot from said second socket, and sleeve means axially received over one end of said body precluding expansion of said first and second sockets, whereby when said pivot is positioned in said second socket, said head is positioned within said first socket, and said sleeve is received over said one end of said body a swivel connector assembly is formed which precludes disassociation of the pivot and elongated member.

4,388,013

PIPE CONNECTION AND METHOD FOR PRODUCTION

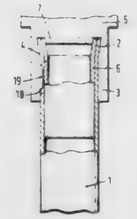
Hans Bergheim, and Winfried Griep, both of Bonn, Fed. Rep. of Germany, assignors to Vaw Leichtmetall GmbH, Dellweg, Fed. Rep. of Germany

Filed Oct. 9, 1980, Ser. No. 195,495

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1979, 2945474

Int. Cl.[3] **B25G** *3/28;* **F16G** *11/00*

U.S. Cl. 403—277 **10 Claims**



1. A connection for joining a pipe with a pipe connection having a flange or a solid or hollow section comprising:

an inner pipe which is for most of its extent generally cylindrical and which has a widened generally frusto-conical end part;

an outer pipe connector receiving said inner pipe therein and having a generally frusto-conical undercut formed therein and receiving said widened end part; and

a sleeve mounted inside said inner pipe with a close tolerance so as to be substantially free from play, said sleeve being for most of its extent generally cylindrical and having a widened generally frusto-conical portion which engages said inner pipe internally, said inner pipe being retained between the undercut thereof and said frusto-conical portion of the sleeve, and means to prevent relative rotation of said pipe connector and inner pipe.

4,388,014

MULTIPLE PART TAPERED COLLAR FOR A TENDON ANCHORAGE SYSTEM

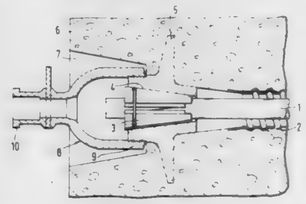
Johann Wlodkowski, and Dieter Jungwirth, both of Munich, Fed. Rep. of Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 23, 1981, Ser. No. 227,597

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1980, 3002846

Int. Cl.[3] **B25G** *3/20;* **F16B** *2/00, 7/04*

U.S. Cl. 403—369 **3 Claims**



1. Multiple part tapered collar for use as a component of a wedge anchorage system for a tendon in a structural concrete unit, comprising a plurality of axially extending parts combining to form an axially extending annular collar said parts of said collar having an inner surface and an outer surface with the inner surrace arranged to bear against the tendon in the form of a wire, rod or the like and with the outer surface arranged to bear against the surface of a frusto-conically shaped bore in an anchoring member, wherein the improvement comprises that

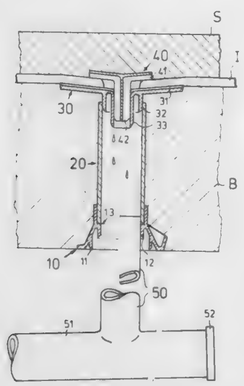
each of said parts have a first end and a second end with the outer surface thereof tapering inwardly from the first end to the second end, said parts combining to form longitudinal grooves extending in the axial direction of said collar for the axial length thereof between the first ends and second ends of said parts for forming a passage for the injection of neat cement or similar material around the tendon, said longitudinal grooves being formed in the outer surfaces of said parts of said collar and having a uniform depth for at least a major portion of the axial length thereof, each said part has a pair of axially extending edges in the assembled collar with a recess along the radially outer end of each said edge with the recess extending radially inwardly along the edge to a position intermediate the inner and outer ends of the edges, the recesses in adjoining edges of said parts forming said grooves.

4,388,015

DRAINAGE DEVICE EMBEDDED IN A CONCRETE SLAB FOR MOISTURE DRAINAGE

Heinz Honegger, Wil, Switzerland, assignor to Honel Holding AG, Ltd., SA, Rorbas, Switzerland

Filed Nov. 12, 1981, Ser. No. 320,182
Int. Cl.³ E01F *5/00*; E03F *1/00*
U.S. Cl. 404—2 **4 Claims**



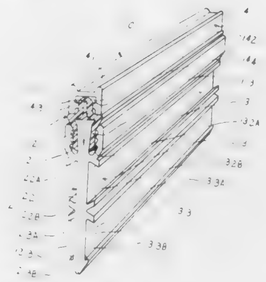
1. A device embedded in a concrete slab for drainage of moisture which collects between a waterproof isolating layer (I) applied to the top surface and the concrete slab itself, and/or moisture which passes through a layer (S) deposited on the top of said isolating layer, said drainage device comprising; a drainpipe (**20**) embedded in said concrete slab (B) and having its upper end fitted with a shallow funnel (**30**) provided on its upper surface with radially extending grooves (**31**) and is flush with the top surface of said concrete slab, the upper end of the funnel opening being covered with a mushroom shaped insert (**40**) resting on said isolating layer, said insert having on its underside radially extending grooves (**41**), the bottom end of said drainpipe being supported in an outlet member (**10**) installed in said concrete slab in such a manner as to be flush with the underside thereof, said funnel (**30**) fitted on its underside with a centering cuff (**32**) concentrically surrounding tube (**33**) of said funnel (**30**) and spatially separating said tube (**33**) from said drainpipe (**20**), the diameter of said funnel tube (**33**) being at least about 20% smaller than the inner diameter of said drainpipe (**20**) to prevent dripping water from coming into contact with the interior wall of said drainpipe (**20**), and said outlet member (**10**) on the lower end of said drainpipe (**20**) having two concentric drip collars (**11**, **12**).

4,388,016

EXPANSION JOINT AND SEAL FOR USE IN CONCRETE STRUCTURES

Bertram J. Levey, Covington, La., assignor to Construction Materials, Inc., Baton Rouge, La.

Filed Jun. 2, 1981, Ser. No. 269,619
Int. Cl.³ E01C *11/04*
U.S. Cl. 404—48 **7 Claims**



1. In apparatus constituting an expansion joint and seal device for use in sealing expansion joints in concrete constructions where, when plastic concrete block within which the device is installed and the concrete cured sufficiently the block cracks and is laterally separated to form an expansion joint between two adjacent concrete blocks each subject to thermal expansions and contractions, there is included an elongate flexible seal member inclusive of an expandable upwardly faced closed loop portion, a removable elongate top cap for affixing upon the loop portion of said elongate flexible seal member for covering same, and a pair of alternately disposed downwardly projecting leg portions extending from the non-closed sides of said loop portion,

the improvement comprising

a pair of elongate side frames, each of which includes upwardly faced deep U-shaped slots within which each of the leg portions of said expandable loop portion of the elongate flexible seal is extended, bonded, and attached by use of an adhesive, each of which contains on an outer surface, one or more pairs of inwardly sloped laterally aligned ribs which form longitudinal channels with relatively wide bottom surfaces with restricted surface outlets, which forms a means of tenaciously bonding plastic cement to said side frames to form a flexible seal, and

each of the side frames are formed from a unitary extruded extrudate mass of rigid plastic, or rubber, by severing side frames of equal length from said extrudate mass.

4,388,017

TROWELING BLADE ROTOR ASSEMBLY

Donald R. Morrison, 6228 Eagle Peak Dr., Charlotte, N.C. 28214

Filed Nov. 27, 1981, Ser. No. 325,276
Int. Cl.³ E01C *19/22*
U.S. Cl. 404—112 **1 Claim**

1. An improved troweling blade rotor assembly adapted for being driven by the drive shaft of a powered rotary-type trowel unidirectionally, comprising:

(a) a hub member having:

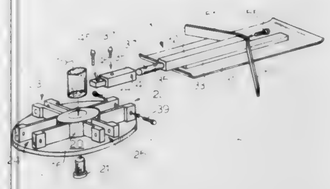
(i) a vertically-oriented, centrally-located collar for receiving the drive shaft of a rotary trowel;

(ii) integral with said collar and extending radially outward therefrom, a plurality of circumferentially spaced blade-mounting arm receptacles; and

(iii) means for securing said shaft to said hub member;

(b) a plurality of radial blade mounting arms having the respective inner ends thereof pivotally mounted in respective said receptacles and pivotal only about horizontal axes passing through the respective said inner ends and oriented transverse of the respective longitudinal axes of said arms;

(c) screw adjusting means mounted on respective said inner end portions of each said mounting arm between said collar and said axes enabling the degree of tilt of said



mounting arms to be individually adjusted with respect to the horizontal plane and when under the influence of the weight of said machine bearing on said collar; and

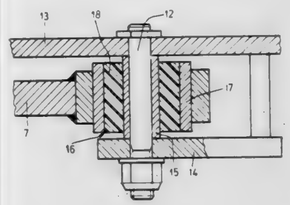
(d) a trowel blade secured to each respective said arm and having the working surface thereof adjustable with respect to the horizontal plane by adjusting the respective said screw adjusting means located thereon.

4,388,018

ECCENTRIC-DISK TAMPER

Marcel Boschung, Schmitten, Switzerland, assignor to Boschung Holding A.G. Freiburg, Fribourg, Switzerland

Filed Apr. 10, 1981, Ser. No. 252,853
Claims priority, application Switzerland, Mar. 6, 1981, 1563/81
Int. Cl.³ E01C *19/38*
U.S. Cl. 404—113 **5 Claims**



1. An eccentric-disk tamper of the type having a vibrator frame intended to be raisably and lowerably disposed on a vehicle, at least one vibrator unit, and at least one parallel linkage connecting said unit to said frame, each said parallel linkage including a plurality of guide rods pivoted to support members of said frame and said unit, a plurality of coupling links disposed at respective pivot points of said linkage, and a plurality of bolts forming part of said coupling links, wherein the improvement comprises:

a first metal sleeve surrounding and non-rotatably secured to each of said bolts in each of said coupling links,

a resilient cylinder for each link having one surface surrounding and non-rotatably secured to said first metal sleeve,

a second metal sleeve for each link surrounding and non-rotatably secured to the opposite surface of said resilient cylinder,

the resilient characteristic of said cylinder affording resilient relative rotation between said opposite surfaces about the cylinder axis,

one of said support members being non-rotatably connected to said first metal sleeve and one of said guide rods non-rotatably connected to said second metal sleeve, and

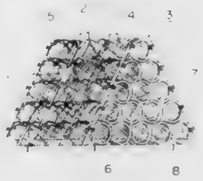
at least one stop means disposed between said support member and said guide rod to limit the angular displacement of said guide rod relative to said support member.

4,388,019

ARTIFICIAL REEF ASSEMBLY CONSTRUCTION

Kunio Kajihara, Tokyo, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 16, 1981, Ser. No. 254,982
Claims priority, application Japan, Dec. 8, 1980, 55-171983
Int. Cl.³ E02B *3/04*
U.S. Cl. 405—25 **7 Claims**



1. An artificial reef assembly construction which comprises an artificial reef assembly comprising a plurality of artificial reef units each comprising a hollow structure having at one end thereof a first opening and at the other end thereof a second opening and having a peripheral framework extending from the circumference of said first opening to the circumference of said second opening, said peripheral framework comprising a plurality of first fiber-reinforced plastic bands wound spirally about an axis of the hollow structure from said first opening to said second opening at an oblique angle with the axis and a plurality of second fiber-reinforced plastic bands wound spirally about the axis in a direction opposite to said first fiber-reinforced plastic bands, thereby forming lattice pattern windows respectively defined by said first fiber-reinforced plastic bands and said second fiber-reinforced plastic bands intersecting therewith;

a weight securely attached to the artificial reef assembly at its lower portion; and

a predetermined number of rods each including an engaging means;

said rods each including an engaging means being disposed on the artificial reef assembly at its both side walls in a direction perpendicular to the axis of the artificial reef unit and firmly secured to the reef units of which the outer partial peripheries constitute said side walls by winding, around portions of the rods and the artificial reef units in contact with each other, fiber glass rovings impregnated with a thermohardening resin, followed by curing of the resin.

4,388,020

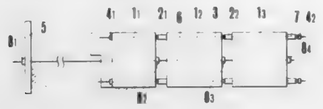
METHOD AND APPARATUS FOR ADVANCING CYLINDRICAL BODIES UNDERGROUND

Koichi Uemura, No. 3-11, 1-chome, Sakura-machi, Koganei-shi, Tokyo, Japan, and Makoto Uemura, Koganei, Japan, assignors to Koichi Uemura, Tokyo, Japan

Continuation of Ser. No. 99,991, Dec. 4, 1979, abandoned. This application Sep. 1, 1981, Ser. No. 298,471
Claims priority, application Japan, Mar. 13, 1979, 54-28247; Mar. 17, 1979, 54-30556; Mar. 19, 1979, 54-31182; Apr. 2, 1979, 54-38432; Apr. 7, 1979, 54-41557
Int. Cl.³ E01G *5/14*
U.S. Cl. 405—138 **14 Claims**

1. A method for advancing two cylindrical bodies underground wherein a second cylindrical body is laid in the rear of a first cylindrical body; an anchor body is disposed underground in front of the first cylindrical body; an anchor member is arranged to have one end thereof anchored in said anchor body and to have the other end project from the rear end of the

second cylindrical body; an advancing jack is disposed in the rear of the second cylindrical body and is connected to the rear part thereof; a thrusting jack is operated to move forward the first cylindrical body with a required reaction force obtained



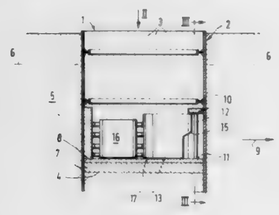
from a sum total of the reaction forces of said anchor body and said second cylindrical body; and then the thrusting jack is released and said advancing jack is operated to move the second cylindrical body forward with a required reaction force obtained from the reaction force of said anchor body.

4,388,021

METHOD OF AND DEVICE FOR MAKING CANALIZATION BY ADVANCING UNDER PRESSURE A STRING OF SEWER PIPES

Richard Weiss, Endstrasse 7, 4130 Moers, Fed. Rep. of Germany

Filed Aug. 26, 1981, Ser. No. 296,520
Int. Cl.³ E03F *3/06;* **E21D** *1/00*
U.S. Cl. 405—184 **1 Claim**



1. A method of making canalization by advancing under pressure a string of sewer pipes in a water-conductive ground defining an underground water level, comprising the steps of forming in the ground at least one shaft or trench having a floor by driving sheet piling excavating sod between the sheet piling; feeding water in the excavation to maintain the original water level; laying a layer of concrete setting underwater on the floor; after setting of the concrete layer, removing water from the shaft or trench; thereafter forming a concrete base tub on the layer of concrete for supporting respective sewer pipes; forming a concrete front partition at one side of the shaft or trench through which the consecutive sewer pipes are to be advanced, the partition having a starting opening communicating with the base tub, the opening being provided with a sealing ring of a resilient material on its inner surface; inserting a tubular cutting member snugly fitting the sealing ring into the opening and closing the communication between the interior of the cutting member and the shaft; then lifting a portion of the sheet piling in the range of the starting opening; and pressing consecutive sewer pipes against the rear end of the cutting tool in the direction of advancement.

4,388,022

FLEXIBLE FLOWLINE BUNDLE FOR COMPLIANT RISER

Larry L. Gentry, Sunnyvale; Herbert H. Moss, Cupertino, both of Calif.; Narayana N. Panicker, Grand Prairie, Tex.; William T. Wada, Sunnyvale, Calif., and Irvin R. Yancey, Irving, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,324
Int. Cl.³ F16L *1/04;* **B63B** *35/00*
U.S. Cl. 405—195 **12 Claims**



1. In a marine compliant riser system wherein a catenary flexible flowline bundle is connected between a surface facility and a submerged lower riser section, the improvement which comprises:

a flexible flowline bundle having means for attaching a plurality of flexible conduits at a bottom portion of the surface facility for rotation relative to the surface facility, the conduits being attached thereto at radially disposed spaced attachment points and depending therefrom at a substantially vertical catenary angle of departure;

a plurality of spreader beams adapted for holding the flexible conduits in parallel spaced-apart relationship and comprising guide means for loosely retaining each of said flexible conduits in substantially linear array while permitting longitudinal movement thereof;

means for maintaining the spreader beams longitudinally spaced along the flowline bundle; and

means for connecting the parallel-spaced conduits at a substantially vertical catenary departure angle to corresponding points on the submerged lower riser section in linear array to establish fluid communication through the rigid riser section and flexible flowline.

4,388,023

TRUSS ARRAY FOR SUPPORTING DEVICES WITHIN A FLUID MEDIUM

Peter R. Cochrane, Kingston, Mass., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Apr. 3, 1981, Ser. No. 250,781
Int. Cl.³ B63B *21/00*
U.S. Cl. 405—195 **16 Claims**

1. An apparatus for supporting within a fluid medium of known density one or more devices in a horizontal position, said apparatus comprising:

a first mass;

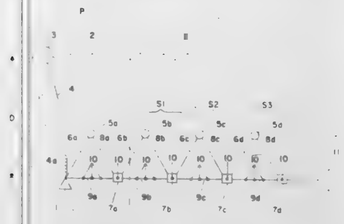
first means for supporting said first mass at a given position within the fluid medium;

a second mass having a density less than the known density of the fluid medium;

second means for connecting said second mass to said first mass;

a third mass having a density greater than the known density of the fluid medium;

third means for connecting said third mass to said second mass and said first mass;



means for deploying said apparatus; and

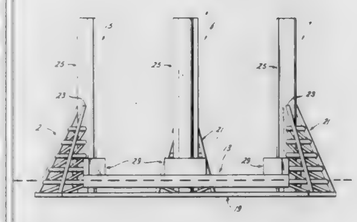
fourth means for supporting the devices, said fourth means being connected between said first mass and said means for deploying.

4,388,024

SUPPORT STRUCTURE FOR OFFSHORE PLATFORMS

Edward D. Dysarz, Houston, Tex., assignor to James G. Brown & Associates, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 73,308, Sep. 7, 1979, and Ser. No. 94,360, Nov. 15, 1979, which is a continuation-in-part of Ser. No. 73,308,. This application Jul. 9, 1980, Ser. No. 167,041
Int. Cl.³ E02B *17/02*
U.S. Cl. 405—198 **6 Claims**



1. A rig for use in supporting and using equipment above the ocean bottom, comprising:

a body;

leg means connected to said body for supporting said body above such ocean bottom;

said leg means including elevation means for elevating said body above such ocean bottom and connection means for connecting said elevation means to said body and at least three legs, each of said legs having

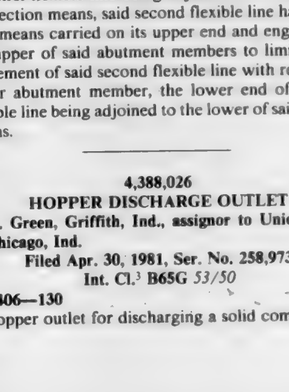
a first end and a second end, said legs having a first portion of variable cross-sectional area extending from said first end to a first position intermediate to said second end and a second portion of variable cross-sectional area extending from said first intermediate position to a second position intermediate to said second end and a third portion being of substantially constant cross-sectional area from said second intermediate position to said second end, the cross-sectional area of said first portion being greatest at said first end and decreasing moving from said first end to said first intermediate position, the cross-sectional area of said second portion being greatest at said first intermediate position and decreasing moving from said first intermediate position to said second end, the cross-sectional area of said third portion being no greater than the cross-sectional area of said second portion, the cross-sectional area of said second portion being no greater than the cross-sectional area of said first portion.

4,388,025

GUARD FOR OFFSHORE STRUCTURE

Orde R. Evans, Lafayette, La., assignor to Oreco III, Inc., Lafayette, La.

Filed Jun. 2, 1980, Ser. No. 155,060
Int. Cl.³ E02B *3/22;* **B63B** *21/00*
U.S. Cl. 405—212 **10 Claims**



1. A guard device for disposition adjacent an offshore structure to protect said structure from impact, comprising:

a generally tubular body of resilient material comprising a stack of elastomeric rings disposed in longitudinally aligned, end-to-end relation;

a pair of connection means adjoined to said positioning means and disposed adjacent axially opposite ends of said tubular body for connection to said offshore structure; and

means for applying a longitudinal compressive load to said stack of rings and including flexible positioning means extending longitudinally through the bore of said tubular body and a pair of abutment members abutting respective upper and lower ends of said stack of rings, said positioning means being connected to said abutment members and adapted to urge said abutment members longitudinally toward each other, said positioning means comprising first and second generally parallel flexible lines, said first flexible line having first stop means carried on its lower end and engageable with the lower of said abutment members to limit upward movement of said first flexible line with respect to said lower abutment member, the upper end of said first flexible line being adjoined to the upper of said connection means, said second flexible line having second stop means carried on its upper end and engageable with the upper of said abutment members to limit downward movement of said second flexible line with respect to said upper abutment member, the lower end of said second flexible line being adjoined to the lower of said connection means.

4,388,026

HOPPER DISCHARGE OUTLET

Daniel R. Green, Griffith, Ind., assignor to Union Tank Car, East Chicago, Ind.

Filed Apr. 30, 1981, Ser. No. 258,973
Int. Cl.³ B65G *53/50*
U.S. Cl. 406—130 **6 Claims**

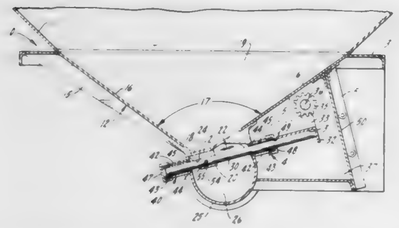
1. A hopper outlet for discharging a solid commodity comprising:

A. means defining a sloping surface that terminates adjacent a discharge slot;

B. an outlet gate below said sloping surface movable along a predetermined path to open and close said slot, there being an opening passing through said gate, said opening extending generally parallel to said path;

C. an elongated gate operating member extending through said opening and protruding beyond the opposite sides of said gate, bearing means supporting said operating member on opposite sides of said gate, a rack attached to said operating member and a pinion meshing with said rack for causing movement of said operating member along said path when said pinion is rotated;

D. means for releasably attaching said gate to said operating member comprising a first hole through said gate intersecting said opening, a second hole through an intermediate portion of said operating member, said first and second holes being aligned in said opening and being generally perpendicular to said path, a pin movable in a direction generally perpendicular to said path passing through said first and second holes for attaching said first and second holes for attaching said gate to said operating member, and means releasably holding said pin in said first and second holes; and



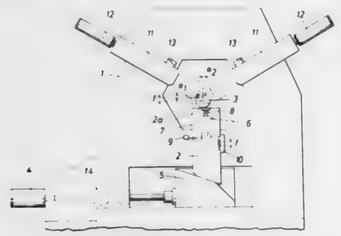
E. means defining an enclosed elongated trough beneath said gate, said pin being removable from one of the ends of said trough, whereby removal of said pin and subsequent movement of said operating member out of said opening permits said gate also to be removed through one of the ends of said trough.

4,388,027

PROCESS FOR MILLING LONG WORKPIECES

Gottfried Blaimschein, Steyr, Austria, assignor to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Gesellschaft m.b.H., Steyr, Austria

Filed Sep. 11, 1980, Ser. No. 186,112
Claims priority, application Austria, Oct. 16, 1979, 6722/79
Int. Cl.[3] B23B *5/18;* **B23C** *3/06*
U.S. Cl. 409—131 **5 Claims**



1. In a process of subjecting a long workpiece to a preliminary rough-milling operation causing distortion of the long workpiece by a plastic deformation and a subsequent finish-milling operation while supporting the workpiece near the center of its length, the improvement of

(a) initially holding the rough-milled workpiece in a position wherein it has a free sag near the center of its length, the free sag causing an elastic deformation of the long workpiece

(b) determining the extent of the free sag, and

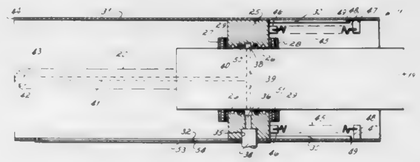
(c) supporting the workpiece near the center of its length sufficiently to eliminate solely the elastic deformation and without eliminating the distortion of the long workpiece while finish-milling the workpiece.

4,388,028

SPLASH GUARD

Michael L. Bodin, 859 Old Mill Dr., Loveland, Ohio 45140

Filed Dec. 29, 1980, Ser. No. 221,345
Int. Cl.[3] B23C *9/00;* **B23B** *47/00*
U.S. Cl. 409—136 **6 Claims**



1. A splash guard for use in combination with a rotary tool having coolant flow passages extending through the tool to the tool cutting edges, said splash guard comprising

a non-rotatable coolant flow inducer ring adapted to be mounted over a rotatable portion of said tool,

thrust rings located upon opposite sides of said coolant flow inducer ring for securing said non-rotatable inducer ring to said rotary tool,

means for fixedly securing said thrust rings to said rotatable portions of said tool,

a coolant flow conduit connected to said inducer ring for supplying liquid coolant to said inducer ring,

coolant flow passageway means extending through said inducer for connecting said coolant flow conduit to the coolant flow passages in said rotary tool,

sealing means for forming a liquid seal between the non-rotatable inducer ring and said rotatable tool,

guide means extending generally longitudinally from one side of said inducer ring,

a splash shield sleeve mounted over said inducer ring and said guide means, said sleeve being longitudinally slideable relative to said inducer ring and guide means, and

spring means connected to said inducer ring and to said sleeve for biasing said sleeve to an extended position in which said sleeve extends longitudinally over the cutting edge of said rotary tool, said spring means permitting said sleeve to be forced by contact with a workpiece longitudinally away from said cutting edge as said rotary tool cuts into said workpiece.

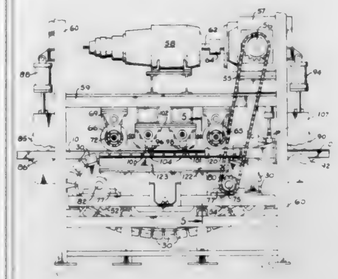
4,388,029

CONDITIONING APPARATUS FOR CASE METAL BARS

Helmut E. Durr, Dunwoody, and George E. Mock, Duluth, both of Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,264
Int. Cl.[3] B23C *1/22;* **B65G** *17/10*
U.S. Cl. 409—295 **6 Claims**

6. Conditioning apparatus for a cast metal bar comprising an endless conveyor; means for driving said endless conveyor along a circuitous path that extends generally linearly through a bar conditioning station; means for holding a cast metal bar on said endless conveyor at the bar conditioning station without substantial relative movement between the bar and bar supporting portions of said conveyor at the bar conditioning station; means for trimming a cast metal bar supported on said endless conveyor at the bar conditioning station; a pair of deflector plates straddling said conveyor at the bar conditioning station with each deflector plate mounted along an incline overlaying a portion of said endless conveyor; and means for flushing bar trimmings from a cast metal bar supported on said conveyor onto said deflector plates and from said endless conveyor at the bar conditioning station.
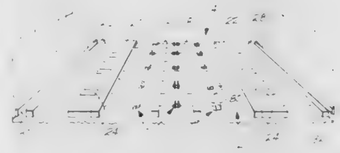


4,388,030

ENDWISE PUSHDOWN GUIDE AND LATERAL RESTRAINT FITTING FOR CARGO

Douglas E. Skaale, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 24, 1980, Ser. No. 220,017
Int. Cl.[3] B60P *1/64;* **B64C** *1/20, 1/22*
U.S. Cl. 410—69 **11 Claims**



1. An endwise pushdown guide and lateral restraint fitting for cargo, comprising:

a base;

two juxtaposed laterally spaced generally upright blades for laterally restraining cargo, said blades being pivotally mounted on said base;

said base supporting two laterally spaced juxtaposed pivot pins;

each blade being mounted to pivot on a respective pivot pin remote therefrom;

a coil spring to normally retractably secure said blades in an upper pivotal position in a direction upwardly from said base, said spring having one end associated with one blade and the other end associated with the other blade so as to bias said blades toward and in said upper pivotal position;

each respective blade being pivotal toward said base from said upper position when a force acting on and through a respective blade is applied to said coil spring through the association of the blade and spring; and

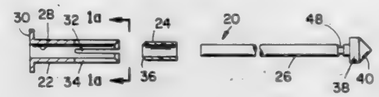
means on each respective blade to receive said force and to direct a downward component of said force in a direction transverse to the force and downwardly toward said base to pivot the respective blade toward the base and below the force source.

4,388,031

BLIND FASTENER DEVICE

Earl T. Rodgers, 3172 Meadowbrook Dr., Concord, Calif. 94523

Filed Oct. 3, 1980, Ser. No. 193,654
Int. Cl.[3] F16B *13/06*
U.S. Cl. 411—43 **6 Claims**



1. A fastener device for installation in at lease one structural member to hold it to another member or to provide an anchor therein, said device comprising:

a main rivet body formed of relatively soft and readily bendable material having an enlarged head at one end with a central bore and a series of spaced apart slot means extending axially from its other end throughout a substantial portion of the axial extent of said rivet body to form bendable sectors;

an elongated pin substantially longer than said rivet body, having a shank with a constant diameter and an enlarged integral pin head at one end having a bearing shoulder extending at substantially right angles to the longitudinal axis of said pin, said pin shank being adapted to extend through said central bore of said rivet body;

a generally cylindrical sleeve shaped member of readily, deformable flowable material surrounding said pin located between and axially aligned with said bendable sectors of said rivet body and said pin head bearing shoulder, the diameter of said bearing shoulder being substantially at least as great as the outer diameter of said sleeve shaped member, said sleeve shaped member having an external frusto conical surface on one end adjacent to and engageable with an internal frusto conical surface at the end of said rivet body having said slot means, said sleeve shaped member being adapted to press against and splay apart said bendable sectors by becoming progressively larger in diameter when compressed by axial force exerted against one end of said sleeve member by said pin head;

whereby said bendable sectors are caused to extend radially from said rivet body and pressed generally flat against the inner surface of said structural member.

4,388,032

LIFTING AND STOWAGE SYSTEM

Robert A. Stohler, Paulsbo, and Benjamin D. Murray, Bremerton, both of Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 30, 1980, Ser. No. 202,213
Int. Cl.[3] B60P *7/10;* **B63B** *25/22;* **B65G** *57/30*
U.S. Cl. 414—95 **2 Claims**

1. A lifting and stowage system comprising:

(a) a carriage, said carriage including a snatch block pin and a buffer striker;

(b) first and second strongbacks, one end of each of said first and second strongbacks rigidly connected to said carriage in spaced apart and parallel relationships, said first strongback including first and second lifting pins, said second strongback including third and fourth lifting pins;

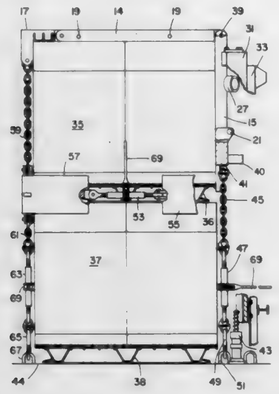
(c) first and second guide rails, said first and second guide rails mounted in a vertical spaced apart, parallel relationship;

(d) first and second rollers, said first and second rollers

rotatably mounted on said carriage and respectively in engagement with said first and second guide rails;

(e) lifting means for raising and lowering said carriage by engaging said snatch block, said lifting means including a cable fixed at one end, drive means connected to the other end of said cable, means for supporting said cable in the horizontal position above said carriage, a snatch block including a pulley and a hook, said pulley being supported by said cable, whereby said snatch block is lowered when said drive means releases said cable and is raised when said drive means tightens said cable;

(f) a buffer mounted on a deck, said buffer striker positioned



to engage said buffer when said carriage is lowered to its lower most position;

(g) a first and a second container, said first container connected to said first, second, third and fourth lifting pins and raised to an elevated position by said carriage, said second container being positioned under said first container and said first container being loaded onto said second container; and

(h) tie down means for tieing down said first and second containers, said tie down means including a plurality of chain and load binders for connecting said first and second strongbacks and said carriage to said deck to retain said first and second containers in a fixed position.

4,388,033

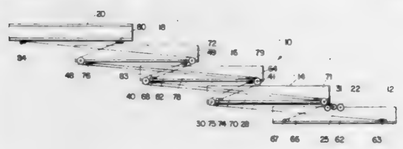
SHUTTLE ASSEMBLY

George R. Pipes, Salt Lake City, Utah, assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 16, 1981, Ser. No. 244,495

Int. Cl.³ B66F *9/14*

U.S. Cl. 414—282 **6 Claims**



1. In a shuttle assembly operable between a retracted condition and an extended condition to move a load, comprising a stationary element; a plurality of stacked elongated elements movable relative to one another in a generally horizontal plane, said movable elements comprising one or more intermediate elements and a load engaging element; drive means interconnecting said stationary and movable elements and operable to move said movable elements telescopically to extend said load engaging element to a position remote from said stationary element; substantially straight guide channel means formed in said stationary and intermediate elements parallel to the direction of motion of said movable elements; first and second rollers mounted adjacent the ends of each of said intermediate and load engaging elements for rotation within the guide channel means of an adjacent element; and third and fourth intermediate rollers mounted on each of said intermediate and load engaging elements between said first and second rollers for rotation within the guide channel means of an adjacent element; the improvement wherein the first and second rollers of at least one of said movable elements are offset upwardly in relation to the remaining rollers on said element; and the guide channel means in which said offset rollers are received are flared upwardly adjacent the ends thereof.

4,388,034

PROCESSING APPARATUS COMPRISING A CASSETTE MEMBER TEMPORARILY SWINGABLE TO VERTICALLY HOLD A PLURALITY OF SUBSTRATES

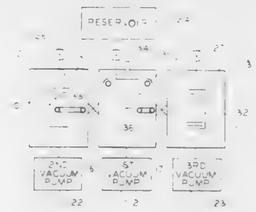
Nobuyuki Takahashi, Fuchu, Japan, assignor to Anelva Corporation, Tokyo, Japan

Filed Jul. 29, 1981, Ser. No. 287,924

Claims priority, application Japan, Jul. 30, 1980, 55-104532

Int. Cl.³ C23C *13/08*

U.S. Cl. 414—331 **5 Claims**



1. A processing apparatus comprising a processing chamber defining a processing hollow space, means coupled to said processing hollow space for processing a sheet-like unprocessed substrate to provide a processed substrate, an inlet chamber defining an inlet hollow space, a first cassette member for holding a stack of unprocessed substrates in said inlet hollow space with each unprocessed substrate kept substantially parallel, means for transferring one substrate from said stack at a time into said processing chamber, an outlet chamber defining an outlet hollow space, means for transferring the processed substrate from said processing hollow space into said outlet hollow space, and a second cassette member for receiving the transferred substrate in said outlet hollow space as a stack of processed substrates with each processed substrate kept substantially parallel, wherein the improvement comprises moving means coupled at least to a selected one of said first and said second cassette member for reversibly moving the selected cassette member between a home position and a temporary position, said selected cassette member holding the substrates with each substrate kept substantially horizontal and vertical when moved to said home and said temporary positions, respectively.

4,388,035

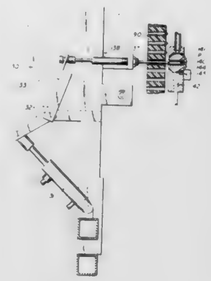
DIBBLE TUBE SOIL PLUG PLANTER

David W. Cayton; Errol C. Armstrong, and Angus B. MacKenzie, all of Salinas, Calif., assignors to Bud Antle, Inc., Salinas, Calif.

Continuation of Ser. No. 62,667, Aug. 1, 1979, Pat. No. 4,294,179. This application May 8, 1981, Ser. No. 261,766

Int. Cl.³ B65G *47/52;* **A01C** *11/00*

U.S. Cl. 414—417 **1 Claim**



1. The apparatus for discharging soil plugs having seedling growing therein comprising: rigid carrying trays defining plug receiving apertures extending between the top and bottom thereof for forming successive columns of plant plugs; at least one plug comprising intermixed soil and binder having a seedling plant disposed therein, each said plug within a supporting aperture in said rigid carrying tray having a bottom soil portion exposed on one side of said rigid carrying tray, a top and plant protruding portion on the other side of said rigid carrying tray and having a plug longitudinally extending between said bottom and top with said rigid carrying tray forming the sole support for said plug; paired and opposed tray support members for holding said rigid carrying tray vertically at the edges thereof only and conveying said rigid carrying trays along a path; conveyor means for restricting the path of travel of said rigid carrying tray between said support members to thereby transport successive apertures containing plugs for extraction at an extraction station; at least one receiving station juxtaposed to said extraction station for receiving from said rigid carrying tray said plugs, said receiving station disposed to receive plugs from the top side of said rigid carrying tray; at least one plant discharging member for penetrating through the bottom side of defined plug receiving aperture in said rigid carrying tray and contacting said plug at said soil exposed portion to cause at least one plug to be dislodged from said defined plug receiving aperture of said rigid carrying tray and discharged from its respective defined plug receiving aperture in said rigid carrying tray to and towards said receiving station; and means for vertically registering said rigid carrying tray in successive columns to said extraction station operatively connected to said conveyor means whereby plugs from said successive columns can be discharged from said rigid carrying tray, said rigid carrying tray forming the sole supporting substrate between said paired and opposed tray support members for the conveyance and discharge of plugs at said extraction station to said receiving station.

4,388,036

TOY CAR AND ROADBED UNIT

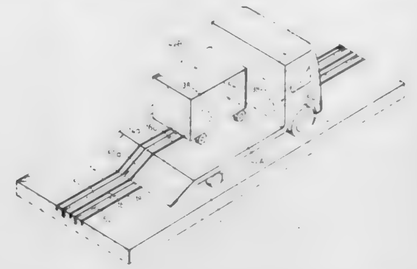
Shozo Okamoto, Tokyo, Japan, assignor to Yonezawa Toys Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1980, Ser. No. 210,157

Claims priority, application Japan, Nov. 28, 1979, 54-153901; Nov. 28, 1979, 54-153902; Nov. 28, 1979, 54-153903; Nov. 28, 1979, 54-153904

Int. Cl.³ B60P *3/06;* **B60L** *15/32*

U.S. Cl. 414—537 **9 Claims**



1. A toy car and road bed unit comprising a road bed having at least one set of three conductive paths running in parallel uniform-spaced relationship to each other, a guide channel located between the center one of the conductive paths and each of the other conductive paths, a DC power source having a center terminal connected to the center one of the conductive paths and a positive and negative terminal selectively connected to each of the other conductive paths, to form two tracks having the center conductive path in common, at least one toy car, each car having collector means depending therefrom and spaced for contact with the center conductive path and one of said other conductive paths and a pin adapted to enter into said channel associated with said track.

8. The unit as claimed in any one of claims **1** to **5** wherein the toy car adapted to run on the road bed comprises a parent toy car having a car body which extends over two electric tracks and having collectors for running along only one electric track, said parent toy car being provided on the body with two auxiliary conductive paths forming an auxiliary track and a baby toy car removable from the parent car adapted to run on the auxiliary track.

4,388,037

HOIST ACCESSORY FOR PALLET TRUCKS

Alfred Suarez, 3286 Woody La., San Jose, Calif. 95132

Filed Feb. 5, 1981, Ser. No. 231,604

Int. Cl.³ B66F *9/19*

U.S. Cl. 414—607 **8 Claims**

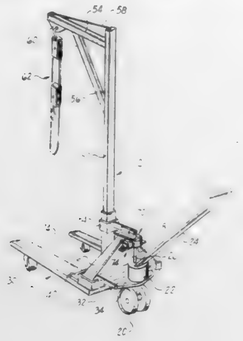
1. Hoist accessory apparatus for pallet trucks and the like of the type having a pair of horizontally extending forks extending in one direction relative to an upstanding shroud and a tongue portion extending in the opposite direction relative to the shroud, comprising:

means forming a base for resting upon the forks of a pallet truck and including clamping means for clamping the base to the shroud of the pallet truck;

hoist means;

support means affixed to said base and extending upwardly to support said hoist means above said forks; and

fastening means for securing said support means to the forwardly extending tongue of the pallet truck, said fastening



means acting in combination with said clamping means to rigidly secure said hoist apparatus to said pallet truck.

4,388,038

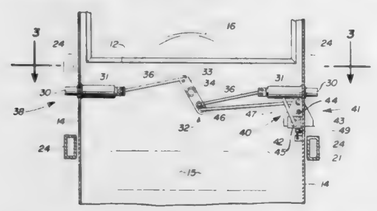
AUTOMATIC LOCKING PIN RETRACTION MECHANISM

Lonny R. Freitag, Lancaster, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Apr. 22, 1981, Ser. No. 256,455

Int. Cl.³ E02F *3/16*

U.S. Cl. 414—685 **10 Claims**



1. In a loader having a mobile frame, including upwardly extending, laterally spaced side members; a boom structure, including a pair of arms pivotally mounted on said frame such that each of said pair of arms is moveable along a generally vertical path adjacent a corresponding side member; power means operatively associated with said boom structure for raising and lowering said arms along said path of movement; a pair of locking pins, each respective said locking pin being mounted on a corresponding said side member adjacent the path of movement of the respective said boom arm, each said locking pin being positionable between a retracted position in which said locking pin is retracted within the respective said corresponding side member out of said path of movement of said boom arm and an extended position in which said pin is projected from said side member into said path of movement to be engageable with the respecitve said boom arm, said boom arms being supportable on said locking pins when said locking pins are in said extended position to prohibit downward movement of said boom arms below said locking pins; and means interconnecting said locking pins for simultaneously actuating the movement of said pins between said retracted position and said extended position, the improvement comprising:

automatic retraction means mounted on said side members below at least one of said locking pins and operatively connected to said means for simultaneously actuating said locking pins for automatically retracting said locking pins under conditions where said locking pins are in said locking position, said boom arms are positioned below said locking pins and said boom arms are moving upwardly toward engagement with said locking pins, said automatic retraction means retracting said locking pins before said boom arms can move upwardly into engagement with said locking pins.

4,388,039

TUBE FEEDING DEVICE

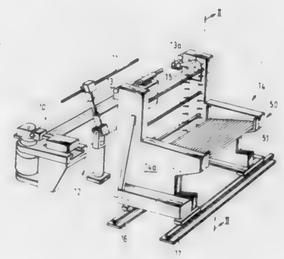
Rigobert Schwarze, Olpener Str. 460-474, 5000 Köln 91, Fed. Rep. of Germany

Filed Oct. 27, 1980, Ser. No. 201,323

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1979, 2943769

Int. Cl.³ B65G *47/06*

U.S. Cl. 414—748 **12 Claims**



1. A tube feeding device, particularly for a bending machine, comprising a tube magazine where tubes are positioned in a stock side by side and upon each other, said magazine having a bottom portion; means for receiving tubes from said tube magazine; means for removing tubes from said tube magazine positioned in said bottom portion and including a recess to receive an individual tube, said recess extending in the direction of elongation of the tubes located in said tube magazine, carriage means positioned in said bottom portion and provided with at least one drive motor adapted to move the carriage means towards and away from said tube receiving means in a direction transverse to said direction of elongation of the tubes, said tube receiving means being located outside said tube magazine, said tube receiving means and said tube removing means being two units forming mirrow images of each other and being spaced from one another at a distance corresponding to the length of the tubes to be treated, each of said units having an inner lateral wall facing the inner lateral wall of another unit, each unit further comprising two opposite end walls projecting between said inner lateral walls and forming a front bearing surface and a rear bearing surface for the tubes located in said tube magazine; and guide rails, said units having wheels being arranged to move on said guide rails, each unit being provided with a handle, which drives a gear which in turn cooperates with a rack positioned on one of the guide rails so as to adjust said distance for a predetermined length of the tubes to be treated.

4,388,040

ROTARY FLUID PUMP

Hiroshi Sakamaki, Utsunomiya, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 212,960

Claims priority, application Japan, Dec. 14, 1979, 54-172389[U]; Dec. 14, 1979, 54-172392[U]

Int. Cl.³ F03B *11/00;* **F04D** *29/04*

U.S. Cl. 415—174 **11 Claims**

1. A rotary fluid pump comprising:

a rotary shaft;

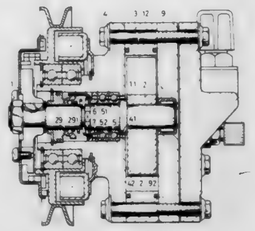
a front housing;

a center housing;

a rear housing;

a rotor having vanes adapted to be rotated by said rotary shaft in a space defined by said front housing, said center housing and said rear housing, said rotary shaft being rotatably supported at both ends thereof;

bearing means through which said rotary shaft is coupled to said front housing; said bearing means comprising two ball bearings each having inner and outer races; widths, in an axial direction of said rotary shaft, of confronting sides of said inner races being different from widths of confronting sides of said outer races, respectively;



first means for fixedly securing said inner races to said rotary shaft by tightening said inner races from opposite outer sides in the axial direction;

second means for fixedly securing said outer races to said front housing by tightening said outer races from opposite outer sides in said axial direction;

said two ball bearings being tightened by said first and second securing means to prevent axial displacement of said rotor and rotary shaft when a thrust force is applied thereto.

4,388,041

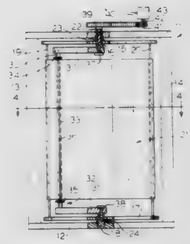
ROTATING SAIL FLUID CURRENT MOTOR

Ralph Dorr, 316 Southland Dr., Danville, Va. 24541

Filed Sep. 8, 1980, Ser. No. 184,778

Int. Cl.³ F03D *3/02*

U.S. Cl. 416—119 **9 Claims**



1. A fluid-powered motor, comprising:

(a) outer frame means adapted for fixed placement in a fluid stream and further adapted for mounting a selected number of inner frames rotatable about an axis passing through the outer frame means and located midway between and parallel to a pair of opposed sides of each said inner frame;

(b) a selected number of flexible, rectangular sails;

(c) a number equal to said selected number of inner frames, each said inner frame having a central axis passing through said outer frame means and located on the inner frame midway between and parallel to a pair of opposed sides thereof and comprising the axis about which each such inner frame is rotatably mounted on said outer frame and each said inner frame pivotally supporting on and extending between said opposed sides a respective said sail widthwise by the ends thereof with some predetermined slack and oriented for being operated on by said fluid;

(d) sail guide means adjustably secured to and positionable relative to said outer frame means and within the space in which said number of inner frames rotate and providing a linear guide surface spanning and continuously engaging the width of each said sail intermediate the length thereof without obstructing rotation of said number of inner frames whereby with said outer frame means appropriately fixed in a selected stream of fluid moving in a given direction, said guide means is adapted to be adjustably positioned with respect to said outer frame means to control the curvature and area of each sail exposed to particular portions of said fluid in various rotative positions of each respective said inner frame thereby with said guide means fixed in an optimum position enabling constantly changing portions of the surfaces and sides of each said sail under the influence of the force of said fluid to cyclically curve and thereby drive and rotate each said inner frame; and

(e) drive apparatus connected to be driven by each said inner frame during rotation thereof.

4,388,042

ROTOR FOR TURBO ENGINES

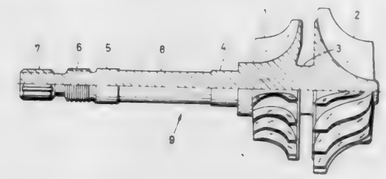
Thomas Weber, Oberursel, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed May 29, 1980, Ser. No. 154,529

Claims priority, application Fed. Rep. of Germany, May 29, 1979, 2921704

Int. Cl.³ F01D *5/34*

U.S. Cl. 416—198 A **1 Claim**



1. A rotor for gas turbine machines wherein the turbine machines operate at high speeds and temperatures, the rotor comprising:

a shaft having first and second ends;

a turbine vane wheel consisting of cast, unmachined vanes formed integrally with the shaft by virtue of being cast therewith and projecting radially from the shaft adjacent the first end thereof;

a compressor vane wheel consisting of cast, unmachined vanes formed integrally with the shaft by virtue of being cast therewith and projecting radially from the shaft at a location spaced from and inboard of the turbine vaned wheel;

a sealing surface disposed between the vaned wheels, the sealing surface being integral with the shaft by virtue of being cast therewith and being machined to provide a smooth surface;

a first bearing surface disposed adjacent to and inboard of the compressor vane wheel, the first bearing surface being integral with the shaft by virtue of being cast therewith and being machined to provide a smooth surface;

a second bearing surface spaced from the first bearing surface, the second bearing surface being integral with the shaft by virtue of being cast therewith and being machined to provide a smooth surface;

a helical thread adjacent to and outboard of the second bearing surface, the helical thread having a machined surface, and

a spline positioned adjacent to the helical thread and at the

second end of the shaft, the spline having a machined surface for receiving a gear;

whereby,

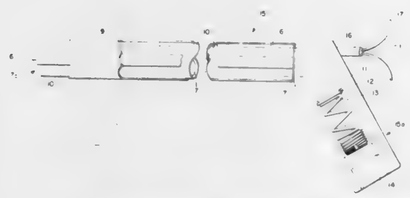
a unitary rotor made from a single unit of material is provided, which rotor is relatively inexpensive to manufacture and withstands high thermal stress and high mechanical stress.

4,388,043

CONDUCTIVITY DEPENDENT PUMP AND PROCESS CONTROL

Gunther W. B. Preiss, Fremont, Calif., assignor to Trevex Corporation, Hayward, Calif.

Filed Dec. 21, 1981, Ser. No. 332,862
Int. Cl.³ F04B 49/06
U.S. Cl. 417—36 **7 Claims**



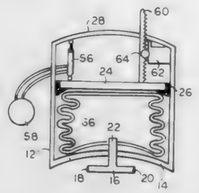
1. A device for activating or inactivating a liquid pump on the basis of the electrical conductivity of a liquid, the device comprising, in combination, a housing having a passageway through which a liquid can flow, a pair of electrodes disposed about the passageway, means for connecting the passageway to a liquid pump and means for connecting the electrodes to a conductivity-dependent pump activation means in communication with the pump, the pair of electrodes comprising a generally tubular outer electrode coaxially disposed about a generally tubular inner electrode, the electrodes being separated by a liquid conductivity measuring chamber, and the inner electrode including an opening for initial liquid contact and an opening adapted to permit liquid communication through the tubular inner electrode and the conductivity measuring chamber.

4,388,044

WATER STORAGE TANK

Paul Wilkinson, Rte. 4, Asheville Hwy., Knoxville, Tenn. 37914

Filed Aug. 1, 1980, Ser. No. 174,614
Int. Cl.³ F04B 49/08
U.S. Cl. 417—38 **8 Claims**



1. A liquid delivery system for pumping a liquid from a supply source to a storage tank, and continuously maintaining said liquid in said storage tank under pressure within a selected range of pressures comprising:

a storage tank comprising an end wall and side walls defining a liquid storage container, said liquid storage container having a cross-section of a selected shape and selected area extending between a first and farther portion, and a travel axis perpendicular to and extending the length of said selected cross-section, said tank further including liquid receiving and discharging means connected to said end wall;

a plunger having a first side and a second side, and an outside shape corresponding to said selected cross-section for providing a sliding fit of said plunger within said liquid storage container along said travel axis and between said first and farther portions such that said first side contacts said liquid contained therein and encloses said liquid storage container so that the volume of said liquid storage container is reduced as said plunger moves from said first portion to said farther portion, and wherein the area of both said first and second sides of said plunger which is perpendicular to said travel axis is equal to said selected area;

an end member secured to said side walls to provide an air tight seal therebetween such that compressed air between said end member and said second side of said plunger provides a first biasing means for urging said plunger towards said farther portion;

a collapsible liquid impervious liner located within the liquid storage container and connected to said receiving and discharging means such that any liquid provided to said storage tank by said receiving means is contained completely within said liner;

second biasing means for urging said plunger towards said farther portion;

a pump to receive liquid from said supply source, and to force said liquid into said tank through said liquid receiving and discharging means such that said plunger is moved against said first and second biasing means from said farther portion towards said first portion; and

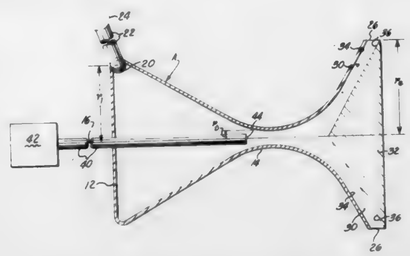
a pressure switch to turn said pump on and off as the pressure of said liquid in said tank varies between said selected range of pressure.

4,388,045

APPARATUS AND METHOD FOR MIXING AND PUMPING FLUIDS

Wayne E. Simon, Evergreen, Colo., assignor to Martin Marietta Corporation, New York, N.Y.

Continuation of Ser. No. 653,931, Jan. 30, 1976, abandoned. This application Apr. 21, 1978, Ser. No. 898,961
Int. Cl.³ F04F 5/42
U.S. Cl. 417—54 **2 Claims**



1. Apparatus for pumping a fluid at a pressure below ambient pressure, said apparatus comprising an enclosed fluid chamber having a funnel shaped first surface circumscribing a longitudinal axis and converging toward the longitudinal axis from a wide end to a narrow end, a throat comprising a second surface contiguous with said first surface and forming a venturi-like passage circumscribing said longitudinal axis and having a throat inlet disposed in fluid communication with said narrow end of said first surface, said second surface further forming a throat outlet, a diffuser having a diffuser inlet in fluid communication with the throat outlet of said venturi-like throat and a diffuser outlet at ambient pressure, means for introducing a pumping fluid tangentially into said chamber at the wide end thereof, said chamber and said throat configured to form the pumping fluid into a swirling vortex flow which advances toward said throat along a decreasing radius and at an increasing speed to form a low pressure region therein, low pressure fluid inlet means positioned on said longitudinal axis and in fluid communication with the low pressure region formed by the swirling vortex flow of pumping fluid so that the low pressure fluid is drawn through said low pressure fluid inlet and mixed with the pumping fluid to form a swirling flow of mixed fluid which advances through the venturi-like throat into the diffuser as a swirling flow, said diffuser comprising a first diverging surface contiguous with said second surface of said throat and a diffuser member disposed on said longitudinal axis in the path of the swirling fluid and including a second diverging surface facing and spaced apart from said first diverging surface and forming therewith a conical section for guiding a swirling flow of fluid from the outlet of the throat along a path of increasing radius to compress the mixed fluids to ambient pressure and blocking flow of ambient pressure through the diffuser to the throat.

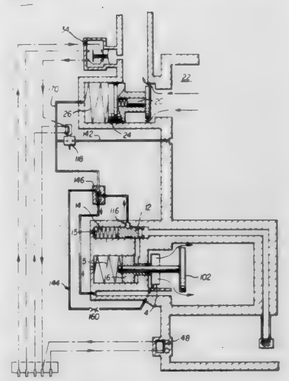
2. A method of pumping a low pressure fluid at a pressure below ambient pressure including the steps of introducing a pumping fluid tangentially into the wide end of an enclosed funnel-shaped chamber which has a longitudinal axis and converges to a narrow end in fluid communication with a venturi-like throat, forming the pumping fluid into a swirling vortex flow which advances toward the narrow end of the chamber and into the venturi-like throat along a path of decreasing radius and at an increasing speed to form a low pressure region therein, which low pressure is lower than the pressure of the low pressure fluid, positioning a low pressure fluid inlet at the low pressure region of said chamber and located on the longitudinal axis thereof so that the low pressure fluid is drawn into the low pressure region in said swirling vortex flow of pumping fluid and mixed with the pumping fluid to form a swirling flow of mixed fluids which advances as a swirling flow through the venturi-like throat and enters a diffuser as a swirling flow of fluid, guiding the swirling flow in the diffuser along a conical path of increasing radius while resisting flow of ambient pressure through the diffuser to the venturi-like throat to compress the mixed fluids to ambient pressure.

4,388,046

ROTARY COMPRESSORS

Edward Boller, Halesowen, England, assignor to Hydrovane Compressor Company Limited, Worcestershire, England

Continuation-in-part of Ser. No. 909,683, May 25, 1978, abandoned. This application May 7, 1980, Ser. No. 147,528
Claims priority, application United Kingdom, May 25, 1977, 22080/77; Jan. 9, 1978, 714/78
Int. Cl.³ F04B 49/02, 49/08, 49/10
U.S. Cl. 417—295 **3 Claims**



1. A rotary compressor of the oil sealed type having an air inlet, an air delivery passage, a delivery space and a compression space, including:

a servo valve;

an unloader valve including a piston and a spring and controlling the air inlet and actuated by said piston subject to a pressure controlled by said servo valve which in turn is acted on by compressor pressure opposing a second spring;

a minimum pressure valve including a third spring controlling the air delivery passage and opened by compressor pressure against said third spring and a restoring pressure;

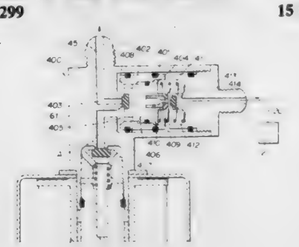
and venting means arranged to vent the delivery and compression spaces of the compressor and connected to a changeover valve operatively coupled to the pressure in a compressed air supply line to assume an on-load position when the said supply line pressure does not exceed a predetermined value greater than the normal working pressure, and to assume a no-load position when the said supply line pressure exceeds the said predetermined value, in which position it permits the venting means to vent the delivery and compression spaces, the compressor further including pressure sensitive switch means operably connected to said changeover valve so that when compressed air is being accepted by a load the changeover valve is in the on-load position and the servo valve and unloader valve modulate the inlet to maintain the nominal compressor delivery pressure with the venting means inoperative and the minimum pressure valve opened whereas when compressed air is not accepted the change-over valve assumes the no-load position, the minimum pressure valve closes the delivery, the venting means operates to vent the delivery and compression spaces, and the unloader valve opens to increase the compressor pressure when the latter sinks below a predetermined low value.

4,388,047

SOLENOID-OPERATED PUMP

Akira Mizuno, and Shigeo Suzuki, both of Fukuroi, Japan, assignors to Shizuoka Seiki Co., Ltd., Fukuroi, Japan

Filed Dec. 19, 1980, Ser. No. 218,381
Claims priority, application Japan, Dec. 22, 1979, 54-167205
Int. Cl.³ F04B 49/02; G05D 7/01
U.S. Cl. 417—299 **15 Claims**



1. A solenoid-operated group, comprising:

a pump body having a first passage extending therethrough, said first passage having a closeable port between the ends thereof;

a solenoid-operated actuator mounted in said pump body for pumping fluid through said first passage, said actuator being located upstream from said port;

fluid directing means comprising a directional control valve mounted on said pump body adjacent to said port, said directional control valve having a valve casing and a valve slide mounted for sliding movement in said valve casing, said valve slide having a first end wall and a second end wall at opposite ends thereof, said first end wall being disposed in opposing relationship to said port, said second end wall being disposed in opposing relationship to

an end wall of said valve casing, a first valve member supported on said first end wall of said valve slide and adapted to seat against and thereby close said port, said fluid directing means having a second passage branched from said first passage at a location upstream of said port, a second valve member in said second passage, said second valve member being mounted on said end wall of said casing, said valve slide having a valve element on said second end wall thereof and disposed in opposing relation to said second valve member and adapted to seat against said second valve member to close said second passage;

means for normally positioning said valve slide in a first position in which said first valve member seats against and closes said port so that said first passage is blocked and said valve element is spaced from said second valve member so that said second passage is open;

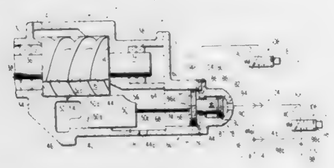
and means in said second passage for producing a change in the pressure of the fluid flowing therethrough in response to a change of the viscosity of the fluid and shifting said valve slide to a second position in which said first valve member is spaced from said port so that said first passage is open and said valve element is seated against said second valve member so that said second passage is blocked.

4,388,048

STEPPING TYPE UNLOADING SYSTEM FOR HELICAL SCREW ROTARY COMPRESSOR

David N. Shaw, Unionville, and Joseph A. L. N. Gagnon, Windsor Locks, both of Conn., assignors to Dunham Bush, Inc., West Hartford, Conn.

Filed Mar. 10, 1981, Ser. No. 242,100
Int. Cl.³ F04B *49/00*; F01C *1/16*
U.S. Cl. 417—310 **4 Claims**



1. A stepping type slide valve unloading system for a positive displacement helical screw rotary compressor, said compressor comprising:

a compressor casing provided with a barrel portion defined by intersecting bores with coplanar axes located between axially spaced end walls and having a low pressure suction port and a high pressure discharge port in communication with said bores at opposite ends of said barrel portion,

helical screw rotors having grooves and lands and being mounted for rotation within respective bores with the lands and grooves of respective rotors intermeshed,

an axially extending recess provided within the barrel portion of the casing and in open communication with said bores,

a slide valve member longitudinally slidable in said recess with the inner face of the slide valve member being complementary to the envelope at that portion of the bores of the casing structure confronted by the opening of the recess communicating with the bore portion of the case,

said slide valve member being in sealing relation with the confronting rotors,

at least a portion of the discharge port being located within the barrel portion of the casing with the slide valve member being movable between extreme positions with the end of the slide valve member proximate to the suction port variably closing off a portion of the recess in open communication with the suction port and functioning as a bypass for a gaseous working fluid,

a linear drive motor for said slide valve member,

said motor comprising a cylinder, a main drive piston sealably and slidably positioned within said cylinder and a piston rod connecting said piston to said slide valve member, said piston forming with said cylinder an inboard chamber on the side of said piston proximate to said slide valve member, and an outboard chamber on the opposite side thereof, and

means for supplying and relieving hydraulic fluid pressure to at least one of said chambers for shifting said slide valve member between extreme positions,

the improvement comprising:

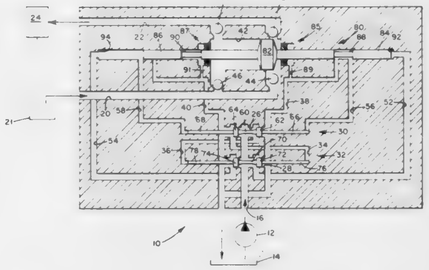
a stepping piston carried by said linear motor and including a portion shiftable between retracted and projected positions into and out of one of said chambers to physically abut said main drive piston and to stop said main drive piston at an intermediate position between the slide valve member extreme positions to thereby define with the main drive piston of said linear motor, three distinct capacity control step positions for said slide valve member.

4,388,049

FLUID SUPPLY SYSTEM USING ONE FLUID MEDIUM TO MOVE A SECOND FLUID MEDIUM

Ronnie F. Burk, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sep. 29, 1980, Ser. No. 191,964
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—396 **4 Claims**



1. A secondary fluid supply system connectible to a source of primary fluid, a first fluid reservoir of primary fluid, a second fluid reservoir of secondary fluid, and a secondary fluid function, said secondary fluid supply system comprising:

(a) a pump body;

(b) a main bore enclosed within said pump body having respective first and second ends;

(c) first and second bores enclosed within said pump body having respective first and second ends;

(d) an inlet into said pump body connecting said source of primary fluid to said first and second bores between said respective first and second ends thereof;

(e) first and second pilot passages enclosed within said pump body respectively connecting said first bore proximate said first end to said second end of said second bore, and said first bore proximate said second end to said first end of said second bore;

(f) first and second main passages enclosed within said pump body respectively connecting said second bore proximate said first end to said first end of said main bore, and connecting said second bore proximate said second end to said second end of said main bore;

(g) first and second control passages enclosed within said pump body respectively connecting said first and second ends of said first bore to said first and second main passages approximately at said ends of said main bore;

(h) first and second relief passages enclosed within said pump body respectively connecting said first ends of said first and second bores to said first main passage between said first control passage and said first end of said main bore and said second ends of said first and second bores to said second main passage between said second control passage and said second end of said main bore;

(i) a secondary fluid reservoir passage enclosed within said pump body connecting said second fluid reservoir to both said first and second ends of said main bore;

(j) a secondary fluid passage enclosed within said pump body connecting said secondary fluid pressure function to both said first and second ends of said main bore;

(k) first and second reservoir check valves respectively disposed in said reservoir passage proximate said first and second ends of said main bore for preventing secondary fluid from flowing from said main bore into said reservoir passage;

(l) third and fourth check valves respectively disposed in said secondary fluid pressure function passage proximate said first and second ends of said main bore for preventing secondary fluid from flowing from said secondary fluid pressure function into said main bore;

(m) a first spool valve positioned within said first bore and extending into both said first and second control passages, said first spool valve being movable in response to primary fluid in said second control passage to connect said primary fluid from said source to said second pilot passage and said second relief passage to said first pilot passage and in said first control passage to connect said primary fluid from said source to said first pilot passage and said second relief passage to said second pilot passage;

(n) a second spool valve positioned within said second bore and extending into both said first and second pilot passages, said second spool valve being movable in response to primary fluid in said second pilot passage to connect said source to said first main passage and said second relief passage to said second main passage and to primary fluid in said first pilot passage to connect said source to said second main passage and said first relief passage to said first main passage; and

(o) a free piston positioned within said main bore and extending into said first and second main passages, said free piston responding to pressurized primary fluid present in said first main passage to move from a first position connecting said first and second control passages to said first fluid reservoir and said second bore through a series of positions drawing fluid from said reservoir through said first reservoir check valve and supplying fluid from said main bore through said second outlet check valve while respectively blocking said first and second control passages from said first and second main passages to a second position respectively connecting said first and second control passages to said second bore and to said first fluid reservoir, said free piston responsive to primary fluid in said second main passage to move from said second position through a series of positions drawing fluid from said reservoir through said second reservoir check valve and supplying fluid from said main bore through said first outlet check valve to said first position.

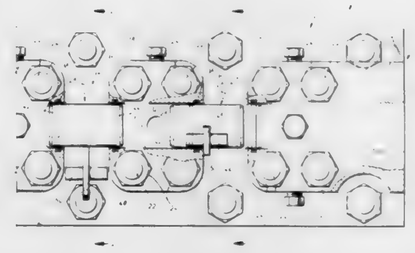
4,388,050

MANIFOLD UNIT AND ASSEMBLY AND FLUID END ASSEMBLY

Ronald A. Schuller, Tulsa, Okla., assignor to Geosource, Inc., Houston, Tex.

Filed Mar. 27, 1981, Ser. No. 248,494
Int. Cl.³ F04B *1/00*
U.S. Cl. 417—454 **18 Claims**

1. A suction manifold unit for mounting relatively to a pump fluid end in association with at least one further suction manifold unit to provide a suction manifold assembly for supplying fluid to suction cylinders of such a pump fluid end, the manifold unit having at least one supply duct leading to its interior, an outlet duct for leading fluid from the supply duct to a suction cylinder during use, and a supply conduit sealingly associated with the supply duct, the supply conduit being adjustable



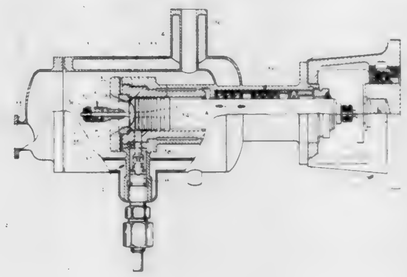
between a retracted position where it would be spaced from another manifold unit mounted relatively to such a pump fluid end, and an extended position for engaging sealingly with a corresponding supply duct of such a further manifold unit to place the manifold units in communication.

4,388,051

PISTON PUMP WITH INTAKE VALVE

Helmut Dresler, Trostberg, and Ernst Turnwald, Altenmarkt, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 10, 1981, Ser. No. 233,169
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005608
Int. Cl.³ F04B *7/00, 15/08*
U.S. Cl. 417—505 **5 Claims**



1. A piston pump comprising:

a cylinder;

a pumping piston member reciprocatable in said cylinder and having an intake stroke upon movement in one direction and a discharge stroke upon movement in the opposite direction;

an intake port formed in said cylinder and provided with an intake valve having

an intake valve member approached by said piston at the end of a discharge stroke, and

a spring biasing said valve member into a closed position,

a discharge port provided with a discharge valve whereby fluid is displaced from said cylinder through said discharge port during said discharge stroke; and

magnetic means providing a magnetic force between said intake valve member and said pumping piston member counter to the force of said spring only upon approach by said piston to said intake valve member at the end of a discharge stroke, thereby attracting said intake valve

member to open said intake valve temporarily by the magnetic force upon the inception of the intake stroke.

4,388,052

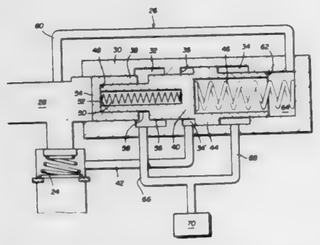
FIXED DISPLACEMENT PUMP WITH VARIABLE CAPACITANCE FLOW REGULATOR

Eugene L. Falendysz, Sr.; Eldon M. Brumbaugh, and Max R. North, all of Racine, Wis., assignors to J. I. Case Company, Racine, Wis.

Filed Mar. 26, 1981, Ser. No. 247,667

Int. Cl.³ F04B *39/00, 23/00;* **F16L** *55/04*

U.S. Cl. 417—540 **3 Claims**



1. In a fixed displacement fluid pump which is adapted for connection to a hydraulic circuit for supplying the fluid under pressure required by the hydraulic circuit and said pump having a fluid discharge chamber that is connected to said hydraulic circuit by a valve means, the improvement comprising:

a variable capacitance flow regulator connected to said fluid discharge chamber for absorbing the excess fluid flow from said pump which is not required by said hydraulic circuit, said variable capacitance flow regulator including a housing, a first piston slidably mounted within said housing for movement in response to variations in the fluid pressure in said hydraulic circuit and a first spring means mounted between one end of said housing and one end of said first piston, and means for communicating the fluid pressure from downstream of said valve means to said first piston for biasing said first piston against said first spring means to various positions within said housing depending upon the fluid pressure in said hydraulic circuit,

a second variable capacitance piston slidably mounted within said housing for independent movement relative to said first piston and a second spring means mounted between said first and second pistons, means for communicating the fluid pressure from said pump discharge chamber aganist one end of said second piston for biasing it against said second spring means and means for communicating the fluid pressure from said pump discharge chamber to said one end of said first piston, and said second piston being movable toward and away from said first piston depending upon the fluid flow demands of said hydraulic circuit and the fluid flow in said pump discharge chamber, thereby absorbing the fluid displacement from said pump which is not required by said hydraulic circuit.

4,388,053

FUEL FEED PUMP

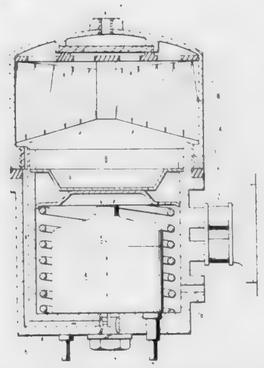
Günter Bartel, Stuttgart; Eckhard Patz, Waiblingen; Karl Koch, Fellbach; Georg Stern, Sindelfingen; Manfred Stotz, Aichwald, and Adolf Triffterer, Nuertingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Feb. 9, 1981, Ser. No. 232,815

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, 3004458

Int. Cl.³ F04B *11/00*

U.S. Cl. 417—542 **13 Claims**



1. A fuel feed pump arrangement adapted to be connected to a fuel conduit system, the fuel feed pump arrangement comprising an electric drive motor means, a fuel pump system coupled to the drive motor means, and a common housing means for accommodating both the drive motor means and the fuel pump system, a diaphragm means disposed in the housing means for maintaining a pressure in the fuel conduit system for a predetermined period of time after the drive motor of the pump system has been turned off,

the diaphragm means dividing the housing means into a pressure chamber and a vacuum chamber, the electric drive motor means and feed pump system disposed in the vacuum chamber, means for supplying a pressure to the pressure chamber so as to expose the diaphragm means to the pressure,

a spring means disposed in the vacuum chamber, a diaphragm means pressing against the spring means when exposed to the pressure in the pressure chamber,

the spring means comprises a coil spring which surrounds the electric drive motor means and the feed pump system.

4,388,054

METHOD FOR MANUFACTURING ELONGATED BODIES BY EXTRUSION OF POWDER IN A CAPSULE

Hans-Gunnar Larsson, Västeras, Sweden, assignor to ASEA Aktiebolag, Västeras, Sweden

Filed Apr. 20, 1981, Ser. No. 255,732

Claims priority, application Sweden, Apr. 25, 1980, 8003139

Int. Cl.³ B22F *5/00;* **F16H** *7/00*

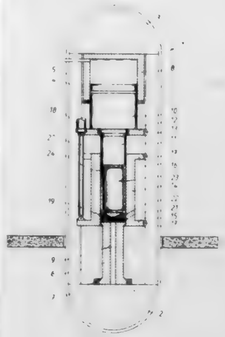
U.S. Cl. 419—32 **11 Claims**

1. A method of manufacturing an elongated, dense metallic body by extrusion of a powder charge enclosed in a metal capsule, which method comprises

(a) heating the powder charge in its metal capsule to a temperature sufficient to cause bonding of the charge at the pressure applied in step (d) to achieve extrusion;

(b) inserting the capsule containing the heated powder charge into a pressure cylinder which has positioned at one end thereof a die having an opening therethrough;

(c) surrounding the capsule in the pressure cylinder with a thermally insulating layer of a readily deformable material, the readily deformable material being selected from the group consisting of talcum powder and pyrophyllite powder, and



(d) applying a pressure to the capsule and the readily deformable material in the pressure cylinder so as to cause the capsule and the deformable material therearound to be extruded together through the opening in the die.

4,388,055

MAT-FORMING APPARATUS

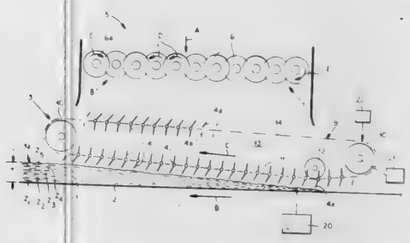
Werner Ufermann, Bernried, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Jun. 11, 1981, Ser. No. 272,473

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1980, 3022629; Jun. 18, 1980, 3022707

Int. Cl.³ B29J *5/00*

U.S. Cl. 425—80.1 **6 Claims**



1. An apparatus for forming a layer of transversely oriented particles, especially for the production of particle board, said apparatus comprising:

a continuously movable layer-receiving surface;

a pair of roller members spaced apart along said surface in the direction of movement thereof;

an endless traveling grate disposed above said surface and looped around said roller members said traveling grate having a lower pass moving generally in the direction of movement of said surface, said traveling grate having flights extending transverse to the direction of movement of said surface and adapted to orient particles deposited thereon, said flights being spaced apart in said direction whereby particles can fall through the passes of said grate between said roller members, said flights having lower edges which define an inclined plane path along a lower pass of said traveling grate diverging from said surface in the direction of movement of said lower pass; and

a dispenser for said particles disposed above said traveling grate and substantially extending over the length thereof for depositing particles on said surface through the upper and lower passes of said traveling grate between said roller members.

4,388,056

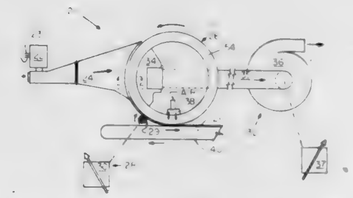
APPARATUS FOR CONTINUOUSLY MAKING AN AIR-LAID FIBROUS WEB HAVING PATTERNED BASIS WEIGHT DISTRIBUTION

Franky B. Lee, and Orin Jobes, Jr., both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 280,768, Jul. 6, 1981, abandoned, which is a continuation of Ser. No. 176,370, Aug. 8, 1980, abandoned. This application Jul. 6, 1982, Ser. No. 395,445

Int. Cl.³ B29J *1/00*

U.S. Cl. 425—83.1 **10 Claims**



1. In an improved apparatus for continuously forming an air-laid fibrous web having oppositely phased, cyclically undulating side edges and a predetermined patterned basis weight distribution which apparatus includes a laydown drum having a forming surface, means for forming and directing a column of air entrained fibers onto said forming surface and depositing fibers on said forming surface, and air flow inducing means for drawing fiber-depleted air through said surface and exhausting it, said laydown drum having a circumferentially segmented annular-shape plenum comprising a multiplicity of circumferentially spaced transverse plenum segments, a partially masked foraminous laydown surface having oppositely contoured, cyclically undulating side edges defining cyclically circumferentialiy alternately spaced relatively widely masked and relatively narrowly masked sections of said surface and which sections corporately define the radially outwardly facing boundary of said plenum, and said air flow inducing means including constant differential pressure means for drawing air through said surface and said plenum from an air-entrained-fiber deposition chute as said drum is being rotated on its axis of revolution, the improvement comprising stationary adjustable air flow modulating means disposed adjacent the radially inwardly disposed boundary of an arcuate portion of said plenum circumferentially spanning a plurality of said transverse plenum segments so that the pressure drop induced by said means for drawing air through said surface can be adjusted across said relatively widely masked transverse sections of said lay-down surface without substantially affecting the pressure drop induced across said relatively narrowly masked transverse sections of said lay-down surface.

4,388,057

DEVICE FOR THE CONTINUOUS APPLICATION OF LIQUID FINISH TO A SPINNERET

Adolf Bachmann, Heimbuchenthal; Joachim Boehler, Grosswallstadt, and Heinz Linhart, Erlenbach, all of Fed. Rep. of Germany, assignors to Akzona, Incorporated, Asheville, N.C.

Division of Ser. No. 144,278, Apr. 28, 1980, Pat. No. 4,301,101. This application Jul. 2, 1981, Ser. No. 279,846

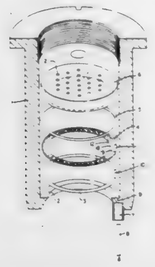
Claims priority, application Fed. Rep. of Germany, May 14, 1979, 2919331

Int. Cl.³ A01J *21/00*

U.S. Cl. 425—97 **14 Claims**

1. In combination, a spinneret having an exit face provided with a plurality of spinning orifices arranged in a pattern,

through which polymeric filaments are melt extruded, and a device for effecting continuous application of a liquid finish to the exit face of the spinneret from which the filaments are extruded, said device including a removable and reinstallable distribution element having at least one opening corresponding to the pattern of the spinning orifices and means for directing



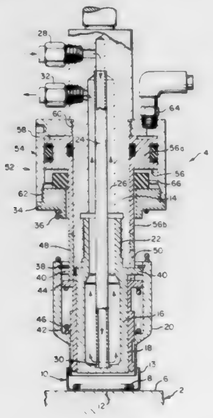
the liquid finish around said at least one opening in said distribution element and for distributing the liquid finish onto said exit face, and fastening means for fitting the distribution element subjacent to the exit face of the spinneret, said fastening means having an opening to supply the finish to the distribution element.

4,388,058

MOLDING DEVICE FOR FORMING A LINER INSIDE OF A CLOSURE SHELL

Tateo Kubo, Hiratsukashi, Japan, assignor to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,641
Claims priority, application Japan, Mar. 21, 1980, 55-34685
Int. Cl.³ B29C *1/04, 3/00, 6/00*
U.S. Cl. 425—110 **5 Claims**



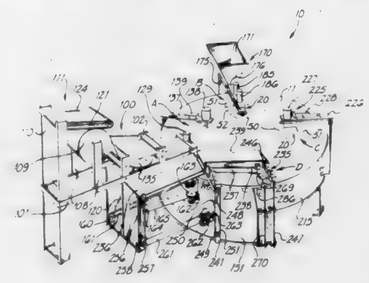
1. A molding device for forming a liner on an inside surface of a top panel of a closure shell where the inside surface includes a central portion comprising an anvil adapted to support an inverted closure shell having a liner material on the inside surface, a molding tool disposed above the anvil including a main body having a lower end portion, a center punch having a lower surface fixed to the lower end portion with the lower surface of the center punch adapted to be positioned opposite to a central portion of the inside top panel surface of a shell supported on the anvil, an annular bushing positioned externally of the center punch, and an elevator mechanism for moving the main body with respect to the anvil; characterized in that the annular bushing is movable with respect to said main body, in having a first resilient means for urging the annular bushing upwardly relative to said main body, and in having a lowering mechanism for selectively lowering the annular bushing against the force of said resilient means.

4,388,059

AUTOMATIC EGG ROLL MAKING MACHINE

Kwok C. Ma, 144 Hester St., New York, N.Y. 10013

Filed Nov. 30, 1981, Ser. No. 325,792
Int. Cl.³ B29D *3/00;* **A23P** *1/00*
U.S. Cl. 425—112 **13 Claims**



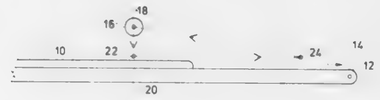
1. Apparatus for automatically making egg rolls comprising:
intermittently moving rotary table transmitting means;
a plurality of forming assemblies on the transmitting means, each forming assembly comprising folding means for folding three side portions of an egg roll dough and mold means for receiving a part of the egg roll stuffing therein;
feeding means for feeding the egg roll dough successively on each forming assembly;
supply means for supplying the egg roll stuffing on the egg roll dough, said supplying means preparing the necessary amount of the stuffing to be disposed in one egg roll product and putting the stuffing into the mold means to deposit the stuffing and a part of the egg roll dough therein;
actuating means for actuating the folding means of said forming assembly to fold three side portions of the egg roll dough over the stuffing in the mold means to thereby form a partially folded egg roll; and
wrapping means for wrapping the partially folded egg roll to form a cylindrical product, said means for wrapping including means for pushing up the partially folded egg roll from the mold, means for turning the partially folded egg roll for wrapping the remaining side portion of the egg roll thereon and means for transferring the wrapped product.

4,388,060

DOUGH ROLLING APPARATUS

Victor F. Gugler, Pinewood Springs, Lyons, Colo. 80540, assignor to Victor Gugler, Lyons, Colo.

Filed Dec. 7, 1981, Ser. No. 328,234
Int. Cl.³ B29C *15/00;* **A21C** *3/02*
U.S. Cl. 425—150 **18 Claims**



1. Dough rolling apparatus comprising:

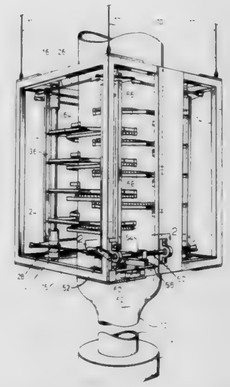
means for moving a sheet of dough horizontally in a forward direction;
a roller;
and means for moving said roller from a first position, spaced above a portion of said sheet, generally downwardly into a second position such that said roller is pressed into said sheet as said sheet is moving in said forward direction, said roller being movable in said forward direction a selected distance to a third position with said roller rotating to roll out and thin said dough when both said sheet and said roller are moving between said second and third positions, and then returning said roller to said first position, said roller being mounted for generally horizontal movement along a framework which has means to support said roller and which support means enables said roller to be oscillated generally vertically with respect to said sheet under operation of a connected actuating means which effects said oscillation.

4,388,061

GUIDE ASSEMBLY FOR CYLINDRICAL PLASTIC TUBES

Janos B. Bebok, Mississauga, Canada, assignor to Macro Engineering Company Ltd., Mississsauga, Canada

Filed Jul. 17, 1981, Ser. No. 284,170
Int. Cl.³ B29D *7/22*
U.S. Cl. 425—392 **10 Claims**



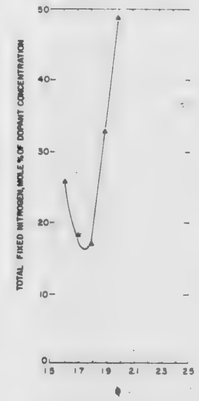
1. A guide assembly for the guidance of a cylindrical tube of plastic material in its travel path from a forming die comprising:
a longitudinal support frame adapted to extend along the portion of the travel path in which guidance is to be provided;
a plurality of pairs of longitudinal members mounted by the frame circumferentially spaced around the said travel path for rotational movement about respective longitudinal axes parallel to one another and to the said travel path portion;
means for moving the two longitudinal members of each pair simultaneously in opposite directions of rotation about their respective longitudinal axes;
each longitudianl member carrying a plurality of longitudinally-spaced, parallel radially-extending arms, each arm of one longitudinal member being associated with a cooperating arm of the other longitudinal member of the said pair thereof;
each two cooperating arms having connected thereto at respective connection positions a respective guide member that is transversely flexible along its length between said connection positions to permit change of curvature thereof, and adapted for guiding engagement with the external surface of a tube in the travel path and for change of its curvature to conform with the diameter thereof;
said simultaneous opposite rotational movement of the two members of each pair causing corresponding inward or outward movement of the said arm connection positions respectively toward or away from the travel path to permit the guide member to change its curvature and thereby conform respectively to tubes of smaller or larger diameter.

4,388,062

MULTI-STAGE PROCESS FOR COMBUSTING FUELS CONTAINING FIXED-NITROGEN SPECIES

William Bartok, Westfield; Yih H. Song, Berkeley Heights; Vince J. Siminski, Rockaway, all of N.J., and John P. Longwell, Cambridge, Mass., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 178,328, Aug. 15, 1980, abandoned. This application Dec. 22, 1980, Ser. No. 218,631
Int. Cl.³ F23M *3/04*
U.S. Cl. 431—10 **14 Claims**



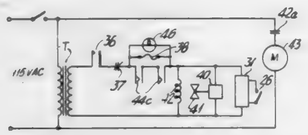
1. A process for converting fixed nitrogen into molecular nitrogen in a multistage combustion process comprising:
(a) mixing a fuel with at least one first oxidizing agent in amounts such that the equivalence ratio of said fuel to said first oxidizing agent is at least about 1.4;
(b) partially combusting the mixture resulting from step (a) in at least one first stage at a first temperature of about 1800° to 1950° K., with a residence time of at least 0.03 second to less than 0.4 second;
(c) injecting a free radical agent into the partially combusted mixture of said fuel and said first oxidizing agent;
(d) reacting the mixture of said free radical agent and said partially combusted mixture of said fuel and said first oxidizing agent for at least about 0.05 second to about 0.2 second;
(e) mixing the reaction products resulting from step (d) with at least one second oxidizing agent in an amount such that the equivalence ratio of reaction products to the total amount of oxidizing agents in the mixture will be about 1.0 or less, such mixing taking place under conditions such that the temperature of the mixture will not exceed about 1800° K.; and
(f) completely combusting the mixture resulting from step (e) in at least one second stage at a second temperature of about 1200° K. to less than about 1800° K.

4,388,063

COMBUSTION HEATING SYSTEM

Laurence B. Craig, 116 Duck Pond Rd., Glen Cove, N.Y. 11542, and Alfred J. Farina, 1939 Anita Ct., Baldwin, N.Y. 11510

Filed Oct. 16, 1980, Ser. No. 197,571
Int. Cl.³ F23N *5/00*
U.S. Cl. 431—19 **3 Claims**



1. In a heat generation and transfer device having a reactor for generating heat from the combustion of a fuel, a casing surrounding the reactor to define a combustion chamber, and an operational circuit including means for igniting a gaseous fuel fed under an initial low pressure sufficient for flowing the fuel through the reactor to the combustion chamber in which the fuel expands during combustion and exhibits an increased higher operational pressure, the safety improvement comprising:

switch contacts normally held open by spring urgency and closed in response to an overriding pressure, which when closed complete an operational circuit for the continued combustion of fuel within the chamber,

a sensor responsive to said higher operating pressure of said combusted gaseous fuel within the combustion chamber to cause said normally open switch contacts to close in response thereto, and

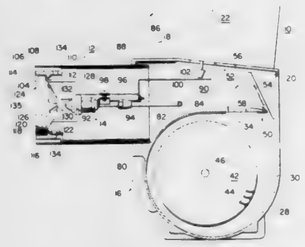
delayed reaction fuse means electrically connected across said normally open switch contacts to provide an alternate path for completion of said operational circuit, the normal operating current for the operating circuit being sufficient to cause said fuse means to open after a predetermined time, said predetermined time being greater than the time required to initiate combustion and provide said overriding pressure.

4,388,064

ENERGY EFFICIENT HIGH STATIC PRESSURE FLUID FUEL BURNER

Robert A. Kaplan, and James E. Wellman, both of Fort Wayne, Ind., assignors to The Scott & Fetzer Company, Fort Wayne, Ind.

Filed Aug. 11, 1980, Ser. No. 176,973
Int. Cl.³ F23Q *3/00*
U.S. Cl. 431—265 **9 Claims**



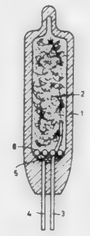
1. In a gun-type fluid fuel burner having a blast tube with a fuel dispensing nozzle therein: a blower housing having a scroll side wall and opposite end walls, said side wall having an upwardly facing air discharge opening therein communicating with said blast tube and one of said end walls having an air inlet opening therein; a blower wheel mounted for rotation in said housing for drawing air through said inlet opening and discharging the same under pressure through said discharge opening; a damper plate mounted on said housing for movement between an open position and a position closing said discharge opening, said damper being moved to said open position thereof in response to movement of air by said blower and returning to said closed position under the influence of biasing force; and means for selectively adjusting said open position of said damper; said blast tube having inner and outer ends, said housing including a first yoke portion adapted to receive and support a part of said inner end of said blast tube, and further comprising a cover member pivotally connected to said housing end walls at a point spaced from said blast tube inner end for movement between open and closed positions, said housing side wall having an outer surface extending between said air discharge opening and said first yoke portion, said cover member having a second yoke portion complementing said first yoke portion and adpated in said closed position of said cover member in conjunction with said first yoke portion to embrace said inner end of said blast tube, said cover member in said closed position thereof defining with said outer surface of said side wall an air passage communicating between said air discharge opening and said inner end of said blast tube.

4,388,065

COMBUSTION FLASH BULB

Karlo P. Martens, Terneuzen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,714
Claims priority, application Netherlands, May 4, 1979, 7903500
Int. Cl.³ F21K *5/02*
U.S. Cl. 431—362 **9 Claims**



1. A combustion flash bulb for high-voltage ignition having a light-pervious envelope in which a mass of actinically combustible metal strips and an oxidizing gas are present and in which current conductors are led through the wall of the envelope in a vacuum-tight manner and are interconnected inside the envelope by an ignition mass, a first of said current conductors extending through the ignition mass into the mass of metal strips, characterized in that a porous mass of an electrically insulating material is provided between the second current conductor and the mass of metal strips.

4,388,066

RADIATION SHIELD AND METHOD OF USE

Cuddalore P. Natarajan, and Siegfried R. Meder, both of Pittsburgh, Pa., assignors to American Schack Company, Inc., Wexford, Pa.

Filed Jul. 31, 1981, Ser. No. 289,100
Int. Cl.³ F27D *7/00;* **F24J** *3/00;* **F22B** *7/04*
U.S. Cl. 432—1 **19 Claims**

1. In a heater, the combination comprising,

a heating chamber including inner and outer heating zones, each of said heating zones being separately fired to a preselected temperature,

said heating chamber having a wall with an inlet and an outlet extending therethrough,

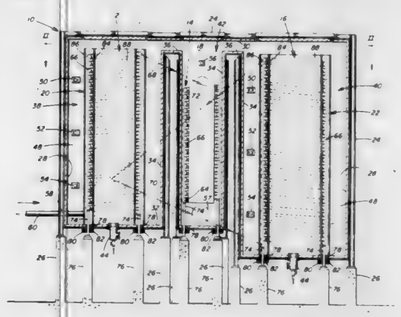
conduit means positioned in a preselected arrangement within said heating chamber for conveying a medium from said inlet through said heating chamber to said outlet,

said conduit means includes a first pipe section connected to said inlet and a second pipe section connected to said outlet,

a coiled pipe section connecting said first pipe section to said second pipe section,

said coiled pipe section forming said inner heating zone and said outer heating zone,

first burner means for supplying heat to said inner heating zone,



second burner means for supplying heat to said outer heating zone,

a pair of radiation shields being positioned adjacent said conduit means in said inner heating zone between said first burner means and said coiled pipe section and in said outer heating zone between said second burner means and said coiled pipe section respectively to lessen the radiant heat transferred to said coiled pipe section from said first and second burner means,

said radiation shields being supported in said heating chamber in spaced relation to said conduit means, and

said radiation shields forming a heat transfer barrier between the source of heat in said heating chamber and said conduit means to reduce the heat transferred to the conduit means for heating the medium.

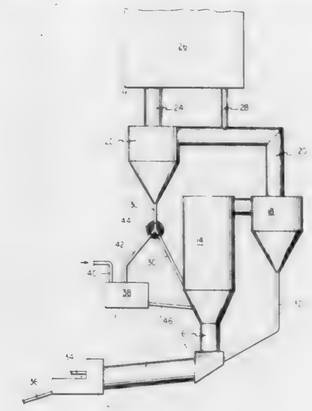
4,388,067

METHOD AND APPARATUS FOR OPERATING A KILN PLANT WITH SOLID FUEL FIRING IN THE PRECALCINING ZONE

Soren B. Christiansen, Copenhagen, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Dec. 10, 1980, Ser. No. 214,976
Claims priority, application United Kingdom, Dec. 11, 1979, 7942684
Int. Cl.³ F27B *15/00*
U.S. Cl. 432—14 **11 Claims**

1. A method of firing with generally solid fuel in a precalcining zone of a kiln plant for burning pulverous or granular material, the kiln plant including at least one preheater for preheating raw material, comprising mixing the generally solid fuel, with at least a portion of the preheated raw material supplied to the precalcining zone, grinding the generally solid fuel together with said portion of preheated raw material, and



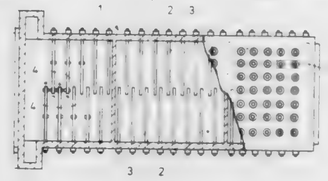
feeding the ground mixture of generally solid fuel and preheated raw material to the precalcining zone.

4,388,068

METAL HEATING FURNACE

Osamu Takeuchi, Mitaka; Hiroshi Hasegawa, Yokohama; Susumu Izumi, Tokyo, and Naoki Otsuki, Himeji, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha and Nippon Steel Corporation, both of Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,547
Claims priority, application Japan, Aug. 6, 1980, 55-107969
Int. Cl.³ F27B *9/14;* **F26B** *5/14;* **F24C** *3/00*
U.S. Cl. 432—122 **6 Claims**



1. A metal heating furnace comprising:

(a). a substantially closed chamber having side walls, a top, a bottom, an entrance end, an exit end, a horizontal walking beam intermediate the top and bottom and extending from the entrance end to the exit end, and

(b). means for heating a work piece on the walking beam comprising:

i. a plurality of substantially horizontal radiant heating tubes extending from each side wall and spaced along the length of the chamber and adjacent the walking beam and each having an open end adjacent the longitudinal center line of the chamber, and

ii. means at the side wall end of each tube closing that end of the tube, said means being constructed, adapted and operable to discharge fuel and air into the connected tube for combustion within the tube.

4,388,069

DENTAL RESTORATIVE MATERIAL

Jan A. Orlowski, Altadena, Calif., assignor to Blendax-Werke R. Schneider GmbH & Co., Mainz, Fed. Rep. of Germany

Filed Apr. 15, 1982, Ser. No. 368,743
Int. Cl.³ A61K *6/08*
U.S. Cl. 433—228 **7 Claims**

1. Dental restoring material containing at least one polymerizable (meth)acrylic compound and 60 to 90% by weight of the total composition of filler mixture of inorganic filler compounds, the filler mixture consisting essentially of

(a) 50 to 90% by weight, of the filler mixture, of an amorphous filling material,

(b) 10 to 50% by weight, of the filler mixture, of crystalline aluminum silicate, crystalline calcium silicate or a mixture thereof with both crystalline compounds having an average particle size from about 0.3 to 20 microns,

and

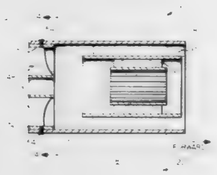
(c) up to 10% by weight, of the filler mixture, of a microfiller with an average particle size of not more than 200 millimicrons.

4,388,070

PROPELLER EXHAUST HUB AND SHROUD

Kenneth Kasschau, 17620 Garrett Dr., Gaithersburg, Md. 20760

Filed Dec. 20, 1978, Ser. No. 971,551
Int. Cl.³ B63H *1/20*
U.S. Cl. 440—89 **4 Claims**



1. A propeller for a through-hub exhaust marine propulsion device, comprising: a hub having a passageway through which exhaust gases flow to rearward, at least one propeller blade, and an annular shroud means extending rearwardly past the after termination of the hub and forward to the forward edge of said blade and fixed concentrically around said hub and open on each end, and means for preventing discharge of exhaust gas through the rearward opening of said shroud means when the said propeller operating in the reverse mode, comprising inducer means for positively inducing the flow of ambient water into said shroud through the rearward opening when the propeller is operating in the reverse mode.

4,388,071

GUM APPLYING APPARATUS

John Sullivan, San Jose, and Harold R. Lillibridge, Burlingame, both of Calif., assignors to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 129,399, Mar. 20, 1980, abandoned. This application Nov. 24, 1981, Ser. No. 324,613
Int. Cl.³ B31B *1/62*
U.S. Cl. 493—333 **6 Claims**

1. Gum applying apparatus comprising:

a pair of laterally spaced gum applying dies, each die including

a central circular plate and a pair of circular sectors spaced from each other about the circumference of said circular plate,

shaft means fixed to and between said circular plates for rotating said plates and die sectors,

gummer roll means positioned in the path of rotation of said sectors on each gummer die for contact therewith to effect transfer of gum from said gummer roll means to said die sectors,

gum container means in the path of rotation of said gummer roll means, and



drive means operatively connected to said shaft means and gummer roll means for rotating said shaft means and gummer roll means,

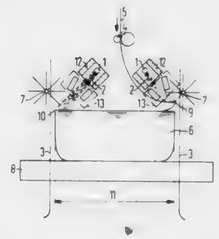
said drive means including means for adjusting the relative distance of said shaft means to said gummer roll means in order to vary the amount of contact pressure of said die sectors with said gummer roll means and thereby, the amount of gum transferred from said gummer roll means to said die sectors.

4,388,072

DEPOSITING DEVICE FOR A PRE-FOLDED CONTINUOUS WEB OF PAPER IN A PAPER STACKER

Gerhard Mueller, Taufkirchen, and Ernst Puritscher, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 4, 1981, Ser. No. 289,881
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1980, 3031309
Int. Cl.³ B65H *45/20*
U.S. Cl. 493—410 **5 Claims**



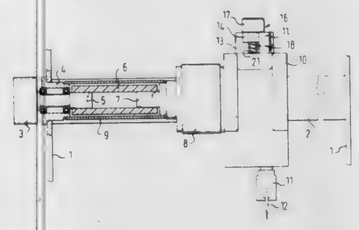
1. A stacker assembly for piling a prefolded continuous web of paper sheets comprising a surface onto which said sheets are piled, means for directing said sheets in consecutive fashion downwardly into said stack such that opposed folded edges of each sheet lie laterally over said surface, an air jet means for directing a pressurized air stream against at least one folded edge of the uppermost piled sheet to press said folded edge down onto the pile, a moveable directional control means for adjusting the direction of said air stream, in order to accommodate sheets of different form lengths and at least one guide wall means adjacent one folded edge side of the pile, said guide wall means being laterally displaceable to accommodate sheets of different form lengths and a coupling means for automatically moving said directional control means responsive to displacement of said guide wall means.

4,388,073

DEVICE FOR PIVOTING THE KNIFE IN ITS LONGITUDINAL AXIS AND FOR ADJUSTING THE KNIFE DEPTH ON KNIFE FOLDING MACHINES

Emil Klenk, Oppenweiler, Fed. Rep. of Germany, assignor to Maschinenbau Oppenweiler Binder GmbH & Co., Fed. Rep. of Germany

Filed Jun. 12, 1981, Ser. No. 273,002
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1980, 3027342
Int. Cl.³ B65H *45/18*
U.S. Cl. 493—444 **3 Claims**



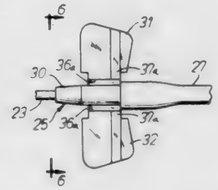
1. In knife folding machines having a coupling and brake unit disposed between and drivingly connecting a rotatable motor drive shaft and a knife drive, for the upwards and downwards movement of a knife bar guided in a housing and carrying an elongated folding knife which cooperates with additional folding elements to produce a folding action, said housing being pivotable about the axis of rotation of the drive shaft, said knife drive being mounted as a unit in said housing to move said knife, a device for pivoting the knife about its longitudinal axis and for adjusting the position of the knife relative to the cooperating folding elements, said position adjusting farther characterised in that there is between said drive shaft and the coupling-brake unit mounted on the housing an elastically deformable rotary joint drivingly connecting the drive shaft to the coupling and brake unit and in that a substantially vertically extending guide plate is arranged to be rigid with a machine frame and in that for pivoting the knife there is at a bottom end of the housing a stay bolt, the length of which is adjustable to vary the space between the housing and guide plate, whereby there is in an upper part of the housing on the guide plate side and parallel with the drive shaft axis, a horizontal pivot arbor which serves as a pivoting axis and in that to adjust the knife position a substantially vertically disposed setscrew is provided which is in screwthreaded engagement with the pivot arbor and its head is rotatably held in a substantially horizontal guide flange in the guide plate and in that at least one locking screw is provided to fix the adjusted vertical knife position, the locking screw being in screwthreaded engagement with the knife bar and having its head resting on the guide plate.

4,388,074

WINGED CATHETER PLACEMENT ASSEMBLY

Charles H. Seberg, Libertyville, and Jack L. Harms, Mundelein, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation of Ser. No. 31,370, Apr. 19, 1979, Pat. No. 4,300,553. This application Jun. 23, 1981, Ser. No. 276,561
The portion of the term of this patent subsequent to Nov. 17, 1998, has been disclaimed.
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—165 **3 Claims**



1. An intravenous catheter assembly comprising:

(a) a flexible plastic catheter having a distally tapered distal end;

(b) a winged catheter insertion means comprising a tubular body having a lumen therethrough and a pair of wings having substantially uniform thickness extending oppositely therefrom, the proximal end of said catheter in communication with said lumen of said catheter insertion means via its distal end;

(c) an area of reduced thickness on each of said wings along at least a portion of the width thereof substantially adjacent to said tubular body and providing improved flexibility to said wings;

(d) a needle unit inserted through said catheter and said winged catheter insertion means, said needle unit comprising a needle having a sharpened distal end extending beyond said distal end of said catheter;

(e) said lumen of said winged catheter insertion means having a diameter predetermined to only capture said needle within said tubular body by the distortion of said lumen of said winged catheter insertion means when said wings are simultaneously held in a substantially vertical position; and

(f) a raised portion transverse to said tubular body on each of said wings constructed and arranged to exert pressure on said tubular body so as to distort the lumen thereof when said wings are simultaneously held in a substantially vertical position.

4,388,075

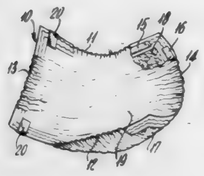
DISPOSABLE DIAPER WITH WIDE ELASTIC GATHERING MEANS FOR IMPROVED COMFORT

Frederick K. Mesek, and Virginia R. Mesek, both of Oak Forest, Ill., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J. and Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Continuation-in-part of Ser. No. 1,616, Jan. 8, 1979, abandoned, and a continuation-in-part of Ser. No. 106,182, Dec. 21, 1979, Pat. No. 4,324,245, which is a continuation-in-part of Ser. No. 862,309, Dec. 20, 1977, abandoned. This application Feb. 8, 1980, Ser. No. 119,898
Int. Cl.³ A41B *13/02*
U.S. Cl. 604—385 **26 Claims**

1. A disposable diaper comprising: a moisture-permeable facing layer; an absorbent panel at one side of said facing layer, said absorbent panel being smaller than said facing layer so that marginal portions of the facing layer extend outwardly beyond the edges of said absorbent panel; a moisture-impervious backing layer at the side of said absorbent panel opposite said facing

layer, said backing layer being larger than said absorbent panel so that marginal portions of the backing layer extend outwardly beyond the edges of said absorbent panel; means bonding said facing and backing layers to one another; gathering means adjacent to at least one edge of said absorbent panel, and means securing said gathering means to at least one of said



layers, said gathering means being defined by an elastic member having a width dimension at least about ½" and having a width-to-thickness ratio of at least about 100 and being effective over a width of at least ½", whereby said gathering means provides improved body conformity without undue application of pressure upon the skin of the wearer.

4,388,076

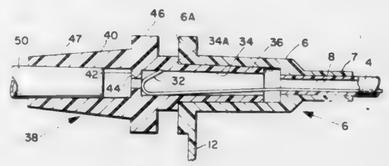
INTUBATING DEVICE

William E. Waters, Elizabeth, N.J., assignor to Biosearch Medical Products Inc., Somerville, N.J.

Filed Feb. 11, 1981, Ser. No. 233,482

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—165 **11 Claims**



1. An Enteric feeding device comprising:

a flexible tube having a self-sustaining diameter, free to be in any position at rest, and having an open proximal end and a discharge opening adjacent its distal end;

a hollow stylet connector plug having an inner diameter and removably secured to the proximal end of the tube;

a stylet extending into the bore of said plug and secured to said plug and extending through the interior of the tube to a point adjacent the distal end of the tube;

said stylet having an outer diameter smaller than the inner diameter of the tube and smaller than the inner diameter of the plug for passage of fluid between the stylet and the tube and the stylet and the plug; and

a hollow connector fitting integral with said plug and having a passage communicating with the interior of the plug.

4,388,077

COMPOSITION FOR WASHING FABRIC

Jules B. Ruck, St. Albert, Canada, assignor to W. E. Greer Ltd., Edmonton, Canada

Filed Aug. 7, 1981, Ser. No. 291,188

Int. Cl.³ D01C *1/02*

U.S. Cl. 8—138 **11 Claims**

1. A method of washing denim, containing excess dye and sizing, comprising:

washing the denim in an aqueous solution containing an amphoteric surfactant, selected from the group consisting of at least one of a dicarboxylic aliphatic acid derivative of about 8 to 18 carbon atoms and a disubstituted imidazoline of about 6 to 22 carbon atoms, one or more builders, selected from the group consisting of perborate salts, phosphate salts, and organic builders, a carbonate salt pH builder, a metal carboxylate salt lubricant, and a light mineral oil lubricant; and

rinsing and drying the denim.

4,388,078

ANTHRAQUINONE DYESTUFF MODIFICATION

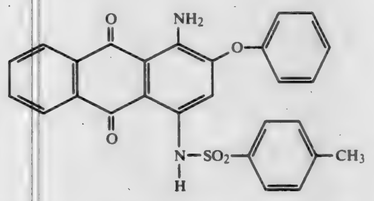
Thomas J. Thomas, and Robert G. Hoquet, both of Summerville, S.C., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Mar. 24, 1982, Ser. No. 361,223

Int. Cl.³ D06P *3/79*

U.S. Cl. 8—514 **15 Claims**

1. A modification of the anthraquinone dyestuff of the formula



characterized by a melting point of 199°–200° C., with lattice plane spacings of strong intensity at 6.5 A°, 18.1 A° and 20.6 A°; of moderate intensity at 10.2 A°, 10.4 A°, 15.9 A°, 16.4 A°; of faint intensity at 21.0 A°, 28.5 A° and 28,9 A°.

4,388,079

COLOR SALT-CONTAINING OPTICAL BRIGHTENER COMPOSITION

Kazuaki Suzuki, Osaka, and Shohei Kuwabara, Suita, both of Japan, assignors to Showa Kagaku Kogyo Co., Ltd., Hyogo, Japan

Filed Jul. 20, 1981, Ser. No. 284,534

Claims priority, application Japan, Jul. 22, 1980, 55-99346

Int. Cl.³ C09B *23/14;* **D06P** *1/41*

U.S. Cl. 8—648 **10 Claims**

1. An optical brightener composition comprising at least one optical brightener and at least one color salt consisting of an optical brightener component having at least one anionic group and a color component having at least one basic group capable of forming a salt with the anionic group.

4,388,080

PROCESS FOR RECOVERY OF HIGH PURITY SILICON

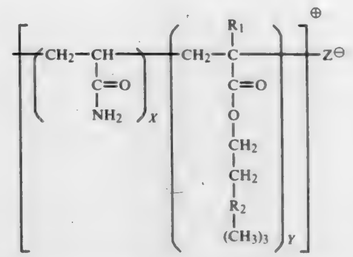
Vijay K. Kapur, and Ashok K. Khanna, both of Northridge, Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 12, 1982, Ser. No. 348,468

Int. Cl.³ B01D *21/01;* **G01B** *33/02*

U.S. Cl. 23—293 R **9 Claims**

1. A method for recovering high purity silicon from an aqueous slurry containing finely divided silicon particles of high purity comprising mixing with said slurry at least one silicon flocculating agent selected from the group consisting of alkaline earth metal oxide, alkaline earth metal hydroxide, a cationic polymer of the formula:



where X varies from 70 to 98 vol%; Y varies from 2 to 30 mol%; Z is selected from the group consisting of chloride and $CH_3SO_4^-$; R_1 is selected from the group consisting of H and $-CH_3$; and R_2 is selected from the group consisting of $-CH_3$ and $-CH_2CH_3$; said flocculating agent being employed in an effective silicon flocculating amount, holding said mixture until silicon flocs form, physically separating said silicon flocs from said slurry, and recovering said silicon flocs for re-use of the high purity silicon contained therein.

4,388,081

MOTOR FUEL

Lyle D. Burns, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 29, 1982, Ser. No. 393,238

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—78 **11 Claims**

1. A fuel composition comprising a hydrocarbon suitable as a fuel for an internal combustion engine and an antiknock improving amount ranging from about 0.5 to about 10 weight percent of a phenoxyalcohol.

4,388,082

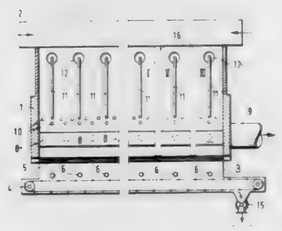
DEVICE FOR OBTAINING LARGE AMOUNTS OF COMBUSTIBLE GAS FROM CARBONACEOUS MATERIALS

Friedrich W. Guttmann, Bergisch Gladbach, and Horst Weigel, Cologne, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Nov. 3, 1981, Ser. No. 317,748

Int. Cl.³ C10B *53/02*

U.S. Cl. 48—76 **4 Claims**



1. A device for gasification of carbonaceous materials and for recovery of combustible gases therefrom comprising:

a combustion chanber having a rectangular cross-section

and having an upper region, a central region wherein said combustion takes place, and a lower region;

a material charging means connected to said upper region of said combustion chamber for charging said combustion chamber with said carbonaceous material to be gasified;

a plurality of partitions in said combustion chamber disposed parallel to the flow of said carbonaceous material therethrough dividing said combustion chamber into a plurality of sub-chambers;

a plurality of air nozzles disposed in longitudinal walls of said combustion chamber for supplying primary combustion air to said central region of said combustion chamber;

a plurality of air supply lances entering said combustion chamber at said upper region and extending in the interior of said combustion chamber to said central region thereof for supplying additional primary combustion air to said central region;

a means for removal of said combustible gas from said combustion chamber communicating with said combustion chamber between said central and lower regions thereof;

a residue conveyor means for conveying residue of said carbonaceous material from said combustion chamber connected to said lower region of said combustion chamber; and

a means for supplying secondary combustion air to said residue between said lower region of said combustion chamber and said residue conveyor means for additional gasification of said residue

whereby supply of said primary and additional combustion air may be controlled for each of said sub-chambers for controlling combustion of said carbonaceous material therein.

4,388,083

MIXING BLOCK FOR EXPLOSIVE GAS MIXTURES DETONATED IN A COMBUSTION CHAMBER

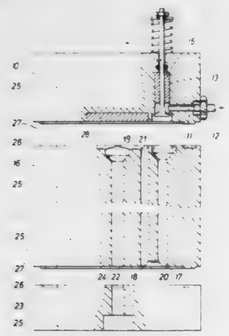
Wolfgang Mauz, Unterer Kasparswald 6, D-7022 Leinfelden-Echterdingen 3, Fed. Rep. of Germany

Filed Sep. 30, 1981, Ser. No. 307,119

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 3041059

Int. Cl.³ F02M *21/02*

U.S. Cl. 48—180 R **7 Claims**



1. A mixing block structure for mixing components of an explosive gas mixture as they are delivered to an adjacent combustion chamber for confined explosion treatment of a solid object or material located therein, comprising a plurality of block-like bodies including:

a principal block body having opposite end surfaces and in which are provided

a first longitudinal bore extending from one to the other of said end surface, at least a part of which is a mixing chamber and which is disposed so as to lead mixed gas from said mixing chamber to said combustion chamber,

duct means for leading at least two components of said mixture separately to said mixing chamber, said duct means including a pair of longitudinal bores for at least one component gas of said explosive mixture, each bore of said pair extending from one to the other of said end surfaces, and

cross channels at opposite ends of one member of each of said pair of bores connecting it respectively to the other bore of said pair and to said mixing chamber, each said cross channel which connects with said mixing chamber being channeled in a said end surface of said principal block body and being open along its length at the said end surface, and

an input-end cap block body shaped to fit against the end surface of the principal block body which is more remote from said combustion chamber and having a gas line connection channel, for connecting an external gas supply line through said cap block to the longitudinal bore of said pair in said principal block body for at least one component gas, which channel is that one of said pair not connected to said mixing chamber by one of said cross channels, said cap block also having a check valve for each said gas line connection interposed therein, and in which input cap block said cross channel which joins with the mixing chamber is channeled in the end surface of said principal body which said input-end cap block fits and is open at said end surface along its length, so as to be closed along its length by said input-end cap block, and wherein in said principal block said duct means includes a said pair of longitudinal bores for each of at least two gaseous components of said explosive mixture and in which said input-end cap block has a said gas line connection channel and a said valve for each said at least two gaseous components of said explosive mixture

each body of said plurality of bodies also having bores located such that bolts are passed therethrough and thereby said bodies are held in alignment and screwed tightly together.

4,388,084

PROCESS FOR GASIFICATION OF SOLID CARBONACEOUS MATERIAL

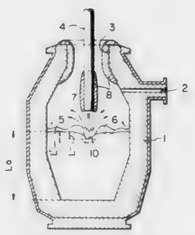
Koji Okane, Chiba; Shozo Okamura, Asomachi; Masanobu Sueyasu, Kawachinagano; Seiichi Masuda, Nishinomiya; Tsutomu Tanaka, and Koichi Tanaka, both of Chiba, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Aug. 6, 1981, Ser. No. 290,520

Claims priority, application Japan, Dec. 1, 1980, 55-169982

Int. Cl.³ C10J *3/46*

U.S. Cl. 48—197 R **10 Claims**



1. A process for gasification of solid carbonaceous material in which pulverized solid carbonaceous material is top-blown onto a molten iron bath stored in a furnace through a non-submerged lance toward a hot spot formed by means of a jet of a gasifying agent comprising at least oxygen, the gasifying agent being top-blown through a non-submerged lance, the solid carbonaceous material being blown by means of a carrier gas, and slag-forming material being optionally added into the furnace by the lump or blown toward the hot spot, thereby the solid carbonaceous material being gasified, wherein the improvement comprises that the ratio L/L_o of the depression depth L of the molten iron bath to the molten iron bath depth L_o is maintained from 0.05 to 0.15, and the blowing velocity of the solid carbonaceous material is maintained from 50 to 300 m/sec so that formation of an adhered mass on the upper part of the furnace, hood or lance is suppressed.

4,388,085

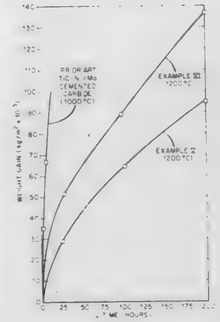
ABRASION RESISTANT ARTICLES BASED ON SILICON NITRIDE

Vinod K. Sarin, Lexington, and Sergej-Tomislav Buljan, Acton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 167,258, Jul. 9, 1980, abandoned. This application Nov. 3, 1981, Ser. No. 317,811

Int. Cl.³ C04B *35/56, 35/58*

U.S. Cl. 51—307 **4 Claims**



1. A densified composite ceramic cutting tool which retains high creep resistance, fracture toughness, and resistance to oxidation at temperatures above 1200° C., said composite consisting essentially of from about 20 to about 60 volume percent of particles of a hard refractory material having an average size of less than about 5 microns selected from the group consisting of the carbides, nitrides, and mixtures thereof of titanium, vanadium, chromium, zirconium, niobium, molybdenum, hafnium, and tantalum uniformly distributed in a two phase matrix consisting essentially of a first phase of crystalline silicon nitride and a second refractory intergranular phase consisting essentially of silicon nitride, magnesium oxide and silicon dioxide, said magnesium oxide and silicon dioxide comprising from about 1 to about 10 weight percent of said two phase matrix, wherein said second phase contains less than 5 weight percent silicon dioxide, less than 3 weight percent additional additives including cation impurities, the hardness of said composite being greater than 93 on the Rockwell A scale and greater than the combined individual hardness of the fractional weight of silicon nitride times the hardness of silicon nitride plus the fractional weight of hard refractory material times the hardness of the hard refractory material, the density of said composite being greater than 97.5 percent of theoretical density and approaching 100 percent of theoretical density.

2. A densified composite cutting tool according to claim **1** wherein said hard refractory material comprises titanium carbide.

4,388,086

INTERCHANGEABLE AND DISPOSABLE FILTER CARTRIDGE AND METHOD OF REMOVING MOISTURE AND OIL FROM COMPRESSED BREATHABLE AIR

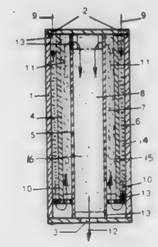
Heinz Bauer, Munich, and Kurt Herter, Eichenau, both of Fed. Rep. of Germany, assignors to Bauer-Kompressoren GmbH, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 123,996, Feb. 25, 1980, abandoned, which is a continuation of Ser. No. 938,411, Aug. 31, 1978, abandoned. This application Aug. 28, 1981, Ser. No. 297,233

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 7727993[U]

Int. Cl.³ B01D *53/02*

U.S. Cl. 55—75 **4 Claims**



4. The method of removing oil and water vapor from breathable compressed air consisting of the steps of passing said compressed air through a first adsorbent filtering medium providing removal of the majority of said water vapor from said compressed air, thereafter passing the thus coarsely dehumidified compressed air through a second adsorbent filtering medium providing adsorption removal of oil from said compressed air, and thereafter passing the thus coarsely dehumidified compressed air from which oil has been removed through a third adsorbent filtering medium providing removal of the remaining of said water vapor from said compressed air, whereby said compressed air having passed through said first, second and third adsorbent filtering media in sequence is substantially oil-free and moisture-free and wherein said first, second and third adsorbent filtering media are disposed each in one of three separate chambers in a single housing, at least two of said chambers being concentrically disposed in said housing and said three chambers being placed in serial communication with each other such that the compressed air to be filtered is sequentially circulated through the individual chambers in a labyrinth-like path for providing relatively long filtering travel of said compressed air, said first, second and third adsorbent filtering media being separated by air-pervious separators.

4,388,087

CYCLONIC SEPARATOR-FILTER

Joe D. Tipton, 3521 Miller Park Dr., Garland, Tex. 75042

Filed Aug. 7, 1981, Ser. No. 290,859

Int. Cl.³ B01D *46/04, 46/14, 50/00*

U.S. Cl. 55—96 **8 Claims**

1. A method of removing particulate matter from a gas, comprising, in combination:

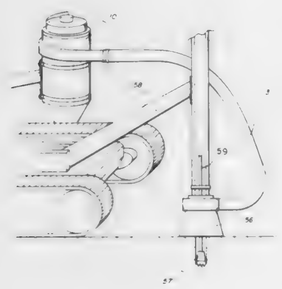
(a) connecting an inlet opening of a partitioned housing to a source of gas and particulate matter;

(b) causing said gas and particulate matter to flow through the housing by continuously inducing a vacuum in the housing with a centrifugal blower vacuum machine means that is connected to a gas discharge opening of the housing;

(c) causing separation of a first portion of the particulate matter from the gas by directing both the particulate matter and the gas to flow vortically in a cyclonic manner

around a cylindrical interior wall of a first chamber of the housing so that terrestrial gravitational force causes said first portion of the particulate matter to fall from the vortically flowing gas toward a bottom of said first chamber;

(d) causing separation of another portion of the particulate matter from the gas by directing the gas flow through a plurality of pleated paper filters, each filter being positioned in a low gas velocity core of the vortical gas and particulate matter flow and affixed over one of a like plurality of openings in a partitioning means between said first chamber and a second chamber of the housing, and each filter having a normal rated filtering capacity expressed in terms of a gas volume per unit time flowable through the filter and being utilized to filter such rated capacity of gas;



(e) continually cleaning said second portion of particulate matter from the filters with counterflowing gas pulses periodically directed through the filters from the second chamber to the first chamber wherein said counterflowing gas pulses are comprised of a compressed gas from an external source being discharged through a plurality of normally-closed valves, located in the second chamber, by rapidly opening and closing, in rotation, approximately one-fourth of said valves simultaneously;

(f) intermittently removing all of the separated first and second portions of particulate matter from the housing through a particulate matter discharge opening in the bottom of said first chamber; and

(g) continuously removing all of said gas flowing through the housing through the gas discharge opening by use of the same vacuum means used to induce the vacuum in the housing.

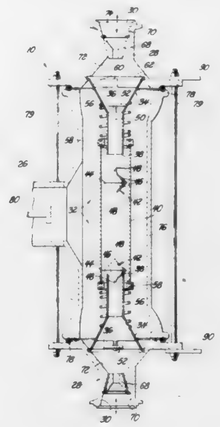
4,388,088

VACUUM CHAMBER ASSEMBLY FOR DEGASSING PARTICULATE MATERIAL

Walter J. Rozmus, Jr., and Walter J. Rozmus, both of Traverse City, Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Filed Nov. 16, 1981, Ser. No. 322,022
Int. Cl.³ B03C *9/00;* **B65G** *69/20*
U.S. Cl. 55—101 **16 Claims**

1. An assembly for degassing gas-contaminated particulate material comprising a vacuum chamber (**10**, **10'**) having first and second ends (**28**, **28'**) with a flow passage (**30**) at each end for directing the flow of particulate material into and out of said vacuum chamber, said vacuum chamber having a vacuum outlet duct (**26**) midway between said first and second ends (**28**, **28'**) thereof for removing gaseous contaminants from said vacuum chamber, flow control means (**32**, **32'**) disposed within said vacuum chamber (**10**, **10'**) between said first and second ends and having symmetrical ends for receiving particulate material from one of said flow passages (**30**) and directing the flow of particulate material to the other one of said flow passages while isolating the flow of particulate material from the surrounding space of said vacuum chamber through the central portion of the vacuum chamber adjacent said vacuum outlet duct (**26**) and for dispersing the particulate material while being subjected to the vacuum in the vacuum chamber adjacent said other one of said flow passages before the particulate



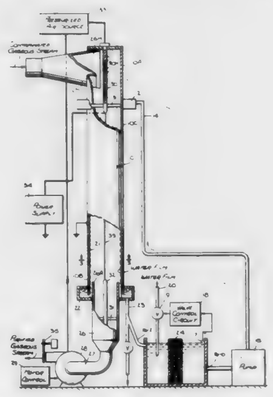
material flows out said other one of said flow passages whereby a quantity of particulate material may flow by gravity through said vacuum chamber from the first end to the second end and thereafter said vacuum chamber may be turned end-for-end so that the quantity of particulate material may flow by gravity, in the same manner back through said vacuum chamber from said second end to said first end thereof.

4,388,089

SELF-CLEANING ELECTRO-INERTIAL PRECIPITATOR UNIT

Robert B. Reif, Grove City, and Paul E. McCrady, Columbus, both of Ohio, assignors to Santek, Inc., Hollywood, Fla.

Continuation-in-part of Ser. No. 270,675, Jun. 4, 1981, which is a continuation of Ser. No. 898,556, Apr. 21, 1978. This application Jan. 15, 1982, Ser. No. 339,712
Int. Cl.³ B03C *3/16, 3/36, 3/78*
U.S. Cl. 55—119 **6 Claims**



1. An inertial-electrostatic wet-wall precipitator unit for extracting particles from a contaminated gaseous stream, the unit comprising:

(A) a vertically-mounted, grounded collector tube whose upper end is enclosed by a cover, said tube having an upper inlet section, a main section and an open-ended outlet section;

(B) a discharge electrode assembly including a wire extending through said main and outlet sections and having a high voltage imposed thereon to establish an electrostatic field in said sections which causes ions to be generated at said wire;

(C) means feeding a liquid into the tube at the junction of the inlet and main sections to form a liquid film on the inner surface of the tube which flows downwardly into and is discharged from the open end of the outlet section;

(D) means to introduce said contaminated gas stream tangentially into said inlet section;

(E) means coupled to said outlet section to produce a suction force drawing said tangentially-introduced stream from the inlet section at high velocity, said means to produce a suction force in combination with said means to introduce the gas stream tangentially imparting a swirling motion to the gas stream to cause said gaseous stream to flow in a helical path down the tube against the liquid film and to induce a swirling pattern therein, the centrifugal force created by the swirling motion urging particles carried by the gaseous stream to migrate toward and to be collected by the film to be flushed out of the tube, which migration is further promoted by the electrostatic force acting on the particles which are charged with ions in the field; and

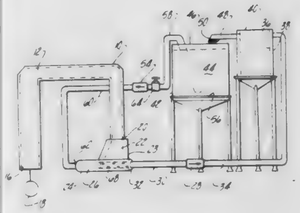
(F) means to periodically interrupt the flow of said gaseous stream through the tube to so modify the swirling film pattern as to cause the film to scrub particle deposits that form on the inner surface of the tube despite the flushing action.

4,388,090

AIR SCRUBBER

Arnet Streeter, 14897 Cruse, Detroit, Mich. 48227

Filed Jun. 29, 1981, Ser. No. 278,555
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—228 **9 Claims**



1. A water utilizing device for removing impurities from air comprising:

a housing defining a mixing chamber;

a settling tank assembly adapted to contain said water;

means fluidly connecting said mixing chamber and said settling tank assembly for circulating a substantially continuous stream of said water, first from said settling tank assembly to said mixing chamber, and second from said mixing chamber to said settling tank assembly; said circulation means comprising first means fluidly connecting said settling tank assembly and said mixing chamber, first pump means fluidly connected to said first means for pumping said water from said settling tank assembly and to said mixing chamber so that water enters said mixing chamber in a first direction, and second means fluidly connecting said mixing chamber and said settling tank assembly, second pump means fluidly connected to said second means for pumping said water from said mixing chamber and to said settling tank assembly; and

means for conducting impurity laden air to said chamber so that said air enters said mixing chamber in a second direction, said second direction being substantially perpendicular to said first direction,

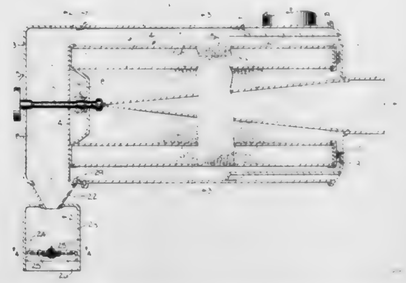
whereby said air is introduced into said water stream at a location in said stream between said first and second pumping means and is thereby cleansed of said impurities.

4,388,091

AIR CLEANER HAVING A DUST DUMPING VALVE

Mostafa M. Khosropour, Madison, Wis., assignor to Nelson Industries, Inc., Stoughton, Wis.

Filed Jul. 29, 1981, Ser. No. 287,888
Int. Cl.³ B01D *45/12, 46/48, 50/00*
U.S. Cl. 55—337 **9 Claims**



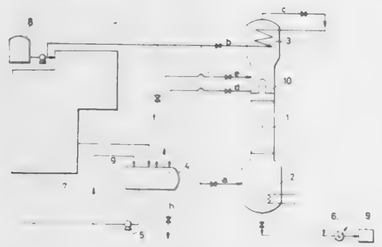
1. An air cleaner assembly for an internal combustion engine, comprising a housing having an air inlet and an air outlet adapted to communicate with the engine, filter means disposed in the housing between the inlet and the outlet, an outlet tube disposed in the lower portion of the housing, said outlet tube having a generally frustoconical configuration and having a large diameter upper end communicating with said housing and a small diameter lower end, a dust collecting container communicating with the lower end of the outlet tube and having a substantially greater cross-sectional area than said lower end of the outlet tube, said container having a lower surface spaced below said small diameter lower end, said lower surface of said container having opening means, a flexible sheet-like valve member disposed flatwise against the underside of the lower surface of said container, said valve member disposed to close off said opening means during periods of engine operation, dust being collected in said container, said valve member being constructed to move to an open position by the weight of collected dust in the container to thereby permit the dust to be discharged through said opening means, said small diameter lower end minimizing the draw back of dust from said container into said housing by engine vacuum when said valve member is opened.

4,388,092

METHOD FOR PROCESSING LNG FOR RANKINE CYCLE

Osamu Matsumoto, Inagi, and Ichizo Aoki, Yokohama, both of Japan, assignors to Chiyoda Chemical Engineering & Construction, Kanagawa, Japan

Filed Jan. 27, 1981, Ser. No. 228,920
Int. Cl.³ F25J *3/00*
U.S. Cl. 62—24 **3 Claims**



1. In an LNG gasification process in which a cold potential of LNG is converted into power with a Rankine cycle using a mixture of hydrocarbons C_1 to C_6 as a medium, a method for producing the medium to be used in said Rankine cycle using a single distillation tower and part of the LNG to be gasified as a raw material, comprising the steps of:

(a) continuously feeding part of an LNG supply to a bottom section of said distillation tower and another part of an LNG supply to a condenser as a refrigerant, stripping a C_1 component to accumulate C_2 and heavier components at a predetermined concentration inside said tower by heating LNG within a reboiler and partially condensing at said condenser, and recovering an overhead vapor mainly containing the stripped C_1 component and vaporized refrigerant at said condenser;

(b) terminating supply of LNG to said tower after the C_2 and heavier components inside said tower reach said predetermined concentration, completely stripping the C_1 component in said tower, and performing total condensation of a residual liquid comprising C_2 and heavier components using LNG as a refrigerant at said condenser, thereby sequentially extracting C_2 to C_4 components respectively from a top tray of said tower and recovering and storing the C_2 to C_4 components according to a required composition of the medium while recovering LNG used at said condenser in the form of a gas;

(c) draining and recovering residual heavier fractions from said tower after carrying out step (b);

(d) repeating a batch distillation operation comprising steps (a) to (c) to produce and store the required quantity of C_2 to C_4 components necessary for the medium; and

(e) adding a predetermined amount of LNG to the C_2 to C_4 components stored in step (d) to provide a composition and quantity of the medium for the Rankine cycle.

4,388,093

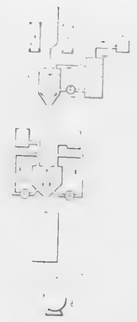
PROCESS FOR PRODUCING A GLASS FIBER FOR LIGHT TRANSMISSION

Takao Kimura, Mito, and Toru Yamanishi, Yokohama, both of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

Filed Dec. 23, 1981, Ser. No. 333,960
Claims priority, application Japan, Dec. 26, 1980, 55-187360
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—3.11 **4 Claims**

1. A process for producing an optical fiber wherein a fiber that has been drawn from a glass preform is coated with a resin composition curable with heat, ultraviolet rays, or electron beams, and then cured,

wherein before the drawn fiber contacts another solid object said fiber is cooled by being passed through a cooling means filled with a non-reactive liquid material which is



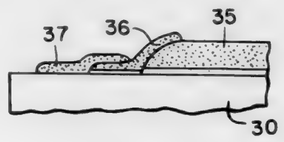
the same as said resin composition except that it is free from any compound that catalyzes curing of the resin, selected from among a curing agent, cross-linking agent, curing catalyst, curing accelerator, sensitizing agent, and a reactive diluent, and then the fiber is coated with said resin composition and cured.

4,388,094

METHOD AND APPARATUS FOR PRODUCING TUBULAR GLASS ARTICLE

Larry L. Carpenter, Corning, and Thomas G. Parham, Elmira, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,546
Int. Cl.³ C03C *25/02*
U.S. Cl. 65—3.12 **18 Claims**



11. An apparatus for forming a continuous length of article comprising

an elongated mandrel,

means for applying particulate material to the exterior surface of said mandrel,

means for reciprocatingly moving said means for applying along at least a portion of the length of said mandrel to form a hollow porous article, and

means for indexing said article in a stop-and-go fashion with respect to said mandrel, whereby said article remains in a longitudinally fixed position with respect to said mandrel between brief periods during which said article is longitudinally moved to its next position with respect to said mandrel.

4,388,095

METHOD OF PRODUCING A GLASS LAYER ON AN INTERIOR SURFACE OF A HOLLOW BODY

Hartmut Schneider, and Egon Lebetzki, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 16, 1981, Ser. No. 284,103
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1980, 3027592
Int. Cl.³ C03B *37/075*; C03C *17/02*
U.S. Cl. 65—18.2 **10 Claims**

1. In a method for manufacturing a layer of glass on an inner surface of a hollow body wherein a reactive gas mixture suitable for glass synthesis is introduced into a hot region within said hollow body and generated by exterior heating of said hollow body, with such reactive gas undergoing a chemical reaction at such region so that a material having the composition of glass is deposited on the inner surface of said hollow body as a layer which is melted into a clear glass film in the hot region, the improvement comprising wherein:

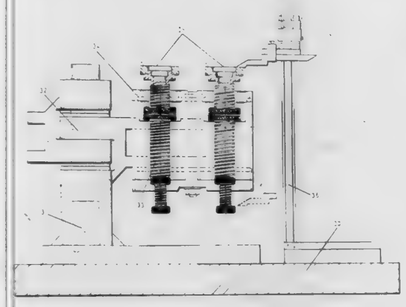
a combustible heating gas mixture is admixed with said reactive gas mixture and the resultant gas admixture is introduced into said hot region within said hollow body, said combustible gas mixture igniting in said hot region and burning therein during said chemical reaction and layer melting.

4,388,096

APPARATUS AND PROCESS FOR THE ALIGNMENT OF MECHANISMS AND/OR ARMS FOR THE MOLDS CHANGES IN MACHINES FOR THE MANUFACTURE OF GLASSWARE, THERMOPLASTIC ARTICLES OR SIMILARS

Alide B. Boschi, Monterrey, Mexico, assignor to Vitro Tec Fideicomiso, Monterrey, Mexico

Filed Dec. 15, 1981, Ser. No. 330,884
Int. Cl.³ C03B *9/197*
U.S. Cl. 65—29 **2 Claims**



1. Apparatus for setting of mechanisms and/or arms in changing molds of machines for forming articles of glass thermoplastic or the like, which comprises:

support base;

a vertical support resting on said support base;

a fastener attached by one end to said vertical support and extending horizontally therefrom;

a false mold supported adjacent said vertical support by the free end of said fastener, from which measurements are made of the levels and centers of the mechanisms and/or arms of the machine, depending on the dimensions of the new mold;

adjustable setting means supported internally of said false mold to permit measurements of the vertical portions of either of its ends to simulate the real length of the molds;

variable replaceable gage members for positioning on the upper and lower ends of said adjustable setting means and which are adaptable to the various mechanisms of the machine which cooperate with the molds; and

measuring means to measure the movement of the adjustable setting means and variable replaceable setting means, along the reference support, to correspond with the real measurements of the molds to be used.

2. Process for setting of mechanisms and/or arms when changing molds of machines for forming articles of glass, thermoplastic or the like which comprises, in combination, the steps of:

providing a projecting reference point simulating the mold, from which the setting of the mechanisms and/or arms of the machine is effected;

making a first setting from said reference point by a suitable gage, positioning at said reference point, with measurements of the real mold;

making a second setting with replaceable variable gages, adapted to the height and center of the various mechanisms and/or arms of the machine;

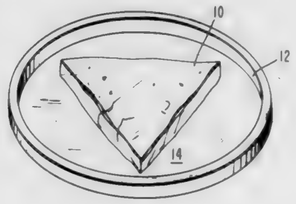
measuring the location of each one of the mechanisms and/or arms of the machine that participate in the setting; placing the reference point with its setting devices and its measurements on the supports of the machine and adjusting the mechanisms and/or arms of the machine to correspond with the measurements made and the real functioning of each of them, obtained during the setting.

4,388,097

HOT-PRESSED FLUORIDE GLASSES

Roger R. Turk, Woodland Hills, and Morton Robinson, Agoura, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed May 28, 1981, Ser. No. 267,934
Int. Cl.³ C03B *23/20*; C03C *3/18*
U.S. Cl. 65—64 **10 Claims**



1. A process for hot-pressing two or more pieces of a fluoride glass or powder thereof to consolidate and form a unitary piece, said fluoride glass having a composition comprising about 47 to 62 mole percent of at least one component selected from the group consisting of HfF_4 and ZrF_4, about 23 to 38 mole percent of BaF_2 and up to about 15 mole percent of at least one component selected from the group consisting of ThF_4 and LaF_3, the process comprising pressing the fluoride glass at a temperature ranging from the softening point of the glass to just below the crystallization temperature of the glass and at a pressure which is at least sufficient to cause flow of the glass at that temperature.

4,388,098

APPARATUS FOR PRODUCING MULTI-COMPONENT GLASS FIBER PREFORM

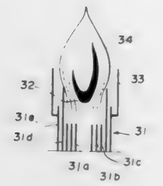
Shiro Takahashi, Mito; Kazuo Sanada, Chiba; Koichi Inada, and Osamu Fukuda, both of Sakura, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation and Fujikura Cable Works, Ltd., both of Tokyo, Japan

Division of Ser. No. 189,856, Sep. 22, 1980, Pat. No. 4,336,049. This application Feb. 26, 1982, Ser. No. 352,568

Claims priority, application Japan, Sep. 26, 1979, 54-123677; Jul. 4, 1980, 55-91292; Jul. 5, 1980, 55-91930

Int. Cl.[3] **B01J** *10/00*

U.S. Cl. 65—157 **1 Claim**



1. Apparatus for producing a multi-component glass fiber preform, which comprises a multi-conduit burner having five concentric conduits, the centrally disposed first conduit and the second and third conduits adjacent thereto being flush with one another at their tip ends, the fourth conduit interposed between the third and outermost conduits extending axially beyond them, the first to fifth conduits serving to feed a gaseous glass raw material, a fuel gas, a nebulized aqueous solution of at least one metal salt, an inert gas and oxygen gas, respectively, and said burner having a nozzle adapted to be directed to a substrate.

4,388,099

PRESSURIZED FLUID DISTRIBUTING ARRANGEMENT FOR A FORMING TOOL FOR SHAPING THERMOPLASTIC MATERIAL

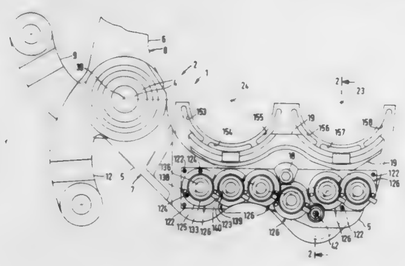
Helmut Hermening, Petershagen; Norbert Monden, Auetal; Lothar Schaar, Heuerssen; Wilhelm Schneider, Auetal, and Hans-Georg Seidel, Rinteln, all of Fed. Rep. of Germany, assignors to Hermann Heye, Obernkirchen, Fed. Rep. of Germany

Filed Oct. 19, 1981, Ser. No. 312,851

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1980, 3040310

Int. Cl.[3] **C03B** *9/38*

U.S. Cl. 65—267 **14 Claims**



1. A distributing arrangement for a pressurized fluid, especially air, for cooling a forming tool of a machine for forming thermoplastic material, especially molten glass, wherein the forming tool includes at least one split mold including mold segments which are respectively mounted on mold segment holders for movement therewith relative to each other and each of which is provided with a plurality of fluid channels for the flow of the pressurized cooling fluid therethrough, comprising a fluid distributing box mounted on each of the mold segment holders for movement therewith and including for each of the mold segments at least two branch channels; means for forming a dismountable common screw-free interface between the fluid channels of the respective mold segment and said branch channels of said fluid distributing box, each of said branch channels communicating across said interface with at least one of the fluid channels of the respective mold segment; and means for supplying the pressurized cooling fluid into said fluid distributing box.

4,388,100

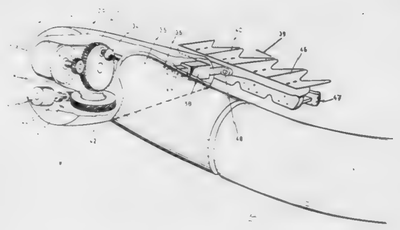
SHEAR MECHANISM FOR MACHINES FOR THE MANUFACTURE OF ARTICLES OF GLASS OR OTHER MATERIALS

Elio G. Marroquin, Monterrey, Mexico, assignor to Vitro Tec Fideicomiso, Monterrey, Mexico

Filed Dec. 8, 1981, Ser. No. 328,610

Int. Cl.[3] **C03B** *5/38*

U.S. Cl. 65—334 **3 Claims**



1. Glass gob shearing apparatus for use with automatic container molding machines comprising:

a housing;

a pair of horizontally spaced vertical shafts rotatably journaled in said housing each shaft including gear means affixed thereon and engaging each other so that said shafts rotate together by equal and opposite amounts;

a pair of horizontally extending shear blade supporting arms having one end affixed to each of said shafts respectively;

adjustable means joining said arms intermediate their ends;

means for vertically adjustably supporting said housing below the level of the feed orifices of an automatic glass feeder;

a pair of elongated hollow casings one coupled across the opposite ends of each of said arms respectively so that said casings face each other and the longitudinal axes of said casings are in substantial alignment;

means for independently adjusting the horizontal position of said casings along the longitudinal axis of said arms;

shear blade supporting means horizontally slidably supported within each of said casings respectively and carrying replaceable shear blades at their facing ends;

means within each of said casings for positively reciprocating said supporting means to effect cutting of molten glass from the feeder orifices into gobs; and

means for adjusting the time and length of stroke of said supporting means.

4,388,101

NON-PRESSURE NITROGEN CARRIER FERTILIZER SOLUTIONS AND DISPERSIONS AND PROCESS OF MANUFACTURE

Robert L. Lowder, Heyburn, Id., assignor to Occidental Chemical Agricultural Products, Inc., Los Angeles, Calif.

Filed Mar. 14, 1979, Ser. No. 20,399

Int. Cl.[3] **C05C** *9/00;* **C05G** *1/00*

U.S. Cl. 71—29 **19 Claims**

1. A process for preparing a non-pressure liquid fertilizer containing nitrogen and sulfur comprising

(a) mixing sulfuric acid in water,

(b) dissolving urea into the resulting solution, and

(c) adding anhydrous ammonia in an amount sufficient to bring the pH of the solution to between about 6 and 8.

4,388,102

ALKYLPHOSPHONATE DIESTERS OF N-PHOSPHONOMETHYLGLYCINATE AS HERBICIDES

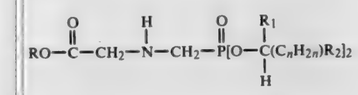
William R. Purdum, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 19, 1981, Ser. No. 275,485

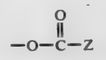
Int. Cl.[3] **A01N** *57/18;* **C07F** *9/40*

U.S. Cl. 71—86 **36 Claims**

1. A compound useful as a herbicide of the formula



wherein R is lower alkyl; R_1 is selected from the group consisting of hydrogen, lower alkyl and lower alkoxycarbonyl, R_2 is selected from the group consisting of lower alkoxy carbonyl and a



group wherein Z is lower alkyl; and n is an integer from 0 to 3.

25. A herbicidal method which comprises contacting a plant with a herbicidally effective amount of a compound of claim 1.

4,388,103

ALKYLPHOSPHONATE MONOESTERS OF N-PHOSPHONOMETHYLGLYCINATE AS HERBICIDES

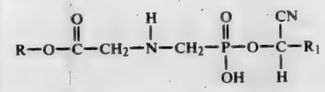
William R. Purdum, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 19, 1981, Ser. No. 275,533

Int. Cl.[3] **A01N** *57/18;* **C07F** *9/40*

U.S. Cl. 71—86 **27 Claims**

1. An alkylphosphonate monoester of N-phosphonomethylglycinate of the formula



wherein R is lower alkyl, lower alkoxy lower alkyl, halo lower alkyl, or phenyl lower alkyl and R_1 is selected from the group consisting of hydrogen and lower alkyl.

19. A herbicidal method which comprises contacting a plant with a herbicidally effective amount of a compound of claim 1.

4,388,104

3-PHENYLMETHOXYTETRAHYDROPYRAN HERBICIDES

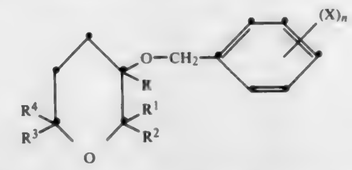
James E. Powell, Ripon, Calif., and Michael D. Barker, Sittingbourne, England, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 26, 1981, Ser. No. 314,612

Int. Cl.[3] **A01N** *43/00;* **C07D** *309/10, 309/12, 317/08*

U.S. Cl. 71—88 **3 Claims**

1. A compound of the formula:



(I)

wherein R is hydrogen, phenyl or alkyl of from one to four carbon atoms, R^1 is hydrogen or alkyl of from one to four carbon atoms, R^2 is hydrogen, R^3 is hydrogen, alkyl of from one to four carbon atoms, phenyl or is a moiety $R^5—O—CH_2CH_2—O)_mCH(R^6)—$, wherein m is zero, one or two, R^4 is hydrogen, alkyl of from one to four carbon atoms, or a moiety $R^5—O((CH_2CH_2)—O)_mCH(R^6)—$, R^5 is alkyl of from one to six carbon atoms and R^6 is hydrogen or alkyl of one to four carbon atoms, with the proviso that R^3 and R^2 together can represent the moiety $—C(R^7)_2—O—$, wherein R^7 is hydrogen or alkyl of from one to four carbon atoms, R^2 representing the oxa (—O—) oxygen therein, X is halogen, and n is zero, one or two.

3. A method for killing unwanted plants at a locus which comprises applying to the locus to be protected a herbicidal amount of a compound of claim 1 or a composition containing it.

4,388,105

HERBICIDAL CYCLIC SULFONAMIDES OF PHENOXYBENZOIC ACIDS

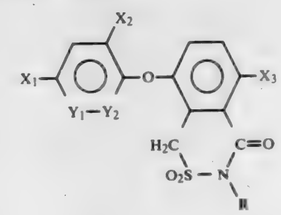
James T. Bahr, Hopewell, N.J., assignor to Rhone-Poulenc Agrochimie, Lyons, France

Filed Jul. 27, 1981, Ser. No. 287,350

Int. Cl.[3] **A01N** *43/72;* **C07D** *279/02*

U.S. Cl. 71—91 **5 Claims**

1. A herbicidal compound of the formula:



where:

(i) Y_1 is N or CH;

(ii) Y_2 is N or CX_4, provided that Y_1 is not N when Y_2 is CX_4;

(iii) X_1 and X_2 are the same or different and selected from the group consisting of halogen or CF_3;

(iv) X_3 is NO_2 or halogen;

(v) X_4 is H, halogen or CF_3; and

(vi) R is H or C_1 to C_{12} alkyl.

4,388,106

OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Werner Föry, Basel; Henry Martin, Allschwil, both of Switzerland, and Georg Pissiotas, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

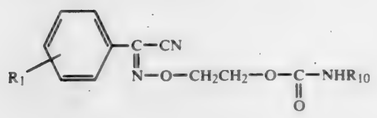
Division of Ser. No. 68,263, Aug. 20, 1979, Pat. No. 4,353,735. This application Jul. 14, 1982, Ser. No. 398,168

Claims priority, application Switzerland, Aug. 31, 1978, 9201/78

Int. Cl.³ A01N *37/34;* **C07C** *121/80*

U.S. Cl. 71—105 **4 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen or cyano, and

R_{10} is lower alkyl or phenyl optionally substituted by halogen or trifluoromethyl.

4. An antidote composition for use in safening plants against the harmful effects of potent herbicides, which comprises (1) a compound according to claim **1** and (2) a carrier.

4,388,107

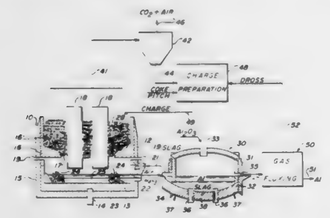
MINIMUM-ENERGY PROCESS FOR CARBOTHERMIC REDUCTION OF ALUMINA

Robert M. Kibby, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 140,842, Apr. 16, 1980, Pat. No. 4,334,917, and a continuation-in-part of Ser. No. 161,292, Jun. 20, 1980, which is a continuation-in-part of Ser. No. 7,986, Jan. 31, 1979, Pat. No. 4,216,010, which is a continuation-in-part of Ser. No. 881,786, Feb. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 785,676, Feb. 7, 1977, abandoned. This application Nov. 10, 1980, Ser. No. 205,451

Int. Cl.³ C22B *21/02*

U.S. Cl. 75—10 R **40 Claims**



1. A carbothermic process for producing aluminum containing aluminum carbide, comprising the following steps:

A. on a furnace hearth, reacting a mixture comprising solid aluminum carbide and carbon with a liquid slag comprising alumina and aluminum carbide, while providing heat input sufficiently high to produce vapors comprising aluminum metal, aluminum monoxide, and carbon monoxide, and liquid aluminum containing aluminum carbide;

B. decomposing said slag in the absence of reactive carbon or solid aluminum carbide to produce additional aluminum and vapors comprising aluminum metal, aluminum monoxide, and carbon monoxide;

C. passing said vapors produced in steps A and B through at least one zone where said vapors react to produce alumina, aluminum tetraoxycarbide, and aluminum carbide;

D. employing the product of step C as part of said mixture in step A which reacts with said liquid slag on said furnace hearth; and

E. recovering product aluminum containing aluminum carbide from step B.

4,388,108

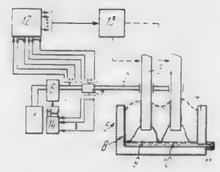
METHOD AND APPARATUS FOR SMELTING CHARGE MATERIALS IN ELECTRIC ARC FURNACE

Vladimir L. Rozenberg, ulitsa Novolesnaya, 18, korpus, 1, kv. 148; Igor P. Brukovsky, 1 Mosfilmovsky pereulok, 5, korpus 2b, kv. 16, both of Moscow; Sergei M. Nekhamin, ulitsa Chekhova, 11, kv. 32, Pushkino Moskovskoi oblasti; Mark A. Ryss, ulitsa Rossiiskaya, 32, kv. 7., Chelyabinsk; Boris B. Pelts, ulitsa Lesnaya, 62/13, kv. 157, Moscow; German V. Serov, Shipilovskaya ulitsa 38, korpus 1, kv. 188, Moscow; Alexandr N. Popov, ulitsa Akademika Pavlova, 13, korpus 4, kv. 58, Moscow; Gennady D. Bogoljubov, Perovskoe, 10, kv. 16, Moscow; Leonid A. Ryazantsev, 3 Karacharovskaya ulitsa, 8, korpus 1, kv. 21, Moscow; Jury S. Ioffe, Yaroslavskaya ulitsa, 1/9, kv. 11, Moscow; Grigory B. Fridman, ulitsa Entuziastov, 7, kv. 45, Zaporozhie; Leonid I. Boitsov, prospekt Lenina, 149, kv. 29, Zaporozhie; Petr D. Andrienko, ulitsa Novgorodskaya, 5, kv. 96, Zaporozhie; German V. Kovalev, ulitsa Tennisnaya, 3, kv. 12, Zaporozhie; Sergei A. Sankov, ulitsa Vestofonskaya, 18, kv. 1, Zaporozhie; Vladimir V. Fomenko, ulitsa Chervono Kinota, 24, Zaporozhie; Valery I. Stalev, ulitsa Girshmana, 18, kv. 21, Kharkov; Pavel K. Greditor, prospekt Lenina, 129, kv. 31, Zaporozhie; Stanislav V. Petrov, ulitsa Gyardeitsev Shirapentsev, 63, kv. 44, Kharkov, and Vladimir G. Mashyanov, ulitsa Voroshilova, 31, kv. 116, Zaporozhie, all of U.S.S.R.

Continuation of Ser. No. 186,244, Sep. 11, 1980. This application Jan. 15, 1982, Ser. No. 339,651

Int. Cl.³ H05B *7/18;* **C22B** *4/00*

U.S. Cl. 75—10 R **4 Claims**



1. In a method for smelting charge materials within a bath of an electric arc furnace with nonconsumable electrodes being provided with electric current having a direction which changes periodically, comprising the steps of:

loading said charge materials into said bath of the electric arc furnace,

smelting said charge materials,

carrying out redox reactions, and

tapping finished melt and slag;

the improvement comprising the steps of:

converting said electric current into a multi-phase current, having a base frequency which is within the range of 0.05 to 30 Hz,

providing said converted electric current to said electrodes of the electric arc furnace,

providing a stable position of said electrodes within said bath of the electric arc furnace,

monitoring variations in the converted current and voltage at said electrodes,

controlling the duration of a no-current condition interval between oppositely-directed half-waves of said converted current provided to said electrodes as a function of the monitored current and voltage, and said base frequency of said current, and

controlling said base frequency of said converted current within said range of 0.05 to 30 Hz.

4,388,109

PROCESS FOR THE PRODUCTION OF SILVER POWDER FROM SILVER CHLORIDE, SULPHATE OR SULPHIDE

Wasyl Kunda, Edmonton, Canada, assignor to Sherritt Gordon Mines Limited, Toronto, Canada

Continuation-in-part of Ser. No. 179,603, Aug. 9, 1980, Pat. No. 4,306,902. This application May 18, 1981, Ser. No. 264,724

The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.

Int. Cl.³ B22F *9/00;* **C22B** *11/00*

U.S. Cl. 75—0.5 B **7 Claims**

1. A process for the production of elemental silver from a silver salt selected from the group consisting of silver chloride, silver sulphate and silver sulphide, said process comprising mixing the silver salt with sodium carbonate, and heating the mixture at a temperature in the range of from about 500° C. to about 650° C. to produce a product mixture comprising elemental silver powder and a product sodium salt selected from the group consisting of sodium chloride and sodium sulphate, cooling the product mixture, and removing the product sodium salt and any unreacted sodium carbonate from the elemental silver powder by washing with water.

4,388,110

METHOD FOR RECOVERING THE METAL CONTENT OF COMPLEX SULPHIDIC METAL RAW MATERIALS

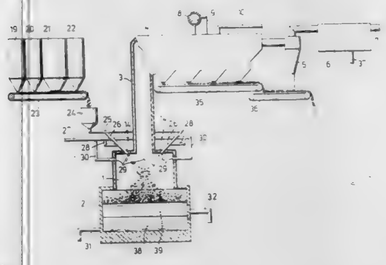
Torsten E. Jensfelt, Stocksund, and Stig A. Petersson, Skellefteham, both of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Nov. 18, 1981, Ser. No. 322,685

Claims priority, application Sweden, Dec. 1, 1980, 8008426

Int. Cl.³ C22B *1/07*

U.S. Cl. 75—21 **7 Claims**



1. A method for recovering the metal content of complex sulphidic metal raw materials by autogenous flame smelting with an oxygen-containing gas, comprising melting said raw materials in a furnace in the presence of an oxygen surplus while adding an acid slag former containing silica to form a melt which is poor in sulphur and comprises mainly metal-oxide silicate; separating from the silicate phase any metal phase formed in the furnace; and recovering non-iron metals present in the silicate phase by selective reduction.

4,388,111

PROCESS FOR THE RECOVERY OF LEAD FROM A LEAD-BEARING SULFIDE CONCENTRATE

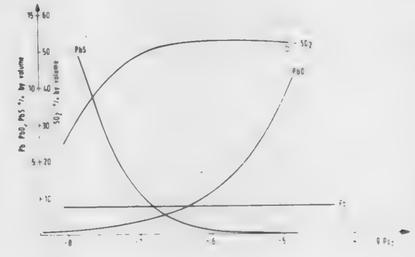
Timo T. Talonen, Nakkila, and Tuula S. M. Mäkinen, Vanha-Ulvila, both of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Apr. 15, 1981, Ser. No. 254,413

Claims priority, application Finland, Apr. 16, 1980, 801213

Int. Cl.³ C22B *13/00*

U.S. Cl. 75—26 **2 Claims**



1. A process for the recovery of lead from a lead-bearing sulfidic concentrate by heating the concentrate in such a manner that lead and lead compounds pass into the gas phase, comprising heating the sulfidic concentrate to a temperature of between 1373° K. and 1773° K. at an oxygen pressure lower than $2 \cdot 10^{-7}$ atm at 1373° K. and lower than $2 \cdot 10^{-4}$ atm at 1773° K., then oxidizing the gas phase and cooling the gas phase to a temperature no lower than 1073° K. at an oxygen pressure no lower than 10^{-12} atm to cause lead compounds of the gas phase including sulfides and oxides of lead to react with each other to produce elemental lead, condensing a major portion of the elemental lead produced at a temperature of at least 1272° K. and an oxygen pressure between 10^{-10} atm, and condensing the remainder of said elemental lead at a temperature below 1272° K.

4,388,112

STEELMAKING PROCESS WITH SEPARATE REFINING STEPS

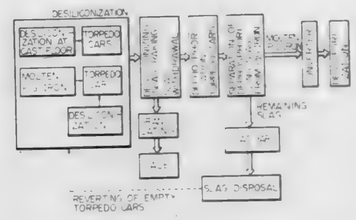
Hiroyuki Nakashima, Kisarazu; Morihiro Sumida, and Hiroki Goto, both of Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Japan

Filed Mar. 13, 1981, Ser. No. 243,451

Claims priority, application Japan, Mar. 21, 1980, 55-34693; Jan. 23, 1981, 56-8855

Int. Cl.³ C21C *7/00, 7/02*

U.S. Cl. 75—51 **31 Claims**



1. A process for making steel by separate steps comprising:

(a) a first step of desiliconizing molten pig iron produced by means of a blast furnace equipped with a cast floor,

said desiliconizing being carried out in a pig runner on the cast floor of said blast furnace, by incorporating in said

molten pig iron an oxidizer selected from the group consisting of an iron oxide and an oxygen-containing gas, whereby a slag is produced produced by said desiliconization, while maintaining the basicity of said slag at 0.4–2.8 throughout said desiliconization, to reduce the silicon content of the molten pig iron to not more than 0.2% and

separating said slag from said molten pig iron;

(b) a second step of dephosphorizing the molten pig iron of step (a),

said dephosphorization being carried out by transferring the molten pig iron of step (a) to an iron ladle or mixer car and

incorporating in said molten pig iron of step (a) a first refining agent comprising a calcium oxide-containing material and an oxidizer selected from the group consisting of an oxygen-containing gas and iron oxide, whereby a further slag is produced by said dephosphorization, while maintaining the basicity of said further slag at not less than 3 during said dephosphorization, to reduce said phosphorus content of said molten pig iron to not more than about 0.040%, and

separating the resultant slag from the molten pig iron,

(c) a third step of decarburizing said molten pig iron of step (b),

said decarburization being performed by transferring the molten pig iron from step (b) to a vessel which is a converter, and

blowing an oxygen-containing gas into said molten pig iron in said converter to decarburize said molten pig iron to a desired level to thereby produce molten steel and

(d) a fourth step of desulfurizing said molten steel of step (c),

said desulfurization being performed by transferring said molten steel from step (c) to another vessel and

incorporating in said molten steel a second refining agent consisting essentially of calcium oxide, thereby causing said desulfurization to occur.

4,388,113

METHOD OF PREVENTING DAMAGE OF AN IMMERSED TUYERE OF A DECARBURIZATION FURNACE IN STEEL MAKING

Yozo Takemura, Tokyo; Isao Kobayashi, Tokai; Yasuhiro Akita, Chita, and Kaoru Kato, Tokai, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 24, 1981, Ser. No. 305,259

Claims priority, application Japan, Sep. 26, 1980, 55-133966; Sep. 26, 1980, 55-133967; Sep. 26, 1980, 55-133968; Feb. 23, 1981, 56-25161

Int. Cl.³ C21C *7/00*; C21B *7/10*

U.S. Cl. 75—51 **35 Claims**

1. A method of preventing damage to an immersed tuyere for use in an oxygen steel making furnace used for a decarburization refining process, comprising the steps of:

forming a gas-powder mixture consisting of a gas emitting particulate material of an amount sufficient to generate a gas for stirring a molten metal bath and a carrier gas other than oxygen;

blowing said gas-powder mixture into said molten metal bath through said immersed tuyere to form a layer of said gas-powder mixture of an increased momentum on the inner peripheral rim and immediately above the nozzle of said immersed tuyere; and

cooling the molten metal around the tip end of said immersed tuyere by the absorption of heat caused by the endothermic decomposition reaction of said particulate material, while, stirring said molten metal bath by the combined effect of said carrier gas jet, gas generated through said decomposition reaction and said particulate material remaining undecomposed;

whereby the entry of said molten metal into said tip end of said immersed tuyere is prevented by the combined effect of the increased momentum, cooling and stirring effect, to prevent clogging, blockage and/or wear of said tip end of said immersed tuyere.

4,388,114

ANTI-WEAR SINTERED ALLOY

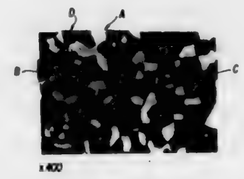
Tetsuya Suganuma, Nagoya; Yoshio Fuwa, Toyota; Shuichi Fujita, Toyota, and Takahashij Yoshitaka, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Dec. 5, 1980, Ser. No. 213,239

Claims priority, application Japan, Mar. 4, 1980, 55-27107

Int. Cl.³ C22C *38/02, 38/04, 38/20, 38/36*

U.S. Cl. 75—243 **12 Claims**



1. An anti-wear sintered alloy consisting essentially of chromium 2.5–7.5 weight %, manganese 0.10–3.0 weight %, phosphorus 0.2–0.8 weight %, copper 1.0–5.0 weight %, silicon 0.5–2.0 weight %, molybdenum 0–3 weight %, and carbon 1.5–3.5 weight %, the balance being Fe and less than 2% impurities.

4,388,115

AQUEOUS INK COMPOSITION

Masatoshi Sugiyama; Akira Ogawa, both of Minami-ashigara, and Shinichi Imai, Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

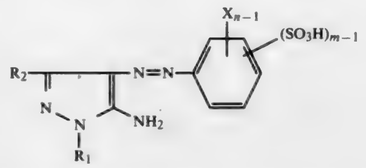
Filed Jun. 15, 1981, Ser. No. 274,045

Claims priority, application Japan, Jun. 13, 1980, 55-79925

Int. Cl.³ C09D *11/02*

U.S. Cl. 106—22 **9 Claims**

1. An aqueous yellow ink composition comprising: a water-soluble dye and a wetting agent dissolved in water, wherein said water-soluble dye has the formula (I):



(I)

wherein R_1 is a phenyl group, a substituted phenyl group, an alkyl group or a substituted alkyl group; R_2 is an alkyl group, a phenyl group, a substituted phenyl group, a cyano group, a hydroxyl group, an alkoxy group, an amino group, an acylamino group, an anilino group, a ureido group, an alkoxycarbonyl group or a carbamoyl group; X is a halogen atom, an alkyl group or an alkoxy group; n is 1, 2, 3, 4 or 5; and m is 1, 2 or 3, provided that the sulfo group in the formula (I) may be an alkali metal salt, an ammonium salt or an organic amine salt.

4,388,116

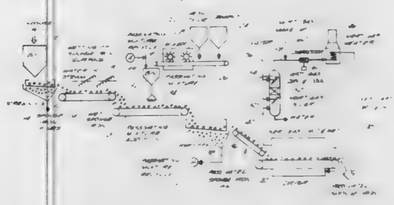
PASSIVATION OF SPONGE IRON

David H. Carrillo-Cantu, and Asdrubal Trevino-Alanis, both of Monterrey, Mexico, assignors to Hylsa, S.A., Monterrey, Mexico

Filed Aug. 4, 1981, Ser. No. 289,999

Int. Cl.³ C04B *7/22*

U.S. Cl. 106—97 **18 Claims**



1. A method of passivating sponge iron pellets comprising the steps of wetting said sponge iron pellets, applying to the wetted pellets a passivating amount of a pulverulent mixture of about 40% to 70% by weight of iron oxide particles and about 60% to 30% by weight of hydraulic cement particles and drying the thus treated sponge iron pellets.

4,388,117

PROCESS AND APPARATUS FOR PRODUCING PORTLAND AND OTHER HYDRAULIC CEMENTS

Eddie K. Wilson, Sr., 6915 Silver Maple Cove, Memphis, Tenn. 38138

Continuation-in-part of Ser. No. 165,500, Jul. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 947,599, Oct. 2, 1978, Pat. No. 4,213,791, which is a continuation-in-part of Ser. No. 690,510, May 27, 1976, abandoned. This application Jul. 21, 1981, Ser. No. 285,452

Int. Cl.³ C04B *7/02*

U.S. Cl. 106—100 **21 Claims**

1. A process for producing a hydraulic cement, such as portland cement, said process comprising: maintaining a melt within a cavity that is lined with a material having substantially the same chemical composition as the desired cement, the melt also having substantially the same chemical composition as the desired cement, whereby the melt does not react with the material that lines the cavity; introducing appropriate feed materials into the melt within the cavity with the feed materials containing compounds suitably proportioned for the desired cement; heating the melt within the cavity sufficiently to enable the feed materials to be in a molten condition and to chemically combine within the melt, the heating being effected by electrical energy; withdrawing the melt from the cavity; and cooling the withdrawn melt to solidify it into a solid substance that has the chemical constituency and properties of the desired cement.

4,388,118

BLACK PIGMENT FREE OF HEAVY METALS

Richard A. Eppler, Timonium, Md., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Mar. 15, 1982, Ser. No. 357,959

Int. Cl.³ C09C *1/02*

U.S. Cl. 106—306 **5 Claims**

1. An inorganic black pigment having a distorted perovskite structure in which the net oxide composition after calcination at a temperature between 1200° and 1900° F. consists essentially of (a) 25 to 84 mol % of an oxide of manganese and (b) 75 to 16 mol % strontium oxide and/or calcium oxide, together with residual amounts of carbonates and/or mineralizers.

4,388,119

DIBENZYLIDENE SORBITOL COMPOSITION AND PROCESS FOR PREPARATION THEREOF

Hiroshi Uchiyama, Hirakata, Japan, assignor to E. C. Chemical Ind. Co., Ltd. and C. Itoh & Co., Ltd., both of Osaka, Japan

Filed Jul. 13, 1981, Ser. No. 282,739

Claims priority, application Japan, Jul. 16, 1980, 55-96188

Int. Cl.³ C08K *5/15*

U.S. Cl. 106—316 **7 Claims**

1. A composition consisting essentially of 95 to 50 parts by weight of solid powdery dibenzylidene sorbitol and 5 to 50 parts by weight of at least one higher fatty acid of the formula $CH_3(CH_2)_nCOOH$ in which n is an integer of from 14 to 20, the total weight of said two components being 100 parts by weight, the surface of the dibenzylidene sorbitol being coated with the higher fatty acid.

4,388,120

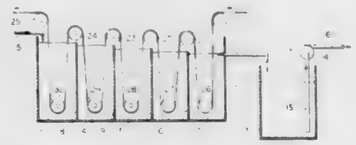
ELECTROCHEMICAL CLEANING CASCADE WASH

Jon K. West; Arthur J. Catotti, both of Gainesville, Fla., and Michael J. Wynn, Latham, N.Y., assignors to General Electric Company, Gainesville, Fla.

Continuation of Ser. No. 191,220, Sep. 26, 1980, abandoned. This application May 7, 1982, Ser. No. 375,907

Int. Cl.³ B08B *1/02*

U.S. Cl. 134—15 **2 Claims**



1. In a process of making battery plates, a method of removing impurities comprising sodium hydroxide from a surface of flexible strip material and recycling said sodium hydroxide, said flexible strip material comprising a mild steel substrate covered with a porous nickel layer filled with nickel hydroxide or cadmium hydroxide, said method comprising:

providing a system for washing said flexible strip material comprising a wash tank containing a plurality of vertically-oriented plates dividing said tanks into a first wash zone, a final wash zone, and at least one intermediate wash zone, the upper ends of said plates being at progressively lower levels in progressing from said final wash zone to said first wash zone;

introducing rinse water into said final wash zone at a rate from about 0.25 to about 0.5 gallons per minute and passing it through said intermediate and first wash zones, said rinse water flowing from each of said final and intermediate wash zones to the next succeeding wash zone over the upper ends of said plates dividing said tank into separate wash zones, thereby cascading from each wash zone to the next succeeding wash zone;

introducing said strip material having impurities comprising sodium hydroxide on at least one surface of said strip material into said first wash zone at a rate up to about 15 feet per minute and passing it through said first, intermediate, and final wash zones countercurrently to the flow of said rinse water whereby sodium hydroxide on the surface of said strip material is dissolved by said rinse water to produce a sodium hydroxide-containing effluent, said strip material following a serpentine path through said system, passing downwardly and then upwardly within each of said washing zones, said strip material being raised vertically from the surface of liquid within said wash zones a sufficient distance to permit at least a portion of the rinse water to drain back into the wash zone from which the strip emerged; and,

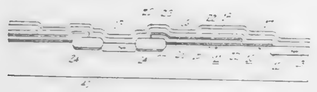
recycling the resulting effluent.

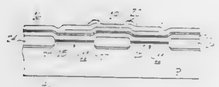
4,388,121

REDUCED FIELD IMPLANT FOR DYNAMIC MEMORY CELL ARRAY

G. R. Mohan Rao, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 21, 1980, Ser. No. 132,703
Int. Cl.³ H01L *21/263*; G11C *11/40, 17/00*
U.S. Cl. 148—1.5 **9 Claims**





1. A method of making a dynamic semiconductor memory cell of the one-transistor type comprising the steps of:

masking a face of a silicon body to expose field areas and cover transistor and capacitor areas,

subjecting said face to an impurity ion implant at a dosage of not more than about 3×10^{12} atoms per sq. cm. to produce implanted regions in said field areas but not in said transistor and capacitor areas,

annealing said body in an inert atmosphere after said implant,

thereafter growing field oxide in said field areas by exposing said face to an oxidizing atmosphere at high temperature thereby creating lightly doped channel stop regions from said implanted regions,

forming electrodes at said transistor and capacitor areas to provide a memory cell, wherein the step of forming electrodes includes:

applying a first layer of conductive material over said face of the semiconductor body to form a capacitor electrode overlying a first semiconductor region,

applying a second layer of conductive material on said face partially overlying the first layer and overlying a second semiconductor region, the first and second semiconductor regions including said capacitor and transistor areas, respectively,

applying a metal layer to said face to define at least one elongated strip overlying the first and second layers and making contact to at least one of said electrodes.

4,388,122

METHOD OF MAKING HIGH STRENGTH HOT ROLLED STEEL SHEET HAVING EXCELLENT FLASH BUTT WELDABILITY, FATIGUE CHARACTERISTIC AND FORMABILITY

Masatoshi Sudo; Shunichi Hashimoto, and Shoji Kambe, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Aug. 3, 1981, Ser. No. 289,280
Claims priority, application Japan, Aug. 11, 1980, 55-110829; Dec. 15, 1980, 55-177841; Dec. 15, 1980, 55-177842
Int. Cl.³ C21D *8/02*
U.S. Cl. 148—12 F **10 Claims**

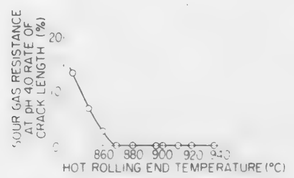
1. A method of producing high strength, hot rolled, steel sheet with excellent flash butt weldability, fatigue characteristic and formability, having a composite structure consisting of polygonal ferrite and bainite, and containing from 0.01 to 0.15% by wt. of C, from 0.01 to 1.5% by wt. of Si, and from 0.3 to 2.0% by wt. of Mn, the area ratio of the bainite being from 3 to 60%, said steel sheet being produced by a cooling treatment consisting of: upon completion of the hot rolling, cooling the hot rolled steel sheet for 3 to 20 seconds at a cooling rate of 4° to 10° C./sec; thereafter cooling the steel sheet at a cooling rate of 50° to 100° C./sec, and winding up the sheet thus cooled at a temperature of from 350° to 575° C.

4,388,123

METHOD FOR THE MANUFACTURE OF STEEL SUITABLE FOR ELECTRIC-WELDED TUBULAR PRODUCTS HAVING SUPERIOR RESISTANCE TO SOUR GAS

Hiroshi Murayama, Tokai, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 31, 1981, Ser. No. 297,971
Claims priority, application Japan, Sep. 5, 1980, 55-122221
Int. Cl.³ C21D *8/02*
U.S. Cl. 148—12 F **3 Claims**



1. In a method for producing a steel suitable for electric-welded tubular products which has a superior resistance to sour gas containing H_2S and other S-bearing gases, the improvement which comprises providing a steel consisting essentially of, as a basic composition, C≦0.12 wt. %, 0.5–1.0% Mn, 0.10–0.25% Si, P≦0.015%, S≦0.0020%, Nb≦0.050%, 0.0010–0.0060% Ca, the remainder Fe and unavoidable and negligible traces of impurities, subjecting said steel to a hot rolling step, said hot rolling step being ended at a temperature above 870° C., further rapidly cooling said steel on a runout table following said hot rolling step at an average cooling rate of from 5° C. to 30° C. per second, to form an acicular ferritic structure, and finally, subjecting the steel to a coiling step at a temperature below 570° C.

4,388,124

CYCLIC OXIDATION-HOT CORROSION RESISTANT NICKEL-BASE SUPERALLOYS

Michael F. Henry, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 34,168, Apr. 27, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,633
The portion of the term of this patent subsequent to Aug. 18, 1998, has been disclaimed.
Int. Cl.³ C22C *19/05*
U.S. Cl. 148—404 **16 Claims**



1. An article of manufacture exhibiting cyclic oxidation-hot corrosion resistant properties comprising a non-eutectic nickel-base superalloy having a microstructure substantially free of carbides in the form of aligned fibers consisting essentially of, on a weight basis, 1–9% Re, 0–2% Ti, at least 2% Al, 3–12% Cr, 1–5.9% Ta, 0–0.5% C, 2–12% Co, 2–10% W, less than 1% V, 2–10% Mo, 0–5% Cb, 0–3% Hf, 0–1.5% Zr and 0–0.20% B, the balance being essentially Ni and incidental impurities.

9. The claim 1 article wherein the article is a unidirectionally solidified anisotropic metallic body.

4,388,125

CARBURIZATION RESISTANT HIGH TEMPERATURE ALLOY

Raymond C. Benn, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Jan. 13, 1981, Ser. No. 224,800
Int. Cl.³ C22C *19/05*
U.S. Cl. 148—428 **26 Claims**

1. A nickel-base heat resistant alloy consisting essentially of, by weight, chromium, from about 28 to about 35%; iron, from about 10 to about 22%; titanium, from about 0.1 to about 0.7%; carbon, from about 0.2 to about 0.75%; manganese, from about 0.5 to about 2%; calcium, present up to about 0.04%; tungsten, from about 0.5 to about 5%; aluminum, from about 2 to about 2.5%; silicon, from about 0.4 to about 2%; and nickel, the balance, said alloy being characterized by a microstructure containing titanium-rich carbonitride particles.

4,388,126

MULTI-COMPONENT PROPELLANT CHARGES

Craig Johnson, Indian Head, Md.; Paul Dendor, Alexandria, Va., and Harry L. Hodgkins, Upper Marlboro, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 22, 1980, Ser. No. 189,428
Int. Cl.³ C06B *45/12*
U.S. Cl. 149—14 **14 Claims**

1. A multi-component propellant charge for a gun launched rocket comprising

(1) a high-energy fuel-rich thrust propellant component forming the forward portion of the propellant charge; and

(2) an high-strength energetic support component forming the rear portion of the propellant charge and comprising

(a) from 55 to 75 weight percent of an oxidizer; and

(b) a binder which is the reaction product of

(i) from 5 to 8 weight percent of a polyalkene glycol having an average molecular weight of from 150 to 500;

(ii) from 2 to 5 weight percent of a trifunctional cross-linking agent capable of reacting with diisocyanates and

(iii) from 4 to 10 weight percent of a di-isocyanate; and

(c) from more than zero to 20 weight percent of an energetic plasticizer;

said weight percents being based on the total weight of the high-strength energetic support component;

and said high-strength energetic support component comprising from 5 to 15 percent of the length of the multi-component propellant charge.

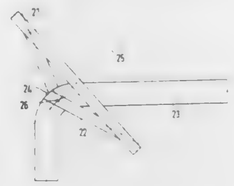
4,388,127

METHOD FOR WRAPPING THREE-DIMENSIONALLY CURVED CONDUCTORS

Karl Brunner, Schwabach; Hans Barking, Dinslaken, and Günter Didschies, Nürnberg-Boxdorf, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 11, 1981, Ser. No. 272,475
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1980, 3022303
Int. Cl.³ H01B *13/08*
U.S. Cl. 156—53 **3 Claims**

1. A method for wrapping a three-dimensionally curved conductor with insulating tape by using a wrapping device having a wrapping ring provided with at least one tiltable supply roll of tape, the tape being guided along a curved conductor, the wrapping ring having freedom of movement in six directions, and an axis of rotation, the method comprising the



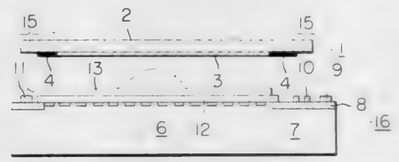
step of moving the wrapping ring so that its axis of rotation is always located at a spinning point of the tape, said spinning point of the tape being located where the tape tangentially contacts the conductor.

4,388,128

SOLID-STATE COLOR-IMAGE SENSOR AND PROCESS FOR FABRICATING THE SAME

Kazufumi Ogawa; Shigeru Kondo, both of Hirakata; Yoshiko Yasuda, Sakai; Taketoshi Yonezawa, Ibaraki, and Isamu Kitahiro, Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 11, 1981, Ser. No. 242,578
Claims priority, application Japan, Mar. 17, 1980, 55/33805; Mar. 19, 1980, 55/35291
Int. Cl.³ B29C *27/10*; B32B *31/20*; H01L *31/18*
U.S. Cl. 156—64 **4 Claims**



1. A process for fabricating solid-state color-image sensors, comprising the steps of:

(a) placing an adhesive agent which is curable not only by ultraviolet-ray irradiation but also by heating between a picture-element grid on a solid-state image sensor chip and a filter pattern on an optical glass substrate of a color filter and pressing said solid-state image sensor chip and said color filter against each other,

(b) aligning the filter pattern on said color filter with the picture-element grid on said solid-state image sensor chip while said color filter and said sensor chip are pressed against each other,

(c) thereafter, curing a predetermined portion or portions of the adhesive by ultraviolet-ray irradiation,

(d) removing the uncured unwanted adhesive which oozes out around the edges of said color filter and sensor chip, and

(e) curing the adhesive which has remained uncured after the curing step by ultraviolet-ray irradiation, by heating.

4,388,129

PRODUCTION OF BUBBLE-FREE ELECTRICAL LAMINATES

Masayuki Oizumi, Ohtsu; Masaharu Abe, Kobe, and Yasuo Fushiki, Takatsuki, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 22, 1981, Ser. No. 304,692

Claims priority, application Japan, Sep. 22, 1980, 55-132158; Sep. 25, 1980, 55-134013

Int. Cl.³ B32B *31/14*

U.S. Cl. 156—73.1 **10 Claims**

1. A process for producing bubble-free electrical laminates which comprises the steps of impregnating a porous fibrous substrate with a solvent-free, liquid resin capable of curing to a rigid state without producing a volatile by-product combining a plurality of impregnated substrates to form a green laminate, allowing said green laminate to stand prior to the curing step for a sufficient length of time and applying ultrasonic waves thereto to dissolve substantially all of the entrapped air bubbles into said liquid resin phase, and then curing the green laminate.

4,388,130

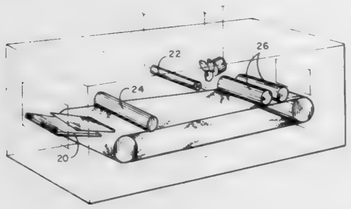
METHOD OF PRODUCING A PACKAGE FOR DISPLAY AND HANDLING OF FOIL ART

F. Jeffery Bautze, 136 Lakeshore Dr., Marlboro, Mass. 01752

Division of Ser. No. 174,497, Aug. 1, 1980, abandoned. This application Dec. 2, 1981, Ser. No. 326,768

Int. Cl.³ B29C *27/20*

U.S. Cl. 156—85 **1 Claim**



1. The method of producing an improved package for the display and handling of foil art comprising the steps of:

determining the size of said foil art;

providing a backboard longer and wider than the size of said foil art said backboard having a thickness of at least 14 ply;

positioning said foil art and said backboard, leaving margins around all the sides of said foil art;

adhering said foil art to said backboard by adhesive;

providing a mat of the same size as said backboard, said mat having an aperture centrally defined therein slightly smaller than the size of said foil art;

positioning said mat over said backboard so that said aperture is above said foil art with a portion of said mat covering the edges of said foil art;

adhering said mat to said backboard;

providing a stiff plastic film of at least 10 mils in thickness of the approximate size of said backboard;

positioning said plastic film to contact said mat above said foil art;

putting said resulting backboard, foil art, mat, and stiff plastic film sandwich provided above into an approximately 75 gauge shrinkwrap envelope of clear chemically-compatible material; to said stiff plastic film;

sealing the edges of said shrinkwrap;

positioning the resulting shrinkwrap covered package on a ledge in a heat tunnel;

heating lightly said shrinkwrap causing slow shrinkage of said wrap;

rolling said sandwich package under a first hot roller to remove the air from therein;

heating said shrinkwrapping to cause said shrinkwrapping to shrink tightly around said sandwich package; and

rolling said sandwich package under a second hot roller to iron any wrinkles remaining in said shrinkwrap.

providing a mat of the same size as said backboard having an aperture defined therein of the approximate size of said foil art;

adhering said mat to said backboard so that said aperture is above said foil art; and

positioning said plastic film to contact said mat above said foil art.

4,388,131

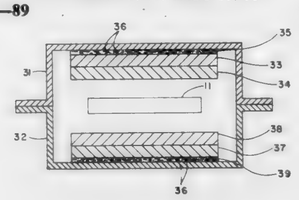
METHOD OF FABRICATING MAGNETS

John C. Unger, San Diego; Sidney J. Schwartz, Vista, and Ling G. Chow, San Diego, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 70,238, Aug. 27, 1979, abandoned, which is a continuation of Ser. No. 792,577, May 2, 1977, abandoned. This application Dec. 22, 1980, Ser. No. 218,866

Int. Cl.³ B32B *31/18;* **B42C** *15/00*

U.S. Cl. 156—89 **7 Claims**



1. An improved method of fabricating a multi-layer magnet structure comprising the steps:

forming a first slurry of a first ferrite including certain first oxide additives and casting a first tape therefrom;

forming at least one other slurry of at least one other chemically different ferrite including certain second oxide additives, at least some which are chemically different from said first oxide additives, and casting an associated tape from each such other slurry;

cutting strips of prescribed common length and width from each said tape and forming a laminate with the tapes laid-up in prescribed order superposed and pressed together intimately; and

heating, and cofiring this laminate to cure the tapes and leave them adhered to one another; the slurry consistancy, pressure and heating values being selected to assure that there is sufficient inter-diffusion between the tapes that they may be so co-fired to form an integral magnet with no magnetically-significant air gap between the tapes.

4,388,132

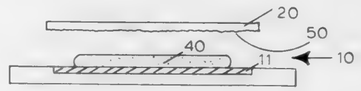
METHOD OF ATTACHING A PROTECTIVE FILM TO AN INTEGRATED CIRCUIT

Carl E. Hoge, Encinitas, and Gregory K. Lin, San Diego, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 1, 1981, Ser. No. 268,813

Int. Cl.³ B32B *31/12, 7/12*

U.S. Cl. 156—153 **10 Claims**



1. A method of attaching a protective film to a planar surface

of an integrated circuit; said film having a perimeter with edges that correspond to and precisely overlie other edges along the perimeter of said planar surface of said integrated circuit when said film and said circuit are in alignment with each other; said method including the steps of:

disposing an adhesive in a fluid phase between said surface of said circuit and the surface of said film such that said corresponding edges are in an offset position from each other;

moving said film, by the surface tension of said fluid adhesive between said surfaces and without any manual or mechanical pressing, from said offset position to another position where said corresponding edges align with each other; and

hardening said adhesive subsequent to said moving step.

4,388,133

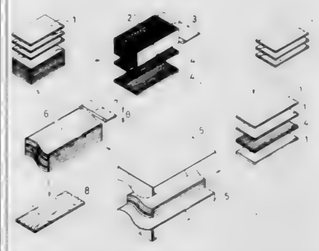
METHOD OF MANUFACTURING ARTIFICIAL WOOD VENEER

Shozo Hirao, Shuita; Yasuhiro Saihara, Kadoma; Toshio Nakanishi, Okazaki; Ichiro Ihara, Okazaki, and Yoshio Sano, Okazaki, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Dec. 2, 1981, Ser. No. 326,618

Int. Cl.³ B29C *19/00*

U.S. Cl. 156—245 **35 Claims**



30. A method of manufacturing artificial veneers comprising the steps of preparing at least two different kinds of material veneers cut out of different natural woods, forming at least three different kinds of first artificial flitches by collecting under a pressure a plurality of said material veneers heaped up with a binder interposed between them, forming at least three different kinds of collected veneers by slicing respective said first artificial flitches in a straight grain direction by a cutting edge oriented transversely of the planes of said material veneers, forming a composite veneer by combining and joining one of said different kinds of collected veneers and material veneer with said binder interposed between them, forming a second artificial flitch by assembling into a set with composite veneer with said composite collected veneer with the collected veneer in the composite veneer arranged adjacent the composite collected veneers and by collecting under a pressure a plurality of said assembled sets alternately heaped up with said binder interposed between them, and slicing said second artificial flitch in a flowered grain direction.

4,388,134

UNDERWATER DIVER'S DRY SUIT AND METHOD OF SEALING

Richard W. Long, and Robert T. Stinton, both of San Diego, Calif., assignors to Diving Unlimited International, Inc., San Diego, Calif.

Filed Apr. 28, 1982, Ser. No. 372,625

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—248 **9 Claims**

1. The method of forming a watertight dry suit for underwater divers, said suit consisting of sections of foam core material laminated on both sides with a cover material, said sections being stitched together, including the steps of:

(1) removing a portion of the cover material on the inside of the suit along a seam to expose the foam core without destroying it;



(2) coating the exposed foam material with an adhesive;

(3) placing a sealing strip of said cover material with foam on one side over the adhesive, with the foam side of the sealing strip in contact with the adhesive to foam a secure foam to foam seal at the seam.

4,388,135

METHOD OF MANUFACTURING OSTOMY POUCHES

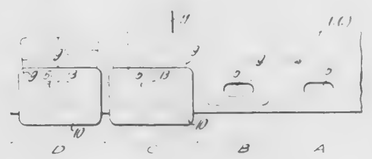
Ole R. Jensen, River Vale, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 24, 1981, Ser. No. 286,495

Claims priority, application Denmark, Aug. 1, 1980, 3328/80

Int. Cl.³ B32B *31/18, 31/20*

U.S. Cl. 156—250 **4 Claims**



1. A method of manufacturing ostomy pouches having an adhesive label or faceplate that attaches the pouch to the body comprising;

(a) advancing two superposed webs of weldable plastics sheet material and producing an aperture only in the uppermost web;

(b) welding said two webs to form a partial pouch contour said partial contour extending from the top edge of the pouch past the area of said aperture in said uppermost web;

(c) inserting a separator member into the partially contour welded pouch to function as a base for said uppermost pouch wall;

(d) welding or bonding an adhesive label or faceplate to said supported uppermost pouch wall around said aperture;

(e) removing said separator member; and

(f) completing the contour welding of said pouch walls so as to form a completed pouch of desired configuration.

4,388,136

METHOD OF MAKING A POLYIMIDE/GLASS HYBRID PRINTED CIRCUIT BOARD

Jaken Y. Huie, Apple Valley, Minn., and Dan Jacobus, Glendale, Wis., assignors to Sperry Corporation, New York, N.Y.

Filed Sep. 26, 1980, Ser. No. 191,651

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—252 **2 Claims**

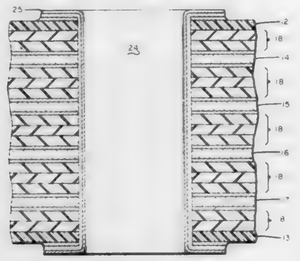
1. A method of fabricating a hybrid multilayer printed circuit board comprising:

trimming to rough size a plurality of double-copper-clad epoxy-glass-base boards;

forming circuit patterns in the top and bottom copper layers of said epoxy-glass-base boards;

trimming to rough size two single-copper-clad polyimide-glass-base boards:

forming a pre-laminated structure by sandwiching said plurality of said epoxy-glass-base boards between said two polyimide-glass-base boards with the copper layers thereon exposed and with one or more layers of B stage prepreg containing an epoxy resin inserted between each of said sandwiched and said sandwiching boards;



forming a laminated structure of said pre-laminated structure by applying pressure and heat thereto;

forming through-holes in said laminated structure;

forming circuit patterns in the copper layers of said polyimide-glass-base boards; and,

trimming said laminated structure to final size.

4,388,137

PROCESS FOR TRANSFER COATING WITH RADIATION-CURABLE COMPOSITIONS

William H. McCarty, Whitehouse Station; John P. Guarino, Lawrenceville, and Frank A. Nagy, Edison, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 967,189, Dec. 7, 1978, abandoned. This application Jul. 31, 1980, Ser. No. 174,057

Int. Cl.[3] **B29C** *19/02*

U.S. Cl. 156—275.5 **14 Claims**

1. A process for applying a coating to a thin porous substrate and reducing absorption of said coating into said substrate, said process comprising:

(a) applying a radiation-curable composition to a carrying web; said radiation-curable coating composition having a crosslink density of 0.11 to about 1.0 determined by calculation of the gram moles of branch points per 100 grams of uncured coating; a glass transition temperature of the radiation cured coating within the approximate range of −20° C. to 50° C.; and containing internal lubricant incorporated therein in an amount sufficient to facilitate removal of the cured coating from a carrying web substrate without adversely affecting adhesion of the cured coating to said solid substrate; said carrying web being of a nature such that said coating composition, when cured, will not adhere to its surface;

(b) bringing a thin porous substrate to which said coating composition will adhere into contact with said coating composition on said carrying web to form a sandwich;

(c) subjecting said sandwich to a radiation curing process wherein said coating composition is polymerized and set on the surface on said porous substrate; and

(d) stripping said carrying web away from the layer comprising said cured coating composition.

4,388,138

PREPARING PARTICLEBOARD UTILIZING A VEGETABLE WAX OR DERIVATIVE AND POLYISOCYANATE AS A RELEASE AGENT ON METAL PRESS PARTS

James P. Brown, Manchester; Graham Gibbins, Lancashire, and Robert S. Hampson, Oldham, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 3, 1981, Ser. No. 289,733

Claims priority, application United Kingdom, Aug. 11, 1980, 8026057

Int. Cl.[3] **B32B** *21/02;* **C08L** *91/06*

U.S. Cl. 156—289 **8 Claims**

1. A process for the continuous manufacture of sheets or moulded bodies which comprises hot pressing a ligno-cellulosic material in contact with an aqueous dispersion of an organic polyisocyanate and a wax release agent which is selected from the group consisting of a vegetable wax and a modified vegetable oil, said wax release agent having a melting point of at least 70° C. whereby there is achieved release of successive batches of said ligno-cellulosic material from metal parts of the press with which it comes into contact during hot pressing.

4,388,139

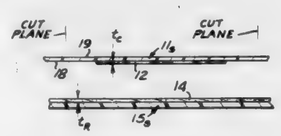
THERMOSENSING ARTICLE AND METHOD OF MANUFACTURE

David L. Fuller, 1110 Mountain Creek Trail, NW., Atlanta, Ga. 30328

Filed Jul. 14, 1980, Ser. No. 168,014

Int. Cl.[3] **C09J** *5/02*

U.S. Cl. 156—307.5 **6 Claims**



1. A method of fabricating a strip thermometer comprising the steps of:

applying to a first substrate a plurality of cholesteric liquid crystal compositions exhibiting color changes with different temperature responsive ranges that each such composition so applied is spaced from the other such compositions so applied and where the liquid crystal compositions are sufficiently viscous to flow under pressure;

coating a second substrate with an uncured solid film forming epoxy resin composition, which absorbs the liquid crystal compositions while in the uncured state;

partially curing the epoxy resin composition coating on the second substrate while maintaining the epoxy resin coating separated from the cholesteric liquid crystal compositions until the epoxy resin composition reaches a non-absorbing partially cured state in which the cholesteric liquid crystal compositions will not be absorbed by the epoxy resin composition;

placing the first and second substrates together so that the partially cured epoxy resin composition overlies all of the cholesteric liquid crystal compositions on the first substrate while the epoxy resin composition is in the non-absorbing partially cured state;

with the partially cured epoxy resin composition overlying the cholesteric liquid crystal compositions, forcing the first and second substrates toward each other while the epoxy resin composition has sufficient fluidity to flow around the cholesteric liquid crystal compositions without substantially distorting the cholesteric liquid crystal compositions to cause the partially cured epoxy resin composition to flow around the cholesteric liquid crystal compositions and into contact with the first substrate between the cholesteric liquid crystal compositions so that the epoxy resin composition adheres to the first substrate and confines the cholesteric liquid crystal compositions between the epoxy resin composition and the first substrate; and

subsequently, finishing the curing of the epoxy resin compound to bond the epoxy resin composition to the first substrate.

4,388,140

APPARATUS FOR WET TREATMENT OF WAFER MATERIALS

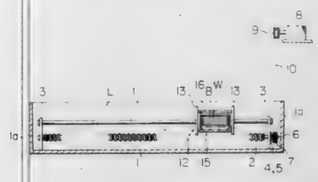
Yasuaki Nakazato, Koshoku; Yasushi Miyazaki, Nagano; Makoto Osuga, Nagano, and Masao Kodaira, Nagano, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1981, Ser. No. 279,314

Claims priority, application Japan, Jul. 15, 1980, 55-99634[U]

Int. Cl.[3] **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—345 **1 Claim**



1. An apparatus for the wet treatment of wafer materials with a treatment liquid which comprises

(a) a liquid tub for containing the treatment liquid,

(b) a pair of screw shafts threaded in the same pitch and held horizontally in the liquid tub in parallel with each other in a rotatable manner in the same direction at the same velocity,

(c) a traveling drum carriage having two circular end plates for holding a wafer basket containing a plural number of wafer materials, said carriage being mountable on the pair of the screw shafts axially in parallel therewith and engaged at the end plates with the threads of the screw shafts so as to be transferred from one end of the pair of the screw shafts to the other with simultaneous axial rotation by the rotation of the screw shafts and demountable therefrom, and

(d) a means for rotating the screw shafts in the same direction.

4,388,141

APPARATUS FOR FUSING STRIPS

Hubert Blessing, Dallas, Tex., assignor to Levi Strauss & Co., San Francisco, Calif.

Division of Ser. No. 79,977, Sep. 28, 1977, Pat. No. 4,259,131. This application Dec. 3, 1980, Ser. No. 212,352

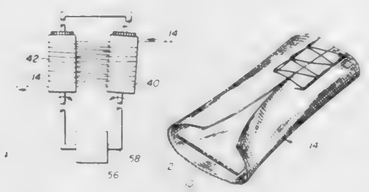
Int. Cl.[3] **B32B** *31/00;* **B65C** *1/00;* **D04F** *61/00*

U.S. Cl. 156—432 **2 Claims**

1. Apparatus for heat fusing a flat strip of a first material to a flat strip of a second material which has a melting point lower than the scorching point of the first material, and wherein at least one of the two strips is continuous, the apparatus comprising:

a pair of side-by-side drums which counter-rotate about non-parallel axes of rotation, each drum having a smooth, cylindrical, outer surface upon which the flat strips of material can be wound in contact with each other in a plurality of figure eight wrappings and wherein at least one of the drums is comprised of a first cylinder and a second cylinder mounted concentrically within the first cylinder to form a hollow, cylindrically shaped space therebetween;

means for heating the cylindrical, outer surfaces of the drums to the melting point of the second material, including means for circulating a hot fluid longitudinally through the annular space between the first and second



cylinders whereby the temperature drop along the length of the outer surface of the first cylinder is minimized, and

adjustable means for counter-rotating the drums at a selected speed whereby the strips travel back and forth over portions of the cylindrical, outer surface of each drum for a predetermined period of time selected to ensure fusing of the strip of the second material into the strip of the first material.

4,388,142

ELECTRICAL HARNESS FORMING MACHINE

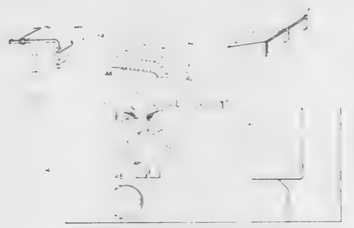
Gaetan Hembert, Marck, France, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 9, 1980, Ser. No. 214,770

Claims priority, application United Kingdom, Dec. 20, 1979, 7943840

Int. Cl.[3] **B65C** *1/00*

U.S. Cl. 156—446 **7 Claims**



1. A harness-forming machine for use in forming an electrical wiring harness in the form of a tape by securing together side-by-side a plurality of leads which have terminal fittings pre-fitted at least on the leading ends thereof, the machine comprising activating means comprising a hot-air blower operable to direct hot air at bonding material drawn therepast to cause it to assume a potentially bond-forming condition, combining means comprising opposed rollers providing a roll nip arranged to bring together the leads and the bonding material, in its potentially bond-forming condition, into a required tape form as the leads and the bonding material are drawn therethrough after the bonding material has been drawn past said hot-air blower, and lead drawing means arranged to cause the leads, and the bonding material therewith, to be drawn through the combining means and the harness so formed to be wound up into the form of a coil, said drawing means comprising winding means comprising lead holding means mounted on a winding drum, said lead holding means being arranged to engage the terminal fittings on the leading ends of the leads in order that the winding means can wind up the harness on the

drum, one of said opposed rollers of the combining meand being mounted for movement away from the other to permit the introduction of leads therebetween when setting up the machine to form a harness, and said hot-air blower being mounted for movement between an operative position and an inoperative position to which it can be moved when not required in its operative position during formation of a harness.

4,388,143

METHOD AND APPARATUS FOR AFFIXING STRIP LABELS TO CONTAINER CLOSURES

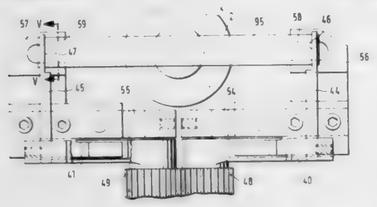
Rainer Buchholz, Düsseldorf; Hans-Werner Mohn, Kaarst; Hermann Boms, Ratingen, and Rudolf Zodrow, Düsseldorf, all of Fed. Rep. of Germany, assignors to Jagenberg-Werke AG, Düsseldorf, Fed. Rep. of Germany

Filed Nov. 2, 1981, Ser. No. 317,682

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 3041057

Int. Cl.³ B65C *1/00*

U.S. Cl. 156—475 **36 Claims**



1. An apparatus for affixing strip labels to container closures, comprising a transfer mechanism for strip labels, an applicator adapted to advance toward two opposite sides of a container to be labeled and to press the label onto the container, two gripping members for picking up a strip label from the transfer mechanism, said gripping members being adapted to grasp the ends of the strip label when said ends are held by the transfer mechanism over the container, and means for pivoting said gripping members while grasping said strip label ends to carry said gripping members from pickup positions over paths which are in the same plane as the axis of the container into a transfer position at the sides of the container.

4,388,144

RAPID-CYCLE PRESS

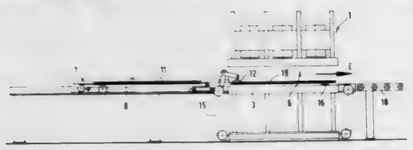
Heinrich Wemhöner, Herford, Fed. Rep. of Germany, assignor to Heinrich Wemhöner GmbH & Co. KG, Herford, Fed. Rep. of Germany

Filed Mar. 18, 1981, Ser. No. 245,113

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1980, 3031683

Int. Cl.³ B30B *1/00;* **B32K** *31/00;* **B23K** *27/00*

U.S. Cl. 156—538 **7 Claims**



1. In a press for coating sheets, panels and similar workpieces, a combination comprising an upper and a lower press plate one of which is mounted for vertical movement relative to the other between a pressing position and a workpiece feeding and removing position in which the plates form with one another a gap; lifting means comprising a suction member for engaging an edge portion of a finished workpiece resting on the lower press plate such that when the one plate is in said removing position the said lifting means lifts such edge portion; means for inserting at least one supporting bar at said lifted edge portion underneath the workpiece; means for removing the workpiece supported on said bar, from said gap; means mounting said lifting means for horizontal movement relative to said gap; and means for feeding workpieces into the gap and having a carriage; said mounting means being located on said carriage; said lifting means and said supporting bar comprising a combination for cooperatively removing a finished workpiece.

4,388,145

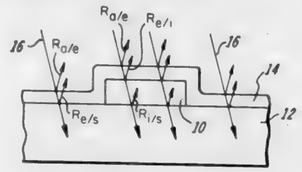
LASER ANNEALING FOR GROWTH OF SINGLE CRYSTAL SEMICONDUCTOR AREAS

William G. Hawkins, and Jerry G. Black, both of West Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1981, Ser. No. 316,210

Int. Cl.³ C30B *13/06*

U.S. Cl. 156—617 R **11 Claims**



1. A method for converting predefined areas of semiconductor material into single crystal areas, characterized by including the steps of:

providing support means in the form of a material being highly absorptive of the wavelength of a projected optical energy source and having a first refractive index;

providing an array of crystallizable semiconductor areas upon said support means, said areas being in the form of a material subtantially transparent to the wavelength of a projected optical energy source and having a second refractive index;

projecting an optical energy source upon each semiconductor area and a portion of the support surrounding each area;

reflecting more incident optical energy in the region of said substrate directly beneath said areas than in the region of said substrate surrounding said areas;

heating the substrate with said optical energy source, such that the region of said substrate surrounding said areas is made hotter than the region of said substrate directly beneath said areas, while leaving said areas substantially unheated thereby;

removing said optical energy source;

melting said areas by heating them from said heated substrate; and

cooling said melted areas and said substrate such that during cooling a concave thermal gradient exists across said areas with the center of each of said areas being cooler than its edges and said areas recrystallize as single crystals.

4,388,146

ANALOG CORRECTION OF QUARTZ RESONATOR ANGLE OF CUT

Arthur Ballato, Long Branch, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 25, 1982, Ser. No. 361,655

Int. Cl.³ B44C *1/22;* **C03C** *15/00, 25/06*

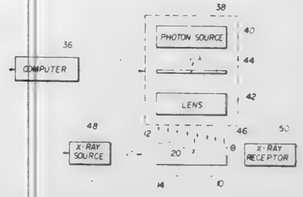
U.S. Cl. 156—626 **18 Claims**

1. The method of correcting the angle of cut of a quartz crystal resonator blank including at least one major face treated with a photolytic etchant and which substantially

eliminates the need for forming a mesa and subsequent machine lapping thereof to provide an inclined corrected angle surface on said blank, comprising the steps of:

(a) locating an uncorrected resonator blank in etching apparatus;

(b) generating a photon energy source; and



(c) directing photon energy from said source to said major face and generating an intensity gradient of photon energy across the surface of said major face causing a gradient of surface erosion to occur by photolytic etching which thereby changes the angle of cut of said resonator blank.

4,388,147

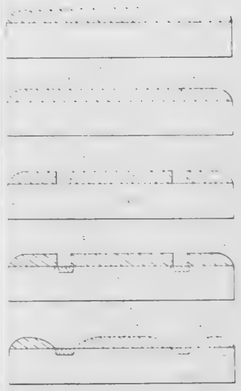
METHOD FOR STEAM LEACHING PHOSPHORUS FROM PHOSPHOSILICATE GLASS DURING SEMICONDUCTOR FABRICATION

Paul R. Engel, Aloha, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Aug. 16, 1982, Ser. No. 408,711

Int. Cl.³ B44C *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—646 **13 Claims**



1. A process for reducing the phosphorus concentration in a phosphosilicate glass, comprising the steps of:

providing a steam environment;

adjusting the temperature of said environment, such that said temperature lies within a predetermined range;

adjusting the pressure within said environment, such that said pressure lies within a predetermined range;

inserting said phosphosilicate glass into said environment;

removing said glass from said environment once a desired amount of phosphorus has been leached from said glass;

whereby the concentration of phosphorus in said glass is reduced.

4,388,148

PROCESS FOR PRODUCING PULP

Richard A. Yahrmarkt, Batavia, Ill., and Michael J. Stanbrough, Benicia, Calif., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 23, 1981, Ser. No. 276,714

Int. Cl.³ D21B *1/16*

U.S. Cl. 162—26 **9 Claims**

1. A process for mechanically refining pulp, comprising:

adding from about one pound to about seven pounds of alkaline salt of aluminate per dry ton of end product pulp to pulp material to reduce energy consumption during mechanical refining; and

mechanically refining said pulp material at a pH of from about 7.5 to about 8.5 in the presence of said alkaline salt of aluminate.

4,388,149

TITANIUM COATED ASBESTOS FIBER

Frank M. Kimmerle, and Pierre Roberge, both of Sherbrooke, Canada, assignors to Societe Nationale de L'Amiante, Quebec, Canada

Filed Oct. 13, 1981, Ser. No. 310,722

Int. Cl.³ D21H *5/18*

U.S. Cl. 162—153 **6 Claims**

1. A chrysotile asbestos fiber substantially coated on its exterior surface with hydrated titanium dioxide, the titanium dioxide content being from 0.5 to 35% by weight, part of the titanium dioxide being chemically bonded to the asbestos fiber and the remaining titanium dioxide being retained by electrostatic bond, said modified fiber having an Mg:Si ratio of from less than 3:2 to 2:2 when calculated on an atomic number ratio, a Ti:Si ratio of from more than 0.2 to less than 1:2 and said modified fiber being also characterized by an infrared spectrum wherein the relative peaks at 1082, 1025 and 957 cm^{-1} have been substantially altered in their intensity as compared to unmodified, natural asbestos fibers, said fiber resisting leaching of the Mg ions by strong acids 3 to 6 times better than unmodified, natural asbestos fibers and resisting leaching of SiO_2 groups in strong alkali media 1.5 to 3 times better than unmodified, natural chrysotile fibers.

2. A method for chemically bonding titanium dioxide to asbestos fibers which comprises

(a) forming a slurry of opened asbestos fibers by dispersing asbestors fibers in deoxygenated water;

(b) contacting said slurry in the absence of oxygen with a solution of trivalent titanium salt having a pH of less than 5 thereby to causing oxidation of the Ti^{+++} ions to Ti^{++++} ions by water catalyzed by the surface of the asbestos fibers, said step (b) resulting in the formation and bonding to the asbestos fibers of titanium dioxide.

4,388,150

PAPERMAKING AND PRODUCTS MADE THEREBY

Olof Sunden, Thonon, France; Per G. Batelson, Lilla Edet, Sweden; Hans E. Johansson, Kungälv, Sweden; Hans M. Larsson, and Per J. Svending, both of Gothenburg, Sweden, assignors to Eka Aktiebolag, Surte, Sweden

Filed Feb. 26, 1981, Ser. No. 238,635

Claims priority, application Sweden, May 28, 1980, 8003948

Int. Cl.³ D21H *3/28, 3/66*

U.S. Cl. 162—175 **37 Claims**

1. In a paper making process in which an aqueous papermaking stock containing a sufficient amount of cellulosic pulp to give a finished paper containing at least 50% cellulosic fiber is formed and dried, the improvement which comprises providing in the stock prior to the formation of the sheet a binder comprising colloidal silicic acid having an average particle size of less than 20 nm, and cationic starch having a degree of substitution of not less than 0.01, the weight ratio of cationic starch to SiO_2 being between 1:1 and 25:1, the solids in said binder amounting to 0.1–15% of the weight of said pulp, said

cationic starch and said colloidal silicic acid being admixed with each other in the presence of cellulosic fiber to form a complex of cationic starch and colloidal silicic acid which serves as a binder for the cellulosic fibers.

4,388,151

METHOD AND DEVICE FOR FEEDING PURGING AND DEGRAPHITIZING AIR INTO COKE OVENS

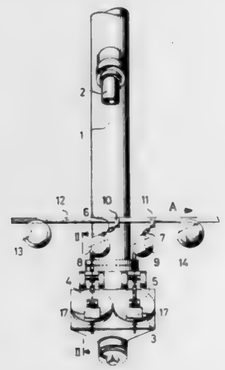
Rainer Küppenbender, Ratingen, Fed. Rep. of Germany, assignor to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,167

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1980, 3031329

Int. Cl.³ C10B *5/02, 21/04, 43/10*

U.S. Cl. 201—2 **9 Claims**



1. A device for feeding purging and degraphitizing air into coke ovens with heating walls, comprising:

a pipe for rich gas leading to each of the heating walls;

a first gate;

a first cross-sectional opening connected to the pipe for rich gas arranged and constructed to be opened and closed with the first gate and having a relatively small cross-sectional aperture for passing purging air therethrough;

a second gate;

a second cross-sectional opening connected to the pipe for rich gas arranged and constructed to be opened and closed with the second gate and having a relatively large cross-section for passing degraphitizing air therethrough; and wherein said gates and openings are arranged and constructed such that purging air flows through said first cross-sectional opening before degraphitizing air flows through said second cross-sectional opening.

4,388,152

PROCESS FOR PRODUCING BLAST FURNACE GRADE COKE, A DISTILLABLE PRODUCT AND FUEL GASES FROM A HEAVY, HIGH SULFUR, CRUDE OIL

George E. Wasson, Eighty Four; Frank W. Theodore, Pittsburgh, both of Pa.; Lyndon D. Boyer, and Matthew C. Sooter, both of Ponca City, Okla., assignors to Conoco Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 174,981, Aug. 4, 1980, abandoned. This application Jan. 21, 1982, Ser. No. 341,381

Int. Cl.³ C10B *49/06, 55/06, 57/02*

U.S. Cl. 201—6 **11 Claims**

1. A process for producing a distillable hydrocarbonaceous product and a high strength coke briquette product suitable for use as blast furnace coke from a heavy high-sulfur crude oil, said process comprising:

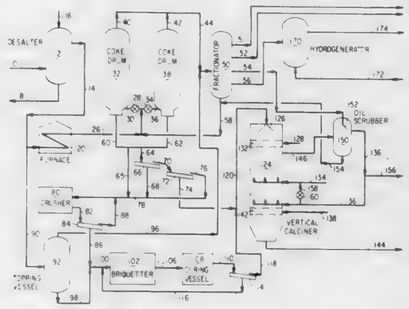
(a) feeding said heavy crude oil having 4 or more weight percent sulfur, to a delayed coking drum at conditions of temperature and pressure to thermally decompose said crude oil to produce a mass of solid coke in said coking drum and a distillable stream recovered as a vaporous stream at a temperature above about 830° F. (445° C.) from said coking drum;

(b) grinding at least a portion of said coke to produce finely-divided coke of a size less than about 6 Tyler Mesh;

(c) mixing a suitable binder with said finely-divided coke in suitable proportions to produce a briquettable mixture;

(d) briquetting said briquettable mixture to produce briquettes;

(e) heating said briquettes to calcining temperatures at a rate of not more than 5° F. per minute within the range of from about 600° F. to about 1500° F.;



(f) calcining said briquettes in a vertical calciner at a temperature from about 2000° to about 2950° F. (about 1090° to about 1625° C.) for a time sufficient to substantially reduce the sulfur content of said briquettes;

(g) recovering a calcined product of a size from about ⅜ inch to about 3 inches having a sulfur content less than 1.0 percent by weight and a hardness factor of 60 or greater and a stability factor of 39 or greater, suitable for use as a blast furnace grade coke and a vaporous hydrocarbonaceous stream from said vertical calciner; and

(h) passing said vaporous stream from said coking drum and said vaporous stream from said vertical calciner to further processing as a distillable hydrocarbonaceous product stream.

4,388,153

COKE SPILLAGE REMOVAL DEVICE

Gilbert Blair, Coraopolis, Pa., and Martin C. Dusel, Indianapolis, Ind., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Nov. 20, 1981, Ser. No. 323,182

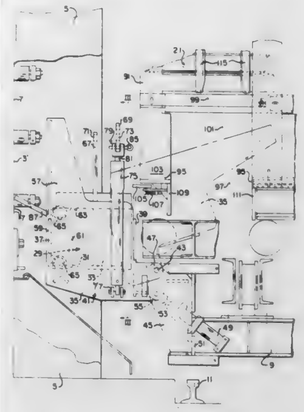
Int. Cl.³ C10B *25/14, 33/14, 45/00*

U.S. Cl. 202—248 **13 Claims**

1. A coke oven battery servicing apparatus for catching and collecting coke discharged from the oven during door removal and conveying the collected discharged coke together with the coke pushed from the oven, from the face of the oven to a quenching receptacle, across a coke side servicing car disposed therebetween, comprising:

coke guide cage means having a first end and a second end and a generally horizontally disposed planar floor member extending therebetween, said planar floor member having an opening therein proximate said first end, said coke guide means being mounted on said servicing car for selective movement at least from a position in which said first end is spaced from the oven face for door removal to a position in which said first end is adjacent a selected oven; and

coke catching means having a generally planar bottom member which is complementary to the opening in said coke guide floor member, said coke catching means being mounted on said servicing car for selective movement from at least a first position in which said coke catching means is disposed below and adjacent the selected oven during door removal to catch and collect discharged coke, to a second position in which said planar bottom member is removably inserted into the opening in said



coke guide floor member and together with said floor member defines a generally continuous planar surface on which the discharged coke together with the coke remaining in the oven is conveyed to the quenching receptacle when said first end of said coke guide is adjacent the selected oven.

4,388,154

ISOLATION OF ACETALDEHYDE AND METHANOL FROM REACTION MIXTURES RESULTING FROM THE HOMOLOGIZATION OF METHANOL

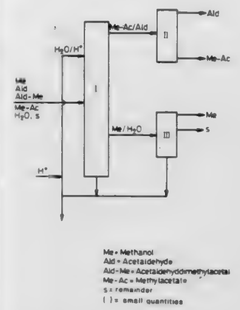
Waldheim Hochstein, Freinsheim; Gerd Kaibel, Lampertheim; Franz-Josef Mueller, Wachenheim, and Horst Hartmann, Boehl-Iggelheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 1, 1981, Ser. No. 259,655

Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019765

Int. Cl.³ B01D *3/14*

U.S. Cl. 203—35 **7 Claims**



Me = Methanol
Ald = Acetaldehyde
Ald-Me = Acetaldehydedimethylacetal
Me-Ac = Methylacetate
s = remainder
( ) = small quantities

1. A process for isolating acetaldehyde and methanol from a reaction mixture which results from the homologization of methanol and which in addition to acetaldehyde essentially contains acetaldehyde dimethylacetal, methanol, methyl acetate and water, which process comprises:

(a) introducing the reaction mixture into the middle zone of a column I, at a temperature at which the methyl acetate and its azeotropic mixture with methanol vaporize completely, but the methanol does not,

(b_1) feeding a liquid aqueous acid into the upper quarter of the column I in counter-current to the rising vapors to cause cleavage of the acetaldehyde-dimethylacetal into acetaldehyde and methanol, or

(b_2) in place of step (b_1), feeding water alone into the upper quarter of the column I in counter-current to the rising vapors in the presence of a solid acidic ion exchanger to effect the acetal cleavage,

(c) taking off a vapor mixture of methyl acetate and acetaldehyde at the top of column I and separating the mixture into its components in a column II,

(d) in the lower quarter of column I, taking off a liquid mixture of methanol and water and separating the mixture into its components in a column III, and

(e) removing a part of the aqueous acid (embodiment b_1) or of the water (embodiment b_2) arising in the bottom of column I, together with minor amounts of other products, from the system, and combining the remainder of this aqueous acid or of this water with the water forming in the bottom of column III and recycling the combined aqueous solution, after mixing with an acid, into the upper quarter of column I.

4,388,155

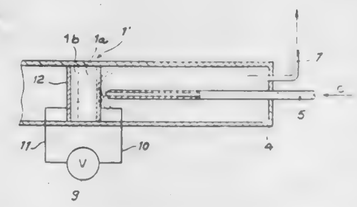
SOLID SENSOR FOR ANHYDRIDES

Andre M. Chamberland, Mont St-Hilaire, and Michel Gauthier, Laprairie, both of Canada, assignors to Hydro-Quebec, Montreal, Canada

Division of Ser. No. 718,511, Aug. 30, 1976, Pat. No. 4,282,078, and a continuation-in-part of Ser. No. 472,904, May 23, 1974, abandoned. This application Jul. 31, 1980, Ser. No. 174,186

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—1 T **2 Claims**



1. A method for measuring the activity of gaseous anhydrides in an oxygen-bearing gas comprising the steps of:

(a) providing a solid state electrolyte element having oxy-anions of the element forming the anhydride to be detected, said electrolyte element comprising one part made of an alkali metal salt or an alkaline earth metal salt supplying said oxy-anions and another part made of a mixture of said salt and of a metal salt; a detection electrode in contact with said alkali metal salt or said alkaline earth metal salt for creating a difference of potential when said anhydride to be detected comes into contact therewith and with said oxy-anion containing part of said electrolyte element; said detection and reference electrodes being arranged such that a potential difference occurs between said two elements when a sample of said anhydride to be detected is contacted with said detection electrode, said reference electrode being made of a metal identical to the metal of said metal salt and being in contact with said mixture; means for heating said electrolyte element to a temperature such that a logarithmic variation in concentration of the anhydride to be detected causes a proportional and substantially linear variation in said difference of potential, said temperature being below the fusion temperature of said electrolyte element, and a potentio-

metric measurement means connected to said electrodes for measuring the activity of said anhydride to be detected by measuring said difference of potential;

(b) passing said oxygen-bearing gas containing said anhydride material into contact with said detection electrode and said electrolyte so as to create a potential difference between said two electrodes; and

(c) measuring said potential difference with said potentiometric measurement means to determine the anhydride content of said gas.

4,388,156

ALUMINUM ELECTROLYSIS IN NON-AQUEOUS MONOMERIC ORGANIC ACID

Thomas N. Gillich, Readington Township, Somerset County, and John E. Walls, Annandale, both of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Dec. 23, 1981, Ser. No. 333,586

Int. Cl.³ C25D *9/02*

U.S. Cl. 204—14 N **10 Claims**

1. A process for treating an aluminum containing sheet substrate which comprises electrolyzing said substrate as an anode in a non-aqueous electrolytic solution comprising a solvent having a dipole moment of at least 1.5 and a compatible monomeric polybasic organic acid, wherein said electrolysis is conducted at a voltage of from about 5 to about 120 volts, with a charge application of from about 1 to about 150 coulombs per square decimeter of substrate, in an electrolyte maintained at a temperature of from about −5° to about 60° C., with a cathode to anode distance of from about 1 to about 25 centimeters.

4,388,157

METHOD OF APPLYING COVERINGS IN THE FORM OF COMPLETELY OR NOT COMPLETELY CLOSED LOOPS

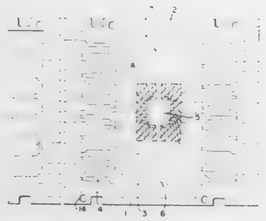
Harry C. Piepers, Eindhoven, Netherlands, assignor to Galentan AG, Zug, Switzerland

Filed Mar. 1, 1982, Ser. No. 353,150

Claims priority, application Netherlands, Mar. 7, 1981, 8101105

Int. Cl.³ C25D *5/02, 17/00*

U.S. Cl. 204—15 **5 Claims**



1. A method of applying continuous or discontinuous loop-like covering to a metal or metallized tape comprising the steps of:

guiding the tape to a first area along the periphery of a wheel;

applying one-half of the said covering at said first area in a first phase of the process;

guiding the tape in a second area along the periphery of the wheel in a direction opposite that in which the tape is guided through the first area along the wheel; and

applying the other one-half of the covering at said second area in a second phase of the process.

4,388,158

ACIDIC TINPLATING PROCESS AND PROCESS FOR PRODUCING AN IRON-TIN ALLOY ON THE SURFACE OF A STEEL SHEET

Tsuneo Inui, Tokuyama; Hitoshi Kuroda, Kudamatsu; Tetsuro Hanabusa, Kudamatsu, and Katsuhito Yazaki, Kudamatsu, all of Japan, assignors to Toyo Kohan Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 92,752, Nov. 9, 1979, abandoned. This application Jun. 25, 1981, Ser. No. 277,162

Claims priority, application Japan, Nov. 27, 1978, 53-145333

Int. Cl.³ C25D *3/32, 5/50, 5/10*

U.S. Cl. 204—27 **3 Claims**

1. A process for producing a steel sheet having 0.05–0.60 g/m^2 of metallic tin on said steel sheet

which comprises electro-tinplating a steel sheet with an aqueous electrolyte consisting essentially of 5–150 g/l of at least one sulfate selected from the group of sulfates of alkaline metals, ammonium, aluminum, manganese or chromium in a stannous sulfate electrolyte or stannous phenolsulfonate electrolyte consisting of 1.5–50 g/l of stannous ions, 1.0–30 g/l of sulfuric acid or 3.6–106.5 g/l of phenolsulfonic acid, and 1–3 g/l of ethoxylated α-naphthol sulfonic acid and wherein the ratio of said stannous ions to said sulfuric acid or said phenolsulfonic acid is 1–3:1 or 1–3:3.6, respectively.

2. A process for producing a steel sheet having an iron-tin alloy on the surface thereof in which 0.05–1.0 g/m^2 of tin calculated from said iron-tin alloy is present on said steel sheet

which comprises electro-tinplating a steel sheet with an aqueous electrolyte consisting essentially of 5–150 g/l of at least one sulfate selected from the group of sulfates of alkaline metals, ammonium, aluminum, manganese and chromium in a stannous sulfate electrolyte or stannous phenolsulfonate electrolyte consisting of 1.5–50 g/l of stannous ions, 1.0–30 g/l of sulfuric acid or 3.6–106.5 g/l of phenolsulfonic acid, and 1–3 g/l of ethoxylated α-naphthol sulfonic acid and wherein the ratio of said stannous ions to said sulfuric acid or said phenolsulfonic acid is 1–3:1 or 1–3:3.6, respectively, and

heating said tin-plated steel sheet at a temperature of 232°–400° C. for 0.5–10 seconds.

3. In a process for producing an electrotinplate in which excellent corrosion resistance is required which comprises preplating a steel sheet with tin followed by a conventional tinplating step,

the improvement which comprises preplating a steel sheet by using an aqueous electrolyte containing 5–150 g/l of at least one sulfate selected from the group of sulfates of alkaline metals, ammonium, aluminum, manganese or chromium in a stannous sulfate electrolyte or stannous phenolsulfonate electrolyte consisting essentially of 1.5–50 g/l of stannous ions, 1.0–30 g/l of sulfuric acid or 3.6–106.5 g/l of phenolsulfonic acid, and 1–3 g/l of ethoxylated α-naphthol sulfonic acid and wherein the weight ratio of said stannous ions to said sulfuric acid or said phenolsulfonic acid is 1–3:1 or 1–3:3.6 at a temperature of 25° to 60° C. and under a cathodic current density of 5–50 A/dm^2 followed by tinplating the preplated steel sheet in a conventional tinplating step which is performed in an aqueous electrolyte consisting of 15–50 g/l of stannous ions, 10–30 g/l of sulfuric acid or 36–106.5 g/l of phenolsulfonic acid and 3–10 g/l of ethoxylated α-naphthol sulfonic acid at a temperature of 25° to 60° C. and under a cathodic current density of 5–50 A/dm^2.

4,388,159

SURFACE PREPARATION OF ALUMINUM ARTICLES

Kostas F. Dockus, Cicero, and William D. Sproul, Palatine, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed May 18, 1981, Ser. No. 264,311

Int. Cl.³ C25D *5/44;* **B05D** *3/12*

U.S. Cl. 204—33 **2 Claims**

1. A process for providing the surface of an aluminum-silicon brazing alloy sheet with a bond-promoting metallic plating comprising the steps of abrading said surface with a low-density abrasive product comprising a plurality of flexible, tough fiberous members intertwined and bonded together and having abrasive granules randomly distributed throughout and bonded thereto, in the presence of a solvent selected from the group consisting of C_1–C_4 alcohols, then depositing on said surface said metallic plating selected from the group consisting of nickel, nickel-lead alloy, cobalt, cobalt-lead alloy and a combination thereof.

4,388,160

ZINC-NICKEL ALLOY ELECTROPLATING PROCESS

George B. Rynne, Rt. 1, Box 150D, Chatsworth Hwy., Ellijay, Ga. 30540

Continuation-in-part of Ser. No. 123,109, Feb. 20, 1980, Pat. No. 4,285,802. This application Aug. 24, 1981, Ser. No. 295,758

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.³ C25D *3/56, 5/48*

U.S. Cl. 204—38 R **18 Claims**

3. A process for applying to a workpiece a bright zinc-nickel alloy electroplated deposit having superior corrosion resistance, said process comprising:

(1) preparing an aqueous bath comprising, on a per liter basis:

(a) a soluble zinc compound providing 30 to 100 grams of zinc as metal and selected from the group consisting of zinc chloride and zinc oxide;

(b) a soluble nickel salt providing up to 10 grams of nickel as a metal, said soluble nickel salt being nickel chloride;

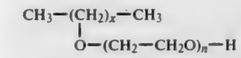
(c) an ammoniated electrolyte providing 1–10 grams of ammonium ions, said ammoniated electrolyte being ammonium chloride;

(d) a buffer;

(e) a non-ammoniated electrolyte selected from the group consisting of potassium chloride and sodium chloride, said non-ammoniated electrolytes providing 25 to 300 grams of chloride ions;

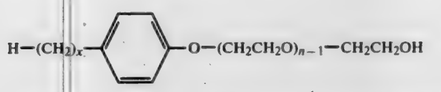
(f) 5-50 grams of a polyoxyalkylated surfactant selected from the group consisting of:

block copolymers of ethylene oxide and linear alcohols having the following structural formula;



wherein x is an integer from 9 to 15 and n is an integer from 10 to 50;

block copolymers of ethylene oxide and phenol alcohols having the following structural formula;



wherein x is an integer from 6 to 15 and n is an integer from 10 to 50;

block copolymers of ethylene oxide and monoethanol amine coconut fatty acid condensate;

alkoxylated alkyl phenols, alkoxylated alkyl naphthols, alkoxylated aliphatic monohydric alcohols, alkoxylated polyoxproypylene glycols, alkoxylated 2,4,7,9-tetramethyl-5-decyne-4,7-diol, alkoxylated ethylene diamine, alkoxylated fatty acids, alkoxylated amides, alkoxylated esters; and

(g) 0.05–4 grams of an aromatic carbonyl compound;

(2) maintaining acid conditions in the bath with a pH of at least about 4;

(3) maintaining said bath at a temperature of at least 10° C.;

(4) causing codeposition of the nickel and zinc to form a zinc-nickel alloy electroplated deposit on the workpiece; and

(5) controlling the amount of nickel ions and ammonium ions in the bath to limit the deposition of nickel and to cause deposition of a zinc-nickel alloy electroplate containing at least 96 percent by weight of zinc and an amount of nickel effective to provide superior corrosion resistance.

7. A process according to claim **3** or claim **5**, wherein the amount of said nickel salt is from 1 to 10 grams.

13. A process according to claim **7** wherein the bright zinc-nickel alloy electrodeposit on the workpiece has an alloy nickel content of at least about 1 percent by weight and is provided with a subsequent chromate conversion coating.

4,388,161

ACID TIN BATH AND TIN/LEAD BATH RESPECTIVELY FOR THE ELECTRODE-POSITION OF LUSTROUS COATINGS OF TIN AND TIN/LEAD RESPECTIVELY

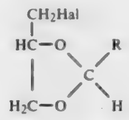
Simeon Acimovic; Karl-Heinz Lindemann, and Volker G. Kunz, all of Trebur, Fed. Rep. of Germany, assignors to Elektro-Brite GmbH & Co. KG, Trebur, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 233,171, Feb. 10, 1981, abandoned. This application Jun. 24, 1982, Ser. No. 392,451

Int. Cl.³ C25D *3/32, 3/60*

U.S. Cl. 204—43 S **4 Claims**

1. Acid tin bath and tin/lead bath respectively for the electrodeposition of lustrous tin coatings and tin/lead coatings respectively containing tin salts and optionally lead salts, aldehydes and/or ketones as brighteners as well as surfactants besides sulfuric acid and/or borofluohydric acid characterized in that it contains in place of part or all of the aldehydes and/or ketones a cyclic reaction product of one or more aromatic aldehydes and epihalohydrin of the general formula



(Hal = chlorine or bromine, R = a phenyl, naphthyl or pyridyl radical optionally substituted by one to three members of the group consisting of chlorine, bromine and fluorine atoms, alkyl and alkoxy groups having 1 to 3 carbon atoms, carboxy and hydroxy groups).

4,388,162

CONTINUOUS FLOW ELECTROCHEMICAL CELL AND PROCESS

Anthony F. Sammells, Naperville, and Michael R. St. John, Chicago, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Feb. 8, 1982, Ser. No. 346,748

Int. Cl.³ C25B *1/10, 3/02, 9/04*

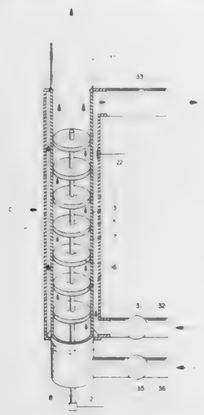
U.S. Cl. 204—78 **17 Claims**

1. A process for hydrogen production by water electrolysis comprising:

continuously passing an anolyte comprising acidic aqueous slurry of solid organic carbonaceous particles through a central elongated anolyte chamber of a tubular electrochemical cell formed by an elongated tubular hydrogen ion permeable separator contacting an anode comprising a

plurality of brush-type electron conducting extensions attached in electrical communication to a coaxial central electron conducting current collector shaft and projecting radially therefrom a distance substantially to said separator oxidizing the carbonaceous component of said solid organic carbonaceous particles forming hydrogen ions and oxidized carbonaceous material;

continuously passing a catholyte comprising an aqueous acidic solution through an annular catholyte chamber



surrounding said anolyte chamber and defined by said hydrogen ion passing separator and a coaxial outer elongated electrolyte retaining tubular cathode;

passing said hydrogen ions through said anolyte, separator, and catholyte to said tubular cathode where molecular hydrogen is formed; and

continuously withdrawing said oxidized carbonaceous material from said anolyte chamber and said hydrogen from said catholyte chamber.

4,388,163

METHOD FOR THE INDIRECT OXIDATION OF UREA

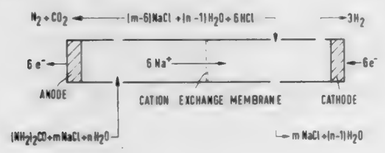
Gerhard Richter; Erhard Weidlich, both of Erlangen, and Konrad Mund, Uttenreuth, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 13, 1981, Ser. No. 310,984

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1980, 3040470

Int. Cl.³ C25B *1/24*

U.S. Cl. 204—101 **14 Claims**



1. A method for the indirect oxidation of urea in an aqueous chloride-containing urea solution through electrochemical means, comprising:

providing an electrochemical cell containing distinct anode and cathode compartments separated from each other by an ion-conducting membrane, said anode compartment containing the anode of said cell and said cathode compartment containing the cathode of said cell;

supplying said aqueous chloride-containing urea solution to the anode compartment of said electrochemical cell wherein, by means of electrochemical oxidation, chloride is converted to chlorine and urea is then oxidized by said chlorine;

passing said solution to the cathode compartment of said electrochemical cell wherein, by means of electrochemical reaction, hydrogen is formed and evolved; and thereafter removing said solution from the cathode compartment.

4,388,164

METHOD OF COATING THE SURFACE OF AN ELASTIC BODY WITH A CONTINUOUS LAYER

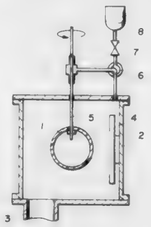
Eberhard Moll, Triesen, Liechtenstein, and Marcel Lardon, Maienfeld, Switzerland, assignors to Balzers Aktiengesellschaft, Liechtenstein

Filed Dec. 3, 1980, Ser. No. 212,560

Claims priority, application Switzerland, Dec. 6, 1979, 10820/79

Int. Cl.³ C23C *15/00;* **B05D** *3/12;* **A61F** *1/00*

U.S. Cl. 204—192 SP **7 Claims**



1. A method of coating the surface of an elastic implant which surface is deformable in use by a particular maximum amount, the coating being sufficiently ductile to deform with the surface without cracking, and the coating being a continuous layer of metal on the surface, which metal is not otherwise sufficiently ductile to deform with deformation of the implant surface in use without cracking, comprising:

temporarily expanding the implant in at least one dimension to temporarily enlarge said surface to be coated by at least an amount equal to said maximum amount of deformation in use;

then depositing said layer of metal on the surface which is enlarged by sputtering in a vacuum; and

returning the implant to its non-expanded state; whereby the layer of metal on the surface will accept deformation of the implant in use, without cracking.

4,388,165

SELECTIVE ION SENSITIVE ELECTRODE AND METHOD OF MAKING IT

Kiyozo Koshiishi, Sagamihara; Noriaki Ono, Hachiojo; Takashi Kamiyama, Tokyo, and Yoshimi Kato, Hachiojo, all of Japan, assignors to Olympus Optical Company Ltd., Japan

Filed Aug. 31, 1981, Ser. No. 298,343

Claims priority, application Japan, Feb. 28, 1981, 56-26730[U]

Int. Cl.³ G01N *27/30*

U.S. Cl. 204—418 **26 Claims**

1. A selective ion sensitive electrode including an ion exchanger selectively sensitive to a specific ion, comprising:

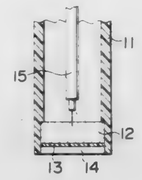
an electrode member to which a signal wire is connected on one side thereof, said member comprised of one of a metal, an electrically conductive resin and a chlorinated metal;

a corrosion resistant conductive thin film formed on the opposite side of said electrode member from said signal wire;

a layer of a silane coupling agent on said corrosion resistant conductive thin film; and

an ion exchanger formed on the surface of said layer of a silane coupling agent.

23. A process of forming a selective ion sensitive electrode comprising the steps of providing an electrode member to which a single wire is connected on one side thereof, said member comprised of one of a metal, an electrically conductive resin and a chlorinated metal, a corrosion resistant conductive thin film formed on the opposite side of said member from



said signal wire and a layer of a silane coupling agent on the surface of said corrosion resistant conductive thin film; applying a solution having an ion exchange substance dissolved in a volatile solvent to the surface of said layer of silane coupling agent; and allowing the solvent to evaporate to form an ion exchanger on said layer of silane coupling agent.

4,388,166

ELECTROCHEMICAL MEASURING APPARATUS PROVIDED WITH AN ENZYME ELECTRODE

Shuichi Suzuki; Masuo Aizawa, both of Tokyo; Masao Koyama, Yokohama; Yuichi Sato, Atsugi, and Junji Koezuka, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 175,038, Aug. 4, 1980, abandoned. This application May 15, 1982, Ser. No. 357,811

Claims priority, application Japan, Aug. 14, 1979, 54-102761

Int. Cl.³ C12Q *1/26*

U.S. Cl. 204—403 **7 Claims**



1. An electrochemical measuring apparatus provided with an enzyme electrode which comprises an electrode having adjacent thereto a filter membrane which is permeable to a material to be detected but impervious to a material of larger particle size than the material to be detected, a separate immobilized enzyme membrane deposited on said filter membrane, and an asymmetric semipermeable membrane mounted on the immobilized enzyme membrane, said asymmetric semipermeable membrane being essentially formed of an outer thin semipermeable layer of a thickness less than 1 micron exposed to contact with a liquid to be measured and an inner thick porous layer within said thin semipermeable layer, whereby the concentration of an organic ingredient contained in said liquid to be measured is determined by utilizing the reaction of the enzyme set in said immobilized enzyme membrane.

4,388,167

ION SELECTIVE ELECTRODE

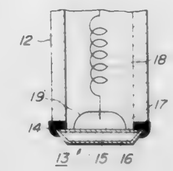
Noriaki Ono, Akishima, and Takashi Kamiyama, Tokyo, both of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Aug. 30, 1982, Ser. No. 413,133

Claims priority, application Japan, Sep. 7, 1981, 56-131899[U]

Int. Cl.³ G01N *27/26, 27/30*

U.S. Cl. 204—420 **15 Claims**



1. An ion selective electrode for measuring an ion concentration of particular ion contained in a sample liquid comprising

a tubular member made of electrically insulating material;

a silicon wafer substrate applied onto one end of the tubular member by means of an adhesive layer and having inner and outer surfaces and a side edge, at least a part of which side edge is tapered inwardly viewed in a direction from the inner surface to the outer surface;

an ion sensitive film applied on both the outer surface and the tapered portion of side edge of silicon wafer substrate; and

a signal wire having a core conductor connected to the inner surface of silicon wafer substrate and extending outwardly from the other end of tubular member.

4,388,168

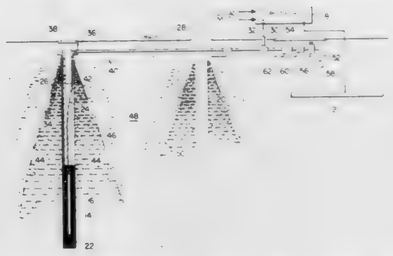
LOW RESISTANCE ELECTRODE SYSTEM

William H. Burkhart, Los Altos, Calif., assignor to Smith & Denison, Hayward, Calif.

Filed May 27, 1980, Ser. No. 153,618

Int. Cl.³ C23F *13/00*

U.S. Cl. 204—196 **10 Claims**



1. A system for maintaining a substantially constant low resistance between a buried electrode and the earth comprising:

at least one electrode;

means for storing a several month's supply of salt;

means for dissolving said salt to produce a saturated solution;

means for mixing fresh water with said saturated solution so as to form a dilute salt solution;

said mixing means including long capillary tube means for controlling the flow of said saturated salt solution, and short capillary tube means for controlling the more rapid flow of fresh water to be mixed with said saturated salt solution;

means for controlling both the rate of flow of the dilute solution and its salt content so as to produce a salt solution having substantially constant resistivity in the range from 50 to 2,000 ohm-centimeters; and

means for distributing said salt solution to the earth surrounding said electrode to thereby substantially reduce the resistance between said electrode and the earth.

4,388,169

APPARATUS FOR SURFACE TREATMENT OF A STEEL STRIP

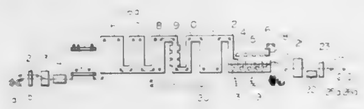
Norichika Nagira; Hiroshi Ikegami; Hiroji Baba, all of Kitakyushu, and Kanji Yahano, Himeji, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 5, 1981, Ser. No. 260,725

Claims priority, application Japan, Oct. 9, 1980, 55-141307

Int. Cl.³ C25D *17/00*

U.S. Cl. 204—207 **4 Claims**



1. An apparatus for the surface treatment of a steel strip, particularly a strip from a continuous annealing apparatus, which strip is adversely affected if allowed to become dry prior to the time it leaves the surface treatment apparatus, said surface treatment apparatus comprising:

(1) a plurality of guide rolls for moving the steel strip along a predetermined path;

(2) a pickling vessel through which a portion of said steel strip path extends, and a first pickling liquid spray means in said pickling vessel for spraying a pickling liquid toward at least one surface of said steel strip as it passes through the pickling vessel, said path extending upwardly out of said pickling vessel and around one of said guide rolls; a further pickling liquid spray means positioned adjacent the top of the path from said pickling vessel at the point where the strip passes around said one of said guide rolls for spraying pickling liquid onto said one surface for keeping the surface wet with pickling liquid;

(3) a first rinsing vessel through which a portion of said steel strip path extends and which is located downstream with respect to the movement of the strip along said path of said pickling vessel, first rinsing water spray means in said first rinsing vessel for spraying rinsing water toward said at least one surface of the steel strip as it passes through said first rinsing vessel, said path extending upwardly out of said first rinsing vessel and around one of said guide rolls; a further rinsing water spray means positioned adjacent the top of the path from said first rinsing vessel at the point where the strip passes around said guide roll for spraying rinsing water onto said one surface of the steel strip for keeping the surface wet with rinsing water;

(4) an electrolytic treating vessel for containing an electrolytic treating liquid and through which a portion of said steel strip path extends and which is located downstream of said first rinsing vessel, and at least one anode positioned in said electrolytic treating vessel at a position below the level of the electrolytic treating liquid therein and facing the said one surface of the steel strip, and means operatively associated with said electrolytic treating vessel for controlling the temperature of the electrolytic treating liquid; said path extending upwardly out of said electrolytic treating vessel and around one of said guide rolls; an electrolytic treating liquid spray means positioned adjacent the top of said path from said electrolytic treating vessel at the point where the strip passes around said guide roll for spraying electrolytic treating liquid on said one surface of said strip for keeping said surface wet with electrolytic treating liquid;

(5) a second rinsing vessel through which a portion of said steel strip path extends and which is located downstream of said electrolytic treating vessel, second rinsing water spray means in said second rinsing vessel for spraying rinsing water toward said at least one surface of the steel strip as it passes through said second rinsing vessel, said path extending upwardly out of said second rinsing vessel; and

(6) said guide roll at the top of the path from said electrolytic treating vessel being of a conductive material, and voltage applying means for applying an electrolyzing voltage between said anode and said conductive material guide roll.

4,388,170

PROCESS FOR PRODUCING LOWER-MOLECULAR-WEIGHT HYDROCARBONS FROM HIGHER MOLECULAR-WEIGHT HYDROCARBONS AND AUXILIARY AGENT THEREFOR

Klaus Schmid, Libauerstr. 27, 89000 Munich 81, and Hannes Kneissl, Kurstr. 18, 8184 Gmund am Tegernsee, both of Fed. Rep. of Germany

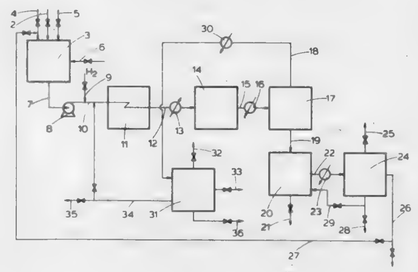
PCT No. PCT/EP80/00140, § 371 Date Aug. 3, 1981, § 102(e) Date Aug. 3, 1981, PCT Pub. No. WO81/01576, PCT Pub. Date Jun. 11, 1981

PCT Filed Nov. 27, 1980, Ser. No. 290,812

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948789; May 5, 1980, 3017170

Int. Cl.³ C10G *1/04, 1/06*

U.S. Cl. 208—8 LE **17 Claims**



1. A process for producing liquid or gaseous lower-molecular-weight hydrocarbons from hydrocarbonanceous solid or liquid fossil-fuel raw materials having a higher molecular weight, which process comprises heating said hydrocarbonaceous materials together with hydrogen and a minor amount, up to 10 weight per cent based on the weight of said hydrocarbonaceous materials, of at least one guanidinium compound, at a temperature in the range 250° to 500° C., a pressure in the range 10 to 300 bar and a time in the range 0.1 to 60 minutes.

4,388,171

SUPERCRITICAL MULTICOMPONENT SOLVENT COAL EXTRACTION

James M. Beggs, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; William H. Corcoran, San Gabriel, Calif.; William S. Fong, Cambridge, Mass.; Puvin Pichaichanarong; Paul C. F. Chan, both of Pasadena, Calif., and Daniel D. Lawson, Arcadia, Calif.

Filed Oct. 30, 1981, Ser. No. 315,584

Int. Cl.³ C10G *1/00, 1/06*

U.S. Cl. 208—8 LE **14 Claims**

1. A method of separating an organic extract from coal comprising the steps of:

adding particulate coal and a mixture consisting essentially of a first solvent and a second solvent; said first solvent being present in the solvent mixture in an amount from 0.1 to 20% by weight and having a molecular diameter at least 50% smaller than the average pore diameter of the coal and said second solvent having a larger molecular diameter than the first solvent and being an efficient coal-extracting solvent;

heating the reactor to a temperature above the critical temperature for the solvent mixture but below 450° C. at a pressure of 500 to 10,000 psig to supercritical fluid form;

extracting organic coal components into the supercritical fluid phase; and

removing said phase from the reactor.

4,388,172

LIQUEFACTION OF COAL

Bernhard Rodewald, Mannheim; Kurt Tippmer, and Hans F. Tamm, both of Recklinghausen, all of Fed. Rep. of Germany, assignors to Ruhrkohle Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 29, 1981, Ser. No. 306,687

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1980, 3038309

Int. Cl.³ C10G *1/06*

U.S. Cl. 208—10 **8 Claims**

1. In a method for the liquefaction of coal having chlorine-containing compounds comprising hydrogenation of said coal in the presence of a catalyst, the improvement which comprises neutralizing said compounds with alkali metal hydrogen sulfide whereby H_2S is produced.

4,388,173

METHOD AND APPARATUS FOR DISTILLATION OF OIL SHALE

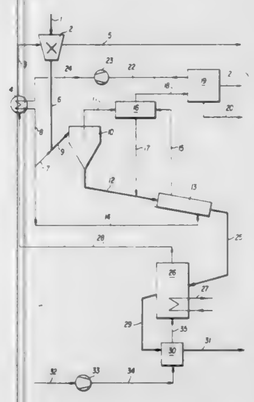
Gerd Escher, Gelsenkirchen-Buer; Heinz Frohnert, Bottrop, and Hans-Peter Wenning, Dorsten-Rhade, all of Fed. Rep. of Germany, assignors to Veba Oel Ag, Gelsenkirchen-Buer, Fed. Rep. of Germany

Filed Jun. 24, 1981, Ser. No. 277,001

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023670

Int. Cl.³ C10B *53/06*

U.S. Cl. 208—11 R **16 Claims**



1. A method for the distillation of oil shale in a distillation cyclone reaction using a hot gas to heat said oil shale comprising:

utilizing distillation gas as said hot gas after separation of the condensable portion of said distillation gas;

removing a portion of said hot gas corresponding to the increase in the amount of gas generated by distillation, tangentially introducing said stream of oil shale and hot gas, in combination, into said distillation cyclone reactor; and

re-heating the residual portion of said hot gas without adding solid material.

4,388,174

PROCESS OF RECOVERING OIL FROM OIL-CONTAINING MINERALS

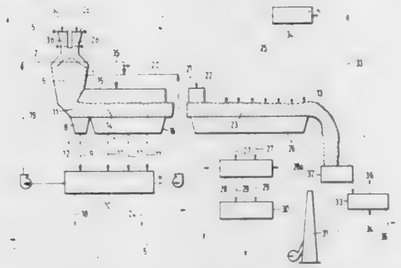
Norbert Magedanz, Hasselroth; Horst Seidel, and Hans J. Weiss, both of Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 10, 1982, Ser. No. 387,072

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124019

Int. Cl.³ C10G *1/00;* **C10B** *49/18, 51/00, 53/06*

U.S. Cl. 208—11 R **9 Claims**



1. In a process of recovering oil from an oil-containing mineral by retorting said oil containing material and separating of oil in a separating stage from the retort gases obtained therefrom which contain the retorting products, and solid carbon contained in the retorted material after the retorting is burnt by a supply of oxygen-containing gases, part of the resultant burnt hot mineral in admixture with the oil-containing mineral is charged into a retorting shaft reactor whereby the oil-containing mineral is heated and retorted, the improvement wherein at least a portion of the retorting is effected in a retorting shaft reactor, the mineral from the retorting reactor is charged onto a traveling grate, a subsequent retorting is effected in an after-retorting zone, in which inert or reducing gases are passed through the material, the gases from the retorting reactor and from the after-retorting zone are supplied to the said separating stage and oil is removed from said gases in said separating stage, the retorted bed of material is moved on the traveling grate to a combustion zone, said solid carbon contained in said mineral in the surface of said bed is ignited at the beginning of the combustion zone, oxygen-containing gases are then sucked through the bed to cause the burning zone to move through the bed, the resultant burnt mineral is discharged from the traveling grate and part of the fired mineral is recycled to the retorting reactor.

4,388,175

HYDROCARBON CONVERSION PROCESS

Thomas A. Lionetti, Houston, and Charles H. Schrader, Groves, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,625

Int. Cl.³ C10G *11/05, 55/08*

U.S. Cl. 208—74 **5 Claims**

1. In a fluid catalytic cracking process wherein a hydrocarbon stock containing sulfur is subjected to catalytic cracking in a fluid catalytic cracking zone, and hydrocarbon products effluent from said cracking zone are separated into fractions including a heavy cycle gas oil fraction having a boiling range

above about 340° C., the method of producing an aromatic feedstock for the production of needle coke by delayed coking which comprises:

(a) subjecting said heavy cycle gas oil to hydrotreating in a hydrotreating zone,

(b) passing a fraction of effluent from said hydrotreating zone boiling above 340° C. to catalytic cracking in a second fluid catalytic cracking reaction zone effecting conversion of said hydrotreated heavy cycle gas oil to light olefins and normally liquid aromatic hydrocarbons,

(c) separating a light olefins fraction from the effluent from said second fluid catalytic cracking reaction zone,

(d) recovering normally liquid aromatic hydrocarbons boiling below about 340° C. from the effluent from said second catalytic cracking zone,

(e) and recovering an aromatic heavy gas oil fraction boiling above about 340° C. from the effluent of said second fluid catalytic cracking zone suitable as feedstock for the production of needle coke by delayed coking.

4,388,176

HYDROCARBON CONVERSION PROCESS

Roy E. Pratt, Port Neches; Scott M. Sayles, Nederland, both of Tex.; Kerry W. Bowers, Birmingham, Ala., and Richard P. Scott, deceased, late of Groves, Tex. (by Candice C. Scott, executrix), assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 19, 1981, Ser. No. 323,097

Int. Cl.³ C10G *11/05, 25/03, 51/06, 55/08*

U.S. Cl. 208—80 **14 Claims**



1. In a process for conversion of heavy paraffinic vacuum gas oil fractions into desirable products by a fluid catalytic cracking process, the improvement which comprises separating paraffins from the vacuum gas oil thereby producing a deparaffined oil, hydrotreating said deparaffined oil, subjecting hydrotreated deparaffined oil to catalytic cracking in a first fluid catalytic cracking zone at a temperature in the range of 520° to 540° C., separately subjecting said paraffins removed from the vacuum gas oil to catalytic cracking in a second fluidized catalytic cracking zone at a temperature in the range of 650° to 700° C., and recovering light olefins and normally liquid motor fuel blending components from the products of said fluid catalytic cracking operations.

4,388,177

PREPARATION OF NATURAL FERRIERITE HYDROCRACKING CATALYST AND HYDROCARBON CONVERSION WITH CATALYST

Emmerson Bowes, Woodstown, and Bruce P. Pelrine, Trenton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 225,079, Jan. 13, 1981, Pat. No. 4,335,019. This application Mar. 8, 1982, Ser. No. 355,439

Int. Cl.³ C10G *47/18*

U.S. Cl. 208—111 **14 Claims**

1. A process for selectively hydrocracking straight chain and single methyl-branched hydrocarbons from a feed selected from the group consisting of reformate and waxy hydrocarbon oil comprising contacting said feed and hydrogen under conversion conditions with a catalyst composition comprised of natural ferrierite treated by contacting it with an oxalate ion under conditions effective to impart to the ferrierite a Constraint Index from about 1 to 12, the ferrierite further comprising at least one hydrogenation component selected from the metals of Group VIA and Group VIII of the Periodic Table.

4,388,178

CATALYTIC CRACKING PROCESS

Paul H. Lewis; Joseph A. Durkin, both of Groves, and Joseph A. Froelich, Nederland, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 198,859, Oct. 20, 1980, Pat. No. 4,324,698. This application Dec. 24, 1981, Ser. No. 334,413

Int. Cl.³ C10G *11/05, 11/08, 11/18;* **B01J** *29/12*

U.S. Cl. 208—115 **3 Claims**

1. In a process wherein a petroleum hydrocarbon feedstock is contacted with a zeolite cracking catalyst under hydrocarbon cracking conditions including a temperature in the range of 850° to 950° F., the improvement which comprises contacting said hydrocarbon with a catalyst consisting of at least 90 percent by weight of a composite of a Y-zeolite in a silica-alumina matrix, said composite containing from about 0.1 to about 5 percent by weight fluorine.

4,388,179

MAGNETIC SEPARATION OF MINERAL PARTICLES FROM SHALE OIL

Robert T. Lewis, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 24, 1980, Ser. No. 210,110

Int. Cl.³ C10G *1/00;* **B03B** *1/02;* **B03C** *1/00;* **B07B** *1/00*

U.S. Cl. 208—177 **11 Claims**

1. A process for separating oil shale mineral solids from a fluid feed comprising retorted shale oil in the liquid or gaseous state, comprising the steps of:

(a) heating said mineral solids to at least the magnetic transformation temperature of at least a portion of said mineral solids; and

(b) thereafter exposing said feed to a magnetic field to cause the migration of said mineral solids under the influence of said magnetic field to concentrate the solids and provide a fluid product having a reduced solids concentration.

4,388,180

METHOD FOR BENEFICIATION OF PHOSPHATE ROCK

Andrew Rainis, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 14, 1981, Ser. No. 330,300

Int. Cl.³ B03D *3/06*

U.S. Cl. 209—5 **4 Claims**

1. A method of removing gangue minerals from phosphate rock comprising:

(a) forming an aqueous slurry of gangue mineral containing phosphate rock;

(b) adjusting the pH of the slurry to between 10 and 11;

(c) adding to said slurry a surface conditioner selected from the group consisting of oleic acid, fatty acids, and high molecular weight organic acids;

(d) using a nonpolar, water insoluble, bridging hydrocarbon having a boiling point of less than 70° C. to selectively form agglomerates of phosphates;

(e) separating the agglomerates of phosphates from the slurry containing the gangue minerals;

(f) recovering the bridging hydrocarbon; and

(g) recycling the bridging hydrocarbon to step (d).

4,388,181

METHOD FOR THE PRODUCTION OF METALLURGICAL GRADE COAL AND LOW ASH COAL

Andrew Rainis, Walnut Creek, and Clifford M. Detz, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 14, 1981, Ser. No. 330,303

Int. Cl.³ B03D *1/08, 3/06*

U.S. Cl. 209—12 **5 Claims**

1. A method of producing a metallurgical grade coal and a low ash coal comprising:

(a) forming an aqueous slurry of coal containing vitrinite, ash and pyritic sulfur;

(b) adding to said slurry a froth flotation reagent;

(c) subjecting said slurry to froth flotation to produce an overflow and an underflow, wherein said overflow is rich in vitrinite and has a low content of ash and pyritic sulfur; and wherein said underflow has a low content of vitrinite and is rich in ash and pyritic sulfur;

(d) filtering and drying the froth flotation overflow to produce a metallurgical grade coal;

(e) using a nonpolar, water insoluble, bridging hydrocarbon having a boiling point of less than 70° C. to selectively form agglomerates of coal from said underflow;

(f) separating the agglomerates of coal from the underflow containing the ash and pyritic sulfur;

(g) recovering the bridging hydrocarbon; and

(h) recycling the bridging hydrocarbon to step (e).

4,388,182

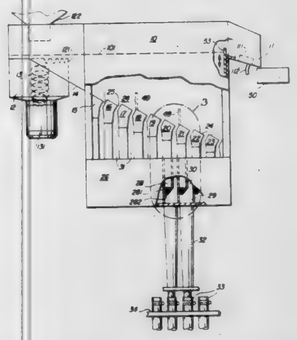
MINERAL SEPARATION BY PARTICLE SETTLING CHARACTERISTICS

H. Gene Hudson, 10625 N. 37th Way, Phoenix, Ariz. 85028

Filed Aug. 21, 1981, Ser. No. 295,150

Int. Cl.³ B03B *5/66*

U.S. Cl. 209—17 **47 Claims**



1. In mineral separation apparatus having means for passing materials bearing minerals and similar substances past an upwelling flow of fluid wherein desired materials move counter to said upwelling flow to first collection means and undesired materials move along said upwelling fluid flow to second collection means, the improvement comprising:

retardation means for retarding the counter movement of such materials as they enter within said upwelling fluid flow to increase the effective interaction time of said fluid flow on such materials as may enter said fluid flow and attempt to move counter thereto; and

means for inhibiting the interaction of all said materials with other than an upwelling flow of fluid.

4,388,183

SWIRLING AIR CENTRIFUGAL SCATTER CLASSIFIER

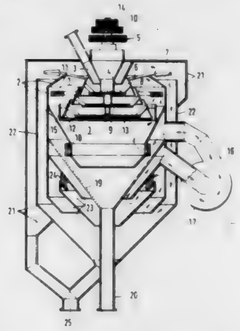
Franz Thomas, Beckum, Fed. Rep. of Germany, assignor to Christian Pfeiffer, Beckum, Fed. Rep. of Germany

Filed Sep. 21, 1981, Ser. No. 304,334

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1980, 3038625

Int. Cl.³ B07B *7/083*

U.S. Cl. 209—139 A **14 Claims**



1. In a scatter classifier having a housing, a system for producing a swirling gas current in said housing, an upper first scatter plate, a lower second scatter plate under said upper plate, a system for turning said plates about a common upright axis at different speeds, said lower second plate having a greater diameter than said upper first plate, a middle feed inlet duct over said upper first plate, a system without said housing for producing a classifying gas current within said housing, said upper first plate having a first baffle ring thereon and designed to be turned therewith for guiding said feed, as moved by said plate, with a baffle function, the improvement residing in that said lower second plate has a second baffle ring thereon designed to be turned therewith.

4,388,184

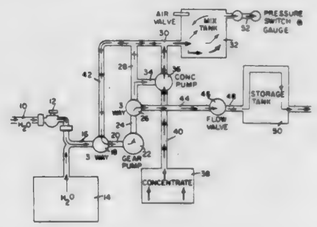
PRESSURE AND FLUID FLOW ACTIVATED, SIMPLIFIED PROPORTIONING SYSTEM

Donald Brous, 110 Hunt Rd., Peterborough, N.H. 03458, and Robert H. Cox, 33 Ferncliff Rd., Scarsdale, N.Y. 10583

Continuation-in-part of Ser. No. 161,065, Jun. 19, 1980, abandoned. This application Sep. 14, 1982, Ser. No. 418,046

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—96.2 **11 Claims**



1. A proportioning system comprising a proportioning mixing tank, a storage tank, a source of concentrate, a source of diluent, a constantly acting pump means, and lines for directing the diluent from said source of diluent to the proportioning tank and from the proportioning tank to the storage tank, the pump means pumping concentrate through a conduit from said source of concentrate into the proportioning tank in a prearranged proportion of the concentrate and the diluent,

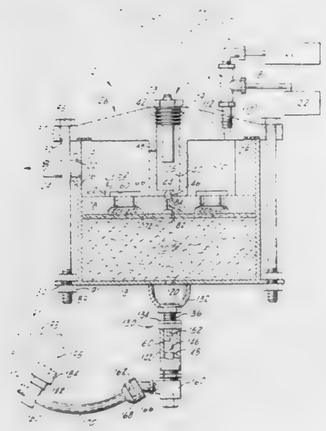
a first sensor operated pressure actuated switch means associated with the proportioning tank for actuation at a certain predetermined pressure in the proportioning tank as said proportioning tank fills, and a second sensor operated fluid flow switch means located in the line just prior to the storage tank for actuation at a predetermined fluid flow,

directional valve means in the lines between said pump means, the proportioning tank and the storage tank, said valve means being actuated first by said first sensor operated pressure actuated switch means for directing the fluid from the proportioning tank to the storage tank while said pump means is still operating, while said valve means shut off the proportioning tank from the concentrate and diluent, the second sensor operated fluid flow switch means being actuated to hold said valve means in this position as long as the flow exists continuing this state of said directional valve means, and said second sensor operated fluid flow switch means operating to reverse the directional valves to their original state to once more direct the diluent and concentrate to the proportioning tank.

4,388,185
ELECTRIC OIL REFINER

Norman Ott, and Jeanette O. McKeachern, both of 6140 SW. 84th Ave., Miami, Fla. 33143

Filed Apr. 26, 1982, Ser. No. 371,616
Int. Cl.³ B01D *3/28, 27/08*
U.S. Cl. 210—136 **5 Claims**



1. For an engine to be operated under oil pressure, an oil refiner comprising,

an open top housing of a first predetermined diameter, said housing having generally tubular walls, a floor spanning the housing bottom, said housing having a side opening adjacent the open top and a central opening through said floor,

lid means sized to span the open end of the housing and means to secure the lid in closing relation of the housing,

said lid having (a) a depending central oil well defining structure of a predetermined height and (b) a plurality of depending radially extending fins extending from the oil well defining structure and each of the fins being of a common radial dimension less than that of said predetermined diameter and of a common predetermined vertical height equal to that of the height of the oil well defining structure, each fin having a lower end surface and radially facing surfaces, said radially facing surfaces being in spaced relation from said housing, said oil well defining structure having a floor with a central through orifice therethrough a radially facing opening adjacent, said lid in open communication with the interior of said housing, the lower end surface of said fins having a cutout therein providing a radially distally located foot on each fin and a portion adjacent to the oil well defining structure comprising a proximal foot on each fin,

a plate having a plurality of apertures therethrough and a central orifice in spanning relation of said housing and in abutting engagement with said fins and said oil well defining structure, and

a bed of waste material in the housing on the floor and beneath the plate,

a felt pad on the waste material and beneath the plate, said bed and said felt pad supporting said plate,

said bolts means to hold the lid in closing relation of the housing maintaining said fins and plate in abutting relation,

a heater means in said oil well defining structure and supported in spaced relation from said oil well defining structure and the bottom of said oil well defining structure, said heater means being adapted to be operatively connected to the electrical system of a vehicle upon which the oil refiner is installed,

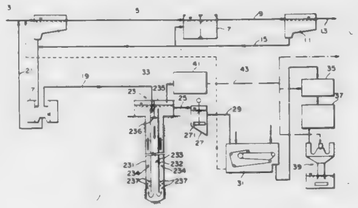
a one-way check valve means in open communication with the opening in the floor of said valve and conduit means to interconnect the check valve means to the oil pump of the engine,

a normally open pressure operated switch in said conduit means responsive to pressure caused by an oil pump in the conduit to energize the heater means.

4,388,186
SLUDGE TREATING APPARATUS

Tadao Fujimoto, Kobe, and Tadaaki Kawasugi, Nara, both of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Aug. 28, 1981, Ser. No. 297,257
Claims priority, application Japan, Mar. 7, 1980, 55-29599; Mar. 8, 1980, 55-29533; Jun. 13, 1980, 55-83151[U]; Jun. 13, 1980, 55-83160[U]
Int. Cl.³ C02F *11/04*
U.S. Cl. 210—170 **11 Claims**

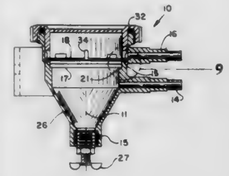


1. An apparatus for treating a sludge produced by waste water treatment, comprising: mechanical condensing means (**17**) for forcedly condensing a produced raw sludge, an anaerobic digestion tank (**23**) of a deep well type buried to extend under the ground in the depth direction, fluid conduit means operatively connecting said digestion tank to said condensing means for receiving and anaerobically digesting the raw sludge condensed by said mechanical condensing means, said anaerobic digestion tank comprising a downward flow chamber extending in the depth direction for flowing a sludge being treated downwardly therethrough, an upward flow chamber disposed in association with said downward flow chamber and also extending in the depth direction, fluid communication means between said upward flow chamber and said downward flow chamber for flowing a sludge being treated therethrough in the upward direction, circulating means operatively connected to said downward flow chamber and said upward flow chamber for forcedly circulating the sludge being treated between said downward flow chamber and said upward flow chamber and for expediting the reaction in said anaerobic digestion tank, and enclosure means for maintaining said digestion tank in an anaerobic condition, whereby conversion from fatty acid into methane gas and carbon dioxide takes place during the anaerobic digestion in said tank with simultaneous conversion from said carbon dioxide into methane gas as a result of the static pressure head afforded by the deep well location of said anaerobic digestion tank, said apparatus further comprising dewatering means operatively connected to said anaerobic digestion tank for receiving and dewatering the sludge digested by said anaerobic digestion tank, methane gas collecting means operatively connected to said anaerobic digestion tank for collecting methane gas produced in said anaerobic digestion tank, and post-treatment means operatively connected to said dewatering means for further treating the digested sludge after the sludge has been dewatered by said dewatering means, said post-treatment means comprising heat generating means, means operatively connected to said methane gas collecting means for supplying said methane gas collected by said methane gas collecting means to said post-treatment means as a source of energy for said heat generating means.

4,388,187
FUEL FILTER

Dustin D. Eaglestone, 2350 E. Iliff, #9, Denver, Colo. 80210

Continuation-in-part of Ser. No. 257,572, Apr. 27, 1981, abandoned, which is a continuation-in-part of Ser. No. 208,543, Jan. 5, 1981, abandoned. This application Mar. 18, 1982, Ser. No. 359,293
Int. Cl.³ B01D *21/00, 35/02*
U.S. Cl. 210—232 **4 Claims**



1. A fuel filter adapted for use in a fuel system comprising in combination:

a main body portion having a vertical axis passing therethrough and a relatively lower inlet connected to a fuel line in said fuel system and a relatively higher outlet connected in-line to said fuel line, said main body further including a reservoir therein having first separation means for draining said reservoir, said first separation means located at a bottommost location on said main body and in general alignment with said vertical axis,

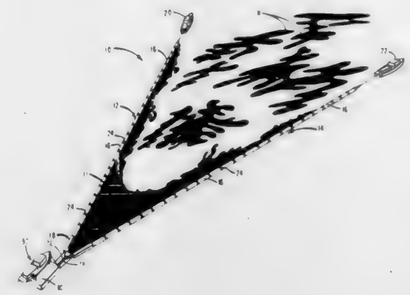
second separation means including a baffle plate having a relatively small number of holes passing therethrough and a screen spaced a relatively small distance above said baffle plate, said baffle plate and screen mounted in said main body at a position intermediate said inlet and said outlet; and

a cap having an insert portion insertable within the main body and a skirt depending downwardly therefrom having connection means for connecting said cap to said main body, said insert portion of said cap adapted to seat against said screen and hold said screen into position within said main body and to further provide a flow passageway for fuel to pass from the interior of said cap and main body to said outlet.

4,388,188
OIL SPILL RECOVERY MEANS

Robert D. Morris, 93 Kickimuit Ave., Bristol, R.I. 02809

Filed Apr. 13, 1981, Ser. No. 253,281
Int. Cl.³ B01D *21/00;* **E02B** *15/04*
U.S. Cl. 210—242.3 **13 Claims**



1. Apparatus for confining an oil slick and for skimming and funneling oil and water into a recovery means for the oil comprising:

(a) two elongated flotatable booms, each boom comprising a plurality of individual cylindrical-shaped flotatable sections interconnected together in series yet being capable of independent movement of one another;

(b) cylindrical-shaped compressible means of a diameter at least as large as the boom sections being located between each two next adjacent interconnected flotatable boom sections whereby to provide a flexible coupling of boom sections and a boom of relative unitary construction thereby permitting the boom sections each to move independently of one another with wave action and preventing the leaking of the oil/water slick between boom sections, the said compressible means being of sufficient thickness and having sufficient resistance to compression as to prevent the ends of adjacent boom sections from impacting one another;

(c) a flotatable catcher funnel connected to each of said flotatable booms at one end of each said boom which catcher funnel comprises a planar bottom of trapezoidal shape and pontoons attached to and flotatably supporting said bottom below the water's surface at a depth sufficient to recover any oil floating on the water's surface, said pontoons being located with respect to one another to provide a catcher funnel wider at its front end than at its rear end and confining the oil/water slick to an ever-narrowing inverted triangular-shaped area;

(d) flotatable recovery means detachably connected to the rear end of said flotatable catcher funnel for receipt of the oil/water discharged from the said funnel and for separating the oil from the water; and

(e) means connected to each said boom at its other end for maintaining the said booms forward of said catcher funnel in the desired pattern.

4,388,189

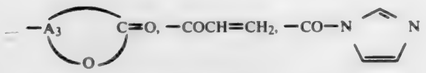
PROCESS FOR PREPARATION OF IMPROVED SEMIPERMEABLE COMPOSITE MEMBRANES

Takeyuki Kawaguchi, 1-28-5-207, Ozu-cho; Hiroyoshi Minematsu, 1-28-5-302, Ozu-cho, both of Iwakuni-shi, Yamaguchi-ken; Yuzuru Hayashi, 3-1-23, and Shigeyoshi Hara, 3-1-40, both of Yamate-machi, Iwakuni-shi, Yamaguchi-ken, all of Japan

Filed Dec. 24, 1980, Ser. No. 220,081
Claims priority, application Japan, Dec. 28, 1979, 54-170359
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—490 **32 Claims**

1. In a process for producing a semipermeable composite membrane which comprises forming on a microporous substrate a thin layer of polymeric material comprising a polyamino polymer containing at least 1 milliequivalent, per gram of the polymer in the dry state, of active amino groups selected from primary amino groups and secondary amino groups, and thereafter interfacially crosslinking a surface portion of said thin layer with a crosslinking agent comprising a cyclic compound having at least two functional groups (a) selected from the group consisting of carbonyl halide, sulfonyl halide, isocyanate and acid anhydride groups; the improvement wherein

(1) said polymeric material contains dispersed therein a polyfunctional aliphatic compound having at least two functional groups (b) which are selected from the group consisting of $-CH(OH)CH_2X_1$, $-COOA_1$, $-NH-COOA_2$,



and active halomethyl groups, in which X_1 and X_2 each represent a halogen atom, A_1 and A_2 each represent a hydrogen atom or an organic radical capable of being split off together with the oxygen atom to which it is bonded, and A_3 represents a trivalent or tetravalent saturated aliphatic groups having 2 to 5 carbon atoms, and are substantially incapable of reacting with the primary or secondary amino groups in said polymer at a temperature at which the interfacial crosslinking is carried out, but capable of reacting easily with either the primary or secondary amino groups or both in said polymer at a temperature at least 30° C. higher than said crosslinking temperature, and

(2) the interfacially crosslinked thin layer is heated to a temperature at which said polyfunctional compound reacts with the primary or secondary amino groups or both in said polymer.

31. A semipermeable composite membrane produced by any one of claims **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9**, **10**, **11**, **12**, **13**, **14**, **15**, **16**, **17**, **18**, **19**, **20**, **21**, **22**, **23**, **24**, **25**, **26**, **27**, **28**, **29** or **30**.

4,388,190

PLATE ASSEMBLY AND METHOD FOR INSTALLING SAME IN A SEPARATION DEVICE

Nicky M. Haddock, 11907 Mile Dr., Houston, Tex. 77065

Filed Mar. 28, 1979, Ser. No. 24,557
Int. Cl.³ B01D *21/00*
U.S. Cl. 210—522 **14 Claims**

1. A plate assembly for use in a cross flow separation device for separating components from a carrier liquid having components of a specific mass differing from that of the carrier liquid, comprising:

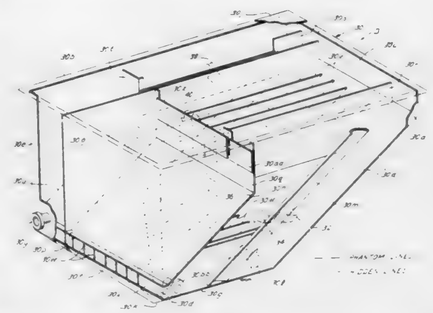
at least a first separating plate and a second separating plate adapted to be mounted within the separation device for enhancing separation of the components from the carrier liquid;

each of said separating plates having a top portion, an intake side portion, a bottom portion, a discharge side portion, a first plate surface, and a second plate surface;

each of said separating plates formed with said first plate surface being substantially parallel with said second plate surface;

said top portion, said intake side portion, said bottom portion, and said discharge side portion forming the perimeter of each of said separating plates;

said second plate surface of said first separating plate adapted to be disposed adjacent said first plate surface of said second separating plate within the separation device; and,



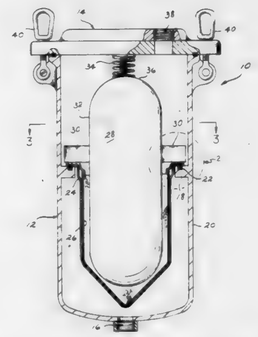
elongate spacer means mounted with said second separating plate at said top portion and said bottom portion and with the longitudinal axis of said spacer means extending along said second plate surface of said second separating plate between said top portion and said bottom portion for engaging and spacing said second plate surface of said second separating plate from said first plate surface of said first separating plate for enhanced coalescing and separation of the components from the carrier liquid within the separation device.

4,388,191

FLOAT BAG HOLD DOWN FOR A FILTER

Howard W. Morgan, 100 Anchor Rd., Michigan City, Ind. 46360

Filed Oct. 16, 1981, Ser. No. 311,961
Int. Cl.³ B01D *29/16*
U.S. Cl. 210—452 **2 Claims**



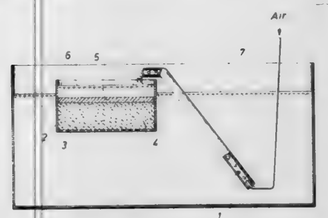
1. A filter for liquids comprising a housing including side and bottom walls with a top opening, said housing side wall carrying an annulus projecting into the interior of said housing, said annulus spaced from said housing top opening, a removable cap spanning said housing top opening, a bag-shaped removable reticulated filter element carried within said housing and having a circumferential outward flange supported upon said annulus, a liquid inlet in flow communication with the interior of said filter element and a liquid outlet in flow communication with the exterior of the filter element, a removable closed float means for decreasing the volumetric interior size of said housing, said float means having top and bottom end walls and side walls, said float means side walls having spaced arm parts extending radially therefrom, said float means inserted into said housing with said bottom end wall thereof extending into said filter element interior and arm parts overlying said filter element flange, a spring compressed between said cap and said float means top end wall urging said filter element flange by said float means arm parts against said housing side wall annulus, at least a portion of said float means side wall being spaced from said filter element whereby liquid entering said inlet flows about said float means and between said arm parts thereof into the interior of the filter element and through the filter element and out said outlet.

4,388,192

PROCESS AND A DEVICE FOR PURIFYING WATER

Ake O. V. Hellqvist, Djurhamn, Sweden, assignor to Cinderella AB, Stockholm, Sweden

Continuation of Ser. No. 79,015, Sep. 26, 1979, abandoned, which is a continuation of Ser. No. 961,902, Nov. 20, 1978, abandoned, which is a continuation of Ser. No. 853,667, Nov. 21, 1977, abandoned, which is a continuation of Ser. No. 660,889, Feb. 24, 1976, abandoned. This application Jun. 10, 1981, Ser. No. 272,150
Claims priority, application Sweden, Feb. 24, 1975, 7502057
Int. Cl.³ B01D *23/10*
U.S. Cl. 210—615 **18 Claims**



1. A process for purifying water by removing suspended particles which comprises passing the water through a filter of an inorganic filter material of the rock-wool type, said filter material being of a thickness of about 2 cm to below 1 m and having been prepared by melting an inorganic material and forming the melt of fibers, said melt having a composition of about 80% diabase mineral and about 20% lime, at least 90% of the fibers of said material having a diameter below 15 microns, the fiber solids content of the filter material being at most 20% of the volume, said fiber material in the fully soaked condition in the filter exhibiting a compression of less than 50% when subjected to an increase of a load acting on the surface of the filter material from a starting value of 50 grams/sq. inch to an increased value of 150 grams/sq. inch, and passing the water through the filter at a flow rate of above 10 meters per hour to remove said suspended particles.

9. A process according to claim **1**, characterized by oxygenating said water prior to passing it into a filter thereby maintaining in the filter a biological layer formed by micro-organisms in the treated water.

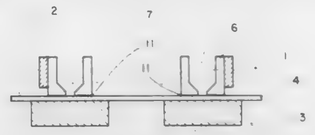
4,388,193

METHOD AND APPARATUS FOR PERFORMING THIN-LAYER CHROMATOGRAPHY

Paul Buncak, Bahnhofstrasse 31, CH-4106 Therwil, Switzerland

Filed Nov. 25, 1980, Ser. No. 210,437
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—658 **11 Claims**

1. Method for performing a thin-layer chromatographic analysis with a plate or sheet provided with a sorption layer, whereby a dissolved specimen to be analyzed is applied at a predetermined interval from a dosing surface and is broken down into its substances while a solvent is being supplied, characterized in that the solvent is conducted directly from a dosing container through an exit opening onto the sorption layer to a surface slit without capillary suction action being used; and further characterized in that after the development is



ended, the dosing container is filled with a reagent in order to make the contained materials visible, and the dosing container is moved relative to the TLC plate or sheet at a preselected pressure and speed, so that said plate or sheet is coated with the reagent.

4,388,194

HYDROGEN SULFIDE ABATEMENT IN GEOTHERMAL STEAM SYSTEMS

William A. Hills, Lawrenceville, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Sep. 4, 1981, Ser. No. 299,290
Int. Cl.³ C02C *1/40;* **C02B** *5/02*
U.S. Cl. 210—697 **8 Claims**



1. In the process of removing hydrogen sulfide from an aqueous waste stream including steam condensate from a geothermal power plant by treating the stream with an iron catalyst/hydrogen peroxide oxidant system, the improvement of preventing deposition of sludge comprising carrying out the treatment in the presence of an effective amount of a soluble polyphosphate selected from the class consisting of:

$M_4P_2O_7$	$M_3P_3O_{10}$	$(MPO_3)_n$
I	II	III
Pyrophosphate	Tripolyphosphate	Higher Polyphosphate

wherein M represents an alkali metal and n is an integer of from about 6 to 21.

4,388,195

PROCESS AND APPARATUS FOR THE CHEMICAL-MECHANICAL TREATMENT AND PURIFICATION OF GROUND WATERS, SURFACE WATERS AND EFFLUENTS

Gunter von Hagel, Aarbergen; Norbert Berlenbach, Wiesbaden-Dotzheim, and Gerhard Werner, Langenau, all of Fed. Rep. of Germany, assignors to Passavant-Werke Michelbacher Hütte, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,900
Int. Cl.³ C02F *1/56*
U.S. Cl. 210—709 **18 Claims**

1. Process for the chemical-mechanical treatment and purification of ground water, surface waters and effluents, comprising the following steps:

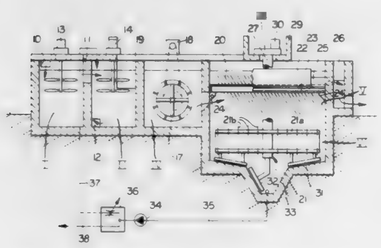
first passing the water being treated through a series of at

least three initial process stages which are carried out in initial zones, including:

(a) in a first initial process stage, which is carried out in a first initial zone, admixing at least one of the following materials with the water by means of stirring:
  (1) flocculants
  (2) flocculation aids
  (3) precipitants
  (4) agents conducive to sedimentations
  (5) agents for altering the pH value of the raw water in an amount effective in flocculating impurities from the water and forming sedimentable flocs;

(b) in a second initial process stage, which is carried out in a second initial zone, admixing contact sludge by means of stirring with the water; and

(c) in a third initial process stage, which is carried out in a third initial zone, admixing at least flocculant aids, using stirring energy input of more than 20 Watts per cubic meter of the reaction volume available in the zone of this initial process stage with a water retention time of no more than about 5 minutes;



then, after said initial process stages, a further process stage including flocculating said impurities and forming said sedimentable flocs, separating the flocs and reaction products and raw water components from the clarified water in a further zone separate from the said initial zones with separate removal of the separated solids, as sludge, and the clarified water from said further zone, with the separation of flocs and reaction products and raw water components from the clarified water in sedimentation equipment, and including concentrating at least a part of the sludge to a solids concentration of at least one percent weight volume and returning at least a part of the concentrated sludge as said contact sludge into said second initial process stage.

9. A process according to any one of claims **1** or **5**, in which at least the solid concentration of the returned contact sludge and the amount of solids present in the raw water and remaining in the clarified water is measured, and including altering the volume of the contact sludge returned per unit time depending on at least one of these measured results.

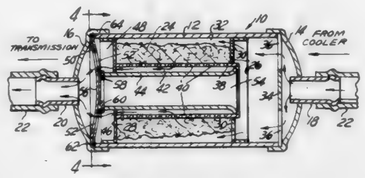
4,388,196

FILTER WITH HEAT CONTROLLED FLUID FLOW BYPASS

Carroll J. Lucia, Green Bay, Wis., assignor to Claude A. Patalidis, Southfield, Mich.

Continuation-in-part of Ser. No. 178,037, Aug. 14, 1980, Pat. No. 4,306,966. This application Apr. 21, 1981, Ser. No. 256,104
Int. Cl.³ B01D *35/02*
U.S. Cl. 210—742 **12 Claims**

1. A fluid filter comprising a housing having an inlet and an outlet, a filtering element disposed in said housing, means in said housing for directing said fluid from said inlet for passage through said filtering element, a bypass channelway through said filtering element in said housing placing said inlet in direct communication with said outlet, and thermostatically operated valving means closing said bypass channelway below a predetermined temperature for causing said fluid to flow through said filtering element and opening said bypass channelway to flow of fluid above said predetermined temperature, wherein said thermostatically operated valving means comprises a thermally deformable bimetallic disk peripherally attached to said housing and disposed proximate an end of said bypass channelway, said bimetallic disk being dished below said predetermined temperature such as to close said channelway end,



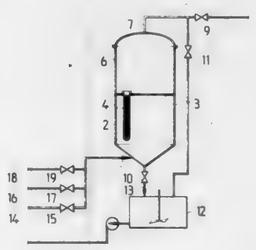
and said bimetallic disk being deformed at said predetermined temperature such as to open said channelway end, said bimetallic disk having an imperforate central portion engaged with said channelway end below said predetermined temperature and a perforate peripheral portion for passage therethrough of said fluid passing through said filtering element.

4,388,197

PROCEDURE FOR SEPARATING FINELY DIVIDED MATTER FROM A SUSPENSION BY FILTERING

Juha Lumikko, Savonlinna, Finland, assignor to Enso-Gutzeit Oy, Savonlinna, Finland

Filed May 28, 1981, Ser. No. 267,878
Claims priority, application Finland, May 29, 1980, 801741
Int. Cl.³ B01D *29/38*
U.S. Cl. 210—777 **3 Claims**



1. Improvement in a method of separating finely divided matter from a suspension by filtration in a periodically operated pressure filter unit including a filter tank having a roof, a filtrate collecting tank located above the filter tank, a plurality of filtering elements extending downwardly from the roof to the filter tank and the interior of the filtering elements communicating with the filtrate collecting tank, comprising the steps of introducing a lime sludge (or $CaCO_3$) into the filter tank, flowing the lime sludge under pressure through the filtering elements for depositing large-grain lime sludge on the exterior surface of the filtering elements within the filter tank while filtrate flows through the filtering elements into the filtrate collecting tank, flowing a green liquor containing sediment into the filter tank and passing the green liquor through the lime sludge layer on the exterior surface of the filtering elements and filtering the sediment in the green liquor on the lime sludge with the filtrate passing through the filtering elements into the filtrate collecting tank.

4,388,198

ANTI-RUST ADDITIVES AND COMPOSITIONS THEREOF

Richard A. Butcosk, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 5, 1979, Ser. No. 54,753
Int. Cl.³ C10M *1/10*
U.S. Cl. 252—28 **14 Claims**

1. A lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefrom and a minor effective proportion of a rust or corrosion inhibitor prepared by reacting under suitable conditions a substituted succinic acid or succinic acid anhydride or the reaction product of a succinic acid or succinic acid anhydride, having an alkenyl radical containing from about 2 to 36 carbon atoms, and an amino acid with a metal hydroxide.

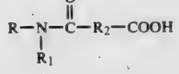
4,388,199

AQUEOUS RUST-INHIBITING AND LUBRICATING COMPOSITIONS

Ernesto Brandolese, Graffignana, Italy, assignor to Snamprogetti S.P.A., Milan, Italy

Continuation of Ser. No. 41,437, May 22, 1979, Pat. No. 4,273,664. This application Oct. 29, 1980, Ser. No. 201,819
Claims priority, application Italy, Jun. 2, 1978, 24135 A/78
Int. Cl.³ C10M *1/36*
U.S. Cl. 252—33.6 **1 Claim**

1. An aqueous lubricating and rust-preventing composition containing from 0.5% to 50% by weight of the water-soluble amine salt prepared from an alkanolamine and a secondary or tertiary monoamide of monoamide-alkylene carboxylic acids having the general formula,



wherein R is an alkyl radical having from 1 to 18 carbon atoms, a phenyl group, a phenyl group substituted with F, Cl, Br or NO_2, or an alcoholic radical having from 2 to 5 carbon atoms; R_1 is hydrogen, an alkyl radical having from 1 to 4 carbon atoms, an alcoholic radical having from 2 to 5 carbon atoms, a polyoxyethylene group, a polyoxypropylene group, or a mixed oxyethyleneoxypropylene group having a degree of oxyethylation or oxypropylation, respectively, of from 1 to 20; and R_2 is an alkylene group having from 1 to 8 carbon atoms, or an alkenyl group, —CH=CH—, and from 0.1% to 20% by weight, realtive to the water-soluble amine salt, of water-soluble oxyethylated-oxypropylated polyglycols the balance being water.

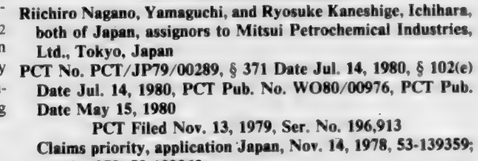
4,388,200

QUATERNARY AMMONIUM SALT COMPOSITION AND LUBRICATING OIL CONTAINING SAME

Phillip B. Valkovich, Spring, Tex., and Kenneth G. Hammond, Poughkeepsie, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,306
Int. Cl.³ C10M *1/32*
U.S. Cl. 252—34 **10 Claims**

1. A quaternary ammonium salt composition represented by the formula:



in which R is a hydrocarbyl radical having from 25 to 200 carbon atoms, x is a number from 2 to 4, y has a value from 0 to 4, R′ is a hydrocarbyl radical having from 1 to 10 carbon atoms, and z is a number from 0 to 2.

4,388,201

CO-DISPERSANT STABILIZED FRICTION MODIFIER LUBRICATING OIL COMPOSITION

Darrell W. Brownawell, Scotch Plains; Harold Shaub, Berkeley Heights; Max J. Wisotsky, Highland Park, and Antonio Gutierrez, Mercerville, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 20, 1981, Ser. No. 284,739
Int. Cl.³ C10M *1/20, 1/26, 1/32, 1/54*
U.S. Cl. 252—49.6 **9 Claims**

1. A storage stable lubricating oil composition having a reduced tendency to form sediment comprising a major portion of lubricating oil containing:

(a) 0.05 to 0.3 weight percent of a polycarboxylic acid-glycol ester friction modifier;

(b) 0.5 to 5.0 weight percent of a polyalkenyl succinimide or borated polyalkenyl succinimide dispersant and;

(c) a sediment reducing amount of a co-dispersant being an oil-soluble hydrocarbyl substituted mono- or bis-oxazoline or a hydrocarbyl substituted lactone oxazoline, said co-dispersant being present in an amount of from 25 to 75 weight percent of said (b) component dispersant and (d) metal containing additives which contribute to the tendency of the formulation to form sediment, the metal containing additives being (i) a neutral or basic phenate, sulfurized phenate or sulfonate detergent additive, present in an amount of from about 2 to 5 weight percent and (ii) a zinc dialkyl dithiophosphate anti-wear additive present in an amount of from about 1 to 3 weight percent.

4,388,202

LUBRICATING OIL COMPOSITION AND PROCESS FOR PREPARATION THEREOF

Riichiro Nagano, Yamaguchi, and Ryosuke Kaneshige, Ichihara, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP79/00289, § 371 Date Jul. 14, 1980, § 102(e) Date Jul. 14, 1980, PCT Pub. No. WO80/00976, PCT Pub. Date May 15, 1980
PCT Filed Nov. 13, 1979, Ser. No. 196,913
Claims priority, application Japan, Nov. 14, 1978, 53-139359; Nov. 14, 1978, 53-139362
Int. Cl.³ C10M *1/28*
U.S. Cl. 252—52 A **20 Claims**

1. A process for preparing a lubricating oil composition containing about 0.5 to about 40% by weight, based on the weight of the lubricating oil, of an oil-soluble graft copolymer, which comprises graft-copolymerizing in the presence of a radical initiator added thereto, a grafting monomer selected from the group consisting of

(a) saturated esters of unsaturated monocarboxylic acids,

(b) unsaturated esters of saturated carboxylic acids, and

(c) unsaturated epoxy compounds

with a lubricating oil and trunk copolymer selected from the group consisting of copolymers of alpha-olefins having 2 to 20 carbon atoms, and hydrogenated products of copolymers of

styrene and diolefins and/or alpha-olefins having 2 to 20 carbon atoms, said trunk copolymer having

(i) a number average molecular weight of about 5,000 to about 100,000,

(ii) a carbon-carbon double bond content determined from its iodine value of not more than about 0.1, and

(iii) an oxygen content of not more than about 0.3% by weight,

thereby to form said oil-soluble graft copolymer having grafted thereto about 10^{-2} to about 5 milliequivalents, per gram of the graft copolymer, of said grafting monomer.

20. A lubricating oil composition comprising a lubricating oil and about 0.5 to about 40% by weight, based on the weight of the lubricating oil, of an oil-soluble graft copolymer prepared by grafting in the presence of a radical intiator added thereto about 10^{-2} to about 5 milliquivalents, per gram of the oil-soluble copolymer formed, of a grafting monomer selected from the group consisting of

(a) saturated esters of unsaturated monocarboxylic acids,

(b) unsaturated esters of saturated carboxylic acids, and

(c) unsaturated epoxy compounds

to both said lubricating oil substrate and a trunk copolymer selected from the group consisting of copolymers of alpha-olefins having 2 to 20 carbon atoms, copolymers of styrene and alpha-olefins having 2 to 20 carbon atoms and hydrogenated products of copolymers of styrene and diolefins, said trunk copolymer having

(i) a number average molecular weight of about 5,000 to about 100,000,

(ii) a carbon-carbon double bond content determined from its iodine value of not more than about 0.1 milliequivalent/g of copolymer, and

(iii) an oxygen content of not more than about 0.3% by weight.

4,388,203

COMPOSITION AND METHOD FOR MELTING FROZEN AQUEOUS SOLUTIONS

Kenneth H. Nimerick, Tulsa, and Claude T. Copeland, Broken Arrow, both of Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 20, 1981, Ser. No. 323,158

Int. Cl.³ C09K *3/18*

U.S. Cl. 252—70 **10 Claims**

1. A method of thawing frozen water which comprises applying to the surface of frozen water a composition comprising: at least one component from each of the following water soluble components (1), (2) and/or (3) comprising (1) a polyhydroxy compound or monoalkyl ether thereof, (2) an organic nonvolatile compound having at least one hydrophilic group, (2) being different from (1), (3) an organic salt which functions to reduce the freezing point of water, (4) an organic polymer which functions to increase the viscosity and tackiness of the composition, and (5) water.

4,388,204

THICKENED ALKALI METAL HYPOCHLORITE COMPOSITIONS

Harold L. Dimond, Cincinnati, Ohio, and Thomas J. Murphy, Florence, Ky., assignors to The Drackett Company, New York, N.Y.

Filed Mar. 23, 1982, Ser. No. 361,031

Int. Cl.³ C11D *3/395, 7/52*

U.S. Cl. 252—98 **22 Claims**

1. A mixed anionic surfactant composition capable of thickening an aqueous solution of an alkali metal hypochlorite, said composition comprising a thickening additive consisting essentially of a mixture of

(A) at least one alkali metal sulfate salt of an ethoxylated aliphatic alcohol in an amount of from about 3 to about 40 percent by weight, based on the total weight of (A), (B) and (C), and

(B) at least one alkali metal salt of an N-alkyl, N-fatty acyl amino acid in an amount of from about 10 to about 50 percent by weight, based on the total weight of (A), (B) and (C), and

(C) at least one alkali metal salt of an alkyl sulfate in an amount of from about 30 to about 75 percent by weight based on the total weight of (A), (B) and (C).

4,388,205

PHOSPHATE-FREE CLEANING COMPOSITIONS

Hans Stettler; Karl Buser, both of Basel, Switzerland, and Jean-Pierre Chavannes, Saint-Louis, France, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 310,997, Oct. 13, 1981, abandoned. This application Nov. 6, 1981, Ser. No. 318,691

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1980, 3038434

Int. Cl.³ C11D *3/08, 7/26, 10/02*

U.S. Cl. 252—135 **20 Claims**

1. A phosphate-free aqueous composition comprising

(A) 100 parts by weight of a polycarboxylic acid in the salt form

(B) 2 to 400 parts by weight of an alkali metal gluconate or glucoheptonate

(C) 20 to 700 parts by weight of an alkali metal metasilicate, and

(D) 10 to 150 parts by weight of an alkali metal hydroxide.

4,388,206

CORROSION INHIBITORS

Eugene V. Hort, Wayne; Lowell R. Anderson, Morristown, and Dru W. Alwani, Wayne, all of N.J., assignors to GAF Corporation, New York, N.Y.

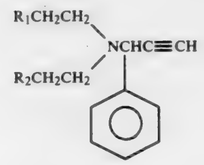
Filed Dec. 1, 1981, Ser. No. 326,236

Int. Cl.³ C11D *7/00;* C23G *1/06;* C04B *9/02*

U.S. Cl. 252—148 **15 Claims**

1. An aqueous composition for inhibiting the corrosion of metals placed therein comprising:

(a) an effective amount of a corrosion-inhibiting compound having the formula:



where R_1 and R_2 are independently alkyl C_1–C_6; and

(b) a non-oxidizing acid.

4,388,207

PROCESS OF AUGMENTING THE AROMA OF DETERGENTS USING METHYL SUBSTITUTED NORBORNANE CARBOXALDEHYDE DIMETHYL ACETALS OR NORBORNENE CARBONITRILES

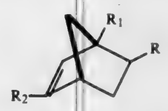
Philip T. Klemarczyk, Old Bridge; James M. Sanders, Eatontown; Manfred H. Vock, Locust; Joaquin F. Vinals, Rumson; Frederick L. Schmitt, Holmdel, and Edward J. Granda, Englishtown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 284,108, Jul. 16, 1981, Pat. No. 4,346,243, which is a continuation-in-part of Ser. No. 247,323, Mar. 25, 1981, Pat. No. 4,326,998, which is a continuation-in-part of Ser. No. 152,187, May 22, 1980, Pat. No. 4,284,824. This application Apr. 6, 1982, Ser. No. 366,081

Int. Cl.³ C11D *3/50, 9/44*

U.S. Cl. 252—174.11 **1 Claim**

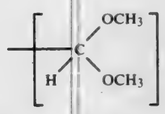
1. The process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base an aroma augmenting or enhancing quantity of at least one compound defined according to the structure:



wherein R represents the nitrile moiety having the structure:

[C≡N]

or the dimethoxymethyl moiety having the structure:



and wherein one of R_1, or R_2 is methyl and the other of R_1 or R_2 is hydrogen.

4,388,209

POLYGLYCIDYL ETHERS

Edgar R. Rogier, Minnetonka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Division of Ser. No. 81,950, Oct. 4, 1979, Pat. No. 4,339,389. This application Mar. 27, 1981, Ser. No. 248,104

Int. Cl.³ C07D *303/26, 303/27;* C08K *5/15;* C09K *3/00*

U.S. Cl. 252—182 **10 Claims**

1. The polyglycidyl ether of a polyol containing on average more than 1.5 oxirane units per molecule selected from the group consisting of:

$$CH_3(CH_2)_m[C(CH_2OH)_2]_n(CH_2)_p[C(CH_2OH)_2]_q(CH_2)_r[C(CH_2OH)_2]_s(CH_2)_tCH_2OH$$

and mixtures thereof: wherein n plus q plus s are integers the sum of which is from 1 to 3; t is 3 or greater; n, q and s are 0 or 1; and m through t are integers the sum of which is from 12 to 20.

2. The composition of claim **1** containing as an additional ingredient the polyglycidyl ether of a polyol containing on average more than 1.5 oxirane units per molecule selected from the group consisting of:

$$H(CH_2)_nCH(CH_2OH)(CH_2)_kCH_2OH$$

where k is 3 or greater; and h plus k are non-zero integers the sum of which is from 12 to 20.

4,388,208

ALUMINIUM SULPHATE COMPOSITION FOR WATER-PURIFYING, PAPER-SIZING AND PLANT DEWATERING PURPOSES AND A METHOD FOR PRODUCING THE COMPOSITION

Ulla B. Gytel, Villa Linnea, Ramlösa Brunns Park, S-25367 Helsingborg, Sweden

Filed Mar. 11, 1982, Ser. No. 357,176

Claims priority, application Sweden, Mar. 23, 1981, 8101830

Int. Cl.³ C02F *5/02, 5/08;* C01F *7/74*

U.S. Cl. 252—175 **9 Claims**

1. An aluminium sulphate composition for water-purifying, paper-sizing retention of filler and fibers in papermaking and plant-dewatering purposes, comprising an aqueous solution of aluminium sulphate containing polynuclear complexes of the kind

$$Al_m(OH)_n^{(3m-n)+}$$

in which m and n are positive integers, characterized in that said composition has a total aluminium content, Al_{tot}, of between about 0.2 and about 2 mole per liter; and that it is a clear, stable solution comprising polynuclear complexes determined by the associated values

Mole Al per liter	Mole Ratio OH/Al
0.2	1.5
0.5	1.1–1.6
1.0	0.8–1.7
1.9	0.35–1.5
2.0	0.3–1.4

4,388,210

HIGH SURFACE AREA LEAD OXIDE COMPOSITE AND METHOD FOR MAKING THE SAME

G. Anthony Parker, Cheswick, Pa., assignor to St. Joe Minerals Corporation, New York, N.Y.

Continuation of Ser. No. 95,155, Nov. 19, 1979, abandoned, which is a continuation of Ser. No. 920,689, Jun. 30, 1978, abandoned. This application Oct. 8, 1981, Ser. No. 309,803

Int. Cl.³ C01G *21/02;* H01M *4/56*

U.S. Cl. 252—182.1 **34 Claims**

1. In a method for preparation of a high surface area lead oxide composite, the steps of:

(a) preselecting starting material comprised of a lead oxide or lead sub-oxide;

(b) admixing said starting material and a liquid medium containing a hydrogen bonding solvent; and

(c) subjecting such mixture to a gaseous flow constituted inclusive of ozone to precipitate from said mixture a composite of lead oxide and lead dioxide having an increased surface area relative to said starting material.

4,388,211

Patent Not Issued For This Number

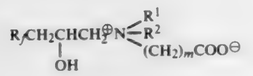
4,388,212

REDUCING SURFACE TENSION WITH N-TYPE BETAINES OF 2-HYDROXYL-1,1,2,3,3-PENTAHYDROPERFLUOROALKYLAMINES

John W. Richter, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Division of Ser. No. 92,767, Nov. 9, 1979, Pat. No. 4,283,533.
This application May 6, 1981, Ser. No. 260,609
Int. Cl.³ B01F *17/28;* **C07D** *265/30*
U.S. Cl. 252—356 **6 Claims**

1. A process for reducing surface tension in aqueous systems comprising adding thereto an effective amount of an amphoteric N-type betaine or a mixture of N-type betaines represented by the formula:



wherein

R_f is C_4–C_{20} perfluoroalkyl;

R^1 and R^2 are methyl or, together with the N atom to which they are bonded, form a piperidino, morpholino, or N-alkyl(C_1–C_4)piperazino; and

m is a whole number between 1 and 4.

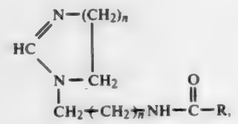
4,388,213

CYCLIC AMIDINE BASED CORROSION INHIBITORS WHICH INHIBIT CORROSION CAUSED BY CO_2 AND H_2S

Knut Oppenlaender, Ludwigshafen; Karl Stork, Lampertheim, and Klaus Barthold, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 26, 1982, Ser. No. 352,634
Int. Cl.³ C23F *11/1*
U.S. Cl. 252—392 **5 Claims**

1. A composition of matter having the following structural formula:



in which R represents a C_7- to C_{25}-alkyl or alkenyl radical and in which n represents the numbers 1 or 2.

4,388,214

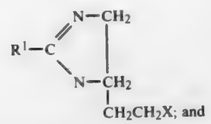
IMIDAZOLINE BASED CORROSION INHIBITORS WHICH INHIBIT CORROSION CAUSED BY CO_2 AND H_2S

Knut Oppenlaender, Ludwigshafen; Karl Stork, Lampertheim, and Klaus Barthold, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 26, 1982, Ser. No. 352,635
Int. Cl.³ C23F *11/14, 11/12*
U.S. Cl. 252—392 **6 Claims**

1. A corrosion inhibitor comprising the reaction product of (A) a compound selected from the group consisting of

(1) an imidazoline or salt thereof having the following structural formula



(I)

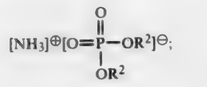
(2) a precursor thereof having the following structural formula:

(Ia)

wherein

R^1 is a C_6 to C_{22} alkyl or alkenyl radical;

X is OH, NH_2, or



and

R^2 is a C_4 to C_{18} alkyl radical; and

(B) elementary sulfur;

wherein (A) and (B) are reacted at 100° C. to 200° C. within 1 to 3 hours in a weight ratio of (A) to (B) of 100:1 to 2:1.

4,388,215

WOOD PRESERVATIVE COMPOSITION

Hideo Ishida; Masashi Kitada, and Keisaku Ihara, all of Honjo, Japan, assignors to Sanyo Mokuzai Bofu Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1981, Ser. No. 328,503
Claims priority, application Japan, Dec. 12, 1980, 55-174711
Int. Cl.³ B27K *3/40;* **C09K** *15/14*
U.S. Cl. 252—402 **5 Claims**

1. A wood preservative composition comprising 2-mercaptobenzothiazole or its salt and 2,5-dichloro-4-bromophenol or its salt.

4,388,216

REGENERATING HEAVY METAL CATALYSTS FOR BUTYNEDIOL PRODUCTION

Helmut Westernacher, Haltern, Fed. Rep. of Germany, and Franz Schämann, deceased, late of Marl, Fed. Rep. of Germany (by Elfriede Schämann, Ilka Schämann, heirs), assignors to GAF Hüls Chemie GmbH, Marl, Fed. Rep. of Germany

Filed Jul. 21, 1980, Ser. No. 171,000
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929586
Int. Cl.³ B01J *31/40, 23/94;* **C07C** *33/046, 29/00*
U.S. Cl. 252—412 **6 Claims**

1. In a process for regenerating suspended heavy metal catalysts comprising a finely divided water insoluble complex cuprous acetylide powder made from a catalyst precursor material containing greater than 20% and less than 35% by weight of copper and 0 to about 3% by weight of bismuth on a magnesium silicate carrier support for the synthesis of butynediol from acetylene and formaldehyde in a reaction mixture thereof, the improvement comprising:

(a) removing an aqueous catalytic slurry containing said supported heavy metal catalysts from said reaction mixture;

(b) raising the removed slurry to a temperature of about 200° to 500° C.; and

(c) maintaining said slurry at said temperature with air being supplied until the carbon content of said supported heavy metal catalysts is reduced to about 0.5 to 3% to form carbon reduced supported catalysts.

5. The process of claim **1**, wherein step (c) is carried out by revolving said supported heavy metal catalysts to eliminate local overheating.

6. The process of claim **5**, wherein said carbon reduced supported catalysts produced by step (c) are reactivated by introducing said catalysts into a formaldehyde solution to form a dispersion, adding acetic acid to said dispersion and treating with acetylene.

4,388,217

PROCESS FOR THE RECOVERY OF CATALYST VALUES

Robert T. Hembre, and Steven L. Cook, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 209,798, Nov. 24, 1980, abandoned. This application Sep. 23, 1981, Ser. No. 304,773
Int. Cl.³ B01J *31/40, 23/96;* **C07C** *51/10;* **C01G** *55/00*
U.S. Cl. 252—413 **4 Claims**

1. Process for the recovery of catalyst values from a catalyst-tar solution derived from a production system in which acetic anhydride is prepared by carbonylating methyl acetate in the presence of rhodium, lithium and methyl iodide wherein the catalyst-tar solution is submitted to an extraction using methyl iodide and aqueous hydrogen iodide and recovering catalyst values in the aqueous phase.

2. Process according to claim **1** wherein the pH of the aqueous hydrogen iodide phase is about 1 or less.

3. Process for the removal of tar from a production system in which acetic anhydride is prepared by carbonylating methyl acetate in the presence of rhodium, lithium and methyl iodide which comprises the steps of:

(1) forming a concentrated catalyst-tar solution containing catalyst values dissolved therein and derived from the production system;

(2) submitting the catalyst-tar solution to an extraction using methyl iodide and aqueous hydrogen iodide to obtain a methyl iodide phase containing tar and an aqueous phase containing catalyst values; and

(3) feeding the aqueous phase to the production system,

whereby rhodium is maintained in its catalytically-active, water-soluble form to avoid loss of rhodium during the tar removal process.

4,388,218

REGENERATION OF CRACKING CATALYST IN TWO SUCCESSIVE ZONES

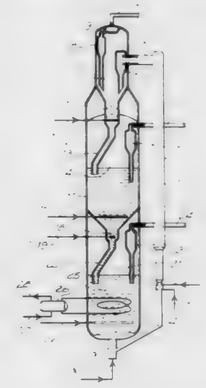
Frederick Rowe, Middlesbrough, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 924,065, Jul. 12, 1978, abandoned. This application Sep. 22, 1981, Ser. No. 304,675
Claims priority, application United Kingdom, Jul. 28, 1977, 31758/77
Int. Cl.³ B01J *21/20, 29/38;* **C10G** *11/18*
U.S. Cl. 252—417 **3 Claims**

1. A process for treating solid particles of partially or completely deactivated cracking catalyst which process comprises:

(1) passing said solid particles into a first fluidized bed reactor and therein contacting the solid particles at elevated temperatures with a first gas stream consisting essentially of (a) oxygen plus steam, (b) oxygen plus carbon dioxide, or (c) oxygen plus steam plus carbon dioxide and adjusting the ratio of oxygen to steam and/or carbon dioxide so that some carbon is removed form the solid particles without major net evolution of heat in the first reactor, thereby partially regenerating the said cracking catalyst particles to produce synthesis gas containing a mixture of steam, carbon monoxide, carbon dioxide and hydrogen, and thereafter

(2) passing the thus-treated solid particles from the base of said first fluidized bed reactor downwardly by gravity to the top of a second fluidized bed reactor and therein contacting the solid particles at elevated temperature wih



a second gas stream comprising oxygen thereby substantially completely regenerating the said cracking catalyst particles and removing the regenerated catalyst from the base of the second fluidized bed reactor, provided that the first fluidized bed reactor is disposed substantially vertically above the second fluidized bed reactor located within one vessel,

the contacting and the reactions occurring in both reactors being controlled so that there is no major evolution of heat from either reactor.

2. A process as claimed in claim **1** in which the solid particles are discharged from the second zone at a temperature which is substantially the same as that used in a catalytic cracking process.

3. A process as claimed in claim **1** in which the second gas stream comprising oxygen is an air stream.

4,388,219

CATALYST FOR POLYMERIZING ETHYLENE, COMPRISING COMPOUNDS OF SEVERAL TRANSITION METALS, AND A POLYMERIZATION PROCESS USING SAID CATALYST

Karel Bujadoux, Lens, France, assignor to Societe Chimique des Charbonnages - CdF CHIMIE, Paris, France

Filed Dec. 19, 1980, Ser. No. 218,095
Claims priority, application France, Dec. 28, 1979, 79 31911
Int. Cl.³ B01J *21/02*
U.S. Cl. 252—429 C **10 Claims**

1. A catalyst for polymerizing ethylene comprising at least two halogen compounds of transition metals, one of which is a titanium trichloride syncrystallized with aluminium chloride, having the formula:

$$(TiCl_3, \tfrac{1}{3}AlCl_3)(MX_3)_x(MgX_2)_y$$

wherein $0.3 \leq x \leq 3$, $0 \leq y \leq 20$, M is a transition metal of group V B and VI B of thhe Periodic system and X is a halogen.

4,388,220

TRANSITION METAL COMPOSITION, PRODUCTION AND USE

Angus J. Hartshorn, Runcorn; Eric Jones, Tarporley, and John A. Segal, Welwyn Garden City, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 13, 1981, Ser. No. 282,954

Claims priority, application United Kingdom, Jul. 14, 1980, 8022948; May 15, 1981, 8114987

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **10 Claims**

1. A transition metal composition which is the product of treating at least one particulate support material, with

(a) at least one organomagnesium compound of formula R^1MgR^2 in which R^1 and R^2, which may be the same or different, are hydrocarbyl groups,

(b) at least one agent which is (a) capable of reacting with the product obtained by treating the at least one particulate support material with the at least one organomagnesium compound to cleave at least a proportion of the carbonmagnesium bonds in the said product, and (b) does not form a magnesium-halide during the cleavage reaction, and

(c) at least one transition metal compound of Groups IVA, VA or VIA of the Periodic Table,

with the proviso (i) that the at least one particulate support material is treated with (a) the at least one organomagnesium compound R^1MgR^2 and then with the at least one cleavage agent or (b) the at least one cleavage agent and then with the at least one organomagnesium compound R^1MgR^2 or (c) a mixture, or at least a notional product of a reaction, of the at least one organomagnesium compound R^1MgR^2 and the at least one cleavage agent prior to being treated with the at least one transition metal compound of Groups IVA, VA or VIA of the Periodic Table, and (ii) that the at least one cleavage agent does not consist of a halogenating agent and a Lewis Base.

4,388,221

VANADIUM-PHOSPHORUS-TIN-MORDENITE OXIDATION CATALYSTS

Eric L. Moorehead, Diamond Bar, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 3, 1981, Ser. No. 289,806

Int. Cl.³ B01J *27/14*

U.S. Cl. 252—435 **31 Claims**

1. An oxidation catalyst described by the formula:

$$V_aP_bSn_cO_dX$$

wherein X is mordenite, a is 0.10 to 1, b is 1, c is 0.001 to 0.30, and d is a number which satisfies the valence requirements of the other elements present.

4,388,222

NI/CO MO P ON TITANIA-ALUMINA HYDRODESULFURIZING CATALYST

Geoffrey Wilson, Westlake Village, and Masami Kayamoto, Whittier, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 874,752, Feb. 3, 1978, abandoned, and a continuation-in-part of Ser. No. 874,753, Feb. 3, 1978, Pat. No. 4,196,101, each is a continuation-in-part of Ser. No. 671,333, Mar. 29, 1976, abandoned. This application Jun. 7, 1979, Ser. No. 46,466

The portion of the term of this patent subsequent to Apr. 1, 1997, has been disclaimed.

Int. Cl.³ B01J *21/04, 23/85, 23/88, 27/18*

U.S. Cl. 252—437 **21 Claims**

1. A hydrodesulfurizing catalyst in the form of an anhydrous pellet comprising a substrate, said substrate consisting essentially of an intimate mixture of alumina and an oxide of a Group IV-B metal, the substrate being further associated with an oxide of a Group VI-B metal, said Group VI-B metal being selected from molybdenum or tungsten, and an oxide of Group VIII metal, the catalyst also containing phosphorous in a complex with molybdenum or tungsten.

4,388,223

CATALYST FOR THE CONVERSION OF UNSATURATED HYDROCARBONS INTO DIOLEFINS OR UNSATURATED ALDEHYDES AND NITRILES, AND PROCESS FOR PREPARING THE SAME

Natale Ferlazzo, Segrate; Natale Bertolini, Milan, and Marcello Ghirga, Bresso, all of Italy, assignors to Euteco Impianti S.p.A., Milan, Italy

Filed Apr. 6, 1981, Ser. No. 251,434

Int. Cl.³ B01J *23/10, 23/34, 23/86, 23/88*

U.S. Cl. 252—437 **19 Claims**

1. A catalyst active and selective in the conversation of unsaturated hydrocarbons into diolefins and unsaturated nitriles and aldehydes, which comprises:

a crystalline phase (I) consisting of one or more molybdates of the monoclinic system, selected from the group consisting of ferric molybdate, an aluminum molybdate isomorph of ferric molybdate, a cerium molybdate isomorph of ferric molybdate, and a chromium molybdate isomorph of ferric molybdate; and

a crystalline phase (II) consisting of one or more molybdates belonging to the monoclinic system, selected from the group consisting of alpha manganese molybdate, a beta cobalt molybdate isomorph of alpha manganese molybdate, a beta nickel molybdate isomorph of alpha manganese molybdate, a zinc molybdate isomorph of alpha manganese molybdate, a magnesium molybdate isomorph of alpha manganese molybdate, and a cadmium molybdate isomorph of alpha manganese molybdate,

wherein the molar ratio between the molybdates of phase (I) and molybdates of phase (II) is from 0.1:1 to 5:1, and

one or more promotor chemical elements selected from the group consisting of selenium, tellurium, arsenic, antimony, bismuth, vanadium, niobium, tin, lead and thallium, homogenously distributed with said crystalline phases (I) and (II) with distortion of the structure of said phases and without creating new further phases wherein the atomic ratio between said promotor elements and the sum of said bivalent and trivalent elements of phases (I) and (II) in said catalyst is from 0.01:1 to 1.0:1.

4,388,224

MOLYBDENUM-EXCHANGED CRYSTALLINE ALUMINOSILICATE ZEOLITE

Eric L. Moorehead, Diamond Bar, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 81,005, Oct. 2, 1979, Pat. No. 4,297,243. This application Jul. 23, 1981, Ser. No. 286,359

Int. Cl.³ B01J *29/16, 29/26, 29/36*

U.S. Cl. 252—455 Z **25 Claims**

24. A catalyst composition comprising a calcined, intimate admixture of (1) one or more hydrogenation components selected from the group consisting of uranium and the Group VIB and Group VIII metals and the compounds thereof, and (2) a crystalline aluminosilicate zeolite containing molybdenum-containing cations in ion-exchangeable form.

25. A catalyst composition comprising a sulfided, intimate admixture of (1) one or more hydrogenation components selected from the group consisting of uranium and the Group VIB and Group VIII metals and the compounds thereof and (2) a crystalline aluminosilicate zeolite containing molybdenum-containing cations in ion-exchangeable form.

4,388,225

OLEFIN OXIDATION WITH SUPPORTED CUO CATALYST

Paul W. Solomon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 228,037, Jan. 23, 1981, Pat. No. 4,337,364. This application Dec. 31, 1981, Ser. No. 336,208

Int. Cl.³ B01J *23/72, 21/04*

U.S. Cl. 252—463 **2 Claims**

1. A method for producing a catalyst comprising (1) impregnating a support with an aqueous solution of cupric oxide, (2) subjecting the impregnated support to a temperature in the range of about 90° C. to about 150° C. for a time sufficient to produce a dry powder thereby providing a support impregnated with about 0.1 to about 5 weight percent cupric oxide.

4,388,226

PREPARATION OF MIXED OXIDE CATALYSTS COMPRISING THE OXIDES OF MOLYBDENUM AND/OR TUNGSTEN

Jean-Yves Derrien, Bourg-la-Reine, and Paul Belon, Ales, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Oct. 30, 1981, Ser. No. 316,896

Claims priority, application France, Nov. 28, 1980, 80 25261

Int. Cl.³ B01J *23/82, 23/84, 23/85, 23/88*

U.S. Cl. 252—470 **10 Claims**

1. A process for the preparation of a mixed oxide active catalyst having the formula:

$$A_aMo_cW_dCo_eB_bO_x$$

wherein:

A is at least one of the metals selected from nickel, manganese and lead;

B is at least one of the metals selected from iron, bismuth, chromium and thallium;

a is the sum of the values indicating the amounts present of each of the metals A, and is a number ranging from greater than or equal to 0 to about 4;

c and d are numbers each equal to or greater than 0 and ranging to 12, with the sum c+d being about 12;

e is a number ranging from about 8 to about 12;

b is the sum of the values indicating the amounts present of each of the metals B, and is a number ranging from greater than 0 to about 1.5 $[(c+d)-(a+e)]$; and

x is a number satisfying all unbalanced valences,

said process comprising, in a first stage, intimately admixing in aqueous phase the salts of all metals to comprise such active catalyst, with the salts of molybdenum and/or tungsten being ammonium salts and at least one salt of at least one of the metals A and B being a nitrate, and further wherein such first stage said intimate admixing comprises acidifying said first aqueous solution comprising said ammonium salts of molybdenum and/or tungsten in amounts sufficient to satisfy the values c and d to such extent as to adjust the pH thereof to a value ranging from about 0.5 to 3, separating the precipitate which forms thereby and forming an aqueous suspension thereof, next adding to said suspension a second aqueous solution comprising said A and B metal salts in amounts sufficient to satisfy the values a and b and, serially thereafter, also adding thereto cobalt carbonate, in powder form, in an amount sufficient to satisfy the value e, and thence concentrating the suspension which results to obtain a paste of the desired active catalyst; and, in a second stage, then drying said paste and, at least once, calcining same.

4,388,227

INTERCALATION OF GRAPHITIC CARBON FIBERS

Ilmar L. Kalnin, Millington, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Mar. 2, 1979, Ser. No. 17,006

Int. Cl.³ D01F *6/18, 9/14*

U.S. Cl. 252—510 **27 Claims**

1. In a process for the formation of an intercalated carbonaceous fibrous material of increased electrical conductivity wherein a carbonaceous fibrous material containing at least 90 percent carbon by weight which incorporates turbostratic graphitic carbon and is derived from a fibrous material of an acrylonitrile homopolymer or an acrylonitrile copolymer containing at least about 98 mole percent of acrylonitrile units and up to about 2 mole percent of one or more other monovinyl units copolymerized therewith is contacted with at least one electron acceptor intercalating agent; the improvement of providing said carbonaceous fibrous material prior to said intercalation in a modified form as evidenced by the ability to exhibit resolved graphitic Miller index (100) and (101) reflections and a (112) reflection when subjected to wide-angle x-ray diffraction analysis.

2. In a process for the formation of an intercalated carbonaceous fibrous material of increased electrical conductivity wherein a carbonaceous fibrous material derived from an acrylic fibrous material containing at least 90 percent carbon by weight which incorporates turbostratic graphitic carbon is contacted with at least one electron acceptor intercalating agent; the improvement comprising selecting a carbonaceous fibrous material which is derived from a fibrous material of an acrylonitrile homopolymer or an acrylonitrile copolymer containing at least about 98 mole percent of acrylonitrile units and up to about 2 mole percent of one or more other monovinyl units copolymerized therewith, and which has been heated in a non-oxidizing atmosphere at a temperature in the range of at least 3000° C. up to approximately 3500° C. while at a pressure sufficient to prevent destruction of the original fibrous configuration prior to contact with said intercalating agent whereby the structure thereof is modified and rendered capable of undergoing intercalation to form an intercalated fibrous product of increased electrical conductivity.

19. An intercalated carbonaceous fibrous material exhibiting a specific electrical resistivity no greater than that of copper formed by (a) heating a carbonaceous fibrous material containing at least 90 percent carbon by weight derived from a fibrous material of an acrylonitrile homopolymer or an acrylonitrile copolymer containing at least about 98 mole percent of acrylonitrile units and up to about 2 mole percent of one or more other monovinyl units copolymerized therewith which incorporates turbostratic graphitic carbon and exhibits the usual unresolved graphitic Miller index (100, 101) doublet reflection and the absence of a (112) reflection when subjected to wide-angle x-ray diffraction analysis in a non-oxidizing atmosphere at a temperature in the range of at least 3000° C. up to approximately 3500° C. while at a pressure sufficient to prevent destruction of the original fibrous configuration whereby the structure thereof is modified and rendered capable of exhibiting resolved graphitic Miller index (100) and (101) reflections and the presence of a (112) reflection when subjected to wide-angle x-ray diffraction analysis, and (b) contacting said previously modified carbonaceous fibrous material with at least one electron acceptor intercalating agent capable of imparting said specific electrical resistivity.

4,388,228

MIXTURE OF ALIPHATIC C_{10} BRANCHED OLEFIN EPOXIDES AND USE THEREOF IN AUGMENTING OR ENHANCING THE AROMA OF PERFUMES AND/OR ARTICLES

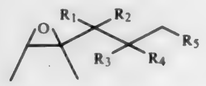
Richard M. Boden, Monmouth Beach; Lambert Dekker, Holmdel; Frederick L. Schmitt, Holmdel, all of N.J., and Augustinus G. Van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 195,630, Oct. 9, 1980, Pat. No. 4,335,009, which is a continuation-in-part of Ser. No. 160,788, Jun. 19, 1980, Pat. No. 4,287,084. This application Feb. 18, 1982, Ser. No. 350,095

Int. Cl.³ A61K *7/46*

U.S. Cl. 252—522 R **6 Claims**

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions and colognes comprising the step of adding to a perfume composition or a cologne base an aroma augmenting or enhancing amount of an epoxide compound defined according to the structure:

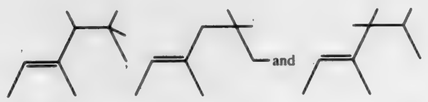


wherein R_1, R_2, R_3, R_4 and R_5 are the same or different and each represents hydrogen or methyl with the proviso that (i) the sum total of carbon atoms in R_1, R_2, R_3, R_4 and R_5 is three, and (ii) R_1 and R_2 represent hydrogen when R_5 represents methyl, and (iii) when either R_1 or R_2 is methyl, R_5 is hydrogen.

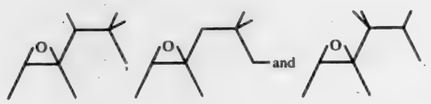
5. A process for augmenting or enhancing the aroma of consumable materials selected from the group consisting of perfume compositions and colognes comprising the step of adding to a perfume composition or a cologne base, at least one epoxide compound-containing composition produced according to the process comprising the steps of reacting isoamylene having the structure:



with a Lewis acid or a mineral acid to form a mixture of diisoamylenes defined according to the structures:



and then reacting the said mixture of diisoamylenes with a peracid in order to form a mixture of epoxides having the structures:



4,388,229

CONTACT LENS REJUVENATING SOLUTION

Cherng-Chyi Fu, Sunnyvale, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Nov. 2, 1981, Ser. No. 317,656

Int. Cl.³ C11D *1/72, 7/48*

U.S. Cl. 252—549 **41 Claims**

1. An aqueous contact lens solution for removing adsorbed and occluded chemical and biological agents from a contact lens in need of rejuvenation which comprises:

(a) a nonionic surfactant;

(b) (i) a cationic ion exchange resin,

(ii) an anionic ion exchange resin or

(iii) mixtures of (i) and (ii);

(c) water; and optionally

(d) an ophthalmologically suitable salt.

4,388,230

Patent Not Issued For This Number

4,388,231

PROCESS FOR EXTRACTION OF IODINE

Lucien Person, Levallois-Perret, France, assignor to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Jan. 24, 1980, Ser. No. 115,076

Claims priority, application France, Mar. 30, 1979, 79 08004

Int. Cl.³ G21F *9/12, 9/06*

U.S. Cl. 252—631 **8 Claims**

1. The process for the selective liquid-liquid extraction of iodine from an aqueous solution containing the same without forming a precipitate, comprising adding to said solution an iodine solvent comprising ether groups, having a non-ionic hydrophobic character, of the general formula:



in which R is a methyl and/or ethyl group, n is a number from 1 to 200, and X is the remainder of an hydrophobic compound which comprises at least one reactive hydrogen atom and recovering the iodine from the solvent.

4,388,232

METHOD OF PRODUCING PLASMA FRACTIONS FREE OF SIDE-EFFECTS USING FAST-REACTING ANTITHROMBIN

Johann Eibl; Fritz Elsinger, and Yendra Linnau, all of Vienna, Austria, assignors to Immuno Aktiengesellschaft für Chemisch Medizinische Produkte, Vienna, Austria

Continuation-in-part of Ser. No. 135,234, Mar. 31, 1980, abandoned. This application May 5, 1982, Ser. No. 375,044

Claims priority, application Austria, Apr. 19, 1979, 2940/79

Int. Cl.³ C07G *7/00*

U.S. Cl. 260—112 B **12 Claims**

1. A method of producing plasma fractions free of side-effects, by purification and step-wise enrichment of plasma proteins, by a technique selected from the group consisting of filtration, cryoprecipitation, precipitation, adsorption, ultrafiltration, centrifugation and lyophilization, in the presence of calcium-binding anticoagulants, which method comprises the purification and enrichment of the plasma proteins, in the presence of fast reacting (avid) antithrombin, while maintaining a concentration of the fast reacting (avid) antithrombin of 0.05 to 50 units per ml of the respective solution during all fractionation-process steps.

4,388,233

SYNTHETIC SUBSTRATES FOR ENZYME ANALYSIS

Eugene R. Bissell, Alamo; Alexander R. Mitchell, Livermore; Karen W. Pearson, Livermore, and Robert E. Smith, Livermore, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed May 15, 1981, Ser. No. 264,118

Int. Cl.³ C07C *103/52;* **C07D** *311/06*

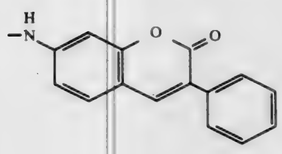
U.S. Cl. 260—112.5 R **1 Claim**

1. A synthetic substrate, useful for enzyme analysis, represented by A-D comprising:

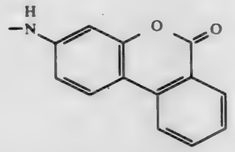
an A moiety and a D moiety, said A and D moieties of said A-D bonded together by an enzyme hydrolyzable bond, said A moiety selected from the group consisting of Leu, Ala, Arg, Lys-Ala, Gly-Gly-Arg, salt forms thereof and blocking groups thereon,

said A moiety determining an enzyme specificity of at least one enzyme for said synthetic substrate,

said D moiety being a coumarin derivative defining a 3 position carbon and a 4 position carbon and having an electron withdrawing group substituted at said 3 position carbon or fused at said 3 and 4 position carbons and selected from the group consisting of



and



4,388,234

PEPTIDE ISOLATION

Bernard L. Horecker, New York, N.Y., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 28, 1981, Ser. No. 335,001

Int. Cl.³ C07C *103/52;* **A61K** *37/02*

U.S. Cl. 260—112.5 R **24 Claims**

1. An active peptide fraction containing immunopentatiating thymic polypeptides, prepared from freshly frozen thymic tissue by a process comprising:

(a) homogenenizing the frozen tissue in an aqueous cold solution containing an effective amount of a guanidinium salt, and

(b) isolating from the resulting homogenate the peptide material therein by an isolation method comprising ultrafiltration through ultrafilters having a molecular weight cut-off of 10,000 daltons and adsorption on and elution from a reverse phase hydrophobic resin with a miscible solvent capable of eluting and providing thereby the active peptide fraction.

4,388,235

SYNTHESIS OF PEPTIDES

Ronald C. Orlowski, Frankfort, and Jay K. Seyler, Bourbonnais, both of Ill., assignors to Armour Pharmaceutical Company, Tarrytown, N.Y.

Filed Feb. 12, 1982, Ser. No. 348,397

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 T **6 Claims**

1. A peptide of the structure:

Cys—Ser—Asn—Leu—Ser—Thr—Cys—Val—Leu—Gly—
—Lys—Leu—Ser—Gln—Glu—His—
—Lys—Leu—Gln—Thr—Tyr—Pro—Arg—
—Thr—Asn—Thr—Gly—Ser—Gly—Thr—
—Pro—NH_2
(Salmon)

3. A peptide of the structure:

Cys—Gly—Asn—Leu—Ser—Thr—Cys—Met—Leu—Gly—
—Thr—Tyr—Thr—Gln—Asp—Asn—
—Lys—Phe—His—Thr—Phe—Pro—Gln—
—Thr—Ala—Ile—Gly—Val—Gly—Ala—
—Pro—NH_2
(Human)

4,388,236

ENKEPHALIN-LIKE COMPOUNDS IN BOVINE ADRENAL MEDULLA

Stanley Stein, Bloomfield, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 253,984, Apr. 13, 1981, abandoned, which is a continuation-in-part of Ser. No. 157,137, Jun. 6, 1980, which is a division of Ser. No. 70,960, Aug. 29, 1979. This application May 4, 1982, Ser. No. 374,825

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **7 Claims**

1. A peptide compound endogenous in mammalian adrenal glands, essentially free of other endogenous peptides and having the following amino acid sequence:

5 10
Glu—Cys—Ser—Gln—Asp—Cys—Ala—Thr—Cys—Ser—
15 20
—Tyr—Arg—Leu—Ala—Arg—Pro—Thr—Asp—Leu—Asp—
25 30
—Pro—Leu—Ala—Cys—Thr—Leu—Glu—Cys—Glu—Gly—
35 40
—Lys—Leu—Pro—Ser—Leu—Arg—Thr—Trp—Glu—Thr—
45 50
—Cys—Lys—Glu—Leu—Leu—Gln—Leu—Thr—Lys—Leu—
55 60
—Glu—Leu—Pro—Pro—Asp—Ala—Thr—Ser—Ala—Leu—
65 70
—Ser—Lys—Gln—Glu—Glu—Ser—His—Leu—Leu—Ala—
75 80
—Lys—Lys—Tyr—Gly—Gly—Phe—Met—Lys—Arg—Tyr—
85 90
—Gly—Gly—Phe—Met—Lys—Lys—Met—Asp—Glu—Leu—
95 100
—Tyr—Pro—Leu—Glu—Val—Glu—Glu—Glu—Ala—Asn—

-continued

105 110
—Gly—Gly—Glu—Val—Leu—Gly—Lys—Arg—Tyr—Gly—

—Gly—Phe—Met

and the pharmaceutically acceptable acid addition salts or base salts thereof.

4,388,237

6(1-PIPERAZINYL), PIPERIDINO AND (1(HOMOPIPERAZINYL)11-CYANOMETHYLENE MORPHANTHRIDINES

Gerd Steiner, Kirchheim; Albrecht Franke, Wachenheim; Dieter Lenke; Hans-Juegen Teschendorf, both of Ludwigshafen; Wolfgang Worstmann, Gruenstadt, and Horst Kreiskott, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

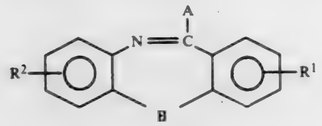
Filed May 7, 1980, Ser. No. 147,538

Claims priority, application Fed. Rep. of Germany, May 10, 1979, 2918778

Int. Cl.³ C07D *403/04, 403/06, 401/04*

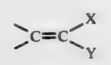
U.S. Cl. 260—239 BC **16 Claims**

1. A compound of the formula I



I

where R^1 and R^2 are hydrogen, fluorine, chlorine, methyl or trifluoromethyl and A is 4-methyl-piperazin-1-yl, 4-ethyl-piperazin-1-yl, 4-methyl-4-oxy-piperazin-1-yl, N'-methyl-homopiperazin-1-yl or 2-piperidin-1-yl-ethyl-amino and where B is an alkylene group of the formula



where X is hydrogen, and Y is cyano.

15. cis,trans-11-Cyanomethylene-6-(N'-methyl-homopiperazin-1-yl)-morphanthridine.

4,388,238

PROCESS FOR THE PREPARATION OF N,O-DISUBSTITUTED URETHANES SUITABLE AS A STARTING MATERIAL FOR THE PREPARATION OF ISOCYANATES

Peter Heitkämper, Dormagen; Klaus König, Leverkusen; Rudolf Fauss, Cologne, and Kurt Findeisen, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 197,042

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1979, 2943480

Int. Cl.³ C07C *125/065, 125/073, 125/077*

U.S. Cl. 260—239 E **6 Claims**

1. A process for the preparation of N,O-disubstituted urethanes by reacting primary amines and alcohols with organic compounds having carbonyl groups in the temperature range of from 120° to 350° C., characterized in that N-unsubstituted urethanes and at least one compound taken from the group consisting of N-monosubstituted ureas, N,N'-disubstituted ureas and polyureas are used as the organic compounds having carbonyl groups.

4,388,239

PRODUCTION OF 1-HALOPHENYL AND 1-PHENYL-3,4-DIHYDRO-5H-2-BENZAZEPINE-5-ONES

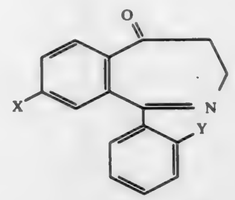
Eugene J. Trybulski, Parsippany, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 150,509, May 16, 1980, Pat. No. 4,318,854, which is a continuation-in-part of Ser. No. 10,118, Feb. 7, 1979, abandoned. This application Nov. 23, 1981, Ser. No. 324,201

Int. Cl.³ C07D *223/16*

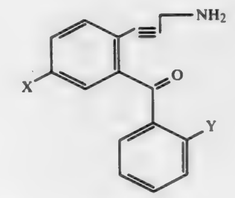
U.S. Cl. 260—239 BB **1 Claim**

1. A process to produce a compound of the formula



wherein X and Y are selected from the group consisting of hydrogen, halogen and trifluoromethyl,

which consists essentially of the reaction of a compound of the formula



wherein X and Y are as above

with (A) a mixture of mercuric sulfate and a C_1 to C_4 carboxylic acid in an inert solvent at from about −10° C. to room temperature, or

(B) concentrated sulfuric acid at from about −10° C. to room temperature.

4,388,240

6-CHLORO-7,8-DIHYDROXY-1-(p-HYDROXYPHENYL)-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINE SULFATE ESTERS

Richard H. Dewey, Philadelphia; Bruce Y. Hwang, Broomall, both of Pa., and George Y. Kuo, Cherry Hill, N.J., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Jan. 6, 1982, Ser. No. 337,227

Int. Cl.³ A61K *31/55;* **C07D** *223/16*

U.S. Cl. 260—239 BB **3 Claims**

1. 6-Chloro-7,8-dihydroxy-1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepin-4'-yl-hydrogen sulfate.

2. 6-Chloro-7-hydroxy-1-(p-hydroxyphenyl)-2,3,4,5-tetrahydro-1H-3-benzazepin-8-yl-hydrogen sulfate being substantially free from its 7-isomer.

3. 6-Chloro-8-hydroxy-1-(p-hydroxyphenyl)-2,3,4,5-tetrahydro-1H-3-benzazepin-7-yl-hydrogen sulfate being substantially free from its 8-isomer.

4,388,241

BILE ACIDS

Reginald Monks, Amersham, England, assignor to The Radiochemical Centre Limited, Buckinghamshire, England

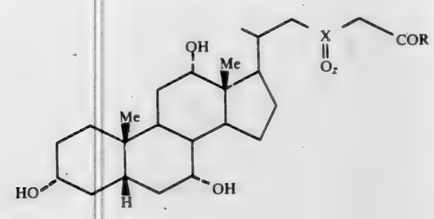
Continuation of Ser. No. 54,574, Jul. 3, 1979, abandoned. This application Jan. 14, 1981, Ser. No. 224,922

Claims priority, application United Kingdom, Jul. 3, 1978, 28569/78

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.1 **8 Claims**

1. A compound having the formula



where

X is Se or Te,

zi s 0 or 1, and

R is OH or a radical derived by removal of a hydrogen atom from the amino group of an amino acid.

4,388,242

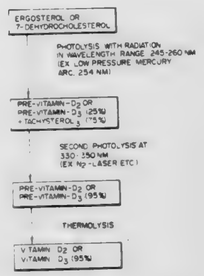
METHOD OF PRODUCTION OF VITAMIN-D

Vincenzo Malatesta; Clive Willis, and Peter A. Hackett, all of Ottawa, Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Mar. 15, 1982, Ser. No. 358,201

Int. Cl.³ C07J *17/00, 9/00*

U.S. Cl. 260—397.2 **2 Claims**



1. A method of production of vitamin-D_2 or vitamin-D_3 using ergosterol or 7-dehydro-cholesterol or their dihydroxy derivatives as the starting materials comprising:

(a) irradiating the starting material with light in the wavelength range 245–260 nanometers to obtain a product containing pre-vitamin-D_2 or pre-vitamin-D_3 as a minor proportion and tachysterol$_2$ and tachysterol$_3$ as a major proportion

(b) irradiating this product with light in the wavelength range 330–360 nanometers to obtain a product containing approximately 95% pre-vitamin-D_2 or pre-vitamin-D_3, and

(c) heating this product to convert the pre-vitamin-D_2 or pre-vitamin-D_3 to vitamin D_2 or vitamin D_3.

4,388,243

PROCESS FOR THE PREPARATION OF ACTIVE-TYPE VITAMIN D_3 COMPOUNDS

Osamu Nishikawa; Kenji Ishimaru, both of Iwakuni; Toru Takeshita, Hino, and Hideki Tsuruta, Iwakuni, all of Japan, assignors to Teijin Limited, Osaka, Japan

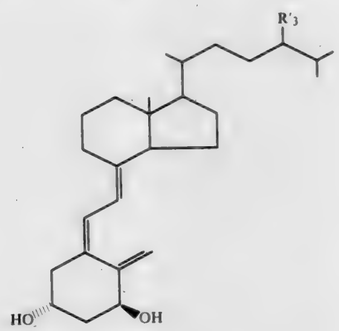
Continuation of Ser. No. 199,126, Oct. 22, 1980. This application Apr. 26, 1982, Ser. No. 371,870

Claims priority, application Japan, Oct. 23, 1979, 54-135871; Dec. 27, 1979, 54-169464; Dec. 27, 1979, 54-169465; Apr. 18, 1980, 55-50258

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.2 **14 Claims**

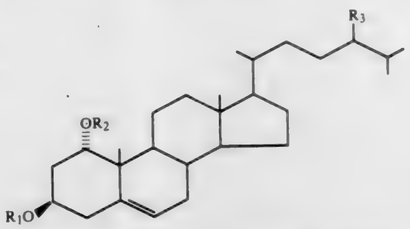
3. A process for preparing an active-type vitamin D_3 compound of the following formula [IV]



[IV]

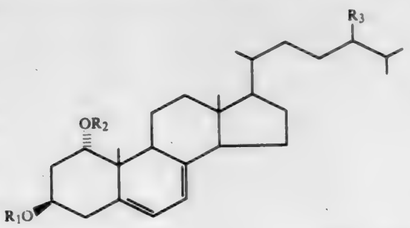
where R_3' represent a hydrogen atom or a hydroxyl group, which consists essentially of:

(i) reacting a hydroxycholesta-5-ene of the following formula [I]



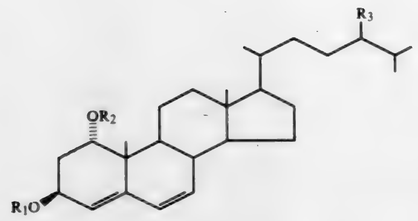
[I]

wherein R_1 and R_2 represent a lower alkoxycarbonyl group, R_3 represents a hydrogen atom or a lower alkoxycarbonyloxy group, with an allylic brominating agent in an inert organic solvent, and then contacting the resulting reaction mixture with a dehydrobrominating agent to form a mixture of a hydroxycholesta-5,7-diene of the following formula [II]



[II]

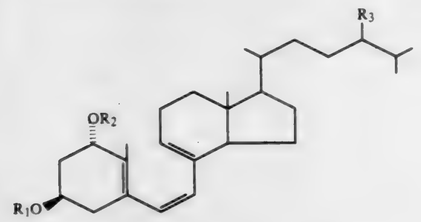
wherein R_1, R_2 and R_3 are the same as defined above and a hydroxycholesta-4,6-diene of the following formula



wherein R_1, R_2 and R_3 are the same as defined above;

(ii) separating the mixture by means of recrystallization to obtain the pure hydroxycholesta-5,7-diene;

(iii) exposing the hydroxycholesta-5,7-diene of formula [II] to ultraviolet irradiation in an inert organic solvent to obtain a mixture of previtamin D_3 compound of the following formula [III]



[III]

wherein R_1, R_2 and R_3 are the same as defined above, and the unchanged hydroxycholesta-5,7-diene;

(iv) separating the mixture by means of recrystallization or rinse into the previtamin D_3 compound, and the unchanged hydroxycholesta-5,7-diene;

(v) recycling the unchanged hydroxycholesta-5,7-diene through the ultraviolet irradiation; and

(vi) thermally isomerizing the previtamin D_3 compound and splitting off the protective groups.

4. The process of claim **3**, wherein R_1 and R_2 in the hydroxycholest-5-ene of formula [1] are an ethoxycarbonyl or a methoxycarbonyl group.

4,388,244

PETROLATUM OR HYDROCARBON WAX OXIDATE COMPOSITION

Donald D. Carlos, Louisville, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Jun. 9, 1981, Ser. No. 271,906

Int. Cl.³ C09F *7/00*

U.S. Cl. 260—404.5 **39 Claims**

1. A petrolatum or hydrocarbon wax oxidate composition having a sinewy or film-forming characteristic comprising the reaction product of:

(a) a hydrocarbon wax oxidate, a petrolatum oxidate or a mixture of said hydrocarbon wax oxidate and said petrolatum oxidate, with

(b) a polyamine containing at least two amino groups, each group having at least one active hydrogen atom; or the metal salt of said reaction product.

4,388,245

PROCESS FOR PREPARING ORGANIC POLYISOCYANATE COMPOSITIONS

Kaoru Ueyanagi; Akira Ide, both of Nobeoka; Masaaki Kato, Fuji, and Kazuro Komatsu, Hyuga, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Filed Aug. 17, 1981, Ser. No. 293,174

Claims priority, application Japan, Aug. 28, 1980, 55-117803

Int. Cl.³ C07C *127/24, 119/042*

U.S. Cl. 260—453 AB **26 Claims**

1. A process for preparing an aliphatic, alicyclic or araliphatic organic polyisocyanate composition which comprises heating an aliphatic, alicyclic or araliphatic organic polyisocyanate composition having at least two isocyanate groups in one molecule at a temperature of from about 100° C. to about 200° C. in the presence of an aliphatic, alicyclic or araliphatic organic diisocyanate monomer in an amount of at least about ½ of the weight of the organic polyisocyanate composition and removing unreacted aliphatic, alicyclic or araliphatic organic diisocyanate monomer.

4,388,246

PROCESS FOR THE PREPARATION OF POLYISOCYANATES

Rudolf Sundermann; Klaus König, both of Leverkusen; Theodor Engbert, Dormagen; Gernot Becker, Dormagen, and Günther Hammen, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 4, 1982, Ser. No. 354,687

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1981, 3108990

Int. Cl.³ C07C *118/00*

U.S. Cl. 260—453 P **7 Claims**

1. A process for the production of a polyisocyanate from a carbamate corresponding to the formula:

$$R^1(NH—CO—O—R^2)_n$$

wherein

R^1 represents an aliphatic hydrocarbon radical which may have inert substituents and/or be olefinically unsaturated with a total of from 2 to 18 carbon atoms; a cycloaliphatic hydrocarbon radical which may contain inert substituents and/or be olefinically unsaturated with a total of from 3 to 18 carbon atoms; an araliphatic hydrocarbon radical which may contain inert substituents with a total of from 7 to 18 carbon atoms; or an aromatic hydrocarbon radical which may have inert substituents with a total of from 6 to 27 carbon atoms;

R^2 represents a radical of the type obtained by removing the hydroxyl group from a primary or secondary aliphatic, cycloaliphatic or araliphatic alcohol having a boiling point which is at least 10° C. higher or lower than the boiling point of the polyisocyanate; and

n represents an integer greater than or equal to 2

comprising:

(a) thermally splitting the carbamate at a temperature of from 150° to 350° C. and pressure of from 0.001 to 20 bar in the presence of an auxiliary compound selected from the group consisting of hydrogen chloride, organic acid chlorides, compounds having an alkylating effect, organotin (IV) chlorides and mixtures thereof; and if necessary,

(b) separating the thus-formed polyisocyanate and alcohol.

4,388,247

TRIHALOMETHYLATION OF ALDEHYDES

Petrus A. Kramer, Amsterdam, Netherlands, and Pieter A. Verbrugge, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 133,773, Mar. 25, 1980, Pat. No. 4,285,882.

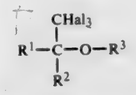
This application Aug. 25, 1980, Ser. No. 180,773

Claims priority, application United Kingdom, Mar. 27, 1979, 7910661

Int. Cl.³ C07C *68/00*

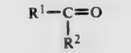
U.S. Cl. 260—463 **14 Claims**

1. A process for the preparation of a compound of the formula I



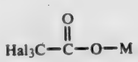
I

wherein R^1 represents a 2-(2,2-dimethoxyethyl)-3,3-dimethylcyclopropyl group, a 2-hydroxycarbonyl-3,3-dimethylcyclopropyl group, a [2,2-dimethyl-3-(2-oxopropyl)cyclopropyl]-methyl group or a 2-alkoxycarbonyl-3,3-dimethylcyclopropyl group in which the alkoxy substituent has fewer than five carbon atoms; R^2 represents a hydrogen atom; each Hal represents a chlorine or bromine atom; and R^3 represents (i) a group —C(O)OM in which M represents an alkali metal atom or (ii) a group —C(O)OR⁴ in which R^4 represents an alkyl group with fewer than five carbon atoms, which process comprises reacting a carbonyl compound of the formula:



(II)

wherein R^1 and R^2 have the same meanings as in formula I, with a trihaloacetate of the formula:



(III)

wherein Hal and M have the above-mentioned meaning, in the presence of a highly polar, aprotic, inert solvent, thus forming a compound of formula I, in which R^3 represents the group —C(O)OM and, if desired, converting this compound of formula I by treatment with an alkylating agent into a compound of formula I, in which R^3 represents the group mentioned in (ii) hereinbefore.

4,388,248

AMMOXIDATION PROCESSES

Kenneth V. Wise, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 973,429, Dec. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 866,596, Jan. 3, 1978, Pat. No. 4,162,992. This application Oct. 20, 1981, Ser. No. 313,140

The portion of the term of this patent subsequent to Jul. 31, 1996, has been disclaimed.

Int. Cl.³ C07C *120/14*

U.S. Cl. 260—465.3 **10 Claims**

1. A process for the production of acrylonitrile which comprises reacting at an elevated temperature in the vapor phase propylene, ammonia, and molecular oxygen over a catalyst having catalytic components consisting essentially of compounds of antimony, vanadium, titanium and oxygen, said catalytic components having the empirical formula

$$Sb_aV_bTi_cO_x$$

wherein a is at least 6, b is 1, and c is a number such that the ratio of c/a is from 0.75 to 3, and x is a number taken to satisfy the valence requirements of the metal ions present.

4,388,249

3-(ALKOXYPHENYLSULFONYL)ACRYLONITRILES

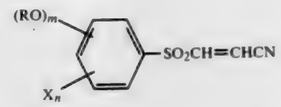
Arnold D. Gutman, Berkeley, and John W. Williams, Vallejo, both of Calif., assignors to Stauffer Chemical Company, Richmond, Calif.

Continuation of Ser. No. 221,119, Dec. 29, 1980, Pat. No. 4,331,480. This application Feb. 26, 1982, Ser. No. 352,679

Int. Cl.³ C07C *121/75*

U.S. Cl. 260—465 F **2 Claims**

1. A compound having the formula



in which R is lower alkyl; X is halogen or lower alkyl; m is 1 or 2; and n is 1, 2, or 3.

4,388,250

PROCESS FOR THE PREPARATION OF P-HYDROXY-BENZYL-NITRILES AND CORRESPONDING AMINES

Leon Farber, Somerset, and Peter S. Gradeff, Pottersville, both of N.J., assignors to Rhone Poulenc Inc., Monmouth Junction, N.J.

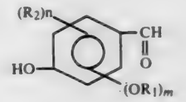
Filed Mar. 15, 1982, Ser. No. 358,397

Int. Cl.³ C07C *121/75, 87/28*

U.S. Cl. 260—465 F **19 Claims**

1. A process for preparing p-hydroxy-benzyl nitriles which comprises, in sequence:

(a) reducing a benzaldehyde having the formula:



wherein:

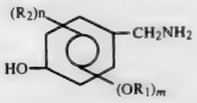
R_1 is methyl or ethyl;

R_2 is methyl or ethyl;

m is a number from 0 to 4;

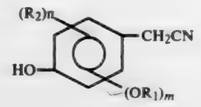
n is a number from 0 to 4;

with hydrogen gas at a pressure within the range from atmospheric pressure up to about 150 psi at a temperature within the range from about 20° to about 100° C. in an aqueous reaction medium comprising ammonia in an amount within the range from a stoichiometric amount up to about ten times the stoichiometric amount and Raney nickel catalyst, thereby forming the corresponding benzyl amine:



(b) replacing the amino group of the benzylamine with a nitrile group by reaction with a cyanide selected from the group consisting of alkali metal cyanides and hydrogen cyanide in solution in a solvent selected from the group consisting of dimethyl formamide, dimethyl sulfoxide and dimethyl pyrrolidone at a temperature within the range from about 80° C. up to the reflux temperature of the

solution, thereby forming the corresponding benzyl nitrile:

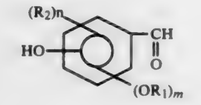


and

(c) removing the solvent and recovering the benzyl cyanide.

11. A process for preparing primary hydroxy-benzyl amines which comprises

(a) reducing a benzaldehyde having the formula:



wherein:

HO is in the ortho, meta or para position;

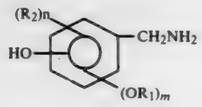
R_1 is methyl or ethyl;

R_2 is methyl or ethyl;

m is a number from 0 to 4;

n is a number from 0 to 4;

with hydrogen gas at a pressure within the range from atmospheric pressure up to about 150 psi at a temperature within the range from about 20° to about 100° C. in an aqueous reaction medium comprising ammonia in an amount within the range from a stoichiometric amount up to about ten times the stoichiometric amount and Raney nickel catalyst, thereby forming the corresponding hydroxy-benzylamine:



and

(b) recovering the hydroxy-benzylamine.

4,388,251

METHOD FOR PREPARING 2-CHLOROBENZOYL CHLORIDE

David P. Clifford, King's Lynn, England, assignor to The Dow Chemical Company Limited, King's Lynn, England

Continuation of Ser. No. 202,914, Nov. 3, 1980, abandoned. This application Jan. 28, 1982, Ser. No. 343,645

Int. Cl.³ C07C *51/58*

U.S. Cl. 260—544 D **3 Claims**

1. A process for preparing 2-chlorobenzoyl chloride which comprises reacting 2-chlorobenzaldehyde with chlorine in the presence of phosphorus pentachloride at a temperature of from 50° to 200° C. and wherein the 2-chlorobenzaldehyde:phosphorus pentachloride ratio is from 1:0.05 to 1:0.2.

4,388,252

PROCESS FOR THE MANUFACTURE OF VINYL PHOSPHONIC ACID DERIVATIVES

Walter Dürsch, Königstein, and Hans-Jerg Kleiner, Kronberg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

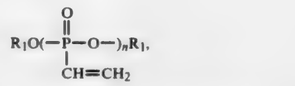
Filed Jan. 12, 1981, Ser. No. 224,316

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1980, 3001894

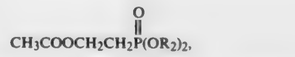
Int. Cl.³ C07F *9/388, 9/40*

U.S. Cl. 260—968 **4 Claims**

1. A process for the manufacture of a vinyl phosphonic acid derivative of the formula



wherein R_1 is hydrogen of alkyl having 1 to 4 carbon atoms and n is 1 or 2, said process comprising heating to 150°–270° C. a 2-acetoxyethane phosphonic acid dialkyl ester of the formula



wherein R_2 is alkyl having 1 to 4 carbon atoms in the presence of a catalytic amount of an acidic or basic catalyst.

4,388,253

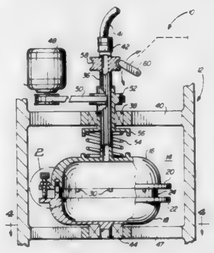
LIQUID COLLECTING AND DISPENSING APPARATUS

Thomas J. Maxwell, 14817 N. 50th Pl., Scottsdale, Ariz. 85254

Filed Dec. 10, 1981, Ser. No. 329,285

Int. Cl.³ F02M *17/16*

U.S. Cl. 261—88 **7 Claims**



1. A liquid collecting and dispensing apparatus, comprising:

means for collecting the liquid including first and second halves, said second half being adjustably disposed within a portion of said first half to form a hollow chamber and valve collar therebetween;

means for inputting the liquid into said chamber comprising hollow shaft means;

a plurality of apertures formed in said valve collar the effective openings of which are varied by adjusting said first and second halves with respect to one another, said plurality of apertures for metering the discharge of the liquid from said chambers;

an electric motor;

pulley drive means coupling said electric motor to said hollow shaft means for rotating said first and second halves; and

means for selectively moving said first and second halves with respect to one another to vary the amount of liquid that is dispensed from the apparatus, said means for selectively moving including a collar coupled with said hollow shaft; a flanged member coupled with said hollow shaft; a spring connected between said flanged member and said first half; and linkage means coupled with said collar for raising and lowering said hollow shaft, said hollow shaft being slidably mounted within a main assembly structure to which said second half section is fixedly mounted.

4,388,254

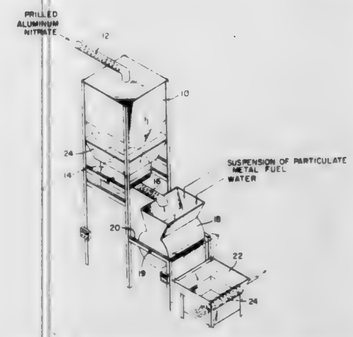
SYSTEM FOR MAKING A HOMOGENEOUS AQUEOUS SLURRY-TYPE BLASTING COMPOSITION

Michel E. Maes, Bellevue, Wash.; Robert L. Shaw, Dallas, Tex., and Royal L. Reinsch, Redmond, Wash., assignors to Energy Sciences Partners, Ltd., Seattle, Wash.

Filed May 29, 1980, Ser. No. 154,381

Int. Cl.³ C06B *21/00*

U.S. Cl. 264—3 C **8 Claims**



1. A method for making a homogeneous, aqueous slurry-type blasting composition containing a particulate inorganic nitrate oxidizer and a finely divided metal fuel, comprising:

premixing the finely divided metal fuel with water and a gelling agent to form a stable suspension of the finely divided metal fuel in the water;

mixing the aqueous suspension of finely divided metal fuel with the particulate nitrate oxidizer and an additional amount of water; and

slowly tumbling the mixture for a brief time sufficient to uniformly mix the components.

4,388,255

METHOD FOR PRODUCING PRE-SHAPED α-SILICON NITRIDE WHISKER COMPACTS AND LOOSE WHISKERS FOR COMPOSITE MATERIAL REINFORCEMENT

Frederick H. Simpson, Seattle, Wash., assignor to Boeing Aerospace Co. (A Division of the Boeing Company), Seattle, Wash.

Filed Mar. 27, 1981, Ser. No. 248,498

Int. Cl.³ C01B *21/06*

U.S. Cl. 264—29.1 **39 Claims**

1. A method for producing a pre-shaped compact of α-silicon nitride whiskers comprising the steps of:

(a) blending silicon particles with fugitive composition particles able to sublime without leaving a residue;

(b) compacting the blend to a desired shape;

(c) subliming and fugitive composition particles from said compacted shape to form a porous silicon precursor compact having said desired shape;

(d) reacting said shaped silicon compact with a substance that releases free nitrogen, said reaction occurring at a temperature sufficiently high to convert said shaped silicon compact to an identically shaped porous compact of



α-silicon nitride whiskers but sufficiently low to avoid subliming substantially all of said formed whiskers.

4,388,256

PROCESS FOR MANUFACTURING REGENERATED CELLULOSE HOLLOW FIBER

Masamichi Ishida, 2-19, Nishisakae, Otake-shi, Hiroshima-ken; Jun Kamo, 3-2-1, Kurokawa, Otake-shi, Hiroshima-ken; Toru Takemura, 3-2-303, Kurokawa 3-chome; Shunsuke Minami, 3-2-104, Kurokawa 3-chome, both of Otake-shi, Hiroshima-ken, and Kensuke Kamada, 44-20, Hanazono-cho, Chiba-shi, Chiba-ken, all of Japan

Filed Aug. 28, 1979, Ser. No. 70,651

Claims priority, application Japan, Nov. 24, 1978, 53/145185; Dec. 14, 1978, 53/157000

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—41 **12 Claims**



1. A process for producing a membrane substantially consisting of cellulose in the form of a hollow fiber, which comprises the step of:

extruding a dope comprised of cellulose ester in a nonvolatile organic solvent having a boiling point of at least 100° C. through a circular slit defined between inner and outer tubes of a spinning nozzle having a double tube structure, while a core liquid substantially insoluble in water is forced through the inner tube of said nozzle;

coagulating the hollow fibrous extrudate in a coagulating bath;

drawing the coagulated hollow fibrous extrudate 1.05 to 2.00 times its original length; and then,

treating the drawn hollow fiber still containing the core liquid in the hollow, with an aqueous caustic alkali solution containing at least 0.5% by weight of a water-soluble metal salt, thereby hydrolyzing the cellulose ester into cellulose.

4,388,257

PROCESS FOR PREPARING CALCIUM SILICATE SHAPED PRODUCT

Yasuo Oguri, Tokyo; Mitsuru Awata, Kodaira, and Mitsunobu Abe, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Jan. 23, 1981, Ser. No. 227,696
Claims priority, application Japan, Feb. 4, 1980, 55-12162
Int. Cl.³ B28B *1/26*
U.S. Cl. 264—82 **9 Claims**

1. A process for preparing a shaped calcium silicate product, comprising:

(a) forming an aqueous slurry of calcium silicate hydrate by heating and reacting a calcareous source with a siliceous source in water;

(b) admixing therewith reinforcing fibers molding resultant mixture into a shaped object having a bulk density of less than 0.6 g/cm³;

(c) curing said molded product in a closed tank having a capacity of 1.5 to 30 times the volume of said molded product at 140° to 300° C. by steam, the total amount of steam in said closed tank being generated from the water in said molded product; and

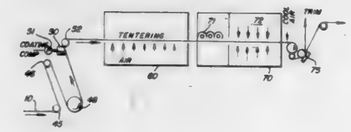
(d) drying said cured product.

4,388,258

POLYMER FILM COATED WITH AQUEOUS POLYMER

Gordon P. Hungerford, Palmyra, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 19, 1981, Ser. No. 235,887
Int. Cl.³ B29D *7/24*
U.S. Cl. 264—129 **8 Claims**



1. A method for producing biaxially-oriented acrylonitrile polymer film comprising the sequential steps of

forming a continuous aquagel film having a self-supporting acrylonitrile polymeric matrix with water uniformly dispersed therein;

heating and stretching said aquagel film longitudinally to orient the polymer uniaxially;

applying an aqueous coating of vinylidene chloride polymer to at least one surface of said aquagel film;

transversely stretching the coated aquagel film to provide biaxially-oriented polymer; and

drying the coated, oriented polymer film under constraint to remove water from the coating and film concurrently.

4,388,259

FLUOROCARBON POLYMER GASKET AND METHOD OF MANUFACTURING SUCH

Walter E. B. Jewell, Glenside, and Adam J. Patarcity, Levittown, both of Pa., assignors to Kennecott Corporation, Stamford, Conn.

Filed Oct. 23, 1981, Ser. No. 314,186
Int. Cl.³ B29C *3/00*
U.S. Cl. 264—153 **14 Claims**

1. A method of manufacturing fluorocarbon polymer gaskets which comprises:

(a) heating a fluorocarbon polymer sheet of predetermined thickness to within the temperature range at which the fluoro-carbon polymer enters the gel state;

(b) compressing said heated sheet to a thickness less than said sheet's predetermined thickness;

(c) cooling said sheet in its compressed state; and



(d) cutting said sheet, cooled in its compressed state, into a gasket.

4,388,260

METHOD OF MAKING VISCOSE RAYON

Gregory C. Bockno, Media, Pa., assignor to Avtex Fibers Inc.

Division of Ser. No. 21,150, Mar. 16, 1979, Pat. No. 4,245,000, which is a continuation-in-part of Ser. No. 793,572, May 4, 1977, abandoned. This application Jan. 8, 1981, Ser. No. 223,465
Int. Cl.³ D01D *5/22*
U.S. Cl. 264—168 **7 Claims**

1. The method of producing crimped regenerated cellulose filaments with an unsymmetrical, multilobular, skin-core cross-section wherein the core is surrounded by a discontinuous broken skin, which comprises

(a) preparing a modifier-free viscose containing from about 6% to 10% cellulose, from about 4% to 9% caustic soda, and from 28% to 45% carbon disulfide based upon the weight of cellulose;

(b) ripening the viscose to a sodium chloride salt index of 5.5 to 15 and a spinning ball fall viscosity of 60 to 110 seconds;

(c) extruding the ripened viscose into an aqueous spinning bath containing from about 4% to 8% sulfuric acid, from about 0.5% to 3% zinc sulfate and from about 17% to 22% sodium sulfate maintained at a temperature between 40 and 65 degrees centigrade;

(d) withdrawing the filaments from the spinning bath, passing the filaments through an aqueous stretch bath maintained at a temperature between 85° C. and 95° C.;

(e) controlling residence time in the spin bath so as to allow stretching the filaments in the stretch bath from about 65% to 120%, said filaments having a wet modulus of between about 5 and 12;

(f) cutting the stretched filaments into staple length fibers; and

(g) relaxing the cut fibers in water having a temperature between about 75° and 100° C.

4,388,261

METHOD FOR FORMING A COMPARTMENTED PUNCTURE SEALANT PACKAGE BY CO-EXTRUSION

Thomas E. Codispoti, Akron; James M. Giustino, Uniontown; Richard M. Griffith, Akron, all of Ohio, and James T. Tsai, Fremont, Calif., assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Oct. 1, 1981, Ser. No. 307,401
Int. Cl.³ B29D *7/04;* **B29H** *3/00*
U.S. Cl. 264—171 **7 Claims**

1. A method of forming a compartmented package containing puncture sealant for use in a tire, the steps of the method comprising

(a) providing a first stream of uniform cross-section of a puncture sealant.

(b) providing a second stream of a package forming material;

(c) encapsulating the puncture sealant stream within the package forming material;

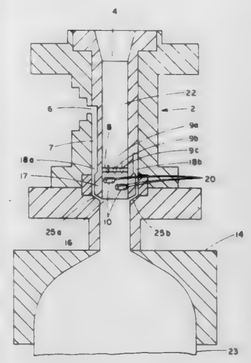
(d) forming continuous ribs of the package forming material through the puncture sealant surrounded by package forming material;

(e) supplying the compartmented stream of the puncture sealant to an extrusion die defining an elongate slot like orifice; and

(f) forming and expanding the composite stream into a generally elongate configuration with ribs extending from package wall to package wall each rib forming a juncture angle of from 1° to 90° with a package wall.

7. An apparatus for forming a compartmented package comprising:

(a) a means for providing a first stream of uniform cross-section of a puncture sealant and a second stream of a package forming material.



(b) a means for encapsulating the puncture sealant stream within the package forming material;

(c) a means for forming non-parallel continuous ribs of the package forming material through the puncture sealant surrounded by package forming material;

(d) a means for supplying the compartmented stream of the puncture sealant to an extrusion die defining an elongate slot like orifice; and

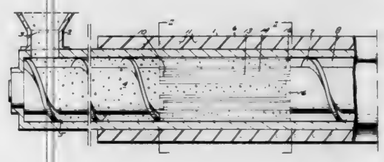
(e) a means for forming and expanding the composite stream into a generally elongate configuration with ribs extending from package wall to package wall each rib forming a juncture angle of from 1° to 25° with a package wall.

4,388,262

METHOD FOR THE FORMING OF PLASTICS

Albert J. H. Brasz, Born, Netherlands, and Hermanus A. Wallink, Seifkant, Fed. Rep. of Germany, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Feb. 20, 1981, Ser. No. 236,046
Claims priority, application Netherlands, Feb. 21, 1980, 8001053
Int. Cl.³ B29B *1/06, 3/02*
U.S. Cl. 264—176 R **31 Claims**



1. A method of forming thermoplastic and/or elastomeric materials utilizing a plastics processing machine of the type including a chamber having a predetermined diameter D, material supply means in communication with said chamber for supplying material to said chamber, means defining a material exit, and screw means operatively associated with said chamber for conveying said material from said material supply means to said exit means, said chamber defining a feed zone, a material heating zone downstream of said feed zone, and a homogenization zone downstream of said feed zone, wherein said screw means includes a melt torpedo disposed in said material heating zone having a plurality of alternating grooves and ridges thereby defining therebetween a plurality of alternating inlet and discharge channels for melting the material and discharging the melted material, respectively, said method comprising:

(a) supplying solid material to the chamber;

(b) melting the material in the material melting zone above its melting point to a predetermined peak temperature; and

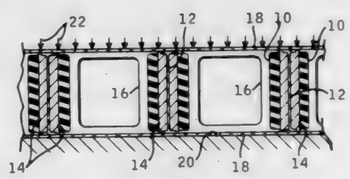
(c) allowing the material melted according to step (b) to cool in the homogenization zone to a substantially lower final melt temperature below the peak temperature prior to exiting the chamber via said material exit means so that at least comparable amounts of material can be processed per unit time at a lower final melt temperature than conventionally associated with the material.

4,388,263

CONTROLLED ELASTOMERIC TOOLING FOR PLASTIC FABRICATION

John Prunty, San Diego, Calif., assignor to General Dynamics Corp./Convair Division, San Diego, Calif.

Filed Oct. 13, 1981, Ser. No. 311,102
Int. Cl.³ B29D *3/02;* **B29C** *1/12, 1/02*
U.S. Cl. 264—257 **9 Claims**



1. The method of applying pressure to a composite material through thermal expansion of an elastomeric pad which comprises the steps of:

arranging said material between mold surfaces, at least one of which comprises a movable reaction block;

positioning a pressure application means adjacent to said reaction block, said pressure application means comprising a container having a base and an upstanding edge extending toward said reaction block and an elastomeric pad spaced a selected distance from said base and retained by said edges; to provide a gap between said pad and the container base

adjusting said reaction block and pad so that said block is in aligned contact with said material and said pad is in contact with the opposite side of said reaction block, by rotating a loosely fitting threaded mounting means between said reaction block and a fixed support therefor and,

heating said assembly to the curing temperature of said material;

whereby said pad expands into said gap during initial heating without exerting significant pressure on said block, then when said gap is filled exerts selected pressure on said block as temperature is further increased.

4,388,264

METHOD AND MEANS FOR WINDING HELICAL COILS FROM THERMOPLASTIC MATERIALS

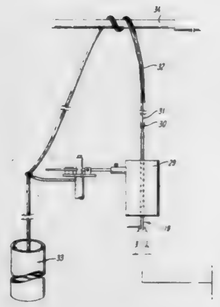
Gerrit W. E. Leuvelink, Haaksbergen, Netherlands, assignor to Textieltechniek Haaksbergen B.V., Haaksbergen, Netherlands

Filed Sep. 25, 1981, Ser. No. 305,704

Claims priority, application United Kingdom, Sep. 26, 1980, 8031199

Int. Cl.³ B29C *17/02*

U.S. Cl. 264—281 **17 Claims**



1. A method of producing a coil for use in the manufacture of a link belt comprising winding a strand of polymeric material onto a first section of a mandrel of a given cross-section to form a coil, heating the coil so formed whilst moving said coil longitudinally of said first section, passing said heated coil through a zone in which it is cooled and twisted, in its coiled form, in a twist direction so as to tend to reduce the cross-section of the so-twisted coil, whilst being supported by a second section of said mandrel having a reduced cross-section in comparison with said first section, and removing said coil from said mandrel overend thereof.

4,388,265

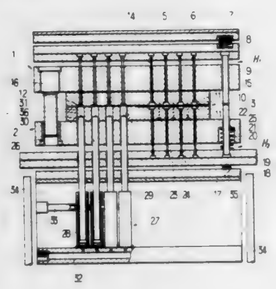
PROCESS AND APPARATUS FOR MOLDING PLASTICS

Kazuo Bandoh, No. 81-8, Toyama, Momoyama-cho, Fushimi-ku, Kyoto-shi, Japan

Filed Dec. 14, 1981, Ser. No. 330,699

Int. Cl.³ B29G *3/00*

U.S. Cl. 264—297.2 **5 Claims**



1. In a process of molding a number of articles of plastics at the same time with use of molds having a multiplicity of cavities, the improvement which comprises supplying the plastics molding material to a plurality of pots individually, the pots being arranged in proximity to the cavities, and injecting the molding material into the cavities from the pots through gates without passing the material through runners.

2. In molding apparatus for forming plastics molded articles including an upper mold and a lower mold which can be clamped and opened and having a multiplicity of cavities in the fitting surfaces thereof, and means for injecting a plastics molding material from a pot into the cavities, the improvement which comprises a plurality of pots formed in the fitting surface of one of the upper and lower molds and positioned in proximity to the cavities, molding material injecting means provided on the same mold as the pots in corresponding relation to the pots individually, cull portions formed in the fitting surface of the other mold and opposed to the pots individually, and gates for holding each of the pots in communication with the corresponding cavities without any runner provided between the pot and the cavities.

4,388,266

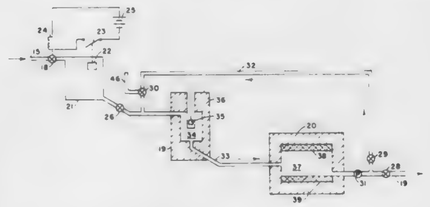
METHOD AND SYSTEM FOR MONITORING ORE GRADE OF AN URANIUM BEARING MIXTURE

Wyatt W. Givens, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 17, 1980, Ser. No. 187,926

Int. Cl.³ G01N *23/12*

U.S. Cl. 376—164 **2 Claims**



1. A method of monitoring the ore grade of an uranium bearing fluid mixture comprising the steps of:

(a) transporting an uranium bearing fluid mixture past a source of neutrons so as to permit continuous irradiation of said fluid mixture with fast neutrons,

(b) transporting said irradiated fluid mixture past a single neutron counter, and

(c) recycling said uranium bearing fluid mixture past said neutron source and said single neutron counter to affect a build-up of delayed fission neutrons such that the predominate delayed fission neutron groups of uranium-235 appear as a single neutron group to said single neutron counter with an effective half-life at about 13.9 seconds.

4,388,267

TEMPERATURE PROFILE DETECTOR

Richard D. Tokarz, West Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 29, 1981, Ser. No. 229,496

Int. Cl.³ G01K *11/06;* **G21C** *17/00*

U.S. Cl. 376—247 **5 Claims**

1. A temperature profile detector comprising:

a tubular sheath having a first closed end and a second end, said sheath surrounding a single loop of electrically conductive wire including an active leg and a return leg each leading to the second end of the sheath, said active leg serving as a first elongated electrical conductor;

said sheath further surrounding a single length of electrically conductive wire connected to its closed end and serving as a second electrical elongated conductor parallel to said first conductor and spaced from it by the minimum distance required to normally maintain an open circuit between them;

said first electrical conductor being made of material having a preselected melting point and said second electrical conductor being made of material whose melting point is appreciably above said preselected melting point;

and confining insulating means surrounding said first and second electrical conductors for allowing molten metal from the first conductor to bridge the separation between the first and second electrical conductors after the attainment of a temperature equal to the melting point of the first electrical conductor at a location along its length.



4,388,268

TRANSPORTATION AND/OR STORAGE CONTAINERS FOR RADIOACTIVE MATERIALS

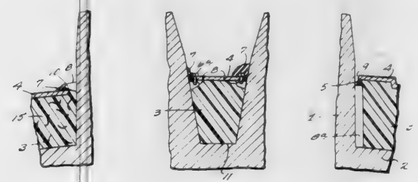
Hans-Günther Knackstedt, Langenselbold; Erhard Müller, Grundau; Richard Christ, Bruchköbel, and Hartmut Kroll, Hanau, all of Fed. Rep. of Germany, assignors to Transnuklear GmbH, Hanau, Fed. Rep. of Germany

Filed Nov. 17, 1980, Ser. No. 207,359

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 7932527[U]

Int. Cl.³ G21C *19/00*

U.S. Cl. 376—272 **7 Claims**



1. A container suitable for conveyance and/or storage of radioactive materials which produce gamma and neutron radiation and significant residual heat, comprising, in combination, a container body having shielding means for gamma radiation, neutron shielding means and bar-shaped cooling fins, said container having an exterior surface, said cooling fins extending outwardly from said exterior surface and having spaces each therebetween, each said cooling fin having a pair of opposite side surfaces on each of which are disposed a boss means intermediate the ends of each said cooling fin, said neutron shielding means including a plurality of segments with a said segment disposed in the space between adjacent ones of said cooling fins, cover means overlying each of said segments, said boss means of each said cooling fin contacting a portion of a respective said cover means to hold said cover means in place on said respective segment of neutron shielding means.

4,388,269

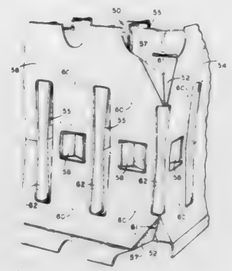
SPACER GRID CORNER GUSSET

Jeffrey G. Larson, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 21, 1980, Ser. No. 209,087

Int. Cl.³ G21C *3/34*

U.S. Cl. 376—442 **5 Claims**



1. A spacer grid for a bundle of longitudinally extending rods in spaced generally parallel relationship comprising;

spacing means for holding the rods in spaced generally parallel relationship, said spacing means including at least one exterior grid strip circumscribing the bundle of rods along the periphery thereof;

said at least one exterior grid having a first end defining the boundary of said strip in one longitudinal direction and a second end defining the boundary of said strip in the other longitudinal direction,

said at least one exterior grid strip having at least one bend formed therein parallel to the longitudinal direction, and

a plurality of sloped corner gussets formed by said at least one bend and said first end and said second end.

4,388,270

RHENIUM-BEARING COPPER-NICKEL-TIN ALLOYS

Michael F. Stavish, Trumbull, and Aldo M. Reti, Milford, both of Conn., assignors to Handy & Harman, New York, N.Y.

Filed Sep. 16, 1982, Ser. No. 418,604

Int. Cl.³ C22C *9/02;* **C22F** *1/08*

U.S. Cl. 420—473 **33 Claims**

1. A copper based alloy consisting essentially of about 4–15 percent nickel, about 4–8 percent tin, the balance essentially copper, to which was added about 0.002–0.4 percent of rhenium.

4,388,271

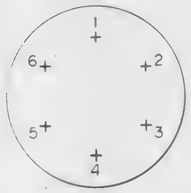
RAPID DIAGNOSTIC AGENTS

Dieter Kraemer, Mainz; Klaus Lehmann, Rossdorf, and Roland Hartl, Muenster, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 110,905, Jan. 10, 1980, abandoned. This application Sep. 10, 1981, Ser. No. 300,899

Int. Cl.³ G01N *33/72*

U.S. Cl. 422—56 **5 Claims**



1. A diagnostic agent for the rapid detection of blood in

excretions and body fluids, which diagnostic agent consists essentially of a filter paper support simultaneously impregnated with

(1) a chromogenic indicator selected from the group consisting of guaiac and chromogenic phenylamino compounds and capable of color change in the simultaneous presence of peroxidase-active hemoglobin present in blood and of peroxide solution separately applied to said diagnostic agent for development thereof, and

(2) a resin selected from the group consisting of acrylic resins, methacrylic resins, and combinations thereof, said chromogenic indicator and resin being distributed uniformly or homogeneously throughout said filter paper, and said resin being present in an amount effective to reduce color change reactions prior to development and to promote the persistence of developed color while not interfering with chromatographic transport of the developed reagent.

4,388,272

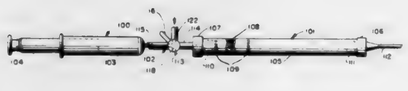
METHOD AND APPARATUS FOR PRECISE CONTROL OF VAPOR PHASE CONCENTRATIONS OF VOLATILE ORGANICS

Robert C. Gesteland, Evanston, Ill., assignor to Northwestern University, Evanston, Ill.

Filed Apr. 8, 1981, Ser. No. 252,039

Int. Cl.³ B01L *5/00;* **C09K** *3/00;* **G01N** *1/22;* **A61L** *9/04*

U.S. Cl. 422—102 **14 Claims**



1. The method of providing a predetermined concentration of a volatile organic compound in a gas carrier sample, comprising:

(a) applying the volatile organic compound free of any other volatile compound to a solid granular adsorbent to partially coat its adsorptive surfaces, the amount of said compound on said adsorbent being less the minimum amount capable of saturating a gas in contact therewith at an ambient temperature, said compound and said adsorbent being chemically non-reactive;

(b) introducing said organic compound-containing adsorbent into an enclosed space from which gas samples can be selectively removed, said enclosed space containing a carrier gas in contact with said adsorbent at said ambient temperature;

(c) maintaining said adsorbent in contact with said gas until an adsorption-desorption equilibrium is reached so that said gas at said ambient temperature contains a predetermined concentration of said organic compound; and

(d) removing a gas sample from said enclosed space containing said predetermined concentration of said organic compound.

10. An assembly for dispensing gas samples containing a reproducible predetermined concentration of a volatile organic compound, comprising a container with at least one opening to the space enclosed thereby, openable means for closing said opening to seal said container, said space containing a carrier gas in contact with a solid granular adsorbent having a volatile organic compound adsorbed thereon, said organic compound on said adsorbent being free of any other volatile compound and said organic compound and said adsorbent being chemically non-reactive, the amount of said organic compound on said adsorbent being less than 10% of the minimum amount capable of saturating said carrier gas at 25° C., said gas containing a substantially equilibrium concentration of said organic compound.

4,388,273

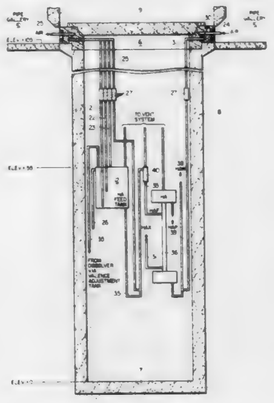
APPARATUS FOR PREVENTING THE DIVERSION OF PLUTONIUM IN NUCLEAR FUEL REPROCESSING

Walter A. Graf, Jr., Saratoga, and Robert C. Breisch, Santa Clara, both of Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Oct. 30, 1979, Ser. No. 89,524

Int. Cl.³ G05B *9/05*

U.S. Cl. 422—117 **5 Claims**



1. In a nuclear fuel reprocessing plant using plutonium, the improvement comprising:

(a) an enclosed cell for housing nuclear fuel reprocessing equipment, said cell having side and bottom walls and a removable top wall, wherein said walls shield personnel from radiation emitted from reprocessing streams and for physically isolating the equipment from plant personnel;

(b) means within the cell for reprocessing spent nuclear fuel;

(c) means within the cell for containing plutonium solution in a liquid state; and

(d) an arrangement of components within said cell including a plurality of conduits, each of which has one end in fluid communication with the plutonium solution in said containing means and a second end accessible to personnel outside of the cell, said arrangement of components being configured to prevent an individual located outside said cell from being able to cause plutonium solution within said container means to pass through said conduits from their ends in fluid communication with the plutonium solution to their second ends, whereby to prevent individuals outside said cell from gaining access to said solution by means of said conduits.

4,388,274

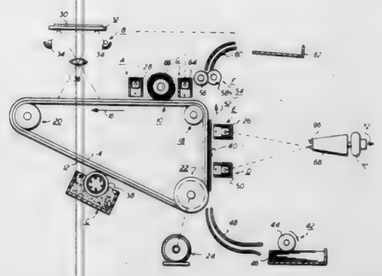
OZONE COLLECTION AND FILTRATION SYSTEM

John L. Rourke, Fairport; Jack C. Azar, Rochester, and William K. Murphy, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 155,349, Jun. 2, 1980, abandoned. This application Dec. 18, 1981, Ser. No. 332,024

Int. Cl.³ B01D *53/56*

U.S. Cl. 422—177 **14 Claims**



1. An apparatus for the collection and removal of ozone and other noxious gases generated by corona discharge devices in an electrostatographic copying machine which comprises: at least one corona discharge device comprising a housing, a corona emission electrode mounted in said housing, and an apertured plenum mounted in said housing away from the path of the corona emission, said apertured plenum having a surface adjacent said corona emission electrode for biasing the corona emission; an ozone and other noxious gases filtering device comprising a low pressure drop fixed bed filter having a large bed area to volume ratio; conduit means connecting the apertured plenum in said corona discharge device with an air inlet in said filtering device; and air circulation means communicating with said apertured plenum, said conduit means and said filtering device for collecting air containing ozone and other noxious gases therethrough.

4,388,275

APPARATUS CONTAINING A CARRIER MATRIX FOR CATALYSTS

Gerhard Fratzer; Bernhard Beck, both of Rheinfelden; Erwin Dold, Wyhlen, and Hans Klebe, Rheinfelden, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 102,581, Dec. 11, 1979, Pat. No. 4,271,044. This application Jan. 23, 1981, Ser. No. 229,608

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1978, 2853547

The portion of the term of this patent subsequent to Jun. 2, 1998, has been disclaimed.

Int. Cl.³ B01J *35/04;* **F01N** *3/22*

U.S. Cl. 422—180 **6 Claims**

1. In an apparatus for the purification of exhaust gases and the conversion of the harmful components thereof into harmless components, comprising a steel jacket or housing and having contained therein a catalyst effective for said conversion which catalyst is deposited on a carrier matrix for catalysts with flow channels passing therethrough, the improvement comprising a carrier matrix formed of alternately smooth and corrugated superimposed layers of high temperature resistant and scale resistant steel, wherein a layer of corrugated sheet metal alternates with a layer of smooth screen cloth, or one layer of smooth sheet metal alternates with a layer of corrugated screen cloth, or a layer of corrugated screen cloth alternates with a layer of smooth screen cloth, whereby a cross-flow effect of gases is obtained as well as enlarged geometric surface and improved retaining capacity with respect to catalysis promoting metal oxides present in a dip dispersion.

4,388,276

DEVICE FOR REGENERATING HYDROCHLORIC COPPER CHLORIDE ETCHING SOLUTIONS

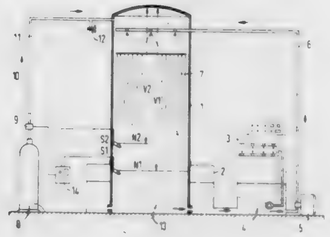
Efthimios Konstantouros, Munich, and Karl Hoeck, Benediktbeuern, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 17, 1981, Ser. No. 293,087

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1980, 3035864

Int. Cl.³ C03C *25/06*

U.S. Cl. 422—187 **8 Claims**



1. In a device for regeneration of spent hydrochloric copper chloride etching solution which is utilized in printed circuit board manufacture for etching non-galvanized printed circuits, wherein etching and regeneration occur in separate etching and regeneration means between which the etching solution is circulated cyclically or continuously and regeneration occurs with an oxidizing gas, the improvement comprising wherein: in combination

said regeneration means comprises;

an enclosed regeneration housing positioned in a flat upright container which holds a hydrochloric copper chloride etching solution therein, said housing having an interior wall defining a chamber in fluid communication with said upright container;

a means for providing an oxidizing gas in controllable fluid communication with an upper area of said chamber, said oxidizing gas being selected from the group consisting of oxygen, chlorine and a mixture of oxygen and chlorine;

said etching means including a means for providing spent hydrochloric copper chloride etching solution in fluid communication with said upright container and with said upper area of said chamber;

means for spraying said spent etching solution into said upper area of the chamber for contacting said etching solution with said oxidizing gas so that regeneration of said etching solution occurs, consumption of at least a portion of said oxidizing gas occurs and regenerated etching solution collects in said upright container from where such regenerated solution flows back to said etching means; and

two level switch means positioned at different levels along the interior wall of said regeneration housing within the chamber thereof for respectively opening and closing said means for providing an oxidizing gas so as to equalize the subatmospheric pressure arising within said chamber because of gas consumption and thus maintain the relatively slow increase of etching solution within said chamber within optimum limits.

4,388,277

CATALYST DEVICE AND METHOD

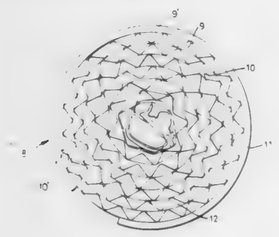
Christopher J. Wright, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jun. 1, 1981, Ser. No. 269,394

Claims priority, application United Kingdom, Jun. 6, 1980, 8018652

Int. Cl.³ B01J *8/02, 35/02*

U.S. Cl. 422—211 **6 Claims**



1. In a method of catalysis of a chemical reaction which comprises passing a reactant or reactants for the reaction through a device under conditions for the catalytically active material to effect catalysis of the reaction, said device comprising a container having a fluid inlet thereto and a fluid outlet therefrom and a plurality of discrete catalyst bodies randomly assembled therein, each body carrying a surface coating comprising catalytically active material for the reaction, the improvement wherein each body is right cylindrical in shape and has a plurality of internal channels of an ordered, predetermined size disposed in substantially parallel arrangement with respect to one another to permit substantially unrestricted flow of fluid through the body, each body having from 25 to 200 hannels per sq cm in a plane at right angles to the direction of the channels, and each body having a protective external boundary to protect the body from attrition.

2. In a device for use in the catalysis of a chemical reaction comprising a container having a fluid inlet thereto, a fluid outlet therefrom and a plurality of discrete catalyst bodies randomly assembled therein, each body carrying a surface coating comprising catalytically active material for the reaction, the improvement wherein each body is right cylindrical in shape and has a plurality of internal channels of an ordered, pre-determined size disposed in substantially parallel arrangement with respect to one another to permit substantially unrestricted flow of fluid through the body, each body having from 25 to 200 channels per sq cm in a plane at right angles to the direction of the channels, and each body having a protective external boundary to protect the body from attrition.

4,388,278

PURIFICATION BY HYDROGENATION OF HYDROGEN CHLORIDE CONTAINING ACETYLENE OBTAINED BY THE THERMAL CRACKING OF 1,2-DICHLOROETHANE

Ludwig Schmidhammer, Haiming; Gerhard Dummer, Burgkirchen, and Rudolf Straszer, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 29, 1981, Ser. No. 316,521

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1980, 3043442

Int. Cl.³ C01B *7/07*

U.S. Cl. 423—488 **5 Claims**

1. A process for reducing the amount of acetylene in a hydrogen chloride stream obtained from cracking of 1,2-dichloroethane, at a pressure of from 8 to 20 bar absolute by hydrogenating the acetylene in a catalytic reactor which comprises:

(a) mixing hydrogen with the hydrogen chloride stream containing acetylene, at a temperature below about 70° C., and at about a molar ratio H, of hydrogen:acetylene, determined according to equation I;

$$H = 10A + 1 \qquad \text{I.}$$

wherein A is the molar percent of acetylene in the hydrogen chloride stream;

(b) heating the hydrogen chloride stream mixed with hydrogen to a temperature to provide a gas stream, at the outlet of the catalytic reactor, at about a temperature T, between about 120° C. and 180° C., said temperature T being determined according to equation II;

$$T = \frac{388 - 0.5\,p}{1 - (2.78\,p + 11.3) \times 10^{-5} \times R/p}$$

wherein

(1) T is the temperature in degrees Kelvin of the gas mixture leaving the reactor;

(2) R is the volume flow rate expressed as liters of gas, measured at standard temperature and pressure per liter of catalyst per hour; and

(3) P is the pressure of the gas mixture in bar absolute,

and wherein the dwell time of the gas mixture, at a temperature of above about 70° C., before entering the catalyst bed is not more than 0.8 seconds,

(c) contacting the hydrogen chloride stream containing hydrogen with a catalyst comprising platinum, palladium, their oxides or mixtures thereof supported on a carrier comprising an oxide of aluminium, an oxide of silicon or mixtures thereof having a specific surface area of not more than 5 m^2/g.

4,388,279

RECOVERY OF METAL VALUES FROM ORGANIC REACTION PRODUCTS

Michael H. Quick, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jun. 3, 1981, Ser. No. 270,203

Int. Cl.³ C01G *55/00*

U.S. Cl. 423—22 **2 Claims**

1. A process for the recovery of rhodium metal complex catalyst from a liquid hydroformylation alcohol reaction product obtained from treatment of an olefinic hydrocarbon with hydrogen and carbon monoxide in the presence of said rhodium metal complex catalyst at hydroformylation conditions, which recovery process comprises treating said hydroformylation alcohol reaction product with an effective amount of ammonia to remove the bulk of the rhodium contained therein, separating the alcohol product solution containing residual amounts of rhodium, thereafter contacting said solution with solid calcium sulfate at adsorption conditions to separate such residual rhodium from the solution and recovering rhodium valves.

4,388,280

EXTRACTION OF ALUMINUM FROM CLAY

William G. Gruzensky, Lebanon, and Richard S. Olsen, Albany, both of Oreg., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation-in-part of Ser. No. 289,613, Aug. 3, 1981, abandoned. This application Jun. 17, 1982, Ser. No. 389,307

Int. Cl.³ C01F *7/20*

U.S. Cl. 423—131 **4 Claims**

1. A process for recovery of aluminum from raw kaolinitic clay comprising:

crushing the clay to a particle size of about minus 14-mesh;

subjecting the crushed clay to agitation in the presence of water in the form of a fine mist, the amount of water being sufficient to form a dense, compacted surface on the individual particles, but not sufficient to cause agglomeration of the particles, whereby any submicron-size dusts are agglomerated on the surfaces of the larger clay particles;

drying the thus-treated clay at a temperature of about 100° to 350° C. and for a time of about 24 hours to 1 hour to cause the particles to shrink and harden, and to cause submicron-size dusts to become firmly attached to the surfaces of the larger clay particles;

calcining the dried clay; and

subjecting the calcined product to treatment with an acidic leach solution, whereby aluminum is leached from the clay.

4,388,281

NOXIOUS-COMPONENT REMOVAL FROM FLUE GAS AND COMPOSITIONS USEFUL THEREFOR

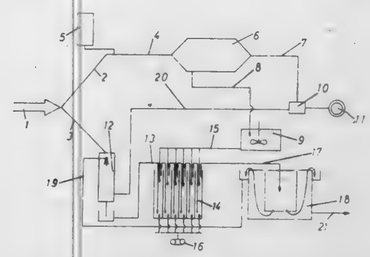
Heinz Hölter, Beisenstrasse 39-41, D-4390 Gladbeck; Heinz Gresch, Franz-Lehar-Strasse 25, D-4600 Dortmund-Wickede; Heinrich Igelbüscher, Marq-en-Baroeul-Str. 60, and Heribert Dewert, Bahnhofstrasse 23, both of, D 4390 Gladbeck, all of Fed. Rep. of Germany

Filed May 22, 1981, Ser. No. 266,291

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3020016; May 24, 1980, 3020049; Jul. 8, 1980, 3025778; Mar. 21, 1981, 3111268; Apr. 4, 1981, 3113788; Apr. 23, 1981, 3116086; Apr. 28, 1981, 3116701; Apr. 28, 1981, 3116702

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—210 **21 Claims**



1. A method for removing noxious components from flue gas before releasing it into the atmosphere which comprises:

dividing the flue gas into two parts, subjecting one part to dry purification and subjecting the other part to wet purification,

the dry purification comprising contacting the one part with a powdery sorption agent selected from the group consisting of calcium oxide and calcium hydroxide to remove noxious components therefrom,

the wet purification comprising incorporating at least one substance selected from the group consisting of calcium hydroxide and calcium oxide in washing liquid and contacting said other part with the washing liquid to remove noxious components therefrom,

the substance incorporated in the washing liquid comprising used sorption agent from the dry purification.

4,388,282

METHOD FOR REGENERATION OF SODIUM SULFITE FROM SPENT FLUE GAS DESULFURIZATION PROCESSES

Eng J. Chou, Piscataway, and Bruce Weinstein, North Bergen, both of N.J., assignors to Research-Cottrell, Inc., Somerville, N.J.

Filed Dec. 22, 1981, Ser. No. 333,410

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—242 **5 Claims**

1. A process for regeneration of a spent sodium sulfite slurry from a flue gas desulfurization absorber employing in the absorption tower Na_2SO_3 comprising carrying out the regeneration in a plurality of serially arranged reactors, adding crushed limestone to the first in the series of reactors, separating the slurry from the reactors in at lest one hydroclone, directing the overflow from the at least one hydroclone to a thickener, directing the underflow from the at least one hydroclone to at least one of the plurality of reactors and utilizing the liquid from the thickener to provide at least a portion of the slurry for the absorber.

4,388,283

SO_2 REMOVAL

Jack Z. Abrams, and Robert M. Sherwin, both of San Rafael, Calif., assignors to Bechtel International Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 181,315, Aug. 25, 1980, abandoned, which is a continuation of Ser. No. 406, Jan. 2, 1979, Pat. No. 4,246,245. This application Feb. 18, 1982, Ser. No. 349,728

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—242 **3 Claims**

1. A method for removing sulfur dioxide from sulfur dioxide containing flue gas resulting from the burning of sulfur containing fossil fuel, said method comprising:

in a spray dryer introducing into a stream of said flue gas fine particles of an aqueous dispersion of Type S hydrated dolomitic lime in an amount sufficient to remove at least about 70% of the sulfur dioxide present in said flue gas, while reducing the temperature of said flue gas from 240°-350° F. to not lower than a temperature in the range of about 145° to 165° F., wherein the amount of the aqueous dispersion introduced is less than the amount which would result in condensation at said lower temperature; and

separating the resulting substantially dry particles from the effluent.

4,388,284

DRY PROCESS FOR PRODUCING DIBORANE

Sheldon G. Shore, Columbus, and Mark A. Toft, Amlin, both of Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed Sep. 18, 1981, Ser. No. 303,387

Int. Cl.³ C01B *6/10*

U.S. Cl. 423—295 **11 Claims**

1. A process for producing diborane comprising reacting lithium or sodium borohydride with boron trifluoride in the absence of a solvent at a reaction temperature of about 0° C. to about 50° C., said lithium or sodium borohydride and said boron trifluoride being present in a molar ratio of about 1:1 to about 3:4 and said reaction being conducted by bringing said boron trifluoride into contact with said lithium or sodium borohydride while said boron trifluoride is in the liquid state and the resultant mixture is allowed to warm to said reaction temperature.

4,388,285

PROCESS FOR THE PREPARATION OF ZSM-5 UTILIZING TRANSITION METAL COMPLEXES DURING CRYSTALLIZATION

Lillian A. Rankel, Princeton, N.J., and Ernest W. Valyocsik, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,285

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—329 **4 Claims**

1. In the process for the synthesis of ZSM-5 from a forming solution containing a mixture of alumina, silica, alkali metal oxide and water, the improvement which comprises adding a complex selected from the group consisting of metal or hydrogen phthalocyanines, iron cyclopentyldienyl complexes and metal complexes containing a —N—C—C—N— aromatic grouping

to the reaction mixture and maintaining the same at a temperature of from about 100° F. to about 400° F. until crystals of ZSM-5 are formed.

4,388,286

SILICON PURIFICATION

Vijay K. Kapur, Northridge, and Uppala V. Choudary, Chatsworth, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 27, 1982, Ser. No. 343,046
Int. Cl.³ C01B *33/02*
U.S. Cl. 423—348 **7 Claims**

1. A method for refining silicon particles which are contaminated with carbon and other impurities to produce high purity silicon comprising vacuum refining the silicon particles in an inert atmosphere and at an elevated temperature to form gaseous CO and SiO, thereafter mixing with said silicon an effective fluxing amount of at least one fluoride of a metal selected from the group consisting of alkali metals and alkaline earth metals, heating said mixture at an elevated temperature and for a time sufficient to produce molten silicon and slag as separate phases, separating said slag from said silicon, and recovering said silicon.

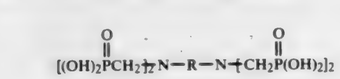
4,388,287

PROCESS FOR PRODUCING SODIUM PERCARBONATE

Junichiro Sugano, Nagoya; Tomoyuki Yui, Yokkaichi; Yoshitugu Minamikawa, Yokkaichi, and Tsuneo Fujimoto, Yokkaichi, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

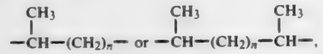
Filed Oct. 27, 1981, Ser. No. 315,651
Claims priority, application Japan, Oct. 28, 1980, 55-151004
Int. Cl.³ C01B *31/00, 15/30*
U.S. Cl. 423—415 P **4 Claims**

1. A process for producing sodium percarbonate which consists essentially of reacting sodium carbonate with hydrogen peroxide in the presence of a stabilizer against the decomposition of hydrogen peroxide in a working solution of sodium carbonate, hydrogen peroxide and water, said stabilizer being present in a stabilizing amount and being selected from the group consisting of N,N,N′,N′-tetra(phosphonomethyl)-diaminoalkane of the following formula



(A)

wherein R is either



and n is 0 or 1 to 4 mixtures thereof.

4,388,288

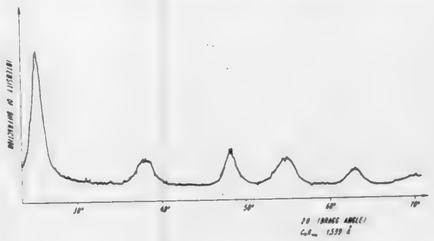
PREPARATION OF SHAPED TITANIUM DIOXIDE CATALYST/CARRIER AND CATALYSIS OF GASEOUS SULFUR COMPOUNDS THEREWITH

Thierry Dupin, Garges les Gonesse; Gilbert Bouge, Salindres, and Regis Poisson, Sevres, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Apr. 23, 1981, Ser. No. 256,978
Claims priority, application France, Apr. 23, 1980, 80 09126
Int. Cl.³ C01B *31/26;* **B01J** *21/06*
U.S. Cl. 423—416 **24 Claims**

1. A process for the preparation of a porous shaped titanium oxide catalyst/carrier, consisting essentially of (i) intimately admixing powdered, poorly crystalline and/or amorphous titanium oxide, said titanium oxide powder characterized by a weight loss on ignition ranging from 1 to 50%, water and from 0 to about 15% by weight of a shaping additive, (ii) next shaping the intimate admixture which results, and (iii) thence calcining the shaped article.

3. The process as defined by claims **1** or **2**, wherein from about 45 to 99% by weight of the titanium oxide powder and about 1 to 40% by weight of water are intimately admixed.



16. A shaped titanium oxide catalyst/carrier prepared by the process as defined by claim **3**.

18. In a process for sulfur removal via Claus catalysis, the improvement which comprises utilizing, as the catalyst/carrier therefor, the shaped titanium oxide catalyst/carrier as defined by claim **16**.

4,388,289

METHOD OF REMOVING ALKALI AND ALKALINE EARTH METAL IMPURITIES FROM OXIDIZED PAN MATERIAL

Gary D. Shepherd, Redondo Beach; Ramon B. Fernandez, Hawthorne, and Ian R. Rule, Encino, all of Calif., assignors to Hitco, Irvine, Calif.

Continuation-in-part of Ser. No. 53,756, Jul. 2, 1979, abandoned, which is a continuation of Ser. No. 800,784, May 26, 1977, abandoned. This application Apr. 14, 1980, Ser. No. 140,257
Int. Cl.³ D01F *9/22*
U.S. Cl. 423—447.4 **10 Claims**

1. A method of treating oxidized polyacrylonitrile material to reduce alkali and alkaline earth metal impurities therein to a total content of no greater than 50 parts per million essentially uncarbonized form comprising the steps of contacting oxidized polyacrylonitrile material which is essentially uncarbonized with an aqueous acid solution of at least 0.5% and not substantially greater than 35% concentration by weight for 5–120 minutes, the solution being maintained at a temperature greater than 100° F., removing the aqueous acid solution from the material and rinsing the material with a solvent which is substantially free of alkali and alkaline earth metal ions, the rinsing taking place for 5–30 minutes.

4,388,290

PURIFYING THIONYL CHLORIDE WITH $ALCL_3$ CATALYST

Gerhard Jonas, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 28, 1981, Ser. No. 268,293
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022879
Int. Cl.³ C01B *17/45*
U.S. Cl. 423—468 **6 Claims**

1. In the purification of thionyl chloride by addition of sulphur and distillation in the presence of a catalyst, the improvement which comprises effecting the distillation in the presence of anhydrous aluminum chloride as catalyst.

4,388,291

PROCESS FOR THE PRODUCTION OF DITHIONITES

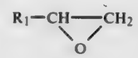
Satoshi Arakawa, Matsudo, Japan, assignor to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed Jun. 7, 1982, Ser. No. 386,059
Claims priority, application Japan, Jun. 18, 1981, 56-94172
Int. Cl.³ C01B *17/66*
U.S. Cl. 423—515 **14 Claims**

1. In the process for producing anhydrous dithionites which comprises reacting (i) formic acid or a formate, (ii) an alkali compound, and (iii) sulfurous acid anhydride in a mixed reaction solvent of water and an organic solvent to form dithionite crystals in a mother liquor, filtering said dithionite crystals from the mother liquor, washing the dithionite crystals with an organic solvent as a washing liquid under conditions which do not cause a slurry to form, and drying the dithionite crystals;

the improvement comprising dividing the washing liquid into two portions which are discharged as (a) the washing liquid first discharged and (b) the washing liquid discharged subsequently, the washing liquid first discharged which contains thiosulfate which inhibits the reaction forming said dithionite and the washing liquid discharged subsequently being collected separately, the washing liquid first discharged is treated by adding thereto at least one compound selected from the group consisting of the compounds represented by the formulae (I) and (II), and cyclohexene oxide; wherein

Formula (I) is



wherein

R_1 is hydrogen, an alkyl group containing from 1 to 8 carbon atoms, a halogenated alkyl group containing from 1 to 2 carbon atoms, phenyl group or a substituted phenyl group;

Formula (II) is R_2—X

wherein

R_2 is a primary or secondary alkyl group containing from 1 to 8 carbon atoms, an allyl group, or a 2-methylallyl or 2-ethylallyl group, and X is halogen, to convert said thiosulfate into a substance which does not exert an adverse influence on the production of dithionites and then recycling said treated washing liquid first discharged as a reaction solvent, and recycling the washing liquid discharged subsequently as a reaction solvent which does not require treatment.

4,388,292

PROCESS FOR REDUCING RADIOACTIVE CONTAMINATION IN PHOSPHOGYPSUM

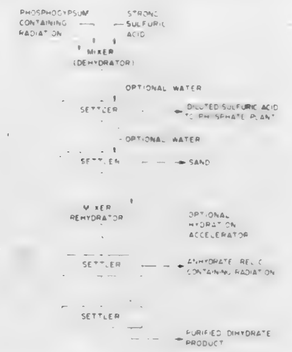
Jay W. Palmer, Temple Terrace, Fla., and John C. Gaynor, Des Plaines, Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Dec. 14, 1981, Ser. No. 330,550
Int. Cl.³ C01F *11/46, 13/00;* **C01B** *25/16;* **G21F** *9/28*
U.S. Cl. 423—555 **17 Claims**

1. A process for reducing radioactivity in waste product phosphogypsum containing radioactive contamination comprising the steps of

dehydrating the phosphogypsum to calcium sulfate anhydrite containing radioactive contamination;

in the presence of radiation free gypsum seed crystals rehydrating a substantial proportion, but less than all, of the anhydrite, to a substantially free of radio-activity gypsum of larger particle size than the anhydrite;



and separating the larger particle size gypsum from the anhydrite containing radioactive contamination.

4,388,293

H_2S REMOVAL

Zaida Diaz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 24, 1981, Ser. No. 324,357
Int. Cl.³ C01B *17/04;* **B01D** *53/34*
U.S. Cl. 423—573 R **20 Claims**

1. A process for the removal of H_2S from a sour gaseous stream comprising:

(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the solution containing an effective amount of a reactant selected from the group consisting of oxidizing polyvalent metal chelate compounds, and mixtures thereof, and a stabilizing amount of a composition selected from the group consisting of thiodiglycolic acid, 3,3-thiodipropionic acid, and mixtures thereof, and producing a sweet gas stream and an aqueous admixture containing crystalline sulfur and a reduced reactant;

(b) removing at least a portion of the crystalline sulfur from the aqueous admixture;

(c) regenerating the aqueous admixture in a regeneration zone to produce a regenerated reactant;

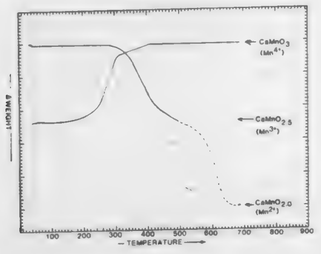
(d) returning aqueous admixture containing regenerated reactant from the regeneration zone to the contacting zone.

4,388,294

OXYGEN DEFICIENT MANGANESE PEROVSKITES

Kenneth R. Poeppelmeier, Edison, and John M. Longo, New Providence, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 31, 1981, Ser. No. 288,996
Int. Cl.³ C01G *45/12*
U.S. Cl. 423—599 **14 Claims**



1. An oxygen deficient manganese compound of the composition $Ca_2MnO_{3.5}$ having a perovskite-type structure.

2. An oxygen deficient manganese compound of the composition $CaMnO_{2.5}$ having a perovskite-type structure.

4,388,295

METHOD AND COMPOSITION FOR DETERMINING HUMAN CHORIONIC SOMATOTROPIN

Francesco Cocola, Siena; Paolo Tarli, Monteriggioni, and Paolo Neri, Siena, all of Italy, assignors to Istituto Sieroterapico e Vaccinogeno Toscano "Sclavo" S.p.A., Siena, Italy

Continuation of Ser. No. 902,254, May 2, 1978, abandoned. This application May 30, 1980, Ser. No. 155,019
Claims priority, application Italy, May 12, 1977, 23473 A/77
Int. Cl.³ G01N *33/54, 33/56, 33/58*
U.S. Cl. 424—1 **8 Claims**

1. A method for quantitatively determining the presence of Human Chorionic Somatotropin (HCS) in a biological fluid comprising:

(a) forming a complex consisting essentially of an antagonist of HCS with the conjugation product of HCS and a tracer;

(b) introducing said complex into a sample of biological fluid suspected of containing HCS; and

(c) measuring the quantity of tracer which has been set free.

4,388,296

ENERGY-EMITTING LATEX-PARTICULATES

Hiram Hart, 3450 Wayne Ave., Bronx, N.Y. 10467

Continuation-in-part of Ser. No. 890,325, Mar. 27, 1980, Pat. No. 4,271,139. This application Sep. 29, 1980, Ser. No. 192,428
Int. Cl.³ A61K *43/00*; G01N *33/56, 33/60*
U.S. Cl. 424—1 **8 Claims**

1. Improved energy-emitting latex particulates for use in the non-destructive method of biological fluid assay wherein biological material being assayed links fluid suspensions of both a plurality of tritiated latex particulates and potentially scintillating latex particulates within activating range one to the other, each of said scintillating latex particulates emitting detectable light pulses upon activation responsive to bombardment of energy from each of said linked tritiated latex particulates within said range, said light pulses being quantitatively correlative to the concentration of said biological material in said fluid,

the improvement wherein said tritiated latex particulates, having a polystyrene base with benzotriazole, coated covalently with an antibody, and said scintillating latex particulates having a polystyrene base with 2,5-diphenylfuran and p-bis (α-methylstyrl) benzene, coated covalently with an antibody.

4,388,297

STABLE TOCICANT COMPOSITIONS OF CHLORPYRIFOS

David H. Naffziger, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 161,101, Jun. 19, 1980, abandoned. This application Apr. 27, 1981, Ser. No. 258,099
Int. Cl.³ A61K *31/74*; A01N *57/00, 57/26, 27/00*
U.S. Cl. 424—78 **8 Claims**

1. A stable insecticidally active composition which is in the form of a solution which is dispersible in water to form a stable emulsion and which comprises the following components: (A) from about 1 to about 50 percent by weight of total composition of chlorpyrifos, (B) from about 10 to about 80 percent by weight of total composition of a Castor Oil based nonionic surfactant containing from about 5 to about 55 moles of ethylene oxide chemically combined with each mole of Castor Oil and (C) from about 5 to about 50 percent by weight of total composition of an anionic surfactant.

4,388,298

PROPAGATION OF HEMORRHAGIC ENTERITIS VIRUS IN A TURKEY CELL LINE AND VACCINE PRODUCED

Keyvan Nazerian, East Lansing, and Aly M. Fadly, Holt, both of Mich., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jul. 14, 1982, Ser. No. 398,001
Int. Cl.³ A61K *39/12*; C12N *7/08*
U.S. Cl. 424—89 **6 Claims**

1. A method for the in vitro propagation of hemorrhagic enteritis virus (HEV) comprising:

a. inoculating with said virus a suspension of lymphoblastoid cells in a medium suitable for growth of said cells, wherein said cells have the characteristics of the MDTC-RP-19 cell line; and

b. culturing said inoculated cell suspension under conditions suitable for propagation of said virus.

5. A vaccine for use in the immunization of turkeys and other avian species against hemorrhagic enteritis comprising the supernatant fluid recovered from the in vitro propagation of hemorrhagic enteritis virus (HEV) on a culture of lymphoblastoid cells, wherein said cells have the characteristics of the MDTC-RP-19 cell line.

4,388,299

MODIFIED PASTEURELLA BACTERIA AND VACCINES PREPARED THEREFROM

Carrell J. Kucera, Lincoln, Nebr., assignor to Norden Laboratories, Inc., Lincoln, Nebr.

Division of Ser. No. 135,828, Mar. 31, 1980, Pat. No. 4,293,545. This application Apr. 17, 1981, Ser. No. 255,145
Int. Cl.³ A61K *39/102*
U.S. Cl. 424—92 **10 Claims**

1. A modified live *Pasteurella haemolytica* vaccine capable of inducing immunity in bovine, porcine and bovine animal species without serious side effects comprising a vaccinal amount of modified live *Pasteurella haemolytica* bacterial prepared by chemical modification of virulent *Pasteurella haemolytica* strain ATCC No. 31611 with an acridinium salt, and a carrier therefor.

8. A method of vaccinating bovine, porcine and ovine animal species comprising administering to said animals the modified live *Pasteurella haemolytica* vaccine of claim **1**.

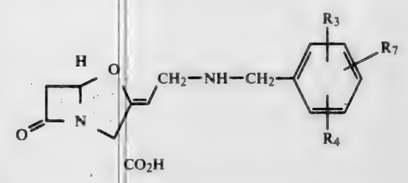
4,388,300

CLAVULANIC ACID DERIVATIVES, A PROCESS FOR THEIR PREPARATION AND THEIR USE IN PHARMACEUTICAL COMPOSITIONS

John B. Harbridge, Coulsdon, England, assignor to Beecham Group Limited, England

Division of Ser. No. 83,838, Oct. 11, 1979. This application Dec. 10, 1980, Ser. No. 214,776
Claims priority, application United Kingdom, Oct. 25, 1978, 41957/78
Int. Cl.³ A61K *35/00*
U.S. Cl. 424—114 **48 Claims**

25. A method of treating bacterial infections in humans and domestic mammals which comprises administering to a human or domestic mammal in need thereof a synergistically effective amount of a compound of the formula (II):



(II)

or a pharmaceutically acceptable addition salt thereof wherein R_3 is hydrogen, fluorine, chlorine, alkyl of 1–3 carbon atoms, alkoxyl of 1–3 carbon atoms or alkanoyloxy of 1–3 carbon atoms, R_4 is hydrogen, fluorine, chlorine, alkyl of 1–3 carbon atoms or alkoxy of 1–3 carbon atoms, and R_7 is nitro, cyano, amino or aminomethyl, and an antibacterially effective amount of a penicillin.

4,388,301

METHOD AND COMPOSITION FOR TREATING ACNE

Robert W. Klein, North Wales, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 270,928, Jun. 12, 1981, abandoned, which is a continuation-in-part of Ser. No. 139,401, Apr. 11, 1980, abandoned, which is a continuation of Ser. No. 967,485, Dec. 7, 1978, abandoned. This application Apr. 30, 1982, Ser. No. 373,442
Int. Cl.³ A61K *33/06, 33/08*
U.S. Cl. 424—154 **18 Claims**

1. A method for treating acne and oily skin in a patient in need thereof which comprises topically administering to said patient an effective amount of a composition comprising about 1–20% by weight of total composition of an inorganic polysulfide compound in a carrier comprising a sorbent powder, said polysulfide comprising a sulfurated lime solution an inorganic metallic di- or polysulfide compound of the formula M_2S_n containing unbranched $[S_n]^{2-}$ ions, where M designates a metal and n is any number from 2 to the maximum value of n, which polysulfide upon topical administration itself has an objectionable odor, said powder comprising about 10–70% by weight of at least one montmorillonite clay based on the weight of the total composition and about 2–30% by weight of attapulgite based on the weight of the total composition, said powder being present in an amount to deodorize said composition, to absorb and adsorb the skin oils and to release an effective amount of said polysulfide compound to treat said patient.

4,388,302

COACERVATED IODINE

Charles S. Ecanow, Skokie, Ill., assignor to NeoMed Corporation, Wilmette, Ill.

Filed Apr. 28, 1981, Ser. No. 258,050
Int. Cl.³ A01N *59/12*; A61K *33/22*
U.S. Cl. 424—150 **8 Claims**

1. A method of preparing coacervated iodine which comprises the steps of:

(a) preparing a two phase aqueous liquid system wherein one phase is a lipoidal non polar aqueous phase, herein also referred to as the coacervate phase, and the second phase is an equilibrium water phase;

(b) adding dissolved urea to the two phase aqueous liquid system of step (a) above;

(c) separating the coacervate phase from the equilibrium water phase;

(d) dissolving crystalline iodine in the coacervate phase which now contains a quantity of dissolved urea.

8. A composition of matter useful as a germicide and antiseptic, prepared according to the method of claim **1**.

4,388,303

METHOD TO REDUCE ANIMAL BROWSING DAMAGE TO PLANTS EMPLOYING SELENIUM COMPOUND

George G. Allan, Seattle, Wash., assignor to Board of Regents, University of Washington, Seattle, Wash.

Filed Apr. 6, 1981, Ser. No. 251,156
Int. Cl.³ A01N *43/64, 59/02*
U.S. Cl. 424—162 **14 Claims**

1. A method to reduce reforestation damage to evergreen seedlings caused by animal browsing comprising the step of applying a compound selected from the group consisting of Na_2SeO_3, $(NH_4)_2SeO_3$, and SeO_2 to the soil around a seedling to promote systemic absorption so that foliage of the seedling contains a level of selenium which repels animals but which is substantially nonphytotoxic to the seedling.

4,388,304

ANGIOTENSIN-II ANALOGUES WITH ANTAGONIZING EFFECTS, CONTAINING AN ESTER GROUP IN POSITION 8, AND A PROCESS FOR THE PREPARATION THEREOF

Olga Nyeki; Lajos Kisfaludy; Egon Karpati, and Laszlo Szporny, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

Filed Jan. 14, 1981, Ser. No. 225,048
Claims priority, application Hungary, Jan. 18, 1980, 101/80
Int. Cl.³ A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 **5 Claims**

1. A compound of the formula (I)

X—Arg—Val—Tyr—Ile—His—Pro—Ile—OA (I)

wherein

X is L-Sarcosyl or hydroxyacetyl and

A is a C_1–C_5 alkyl group, or a pharmaceutically acceptable acid addition salt or complex thereof.

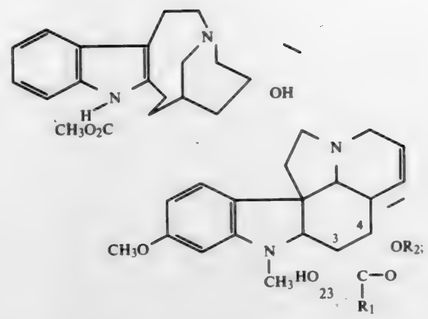
4,388,305

VINBLASTIN-23-OYL AMINO ACID DERIVATIVES FOR USE AS ANTITUMOR AGENTS

Andre B. L. Trouet, Winksele; Jean A. A. J. Hannart, Dion Valmont, and Kandukuri S. B. Rao, Rosieres, all of Belgium, assignors to Omnichem S.A., Belgium

Filed Jun. 3, 1981, Ser. No. 269,876
Claims priority, application Luxembourg, Jun. 10, 1980, 82514; Dec. 23, 1980, 83034
Int. Cl.³ A61K *31/475*; C07D *519/04*
U.S. Cl. 424—177 **17 Claims**

1. A vinblastine derivative of the formula



wherein R_1 is an ester of a α-aminoacid selected from the group consisting of glycine, alanine, valine, leucine, isoleucine, serine, threonine, aspartic acid, glutamic acid, aspargine, glutamine, arginine, lysine, cysteine, cystine, methionine, phenylalanine, tyrosine, trypthophan, proline, histidine, hydroxy-lysine, hydroxyproline, or of a peptide consisting of 1–6 identical or different such amino-acids, and the ester group, which may be straight or branched, being a carboalkoxy group having 2–9 carbon atoms, and R_2 is hydrogen or a C_2–C_9 alkanoyl group, and their pharmaceutically acceptable mineral or organic acid addition salts.

11. Pharmaceutical composition for use in human or veterinary medicine for treating leukemia, solid tumors treatable with vinblastine, vincristine or vindesine or Hodgkins disease containing a compound in accordance with claim **2** in an amount of about 2–900 mg in a unitary dose.

17. The method of treating leukemia, solid tumors treatable with vinblastine, vincristine or vindesine or Hodgkins disease which comprises administering to a cancer patient in therapeutically effective amount, a compound as defined in claim **2**.

4,388,306

PHARMACEUTICAL COMPOSITION COMPRISING MODIFIED POLYRIBOINOSINIC-POLYRIBOCYTIDYLIC ACID, FOR INDUCTION OF INTERFERON IN PRIMATES

A. Kirk Field, North Wales; Alfred A. Tytell, Lansdale, and George P. Lampson, Hatfield, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 156,295, Jun. 4, 1980, abandoned, which is a continuation-in-part of Ser. No. 76,004, Sep. 17, 1979, abandoned. This application Feb. 8, 1982, Ser. No. 346,673

Int. Cl.[3] **A61K** *37/02, 45/02*

U.S. Cl. 424—177 **6 Claims**

1. An interferon-inducing composition comprising a solution in a pharmaceutically acceptable aqueous carrier, of a complex of poly I:C/poly-L-lysine hydrobromide or hydrochloride, the concentration in solution of the poly I:C being from about 1 to about 2 mg/ml, the ratio by dry weight of the poly I:C to the poly-L-lysine hydrobromide or hydrochloride being about 1 to about 0.3, or a molar ratio of 2:1; the poly I having a $S_w20°$ of 11–20, and an $E_{1\%}$ at 248 nm of 240–280; the poly C having a $S_w20°$ of 5–7 and an $E_{1\%}$ at 248 nm of 175–185; and the poly-L-lysine having a molecular weight of from about 10,000 to about 70,000 daltons.

4,388,307

GALENICAL COMPOSITIONS

Thomas Cavanak, Oberwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 208,181, Nov. 19, 1980, abandoned, which is a continuation-in-part of Ser. No. 82,487, Oct. 9, 1979, abandoned, which is a continuation of Ser. No. 16,950, Mar. 2, 1979, abandoned. This application Feb. 9, 1982, Ser. No. 347,276

Claims priority, application Switzerland, Mar. 7, 1978, 2461/78; Mar. 14, 1978, 8634/78

Int. Cl.[3] **A61K** *37/00, 47/00*

U.S. Cl. 424—177 **15 Claims**

1. A liquid pharmaceutical composition comprising a pharmaceutically effective amount of a cyclosporin and a carrier comprising the following components:

(a) a trans-esterification product of a natural vegetable oil triglyceride and a polyalkylene polyol;

(b) a vegetable oil; and

(c) ethanol; whrein the ratio of component (a) to cyclosporin is 10:0.2 to 10 parts by weight; the amount of component (b) is 35 to 60% by weight based on the total weight of the composition, and the amount of component (c) is 1 to 20% by weight based on the total weight of the composition.

4,388,308

N^6-[(2-HYDROXYPROPYL)ARYL]ADENOSINES

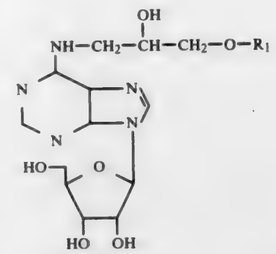
Robert W. Hamilton, Wilmette; Richard E. L. Henderson, Evanston, and Barnett S. Pitzele, Skokie, all of Ill., assignors to G.D. Searle & Co., Skokie, Ill.

Filed Jun. 9, 1980, Ser. No. 157,693

Int. Cl.[3] **A61K** *31/70;* **C07H** *19/16*

U.S. Cl. 424—180 **15 Claims**

1. An N^6-substituted adenosine represented by the formula:



wherein R_1 is selected from the group consisting of naphthyl, acetylphenyl, 2-propenylphenyl and 1, 2-biphenyl; or a pharmaceutically acceptable salt thereof.

4,388,309

PROCESS FOR SUPPRESSING GRAFT REJECTION IN ORGAN TRANSPLANTATION

Hans-Ake Fabricius, Breisach, and Eckart U. Köttgen, Freiburg, both of Fed. Rep. of Germany, assignors to Shanksville Corporation, N.V., Netherlands Antilles

Filed Jun. 10, 1981, Ser. No. 272,130

Int. Cl.[3] **A61K** *31/70*

U.S. Cl. 424—180 **8 Claims**

1. A method for inhibiting cell mediated rejection of organ transplants from a donor to a host comprising administering to the host an immunologically suppressive effective amount of from about 0.5 μg to about 10 mg per kilogram body weight per day of a desialylated ganglioside capable of blocking soluble mediators needed for T cell blast formation and proliferation.

4,388,310

6-AMIDO-2-S-OXIDES OF SUBSTITUTED 2-ORGANOTHIO-PEN-2-EM-3-CARBOXYLIC ACIDS

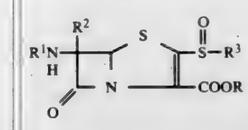
Burton G. Christensen, Cliffside Park; Frank P. DiNinno, Old Bridge; David A. Muthard, Rahway, and Ronald W. Ratcliffe, Matawan, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 1, 1982, Ser. No. 353,450

Int. Cl.[3] **A61K** *31/67, 31/43;* **C07D** *277/02, 499/44*

U.S. Cl. 424—200 **5 Claims**

1. A compound having the structural formula:



wherein R is H, a pharmaceutically acceptable salt, or ester moiety, or a removable protecting group; wherein: R^1=H or acyl; R^2 is hydrogen or methoxyl; R^3 is alkyl having 1–6 carbon atoms, phenylalkyl having 7–12 carbon atoms, or cycloalkyl having 3–6 carbon atoms.

4. An antibacterial pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim **1** and a pharmaceutically effective carrier therefor.

4,388,311

METHOD FOR THE INDUCTION OF MENSES

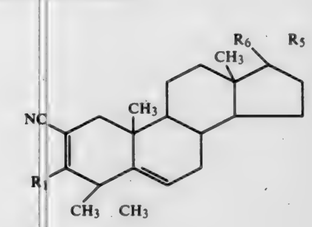
Leland J. Chinn, Morton Grove, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed May 6, 1982, Ser. No. 375,619

Int. Cl.[3] **A61K** *31/56*

U.S. Cl. 424—238 **6 Claims**

1. A method for the induction of menses or the termination of pregnancy which comprises administering an amount of a compound of the formula:



wherein R_1 is:

(a) hydroxy;

(b) R_2COO—;

(c) HOOC—R_3—COO—; or

(d) $R_4C(=O)$—R_3—COO—;

wherein R_2 is:

(a) alkyl of from 1 to 10 carbon atoms inclusive;

(b) oxacycloalkyl group containing from 4 to 7 carbon atoms and one ring oxygen atom; or

(c) cycloalkyl of from 5 to 10 carbon atoms, inclusive,

(d) ring-unsaturated oxacycloalkyl of from 4 to 7 carbon atoms and one ring oxygen atom; or

(e) ring-unsaturated cycloalkyl of from 5 to 10 carbon atoms, inclusive;

wherein R_3 is:

(a) alkylene of from 1 to 10 carbon atoms, inclusive;

(b) cycloalkylene of from 5 to 10 carbon atoms, inclusive;

wherein R_4 is:

(a) alkyl of from 1 to 6 carbon atoms, inclusive;

wherein R_5 is:

(a) hydrogen; or

(b) alkyl of from 1 to 6 carbon atoms, inclusive;

wherein R_6 is:

(a) hydroxy.

4,388,312

QUINONE DERIVATIVES, THEIR PRODUCTION AND USE

Shinji Terao, Toyonaka; Mitsuru Shiraishi, and Kaneyoshi Kato, both of Suita, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

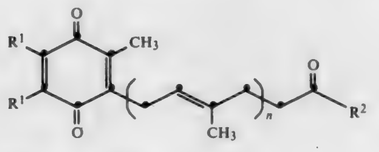
Filed Aug. 26, 1980, Ser. No. 182,401

Claims priority, application Japan, Sep. 12, 1979, 54/117771

Int. Cl.[3] **A61K** *31/495;* **C07D** *295/18*

U.S. Cl. 424—244 **8 Claims**

1. A compound of the formula:



(Ia)

wherein n is an integer of 1 to 10,

R^1 is methyl or methoxy, or two of R^1 combine to represent —CH=CH—CH=CH—, and

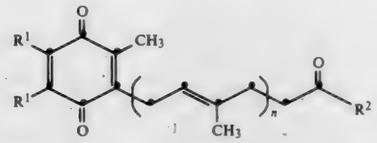
R^2 is a cyclic amino group selected from the class consisting of azetidinyl, pyrrolidinyl, piperazinyl, piperidino and morpholino,

said cyclic amino groups being unsubstituted or substituted by C_{1-4} alkyl, hydroxyl, C_{1-4} alkoxy, C_{1-4} alkylthio, carboxyl, one of mono- to decaprenyl, benzyl, 3,4,5-trimethoxybenzyl or 3,4-methylenedioxybenzyl,

or its hydroquinone form,

or a pharmaceutically acceptable salt thereof.

8. A method for the treatment of allergosis in a mammal which comprises administering to said mammal an effective amount of a compound of the formula:



wherein n is an integer of 1 to 10,

R^1 is methyl or methoxy, or two of R^1 combine to represent —CH=CH—CH=CH—, and

R^2 is a cyclic amino group selected from the class consisting of azetidinyl, pyrrolidinyl, piperazinyl, piperidino and morpholino,

said cyclic amino groups being unsubstituted or substituted by C_{1-4} alkyl, hydroxyl, C_{1-4} alkoxy, C_{1-4} alkylthio, carboxyl, one of mono- to decaprenyl, benzyl, 3,4,5-trimethoxybenzyl or 3,4-methylenedioxybenzyl,

or its hydroquinone form,

or a pharmaceutically acceptable salt thereof.

4,388,313

NOVEL 3-HYDROXY-1,4-BENZODIAZEPINE-2-ONES AND PROCESS FOR THE PREPARATION THEREOF

Ludwig H. Schlager, Vienna, Austria, assignor to Gerot-Pharmazeutika Gesellschaft m.b.H., Vienna, Austria

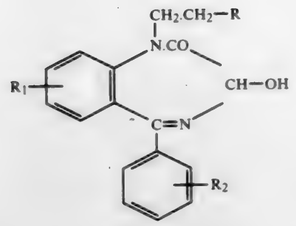
Continuation of Ser. No. 104,998, Dec. 18, 1979, abandoned. This application May 11, 1981, Ser. No. 262,676

Claims priority, application Austria, Dec. 18, 1978, 9031/78

Int. Cl.[3] **A61K** *31/55;* **C07D** *243/24*

U.S. Cl. 424—244 **13 Claims**

1. A 3-Hydroxy-1,4-benzodiazepine-2-one of the formula



(I)

in which R is CN, R_1 is hydrogen, halogen, trifluoromethyl or nitro and R_2 is hydrogen or halogen.

13. A pharmaceutically active sedative composition comprising a therapeutically effective amount of 1-(cyanoethyl)-7-nitro-3-hydroxy-5-phenyl-1,3-dihydro-2H-1,4-benzodiazepine-2-one together with a material selected from the group consisting of a pharmaceutically acceptable carrier or diluent.

4,388,314

HETEROMONOCYCLIC AND HETEROBICYCLIC DERIVATIVES OF UNSATURATED 7-ACYLAMIDO-3-CEPHEM-4-CARBOXYLIC ACID

Giuliano Nannini; Ettore Perrone, both of Bresso; Dino Severino, Vedasco di Stresa; Giuseppe Meinardi, Milan; Gisella Monti, Milan; Alberta Bianchi, Milan; Angelo Forgione, Milan, and Carlo Confalonieri, Cusano Milanino, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Continuation of Ser. No. 134,788, Mar. 28, 1980, abandoned, which is a continuation of Ser. No. 47,893, Jun. 12, 1979, abandoned, which is a division of Ser. No. 868,665, Jan. 11, 1978, Pat. No. 4,172,892. This application Aug. 21, 1981, Ser. No. 295,074

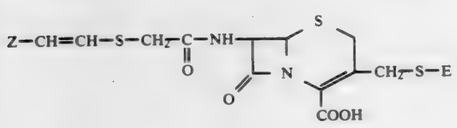
Claims priority, application Italy, Feb. 11, 1977, 20173 A/77

The portion of the term of this patent subsequent to May 15, 1996, has been disclaimed.

Int. Cl.³ C07D *501/36;* **A61K** *31/545*

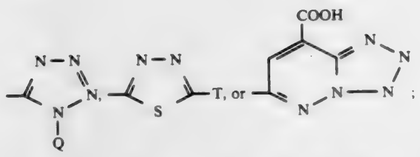
U.S. Cl. 424—246 **9 Claims**

1. A compound of the formula

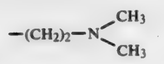


wherein

E is

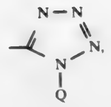


Q is $-C_2H_5$, $-CH_2-CH=CH_2$, $-CH=CH-CH_3$, or



T is amino or $-CH_2COOH$, and

Z is cyano, or, when E is



Z is cyano or carbamoyl, and the pharmaceutically or veterinarily acceptable salts thereof.

4,388,315

CEPHALOSPORINS

Bernd Wetzel; Eberhard Woitun; Roland Maier, all of Biberach an der Riss; Wolfgang Reuter, Laupertshausen; Uwe Lechner, Ummendorf, and Hanns Goeth, Biberach an der Riss, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

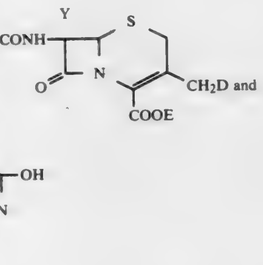
Division of Ser. No. 151,694, May 20, 1980, Pat. No. 4,316,898. This application Sep. 30, 1981, Ser. No. 307,117

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1979, 2924948

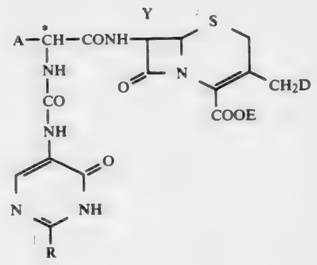
Int. Cl.³ A61K *31/545;* **C07D** *501/36*

U.S. Cl. 424—246 **24 Claims**

1. A compound of the tautomeric formulas



and



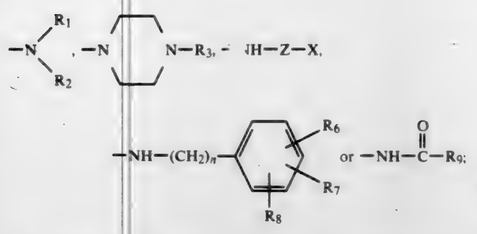
wherein

A is phenyl, 4-hydroxyphenyl, cyclohexyl, cyclohexene-1-yl, cyclohexa-1,4-diene-1-yl, 2-thienyl, 3-thienyl, 2-furyl, 3-furyl or 3,4-disubstituted phenyl, where the substituents are each chlorine, hydroxyl or methoxy;

Y is hydrogen or methoxy;

D is S-Het, where Het is 1-methyl-tetrazol-5-yl, tetrazol-5-yl, 3-methyl-1,2,4-thiadiazol-5-yl, 1,2,4-thiadiazol-5-yl, 1,3,4-thiadiazol-5-yl, 2-methyl-1,3,4-thiadiazol-5-yl, 2-methylamino-1,3,4-thiadiazol-5-yl, 2-dimethylamino-1,3,4-thiadiazol-5-yl, 2-formylamino-1,3,4-thiadiazol-5-yl, 2-acetylamino-1,3,4-thiadiazol-5-yl, 2-methyl-1,3,4-oxadiazol-5-yl, 1,2,3-triazol-4-yl or 1,2,4-triazol-3-yl;

R is hydrogen, methyl, cyclopropyl, hydroxyl, methoxy, ethoxy, mercapto, morpholino, thiomorpholino, thiomorpholino-S-oxide, thiomorpholino-S,S-dioxide,

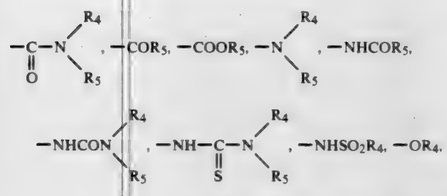


R_1 and R_2 are each hydrogen; straight or branched aliphatic hydrocarbyl of 1 to 6 carbon atoms, optionally containing one to two duble bonds or a triple bond; cycloalkyl of 3 to 6 carbon atoms; or cycloalkyl-alkyl of 3 to 6 carbon atoms in the cycloalkyl moiety and 1 to 2 carbon atoms in the alkyl moiety;

R_3 is formyl, acetyl or ethoxycarbonyl;

Z is alkylene of 1 to 4 carbon atoms or cycloalkylene of 3 to 6 carbon atoms;

X is cyano, hydroxyl, mercapto, amino, aminocarbonyl, aminosulfonyl, aminocarbonylamino,



R_4 is alkyl of 1 to 3 carbon atoms;

R_5 is hydrogen or alkyl of 1 to 3 carbon atoms;

n is 0 or 1;

R_6, R_7 and R_8 are each hydrogen, halogen, amino, alkylamino, dialkylamino, hydroxy, alkoxy, formylamino, acetylamino, aminocarbonylamino, alkylaminocarbonylamino, dialkylaminocarbonylamino, nitro, alkylsulfonylamino, formyl, alkylcarbonyl, alkylcarbonyloxy, alkoxycarbonyl, alkoyxcarbonyloxy, carboxyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, aminocarboxyl, alkylaminocarboxyl, dialkylaminocarboxyl, alkoxycarbonylamino, cyano, mercapto, alkylmercapto, alkylsulfinyl, alkylsulfonyl, aminosulfonyl, alkylaminosulfonyl, dialkylaminosulfonyl, hydroxysulfonyl, or alkyl, where each alkyl moiety in these variants may contain 1 to 3 carbon atoms;

R_9 is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 3 carbon atoms, amino, methylamino or dimethylamino; and

E is hydrogen or a protective group which is easily removable in vitro or in vivo;

or, when E is hydrogen, a non-toxic, pharmacologically acceptable salt thereof formed with an inorganic or organic base.

4,388,316

AMINO-SUBSTITUTED OXAZOLE, OXADIAZOLE AND ISOXAZOLE-SUBSTITUTED CEPHALOSPORINS

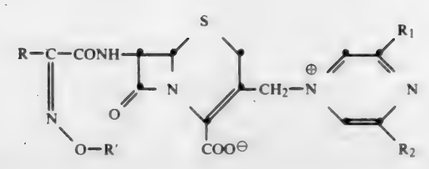
William H. W. Lunn, and William J. Wheeler, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 2, 1981, Ser. No. 307,989

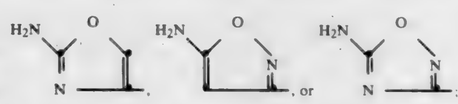
Int. Cl.³ A61K *31/545;* **C07D** *501/46*

U.S. Cl. 424—246 **14 Claims**

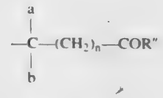
1. A compound of the formula

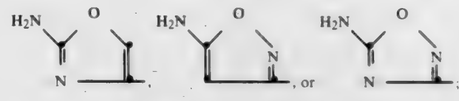


wherein R is an amino-substituted heterocyclic of the formula

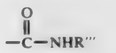


R′ is hydrogen, C_1–C_4 alkyl, or a carboxy-substituted alkyl or carboxy-substituted cycloalkyl group of the formula





wherein a and b when taken separately are independently hydrogen or C_1–C_3 alkyl, and when taken together with the carbon atom to which they are attached form a C_3–C_7 carbocyclic ring; N is 0–3; R″ is hydroxy, C_1–C_4 alkoxy, amino; or R′ is a carbamoyl group of the formula



wherein R‴ is C_1–C_4 alkyl, phenyl, or C_1–C_3 alkyl substituted by phenyl; R_1 is hydrogen, C_1–C_4 alkyl, chloro, amino, C_1–C_4 alkylamino, di(C_1–C_4 alkyl)amino, C_2–C_4 hydroxyalkylamino, or di(C_2–C_4 hydroxyalkyl)amino; R_2 is hydrogen or C_1–C_4 alkyl; and the pharmaceutically acceptable non-toxic salts thereof.

11. The pharmaceutical composition comprising a therapeutically effective amount of a compound of claim **1** and a pharmaceutically acceptable diluent.

4,388,317

PYRIMIDONES HAVING HISTAMINE H_2-ANTAGONIST ACTIVITY

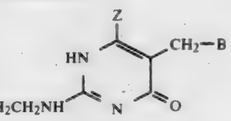
Thomas H. Brown, Tewin, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Mar. 27, 1981, Ser. No. 248,096

Int. Cl.³ A61K *31/505;* **C07D** *239/24*

U.S. Cl. 424—248.51 **30 Claims**

1. A compound of formula (I):



(I)

where

W is a 2-furanyl or 2-thienyl group optionally substituted in the 5-position with a group $R^1R^2N(CH_2)_m$—; a phenyl group substituted in the 3- or 4-position with a group $R^1R^2N(CH_2)_m$—; a 4-imidazolyl group optionally substi-

tuted in the 5-position with methyl or bromine; a 2-pyridyl group optionally substituted in the 3-position with C_{1-4} alkyl, C_{1-4} alkoxy, halogen, amino or hydroxy; a 2-thiazolyl group or a 2-guanidino-4-thiazolyl group;

X is methylene or sulphur

and Y is methylene or, provided X is methylene and W is a substituted phenyl group, oxygen;

Z is hydrogen or C_{1-4} alkyl;

and B is a 2-furanyl or 2-thienyl group substituted in the 5-position by a group $R^1R^2N(CH_2)_m$—; a phenyl group substituted in the 3- or 4-position by a group $R^1R^2N(CH_2)_m$— or a 3-pyridyl group substituted in position 5 or 6 or a 4-pyridyl group substituted in position 2 by a group $R^1R^2N(CH_2)_m$;

R^1 and R^2 are C_{1-4} alkyl or together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino or morpholino group;

m is 1 to 4;

or a pharmaceutically acceptable acid addition salt thereof.

4,388,318

METHOD OF TREATING ENDOTOXIN SHOCK WITH A PYRIMIDO-PYRIMIDINE DERIVATIVE

Shozo Koyama; John W. Manning, Jr., both of Atlanta, Ga.; William S. Ammons, Oklahoma City, Okla., and Hector L. Santiesteban, Atlanta, Ga., assignors to Boehringer Ingelheim International GmbH, Ingelheim, Fed. Rep. of Germany

Filed Sep. 29, 1981, Ser. No. 306,773

Int. Cl.³ A61K *31/505*

U.S. Cl. 424—251 **1 Claim**

1. The method of treating endotoxin shock in a warm-blooded animal in need thereof, which comprises parenterally administering to said animal an effective amount for treating endotoxin shock of 2,2'-[(4,8-bis(diethylamino)-pyrimido[5,4-d]-pyrimidine-2,6-diyl)di-(2-methoxyethyl)imino]diethanol or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4,388,319

N-HETEROCYCLIC ALKYL-N'-THIADIAZOLYL, THIAZOLYL AND ISOTHIAZOLYL ALKYLTHIOUREAS, UREAS AND GUANIDINES

Graham J. Durant, and Charon R. Ganellin, both of Welwyn Garden City, England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

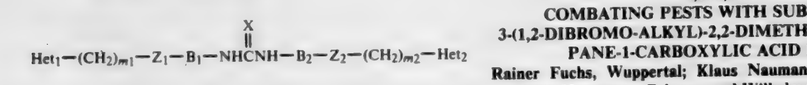
Division of Ser. No. 106,080, Dec. 20, 1979, Pat. No. 4,271,169, which is a division of Ser. No. 5,052, Jan. 22, 1979, Pat. No. 4,215,125, which is a division of Ser. No. 770,538, Feb. 22, 1977, Pat. No. 4,152,443, which is a division of Ser. No. 640,525, Dec. 15, 1975, Pat. No. 4,025,527, which is a continuation-in-part of Ser. No. 481,716, Jun. 21, 1974, abandoned. This application Dec. 11, 1980, Ser. No. 215,293

Claims priority, application United Kingdom, Jul. 13, 1973, 33428/73; Nov. 12, 1975, 46732/75

Int. Cl.³ A61K *31/425, 31/415, 31/42, 31/41;* **C07D** *403/12, 413/12, 417/12*

U.S. Cl. 424—270 **13 Claims**

1. A compound of the formula:



$$Het_1-(CH_2)_{m1}-Z_1-B_1-NHCNH-B_2-Z_2-(CH_2)_{m2}-Het_2$$

wherein one of Het_1 and Het_2 is thiazole, isothiazole or 1,3,4-thiadiazole and the other is imidazole, isothiazole, isoxazole, triazole or 1,3,4-thiadiazole, or when one of Het_1 and Het_2 is isothiazole or 1,3,4-thiadiazole, the other may be oxazole, said Het_1 and Het_2 being optionally substituted by lower alkyl, hydroxyl, halogen or amino; Z_1 and Z_2 are sulphur or a methylene group; B_1 is $(CH_2)_{n1}$ and B_2 is $(CH_2)_{n2}$; m_1 and m_2 are 0, 1 or 2 and n_1 and n_2 are 2 or 3, provided that the sum of m_1 and n_1 and the sum of m_2 and n_2 are from 2 to 4; and X is sulphur, oxygen or NY wherein Y is hydrogen, cyano, $CONH_2$ or SO_2R_1 wherein R_1 is lower alkyl or phenyl, provided that when X is NH, at least one of Z_1 or Z_2 is sulphur, and that when X is NH the sum of m_1 and n_1 is 3 or 4 if Het_1 is imidazole and the sum of m_2 and n_2 is 3 or 4 if Het_2 is imidazole, or a pharmaceutically acceptable acid addition salt thereof.

13. A method of inhibiting H-2 histamine receptors which comprises administering to an animal in an effective amount to inhibit said receptors a compound of claim **1**.

4,388,320

3-AMINOPROPOXYARYL DERIVATIVE IN THE TREATMENT OF TREMOR

Erwin Ringwald, Riehen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Mar. 3, 1982, Ser. No. 354,454

Claims priority, application United Kingdom, Mar. 9, 1981, 8107305; Jan. 13, 1982, 8200907

Int. Cl.³ A61Y *31/40*

U.S. Cl. 424—274 **8 Claims**

1. A method of treating tremor in animals comprising administering 4-(2-benzoyloxy-3-tert-butylaminopropoxy)-2-methylindole in free base form or in pharmaceutically acceptable acid addition salt form to an animal in need of such treatment.

4,388,321

METHOD FOR INHIBITING GROWTH OF FOOD POISONING ORGANISMS

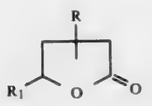
Michael C. Robach, St. Peters, Mo., and Quentin E. Thompson, Belleville, Ill., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 6, 1981, Ser. No. 290,446

Int. Cl.³ A01N *43/02;* **A23L** *3/34*

U.S. Cl. 424—279 **6 Claims**

1. Method of inhibiting growth of yeasts in a food or feed product which comprises contacting said yeast with an effective growth inhibiting amount of a furanone represented by the formula



wherein:

R represents hydrogen or alkyl having up to 10 carbon atoms; and

R_1 represents an ethenyl group.

4,388,322

COMBATING PESTS WITH SUBSTITUTED 3-(1,2-DIBROMO-ALKYL)-2,2-DIMETHYL-CYCLOPROPANE-1-CARBOXYLIC ACID ESTERS

Rainer Fuchs, Wuppertal; Klaus Naumann, Leverkusen; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

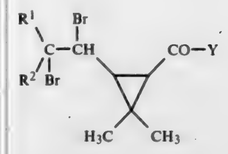
Filed Jan. 19, 1981, Ser. No. 226,290

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1980, 3004092

Int. Cl.³ A01N *37/34;* **C07C** *121/75*

U.S. Cl. 424—304 **9 Claims**

1. A substituted 3-(1,2-dibromo-alkyl)-2,2-dimethyl-cyclopropane-1-carboxylic acid ester of the formula

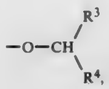


in which

R^1 is phenyl optionally substituted by at least one of halogen, optionally halogen-substituted C_1C_4 alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio or C_1–C_2-alkylenedioxy,

R^2 is hydrogen, halogen or optionally halogen-substituted C_1–C_4-alkyl,

Y is



R^3 is hydrogen, cyano or optionally substituted alkyl, alkenyl or alkynyl, and

R^4 is phenyl which is substituted by at least one of halogen and phenoxy which is itself optionally substituted by halogen, alkyl or halogenoalkyl, with the proviso that the phenyl radical contains at least one halogen substituent if R^1 represents methyl or halogen.

4,388,323

ACARICIDE COMPOUNDS

Pietro Massardo; Angelo Longoni, and Paolo Piccardi, all of Milan, Italy, assignors to Montedison S.p.A., Milan, Italy

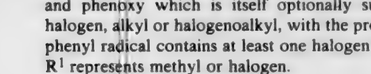
Filed Mar. 17, 1981, Ser. No. 244,591

Claims priority, application Italy, Mar. 28, 1980, 21003 A/80; Nov. 25, 1980, 26205 A/80; Dec. 3, 1980, 26401 A/80

Int. Cl.³ C07C *69/74, 43/235;* **A01N** *53/00, 31/14*

U.S. Cl. 424—305 **22 Claims**

1. A compound of general formula:



(I)

$$R-O-(\bigcirc)-O-CH_2-CH_2-CH_2-C\equiv C-CH_2-O-R^1$$

wherein

R represents an alkyl with from 8 to 11 carbon atoms;

R^1 represents a hydrogen atom, an alkyl with from 1 to 4 carbon atoms or an alkenyl with from 2 to 4 carbon atoms or

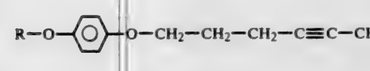


$$-C(=O)-R^2$$

wherein

R^2 represents an alkyl with from 1 to 4 carbon atoms, a cycloalkyl with from 3 to 6 carbon atoms or phenyl.

12. A method for controlling and preventing mite infestations on useful plants consisting in distributing on the plants an effective amount of a compound of general formula:



(I)

$$R-O-(\bigcirc)-O-CH_2-CH_2-CH_2-C\equiv C-CH_2-O-R^1$$

wherein

R represents an alkyl with from 8 to 11 carbon atoms;

R^1 represents a hydrogen atom, an alkyl with from 1 to 4 carbon atoms or an alkenyl with from 2 to 4 carbon atoms or



$$-C(=O)-R^2$$

wherein

R^2 represents an alkyl with from 1 to 4 carbon atoms, a cycloalkyl with from 3 to 6 carbon atoms or phenyl

as such or in the form of a suitable composition.

4,388,324

PHARMACEUTICAL AND DIETARY COMPOSITION

David F. Horrobin, Montreal, Canada, assignor to Efamol Limited, London, England

Filed May 15, 1980, Ser. No. 150,402

Claims priority, application United Kingdom, May 18, 1979, 7917456

Int. Cl.³ A01N *37/02, 37/00*

U.S. Cl. 424—312 **9 Claims**

1. A pharmaceutical composition for treating alcoholism or moderating the effect of taking alcohol consisting essentially of γ-linolenic acid and/or dihomo-γ-linolenic acid, optionally in association with linoleic acid or other fat acids, said acids being present as such or as physiologically functional ester or other derivative thereof, in combination with ascorbic acid.

4,388,325

L-ARGININE D,L-PYROGLUTAMATE AS A PHARMACEUTICAL AGENT HAVING AN ACTIVITY AT THE NEURO-ENDOCRINAL LEVEL

Giovanni Orzalesi, Florence, Italy, assignor to Societa' Italo-Britannica L. Manetti-H. Roberts & C., Florence, Italy

Filed Jun. 22, 1981, Ser. No. 275,774

Claims priority, application Italy, Jun. 30, 1980, 49111 A/80

Int. Cl.³ A01N *37/12;* **A61K** *31/195*

U.S. Cl. 424—319 **3 Claims**

1. A method for increasing on a neuro-endocrinal basis sexual activity in male mammals, said sexual activity of which has decreased or become deficient due to specific dopaminergic hypotonicity, comprising administering to said mammals an amount of L-arginine D,L-pyroglutamate effective to increase said sexual activity.

4,388,326

PHENYL HYDROXYPROPYL SULFOXIDE ENZYME INHIBITORS

Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

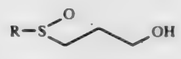
Continuation-in-part of Ser. No. 66,603, Aug. 15, 1979, abandoned. This application May 7, 1980, Ser. No. 147,657

Int. Cl.³ A61K *31/095;* **C07C** *147/14*

U.S. Cl. 424—335 **4 Claims**

1. The compound 3-p-nitrophenylsulfinyl-1-propanol or a pharmaceutically acceptable salt thereof.

3. A method of inhibiting alcohol dehydrogenase in a patient in need of such treatment which comprises the administration of an enzyme inhibitory amount of a compound of structural formula:



$$R-S(=O)-CH_2-CH_2-OH$$

or a pharmaceutically acceptable salt thereof wherein R is

(a) phenyl, either unsubstituted or substituted with

(1) nitro,

(2) cyano,

(3) C_{1-3} alkylsulfonyl,

(4) C_{1-3} alkoxycarbonyl,
(5) o-C_{1-3} alkyl,
(6) o,o-di(C_{1-3} alkyl), or
(7) di(trifluoromethyl).

4,388,327

METHOD OF INCREASING MILK PRODUCTION OF DAIRY CATTLE

Earl W. Cummins, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Oct. 30, 1981, Ser. No. 316,935
Int. Cl.³ A23L *1/30*
U.S. Cl. 426—2 **3 Claims**

1. A method of improving the milk production of dairy cows which comprises feeding to said cows as part of their diet a feed supplement containing an amount effective to improve milk production of γ-methylmercapto-α-hydroxybutyric acid and its oligomers, which oligomers are about 10 to 75% of the total equivalent free γ-methylmercapto-α-hydroxybutyric acid in said amount of the acid and its oligomers.

4,388,328

SORBITOL CONTAINING MIXTURE ENCAPSULATED FLAVOR

Michael Glass, Flushing, N.Y., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 15, 1981, Ser. No. 311,572
Int. Cl.³ A23L *1/22*
U.S. Cl. 426—3 **15 Claims**

1. A method for preparing a flavor composite comprising:
a. preparing a eutectic mixture comprising about 5 to about 6% mannitol; about 0.15 to about 0.16% saccharin, and the remainder sorbitol, said percents being by weight of the final composite;
b. heating said mixture to a temperature of about 200° C.;
c. cooling said mixture to a temperature below 70° C.;
d. adding at least one flavor to said mixture under agitation to uniformly disperse said flavor therein;
e. adding to said mixture under agitation, a quantity of seed particles containing a quantity of sorbitol;
f. permitting said mixture to solidify; and
g. recovering said flavor composite.

4,388,329

PROCESS FOR THE PRODUCTION OF A PASTEURIZED CHEESE IN POWDER FORM

Marcel Buhler, Tolochenaz, Switzerland, and Mats Olofsson, Astorp, Sweden, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Jul. 7, 1981, Ser. No. 281,063
Claims priority, application Switzerland, Jul. 11, 1980, 5333/80
Int. Cl.³ A23C *9/16, 19/00*
U.S. Cl. 426—40 **10 Claims**

1. A process for the production of a pasteurised cheese in powder form which, after reconstitution, has the properties of Mozzarella, and which process does not cause the coagulation of proteins, which comprises
preparing a colloidal lactic starting solution having protein/-lactose and protein/calcium ratios at least about twice as high as those of natural milk and a pH-value in the range from 5.0 to 5.5,
adjusting the solution thus prepared to a pH-value of from 6.3 to 6.4 and heating the pH adjusted solution to a temperature sufficient to pasteurize the solution but below that which would cause the coagulation of proteins it,
returning the pH of the pasteurized solution to a value of from 5.0 to 5.5 and
drying the solution to give the cheese in powder form.

4,388,330

PROCESS FOR THE PREPARATION OF CITRUS JUICE CONTAINING BEVERAGES WITH IMPROVED CLOUD STABILITY

Hendrik J. Wobben, and Hian-Bie Tan, both of Naarden, Netherlands, assignors to Naarden International N.V., Naarden-Bussum, Netherlands

Filed Nov. 26, 1980, Ser. No. 210,561
Claims priority, application Netherlands, Dec. 3, 1979, 7908722
Int. Cl.³ A23L *2/02*
U.S. Cl. 426—51 **12 Claims**

1. A process for preparing citrus juice products for use in soft drinks and other beverages, which comprises the step of treating juice selected from the group consisting of pasteurized concentrated citrus juice and pasteurized single strength citrus juice with one or more protease enzymes for a time and under conditions sufficient to improve cloud stability when the juice is subsequently employed in soft drinks and other citrus juice containing beverages.

4,388,331

COLLAGEN SAUSAGE CASING

Albert T. Miller, Bridgewater, N.J., assignor to Devro, Inc., Somerville, N.J.

Filed Jan. 23, 1981, Ser. No. 228,005
Int. Cl.³ A23J *3/00;* **C12N** *11/02*
U.S. Cl. 426—63 **4 Claims**

1. A method of preparing an edible collagen film comprising:
(a) preparing an extrudable collagen gel containing from 2% to 12% by weight of collagen;
(b) adding to the collagen gel, in an amount of from 0.001 to 0.5 percent, based on the dry weight of the collagen in the gel, a proteolytic enzyme selected from the group consisting of papain, bromelain, ficin, fungal protease, bacterial protease, trypsin, chymotrypsin, and pepsin;
(c) extruding the enzyme-containing collagen gel before sufficient time has elapsed to allow significant hydrolysis of the collagen to form a cohered collagen casing film, thereby immobilizing the proteolytic enzyme; and
(d) reducing the water content of the casing to between 10% and 20%, based on the weight of the casing to reduce the water activity of the casing and render the enzyme non-functioning.

4,388,332

HEAT TREATMENT TEMPERATURE INDICATING FOOD PACKAGE AND PROCESS FOR PROVIDING SAME

Walter W. Egee, Wallingford, Pa., and David A. Rickansrud, Voorhees, N.J., assignors to Campbell Soup Company, Camden, N.J.

Filed Sep. 15, 1981, Ser. No. 302,458
Int. Cl.³ G01K *1/14, 11/12;* **B65B** *25/00, 55/14*
U.S. Cl. 426—88 **7 Claims**

1. The method of treating and packaging ground meat, comprising:
placing entirely within a predetermined ball of said ground meat a wireless temperature-recorder device which changes its appearance permanently when heated to at least the temperature required to inactivate the virus of foot and mouth disease;
partially filling the bottom of a food container with ground meat similar to the meat of said predetermined ground meat ball, to a level just below the position of the thermal cold-spot of said container when said container is filled to a predetermined level with said ground meat;
securing said selected ground meat ball to and adjacent a thin, plastic, apertured disc-like holder which has edges adapted to fit inside and against the inner side walls of said container and which is adapted to lie flat on the top of said ground meat partially filling said container, in a predetermined position with said predetermined ground meat ball and said temperature recorder secured thereto adjacent one side thereof and substantially at said cold-spot, said securing of said selected ground meat ball comprising enveloping said selected ground meat ball in a thin flexible material and securing said material to said holder;
placing said holder, with said predetermined ground meat ball secured thereto, in said container transversely of said container and in said predetermined position;
thereafter filling said container with additional ground meat to said predetermined level and sealing it;
and
heating said container and contents, before or after said sealing, to at least said temperature sufficient to inactivate the virus of foot and mouth disease, whereby said temperature-recording device provides a permanent record of said heating to said temperature.

4. A food-package assembly adapted to provide indication that it has been heated sufficiently to inactivate the virus of foot and mouth disease which may be present therein, comprising a moisture proof container, a mass of ground meat filling



said container to a predetermined level, a temperature-recording device within said mass of meat, and an apertured holder for locating said temperature-recording device within said mass of meat, characterized in that:
said holder is of thin disc-like form and has a periphery fitting closely within and against the interior of the side walls of said container when said holder is positioned transversely of said container;
said temperature-recorder device being wireless and positioned entirely within a predetermined ball of said ground meat and said predetermined ball being secured to said holder adjacent one side thereof, said holder being positioned transversely of said container within said mass of ground meat to position said temperature-recording device substantially at the cold-spot of said mass, said ball of ground meat being enveloped in a thin flexible material and said material being secured to said holder; and
said temperature-recording device being of a type which changes its appearance permanently when heated to a temperature at least as high as that required to inactivate the virus of foot and mouth disease.

4,388,333

SIMULATED ADIPOSE TISSUE

Terrence J. Maurice, Colborne; Edward D. Murray, Winnipeg, and Jennifer M. Agnes, Cobourg, all of Canada, assignors to General Foods Inc., Don Mills, Canada

Filed Oct. 26, 1979, Ser. No. 88,493
Claims priority, application Canada, Oct. 10, 1978, 313038
Int. Cl.³ A23D *5/00, 5/02;* **A23J** *3/00*
U.S. Cl. 426—104 **15 Claims**

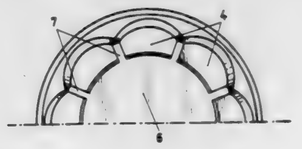
1. A process for the production of a simulated adipose tissue consisting essentially of a heat-coagulated matrix of protein with entrapped lipid material and having protein fibres dispersed therethrough, said process comprising:
dissolving and/or dispersing a mixture of proteinaceous emulsifying materials in water, said mixture of proteinaceous emulsifying materials comprising egg white, gelatin and at least one emulsifying protein micellar mass;
emulsifying an edible lipid material with the proteinaceous dispersion to provide a stable oil-in-water emulsion;
incorporating protein fibres in dispersed form in the emulsion; and
heat coagulating said emulsion to a fat-like solid material,
said lipid material, water, proteinaceous emulsifying materials and protein fibres being used in the following percentages by weight:
lipid material—about 65 to about 80
Water—about 15 to about 25
Proteinaceous emulsifying material—about 2.5 to about 7.0
Protein micellar mass—about 1 to about 4.0
Egg white—about to about 2.5
gelatin—about 0.1 to about 1.0
Protein fibres—about 15 to about 45.

4,388,334

MOULD FOR PACKAGING DESSERTS

Rene Deveaux, Le Raincy, France, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Division of Ser. No. 158,783, Jun. 12, 1980, abandoned. This application Nov. 27, 1981, Ser. No. 325,219
Claims priority, application France, Jun. 22, 1979, 79 16059
Int. Cl.³ A23G *1/20, 9/00;* **B65D** *85/72*
U.S. Cl. 426—112 **7 Claims**



1. A packaged dessert comprising:
(a) a mould having a wall structure including a bottom wall and a side wall extending from said bottom wall at the periphery thereof, said bottom wall and said side wall cooperatively defining a cup-like first space, said wall structure defining an opening at the mouth of said cup-like first space remote from said bottom wall, said bottom wall having both a central depression open to said first space remote from said side wall and a plurality of circumferentially spaced elongated grooves or depressions open to said first space extending outwardly from said central depression towards said sidewall and in fluid communication with said central depression, said depression and said grooves cooperatively defining a second space communicating with said first space;
(b) a congealable product solid at the storage temperature of the dessert disposed in said first space; and
(c) a syrup disposed in said second space; the portions of the bottom wall between said circumferentially spaced elongated grooves or depressions supporting said congealable product during filling and storage to prevent mixing of said congealable product and said syrup; said circumferentially spaced elongated grooves or depressions channeling said syrup to the sides of said congealable product during removal of the dessert from the mould.

4,388,335

MICROWAVE BAKING WITH METAL PANS

Robert F. Schiffmann, New York; Alfred H. Mirman, Pomona; Richard J. Grillo, Peekskill, and Robert W. Batey, Port Chester, all of N.Y., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 50,397, Jun. 20, 1979, abandoned, which is a continuation of Ser. No. 700,945, Jun. 29, 1976, abandoned. This application Feb. 12, 1981, Ser. No. 233,755

Int. Cl.[3] A21D *8/06*

U.S. Cl. 426—243 9 Claims

1. A method for decreasing the time required for baking bread comprising the steps of:

providing an individual loaf of bread dough weighing at least approximately one pound in a metal baking pan;

proofing said loaf in said baking pan;

baking said proofed loaf in said baking pan in a hot air oven at a temperature of 380° to 450° F. for a total baking time of 6 to 14 minutes; and

applying to said proofed loaf in said baking pan microwave energy at frequencies of both 915 MHz and 2450 MHz simultaneously at a predetermined total power flux density in said loaf between 6 and 22 watt-hours per pound of bread divided between said frequencies for a minimum of three minutes during said baking step.

4,388,336

DOUGH PRODUCT CONTAINING AN ORGANIC ACID LEAVENER

Samuel H. Yong; George R. Anderson, both of Minneapolis, and Liza Levin, St. Louis Park, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed May 11, 1981, Ser. No. 262,585

Int. Cl.[3] A21D *2/00*

U.S. Cl. 426—551 4 Claims

1. An improved dough formulation comprising:

a mixture of flour, water and shortening and at least one leavener including an organic acid leavener incorporated into the mixture; and

at least one of a calcium divalent or trivalent compound and aluminum divalent or trivalent compound in an amount effective to reduce gumminess of less than about 1% by weight of dough.

4,388,337

DRY DESSERT MIX COMPOSITION

Diane Cawdron, Radway, England, assignor to General Foods Limited, Banbury, England

Filed Dec. 28, 1981, Ser. No. 334,767

Int. Cl.[3] A23L *1/195*

U.S. Cl. 426—573 15 Claims

1. A dry powdered mix composition for mixing with cold milk to produce a ready-to-serve, milk-based preparation having a pH at or below 4.8 comprising 0.5 to 2% by weight of a high methoxy pectin, 5 to 15% by weight of a modified starch, 0.4 to 1.8% by weight of a rapidly dissolving uncoated edible acid selected from the group consisting of citric acid and lactic acid and 2.0 to 4.5% by weight of a slowly dissolving uncoated edible acid selected from the group consisting of adipic acid and fumaric acid, the ingredients and their proportions being selected such that the dry powdered composition when mixed with milk allows the incorporation of acidulents in the milk-based preparation without curdling of the casein.

4,388,338

METHOD FOR PREPARING BEVERAGES IN PORTIONS

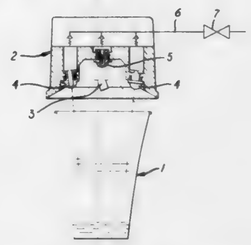
Poul E. Wittenborg, Odense, Denmark, assignor to A/S Wittenborgs Automatfabriker, Denmark

Continuation of Ser. No. 31,998, Apr. 20, 1979, abandoned. This application Apr. 6, 1981, Ser. No. 251,109

Claims priority, application Denmark, Apr. 26, 1978, 1820/78

Int. Cl.[3] A23L *2/00;* B65B *3/04*

U.S. Cl. 426—590 6 Claims



1. A method for preparing beverages at ambient pressures, comprising

(a) adding a premeasured amount of flavored powder to a container;

(b) partially filling said container with a first quantity of water introduced into said container through at least one water supply outlet at a first velocity and a first mass rate of flow; and

(c) substantially simultaneous with step (b), introducing a second quantity of water at a second velocity, which velocity is higher than said first velocity, and a second mass rate of flow, said second mass rate of flow being lower than said first mass rate of flow, through at least one nozzle to substantially fill said container and effectively mix said powder and water to produce a beverage, wherein the diameter of said outlet is larger than the diameter of said nozzle whereby the velocity of said second quantity of water is sufficient to intensively mix by whipping said water and said flavored powder within said container.

4,388,339

MARGARINE AND METHOD FOR MAKING SAME

Richard B. Lomneth; Daniel R. Blair, both of Cincinnati; Gary L. Parnell, Forest Park, and Bernard Y. Tao, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 4, 1981, Ser. No. 318,163

Int. Cl.[3] A23D *3/00, 5/00*

U.S. Cl. 426—602 18 Claims

1. An edible water-in-oil emulsion spread, which comprises:

(1) an aqueous phase; and

(2) an oil phase comprising a margarine oil product having:

(A) from about 30% to about 65% by weight of a soft oil; and

(B) from about 35% to about 70% by weight phase of a structural fat consisting of:

(a) from about 3% to about 9% by weight SSS triglycerides;

(b) from about 32% to about 50% by weight SOS triglycerides;

(c) from about 5% to about 12% by weight SSO triglycerides; and

(d) from about 20% to about 32% by weight SOO/SLS triglycerides,

wherein S=saturated C_{16} or C_{18} fatty acid residue, O=oleic acid residue, and L=linoleic acid residue;

said fat having a weight ratio of P:St acid residues attached to the glycerides of greater than 8.5 and a weight ratio of O:L acid residues of from about 4 to about 5, wherein P=palmitic, St=stearic, O=oleic, and L=linoleic;

wherein said spread has a slump grade of at least 8 after 1 hour at 80° F. and a Hot Probe value of at least about 11.3° F./6 sec.

4,388,340

PROCESS FOR THE PRODUCTION OF A FROZEN CHOPPED EGG PRODUCT

Mario P. de Figueiredo, Chesterfield; Balagtas F. Guevara, St. Louis; James L. Long, Creve Coeur; Ronnie G. Morgan, and Lawrence R. York, both of Manchester, all of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 184,584, Sep. 5, 1980, abandoned. This application Oct. 5, 1981, Ser. No. 308,710

Int. Cl.[3] A23L *1/32*

U.S. Cl. 426—614 18 Claims

1. A method of forming a chopped egg product comprising:

a. dynamically preheating egg yolks to a product temperature which does not exceed about 183° F. and dynamically preheating egg whites to a product temperature which does not exceed about 167° F. followed by statically heating egg yolks and egg whites at a temperature and time effective to coagulate the yolks and whites.

b. freezing said coagulated yolks and whites,

c. chopping the frozen whites and yolks at a temperature of between about 20°–30° F. to provide a chopped egg mixture without smearing of the yolks.

4,388,341

PROCESS FOR PREPARATION OF FISH MEAT-LIKE FLAKY FOODS

Akira Seto, and Takashi Sakita, both of Yokohama, Japan, assignors to Nisshin Oil Mills, Limited, Tokyo, Japan

Filed Feb. 23, 1981, Ser. No. 237,055

Claims priority, application Japan, Feb. 21, 1980, 55-19736

Int. Cl.[3] A23J *3/00*

U.S. Cl. 426—656 6 Claims

1. A process for preparing a simulated fish-like food flake, comprising the steps of:

providing granulated vegetable protein material having a particle size of about 3 to 10 mesh;

hydrating the granular material in water of about 70° C. to 100° C. having alkali earth metal salt therein in a concentration of about 0.3 to about 1% for a time sufficient to at least toughen said material for forming into flakes;

forming said hydrated granular material into flakes;

washing said flakes; and

dehydrating to a level of about no less than 60% water content and seasoning said flakes.

4,388,342

METHOD FOR CHEMICAL VAPOR DEPOSITION

Takaya Suzuki, Katsuta; Yosuke Inoue, Tokaimura, and Takashi Aoyama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 28, 1980, Ser. No. 154,025

Claims priority, application Japan, May 29, 1979, 54-65552

Int. Cl.[3] B05D *5/12*

U.S. Cl. 427—8 12 Claims

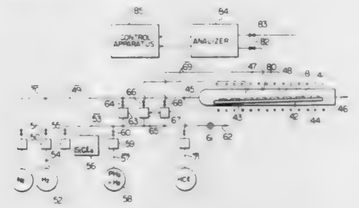
1. A method for chemical vapor deposition of layers of material individually onto the surfaces of a plurality of substrates within a reaction chamber having a primary gas inlet at one end and a gas exhaust at another end, which comprises the steps of:

(a) supporting a plurality of substrates within said reaction chamber with said substrates being arranged in series in a direction extending from the inlet to the exhaust,

(b) supplying a gaseous mixture containing a gaseous compound of said material into said reaction chamber through said inlet and causing the gaseous mixture to flow through the reaction chamber over the plurality of said substrates to said exhaust,

(c) heating said substrates to a temperature at which chemical vapor deposition onto said substrates takes place during the flow of said gaseous mixture through said reaction chamber,

(d) removing a sample of said gaseous mixture from the flow of said gaseous mixture and from said reaction chamber at a position along the series-arranged substrates between said inlet and said exhaust,



(e) measuring a concentration of said gaseous compound in said sample of the gaseous mixture removed from said reaction chamber, and

(f) supplying, in addition to said gaseous mixture, an auxiliary gas which contains said gaseous compound into the flow of said gaseous mixture in said reaction chamber to compensate for the consumed gaseous compound in said reaction chamber in response to the measurement of said concentration of said gaseous compound whereby the chemical vapor deposition in said reaction chamber is maintained substantially uniform along the length of the series-arranged substrates.

4,388,343

METHOD AND APPARATUS FOR LUBRICATING MOLDING TOOLS

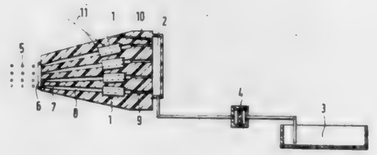
Gunther Voss, Diessen, and Peter Gruber, Biberach, both of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 109,360, Jan. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 94,274, Nov. 14, 1979, abandoned. This application Nov. 30, 1981, Ser. No. 326,168

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1978, 2849496; Aug. 8, 1979, 2932069

Int. Cl.[3] B05B *5/02, 5/08;* B05D *1/04*

U.S. Cl. 427—14.1 11 Claims



1. In a method of preparing tablets from a granulate material comprising introducing granulate material into a mold die cavity, compressing the granulate material in the mold die cavity with a cooperating punch to form tablets, and ejecting the tablets from the mold die cavity,

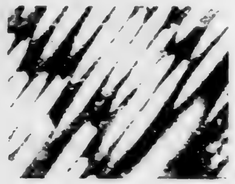
the improvement which comprises forming a lubricant film over substantially the entire mating surfaces of the mold die cavity and cooperating punch by selectively dotting liquid or suspended lubricant in specific quantities and in the form of discrete droplets by piezoelectric means onto a small portion of said mating surfaces to provide complete lubrication of the mating surfaces.

4,388,344

METHOD OF REPAIRING SURFACE DEFECTS IN COATED LASER MIRRORS

Alexander J. Shuskus, West Hartford, Conn., and Melvyn E. Cowher, East Brookfield, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 31, 1981, Ser. No. 297,899
Int. Cl.³ G02B *1/10, 5/08*
U.S. Cl. 427—38 **10 Claims**



1. The method of repairing surface defects in an amorphous silicon or amorphous germanium deposited coating on a laser mirror substrate comprising forming an oxide layer of the silicon or germanium on the deposited coating by plasma enhanced chemical vapor deposition.

4,388,345

COATING COMPOSITION AND PROCESS FOR PREPARING SYNTHETIC RESIN SHAPED ARTICLES BY USING SAME

Kazuo Kishida, Otake; Isao Sasaki, Hiroshima; Kenji Kushi, and Misao Tamura, both of Otake, all of Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Filed Jan. 27, 1982, Ser. No. 343,221
Claims priority, application Japan, Feb. 4, 1981, 56-15139
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—54.1 **21 Claims**

1. A coating composition which comprises:
(a) a mixture comprised of, based on the weight of said mixture, (i) 25 to 99.95% by weight of at least one polyfunctional monomer having at least three acryloyloxy or methacryloyloxy groups in the molecule, (ii) 0 to 50% by weight of at least one mono- or bi-functional monomer having one or two polymerizable unsaturated groups in the molecule and (iii) 0.05 to 25% by weight of at least one organic acid which has at least one halogen substituent selected from the group consisting of fluorine, chlorine or bromine and which is liquid at normal temperature and pressure, and
(b) 0.01 to 10 parts by weight, based on 100 parts by weight of said mixture, of a photosensitizer.

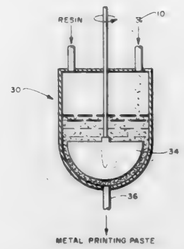
9. A process for the preparation of a synthetic resin shaped article made of polydiethylene glycol bisallylcarbonate, which comprises coating the surface of a synthetic resin shaped article made of polydiethylene glycol bisallylcarbonate with a coating composition and irradiating the coated shaped article with ultraviolet rays to form on the surface of the synthetic resin shaped article a crosslinked and cured film exhibiting good abrasion resistance and adhesion, wherein said coating composition comprises:
(a) a mixture comprised of, based on the weight of said mixture, (i) 25 to 99.95% by weight of at least one polyfunctional monomer having at least three acryloyloxy or methacryloyloxy groups in the molecule, (ii) 0 to 50% by weight of at least one mono- or bi-functional monomer having one or two polymerizable unsaturated groups in the molecule and (iii) 0.05 to 25% by weight of at least one organic acid which has at least one halogen substituent selected from the group consisting of fluorine, chlorine or bromine and which is liquid at a normal temperature and pressure, and
(b) 0.01 to 10 parts by weight, based on 100 parts by weight of said mixture, of a photosensitizer.

4,388,346

ELECTRODES FOR SOLID STATE DEVICES

James M. Beggs, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Donald B. Bickler, Temple City, Calif.

Filed Nov. 25, 1981, Ser. No. 325,083
Int. Cl.³ H05K *3/12*
U.S. Cl. 427—58 **11 Claims**



1. A method of forming a contact electrode on the surface of an electrical device comprising the steps of:
(1) applying an ink including grains of a conductive, oxidizable, base metal to said surface, said grains containing a coating of a lower melting, sinterable, non-oxidizing metal and being dispersed in a liquid vehicle containing a polymer vaporizable at the temperature of sintering and a minor amount of a vaporizable, fluorocarbon polymer;
(2) heating said surface to vaporize said polymer and said fluorocarbon polymer to etch said surface and to sinter said grains so that they flow to form an adherent, continuous, conductive, contact electrode.

4,388,347

CONDUCTIVE PIGMENT-COATED SURFACES

Ming S. Shum, Des Plaines; Daniel S. Janikowski, Chicago, and Steven A. Bradley, Northbrook, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 206,335, Nov. 11, 1980, abandoned. This application May 17, 1982, Ser. No. 379,208
Int. Cl.³ H05K *3/12*
U.S. Cl. 427—96 **12 Claims**

1. A process for the preparation of a conductive pigment-coated surface having enhanced adhesion qualities and enhanced predictable resistivity which comprises alloying a nonnoble conductive metal with from about 12% to about 25% by weight of at least one oxidizable material selected from the group consisting of boron, boron-carbon and boron-silicon, mixing the resulting alloy with an organic vehicle to form an ink, screening said ink onto a substrate, thereafter firing said ink in an oxidizing atmosphere containing about 20% by volume of oxygen at a temperature in excess of about 1000° F. for a period of time sufficient to oxidize said oxidizable material without oxidation of said nonnoble metal, and cooling the thus fired product to produce conductive pigment-coated surface.

4,388,348

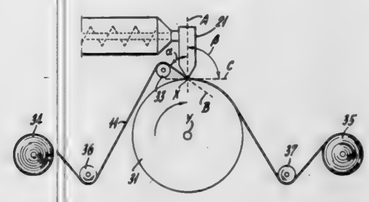
Patent Not Issued For This Number

4,388,349

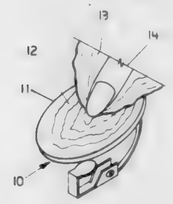
EXTRUSION COATING PROCESS

Ralf Korpman, Bridgewater, and C. Palermo Felice, Asbury, both of N.J., assignors to Permacel, New Brunswick, N.J.

Continuation-in-part of Ser. No. 209,161, Nov. 21, 1980, abandoned. This application Jul. 28, 1982, Ser. No. 402,768
Int. Cl.³ B05D *5/10*
U.S. Cl. 427—208.4 **9 Claims**



1. A direct extrusion process for preparing a coating substrate from a viscous coating composition which comprises:
(a) feeding the component material or materials of a coating composition into an extruder,
(b) advancing the material or materials forward in the extruder barrel to obtain a molten homogeneous composition, and then through an elongated extrusion die orifice leading from said extruder barrel,
(c) directing a substrate into positive engagement with the outlet opening defined by said extrusion die,
(d) extruding the homogeneous composition through the extrusion die orifice onto the substrate to force the substrate away from said die and forming a uniform coating on said substrate, moving the coated substrate into immediate contact with a closely disposed coating roll, said substrate being drawn to the die orifice from a direction such that the angle α formed between a line representing the direction of approach of the substrate and a line representing the direction of extrusion is less than 90°, and said coated substrate is drawn away from the die orifice in a direction such that the angle β formed between the direction of extrusion and a line representing the initial departing direction of the coated substrate immediately on formation when combined with the angle β is less than 180°.
(a) coating said article with a first layer of a colored coating composition containing a solvent solution of a binder;
(b) overcoating said first layer substantially uniformly with one or more subsequent layers of coating composition containing a solvent solution of a binder, each of which is different visually from the preceding layer, in which said solvent for each is a solvent for the binder in the first layer and for the binder in each subsequent layer;
(c) drying each layer before applying a subsequent layer;



(d) while the last of said subsequent layers is wet with said solvent in sufficient concentration to at least soften the binder of any one or more of said underlying layers, redistributing said last and said at least softened underlying layer or layers to form a decorative pattern by exposure of one or more of the underlying layers; and
(e) drying the last and the at least softened underlying layer or layers.

4,388,350

PROCESS FOR DECORATING ARTICLES

Anne L. Ayers, P.O. Box 233, Daniels, W. Va. 25832

Continuation of Ser. No. 99,922, Dec. 3, 1979, abandoned. This application Dec. 1, 1981, Ser. No. 326,347
Int. Cl.³ B05D *3/12, 5/06*
U.S. Cl. 427—262 **12 Claims**

1. A process for decorating an article comprising the steps of

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4,388,351

METHODS OF FORMING A PATTERNED METAL FILM ON A SUPPORT

Ernest W. Sawyer, Richmond, Va., assignor to Western Electric Company, Inc., New York, N.Y.

Continuation of Ser. No. 68,298, Aug. 20, 1979, abandoned. This application Dec. 15, 1981, Ser. No. 330,993
Int. Cl.³ B05D *3/04*
U.S. Cl. 427—304 **2 Claims**

1. A method of applying a patterned metal film onto a substrate comprising (1) applying a negative mask onto a surface of the substrate whereby portions of the surface are exposed in a positive pattern, (2) forming micropores in the positive pattern portions of the substrate surface, (3) sensitizing the positive patterned portions of the substrate and the negative mask to form thereon a catalytic species capable of catalyzing an electroless metal deposition, (4) electrolessly depositing a thin porous flash metal deposit having a thickness of from 0.003 to 0.020 mils onto the delineated catalytic species in the circuit pattern, (5) removing the negative mask and thereby the catalytic species and flash electroless metal deposit thereon to delineate the catalytic species and flash deposit in the positive pattern on the substrate surface, and (6) electrolessly depositing a metal onto the catalyzed positive pattern.

4,388,352

METHOD FOR PREPARING A CONTROLLED RELEASE COMPOSITION

George G. Allan, Seattle, Wash., and Young C. Ko, Stockholm, Sweden, assignors to Board of Regents, University of Washington, Seattle, Wash.

Filed Aug. 3, 1981, Ser. No. 289,302
Int. Cl.³ B05D *3/02;* D21D *3/00;* D21F *11/00;* A01N *37/38*
U.S. Cl. 427—391 14 Claims

1. A method for preparing a controlled release composition containing an impregnant in a microporous carrier which is initially fluid-filled, comprising the steps of:

(a) immersing the microporous, fluid-filled carrier in a first solution containing the impregnant and a solvent to form a mixture;

(b) distilling the fluid in the carrier's pores from the mixture to exchange the fluid in the pores of the carrier with the solution; and

(c) drying the carrier to entrap the impregnant within the carrier structure.

2. The method of claim 1 wherein the carrier is cellulose pulp.

4,388,353

METHOD AND APPARATUS FOR APPLYING ENAMELS

Raymond W. Hatfield, Warren, Mich., assignor to Michael Ladney, Jr., Grosse Pointe Shores, Mich.

Filed Jul. 22, 1981, Ser. No. 285,314
Int. Cl.³ B05D *1/02*
U.S. Cl. 427—422 7 Claims

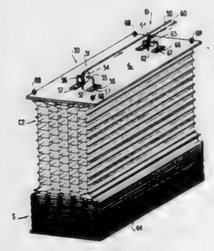
1. The method of applying an acrylic enamel to a workpiece so that the painted surface becomes dust free at an ambient temperature of between about 60° to 70° F. within one to three minutes after spraying which comprises, adding a thermosensitive organic acid catalyst to the enamel for accelerating the curing time of the enamel and directing the enamel through the nozzle of a spray gun supplied with atomizing air at a pressure of 1 to 7 pounds per square inch and at a rate of about 90 and 250 cubic feet per minute, said atomizing air being heated such that its temperature as it issues from the nozzle is between about 110° to 140° F., whereby the heat of the air initiates activation of the catalyst substantially immediately upon discharge of the enamel from the nozzle.

4,388,354

TUBULAR INSULATING CURTAIN AND METHOD OF MANUFACTURE

Heikki S. Suominen, Petsamonk 14, Tampere, Finland

Division of Ser. No. 942,087, Sep. 13, 1978, Pat. No. 4,288,485.
This application Sep. 8, 1981, Ser. No. 300,149
Claims priority, application Finland, Mar. 21, 1978, 780877; Mar. 21, 1978, 780878
Int. Cl.³ B32B *3/12*
U.S. Cl. 428—12 11 Claims



1. A selectively collapsible and expandable curtain having in its fully expanded state a predetermined width, a predetermined height and a plurality of expanded tubes extending across the width of the curtain so as to provide thermal insulating characteristics in the direction of curtain thickness, said curtain comprising:

(a) a plurality of superimposed strips of flexible thin film material, said superimposed strips being adheringly secured together by a plurality of uniformly spaced longitudinally extending bands so as to form superimposed tubes one atop the other in the direction of curtain height, and the length of said superimposed strips being substantially equal to said predetermined curtain width and significantly greater than the width of said superimposed strips in said direction of curtain thickness;

(b) said bands on successive adjoining strips being in a staggered relationship such that each tube when fully expanded has a width substantially defined by a pair of opposing bands on upper and lower adjoining strips and a height substantially defined by upper and lower side sections comprising the portions of said adjoining strips lying between said pair of opposing bands and a pair of transversely spaced bands joining said upper and lower adjoining strips on either side of said opposing bands;

(c) said side bands forming fold lines such that said superimposed strips are substantially flat without folds when said curtain is in a collapsed state; and,

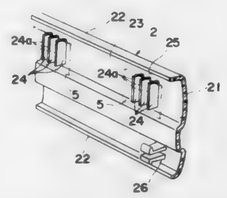
(d) the number of said superimposed strips being such that the combined heights of said superimposed tubes in their fully expanded state are sufficient to provide substantially said predetermined curtain height, each of said tubes when fully expanded having a substantially rectangular cross-section with top and bottom walls defined by said opposing bands and sidewalls defined by said upper and lower side sections and a length along the longitudinal axis of the tube significantly greater than the thickness of the curtain transverse to said axis.

4,388,355

MOLDINGS FOR VEHICLE BODY STRUCTURE

Naoyuki Ikemizu, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Apr. 5, 1982, Ser. No. 365,497
Claims priority, application Japan, Apr. 9, 1981, 56-54074
Int. Cl.³ B60R *13/02*
U.S. Cl. 428—31 7 Claims



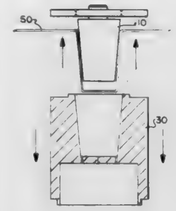
1. A resinous molding for a vehicle body structure which comprises a generally elongated body made of synthetic resin and having a recess defined therein, said recess extending inwardly from one surface of the elongated body and generally over the length of the molding, and a plurality of generally rectangular thin-walled flexible ribs integrally formed with the elongated body and protruding within the recess from the bottom of said recess with a longitudinal axis of each of said flexible ribs oriented generally widthwise of the molding, said ribs being spaced from a peripheral side wall of the body, one face of each of the flexible ribs opposite to the bottom of the recess being adapted to be bonded to an outer surface of the vehicle body structure.

4,388,356

HEAT SETTING A THERMOFORMED PET ARTICLE UTILIZING A MALE PLUG AS A CONSTRAINT

John E. Hrivnak, Clinton, and Robert J. Gartland, Youngstown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 16, 1981, Ser. No. 322,106
Int. Cl.³ B29C *17/04*
U.S. Cl. 428—35 20 Claims



1. A heat set polyester article, comprising:

the article made by heating an amorphous sheet of polyethylene terephthalate to a temperature high enough to cause softening thereof;

heating a female mold to a temperature above the glass transition temperature to crystallize said PET sheet;

positioning said softened sheet over the cavity of said female mold;

drawing said softening sheet into said female mold cavity using a male plug, wherein said male plug has dimensions of between about 90% and 99.5% of the dimensions of said female mold;

transferring said softened sheet from said male plug to said female mold by the application of air pressure to said softened sheet;

heating said softened polyester sheet to above its glass transition temperature through contact with said female mold, which causes said polyester to be heat-set thereby;

releasing said air pressure and thus allowing said molded polyester to shrink back onto said male plug and be cooled thereby; and

withdrawing said molded, cooled polyester from said plug.

10. A process for heat setting polyethylene terephthalate, comprising the steps of:

heating an amorphous sheet of polyethylene terephthalate to a temperature above its glass transition temperature;

heating a female mold to above the glass transition temperature of said polyethylene terephthalate to effect crystallization;

positioning said sheet over said female mold cavity;

drawing said sheet into said cavity by means of a male plug maintained at a temperature below the oriented, crystallized glass transition temperature of said sheet, wherein said male plug has dimensions of between about 90 and 99.5% of the dimensions of said female mold;

transferring said stretched polyethylene terephthalate sheet from the surface of said male plug to the surface of said female mold across a gap therebetween; and

allowing said molded polyethylene terephthalate to shrink back onto said male plug and thereby be cooled to a temperature between its glass transition temperature.

4,388,357

SHEET USEFUL AS A RESERVOIR LINER

Robert W. Luebke, Hudson, Ohio, assignor to True Temper Corporation, Cleveland, Ohio

Division of Ser. No. 5,699, Jan. 23, 1979, Pat. No. 4,296,884.
This application Jun. 15, 1981, Ser. No. 273,403
Int. Cl.³ B32B *25/10;* B65G *5/00;* E02B *5/02;* E21F *17/16*
U.S. Cl. 428—57 4 Claims



1. A liquid impervious flexible liner capable of being packaged in roll form and adapted for use in an earthen reservoir for collecting liquid, such as petroleum based oils, consisting essentially of a layer of pervious non-woven polyester fabric material having secured to at least one of its sides a layer of liquid impervious material, the latter being resistant to degradation by petroleum based liquids, said liner being adapted to generally follow the contour of the upwardly opening earthen reservoir space and being adapted to prevent inadvertent escape or seepage of liquid therefrom, the reservoir being adapted to be generally filled with a relatively coarse particle bed, such as for instance, rock or gravel, disposed on said liner, with the bed being adapted to support thereon a section of railroad track for carrying railway vehicles such as diesel powered locomotives, thereon, the first mentioned layer of said liner being needle punched, liquid pervious relatively low density fabric resistant to puncturing and having a thickness in the range of approximately 60 mils to 190 mils, the second mentioned layer being of rubber and having a thickness of approximately one-third the thickness of said first mentioned layer.

2. A liner in accordance with claim 1 which is comprised of plurality of adjoining strips of predetermined width of the first mentioned and second mentioned materials in said secured relation, and overlapped at the junctures thereof, said junctures being secured together thereat to form said liner.

4,388,358

ADAPTIVE SUPPORT SYSTEM

Thomas A. Davis, Scotch Plains, N.J., and Donald R. Cowsar, Birmingham, Ala., assignors to University of Alabama and Southern Research Institute, both of Birmingham, Ala.

Division of Ser. No. 101,511, Dec. 7, 1979, Pat. No. 4,327,046.
This application Aug. 25, 1981, Ser. No. 296,018
Int. Cl.³ B32B *1/06, 3/18, 3/26*
U.S. Cl. 428—71 5 Claims

3. A rigid, shaped, mass support system, comprising a flexible container made of elastic polymeric film containing:

(a) a multiplicity of rigid particles of polystyrene foam spheres having an average diameter of between about 1 and 5 millimeters; and

(b) a cured, polymeric adhesive binder material uniformly distributed among and bonding the rigid particles to form a rigid composite, said binder material comprisng a polyurethane resin which has been cured with a gaseous tertiary amine,

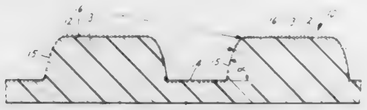
said system being disposable against and conforming to the shape of the mass such as the contour of that portion of a person's body which the system is intended to support.

4,388,359

EMBOSSED PAVEMENT-MARKING SHEET MATERIAL

John L. Ethen, Oakdale, and Timothy D. Bredahl, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Apr. 23, 1982, Ser. No. 371,216
Int. Cl.³ B32B *5/16, 3/30*
U.S. Cl. 428—143 **12 Claims**



1. Pavement-marking sheet material comprising a continuous polymeric base sheet having its upper surface configured with a multitude of protuberances which in total occupy at least 10 percent of the area of the base sheet, said protuberances having at least one dimension in the plane of the base sheet that is less than about 15 millimeters, having a height of at least about one millimeter, and having a side surface that is adapted to face oncoming traffic when the sheet material is applied to a roadway and which forms an angle to the plane of the base sheet of at least about 30°, said side surface carrying transparent microspheres at least near the top of the protuberance, which are partially embedded in the surface and partially protrude out of the surface, and the areas of the base sheet between the protuberances being substantially free of protruding microspheres but containing microspheres which have been substantially fully pressed into the base sheet.

4,388,360

MAGNETIC RECORDING MEDIUM

Takahito Miyoshi; Toshimitu Okutu, both of Odawara; Masaaki Takimoto, Tokyo; Takashi Saida, Asaka; Goro Akashi, and Masaaki Fujiyama, both of Odawara, all of Japan, assignors to Fuji Photo Film Company Limited, Kanagawa, Japan

Filed Mar. 9, 1982, Ser. No. 356,540
Claims priority, application Japan, Mar. 9, 1981, 56-33581
Int. Cl.³ H01F *10/02*
U.S. Cl. 428—172 **10 Claims**

1. A magnetic recording medium, comprising:
a nonmagnetic support base;
a magnetic layer on a first surface of said nonmagnetic support base; and
a back coating on a second surface of said nonmagnetic support base, having a thickness of 1μ or less, said back coating being comprised of inorganic particles dispersed in a binder, wherein said inorganic particles include SnO_2 particles.

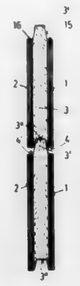
4,388,361

ELEMENT FOR THE INSULATION OF THE OUTER WALL OF A BUILDING

Elio Vassalli, 6852 Genestrerio, Switzerland

Filed Dec. 31, 1980, Ser. No. 221,638
Claims priority, application Switzerland, Dec. 31, 1979, 11484/79; Nov. 19, 1980, 8545/80
Int. Cl.³ E04B *2/18;* **E04C** *1/10*
U.S. Cl. 428—192 **5 Claims**

1. Element for insulation of the external walls of a building, comprising two rigid slabs, and expanded polyurethane insulating material between the slabs which unites the slabs; the insulating material between the two slabs projecting out from between both of the two rigid slabs of the element along one edge of the element and being recessed between both of the two rigid slabs of the element along the opposite edge of the element in such a manner as to leave an interspace on each side of the element between the periphery of the rigid slabs of one element and the periphery of the rigid slabs of the adjacent elements when the insulating material of said one element abuts the insulating material of said adjacent elements, so as to receive mortar to connect the rigid slabs together, said insulating material being laterally outwardly exposed to said mortar in said interspace.

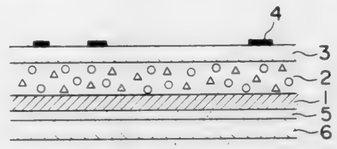


4,388,362

RELEASED HEAT-SENSITIVE RECORDING PAPER

Susumu Iwata, Shizuoka; Keiichi Maruta, and Yukihiro Yuyama, both of Numazu, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1981, Ser. No. 309,661
Claims priority, application Japan, Oct. 17, 1980, 55-144268
Int. Cl.³ B41M *5/18*
U.S. Cl. 428—211 **10 Claims**



1. A releasable, heat-sensitive, recording paper comprising:
(a) a substrate;
(b) a heat-sensitive, color-forming layer superposed on said substrate, said heat-sensitive, color-forming layer consisting essentially of a binder, a colorless or pale leuco dye and an acidic substance adapted to cause said leuco dye to undergo color formation upon heating of said recording paper;
(c) a protective layer superposed on said heat-sensitive, color-forming layer, said protective layer consisting essentially of a water-soluble resin and having a thickness of from 0.5 to 3.0 g/m^2 in terms of the quantity of the solids thereof;
(d) a pattern of ultraviolet-setting printing ink printed on said protective layer;
(e) a pressure-sensitive adhesive layer superposed on said substrate on the opposite side thereof from said heat-sensitive, color-forming layer and said protective layer; and
(f) a release paper covering said adhesive layer.

4,388,363

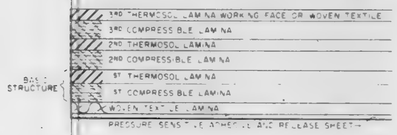
COMPRESSIBLE PRINTING ELEMENT CONTAINING THERMOSOL LAMINA

Roy D. Fountain, Lexington, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Continuation of Ser. No. 15,020, Feb. 26, 1979, abandoned. This application Aug. 5, 1980, Ser. No. 175,465
Int. Cl.³ B32B *5/18, 3/00;* **B41N** *1/12*
U.S. Cl. 428—215 **16 Claims**

1. A printing element comprising a resilient compressible press packing comprising a compressible lamina having voids and a lamina consisting essentially of a solid heat set thermosol comprising heat set polyvinyl plastisol, phenolic resin and polyacrylate monomer.

9. A printing element comprising a resilient compressible press packing comprising a compressible lamina having voids and a lamina consisting essentially of a solid heat set thermosol comprising heat set polyvinyl plastisol and polyacrylate monomer wherein the polyvinyl plastisol content of said thermosol is about 30 to about 95% and the polyacrylate monomer content is about 2 to about 20% by weight and wherein said compressible lamina comprises a fibrous sheet impregnated with an impregnant comprising an epoxy resin and said thermsol comprises about 2 to about 30% by weight phenolic resin.



15. A printing element consisting of a resilient compressible press packing comprising a highly porous compressible lamina at least 10 mils thick and a solid thermosol lamina at least 2 mils thick comprising about 70 to about 95% by weight of polyvinyl plastisol and about 3 to about 10% acrylate crosslinked with said polyvinyl forming a thermoset polymer, and a second highly porous compressible lamina at least 10 mils thick on the opposite side of said solid thermosol from the first said highly porpous compressible lamina said thermosol lamina being a single ply in direct contact with each of said highly porous compressible laminas and forming the sole means securing said three laminas together, said press packing being resistant to collapse of said porosity over long use.

4,388,364

HEAT SET WARP KNIT WEFT INSERTED FABRIC AND COATING THEREOF

Kenneth H. Sanders, Jonesville, S.C., assignor to Milliken Research Corportion, Spartanburg, S.C.

Filed Jun. 4, 1982, Ser. No. 385,023
Int. Cl.³ B32B *27/02, 27/12, 27/36*
U.S. Cl. 428—253 **5 Claims**

1. A coated fabric comprising a layer of polymeric material coated onto one side of a heat stretched and set polyester warp knit fabric, said polyester warp knit fabric having a plurality of courses and wales of tricot stitches and a plurality of spaced weft yarns laid into said fabric and held therein by said tricot stitches.

5. A method of making a stabilized coated fabric comprising the steps of: warp knitting a weft inserted substrate fabric from substantially all polyester yarn, heat stretching and setting the polyester fabric after knitting, coating the polyester substrate fabric with a polymeric material and heating the polymeric material to fix the polymeric material to said polyester substrate fabric.

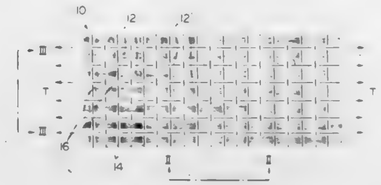
4,388,365

POROUS FRP SHEET AND MANUFACTURING METHOD THEREOF

Shigekazu Hasegawa, Yachiyo, Japan, assignor to Hawegawa Chemical Industry Co., Ltd., Yachiyo, Japan

Filed Feb. 22, 1982, Ser. No. 351,038
Claims priority, application Japan, Mar. 20, 1981, 56-41243
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—258 **2 Claims**

1. A porous FRP (Fiber Reinforced Plastics) sheet containing a woven fabric reinforcing body formed by warp and weft impregnated with cured thermosetting resin, the warp consisting of roving and thread selected from the group consisting of twisted thread or metal thread, the roving being bent above and below the weft, wherein tension is applied to the twisted or metal thread in the warp so as to affect the tension to the weft so that the roving is rounded and wrapped by the tensed weft.

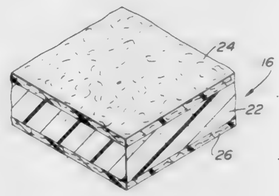


4,388,366

INSULATION BOARD

Dennis W. Rosato, 256 Fieldboro Dr., Lawrenceville, N.J. 08648, and Neil K. Lister, 150 Elm Ave., Rahway, N.J. 07065

Filed Jun. 21, 1982, Ser. No. 390,249
Int. Cl.³ B32B *17/10, 5/18, 5/32*
U.S. Cl. 428—285 **6 Claims**



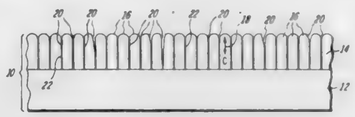
1. An insulation board comprising a plastic foam layer bonded to at least one facing sheet, said facing sheet comprising glass fibers which are randomly dispersed in uniform fashion throughout the sheet, said fibers being bonded together by a bonding agent, and said fibers and bonding agent being coated by a non-wicking agent to provide a porous but liquid-repellant structure.

4,388,367

PERPENDICULAR MAGNETIC RECORDING MEDIUM AND FABRICATION

Tu Chen, Saratoga, Calif., and Pietro L. Cavallotti, Milan, Italy, assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 28, 1981, Ser. No. 306,127
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—323 **19 Claims**



1. A method of producing a continuous thin film magnetic medium comprising a substrate upon which is deposited a thin magnetic layer of Co or alloy thereof, said magnetic layer comprising self-supported, juxtaposed, acicular shaped crystalline particles of magnetic material with the crystallographic "c" axis of the crystal in each particle oriented parallel to the longitudinal axis of the magnetic particle acicula and the longitudinal axis of said magnetic acicular particles oriented substantially normal to the plane of said magnetic layer, said

magnetic acicular particles having a grain boundary of non-magnetic material separating said magnetic particle acicula from one another, said method comprising the steps of

providing an electrochemical plating bath solution containing a Co salt solution having a predetermined Co^{++}ion concentration,

electrodepositing Co on said substrate, and

controlling the precipitation of $Co(OH)_2$ in said bath solution,

the step of controlling comprising the steps of inducing the precipitation of $Co(OH)_2$ at the grain boundaries of said magnetic acicular particles while maintaining the maximum pH value of the Co salt solution at a point before the precipitation of $Co(OH)_2$ would occur in the solution bulk.

4,388,368

MAGNETIC RECORDING MEDIA

Noburo Hibino, and Goro Akashi, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 27, 1981, Ser. No. 286,840
Claims priority, application Japan, Jul. 28, 1980, 55/103396
Int. Cl.³ H01F *10/00*
U.S. Cl. 428—336 **8 Claims**

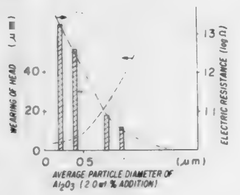
1. In a magnetic recording tape comprising a base film having coated thereon a magnetic recording layer, the improvement wherein said base film comprises a plastic film having a thin glass layer laminated on at least one surface thereof, wherein the thickness of the glass layer is about 0.1 to about 5 μm.

4,388,369

MAGNETIC RECORDING MEDIUM

Kiminori Tamai, and Masashi Hayama, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1982, Ser. No. 341,005
Claims priority, application Japan, Mar. 30, 1981, 56-47045
Int. Cl.³ H01F *10/02*
U.S. Cl. 428—339 **1 Claim**



1. A magnetic recording medium comprising a magnetic layer on a base film said magnetic layer comprising a magnetic powder composition in a binder, said magnetic powder composition consisting essentially of a magnetic powder and from 0.1 to 3.0 wt. percent based on said magnetic powder of a mixture of (a) an abrasive powder having an average particle diameter of 0.4 μm or less and (b) an abrasive powder having an average particle diameter of 0.8 μm or more, said abrasive particles having a moh's hardness or greater than 6, wherein the ratio of (a) and (b) is in a range of 1.0:0.08 to 1.0 to 0.33.

4,388,370

ELECTRICALLY-CONDUCTIVE FIBRES

Vincent S. Ellis, and Kazimierz W. Mieszkis, both of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 351,612, Apr. 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 297,392, Oct. 13, 1972, abandoned. This application Aug. 26, 1975, Ser. No. 607,949
Claims priority, application United Kingdom, Oct. 18, 1971, 48362/71; Feb. 3, 1972, 5107/72
Int. Cl.³ B32B *9/00*; D02G *3/00*
U.S. Cl. 428—368 **4 Claims**

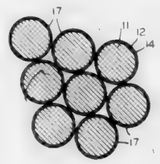
1. A drawn electrically-conductive fibre of substantially circular cross-section, comprising a fibre substrate formed from two polymeric components in an integral sheath/core configuration, the sheath component having a lower softening temperature than the core component, and finely divided electrically-conductive particles penetrating into the sheath component so as to form a phase independent of the polymeric material of the sheath component in an annular region located at the periphery of the sheath component, the electrically-conductive particles being present in an amount sufficient to render the fibre antistatic.

4,388,371

SELF-BONDING ACRYLIC POLYMER OVERCOAT FOR COATED METAL SUBSTRATES

Donald A. Bolon, Scotia, N.Y., and Edith M. Boldebuck, deceased, late of Downers Grove, Ill. (by Jeanette M. Foster, executrix), assignors to General Electric Company, Fort Wayne, Ind.

Filed Jun. 29, 1981, Ser. No. 278,203
Int. Cl.³ B32B *27/30*; H01F *41/06*
U.S. Cl. 428—383 **28 Claims**



1. An insulated heat bondable electrically conductive material comprising an electrically conductive substrate, a base coat on said substrate of electrically insulting, heat resistant, cured resin, and an overcoat of heat curable acrylic polymer upon said base coat forming a non-tacky, flexible, scrape resistant heat bondable acrylic polymer coating thereon.

19. A method of making an insulated, heat bondable metal substrate comprising:

applying a base coat of electrically insulating heat resistant resin to the metal substrate;

curing the base coat resin;

applying an overcoat of acrylic polymer forming composition upon the cured base coat resin; and

partially curing said acrylic polymer coating composition to the B-stage to form a heat bondable overcoat on said base coat resin coated substrate.

20. A method of self-bonding a plurality of turns of a magnet wire defining a coil thereof with the magnet wire having a base coat of an electrically insulated heat resistant resin and an overcoat of heat curable acrylic polymer, the method comprising the steps of:

adhering the base coat to the magnet wire and curing it thereon;

forming the overcoat upon the cured base coat on the magnet wire and partially curing the overcoat to a preselected cure stage less than a generally complete cure stage thereby to form a bondable overcoat;

assembling the turns of the magnet wire into the coil thereof with at least a part of the overcoat of at least one of the turns being in contact with at least a part of at least another of the turns; and

curing the overcoat on the magnet wire to the generally complete cure stage thereof and effecting thereby the bonding together of at least the at least part of the overcoat on the at least one turn of the magnet wire in contact with the at least part of the overcoat on the at least another turn of the magnet wire.

4,388,372

DURABLE ANTISOILING COATINGS FOR TEXTILE FILAMENTS

Nitin J. Champaneria, Seaford, Del.; Lee R. Harper, Media, Pa., and Edward A. Hosegood, Ocean City, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 149,334, May 13, 1980, Pat. No. 4,325,857. This application Mar. 10, 1982, Ser. No. 356,716
Claims priority, application Brazil, May 5, 1981, PI8102732
Int. Cl.³ B32B *27/34, 27/36*; C08L *63/00*
U.S. Cl. 428—395 **7 Claims**

1. A yarn having durable antisoiling properties comprised of filaments of a synthetic polycarbonamide having incorporated therewith a coating composition comprising an aqueous dispersion of (1) a perfluoroalkylester of a citric acid urethane and a fluorinated alcohol having the formula $C_nF_{2n+1}(CH_2)_mOH$ wherein n is 6 to 14 and m is 2 and of (2) the reaction product of

(A) not less than 50% by weight, based on the weight of (A) plus (B), of an epoxy resin containing, on the average, two terminal 1,2-epoxy groups per molecule and having an epoxy equivalent weight of 750–5000;

(B) a carboxyl-functional polymer in an amount sufficient to provide at least 1.25 equivalents of carboxyl groups, when the source of the carboxyl group is a mono-protic acid, and at least 2.0 equivalents of carbosyl groups, when the source of such groups is a diprotic acid, per equivalent of 1,2-epoxy groups in the epoxy resin, said polymer having a weight average molecular weight (determined by light scattering) of about 10000–160000 and an acid number of 100–500;

(C) an aqueous solution of at least 1.25 equivalents of a tertiary amine per equivalent of 1,2-epoxy groups in the epoxy resin, said tertiary amine being selected from the group consisting of $R_1R_2R_3N$, pyridine, N-methylpyrrole, N-methyl piperidine, N-methyl pyrrolidine, N-methyl morpholine, and mixtures thereof and wherein R_1 and R_2 are substituted or unsubstituted monovalent alkyl groups containing one or two carbon atoms in the alkyl portion and R_3 is a substituted or unsubstituted monovalent alkyl group containing 1–4 carbon atoms; and

(D) optionally, 10–90% of the amount required for stoichiometric reaction with the carboxyl-functional polymer of (B) of at least one primary, secondary or tertiary amine or monofunctional quaternary ammonium hydroxide;

wherein Y is at least about $6+0.75(2^X)$ wherein Y is the milliequivalent of carboxyl groups neutralized with primary, secondary or tertiary amine or mono-functional quaternary ammonium hydroxide per 100 grams of acid polymer plus epoxy, and X is the epoxy equivalent weight divided by 1000; and wherein for increasing ratios of carboxyl groups to 1,2-epoxy groups, the amount of amine is increased to keep the carboxyl-functional polymer water dispersible; with said ester being present in said dispersion in a ratio in parts by weight to said reaction product within the range of about 1:1 to 12:1.

4,388,373

COATING PLASTIC SUBSTRATES WITH MINERALS

Frank N. Longo, East Northport; Robert A. Miller, Kings Park, and Joseph D. Reardon, Smithtown, all of N.Y., assignors to Metco, Inc., Westbury, N.Y.

Filed Jun. 2, 1981, Ser. No. 269,437
Int. Cl.³ C08L *63/00*
U.S. Cl. 428—413 **11 Claims**

1. A flame sprayable powder composition suitable for coating a plastic substrate, comprising by weight

(a) about 70 to 98% of a flame sprayable mineral powder,

(b) about 1 to 25% of a nylon powder, and

(c) about 1 to 25% of an epoxy resin powder.

4,388,374

WATER REDUCIBLE COATING COMPOSIIONS

David A. Shimp, Prospect, Ky., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 264,780, May 18, 1981, Pat. No. 4,360,613. This application Aug. 30, 1982, Ser. No. 412,731
Int. Cl.³ B32B *27/38*
U.S. Cl. 428—414 **2 Claims**

1. Ovenable coated paperboard comprising paperboard stock first coated with a sealer coating of a vinyl acetate homopolymer or copolymer, followed by two coats of a cured composition comprising

(A) the reaction product of

(a) about 55 to 90 weight percent of a glycidyl polyether of a dihydric phenol having a molecular weight of about 800 to about 2500;

(b) about 8 to about 44.1 weight percent of a polyethylene glycol having a molecular weight of about 300 to about 2000; and

(c) about 0.9 to about 2 weight percent of ortho phosphoric acid; and

(B) aminoplast resin wherein the total coating has a thickness of about 0.5 to about 1.5 mils.

4,388,375

POLYESTER BASED POLARIZER

Michael J. Hopper, Taylors; Michael R. Martin, Greenville, both of S.C.; Lawrence Bolt, Van Nuys; Michael Smith, Thousand Oaks, both of Calif., and Ali Tavasolian, North Hollywood, Calif., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Nov. 24, 1981, Ser. No. 324,507
Int. Cl.³ B32B *27/40*; G02F *1/13*
U.S. Cl. 428—423.7 **16 Claims**

1. A polarizer prepared by the process which comprises:

(a) extruding a moving molten web of polyester film; and

(b) quenching the moving web to solidify it in a substantially amorphous form; and

(c) applying a coating of a dispersed aqueous composition of polyvinyl alcohol or polyurethane to at least a portion of the surface of said film; and

(d) stretching the moving web in a direction transverse to the direction of motion while heating the web at a temperature of from about its glass transition temperature to about 160° C.; and

(e) crystalizing the transversely restrained moving web by heating it to a temperature in the range of 130° C. to 240° C. without stretching said web; and

(f) cooling said web to substantially ambient atmospheric room temperature; and

(g) adhering a polyvinyl alcohol film to at least a portion of said coating; and

(h) staining said polyvinyl alcohol film in a bath of an iodine containing composition; and

(i) subjecting said polyvinyl alcohol film to concentrated sources of infrared and ultraviolet radiation sufficient to substantially increase the hydrolytic stability of the formed polarizer.

4,388,376

MAGNETIC RECORDING MEDIUM

Yuichi Kubota, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1980, Ser. No. 158,353
Claims priority, application Japan, Jun. 25, 1979, 54-79937
Int. Cl.³ G11B *5/68*
U.S. Cl. 428—425.9 **7 Claims**

1. A magnetic recording medium which comprises a substrate coated with a magnetic powder composition comprising a magnetic powder and an organic binder consisting essentially of as a main component (A) a copolymer consisting essentially of a vinyl chloride-vinyl alcohol copolymer, wherein said copolymer comprises less than 2 mole % of vinyl acetate component and 8 to 22 wt. % of vinyl alcohol component and wherein said vinyl chloride-vinyl alcohol copolymer is obtained by a hydrolysis of a vinyl chloride-vinyl acetate copolymer having a molar ratio of vinyl chloride component to vinyl acetate component of 85:15 to 70:30, with or without a stabilizer for the vinyl chloride-vinyl alcohol copolymer and (B) as a minor component at least one polymer which is an elastomer or soft thermoplastic resin or mixture thereof at a ratio of 50 to 10 wt. % based on the total organic binder.

4,388,377

TAR INHIBITOR COATED LAYER

Fusaoki Uchikawa, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1981, Ser. No. 260,099
Claims priority, application Japan, Jul. 11, 1980, 55/94860
Int. Cl.³ B32B *9/04, 15/04*
U.S. Cl. 428—446 **5 Claims**

1. A tar inhibitor coated layer formed on a wall of a combustion device inhibiting the formation of tar caused by combustion of oil, which coated layer comprises a porous binder, a reducing agent selected from the group consisting of a metal and a metallic salt, and optionally an alkaline metallic salt incorporated in said porous binder.

4,388,378

THERMOPLASTIC HARDBOARD FROM ACETYLATED MAT

Cynthia B. House, Arlington Heights, Ill., and Robert J. Leichti, Auburn, Ala., assignors to United States Gypsum Company, Chicago, Ill.

Filed Dec. 5, 1980, Ser. No. 213,263
Int. Cl.³ B32B *23/04;* **D21F** *11/00*
U.S. Cl. 428—537 **1 Claim**

1. A fiberboard mat prepared by an acetylation process comprising the steps of coating a substantially dry wood fiber mat with from about 35% to about 120% by weight of acetic anhydride, enclosing the coated mat in a sealed space, heating the enclosed mat at from about 150° F. to about 300° F. for from about 20 minutes to about 120 minutes, and removing by-product acetic acid and residual anhydride.

4,388,379

ELECTRODEPOSITION OF LOW STRESS, HARD IRON ALLOY AND ARTICLE SO PRODUCED

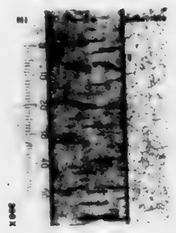
Otto J. Klingenmaier, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 27, 1981, Ser. No. 257,988
Int. Cl.³ C25D *3/56*
U.S. Cl. 428—613 **5 Claims**

1. A method for electrodepositing an iron alloy onto a substrate to form a hard, wear-resistant plate having a relatively low residual tensile stress, said method comprising

immersing the substrate in a high-conductivity aqueous plating solution having a ferrous ion concentration between 90 and 125 g/l, a cobalt ion concentration between 1.8 and 2.5 g/l, a specific resistance less than about 6 ohm-cm at 25° C. and a pH between 0.5 and 2.5, said solution being maintained at a temperature between 56° to 77° C., and

passing direct electrical current through said solution between said substrate as a cathode and an anode to electroplate iron alloy onto said substrate, said current having a density based on the immersed area of the substrate between 5 and 40 A/dm² and effective to deposit a plate containing up to about 6 weight percent cobalt and having a residual tensile stress below 75 MPa and a Vickers hardness above 550 DPH.



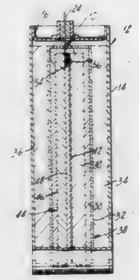
3. An article of manufacture comprising a metal substrate bearing a hard, wear-resistant, adherent electroplate comprising between about 3 to 6 weight percent cobalt and the remainder essentially iron, said plate being characterized by microscopic cracks perpendicular to the substrate surface and in a density greater than about 200 cracks per linear cm at the plate surface, said cracks being effective to reduce the residual tensile stress to below about 60 MPa, said plate being further characterized by a Vickers hardness greater than 550 DPH.

4,388,380

LITHIUM CELL HAVING DEPLETION GAUGE

Abel De Haan, Pembroke Pines, and Harshad Tataria, Miami, both of Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Nov. 16, 1981, Ser. No. 321,350
Int. Cl.³ H01M *10/48*
U.S. Cl. 429—91 **8 Claims**



1. A lithium cell comprising:

an outer conductive housing;

at least one cathode member being positioned within the conductive housing and having two major surfaces one of which is in direct electrical contact with the conductive housing;

an insulative separator being positioned against the outer major surface of the cathode member;

a first lithium anode of a predetermined thickness having first and second major surfaces, said first surface thereof is positioned adjacent to the insulative separator;

a second lithium anode of a predetermined thickness having first and second major surfaces, said first surface thereof is positioned adjacent to the second surface of the first lithium anode, the first major surface of said second lithium anode having a stepped portion to thereby form a gap between a portion of the first surface of said second lithium anode and the second surface of said first lithium anode;

an anode lead electrically connected to the second lithium anode, said lead extending out of the conductive housing and being electrically insulated from the housing;

an electrical sensing conductor positioned within the gap between the surfaces of the first and second lithium anodes, said electrical conductor being in electrical contact with the first lithium anode;

an insulative pad interposed between said electrical conductor and said second lithium anode; and,

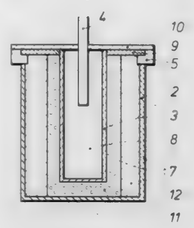
said electrical conductor extending out of said conductive housing and being electrically insulated from said housing so that an electrical potential is developed between the electrical conductor and the conductive housing until the first lithium anode is consumed by discharge of the cell to thereby provide an indication of a predetermined level of discharge of the cell.

4,388,381

ELECTROCHEMICAL STORAGE CELL

Stefan Mennicke, Leimen-Gauangelloch, and Gert Weddigen, Heidelberg-Handschuhsheim, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,452
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1980, 3028836
Int. Cl.³ H01M *10/39*
U.S. Cl. 429—104 **13 Claims**



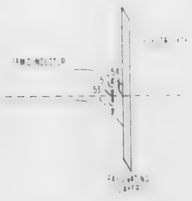
1. Electrochemical storage cell based on alkali metal and chalcogen with at least one anode space for the alkali metal anolyte and a cathode space for the chalcogen catholyte of sulfur or sulfides and mixtures thereof, with the anode space and the cathode space separated from each other by an alkali-ion conducting solid electrolyte, and at least in some regions are enclosed by a metallic housing, the combination therewith of the outer surface of the solid electrolyte surrounded by a directly adjacent ion-conducting layer, and the inner surface of the metallic housing covered by a directly contacting electron-conducting layer, and wherein the electron-conducting layer borders the ion-conducting layer and conversely, and wherein at least the electron conducting layer is impregnated with sulfur, and wherein the cathode space is filled with the ion-conducting and the electron-conducting layers.

4,388,382

PHOTOELECTROCHEMICAL CELLS

Klaus J. Bachmann, Piscataway, N.J.; Hans-Joachim Lewerenz, Berlin, Fed. Rep. of Germany, and Maria T. A. S. Menezes, Tewksbury, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 13, 1981, Ser. No. 234,418
Int. Cl.³ H01M *6/36*
U.S. Cl. 429—111 **8 Claims**



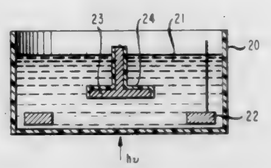
1. A device comprising an electrolyte, a semiconductor electrode, and means for electrically contacting said electrolyte and said semiconductor electrode characterized in that a passivating layer is formed on said semiconductor electrode by a process comprising a cyclic electrolyte technique, wherein said passivating layer is continuous, and is sufficiently thin so that tunneling of electrons through said passivating layer is allowed, wherein the energy difference between the Fermi level and the majority carrier band of said semiconductor material is smaller than the energy difference at infinite separation between said majority carrier band and the redox level of said electrolyte, and whereby when light is absorbed in said semiconductor material electrical power is generated.

4,388,383

DEVICES HAVING CHEMICALLY MODIFIED P-TYPE INP SURFACES

Adam Heller, Bridgewater, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 14, 1981, Ser. No. 263,683
Int. Cl.³ H01M *6/36;* **H01L** *31/06*
U.S. Cl. 429—111 **9 Claims**



1. A semiconductor device comprising a p-type semiconductor selected from the group consisting of InP and InGaAsP, said semiconductor having a chemically treated surface further containing a metal selected from the group consisting of silver, ruthenium, gold, platinum and rhodium, said metal being present in an amount less than 1 monolayer.

4,388,384

PHOTOELECTROCHEMICAL CELL

R. David Rauh, Newton, and Robert A. Boudreau, Norton, both of Mass., assignors to EIC Laboratories, Inc., Newton, Mass.

Filed Jul. 6, 1981, Ser. No. 280,450
Int. Cl.³ H01M *6/36*
U.S. Cl. 429—111 **5 Claims**

1. A photoelectrochemical cell comprising

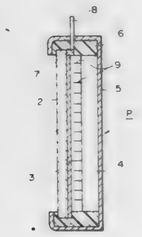
a sealed container having a light-transmitting window for

admitting light into said container across a light-admitting plane,
an electrolyte in said container,
a photoelectrode in said container having a light-absorbing surface arranged to receive light from said window and in contact with said electrolyte, said surface having a plurality of spaced portions oblique to said plane, each said portion having dimensions at least an order of magnitude



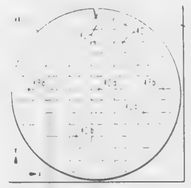
larger than the maximum wavelength of incident sunlight, the total surface area of said surface being larger than the area of said plane bounded by said container, and
a counter electrode in said container in contact with said electrolyte,
said photoelectode being between said window and said counter electrode, having ion-flow openings therethrough, and being louvered to provide said portions and said openings.

4,388,385
SOLID ELECTROLYTE PHOTOCELL
Satoshi Sekido, Yawata, and Tadashi Sotomura, Kashiwara, both of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan
Filed Aug. 18, 1981, Ser. No. 294,017
Claims priority, application Japan, Aug. 19, 1980, 55-114593; Feb. 20, 1981, 56-24435
Int. Cl.³ H01M *6/36*
U.S. Cl. 429—111 **17 Claims**



1. A photocell comprising a solid electrolyte film made of a member selected from the group consisting of AgBr, AgI and salts containing a silver halide represented by AgX wherein X is Br or I, an optically transparent first electrode formed on one surface of the solid electrolyte film, and a second electrode formed on the other surface of said electrolyte film and made of a material capable of forming a charge transfer complex with the halogen of the electrolyte whereby, when light is irradiated on the electrolyte film through the first electrode, silver halide in said electrolyte film is photodissociated and an electrochemical discharge reaction is undergone between the silver formed on the first electrode and the complex formed in the second electrode by absorption of the halogen formed by the photodissociation.

4,388,386
MASK SET MISMATCH
Bruce D. King, Burlington, and James P. Levin, Shelburne, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 7, 1982, Ser. No. 385,591
Int. Cl.³ G03C *5/06*
U.S. Cl. 430—5 **10 Claims**



1. In a mask set comprised of a plurality of separate masks for producing integrated circuits, where each separate mask contains a plurality of similarly positioned images, a method of minimizing mismatch between the similarly positioned images provided on each mask in the set when the masks are assembled in a set and used to produce the circuits, comprising the steps of;
forming a first mask,
aligning said first mask to a fixed known standard,
determining the coordinates of the centroid of all image fields on said first mask,
forming a second mask,
aligning said second mask to said fixed known standard,
determining the coordinates of the centroid of all fields on said second mask, and
marking said second mask with respect to said first mask so that said second mask may be aligned with said first mask to cause the determined centroid of the second mask to overlie the determined centroid of the first mask to minimize the mismatch between the similarly positioned image fields on said first and said second masks and reduce the overall average error of the said similarly positioned image fields to zero.

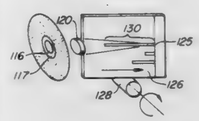
4,388,387
PROCESS FOR FORMING COLOR IMAGES
Masayoshi Tsuboi, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 26, 1980, Ser. No. 133,998
Claims priority, application Japan, Mar. 26, 1979, 55-35220
Int. Cl.³ G03F *5/00*
U.S. Cl. 430—7 **9 Claims**

1. A process for forming color micro patterns having high resolving power which comprises forming only a light absorbing dye layer or a light absorbing dye-containing layer directly on a base, at least the surface of which is composed of a transparent dye accepting polymer through which dyes are capable of thermally diffusing, imagewise exposing said dye layer or said dye-containing layer to light having a high energy density such that a dye image is formed in said dye accepting polymer of said base corresponding to the exposed area by thermal diffusion of the dye into the dye accepting polymer of said base, and thereafter removing by dissolving the dye or the dye-containing layer in the unexposed areas.

4,388,388
METHOD OF FORMING METALLIC PATTERNS ON CURVED SURFACES
Thomas W. Kornbau, Poway, and Robert A. Sievers, Escondido, both of Calif., assignors to General Dynamics Electronics Division, San Diego, Calif.
Filed Jun. 4, 1981, Ser. No. 270,338
Int. Cl.³ G03C *5/00;* **H01Q** *1/28, 1/40*
U.S. Cl. 430—258 **7 Claims**

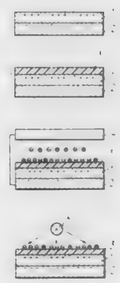
1. The method of providing an electrical pattern on an element with a curved surface of dielectric material comprising the steps of;
coating said surface with a metal;
coating said metal with a photoresist;
forming a pattern in the emulsion of a stripping film that includes an emulsion on a thin membrane of flexible material having a thickness on the order of about one-half thousandth inch;
applying a thin layer of water soluble adhesive on said photoresist, said adhesive being non degradable to a subsequent process of exposing and developing the photoresist and etching away portions of said metal;
pressing said membrane against said adhesive in close engagement with the surface to conform said membrane to said curved surface;
exposing said membrane to a source of ultraviolet light to fix the pattern on said photoresist;
removing said membrane from said curved surface; and developing said photoresist and etching away that portion of the conductive surface that has not been fixed with said photoresist;
said method providing a sharp, clearly defined pattern in said curved surface.

4,388,389
PHOTO RESIST SPECTRAL MATCHING TECHNIQUE
Nathan Gold, 13126 Anza Dr., Saratoga, Calif. 95070
Filed Nov. 16, 1981, Ser. No. 321,656
Int. Cl.³ G03C *5/04;* **G01N** *21/00*
U.S. Cl. 430—30 **12 Claims**



12. In the process of setting the exposure time of photo resist to a high pressure mercury arc lamp including the steps of measuring the response of photo resist to exposures; setting the exposure time of said photo resist to produce an image and developing the photo resist to obtain an image the improvement in said measuring the light intensity of the exposure source on said photo resist of utilizing discrete frequency bands from said high pressure mercury arc lamp to expose at the focus of said mercury arc lamp said photo resist; varying at a constant rate for each band the exposure on said photo resist to generate exposure lines; measuring the exposure lines to determine their ratio of exposure one to another; placing a light meter at the focus of the apparatus; and for each discrete frequency calibrating said light meter to emit a signal in a weighted average proportional to said ratios; placing said light meter at the focus of said light source whereby said light meter receives light intensity in the same manner as said photo resist is exposed.

4,388,390
ELECTROPHOTOGRAPHIC METHOD FOR PRODUCING AN IMAGE ON DIELECTRIC FILM USING ION GENERATION
Felix A. Anokhin, ulitsa Argunovskaya, 8, kv. 222, Moscow, U.S.S.R.
PCT No. PCT/SU80/00097, § 371 Date Jan. 26, 1982, § 102(e) Date Jan. 26, 1982, PCT Pub. No. WO81/03556, PCT Pub. Date Dec. 10, 1981
PCT Filed May 30, 1980, Ser. No. 354,091
Int. Cl.³ G03G *13/18*
U.S. Cl. 430—48 **5 Claims**





1. An electrophotographic method for producing an image on a dielectric film, in which the dielectric film is contacted with the surface of a charged and exposed electrophotographic layer, the latent image on the film is developed and fixed, characterized in that after the dielectic film (**3**) is contacted with the electrophotographic layer, the dielectric film (**3**) is acted on by positive and negative ions of the same concentration from a source (**4**) of ions which settle on the film (**3**) and produce a latent image thereon; before the development of this latent image the electrophotographic layer is illuminated by an actinic light source (**5**).

4,388,391

PROCESS FOR THE MANUFACTURE OF A LITHOGRAPHIC PRINTING FORM BY ELECTROPHOTOGRAPHY

Loni Schell, Hofheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 9, 1981, Ser. No. 232,888

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005695

Int. Cl.³ G03G *13/26, 13/32*

U.S. Cl. 430—49 **11 Claims**

1. A process for the manufacture of a lithographic printing form by electrophotographic means, comprising the steps of:

uniformly charging an oleophilic photoconductive layer which is present on an electrically conductive hydrophilic layer support and which contains a photoconductor and a binder;

image-wise exposing the charged photoconductive layer to produce a charge image;

developing the charge image with toner to produce a toner image comprised of imaged areas and non-image areas;

fixing the toner image;

decoating the non-image areas of the photoconductive layer to bare the electrically conductive layer support;

coating the bared areas of the layer support with a solution comprising a water-soluble, but hydrocarbon-insoluble film-forming polymer and a vinyl phosphonic acid compound;

drying the coating solution to form a uniform coating; and

removing the toner image by rinsing with a hydrocarbon composition containing aromatic portions in an amount of at least about 20% by weight, whereby said coating containing said vinyl phosphonic acid compound prevents deposition in non-imaged background areas of toner image substances which would cause toning of said printing form.

4,388,392

LAMINATED PHOTOSENSITIVE PLATE FOR ELECTROPHOTOGRAPHY HAVING AN ELECTRON DONATIVE POLYMER AND PHENANTHRENE CHARGE TRANSPORT LAYER

Yoshiaki Kato, Hirakata, and Akira Fushida, Suita, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Apr. 8, 1981, Ser. No. 252,261

Claims priority, application Japan, Apr. 11, 1980, 55/46768

Int. Cl.³ G03G *5/07, 5/14*

U.S. Cl. 430—58 **12 Claims**

1. A laminated photosensitive plate for electrophotography, which comprises a conductive substrate, a charge generating layer containing a photoconductive organic pigment, which is formed on the surface of the substrate, and a charge transporting layer formed on the charge generating layer, wherein the charge transporting layer is formed of a homogeneous composition comprising an electron-donative polymer photoconductor and phenanthrene incorporated in the polymeric photoconductor in an amount of 0.05 to 3 parts by weight per part by weight of the polymeric photoconductor.

4,388,393

HYDRAZONE COMPOUND, WITH HYDROXYETHYL GROUP IN CHARGE TRANSFER LAYER

Kiyoshi Sakai, Numazu, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

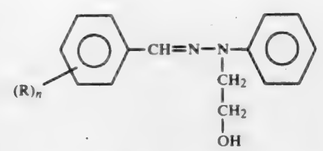
Filed Mar. 3, 1981, Ser. No. 239,954

Claims priority, application Japan, Mar. 13, 1980, 55-32420; Apr. 8, 1980, 55-46019

Int. Cl.³ G03G *5/14*

U.S. Cl. 430—59 **12 Claims**

1. An electrophotographic element comprising an electrically conductive substrate, a charge carrier generating layer and a charge transfer layer, wherein said charge transfer layer contains at least one hydrazone compound having the formula:



wherein R is hydrogen, alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms, dialkylamino group in which each alkyl has 1 to 6 carbon atoms or dibenzylamino, and n is an integer of 1 to 3; and a binder.

4,388,394

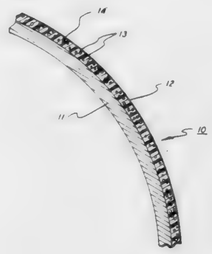
CADMIUM SULFIDE PHOTOCONDUCTOR BLENDED WITH LIGHT-ABSORBING MATERIAL

Sixdeniel Faria, and Ronald E. Karam, both of Towanda, Pa., assignors to Gte Products Corporation, Stamford, Conn.

Filed Jul. 13, 1981, Ser. No. 282,785

Int. Cl.³ G03G *5/04*

U.S. Cl. 430—94 **5 Claims**



1. A photoreceptor device comprising a conductive substrate and an electrophotographic layer thereon, the electrophotographic layer comprising particles of copper-chlorine activated cadmium sulfide photoconductor dispersed in a resin binder matrix, a light-absorbing material also being dispersed in said resin binder matrix, the amount of light-absorbing material being sufficient to significantly reduce the photodischarge rate of the electrophotographic layer.

4,388,395

LIQUID DEVELOPER FOR USE IN ELECTROPHOTOGRAPHY

Kazuo Tsubuko; Junichiro Hashimoto; Shinichi Kuramoto, all of Numazu, and Makoto Okawara, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Jan. 15, 1982, Ser. No. 339,544

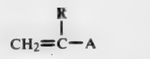
Claims priority, application Japan, Jan. 21, 1981, 56/7385

Int. Cl.³ G03G *9/12*

U.S. Cl. 430—114 **7 Claims**

1. A liquid developer for use in electrophotography which is prepared by dispersing a toner consisting essentially of a pigment or dye and a resin in a carrier liquid having a high insulating property and a low dielectric constant, wherein said resin is a nonaqueous dispersed resin obtained by effecting, in a nonaqueous solvent comprising an aliphatic hydrocarbon, the steps of:

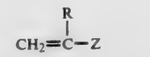
(a) copolymerizing (1) a monomer A having the general formula I:



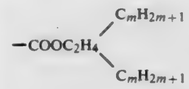
wherein R is —H or —CH_3, A is —$COOC_nH_{2n+1}$ or —OC_nH_{2n+1}, and n is an integer of 6 to 20, with (2) a polyfunctional second monomer having two or more double bonds and (3) a third monomer selected from the group consisting of a monomer B having a glycidyl group or a vinyl monomer C having a carboxyl group,

(b) esterifying the resulting copolymer with a fourth monomer selected from the group consisting of said monomer B and said monomer C, such that said fourth monomer is said monomer C when said third monomer is monomer B and said fourth monomer is said monomer B when said third monomer is monomer C, and

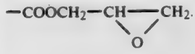
(c) grafting the resulting esterified copolymer with a monomer D selected from the group consisting of styrene, vinyl acetate, vinyltoluene, chlorostyrene, vinylpyrrolidone, vinylpyridine, and compounds having the general formula II:



wherein R is the same as defined above and Z is —$COOC_mH_{2m+1}$, wherein m is an integer of 1 to 4, —$OCOC_{m'}H_{2m'+1}$, wherein m' is an integer of 1 to 6,



wherein m is the same as defined above, —COOH, —$COOC_2H_4OH$ or



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developer image with a heated polytetrafluoroethylene surface.

4,388,397

PHOTOSENSITIVE COMPOSITION FOR DRY DEVELOPMENT

Wataru Kanai, Samukawa, Japan, assignor to Tokyo Ohka Kogyo Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 27, 1981, Ser. No. 248,325

Claims priority, application Japan, Mar. 29, 1980, 55-39673

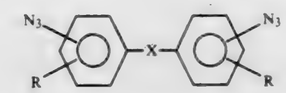
Int. Cl.³ G03C *1/71, 1/70, 1/60*

U.S. Cl. 430—197 **8 Claims**

1. In a photosensitive composition for dry development comprising a polymer and a subliming bisazide compound as a photocuring agent, the improvement comprising:

(a) selecting as the polymer, polyglycidyl methacrylate, and

(b) selecting the subliming bisazide compound from subliming bisazide compounds of the formula:



where R is a hydrogen or a halogen atom and X is an oxygen atom, a carbonyl group, a methylene group, a sulfur atom, a disulfide group or a sulfone group.

4,388,398

PHOTOGRAPHIC PRODUCTS AND PROCESSES WITH SILVER HALIDE SOLVENT PRECURSORS

Alan L. Borror, Lexington, and Ernest W. Ellis, Carlisle, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 23, 1982, Ser. No. 360,822

Int. Cl.³ G03C *5/54, 5/38, 1/148*

U.S. Cl. 430—212 **27 Claims**

4,388,396

ELECTROPHOTOGRAPHIC PROCESS OF DEVELOPING AND TRANSFERING IMAGES USES FLUORINE CONTAINING OFFSET PREVENTING AGENT IN DEVELOPER

Hatsumi Nishibayashi, Hirakata; Yoshimi Amagai, Katano; Norio Hikake, Kyoto; Toshihiro Kouchi, Hirakata, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Division of Ser. No. 893,338, Apr. 4, 1978. This application Apr. 15, 1982, Ser. No. 368,728

Claims priority, application Japan, Apr. 7, 1977, 52-39015

Int. Cl.³ G03G *13/06, 13/14*

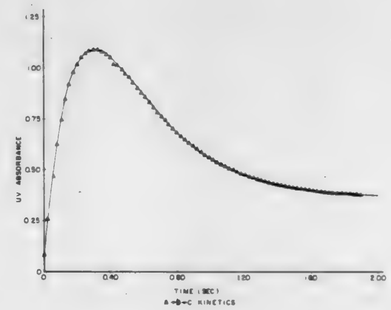
U.S. Cl. 430—126 **22 Claims**

1. A process for developing and fixing an electrostatic image comprising

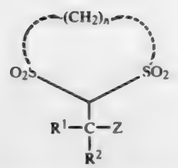
developing the electrostatic image by contacting the electrostatic image with a developer consisting essentially of particles comprising a pigment, a binder and an offset-preventing agent selected from the group consisting of aliphatic fluorocarbon compounds and fluorochlorocarbon compounds to allow the developer to adhere to said electrostatic image,

transferring the image formed by said developer to a transfer sheet, and

fixing the transferred developer image onto said transfer sheet by contacting the transfer sheet while carrying said



11. A photographic product which comprises a first sheet-like element comprising a photosensitive silver halide emulsion layer carried on a support, a second sheet-like element adapted to be superposed with said first sheet-like element, means for retaining an aqueous alkaline processing composition for distribution between said first and second sheet-like elements, and a silver halide solvent precursor disposed in one or both of said sheet-like elements, said silver halide solvent precursor being a compound selected from those represented by the formula



wherein R^1 is a monovalent organic radical; R^2 is hydrogen or a monovalent organic radical; Z is a moiety that undergoes β-elimination in aqueous alkaline solution; and n is an integer 3, 4 or 5.

12. A photographic product as defined in claim **11** wherein said silver halide solvent precursor is disposed in said first sheet-like element.

15. A photographic product as defined in claim **12** wherein one of said first and second sheet-like elements additionally includes an image-receiving layer.

16. A photographic product as defined in claim **15** wherein said image-receiving layer is contained in said second sheet-like element.

18. A photographic product as defined in claim **16** wherein said image-receiving layer is a dye image-receiving layer and said first sheet-like element additionally includes a dye image-forming material associated with said silver halide emulsion layer.

4,388,399

LIGHT-SENSITIVE IMAGE-FORMING MATERIAL

Fumiaki Shinozaki; Tomizo Namiki, both of Asaka, and Tomoaki Ikeda, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 181,558, Aug. 27, 1980, abandoned. This application Feb. 10, 1982, Ser. No. 347,620
Claims priority, application Japan, Aug. 28, 1979, 54-109417
Int. Cl.³ G03C *1/76*
U.S. Cl. 430—271 **6 Claims**

1. A light-sensitive image-forming material which comprises a support having provided thereon a first layer consisting essentially of at least one alcohol-soluble polyamide resin and, on said first layer, a second layer comprising a light-sensitive photoresist composition, said layer containing said alcohol-soluble polyamide resin and further consisting essentially of one or more polymers having one or more of a free carboxy group(s), one or more of a phenolic hydroxy group(s) or a maleic anhydride group in a proportion of about 0.1:9.9 to 6:4 by weight to said polyamide resin, wherein said light-sensitive layer and said alcohol-soluble polyamide resin layer are capable of being simultaneously developed and etched in an alkaline aqueous developer, whereby only either unexposed or exposed areas are selectively dissolved or swollen by the aqueous developing solution and removed.

4,388,400

HEAT-MODE RECORDING MATERIAL

Masatoshi Tabei; Minoru Wada; Yonosuke Takahashi, and Satoshi Yoshida, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 6, 1981, Ser. No. 309,143
Claims priority, application Japan, Oct. 6, 1980, 55-139687
Int. Cl.³ G03C *1/76, 5/04*
U.S. Cl. 430—346 **23 Claims**

1. A heat-mode recording material for recording information by imagewise exposure to high intensity radiation, which comprises a base support having thereon a recording layer capable of thermal deformation at the irradiated areas to cause a difference in optical density between the irradiated areas and the non-irradiated areas, said recording layer being a hydrogen-containing layer comprised of one or more elemental metals selected from the group consisting of Mg, Sc, Y, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Re, Fe, Co, Ni, Ru, Rh, Pd, Ir, Pt, Cu, Ag, Au, Zn, Cd, Al, Ga, In, Si, Ge, Tl, Pb, Po, Sn, As, Sb, Bi, Se and Te, wherein the hydrogen is introduced in the elemental metal layer to increase heat-sensitivity of the elemental metal layer.

4,388,401

MULTILAYER COLOR REVERSAL LIGHT-SENSITIVE MATERIAL

Kazunori Hasebe, and Yoshisato Minagawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 29, 1981, Ser. No. 335,412
Claims priority, application Japan, Dec. 29, 1980, 55/185668
Int. Cl.³ G03C *1/76*
U.S. Cl. 430—505 **9 Claims**

1. A multilayer color reversal light-sensitive material comprising a support, a yellow filter layer, a group of green-sensitive emulsion layers, and a group of red-sensitive emulsion layers, wherein

said emulsion layer groups are positioned nearer to the support than the yellow filter layer,

each of the emulsion layer groups comprises at least two adjacent layers, including a high-sensitivity silver halide emulsion layer containing a coupler and silver halide grains having an average size of from 0.6μ to 2.0μ, and a low-sensitivity silver halide emulsion layer containing a coupler and silver halide grains having an average size of from 0.1μ to 0.5μ, and

at least one of the green-sensitive low-sensitivity emulsion layer or the red-sensitive low-sensitivity emulsion layer is positioned farther from the support than the high-sensitivity emulsion layer of the corresponding emulsion layer group.

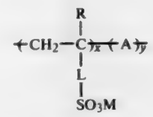
4,388,402

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yasuo Mukunoki, Minami-ashigara; Yasuhiro Nakayama, Fujinomiya, and Shigeki Yokoyama, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 12, 1981, Ser. No. 292,082
Claims priority, application Japan, Aug. 15, 1980, 55-112416
Int. Cl.³ G03C *1/06, 1/38, 1/84*
U.S. Cl. 430—527 **19 Claims**

1. A photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer, said material including at least one hydrophilic colloid layer containing at least 0.1 g/m² of a water-soluble polymer having a molecular weight of from 10,000 to 500,000 and consisting essentially of a repeating unit represented by formula (I)



(I)

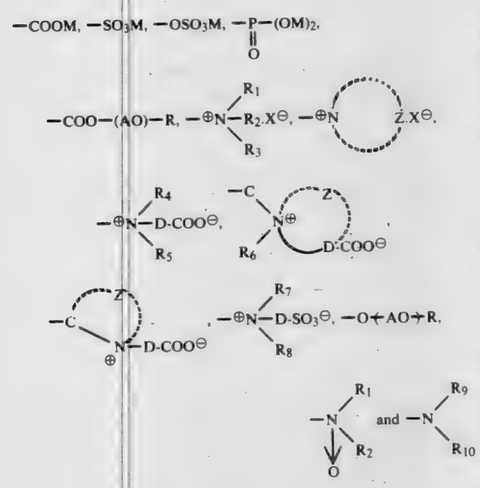
wherein R represents a hydrogen atom, a halogen atom, or an alkyl group; L represents an arylene group, an aryleneakylene group, an alkylene group or a single chemical bond; M represents a hydrogen atom, an ammonium ion, or an alkali metal ion; x represents from 10 to 100 mol%; y represents from 0 to 90 mol%; and A represents a copolymerized monomer unit selected from an ethylenically unsaturated monocarboxylic acid or dicarboxylic acid, an ester of an ethylenically unsaturated monocarboxylic acid or dicarboxylic acid, an ethylenically unsaturated ester of a monoaliphatic acid, styrene, α-methylstyrene, acrylonitrile, acrylamide, methacrylamide, N-vinyl pyrrolidone, ethylene, propylene, or a diene, wherein

said photographic material further contains an organic fluorocompound represented by formula (II)

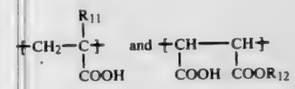


(II)

wherein (Cf) represents an n-valent group containing at least three fluorine atoms and at least three carbon atoms; n represents an integer of 1 or 2; and (Y) represents a moiety selected from the group consisting of



wherein M represents a hydrogen atom, a cation or a hydrocarbon group having from 1 to 18 carbon atoms; —(AO)— represents a polyalkylene oxide group having a degree of polymerization of from 2 to 100 and selected from the group consisting of polyoxyethylene, polyoxypropylene and a polyoxyethylene-polyoxypropylene block copolymer; R represents a hydrogen, atom an alkyl group having from 1 to 18 carbon atoms or an aryl group; R_1, R_2, R_3, R_4, R_5, R_6, R_7 and R_8 each represents an alkyl group having from 1 to 4 carbon atoms or a hydroxyalkyl group having from 1 to 4 carbon atoms; R_9 and R_{10} each represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms or a hydroxyalkyl group having from 1 to 4 carbon atoms; X represents a halogen atom or an $R—O—SO_2—O^{\ominus}$ group; Z represents an atom or an atomic group forming a 5-membered or 6-membered ring together with the N atom; and D represents an alkylene group having 1 to 5 carbon atoms and a film forming water soluble polymer having carboxylic acid groups selected from



wherein R_{11} represents a hydrogen atom or a methyl group; and R_{12} represents a hydrogen atom or an alkyl group having from 1 to 5 carbon atoms.

4,388,403

PROCESS FOR THE PREPARATION OF DISPERSIONS OF HYDROPHOBIC SUBSTANCES IN WATER

Günter Helling, Odenthal; Helmut Reiff; Wolfgang Himmelmann, both of Leverkusen, and Günter Renner, Gladbach, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 24, 1981, Ser. No. 305,201
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, 3036846
Int. Cl.³ G03C *1/40*
U.S. Cl. 430—546 **7 Claims**

6. The method of preparing color photographic materials which comprises the steps of preparing a solution of a hydrophobic substance together with an ionomeric polyaddition or condensation product in an organic, water-miscible solvent having a boiling point below 120° C., or in a mixture of the organic solvent with water in a proportion by weight of from 50:50 to 100:0, water being added to the solution so that the proportion, by weight, of solvent to water in the mixture is from 10:1 to 1:10, and then removing the organic solvent from the solution.

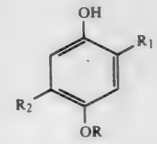
4,388,404

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Masakazu Morigaki; Morio Yagihara, and Takashi Ozawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 19, 1982, Ser. No. 369,769
Claims priority, application Japan, Apr. 21, 1981, 56-60264
Int. Cl.³ G03C *1/40*
U.S. Cl. 430—548 **25 Claims**

1. A silver halide color photographic light-sensitive material, comprising: a magenta color image forming polymer coupler latex; and a compound represented by the following general formula (I)



(I)

wherein R represents an alkyl group; and R_1 and R_2 each represents a tertiary alkyl group and R_1 and R_2 may be the same or different.

4,388,405

METHOD FOR PRODUCING L-HISTIDINE BY FERMENTATION

Kounosuke Sano, Tokyo, and Takayasu Tsuchida, Kawasaki, both of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Jun. 12, 1980, Ser. No. 158,876
Claims priority, application Japan, Jun. 25, 1979, 54-79851
Int. Cl.³ C12N *1/20, 15/00*; C12P *13/24*; C12R *1/185*
U.S. Cl. 435—107 **10 Claims**

1. A method for producing L-histidine by fermentation which comprises: culturing in a culture medium an L-histidine producing microorganism selected from the group consisting of *Escherichi coli* NRRL B-12116, *Escherichia coli* NRRL B-12118, *Escherichia coli* NRRL B-12119, *Escherichia coli* NRRL B-12120 and *Escherichia coli* NRRL B-12121, which is produced by incorporating a hybrid plasmid into a recipient strain of the genus "Escherichia", said hybrid plasmid containing a deoxy-ribonucleic acid fragment possessing genetic information related to L-histadine production, obtained from a mutant of the genus "Escherichia", resistant to a histidine analogue;

and recovering the L-histidine accumulated in the culture medium.

4,388,406

PROCESS FOR ISOLATING CU,ZN-SUPEROXIDE DISMUTASE FROM AQUEOUS SOLUTIONS CONTAINING SAID ENZYME TOGETHER WITH ACCOMPANYING PROTEINS

Jack T. Johansen, Rungsted Kyst, Denmark, assignor to De Forenede Bryggerier A/S, Copenhagen, Denmark

Continuation of Ser. No. 149,383, May 13, 1980, abandoned. This application Oct. 27, 1981, Ser. No. 315,392

Claims priority, application Denmark, May 17, 1979, 2033/79; Apr. 21, 1980, 1687/80

Int. Cl.³ C12N *9/02, 9/08*

U.S. Cl. 435—189 **2 Claims**

1. A process for isolating Cu,Zn-superoxide dismutase (SOD) from aqueous solutions containing said enzyme together with accompanying proteins, characterized by subjecting the solution at a pH of 4.7 to 5.5 to chromatography on a cation exchange resin of the same polarity as SOD in the pH range used.

4,388,407

PROCESS AND APPARATUS FOR THE RAPID DETERMINATION OF THE CHARACTERISTICS OF A PETROLEUM POLLUTANT

Andre Lepain, Rosiere; Robert Bronchart, Brussels, and Roger Remacle, Lasne, all of Belgium, assignors to Labofina, S.A., Brussels, Belgium

Filed Feb. 2, 1981, Ser. No. 230,637

Claims priority, application Belgium, Jun. 12, 1980, 201011

Int. Cl.³ G01N *9/04, 25/10, 33/28*

U.S. Cl. 436—3 **4 Claims**



1. A process for determining the characteristics of an oil-pollutant containing water which comprises the steps of:

(a) determining the water content of the mixture of water and pollutant by

introducing into the upper part of a first glass tube having a valve separating the upper and lower parts thereof, a cup filled with a known volume of said mixture of water and pollutant, an amount of a solvent for oil sufficient to completely solubilize all of the pollutant from said mixture, said solvent being substantially water-insoluble and having a specific gravity significantly higher than that of water, and a water-repellent coalescent agent,

closing the top of said first tube and agitating the contents of said first tube until the pollutant from said mixture is completely solubilized in said solvent,

opening the valve separating the upper and lower parts of the first tube and allowing the mixture to decant into an upper aqueous phase and a lower organic phase in the lower part of said first tube,

placing the zero of a graduated plate which is movable along the lower part of said first tube in front of the upper meniscus of said aqueous phase, said graduated plate being previously calibrated in percent water, and

noting the graduation of said movable plate which is in front of the lower meniscus of said aqueous phase and which indicates the water content of the mixture of water and pollutant;

(b) determining the specific gravity of said mixture of water and pollutant by

hanging a vessel of known volume filled with the mixture of water and pollutant and closed with a cap on a calibrated spring which is provided with an indicator mark and enclosed in a suspended second glass tube, said vessel being hung on said spring via an attachment rod which connects the calibrated spring with the cap of the vessel, and

noting the graduation on a fixed graduation plate previously standardized in specific gravity and attached to the second glass tube, which is in front of the indicator mark of the calibrated spring;

(c) determining the initial boiling point of the pollutant by

introducing into a third glass tube having closing means at the top thereof, filter means near the bottom thereof, and a valve at the bottom thereof beneath said filter means, a sample of the mixture of water and pollutant, and an amount of a glycol-type solvent sufficient to separate the water from the mixture of water and pollutant, said glycol-type solvent being water-soluble and practically insoluble in the pollutant,

allowing the mixture to decant into a lower aqueous phase and an upper organic phase,

opening the valve at the bottom of said third tube and allowing the aqueous phase to run out of the third tube,

thereafter introducing into the organic phase remaining in said third glass tube an amount of a mixture of anhydrous calcium chloride and anhydrous sodium sulfate sufficient to absorb any water remaining in said organic phase,

reopening the valve at the bottom of said third tube and collecting the water-free pollutant, said calcium chloride and sodium sulfate being retained in said third tube by said filter means,

introducing the resulting water-free pollutant into a device formed by a fourth glass tube comprising a first inclined lateral tube having a thermometer mounted therein and a second lateral tube diametrically opposed to said first lateral tube comprising two horizontal branches linked by a vertical branch topped by a vent tube, said second lateral tube ensuring reflux of distilled pollutant in said fourth glass tube through the two horizontal branches, the lower horizontal branch extending into the interior of said fourth glass tube to promote the formation of a liquid plug whereby exhaust of vapors directly through the second lateral tube is avoided,

securing said device above the burner of a gas-fired torch and heating the water-free pollutant in said fourth glass tube until reflux occurs, and

noting the temperature indicated on the thermometer at the time reflux occurs.

4,388,408

COKER FEEDSTOCK ANALYSIS METHOD

Herbert P. Sien, Philadelphia, Pa., and Thomas J. McGinley, Wilmington, Del., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Dec. 22, 1980, Ser. No. 219,406

Int. Cl.³ G01N *33/26*

U.S. Cl. 436—60 **3 Claims**

1. A method for determining the suitability of a clarified slurry oil from a fluidized bed catalytic cracking operation as a feedstock for electrode grade coke which comprises subjecting said feedstock to analysis of asphaltenes and U.V. absorptivity and selecting as suitable for coking those oils which show no more than 12 weight percent of asphaltenes and a minimum absorptivity in a 1 cm. cell of 40, 19 and 15 liters per gm-cm., at wave lengths of 292, 324 and 340 nm., respectively.

4,388,409

CEMENT TEST DEVICE FOR THE DETECTION OF IMITATION GOLD

Andre Reiss, 147-47 Village Rd., Jamaica, N.Y. 11435

Filed Jan. 7, 1982, Ser. No. 337,680

Int. Cl.³ G01N *21/78, 33/20*

U.S. Cl. 436—80 **7 Claims**

1. A test device for the detection of imitation gold or the purity of gold alloy comprising a cast cement carrier impregnated with an aqueous acidic solution of a complex molybdic acid and a hygroscopic salt.

4,388,410

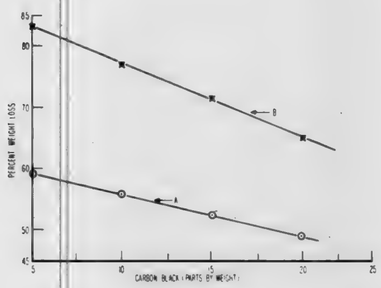
METHOD TO DETERMINE CARBON BLACK CONTENT

Nestor A. Arroyo, Cranbury; Nitin V. Desai, Hightstown, both of N.J., and James F. Buchanan, Greenwood, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 9, 1981, Ser. No. 223,856

Int. Cl.³ G01N *25/00, 33/44*

U.S. Cl. 436—85 **9 Claims**



1. A method for thermogravimetrically analyzing a plastic molding composition comprising carbon black and a molding resin consisting of a homopolymer or copolymer of vinyl chloride determine the carbon black content wherein the method comprises the steps of:

(a) compounding the plastic molding composition so that the carbon black is uniformly dispersed therein,

(b) heating the molding composition in an inert atmosphere at about 350° C.,

(c) maintaining the molding composition at about 350° C. in an inert atmosphere for a first given time which is long enough so that there is no further significant weight loss,

(d) heating the molding composition in an inert atmosphere to a temperature between about 600° C. and 750° C.,

(e) maintaining the molding composition at a temperature between about 600° and 750° C. in an inert atmosphere for a second given time which is long enough so that there is no further significant weight loss,

(f) weighing the molding composition to determine the weight loss during the first given time and the second given time, and

(g) comparing the weight loss with that for samples of known composition analyzed under the same conditions to determine the carbon black content of the molding composition.

4,388,411

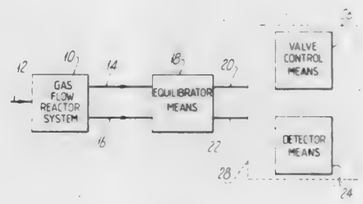
APPARATUS AND METHOD FOR DETECTING FLUID

James E. Lovelock, Launceston, England, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 29, 1981, Ser. No. 258,843

Int. Cl.³ G01N *27/14, 21/72, 33/00*

U.S. Cl. 436—149 **28 Claims**



1. Apparatus for use in detecting a constituent fluid in very low concentrations in a sample flow of fluid, also containing at least one contaminant, the apparatus comprising first and second conduit means each having an inlet and an outlet and being formed of a material which is permeable to the at least one contaminant; enclosure means for enclosing the first and second conduit means substantially along the length thereof, the enclosure means having an inlet and an outlet whereby a diluent fluid can be passed through the enclosure means to remove contaminant diffused from the first and second conduit means into the enclosure means and whereby residual contaminant can be distributed equally between the first and second conduit means; detector means having a first inlet and an outlet; and valve control means for alternately allowing the sample flow of fluid from the first conduit means to pass through the detector means, when the valve control means is in a first condition, and a reference flow of fluid from the second conduit means to pass through the detector means, when the valve control means is in a second condition.

4,388,412

IMMUNOASSAY OF PHOSPHOLIPID, SUCH AS PHOSPHATIDYLCHOLINE, IN FLUIDS SUCH AS AMNIOTIC

Kenichi K. Yabusaki, Albany, Calif., assignor to Hana Biologics, Inc., Emeryville, Calif.

Filed Feb. 2, 1982, Ser. No. 344,930

Int. Cl.³ G01N *33/54, 33/92*

U.S. Cl. 436—536 **20 Claims**

1. A method of determining the presence of a phospholipid in a biological fluid comprising:

A. adding an ethanolic solution of diacylphosphatidylcholine and cholesterol to the biological fluid forming a macromolecular aggregate complex solution;

B. adding the macromolecular aggregate complex solution to antibody molecules to the phospholipid in an aqueous buffered medium causing an agglutination reaction; and

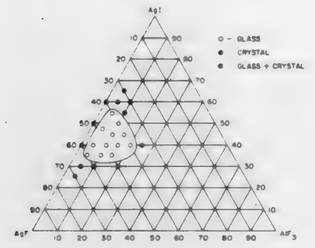
C. examining the results of the agglutination reaction to determine the presence of the phospholipid.

4,388,413

SILVER HALIDE GLASSES

Robert H. Doremus, 1544 Keyes Ave., Schenectady, N.Y. 12309; George Csanak, 167 Cold Spring Rd., Stamford, Conn. 06905; B. Michael Kale, 70 Olmstead La., and James E. Moore, 105 Keeler Dr., both of Ridgefield, Conn. 06877

Filed Oct. 21, 1981, Ser. No. 313,481
Int. Cl.³ C03C *3/12, 3/18, 3/24*
U.S. Cl. 501—40 **4 Claims**



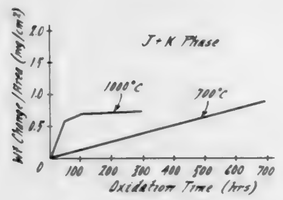
1. A glass composition comprising 35 to 64 percent silver fluoride, 30 to 60 percent silver iodide and aluminum fluoride wherein said aluminum fluoride is present in an amount up to 30 percent of said glass.

4,388,414

THERMALLY STABLE SILICON NITRIDE MATERIAL

John A. Mangels, Flat Rock, and John R. Baer, Ypsilanti, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1981, Ser. No. 332,918
Int. Cl.³ C04B *35/58*
U.S. Cl. 501—98 **1 Claim**



1. A thermally stable material which consists of:
a substantially pure primary phase formed of substantially pure silicon nitride; and
a substantially pure secondary phase formed of a material selected from the group consisting of $Si_3N_4/SiO_2/4Y_2O_3$, $Si_3N_4/SiO_2/2Y_2O_3$, $Si_3N_4/4SiO_2/5Y_2O_3$, wherein said primary phase forms individual grains and said secondary phase forms grain boundaries between said individual grains.

4,388,415

HIGH VOLTAGE DIELECTRIC (SRT I03)

Mike S. Chu, State College, Pa., assignor to Erie Technological Products, Inc., Erie, Pa.

Filed Sep. 30, 1981, Ser. No. 306,960
Int. Cl.³ C04B *35/00*
U.S. Cl. 501—136 **7 Claims**

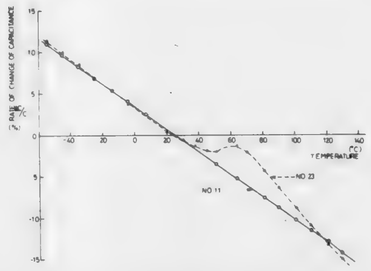
1. A ceramic dielectric composition consisting essentially of 63 to 74 mole % of $SrTiO_3$, 17 to 25 mole % TiO_2, and 9 to 12 mole % Bi_2O_3 and further including 1 to 8 weight % NiO based on the total weight of the above mentioned three compounds $SrTiO_3$, TiO_2, and Bi_2O_3, the ceramic composition has high dielectric constant, low dielectric loss at 1 KHz, 1 MHz, and 60 Hz, small variation of capacitance with temperature from −55° C. to +125° C., high insulation resistance, and high dielectric breakdown voltage.

4,388,416

CERAMIC DIELECTRIC COMPOSITIONS FOR TEMPERATURE COMPENSATING CAPACITORS

Yukio Sakabe, and Yukio Hamaji, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Nov. 6, 1981, Ser. No. 318,863
Claims priority, application Japan, Nov. 28, 1980, 55-168870
Int. Cl.³ C04B *35/46*
U.S. Cl. 501—136 **1 Claim**



1. Ceramic dielectric compositions for temperature compensating capacitors, which have a high dielectric constant of 350 to 500, a small temperature coefficient of dielectric constant of N 1200–N 2000 ppm/°C. and a good linearity of temperature coefficient, a Q value of 1000 or more and consisting essentially of:
strontium oxide (SrO);
calcium oxide (CaO);
titanium dioxide (TiO_2);
bismuth oxide (Bi_2O_3);
trilead tetroxide (Pb_3O_4); and
magnesium oxide (MgO);
wherein the percentages by weight of said composition fall within the region of 1.2–19.0% by weight of SrO, 12.2–17.4% by weight of CaO, 35.8–43.9% by weight of TiO_2, 15.7–37.6% by weight of Bi_2O_3, 1.9–14.6% by weight of Pb_3O_4, and 0.9–2.7% by weight of MgO.

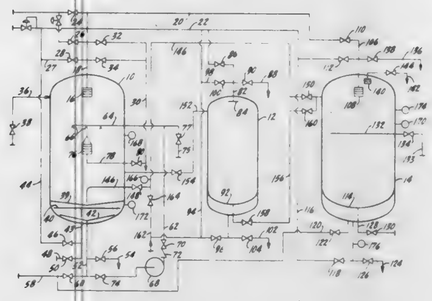
4,388,417

REGENERATION OF DEEP BED CONDENSATE POLISHERS

Peter E. Down, Summit, and Eli Salem, Deal, both of N.J., assignors to Ecodyne Corporation, Chicago, Ill.

Filed Oct. 26, 1981, Ser. No. 315,252
Int. Cl.³ B01J *49/00*
U.S. Cl. 521—26 **4 Claims**

1. A method for regenerating a mixture of anion and cation exchange resins from a mixed bed demineralizer, comprising:
transferring the exhausted anion and cation resins into a separation vessel having a quantity of inert material therein whose specific density is intermediate to the specific densities of the anion and cation resins;
passing a backwash liquid through the separation vessel so as to separate the resins into an upper anion resin layer, an intermediate inert material layer and a lower cation resin layer;
transferring the cation resin from the bottom of the separation vessel to a cation regeneration vessel, leaving the anion resin and substantially all of the inert material in the separation vessel;
passing a regenerant liquid through the separation vessel to regenerate and float the anion resin;
transferring the floating anion resin from the separation vessel to an anion rinse vessel, leaving the inert material and any not previously transferred cation resin in the separation vessel;
rinsing the anion resin within the anion rinse vessel;
passing a regenerant liquid through the cation regeneration vessel to regenerate the cation resins;



rinsing the cation resin within the cation regeneration vessel; and
transferring the anion resin from the anion rinse vessel to the cation regeneration vessel.

4,388,418

FOAMABLE POLYMERIC STYRENE PARTICLES

Richard A. Schwarz, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Filed Sep. 24, 1982, Ser. No. 423,487
Int. Cl.³ C08J *9/20—*
U.S. Cl. 521—56 **6 Claims**

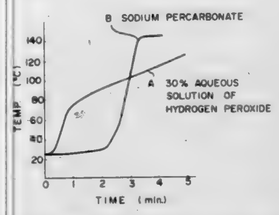
1. An expandable polymeric styrene particle having incorporated therein a blowing agent, from about 0.1% to about 0.5% by weight of bis (allyl ether) of tetrabromobisphenol A and from about 1% to about 2.5% by weight of dibromoethyldibromocyclohexane all percentages being based upon the weight of the polymeric styrene.

4,388,419

UNSATURATED POLYESTER RESIN FOAMS AND METHOD OF PREPARATION

Shinji Murakami, Kyoto, Japan, assignor to Eiwa Chemical Industry Co., Ltd., Kyoto, Japan

Filed Jan. 12, 1982, Ser. No. 339,009
Claims priority, application Japan, Jan. 19, 1981, 56-5113
Int. Cl.³ C08J *9/10*
U.S. Cl. 521—103 **10 Claims**



1. An foamable liquid unsaturated polyester resin composition which comprises in combination:
(a) a liquid unsaturated polyester resin in solution with an ethylenically unsaturated monomer,
(b) a hydrazide compound in an amount of from 0.1 to 20 phr,
(c) a cobalt compound in an amount of from 0.003 to 0.5 phr as a metal content, and
(d) at least one powdered inorganic compound selected from the group consisting of percarbonates, perborates and perphosphates in an amount of from 0.1 to 20 phr.

4,388,420

PROCESS FOR PREPARING A MICROCELLULAR POLYURETHANE FOAM WITH IMPROVED GREEN STRENGTH

Robert L. McBrayer, Lincoln Park, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 146,646, May 5, 1980, abandoned. This application Nov. 30, 1981, Ser. No. 325,793
Int. Cl.³ C08G *18/14, 18/18, 18/24*
U.S. Cl. 521—127 **6 Claims**

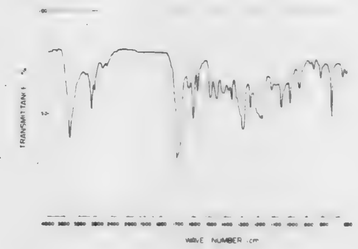
1. A process for preparing a flexible, microcellular polyurethane foam with improved green strength, comprising:
reacting together a polyalklyene polyether polyol having an average functionality of from about 2 to about 8 and an average equivalent weight of from about 1000 to about 2700, a chain extender and an organic polyisocyanate in the presence of an admixture of (1) a urethane—formation promoting organometallic catalyst and (2) an amine selected from the group consisting of N, N, N^1, N^1-tetrakis-(2-hydroxypropyl)ethylene diamine, triethanolamine and mixtures thereof, the amine being present in an amount ranging from about 0.1 to about ten parts by weight thereof per hundred parts by weight of polyol.

4,388,421

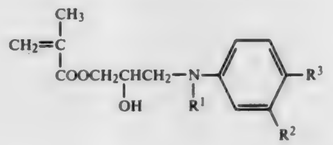
N-(2-HYDROXY-3-METHACRYLOYLOXYPROPYL)-AMINOBENZOIC ACID DERIVATIVES AND DENTAL ADHESIVE COMPOSITION CONTAINING SAME

Shin-ichi Suzuki, Odawara; Shinya Kitoh, Hiratsuka; Haruhiko Toda, Odawara, and Moriaki Higo, Ninomiya, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Dec. 14, 1981, Ser. No. 330,605
Claims priority, application Japan, Dec. 20, 1980, 55-181066; Dec. 20, 1980, 55-181067
Int. Cl.³ C08K *5/10, 5/16*
U.S. Cl. 523—118 **10 Claims**



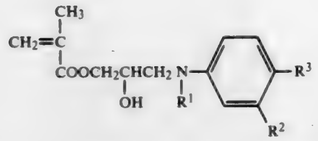
1. An N-(2-hydroxy-3-methacryloyloxypropyl)-aminobenzoic acid derivative having the general formula:



(1)

wherein R^2 is a carboxyl group and R^3 is a hydrogen atom when R^1 is a methyl group, and R^2 is a hydroxyl group and R^3 is a carboxyl group when R^1 is a hydrogen atom.

4. A dental adhesive composition comprising an N-(2-hydroxy-3-methacryloyloxypropyl)aminobenzoic acid derivative having the general formula:



(1)

wherein R^2 is a carboxyl group and R^3 is a hydrogen atom when R^1 is a methyl group, and R^2 is a hydroxyl group and R^3 is a carboxyl group when R^1 is a hydrogen atom.

4,388,422

FIBER-REINFORCED COMPOSITE MATERIALS

Steven R. Gerteisen, and David R. Wetzel, both of Evansville, Ind., assignors to Dart Industries Inc., Northbrook, Ill.

Filed Apr. 16, 1979, Ser. No. 30,253

Int. Cl.³ C08L *69/00;* **C08K** *7/14, 9/02*

U.S. Cl. 523—137 **1 Claim**

1. A fiber reinforced thermoplastic resin composition of improved shielding effectiveness against electromagnetic interference comprising a polycarbonate resin having incorporated therein a commingled fiber constituent comprised of aluminized glass fibers and carbon fibers, wherein the fiber component and the resin component are present over a range of fiber to resin of from about 10% to about 45% and wherein the aluminized glass fiber and the carbon fiber are present over a range of aluminized glass fiber to carbon fiber of from about 20% to about 80%.

4,388,423

FRICTION LINING MATERIAL

Edward R. Kaufman, Andover; Gregory R. Benson, Dracut, and Alfred Shaines, Waban, all of Mass., assignors to Glennco Trust, Lawrence, Mass.

Continuation of Ser. No. 316,784, Nov. 2, 1981, which is a continuation-in-part of Ser. No. 98,996, Nov. 30, 1979, and Ser. No. 259,857, May 4, 1981. This application Jul. 29, 1982, Ser. No. 402,835

Int. Cl.³ C08J *5/14*

U.S. Cl. 523—153 **17 Claims**

1. A friction material for use as a brake lining and the like comprising expanded vermiculite having an average minimum particle size of about 0.15 mm. and a thermosetting resin, said vermiculite and thermosetting resin being present in the friction material in a weight ratio of resin-to-vermiculite in a range from about 1.5/1 to 0.15/1, having no more than 15% of fibrous material either alone or in combination with acicular mineral particles.

4,388,424

CAULK CONTAINING MICROBALLOONS

Samuel C. Kennell, Chesterland, and Ronald F. Witkiewicz, Garfield Hts., both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Nov. 5, 1981, Ser. No. 318,472

Int. Cl.³ C08J *9/32*

U.S. Cl. 523—219 **2 Claims**

1. A low shrink lightweight caulk for sealing structural joints containing binder, plasticizer, filler, adhesion promoter, and other caulk additives, wherein the improvement comprises:

40% to 75% by weight of an acrylic copolymer latex binder

25% to 60% by weight of glass microballoon powder having a predominant particle size less than about 130 microns.

4,388,425

PRODUCTION OF CONCENTRATES OF TITANIUM DIOXIDE IN POLYCAPROLACTAM

Hugo Strehler, Frankenthal; Werner Hoerauf, and Guenter Valentin, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 4, 1982, Ser. No. 385,296

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1981, 3128476

Int. Cl.³ C08L *77/02*

U.S. Cl. 523—333 **2 Claims**

1. A process for the production of a concentrate of from 20 to 50% by weight of titanium dioxide in polycaprolactam, wherein a 5–15% strength by weight aqueous suspension of titanium dioxide is metered into a solution of caprolactam in water at from 110° to 150° C. at the same rate at which water is distilled off, and after all the water has been distilled off the resulting mixture is polymerized at from 240° to 280° C.

4,388,426

STABILIZATION OF EPOXY SYSTEMS IN NON-FLAMMABLE SOLVENTS

Ralph M. Schure, Darien, and Gerald H. Steele, Lisle, both of Ill., assignors to Eschem Inc., Chicago, Ill.

Filed Jun. 26, 1981, Ser. No. 277,903

Int. Cl.³ C08G *69/48, 59/18;* **C08L** *63/02;* **C08K** *5/02*

U.S. Cl. 523—462 **23 Claims**

1. A flame-resistant laminating adhesive composition comprising:

a part A component including an epoxy containing reactive resin and a flame-resistant solvent; and

a part B component including a polyamide reactive resin, a flame-resistant halogenated hydrocarbon solvent, and an adduct of an amine and an aromatic hydroxy compound or epoxy resin, said amine being a catalyst for said epoxy containing reactive resin, and said adduct being resistant to reaction of said amine with said halogenated hydrocarbon solvent.

4,388,427

HEAT-SET TYPE PRINTING INKS

Syuzi Nishikawa; Toru Matsubara; Kazuyoshi Iida, and Seiichiro Tahara, all of Kyobashi, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1981, Ser. No. 301,152

Claims priority, application Japan, Sep. 28, 1980, 55-130710

Int. Cl.³ C09D *11/06, 11/08*

U.S. Cl. 523—500 **5 Claims**

1. A heat-set type printing ink comprising as the vehicle a non-aqueous dispersion prepared by dissolving at least one member selected from the group consisting of petroleum resins, modified rosin resins and alkyd resins in a hydrocarbon solvent-containing solvent boiling at not lower than 170° C. to form a resin solution and polymerizing at least one kind of vinyl monomer in said resin solution to obtain the non-aqueous dispersion.

4,388,428

BIOLOGICALLY STABILIZED COMPOSITIONS COMPRISING COLLAGEN AS THE MAJOR COMPONENT WITH ETHYLENICALLY UNSATURATED COMPOUNDS USED AS CONTACT LENSES

Petr Kuzma, Dayton, and Giovanina Odorisio, Palisades Park, both of N.J., assignors to National Patent Development Corporation, New York, N.Y.

Filed Jul. 20, 1981, Ser. No. 284,432

Int. Cl.³ C08H *1/00*

U.S. Cl. 523—106 **29 Claims**

1. A polymerized hydrophilic water-swellable, biologically stable composition made from a mixture of components consisting essentially of:

(a) solubilized collagen; and

(b) an ethylenically unsaturated monomer which is characterized by a polymerizable carbon-to-carbon double bond and is composed of atoms of the group consisting of

(i) carbon, hydrogen, oxygen and nitrogen in the form of amido and optionally oxygen in the form of carbonyl,

(ii) carbon, hydrogen, and oxygen in the form of carbonyloxy and hydroxyl, and optionally oxygen in the form of etheric oxygen,

(iii) carbon, hydrogen, carbonyloxy oxygen and etheric oxygen,

(iv) carbon, hydrogen, carbonyloxy oxygen, and oxygen in the form of vicinal-epoxy, and

(v) carbon, hydrogen, carbonyloxy oxygen, and amino nitrogen;

(c) said polymerized hydrophilic composition containing from 50 to about 70 weight percent of solubilized collagen and from less than 50 to about 30 weight percent of ethylenically unsaturated monomeric units, based on the total weight of the components.

4,388,429

FLAME RETARDANT POLYMER COMPOSITIONS

Charles S. Ilardo, Tonawanda, and Daniel J. Scharf, East Amherst, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Apr. 24, 1981, Ser. No. 257,082

Int. Cl.³ C08K *5/02, 5/15, 5/34*

U.S. Cl. 524—94 **13 Claims**

1. A fire retardant polymeric composition comprising a polyolefin polymer and an effective fire retardant proportion of the composition comprising

(1) a brominated aromatic component selected from the group consisting of polydibromophenylene oxide, decabromodiphenyl oxide, tetrabromo-ortho-chlorotoluene, and bis tetrabromophthalimide ethane, and

(2) a chlorinated organic component which is a diaduct of hexachlorocyclopentadiene and a polyunsaturated cyclic compound selected from the group consisting of 1,5 cyclooctadiene and furon and (3) antimony oxide

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4,388,430

ASSOCIATIONS FOR STABILIZING VINYL RESINS

Paul de Cointet de Fillain, Toulouse, and Charles Pigerol, Saint-Ouen, both of France, assignors to Sanofi, Paris, France

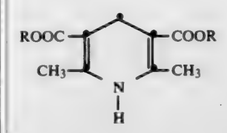
Filed Sep. 30, 1981, Ser. No. 307,298

Claims priority, application France, Oct. 3, 1980, 80 21243

Int. Cl.³ C08K *5/17, 5/34;* **C09K** *15/20, 15/30*

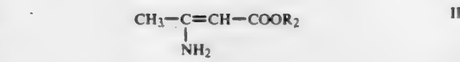
U.S. Cl. 524—99 **11 Claims**

1. New stabilizing association for vinyl resins made up of vinyl polymers or copolymers, characterized by the fact that it includes a dihydropyridine derivative of the general formula:

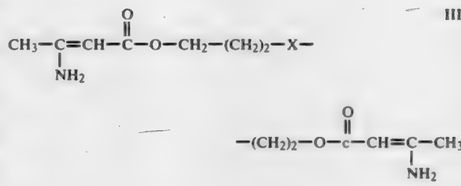


I

in which R represents a linear alkyl radical containing from 1 to 22 carbon atoms, a linear alkeny¹ radical containing 3 to 18 carbon atoms, a linear alkynyl radical containing 3 to 11 carbon atoms, or an aralkyl radical, optionally substituted in the ortho or para position by a halogen atom or by a methyl or methoxy radical, or R represents a phenyl radical, optionally substituted in the para position by a methoxy radical, or R represents a radical $R_1—O—(CH_2)_n—$ in which n has the value 2, 3, or 4, and R_1 represents a linear alkyl radical containing 1 to 4 carbon atoms or a phenyl radical, and a β-aminocrotonic acid derivative of the general formulas:



II



III

in which R_2 represents a linear alkyl radical with 1 to 8 carbon atoms or a mixture of linear alkyl radicals containing 16 to 18 carbon atoms, and X represents a sulfur or oxygen atom or a single bond.

3. Vinyl resins made up of vinyl polymers or copolymers characterized by the fact that they contain an association according to claim 1 as a stabilizer.

4,388,431

FLAMEPROOFED ORGANIC MATERIALS

Claudine Mauric, Basel, and Rainer Wolf, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

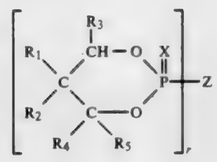
Filed Feb. 13, 1980, Ser. No. 121,205

Claims priority, application Switzerland, Feb. 14, 1979, 1461/79; Feb. 23, 1979, 1839/79

Int. Cl.³ C08K *5/52, 5/53*

U.S. Cl. 524—119 **23 Claims**

1. Flameproofed polyester containing, as a flameproofing agent, a flameproofing effective amount of at least one compound of formula I,



I

wherein

R_1 and R_2 are, independently, hydrogen; C_{1-4}alkyl; phenyl; or R_1 and R_2, together with the carbon atom to which they are attached, form a cyclohexylidene or cyclohexenylidene ring;

R_3 and R_4 are, independently, hydrogen or C_{1-4}alkyl;

R_5 is hydrogen or methyl, provided that when R_1 and R_2, together with the carbon atom to which they are attached, form a cyclohexylidene or cyclohexenylidene ring, each of R_3, R_4 and R_5 is hydrogen;

Z is a group Z_a''' or Z_b, where

Z_a''' is C_{1-10}-alkylene, C_{6-8}cycloalkylene, 2-butenylene or a group of the formula

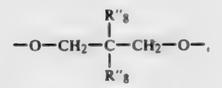
$$—CH_2CHR_6—COO—C_{m''}H_{2m''}—OOC—CHR_6C-H_2—$$

in which

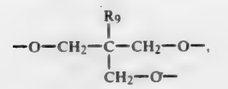
R_6 is hydrogen or methyl and

m'' is 2, 3 or 4; and

Z_b is a group of the formula



in which R_8'' is C_{1-4}alkyl, or a group of the formula



where R_9 is methyl or ethyl,
X is oxygen when Z is Z_a''' and oxygen or sulphur when Z is Z_b, and
r is 2 when Z is Z_a''' and 2 or 3 when Z is Z_b.

4,388,432

REPULPABLE ACRYLIC ACID BASED PRESSURE-SENSITIVE ADHESIVE

Robert R. Eskay, Woodbridge, N.J., assignor to Permacel, New Brunswick, N.J.

Filed Dec. 15, 1981, Ser. No. 330,936
Int. Cl.³ C08K *5/05*
U.S. Cl. 524—388 **11 Claims**

1. A high-temperature shear-resistant, water-dispersible pressure-sensitive adhesive comprising (1) a copolymer of from about 85 to about 97 percent by weight of acrylic acid compound and from about 15 to about 3 percent by weight of acrylamide, said acrylic acid compound including at least about 75 weight percent acrylic acid and about 25 to about 0 weight percent of a plasticizing monomer, (2) a plasticizer-tackifier comprising a polyhydric alcohol compound in an amount of from about 100 to 500 parts for every 100 parts of copolymer and (3) from about 0.5 to 2.5 percent based on copolymer of caustic.

4,388,433

SHELF-STABLE CATALYST COMPONENT FOR RTV SILICONE COMPOSITION

Steven H. Klein, Clifton Park, and Alfred H. Smith, Jr., Ballston Lake, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Feb. 26, 1981, Ser. No. 238,333
Int. Cl.³ C08L *83/06*
U.S. Cl. 524—401 **20 Claims**

1. A process for producing a shelf-stable catalyst component for a room temperature vulcanizable silicone rubber composition comprising:

(a) mixing 100 parts by weight of an organo polysiloxane fluid of a viscosity varying from 1,000 to 50,000 centipoise where the organo group is a monovalent hydrocarbon group, with a first portion of a mixture of crosslinking agent, catalytic promoter and self-bonding additive effective for providing a stable catalyzed paste base mixture of said composition upon heat cycling of said base mixture wherein said first portion constitutes 1 to 15 percent by weight of the total amount of crosslinking agent, catalytic promoter and self-bonding agent utilized in said shelf-stable catalyst component for a room temperature vulcanizable silicone rubber composition and is comprised of:

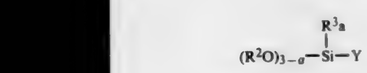
(1) an alkyl silicate crosslinker of the formula:

$$R_mSi(OR^1)_{4-m}$$

or partial hydrolysis products thereof wherein R and R_1 are monovalent hydrocarbon radicals, m is 0 or 1;

(2) a tin salt catalytic promoter and

(3) a self-bonding additive of the formula:



where R^2 and R^3 are alkyl radicals of 1 to 8 carbon atoms, a is 0 or 1 and Y is a nitrogen-functional radical which is a saturated, unsaturated or aromatic residue which in addition to nitrogen functionality may be functionalized by a radical selected from the class consisting of amino, cyano, thio, oxo, and ester, and multiples and combinations thereof; and after there is a uniform mixture of (a);

(b) adding to the mixture from 10 to 250 parts of filler and mixing the ingredients to a uniform mixture and heating the mixture to a temperature of at least 100° C. for at least 1 hour thereby providing a stable paste-like base mixture; and

(c) mixing into the base mixture a second portion consisting of the remainder of the cross-linking agent, the catalytic promoter and self-bonding additive; and mixing to a uniform fluid mixture by agitating the base mixture and the rest of the ingredients for at least 30 minutes wherein the entire process is carried out in the substantial absence of moisture.

4,388,434

LITHOGRAPHIC INK VEHICLE CONTAINING ADDITION POLYMER AND ALIPHATIC HYDROCARBON SOLVENT

Graham Swift, Bluebell; Harry J. Cenci, Warminster, both of Pa., and Raymond F. Jenkins, Masonville, N.J., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 5,930, Jan. 24, 1979, which is a continuation-in-part of Ser. No. 893,646, Apr. 4, 1978, abandoned, which is a continuation of Ser. No. 766,391, Feb. 7, 1977, abandoned. This application Dec. 8, 1980, Ser. No. 214,057
Int. Cl.³ C08K *5/01*
U.S. Cl. 524—476 **10 Claims**

1. A printing ink containing a colorant, a polymer, and a hydrocarbon solvent comprising by weight at least 70% of aliphatic hydrocarbons and no more than about 25% of aromatic hydrocarbons, said solvent having a kauri-butanol number of between 18 and 31, said polymer being an addition polymer of polymerized ethylenically unsaturated monomers dissolved in said solvent, the $\overline{M}w$ of the polymer being from 1,000 to 15,000 as determined by gel permeation chromatography, and the calculated T_g of the polymer being from 40° C. to 200° C., and in which the monomers from which the polymer is prepared include at least about 15% of at least one of isobutyl methacrylate, s-butyl methacrylate, isobornyl methacrylate, isobornyl acrylate, dicyclopentenyl methacrylate, dicyclopentenyl acrylate, dicyclopentenylethoxy methacrylate, dicyclopentenylethoxy acrylate, dicyclopentenylneopentoxy methacrylate, dicyclopentenylneopentoxy acrylate, and a vinyl aromatic monomer, with the proviso that no more than about 40% of the total monomers is used in the form of styrene or isobornyl methacrylate, said copolymer containing no more than about 5% methyl methacrylate.

4,388,435

AQUEOUS PIGMENT PASTES AND THEIR USE

Werner Loch, Erpolzheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 10, 1981, Ser. No. 320,020
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1981, 3121765
Int. Cl.³ C08L *39/06*
U.S. Cl. 524—548 **7 Claims**

1. A pigment paste comprising

(A) from 15 to 60% by weight of water;

(B) from 15 to 50% by weight of one or more organic solvents;

(C) from 0.1 to 20% by weight of a copolymer of

(a) from 10 to 75% by weight of one or more water-immiscible, or only partially water-miscible, copolymerizable α,β-olefinically unsaturated compounds and

(b) from 25 to 90% by weight of one or more water-soluble copolymerizable N-vinyl compounds; and

(D) from 10 to 79% by weight of one or more finely divided pigments or fillers, or mixtures of pigments and fillers,

dispersed in the mixture of (A), (B), (C), the sum of the percentages of (A), (B), (C) and (D) being 100.

4,388,436

PERMEABLE CONTACT LENS

Richard Chen, Phoenix, Ariz., assignor to National Patent Development Co., New York, N.Y.

Filed Jun. 8, 1981, Ser. No. 271,481
Int. Cl.³ C08F *20/54*; **G02C** *7/04*
U.S. Cl. 524—553 **26 Claims**

10. A water-swellable, water-insoluble hydrophilic contact lens formed from a cross-linked copolymer of N,N-(C_1-C_2alkyl)acrylamide and cyclohexyl methacrylate having a molar ratio of 3.5 to 5.5:1.

4,388,437

AMINO-FUNCTIONAL SILICONE EMULSIONS

Isao Ona, Sodegaura, Japan, assignor to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Dec. 18, 1981, Ser. No. 332,063
Claims priority, application Japan, Dec. 29, 1980, 55-187704
Int. Cl.³ C08L *83/06*
U.S. Cl. 524—588 **6 Claims**

1. An organopolysiloxane composition consisting essentially of

(A) 100 parts by weight of an organopolysiloxane having the formula $R_aX_bY_cSiO(4-a-b-c)/2$; wherein R denotes a monovalent unsubstituted or substituted hydrocarbon group free of amino substitutents, X denotes an amino-functional group having the formula $-R^1(NHCH_2CH_2)_dNHR^2$ wherein R^1 denotes a divalent hydrocarbon group, R^2 denotes a hydrogen atom or a monovalent hydrocarbon group and d has a value of 0, 1, 2, or 3; Y denotes a hydroxyl group or an alkoxy group, a+b+c has a value of from greater than 1.9001 to 2.1, a has a value of from greater than 1.9 to less than 2.1, b has a value of from 0.0001 to 0.1 and c has a value of from 0 to 0.1,

(B) 1 to 100 parts by weight of a nonionic or cationic surfactant,

(C) 0.1 to 50 parts by weight of an organotitanate, an organozirconate, or an organogermanate,

(D) a sufficient amount of an organic acid to provide a pH of from 2.5 to less than 7.0 for the organopolysiloxane composition and

(E) an emulsion-forming amount of water.

4,388,438

AQUEOUS DISPERSIONS OF COPOLYMERS OF STYRENE DIBUTYL MALEATE AND ACRYLIC OR METHACRYLIC ACID OR MONOBUTYL MALEATE AND METHOD FOR PREPARATION THEREOF

Maria Knypl; Eugeniusz Knypl; Marian Starzak, all of Oswiecim; Ewa Mieczkowska, Katowice; Urszula Pawlus, Siemianowice Slaskie; Romuald Palubicki, Katowice; Mieczyslaw Ficek, and Jozef Goldynia, both of Oswiecim, all of Poland, assignors to Osrodek Badaw Cze-Rozwojowy Kauczukow I Tworzyw Winylowych, Oswiecim, Poland

Filed Jan. 6, 1981, Ser. No. 224,476
Claims priority, application Poland, Jan. 10, 1980, 221298
Int. Cl.³ C08L *35/06*
U.S. Cl. 524—833 **5 Claims**

1. A method for preparing an aqueous dispersion of a copolymer of styrene, dibutyl maleate and acrylic or methacrylic acid or monobutyl maleate, said method consisting in emulsion polymerization of a mixture of monomers containing styrene in the amount of 40–90 percent by weight, dibutyl maleate in the amount of 10–60 percent by weight, and acrylic or methacrylic acid or monobutyl maleate in the amount of 1.0–10.0 percent by weight in relation to the sum total of monomers, said monomer mixture being added to a water phase previously prepared by adding a free radical polymerization initiator in one dose in the amount of 0.3 percent by weight to water containing a mixture of ionic and non-ionic emulsifiers in a ratio of 1:3–10 and in the amount of 2–8 percent by weight; a buffer in the amount of 0.2–1.0 percent by weight; the sodium salt of an α,β-ethylenically unsaturated carboxylic acid in the amount of 0.1–1.0 percent by weight; a water souble ethylenically unsaturated monomer containing an N-methylol group in the amount of 0.3–3.0 percent by weight and an alkylene glycol containing 2–6 carbon atoms in the alkylene radical in the amount of 1–6 percent by weight relative to the sum total of monomers, the ratio of alkylene glycol to the amount of acrylic or methacrylic acid or monobutyl maleate contained in the monomer mixture being 1:0.2–2.0; said polymerization being conducted at a temperature from 70°–90° C. until the monomer reaction has been completed and then cooling the reaction mixture to a temperature of 10°–30° C. and neutralizing the mixture to a pH value of 9.5 by the addition of a concentrated water solution of ammonia.

4,388,439

WET-STRENGTH RESIN FOR PAPER AND METHOD OF PREPARING SAME

William W. Maslanka, London-Britain Township, Chester County, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 761,101, Jan. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 554,999, Mar. 3, 1975, abandoned. This application Oct. 26, 1981, Ser. No. 314,909
Int. Cl.³ C08L *77/06*
U.S. Cl. 524—845 **15 Claims**

1. A method of preparing an aqueous solution of a water-soluble, cationic thermosetting resin which consists essentially of reacting methylbisaminopropylamine and a diester of oxalic acid to form a polyaminopolyamide containing tertiary amines, the mole ratio of amine to diester being from about 0.9:1 to about 1.2:1 and then reacting the polyaminopolyamide in aqueous solution in the form of its acid salt with an epihalohydrin, said acid salt being prepared by adding to an aqueous dispersion of the polyaminopolyamide a water-soluble acid in an amount essentially stoichiometrically equivalent to the tertiary amines of the polyaminopolyamide, the amount of epihalohydrin employed being from about 1 mole to about 1.5 moles per mole of tertiary amine of the polyaminopolyamide.

4,388,440

POLYESTER RESIN BLEND

James G. Murray, East Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 27,171, Apr. 4, 1979, which is a continuation-in-part of Ser. No. 870,780, Jan. 19, 1978, abandoned. This application Aug. 5, 1980, Ser. No. 175,553
Int. Cl.³ C08L *67/06*
U.S. Cl. 525—49 **4 Claims**

1. A resin composition which comprises an unsaturated polyester and a polymerizable mixture of isomers of methyl ethenyl benzene consisting essentially of 1-methyl-2-ethenyl benzene, 1-methyl-3-ethenyl benzene, and 1-methyl-4-ethenyl benzene, in the following proportions by weight:

1-methyl-2-ethenyl benzene 0 to 0.1%
1-methyl-3-ethenyl benzene 1 to 10%
1-methyl-4-ethenyl benzene at least 90%;

said composition having a lower viscosity and a lower exotherm upon curing than the corresponding compositions in which said isomers comprise methyl ethenyl benzene containing 60% or more of the meta isomer and 40% or less of the para isomer.

4,388,441

INDUCTION OF IMMUNOLOGICAL TOLERANCE

David H. Katz, La Jolla, Calif., assignor to Scripps Clinic & Research Foundation, La Jolla, Calif.

Division of Ser. No. 764,586, Feb. 3, 1977, Pat. No. 4,191,668.
This application Aug. 28, 1978, Ser. No. 937,574
Int. Cl.³ C08G *69/48, 69/50*
U.S. Cl. 525—54.1 **4 Claims**

1. A therapeutic immunosuppressive agent capable of inducing specific immunological tolerance to an antigen by suppression of antibody response, comprising a conjugate of D-glutamic acid:D-lysine copolymer and the antigen benzylpenicilloyl.

4,388,442

STABILIZER OR DISPERSING AGENT FOR USE IN A SUSPENSION POLYMERIZATION OF A VINYL COMPOUND COMPRISING A MODIFIED AND PARTIALLY HYDROLYZED ANIONIC POLYVINYL ALCOHOL

Yasuo Taniguchi; Toshio Asano; Haruo Funami, and Kouichi Itou, all of Quni, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 10, 1980, Ser. No. 195,737
Claims priority, application Japan, Oct. 13, 1979, 54-132296; Oct. 13, 1979, 54-132297; Oct. 23, 1979, 54-136589; Nov. 28, 1979, 54-153870
Int. Cl.³ C08F *8/12, 8/36, 8/40, 8/46*
U.S. Cl. 525—60 **11 Claims**

1. A stabilizer or dispersing agent for use in a suspension polymerization of a vinyl compound, comprising a modified and partially hydrolyzed polyvinyl alcohol having an average polymerization degree of from 200 to 3,000 and an average hydrolysis degree of from 60 to 90 mol% and including anion hydrophilic groups at the side chains thereof, wherein said anion hydrophilic groups are selected from the group consisting of dicarboxyl groups, and/or esters, and/or salts thereof, sulfuric esters and/or salts thereof, and phosphoric esters and-/or salts thereof, and mixtures thereof, and the content of said anion hydrophilic groups is in the range of from 0.02 to 10 mol% per unit mol of the polyvinyl alcohol.

4,388,443

MOLDABLE POLYBLENDS

Larry G. Bourland, Downingtown, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 19, 1982, Ser. No. 350,516
Int. Cl.³ C08L *69/00, 67/04*
U.S. Cl. 525—67 **9 Claims**

1. A moldable polyblend comprising a polylactone, a polycarbonate and a rubber-modified copolymer of styrene and maleic anhydride wherein said polylactone is employed in an amount within the range of from about 1 to about 10 weight percent of the polyblend.

4,388,444

PREPARING BLENDS OF A SYNTHETIC RUBBER WITH A POLY(ARYLENE OXIDE) BY DISTILLATIVE DISPLACEMENT

Howard B. Irvin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 5, 1982, Ser. No. 375,168
Int. Cl.³ C08L *71/04*
U.S. Cl. 525—92 **22 Claims**

1. A process for preparing a poly(arylene oxide) resin/rubbery diene/monovinylarene block copolymer blend which comprises:

(a) contacting in fractionation means a rubbery diene/-monovinylarene polymer-in-cycloaliphatic solvent solution with hot aromatic hydrocarbon solvent vapors, thereby taking cycloaliphatic solvent vapors as overhead, and producing a rubbery copolymer-in-aromatic hydrocarbon solvent bottoms,

(b) flash evaporating at least a portion of said aromatic solvent from said rubbery copolymer-in-aromatic solvent bottoms, thereby producing aromatic solvent vapor overhead, and a stream of concentrated copolymer-in-aromatic solvent,

(c) dissolving poly(arylene oxide) resin in hot aromatic solvent to produce a poly(arylene oxide)-in-aromatic solvent solution,

(d) blending said concentrated rubbery copolymer-in-aromatic solvent solution with said poly(arylene oxide)-in-aromatic solvent solution to produce a blended polymeric admixture-in-aromatic solvent,

(e) steam-sripping said blended polymeric admixture in aromatic solvent, thereby producing a recycle aromatic solvent stream and a blended rubbery copolymer/poly(arylene oxide) crumb in water, and

(f) recycling aromatic solvent from said steam-stripping at least in part to said (c) poly(arylene oxide) dissolving step and said (a) rubber-in-cycloaliphatic solvent contacting steps.

4,388,445

HEAT-CURABLE COATING COMPOSITION

Shinji Sugiura, and Kyoichi Horibe, both of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Jan. 19, 1982, Ser. No. 341,154
Claims priority, application Japan, Jan. 23, 1981, 56-7819
Int. Cl.³ C08F *8/00*
U.S. Cl. 525—124 **9 Claims**

1. A heat-curable coating composition comprising, as a binder, a composition consisting of

(A) 15 to 60% by weight of an oil-free polyester in which at least 30 mole% of the acid component consists of a saturated alicylic polybasic acid, said polyester having a composition on or within the four sides of a tetragon defined by the four points of (0.8, 60), (0.8, 100), (1.00, 70) and (1.00, 100), on coordinates in which the abscissa represents the molar ratio of the polybasic acid component to the polyhydric alcohol component of the polyester (dibasic acid ratio), and the ordinate represents the proportion in mole% of a glycol having at least 3 carbon atoms in the polyhydric alcohol component,

(B) 5 to 40% by weight of an alkyd resin having an oil length of 15 to 50% and a hydroxyl value of 40 to 200,

(C) 5 to 40% by weight of a hydroxyl-containing acrylic resin having a hydroxyl value of 20 to 200 and a number average molecular weight of 1,000 to 30,000, and

(D) 10 to 40% by weight of a crosslinking agent, said weight percentages being based on the total weight of the binder.

4,388,446

POLYETHYLENE TEREPHTHALATE BLENDS

Edwin D. Hornbaker, and Jesse D. Jones, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 230,253, Jan. 30, 1981, abandoned, and a continuation-in-part of Ser. No. 191,359, Sep. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 162,067, Jun. 23, 1980, abandoned, said Ser. No. 230,253, is a continuation-in-part of Ser. No. 162,067, , abandoned. This application Sep. 14, 1981, Ser. No. 301,936
Int. Cl.³ C08L *67/02*
U.S. Cl. 525—175 **13 Claims**

1. A thermoplastic composition which comprises in intimate admixture:

(a) a polyethylene terephthalate, and

(b) a copolymer of a vinyl aromatic compound and an α,β-unsaturated cyclic imide;

said composition having a heat deflection temperature of at least about 80° C. at 264 psi as measured by the ASTM procedure D 648-72.

4,388,447

PROCESS FOR PRODUCING RUBBER MODIFIED STYRENE RESINS

Mune Iwamoto; Norifumi Ito; Yuzuru Ishida, all of Yokohama; Yasuo Furuta, Hiratsuka, and Tetsuyuki Matsubara, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Nov. 19, 1981, Ser. No. 323,064
Claims priority, application Japan, Dec. 5, 1980, 55/170889
Int. Cl.³ C08F *279/02*
U.S. Cl. 525—316 **9 Claims**

1. A process for continuously producing rubber modified styrene resins from a rubber-like polymer and a styrene monomer according to solution or bulk polymerization techniques, which comprises

(A) transforming the rubbery phase including said rubber-like polymer into dispersed particles in a stirred-tank reactor having both a helical-blade agitator mounted in a draft tube and an auxiliary agitator for causing the stream of fluid having just entered said reactor to diverge and flow in various directions;

(B) controlling the agitating efficiency of said agitators in such a way that the average number of circulations of the fluid within said reactor is not less than 20 per hour;

(C) operating said helical-blade agitator in such a way that the value of $N^2 \cdot D$ satisfies

$$20 > N^2 \cdot D > 0.15$$

where N is the rotational speed, in rps, of said helical-blade agitator and D is the diameter, in meters, of said helical-blade agitator; and

(D) determining the operating conditions in such a way that the values of X_1 and X_2 satisfy

$$20 \geqq X_1$$

and

$$50 \geqq X_2 \geqq 2.4X_1 - 0.05X_1^2$$

where X_1 is the weight percentage of said rubber-like polymer and X_2 is the weight percentage of the polymerizable monomer converted to polymer, said weight percentages being based on the total amount of all components within said reactor.

4,388,448

GLYCIDYL METHACRYLATE POLYMERS, THEIR PREPARATION AND SOLVOLYSIS PRODUCTS

Lester R. Melby, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 23, 1981, Ser. No. 236,854
Int. Cl.³ C08F *2/00, 24/00*
U.S. Cl. 525—327.3 **10 Claims**

1. A polymer selected from the group consisting essentially of:

(i) poly(glycidyl methacrylate), and

(ii) copolymer of glycidyl methacrylate and at least one other methacrylate ester capable of anionic polymerization,

each of said polymer (i) and copolymer (ii) characterized by having

(a) a polydispersity index (M_w/M_n) between about 1.0 to 1.4, and

(b) substantially all glycidyl methacrylate epoxide functions intact;

polymer (i) and copolymer (ii) being represented by the formula

$$A\text{-}(\text{-AMA})_x(\text{GMA})_y(\text{RMA})_z\text{-}Q$$

wherein

A is the organic moiety of an organo(alkali metal) compound used to form an initiator adduct with AMA, said organo(alkali metal) compound being selected from the group consisting essentially of 1,1 diphenylhexyl(alkali metal), adduct of an alkyl(alkali metal) with 1,1-diaryl-substituted ethylene wherein the aryl substituents are free of electrophilic substituents, diisopropylamido(alkali metal), adduct of a secondary or tertiary alkyl(alkali metal) with a pyridine unsubstituted in the 2,5 and 6 positions wherein adduct substituents are nonelectrophilic, cumyl and cumyl-type alkali metal derivatives free of electrophilic substituents, and polynuclear hydrocarbon-alkali metal adducts;

AMA is alkyl methacrylate in which the alkyl group has 1 to 18 carbon atoms;

GMA is glycidyl methacrylate;

RMA represents one or more methacrylate esters selected from the group consisting essentially of alkyl of 1 to 18 carbon atoms, alkenyl of 2 to 18 carbon atoms, alkadienyl of 5 to 18 carbon atoms, dialkylaminoalkyl of about 4 to 12 carbon atoms, alkoxyalkyl of about 3 to 12 carbon atoms, and lower fluoroalkyl;

x is the number of methacrylate units in the initiator adduct and is at least 1;

y is the total number of combined GMA units in the chain, and is at least 1 when z is greater than zero, and at least 6 when x is 1 to 3 and z is zero;

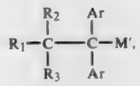
z is the total number of combined RMA units in the chain and is zero in a homopolymer and greater than zero in a copolymer; and

Q is a terminating group formed by terminating the polymerization with a protic material or by warming to room temperature.

5. A method for preparing the polymer of claim 1 characterized by contacting glycidyl methacrylate monomer or a combination of glycidyl methacrylate and one or more other methacrylate esters with a polymerization initiator that is the reaction product of an organo(alkali metal) compound and at least one mole of a lower alkyl methacrylate, in solution at reduced temperature;

the organo(alkali metal) compound being selected from the group consisting essentially of:

(i) a compound of the formula



wherein:

R_1 = alkyl,

R_2 = H or alkyl,

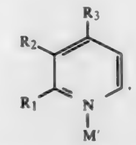
R_3 = H or alkyl,

Ar is aryl,

M′ = alkali metal;

(ii) diisopropylamido(alkali metal);

(iii) a compound of the formula



wherein R_1 is secondary or tertiary alkyl and R_2, R_3, and M′ are as defined;

(iv) a compound of the formula



wherein R_1 and R_2 are alkyl and Ar and M' are as defined; and

(v) polynuclear hydrocarbon-alkali metal adducts.

4,388,449

SILICONE RESIN

Jean-Claude Bonnet, Saint Aignan, France, and Kenneth B. Pithouse, Swindon, England, assignors to Raychem Limited, London, England

Continuation of Ser. No. 130,142, Mar. 13, 1980, abandoned, which is a continuation of Ser. No. 927,769, Jul. 25, 1978, abandoned. This application Dec. 16, 1981, Ser. No. 331,237

Claims priority, application United Kingdom, Jul. 27, 1977, 31536/77

Int. Cl.³ C08F *283/00*

U.S. Cl. 525—477 **28 Claims**

1. A melt processable thermoplastic monoorganopolysiloxane resin comprising units of the formula $RSiO_{1.5}$ and $R_1R_2R_3SiO_{0.5}$ wherein each of R, R_1, R_2 and R_3 is independently hydrogen, or an organic group, at least 85% of the R groups in the $RSiO_{1.5}$ units being organic groups, and at least two of the groups R_1, R_2 and R_3 in each $R_1R_2R_3SiO_{0.5}$ unit being organic groups, and in which the molar ratio of $RSiO_{1.5}$ units to $R_1R_2R_3SiO_{0.5}$ units is from 1:0.005 to 1:0.03 respectively, and wherein the organopolysiloxane contains Si—OH groups, the percentage by weight of said hydroxyl groups, based on the weight of the resin, being less than 2% and which has a number average molecular weight in the range of from 2,000–6,000, as measured by vapor phase osmometry.

4,388,450

AROMATIC POLYVINYL ETHERS AND HEAT CURABLE MOLDING COMPOSITIONS OBTAINED THEREFROM

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 13, 1981, Ser. No. 243,302

The portion of the term of this patent subsequent to Nov. 6, 1996, has been disclaimed.

Int. Cl.³ C08L *61/12, 61/08, 29/10*

U.S. Cl. 525—502 **9 Claims**

1. Heat curable compositions comprising,

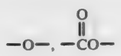
(A) aromatic polyvinylethers selected from

(i) polyvinyl compounds having the formula,

$$R[GR^1OC(R^2)=C(R^3)_2]_n, \text{ and}$$

(ii) reaction products comprising said polyvinyl compounds and from 0.1 to 1 mole, per mole of said polyvinyl compounds of an active hydrogen compound selected from polycarboxylic acids, phenols, thiols, silanes and polyols, and

(B) an effective amount of a thermal curing catalyst comprising (a) an arylonium salt selected from a diaryliodonium salt and a dialkyl hydroxyarylsulfonium salt and (b) from 0.1 part of 10 parts, per part of said arylonium salt of an organic oxidant or an aromatic polyvinylether soluble copper compound, which thermal curing catalyst is capable of generating an acid having a pK value lower than 14, when the heat curable composition is heated to a temperature of at least 25° C., where G is selected from the class consisting of



and mixtures thereof,

R is a polyvalent aromatic organic radical, R^1 is a $C_{(1-8)}$ alkylene radical, R^2 and R^3 are the same or different monovalent radicals selected from hydrogen, halogen and $C_{(1-8)}$alkyl radicals, and n is an integer equal to 2–10 inclusive.

4,388,451

POLYMERS DERIVED FROM ALLYLPHENOL OR SUBSTITUTED ALLYLPHENOL AND MALEIC ANHYDRIDE

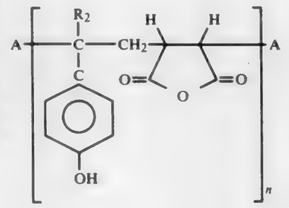
Billy M. Culbertson, Worthington; Larry K. Post, Columbus, both of Ohio, and Ann E. Aulabaugh, Madison, Wis., assignors to Ashland Oil, Inc., Ashland, Ky.

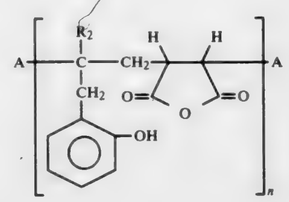
Filed Sep. 28, 1981, Ser. No. 306,198

Int. Cl.³ C08F *26/00, 22/40*

U.S. Cl. 526—271 **3 Claims**

1. A polymer consisting of one of the following two general formulas:





wherein R_2 represents H or $-CH_3$; A represents terminal groups of a polymer chain; and n is an integer greater than 10.

4,388,452

OLEFIN-ACRYLONITRILE COPOLYMERS AND USES THEREOF

Michael I. Naiman, and Rudolf S. Buriks, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 810,342, Jun. 27, 1977, Pat. No. 4,333,741. This application Oct. 16, 1981, Ser. No. 312,063

Int. Cl.³ C08F *220/42*

U.S. Cl. 526—342 **3 Claims**

1. A copolymer of a 1-alkene and acrylonitrile wherein the 1-alkene has from 6 to 28 carbon atoms, the molar ratio of acrylonitrile to 1-alkene is about 2:1 to 5:1 and the molecular weight of the copolymer is from about 1,000 to about 100,000.

4,388,453

CROSSLINKED ORGANOPOLYSILOXANES HAVING LIQUID-CRYSTALLINE PROPERTIES

Heino Finkelmann; Günther Rehage, both of Clausthal-Zellerfeld, Fed. Rep. of Germany, and Franz-Heinrich Kreuzer, Martinsried, all of Fed. Rep. of Germany, assignors to Consortium für Elektrochemische, Munich, Fed. Rep. of Germany

Filed May 5, 1982, Ser. No. 375,152

Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119459

Int. Cl.³ C08G *77/06*

U.S. Cl. 528—15 **4 Claims**

1. Three dimensional crosslinked organopolysiloxanes having liquid-crystalline properties which have mesogenic molecules chemically bonded to the organopolysiloxane lattice.

2. The organopolysiloxanes of claim 1, wherein the organopolysiloxanes have nematic or chiral nematic properties.

3. A process for preparing the crosslinked organopolysiloxanes of claims 1 or 2, wherein an organohydrogenopolysiloxane is reacted with a mixture containing vinyl-substituted mesogenic molecules and an organopolysiloxane having a vinyl group in each terminal unit, in which at least a stoichiometric number of vinyl groups and Si-H groups are present in the reaction mixture, in the presence of a catalyst capable of promoting the addition of Si-H to aliphatic multiple bonds.

4,388,454

POLYESTER

Werner Rieder, Vienna, Austria, and Martin Fehrle, Bietigheim-Bissingen, Fed. Rep. of Germany, assignors to Isovolta Osterreichische Isolierstoffwerke, Wiener Neudorf, Austria

Filed May 5, 1982, Ser. No. 375,205

Claims priority, application Austria, Dec. 9, 1981, 5278/81; European Pat. Off., May 7, 1981, 81-890076.3

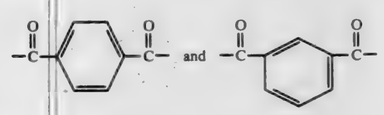
Int. Cl.³ C08G *63/02*

U.S. Cl. 528—176 **20 Claims**

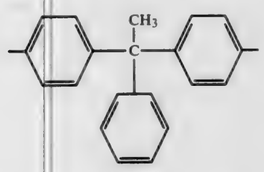
1. An organic, high-molecular weight polyester containing substantially chain members of the formula

$$+O\text{-}X\text{-}O\text{-}Y+$$

wherein X is at least one member selected from the group consisting of



and Y has the formula



having an inherent viscosity of at least 1.0 dl/g measured at 30° C. in a solution of 0.5 g of the polyester in 100 ml of a mixture of 60% by weight of phenol and 40% by weight of 1,1,2,2-tetrachloroethane and whose films cast from a chlorinated organic solution have an elongation at break of more than about 20%.

4,388,455

PROCESS FOR PREPARING ESTER CARBONATE COPOLYMERS

Stephen E. Bales, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 17, 1982, Ser. No. 378,693

Int. Cl.³ C08G *63/64*

U.S. Cl. 528—176 **10 Claims**

1. A process for making ordered ester/carbonate copolymers which process comprises the steps of (1) contacting in an organic liquid medium a dihydric organic compound with a carbonate precursor and a diacid halide under conditions such that the carbonate moieties in the resultant intermediate oligomer are formed simultaneously with or before the formation of ester moieties and (2) contacting this oligomer with additional carbonate precursor under conditions sufficient to form the desired ordered ester/carbonate copolymer.

4,388,456

COPOLYESTERS HAVING IMPROVED GAS BARRIER PROPERTIES

Robert B. Barbee, Kingsport, and Larry A. Minnick, Bluff City, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,739

Int. Cl.³ C08G *69/44, 73/16*

U.S. Cl. 528—289 **10 Claims**

1. Copolyesters characterized by relatively high glass transition temperatures and low oxygen permeability, said copolyesters being derived from

A. 100 mol % of an acid component comprising about 5–75 mol % isophthalic acid and about 95–25 mol % 4-carboxy-N-(carboxymethyl)phthalimide, and

B. 100 mol % of a glycol component, at least 80 mol % of said glycol component being ethylene glycol.

4,388,457

PHYLLANTHOSTATIN COMPOUNDS

George R. Pettit, Paradise Valley, Ariz., assignor to University Patents, Inc., Norwalk, Conn.

Filed Feb. 11, 1982, Ser. No. 348,114

Int. Cl.³ C07H *7/06, 13/00;* **A61K** *31/71*

U.S. Cl. 536—4.1 **3 Claims**

1. Phyllanthostatin 1 which has the following characteristics:

Melting point—125°–126° C.;

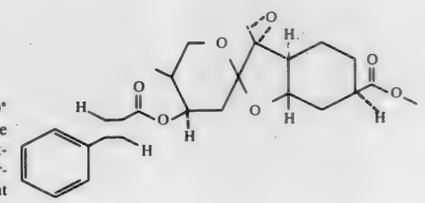
Field desorption mass spectrum—m/e 805 $(M^+ + H)$;

Optical rotation—$[\alpha]_D^{26} - 3.6°$ (c 0.83, $CHCl_3$);

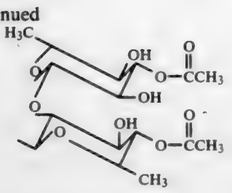
Ultra violet absorption spectrum—ν_{max}^{MeOH} nm (log ε) 216 (4.19), 222 (4.12) and 277 (4.29);

Infrared absorption spectrum—(KBr) ν_{max} 3450, 1755, 1740, 1710, 1640, 1452, 1380, 1310, 1245, 1170, 1075 and 770 cm^{-1};

and which can be shown by the following structural formula:



-continued



4,388,458

USE OF ULTRASONIC ENERGY TO IMPROVE NITROCELLULOSE PURIFICATION

Robert P. Baumann, Mine Hill; Marcel Blais, Newton, and Irwin Spiess, Pequannock, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 24, 1981, Ser. No. 334,118
Int. Cl.³ C08B *5/04*
U.S. Cl. 536—38 **3 Claims**

1. A process for removing trace sulfuric acid from nitrocellulose fibers comprising:
dispersing nitrocellulose fibers in water;
subjecting the nitrocellulose fibers and water dispersion to ultrasonic energy for a time period and at an energy level sufficient to enhance nitrocellulose fibers contact with water and facilitate sulfuric acid dispersal in the water;
separating waste water containing the traces of sulfuric acid contaminant from the nitrocellulose fibers; and
recovering purified nitrocellulose fibers.

4,388,459

CERTAIN CINNAMIC ACID OR PROPIOLIC ACID DERIVATIVES

Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 8,467, Feb. 1, 1979, Pat. No. 4,259,352. This application Nov. 28, 1980, Ser. No. 211,165
Int. Cl.³ C07D *213/64;* **C07C** *101/46*
U.S. Cl. 542—427 **6 Claims**

2. The compound 3-pyridyl p-[7-(cyclopentyl)heptylamino]-cinnamate.

4. The compound p-[4-(propyl)cyclohexylamino]cinnamic acid.

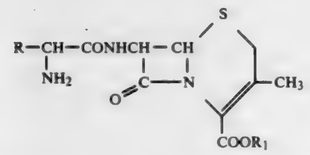
4,388,460

CEPHALOSPORINE DESACETOXY ESTERS AND SALTS THEREOF

Marco Falciani, and Renato Broggi, both of Milan, Italy, assignors to Dobfar S.p.A., Milan, Italy

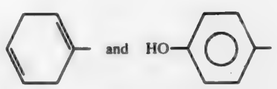
Filed Mar. 4, 1981, Ser. No. 240,309
Claims priority, application Italy, Apr. 17, 1980, 21463 A/80
Int. Cl.³ C07D *501/22*
U.S. Cl. 544—23 **9 Claims**

1. Esters of desacetoxy cephalosporines having the formula



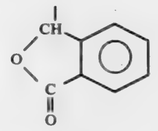
(I)

wherein R is selected from the group consisting of:



and

and R_1 is selected from the group consisting of



and $-CH_2-OCOC(CH_3)_3$.

4,388,461

PROCESS FOR PRODUCING ALPHA-PICOLINE

Clarence D. Chang, Princeton, and Patrick D. Perkins, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 326,258, Dec. 1, 1981, abandoned. This application Jun. 2, 1982, Ser. No. 384,360
Int. Cl.³ C07D *213/09, 213/73*
U.S. Cl. 546—251 **14 Claims**

1. A method of making an alpha-picoline by contacting a phenolic compound with ammonia or an amine in the presence of a crystalline zeolite catalyst having a silica:alumina ratio of at least 12 and a Constraint Index of 1 to 12 and separating the alpha-picoline from the resulting product stream.

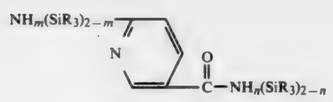
4,388,462

TRIALKYLSILYL-6-AMINONICOTINAMIDES

Raphael Pappo, and Kenneth M. Otteson, both of Redwood City, Calif., assignors to International Plant Research Institute, Inc., San Carlos, Calif.

Filed Jul. 20, 1981, Ser. No. 284,896
Int. Cl.³ C07F *7/10*
U.S. Cl. 546—14 **14 Claims**

1. A trialkylsilyl-6-aminonicotinamide having the following formula:



wherein:
R is an alkyl group and all three of said alkyl groups contain no more than 24 carbon atoms; and
n and m are 0 to 2 and at least one of n and m is 1.

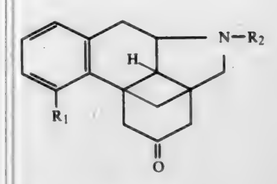
4,388,463

6-KETO-MORPHINAN ANALGESICS

Arnold Brossi; Helmut Schmidhammer, both of Bethesda; Arthur E. Jacobson, Potomac, and Fu-Lian Hsu, Rockville, all of Md., assignors to The United States of America as represented by Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Jul. 16, 1981, Ser. No. 284,088
Int. Cl.³ C07D *221/28;* **A61K** *31/485*
U.S. Cl. 546—74 **12 Claims**

1. A compound according to the following formula and pharmaceutically acceptable acid addition salts thereof:



where R_1=OCH_3, $OCOCH_3$, or H;
R_2=CH_3, $CH_2-CH=CH_2$,



or $C_2H_2CH_6CH_5$.

12. (−)-6-Ketomorphinan.

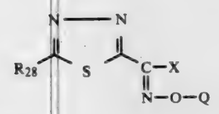
4,388,464

THIADIAZOLYL-GLYOXYLONITRILE-2-OXIME ETHER DERIVATIVES FOR PROTECTING PLANT CROPS

Haukur Kristinsson, Bottmingen; Beat Muller, Reinach, and Johannes P. Pachlatko, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 70,288, Aug. 28, 1979, Pat. No. 4,347,372. This application Feb. 9, 1981, Ser. No. 232,752
Claims priority, application Switzerland, Sep. 1, 1978, 9255/78
Int. Cl.³ A01N *43/82, 47/40;* **C07D** *285/12*
U.S. Cl. 548—136 **6 Claims**

1. A compound of the formula



wherein
R_{28} is lower alkoxy, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl or phenyl,
Q is hydrogen; lower alkyl which can be interrupted by oxygen or sulfur, or substituted by halogen or cyano; or an aliphatic carboxylic acyl radical, and
X is hydrogen, cyano, halogen, C_1–C_{10} alkyl, lower alkanoyl, —COOH, —COO—lower alkyl, —COS—lower alkyl, or $-CON(R)_2$ in which R is hydrogen or lower alkyl.

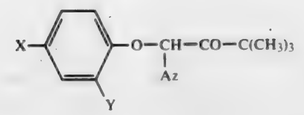
4,388,465

PREPARATION OF PHENOXY-AZOLYL-BUTANONE DERIVATIVES

Hans-Ludwig Elbe; Hermann Arold; Eckart Kranz, and Claus Stölzer, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 8, 1981, Ser. No. 300,071
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1980, 3035022
Int. Cl.³ C07D *233/60, 249/08*
U.S. Cl. 548—262 **9 Claims**

1. In the preparation of a phenoxy-azolyl-butanone derivative of the formula



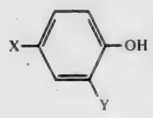
in which
X is a hydrogen atom,
Y is a hydrogen or halogen atom, and
Az is an imidazolyl radical or a 1,2,4-triazolyl radical,
wherein dichloropinacolin of the formula

$$Cl_2CH-CO-C(CH_3)_3$$

is reacted with an azole of the formula

$$Az-H$$

and a phenol of the formula



in the presence of an acid-binding agent, the improvement which comprises carrying out the reaction in the presence of a water-immiscible organic solvent at a temperature between about 40° and 150° C., and without isolation adding to the same water-immiscible solvent at a temperature between about 0° and +80° C. a mineral acid in amount sufficient to precipitate the mineral acid salt of the phenoxy-azolyl-butanone derivative, and separating such salt.

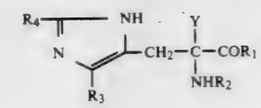
4,388,466

α-HALOMETHYL DERIVATIVES OF AMINO ACIDS

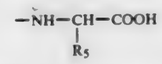
Philippe Bey, Strasbourg, and Michel Jung, Illkirch Graffestaden, both of France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Division of Ser. No. 819,975, Jul. 28, 1977, Pat. No. 4,315,095. This application Nov. 3, 1981, Ser. No. 317,821
Int. Cl.³ C07D *233/64*
U.S. Cl. 548—337 **5 Claims**

1. A compound of the formula

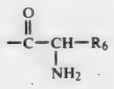


wherein Y is F_2CH-, F_3C-, or Cl_2CH-; each of R_3 and R_4 is hydrogen, halogen selected from fluorine, chlorine, bromine and iodine or a straight or branched lower alkyl group of from 1 to 4 carbon atoms and can be the same or different with the proviso that when both R_3 and R_4 are halogen R_3 and R_4 are the same; R_1 is hydroxy, a straight or branched alkoxy group of from 1 to 8 carbon atoms, $-NR_{11}R_{12}$ wherein each of R_{11} and R_{12} is hydrogen or a straight or branched lower alkyl group of from 1 to 4 carbon atoms or



wherein R_5 is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or p-hydroxybenzyl;

R_2 is hydrogen, alkylcarbonyl wherein the alkyl moiety has from 1 to 4 carbon atoms and is straight or branched, alkoxycarbonyl wherein the alkoxy moiety has from 1 to 4 carbon atoms and is straight or branched or



wherein R_6 is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or p-hydroxybenzyl; and pharmaceutically acceptable salts and individual optical isomers thereof.

4,388,467

CYCLOALKA[4,5]PYRROLO[2,3-G]ISOQUINOLINES

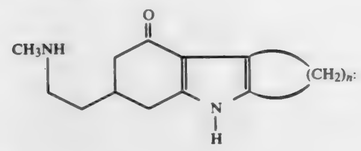
Leo Berger, Montclair, and Gary L. Olson, Westfield, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 230,765, Feb. 2, 1981, Pat. No. 4,334,070, which is a continuation-in-part of Ser. No. 216,116, Dec. 15, 1980, abandoned, which is a continuation-in-part of Ser. No. 125,604, Feb. 28, 1980, abandoned. This application Mar. 25, 1982, Ser. No. 361,667

Int. Cl.³ C07D *209/88*

U.S. Cl. 548—439 **1 Claim**

1. A compound of the formula



wherein n is 3, 4, 5 or 6.

4,388,468

PROCESS FOR PRODUCING SUBSTITUTED PYRROLES

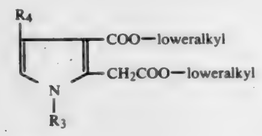
Michael J. Dagani, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 137,511, Apr. 4, 1980, abandoned. This application Aug. 18, 1981, Ser. No. 293,853

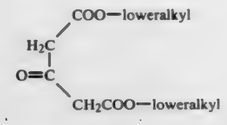
Int. Cl.³ C07D *207/34*

U.S. Cl. 548—531 **11 Claims**

1. In a process for the preparation of a loweralkyl 1,4-diloweralkyl-3-loweralkoxycarbonyl-pyrrole-2-acetate of the formula:



by reacting a mixture of a chloromethyl loweralkyl ketone of the formula: Cl—CH_2—CO—R_4, with a diloweralkyl acetone dicarboxylate of the formula:



and a loweralkylamine of the formula: R_3NH_2, wherein the foregoing formulas said R_3 and said R_4 represent loweralkyl, the improvement consisting essentially of said reaction being carried out in a two-stage procedure according to the steps of

(a) adding said chloromethylloweralkyl ketone to a premixed cooled solution of said loweralkylamine and said dicarboxylate in a suitable solvent with reaction at below 60° C., and

(b) heating the resultant reaction mixture to from about 70° to about 100° C. for a period sufficient to dehydrate the dihydroxy pyrrolidine intermediate in said resultant reaction mixture and produce the desired loweralkyl 1,4-diloweralkyl-3-loweralkoxycarbonyl-pyrrole-2-acetate.

4,388,469

DIPHENYLALKANOETHER AND DIPHENYLALKANONE OXIMEETHER DERIVATIVES

Keiichi Ono, Osaka; Hajime Kawakami, Takarazuka, and Junki Katsube, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

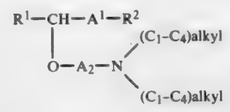
Filed Apr. 2, 1980, Ser. No. 136,565

Claims priority, application Japan, Apr. 2, 1979, 54-40032; Aug. 13, 1979, 54-103340

Int. Cl.³ C07D *333/04;* **C07C** *87/28;* **C07D** *307/34;* **A61K** *31/38, 31/34, 31/135*

U.S. Cl. 549—59 **15 Claims**

1. A compound of the formula:



wherein R^1 and R^2 are each independently a phenyl, thienyl, furyl or naphthyl group optionally substituted with 1 to 3 substituents selected from the group consisting of halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, cyano, di(C_1–C_4)alkylamino, amino, benzyloxy, hydroxyl, C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl, C_1–C_4 alkylsulfonyl, C_1–C_4 alkanoylamino, C_1–C_4 alkylamino and N-(C_1–C_4)alkyl-N-(C_1–C_4)alkanoylamino, A^1 is a C_3–C_6 alkylene group and A^2 is a C_2–C_4 alkylene group.

4,388,470

CERTAIN SUBSTITUTED CYCLOBUTANE DICARBOXYLIC ACID ANHYDRIDES

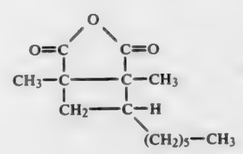
Ellis K. Fields, River Forest, and Ronald L. Anderson, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 27, 1981, Ser. No. 287,156

Int. Cl.³ C07D *307/93*

U.S. Cl. 549—240 **3 Claims**

1. As a composition of matter, the compound of the following structure:



4,388,471

PROCESS FOR THE PREPARATION OF ALKENYL SUCCINIC ANHYDRIDES

Robert H. Wollenberg, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 30, 1982, Ser. No. 373,471

Int. Cl.³ C07C *57/145, 57/15, 69/60;* **C07D** *307/60*

U.S. Cl. 549—255 **8 Claims**

1. In a method for preparing a substituted carboxylic acid or derivative thereof which comprises reacting (A) an alkylating hydrocarbon containing one double bond with (B) at least one of maleic acid, fumaric acid, itaconic acid and anhydrides and esters of any of these acids, at least part of the reaction being conducted thermally, the improvement which comprises conducting said thermal reaction in the presence of a furan-type compound.

4,388,472

SUBSTITUTED DIPHENYL ETHERS

David Cartwright, Reading, and David J. Collins, Crowthorne, both of England, assignors to Imperial Chemical Industries PLC, London, England

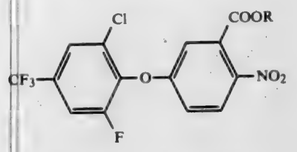
Continuation-in-part of Ser. No. 168,783, Jul. 14, 1980. This application Jan. 13, 1981, Ser. No. 224,823

Claims priority, application United Kingdom, Jul. 18, 1979, 7925035; Jul. 1, 1980, 8021545

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—21 **2 Claims**

1. A compound of the formula:



wherein R is hydrogen, or an alkyl group of 1 to 6 carbon atoms.

4,388,473

SUBSTITUTED BENZOIC OR PHENYLACETIC ACID ESTERS HAVING PLANT GROWTH REGULATING PROPERTIES

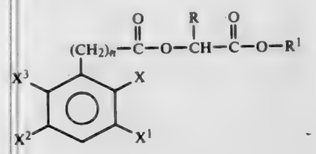
Sidney B. Richter, Fairlawn, and Barry Van Gemert, Massillon, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 29, 1981, Ser. No. 316,256

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—65 **7 Claims**

1. A compound, having plant growth regulating properties, represented by the formula:



wherein,

X is halogen;

X^1 is hydrogen, nitro, or



wherein R^2 and R^3 are the same or different and represent hydrogen, C_1 to C_4 alkyl, alkoxy or haloalkyl or



wherein R^4 is C_1 to C_4 alkyl;

X^2 is halogen;

X^3 is hydrogen, nitro, amino, or C_1 to C_4 alkyl, alkoxy or haloalkyl, provided that either X^1 or X^3 is other than hydrogen;

R is hydrogen or C_1 to C_4 alkyl;

R^1 is hydrogen, C_1 to C_{10} alkyl, haloalkyl or alkoxyalkyl, or an agronomically acceptable ionic species; and

n is 0 or 1.

4,388,474

METHOD FOR THE PREPARATION OF GUANIDINE SULFAMATE

Koichi Tanihara, Ogoori, Japan, assignor to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 6, 1981, Ser. No. 241,236

Claims priority, application Japan, Mar. 6, 1980, 55-29363

Int. Cl.³ C07C *143/837*

U.S. Cl. 564—241 **3 Claims**

1. In a method for the preparation of guanidine sulfamate by a process wherein urea is reacted with ammonium sulfamate under atmospheric pressure or urea is reacted with ammonium sulfamate or diammonium imidosulfonate or triammonium nitrilosulfonate, or more than one of them, in the presence of ammonia under atmospheric pressure, the improvement whereby guanidium sulfamate is separated from the reaction product by a process which comprises the steps of:

(a) Forming an aqueous solution of the reaction product,

(b) Adding hydrolysis product of a preceding run to the solution in an amount effective to promote hydrolysis of the compounds of the reaction products,

(c) heating the solution to a temperature not exceeding 100° C. to give a hydrolysis product mainly composed of guanidinum ions, ammonium ions, hydrogen ions, sulfamate ions and sulfate ions,

(d) Admixing the hydrolysis product in which guanidium ions and sulfamate ions are substantially equal, with CaO or $Ca(OH)_2$, and

(e) Separating the solid components from the liquid containing guanidium sulfamate.

4,388,475

ALLYLSULFOXIDE ENZYME INHIBITORS

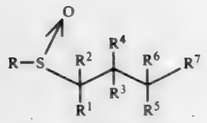
Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 66,603, Aug. 15, 1979, abandoned. This applicatiou May 7, 1980, Ser. No. 147,659

Int. Cl.³ C07C *147/08;* **A61K** *31/10*

U.S. Cl. 564—341 **2 Claims**

1. A compound of structural formula:



or a pharmaceutically acceptable salt thereof wherein,

R is phenyl, either unsubstituted or substituted with

(1) nitro,

(2) o-C_{1-3} alkyl, or

(3) o,o-di(C_{1-3} alkyl),

R^1 is hydrogen;

R^2 and R^5 are hydrogen;

R^3 is a facile leaving group selected from

(a) halo

(b) toluenesulfonyloxy,

(c) benzenesulfonyloxy, and

(d) C_{1-3} alkanesulfonyloxy, or

R^2 and R^3 taken together form a double bond;

R^4 is hydrogen;

R^6 is hydrogen; and

R^7 is $-NH_2$.

4,388,476

HYDROFORMYLATION PROCESS WITH RHODIUM CATALYST AND OXYGEN STABILIZATION THEREOF

James L. Cooper, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 1, 1981, Ser. No. 259,399

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—451 **15 Claims**

1. A hydroformylation process comprising contacting at least one alpha or internal olefin of from 2 to 20 carbon atoms in a reaction zone at a temperature of from about 20° C. to about 300° C. and a pressure of from about 15 psig to about 10,000 psig with hydrogen, carbon monoxide and a catayst consisting essentially of unmodified rhodium for a sufficient period of time to produce aldehyde product, treating reactor effluent with an oxygen containing gas, and separating said product from said effluent in a distillation zone at a temperature of about 120° C. or less to leave a base product containing a rhodium salt of a carboxylic acid.

4,388,477

HYDROFORMYLATION PROCESS EMPLOYING UNMODIFIED RHODIUM-COBALT CATALYST

James L. Cooper, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 2, 1981, Ser. No. 269,094

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—451 **6 Claims**

1. A hydroformylation process comprising contacting at least one olefin having from 2 to 20 carbon atoms in a reaction zone at a temperature of from about 60° C. to about 250° C. and a pressure of from about 750 psig to about 10,000 psig with hydrogen, carbon monoxide, and a catalyst consisting of a mixture of unmodified cobalt and unmodified rhodium in a molar ratio of from about 0.5 to about 100, wherein for each mole of olefin there is present from about 1×10^{-7} to about 1×10^{-4} moles of cobalt and from about 1×10^{-7} to about 1×10^{-5} moles of rhodium, for a sufficient period of time to permit reaction of said olefin with said carbon monoxide and hydrogen to form aldehyde product.

4,388,478

PROCESS FOR THE ORTHO-ALKYLATION OF PHENOLIC COMPOUNDS

Akihide Kudoh; Motoo Kawamata; Kazushi Ohshima; Makoto Kotani, all of Yokohama; Takeshi Tsuda, Kanagawa, and Fukuichi Aoki, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Oct. 30, 1981, Ser. No. 316,800

Claims priority, application Japan, Nov. 17, 1980, 55-160686

Int. Cl.³ C07C *37/16*

U.S. Cl. 568—804 **6 Claims**

1. In a process for the selective ortho-alkylation of a phenolic compound having at least one ortho-positioned hydrogen atom by catalytically reacting the phenolic compound with a saturated aliphatic alcohol having from 1 to 4 carbon atoms in the vapor phase at a temperature of from 300° C. to 550° C., the improvement of which comprises carrying out the reaction in the presence of a catalyst containing manganese oxide and one or more additives selected from group (A) consisting of germanium oxide, tin oxide and lead oxide, said additives selected from the group (A) are present in such proportion as to provide an atomic ratio of manganese to said additives ranging from 100:0.1 to 100:50.

4,388,479

PROCESS FOR PRODUCING C_4-C_{10} ETHYLENE ALCOHOLS

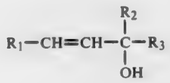
Vladimir M. Gryaznov, Lomonosovsky prospekt, 14, kv. 504; Andrei N. Karavanov, ulitsa Fabritsiusa, 20, kv. 29; Tamara M. Belosljudova, ulitsa Konenkova, 11, kv. 60, all of Moscow; Anatoly V. Ermolaev, poselok Shvarts, ulitsa Mendeleeva 7, kv. 54, Tulskaya oblast; Anatoly P. Maganjuk, Yasenevo, 9 mikroraion, 73, kv. 540, and Irina K. Sarycheva, ulita Baumanskaya, 62, kv. 85, both of Moscow, all of U.S.S.R.

Filed Apr. 9, 1981, Ser. No. 252,307

Int. Cl.³ C07C *29/17*

U.S. Cl. 568—828 **4 Claims**

1. A process for producing C_4-C_{10} ethylene alcohols of the formula:



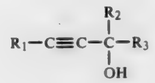
(I)

wherein

(a) R_1 is $-CH_2OH$, $R_2{=}R_3{=}-H$;

(b) R_1 is $-H$, R_2 is $-CH_3$, R_3 is a radical selected from the group consisting of $-CH_3$ and $-C_6H_{11}$

comprising hydrogenation of acetylene alcohols of the formula:



(II)

wherein

(a) R_1 is $-CH_2OH$, $R_2{=}R_3{=}-H$;

(b) R_1 is $-H$, R_2 is $-CH_3$ and R_3 is a radical selected from the group consisting of $-CH_3$ and $-C_6H_{11}$

in the form of technical products in the liquid phase on a membrane catalyst made of an alloy consisting of palladium and ruthenium at a mass ratio therebetween of 90–94:10–6 respectively; hydrogenation of said alcohols is effected by means of hydrogen diffusing through the membrane catalyst at a temperature of from 60° to 180° C. and atmospheric pressure of hydrogen.

4,388,480

PROCESS FOR PREPARING 4-METHYL-1-PENTENE

Hirosuke Imai, Yokohama; Mitsuo Matsuno, Kawasaki, and Michio Kudoh, Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Jan. 7, 1982, Ser. No. 337,775

Claims priority, application Japan, Jan. 27, 1981, 56-9579

Int. Cl.³ C07C *3/02, 3/20*

U.S. Cl. 585—516 **6 Claims**

1. A process for the preparation of 4-methyl-1-pentene which consists of dimerizing propylene at a temperature of 100° C.–250° C. in the presence of a catalyst consisting of at least one compound selected from the group consisting of sodium and sodium amide supported on a carrier of formula

$$K_2O.xAl_2O_3$$

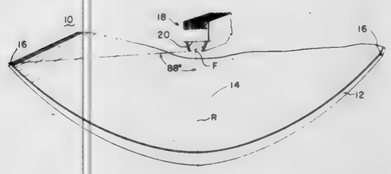
wherein x has a value in the range of $0.5 \leqq x \leqq 11$, said carrier being prepared by heating at 400°–2000° C., a mixture of K_2O or a compound capable of forming K_2O and Al_2O_3 or a compound capable of forming Al_2O_3 at said temperature of 400°–2000° C.

4,388,481

CONCENTRATING PHOTOVOLTAIC SOLAR COLLECTOR

Miroslav Uroshevich, Cincinnati, Ohio, assignor to Alpha Solarco Inc., Cincinnati, Ohio

Filed Jul. 20, 1981, Ser. No. 284,649
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—246 **17 Claims**



1. A concentrating photovoltaic solar collector comprising:

a reflector having a generally concave cross sectional configuration positionable to receive solar radiation and concentrate it at a focus, said reflector being symetrical with respect to a reference line extending from said focus to said reflector, said reflector further having a sufficiently deep curvature that solar rays striking portions of the reflector farthest from said reference line are reflected to said focus at an angle of close to 90° with respect to said reference line;

photovoltaic cell means positioned along said line so that the energy receiving surface of said cell means is substantially normal to said reference line and facing said reflector, said cell means being positioned so that the focus is between the cell means and the reflector; and,

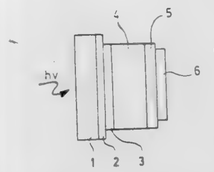
reflector means extending from adjacent said cell means towards said reflector and having a cross sectional configuration generally defining an acute angle with respect to the energy receiving surface of said cell means for re-reflecting solar rays from adjacent the limits of said reflector onto said cell means for uniform solar energy distribution across said surface.

4,388,482

HIGH-VOLTAGE PHOTOVOLTAIC CELL HAVING A HETEROJUNCTION OF AMORPHOUS SEMICONDUCTOR AND AMORPHOUS SILICON

Yoshihiro Hamakawa, 3-17-4, Minami-Hanayashiki Kawanishi, Hyogo, and Yoshihisa Tawada, 14-39, Oike-Miyamadai, Kita-Ku, Kobe, Hyogo, both of Japan

Filed May 19, 1981, Ser. No. 266,064
Claims priority, application Japan, Jan. 29, 1981, 56-12313; Feb. 17, 1981, 56-22690; Apr. 30, 1981, 56-66689
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—258 **13 Claims**



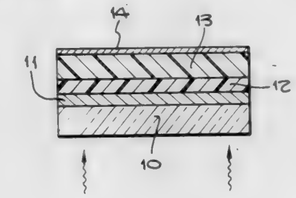
1. A p-i-n amorphous silicon type photovoltaic cell, characterized by incorporating as either the p or n type side thereof exposed to the incident light an amorphous semiconductor having an optical band gap, Eg.opt, of not less than about 1.85 eV, an electric conductivity of not less than about 10^{-8} $(\Omega.cm)^{-1}$ at 20° C. and a p-i-n junction diffusion potential, Vd, of not less than about 1.1 volts.

4,388,483

THIN FILM HETEROJUNCTION PHOTOVOLTAIC CELLS AND METHODS OF MAKING THE SAME

Bulent M. Basol; Eric S. Tseng, and Robert L. Rod, all of Los Angeles, Calif., assignors to Monosolar, Inc., Santa Monica, Calif.

Filed Sep. 8, 1981, Ser. No. 300,116
Int. Cl.³ H01L *31/06, 31/18*; C25D *5/50, 9/04*
U.S. Cl. 136—260 **7 Claims**



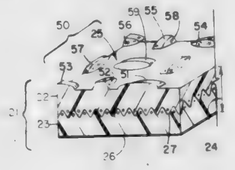
6. A thin film heterojunction photovoltaic cell formed by (a) electrodepositing a layer of a thickness of about 0.02 to 0.05 microns of a semiconductor compound formed of at least one of the metal elements of Class II B and one of the non-metal elements of Class VI A of the Periodic Table of Elements, (b) electrodepositing on said layer a film of a near intrinsic or n-type semiconductor compound different from the layer semiconductor compound and formed of at least one of the metal elements of Class II B of the Periodic Table of Elements and at least tellurium and (c) heating said film at a temperature between about 250° and 500° C. for a time sufficient to convert said film to a suitably low-resistivity p-type semiconductor compound.

4,388,484

OIL FIELD MATS

Gerald O. York, 623 Gardner St., Borger, Tex. 79007

Filed Oct. 2, 1981, Ser. No. 307,794
Int. Cl.³ H01B *17/64*
U.S. Cl. 174—5 R **8 Claims**



1. A protective mat comprising an oil-resistant elastomer with d.c. proof test voltage in excess of 70,000 volts comprising the formulation of 1503 type rubber, a cold polymerized styrene butadiene with a fatty acid emulsifier formed by acid coagulation, 23.5% target bound styrene, with a nominal Mooney viscosity of 52 (ML 1+4) 212° F. and is non staining (80 parts); CIS-4-1203, a solution butadiene dry rubber with CIS content of 93% and having a nominal Mooney viscosity (ML 1+4, 100° C.) of 45 (20 parts); Ca CO3 (25 parts); Mineral Rubber (50 parts); Zinc Oxide (10 parts); Stearic acid (1 part); Octamine (1 part); Sunproof wax (2 parts); PbO (2 parts); 90% of the zinc salt of 2-mercapto-benzo thiazole and 10% hydrocarbon wax (2½ parts); tetramethyl thiuram monosulphide (2.3 parts); and Sulfur (1.8 parts); which material provides a scorch test of 9.5 minutes at 280° F. and has a Shore A hardness of 56.

4,388,485

LONGITUDINALLY WATER-TIGHT CABLES

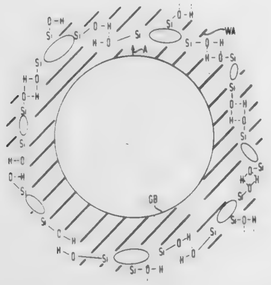
Guenter Zeidler, Germering; Ernst Ney, Krailling; Gerhard Lange, and Helmut Saller, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 24, 1981, Ser. No. 247,078

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012206

Int. Cl.³ B32B *9/00, 15/00;* **G02B** *5/16;* **H02G** *15/20*

U.S. Cl. 174—23 C **6 Claims**



1. In a longitudinally water-tight communication cable structure having at least one signal-carrying element therein and a jacket for closing the interior of such structure off from the outside and having in its interior a filling material containing a water-repellent substance and relatively small-diameter gas bubbles embedded in such filling material, the improvement wherein:

said filling material contains a reticulating thixotropic substance characterized by a 3-dimensional network-like structure formed by hydrogen bridges and which is disruptable under mechanical influence and is regenerable over a time span in a motionless state, with a significant increase of viscosity, said thixotropic substance being an oxide selected from the group consisting of B_2O_3, P_2O_5 and GeO_2, and being compounded with water; and

said gas bubbles being of a size relative to the resistance to disruption of said network-like structure so that the buoyancy of such gas bubbles in said filling material is significantly below the resistance to disruption in the motionless state of the filling material so that such relatively small diameter gas bubbles are maintained at their respective positions in said filling material in a time-stable manner during a motionless state.

4,388,486

SHIELDED LINE

Hisayoshi Nakatsuka, Mitaka, Japan, assignor to Namiki Precision Jewel Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1981, Ser. No. 251,890

Claims priority, application Japan, Apr. 25, 1980, 55-057225[U]

Int. Cl.³ H01B *11/06*
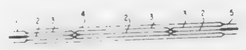
U.S. Cl. 174—34 **4 Claims**

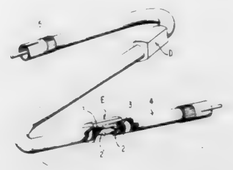
1. A shielded line comprising

a inner wire having first and second ends;

a shielding conductor disposed around the inner wire, said shielding conductor having first and second ends where the shielding conductor including the first and second ends there is electrically insulated from the inner wire including the first and second ends thereof; and

said inner wire and shielding conductor being divided into first, second and third parts where (a) the inner wires of the first and third parts are connected to the shielding conductor of the second part and (b) the inner wire of the second part is connected to the shielding conductors of the first and third parts so that a signal applied to the inner wire of the first part flows through the inner wire of the first part, the shielding conductor of the second part and the inner wire of the third part and a signal applied to the





shielding conductor of the first part flows through the shielding conductor of the first part, the inner wire of the second part and the shielding conductor of the third part and where the effective length of the first and third parts is substantially equal to that of the second part.

4,388,487

ARRANGEMENT FOR PREVENTING THE FORMATION OF A FOREIGN LAYER ON A HIGH-VOLTAGE INSULATOR

Edmond Petrossian-Avakian, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 23, 1981, Ser. No. 333,914

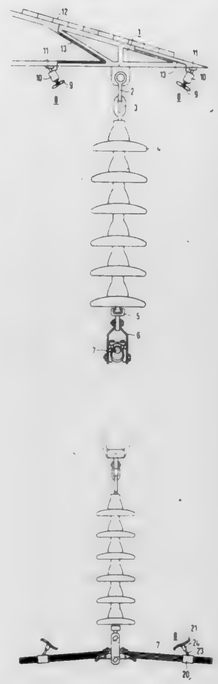
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1981, 3102613

Int. Cl.³ H01B *17/52;* **H02G** *7/00*

U.S. Cl. 174—40 R **4 Claims**

1. An arrangement for preventing the formation of a foreign layer on a high-voltage insulator which is at least partially exposed, the arrangement comprising fan means having an exposed fan blade disposed in the vicinity of the high-voltage insulator, said fan means being arranged to cover the exposed portion of the high-voltage insulator with an air stream.

4. The arrangement of claim **1** wherein said fan means is of a motorless type, and is attached to high-voltage carrying parts of a network, said fan blade having electrically conducting points, said electrically conducting points driving said fan blade to rotation by generating and repelling ions, in accordance with a point-effect principle.



4,388,488

SEALING SYSTEM FOR A LONGITUDINALLY DIVIDED CABLE FITTING ELEMENT

Rudolf Wicek, Haar, and Dieter Kunze, Neuried, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

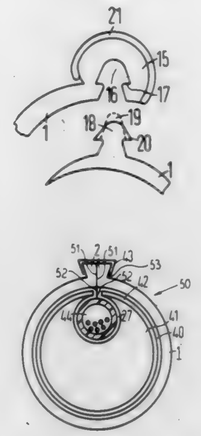
Filed Sep. 8, 1980, Ser. No. 184,989

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939241

Int. Cl.³ H02G *15/18, 3/04*

U.S. Cl. 174—92 **9 Claims**

1. A sealing system for a longitudinally divided cable fitting element of heat shrinkable material having a longitudinally extending opening, said sealing system comprising a longitudinally extending clamp portion being integrally formed on one side of the opening of the fitting element, said clamp portion having a longitudinally extending groove with undercuts forming shoulders, a longitudinally extending head portion being disposed on the other side of the opening of said fitting element and having undercuts, said clamp portion receiving the bead portion to form a seal of the opening with the undercuts engaging the shoulders to form a snap fit, one of said bead and clamp portions being substantially rigid and unaffected by heat, the other of said bead and clamp portions having a permanent shape which is tightly engaged with said one portion to form the seal, said other portion being deformed from the permanent shape to a temporary shape to enable easy assembly of the fitting element is heated to an elevated temperature for a



shrinking process so that the portions are easily assembled to close the opening and then treated to create a tight sealing fit.

4,388,489

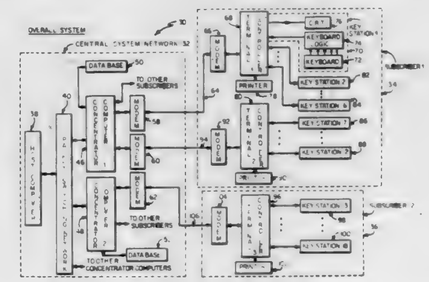
CONVERSATIONAL VIDEO SYSTEM

Jack G. Wigan; David G. Ure, both of London, and John M. Richards, Blewbury, all of England, assignors to Reuters Limited, London, England

Filed Jan. 30, 1981, Ser. No. 230,341

Int. Cl.³ G06F *15/20;* **H04Q** *11/04;* **G11B** *27/10*

U.S. Cl. 178—3 **23 Claims**



1. In a video communication network capable of providing textual data messages to a plurality of subscriber terminals throughout said network, at least a portion of said plurality of subscriber terminals comprising keystations, each of said keystations comprising a keyboard means for inputting textual data messages and associated data control signals to said network and a video display means for providing a textual video display of at least keyboard generated data input to said network; the improvement comprising at least one message switching node interface means for routing video conversational textual data messages throughout said network and a plurality of keystation terminal controller interface means operatively connected between said keystations and said one message switching node interface means with at least one keystation being operatively connected to one keystation terminal controller interface means for each of said plurality of

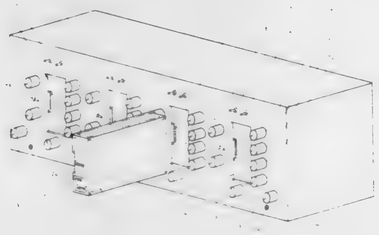
keystation terminal controller interface means, said one message switching node interface means comprising message routing logic means and storage means operatively connected to said message routing logic means for providing message routing logic control signals, each of said keystation controller interface means comprising display control logic means and local video display storage means for locally storing video conversational textual data for providing a video display thereof to at least one of said keystations connected to said keystation controller interface means, said keyboard means comprising means for providing unique calling signals to said keystation controller interface means for initiating calls to a keystation designated portion of said plurality of keystations in said network, said keystation controller interface means comprising means for providing said calling signals to said message switching node interface means and for receiving said calling signals therefrom for completing a call to said one connected keystation, said message routing logic means comprising means for routing said calling signals to said designated keystations to complete said initiated calls, said display control logic means comprising means for providing on said one connected keystation video display means a substantially simultaneous video display of video conversational textural data received from two different designated keystations in said network with which calls are completed via said separate keyboard means associated with said two different designated keystations and transmitted to said two different designated keystations via said keyboard means associated with said one connected keystation, whereby different video conversations may be substantially simultaneously carried out with different keystations on a common video display using a common keyboard.

4,388,490

EFFECTS BOX SYSTEM AND METHOD

Abner Spector, 1710 Avenida Del Mundo #803, Coronado, Calif. 92118

Filed May 19, 1980, Ser. No. 150,813
Int. Cl.³ H04R *3/12*
U.S. Cl. 179—1 B **3 Claims**



1. A system for noiselessly operatively inserting at least one audio effects circuit module into a main audio path having a source audio signal without introducing spurious noise signals, while maintaining continuity of the audio path, comprising:

(a) an audio effects circuit module which provides audio effects, said audio effects circuit module having module contact elements including at least one input terminal and at least one output terminal, wherein said output terminal provides the audio effects;

(b) a main housing having a main input terminal for connecting a main incoming source audio signal to the audio path and having a main output terminal, said main housing further having at least one recess for receiving said audio effects circuit module, said recess having recess contact elements mounted and positioned thereon to make corresponding contact with said module contact elements when said module is fully inserted into said recess;

(c) first switching means associated with the audio path and with said recess contact elements for maintaining the continuity of the audio path when said recess is devoid of said audio effects circuit module; and

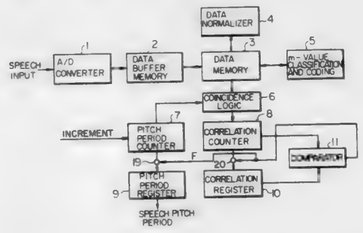
(d) second switching means associated with the audio path and with said recess contact elements, said second switching means being responsive to partial insertion of said audio effects circuit module into said recess for electrically disconnecting said recess contact elements from the audio path, while maintaining continuity of the audio path, so that the first physical contact between said module contact elements and said corresponding recess contact elements is made remote from the audio path, said second switching means further being responsive to full insertion of said audio effects circuit module for electrically connecting said recess contact elements to the audio path only after physical and electronic contact between said module contact elements and said corresponding recess contact elements has been solidly made, for noiselessly operatively connecting said module input and output to the audio path thereby inserting said audio effects circuit module into the audio path without introducing spurious noise signals.

4,388,491

SPEECH PITCH PERIOD EXTRACTION APPARATUS

Yoshihiro Ohta, Yokohama, and Akira Ichikawa, Musashino, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 26, 1980, Ser. No. 191,291
Claims priority, application Japan, Sep. 28, 1979, 54-124052
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SC **11 Claims**



1. A speech pitch period extracting apparatus comprising:

(a) classifying and coding means for classifying and coding the amplitude value of a plurality of successive samples of a speech waveform into at least three values of coded data on the basis of predetermined threshold values;

(b) code-coincidence determining means for detecting when coincidence occurs between selected code values of data thus classified and coded by said classifying and coding means; and

(c) code-coincidence counting means for counting the times of coincidence between data signals separated by a predetermined time interval in response to said code coincidence determining means; and

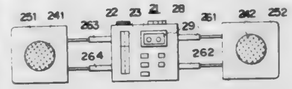
(d) pitch deciding means responsive to said code-coincidence counting means for determining that time interval which provides the maximum number of code coincidences between data signals, thereby determining the speech pitch period.

4,388,492

MINIATURE STEREO DEVICE WITH EXTENSIBLE SPEAKERS

Masaaki Sato, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Nov. 26, 1980, Ser. No. 210,598
Claims priority, application Japan, Mar. 7, 1980, 55-28778
Int. Cl.³ H04R *5/02*
U.S. Cl. 179—1 GA **8 Claims**



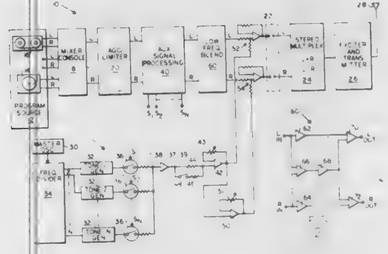
1. A minature stereo device comprising an audio device which generates a stereo output, said audio device including a main body, a pair of speakers positioned at both sides of said main body and facing in a forward direction relative to said main body for reproducing said stereo output and directing the reproduced stereo output in the forward direction, and extensible means fixed to said main body and to at least one of said pair of speakers for enabling said at least one speaker to be adjustably linearly moved in the direction perpendicular to the forward direction between a minimum separation and a maximum separation and to be held at a desired position whereat the speaker is linked to but separated from the other speaker for obtaining an optimum stereo effect.

4,388,493

IN-BAND SIGNALING SYSTEM FOR FM TRANSMISSION SYSTEMS

Douglas A. Maisel, 2412-6th St., Berkeley, Calif. 94710

Filed Nov. 28, 1980, Ser. No. 211,307
Int. Cl.³ H04H *5/00*
U.S. Cl. 179—1 GD **22 Claims**



1. In a stereo transmission system for generating and transmitting an FM multiplex signal derived from left and right audio frequency stereo channels, said multiplex signal including a sum channel containing the summed left and right stereo channel signals and a difference channel containing the difference between said left and right stereo channel signals, an in-band signaling system comprising:

means for generating at least one low frequency audio tone;

means for generating from each said audio tone first and second component signals, said first component signal being substantially of equal amplitude and 180° out of phase with said second component signal; and

summing means for summing each said first component signal with said left stereo channel and for summing each said second component signal with said right stereo channel such that when FM multiplexed, each said tone appears substantially only on said difference channel.

11. An automatic tone detecting apparatus for receiving a transmitted FM stereo multiplex signal containing at least one low frequency audio tone modulated substantially only on the 38 kHz subcarrier of said FM stereo signal, comprising:

means for detecting the existence of each said low frequency tone on said 38 kHz subcarrier; and

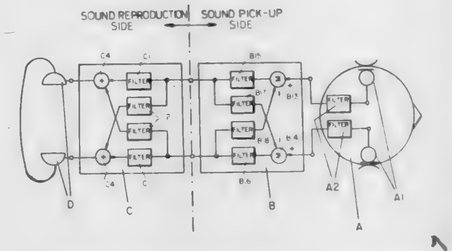
means responsive to said tone detection for activating an auxiliary circuit, said auxiliary circuit remaining activated so long as said tone continues to be detected by said tone detector means.

4,388,494

PROCESS AND APPARATUS FOR IMPROVED DUMMY HEAD STEREOPHONIC REPRODUCTION

Peter Schöne, No. 13, Rosenstrasse, 8011 Aschheim; Jürgen Ölmann, No. 5, Davidstrasse, 8000 Munich 89, and Helmut Lamparter, No. 36, Rosenstrasse, 8011 Kirchheim, all of Fed. Rep. of Germany

Filed Jan. 5, 1981, Ser. No. 222,475
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1980, 3001007; Feb. 2, 1980, 3003852
Int. Cl.³ H04S *1/00*
U.S. Cl. 179—1 G **11 Claims**



1. A process for stereophonic transmission of sound signals, comprising the steps of:

(a) providing a dummy head containing two microphone arrangements for simulating directional hearing with respect to a human listener;

(b) feeding output signals from said microphone arrangements to two filters each having a frequency response inverse with respect to the free-field transfer constants of said microphone arrangements for providing filter output signals which are independent of frequency; and

(c) feeding said filter output signals to a decoupling arrangement having transfer functions determined from said free-field transfer constants of said dummy head containing said microphone arrangements for producing space-related stereophonic signals containing directional information items.

4,388,495

SPEECH RECOGNITION MICROCOMPUTER

Myron H. Hitchcock, Englewood, Colo., assignor to Interstate Electronics Corporation, Anaheim, Calif.

Filed May 1, 1981, Ser. No. 259,695
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SD **20 Claims**

6. A speech recognition system, comprising:

a read-only memory permanently storing speech template data for a limited vocabulary, said speech template data defining words selected to be dissimilar;

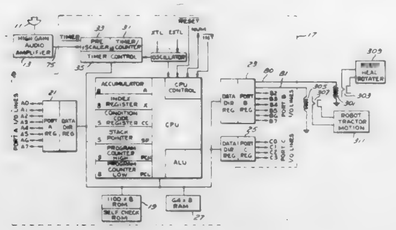
means for analyzing speech input data, said means comprising:

means for measuring the average speech frequency of said data;

means for comparing said average speech frequency with thresholds to generate speech state sequences of fricative-like, vowel-like, and silence states; and

means for changing at least one of said thresholds in re-

sponse to a previous state of said speech state sequence; and



means for comparing said speech state sequences with said speech template data to output a signal identifying said speech.

4,388,496

FM/AM STEREO RECEIVER

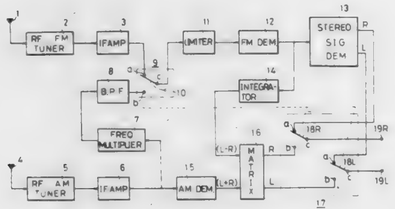
Yukihiko Miyamoto, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1981, Ser. No. 291,968

Claims priority, application Japan, Aug. 11, 1982, 55-113543[U]; Aug. 11, 1982, 55-113544[U]

Int. Cl.³ H03D *3/22;* **H04H** *5/00*

U.S. Cl. 179—1 GS **8 Claims**



1. An FM/AM stereo receiver comprising:

an RF FM stereo tuner for selecting and converting an RF FM stereo signal into an IF FM stereo signal;

an IF FM stereo amplifier for amplifying the IF FM stereo signal from the RF FM stereo tuner;

an RF AM stereo tuner for selecting and converting an RF AM stereo signal of an AM-PM system into an IF AM stereo signal;

an IF AM stereo amplifier for amplifying the IF AM stereo signal from the RF AM stereo tuner;

a frequency multiplier for frequency multiplying the IF AM stereo signal from the IF AM stereo amplifier to obtain a frequency-multiplied IF AM stereo signal the non-phase-modulated carrier frequency of which is equal or close to a non-frequency-modulated carrier of the IF FM stereo signal from the IF FM stereo amplifier;

FM/AM stereo signal selecting means for selecting the IF FM stereo signal from the IF FM stereo amplifier and the frequency-multiplied IF AM stereo signal from the frequency multiplier;

a limiter for amplitude limiting the IF FM stereo signal from the FM/AM stereo signal selecting means and amplitude limiting the frequency-multiplied IF AM stereo signal from the FM/AM stereo signal selecting means to obtain a frequency-multiplied IF PM difference signal;

an FM demodulator for frequency demodulating the IF FM stereo signal from the limiter into a composite stereo signal and frequency demodulating the frequency-multiplied IF PM difference signal from the limiter to obtain an IF demodulated PM difference signal;

a stereo signal demodulator for deriving left and right signals from the composite stereo signal provided from the FM demodulator;

an integrator for integrating the IF demodulated PM difference signal from the FM demodulator to obtain a difference signal;

an AM demodulator for amplitude demodulating the IF AM stereo signal from the IF AM stereo amplifier to obtain a sum signal; and

a matrix circuit for deriving left and right signals from the sum signal and the difference signal provided from the AM demodulator and the integrator, respectively.

4,388,497

TELEPHONE POWER SUPPLY ARRANGEMENT

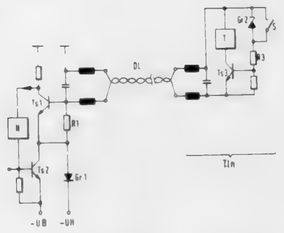
Hartmut Scheffler, Aspach, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 239,101

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007468

Int. Cl.³ H04M *19/00*

U.S. Cl. 179—77 **10 Claims**



1. In a circuit for supplying power to a subscriber telephone device connected to a central office via a two-wire line, which circuit includes a main power supply at the central office and switching means at the telephone device actuatable to place the device in operation and to connect an electrical load in circuit across the line, the improvement comprising: an auxiliary power supply disposed at said central office and connected across said line when said telephone device is not in operation; and circuit means connected for selectively connecting said main power supply to said line when said telephone device is in operation.

4,388,498

VOLTAGE STABILIZER SUITABLE FOR USE IN A TELEPHONE SET

Josephus J. A. Geboers, and Daniel J. G. Janssen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 26, 1980, Ser. No. 191,102

Claims priority, application Netherlands, Oct. 1, 1979, 7907276

Int. Cl.³ H04M *1/00*

U.S. Cl. 179—81 R **1 Claim**

1. A voltage stabiliser suitable for a telephone set comprising:

first and second terminals,

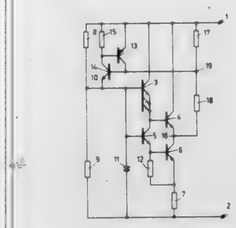
first and second resistors,

a first transistor having a first current path which is coupled between said first and second terminals by means of said first and second resistor,

a first voltage divider connected between said terminals, a first tap of said first voltage divider being connected to the base of said first transistor,

a capacitor connected between the base of said first transistor and said second terminal to which the emitter of said first transistor is also coupled through said first and second resistors,

a second transistor having a second current path connected in series with said second resistor and said first and second terminals, the base of said second transistor being connected to the junction of the emitter of said first transistor and said first resistor,



a third resistor,

a thyristor having an anode gate and a cathode gate, said anode gate being connected through said third resistor to said first terminal and to the base of said first transistor by means of the emitter terminal of said thyristor, and

a second voltage divider having a tap connected to said cathode gate of said thyristor, said second voltage divider being connected between said first terminal and the collector terminal of said second transistor.

4,388,499

LINE INTERRUPTION CIRCUIT FOR USE IN A TELEPHONE SET

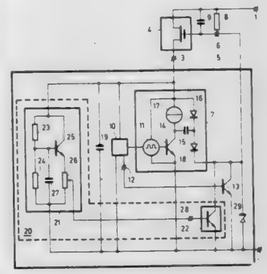
Daniël J. G. Janssen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 13, 1981, Ser. No. 234,086

Claims priority, application Netherlands, Feb. 26, 1980, 8001136

Int. Cl.³ H04M *1/44*

U.S. Cl. 179—81 R **5 Claims**



1. A line interruption circuit for use in a telephone set for producing electronically generated dial pulses comprising:

a semiconductor switching element connected between a first terminal and a connecting point,

a control circuit connected between said connecting point and a second terminal, a control electrode of said semiconductor switching element being coupled to said control circuit for rendering said semiconductor element non-conductive during the presence of each control pulse produced by said control circuit and for rendering said semiconductor switching element conductive in the absence of a control pulse, said control circuit comprises a current detection device for driving said semiconductor switching element into saturation during the absence of a dial pulse when the line current is below a predetermined value and for driving said semiconductor switching element out of saturation when the line current is above the said predetermined value.

4,388,500

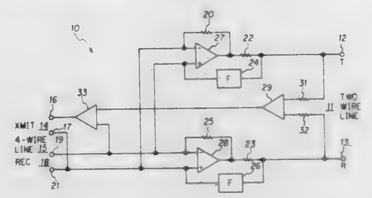
ELECTRONIC HYBRID

John F. Regan, Lombard, Ill., assignor to Wescom, Inc., Downers Grove, Ill.

Filed Feb. 27, 1981, Ser. No. 239,061

Int. Cl.³ H04B *1/58*

U.S. Cl. 179—170 NC **9 Claims**



1. In an electronic hybrid having a two wire port for coupling to a two wire line, separate transmit and receive ports for coupling to a four wire line, driving means responsive to signals imposed on the receive port for driving the two wire line including a pair of amplifiers each having an input responsive to signals imposed on said receive port and an output, means responsive to signals imposed on the two wire port for transmitting said signals to the transmit port, means for preventing signals imposed on the receive port and coupled to the two wire port from being returned to the transmit port, an impedance serially connected between each amplifier output and the two wire port, the driving means including means for providing an ac ground at the junction between each amplifier output and its associated impedance and the driving means being biased to supply dc current to the two wire line through the impedances, the improvement comprising said serially connected impedances having an aggregate value of less than half of the desired terminating impedance of the hybrid, and feedback means connected from the junction between each impedance and the two wire port to an input of each amplifier for providing positive feedback for each amplifier whereby the output impedance of the hybrid attributable to the aggregate of the serially connected impedances increased.

4,388,501

AUDIO-VISUAL LINE TEST TERMINATION DEVICE

Omprakash G. Ahuja, East Meadow, N.Y., assignor to TII Industries Inc., Copiague, N.Y.

Filed May 11, 1981, Ser. No. 262,456

Int. Cl.³ H04B *3/46;* **H04M** *1/26*

U.S. Cl. 179—175.3 R **8 Claims**

1. A varying impedance line test termination device for providing a characteristic signature to the telephone central office and an audio-visual indication at a subscriber termination when a continuity test is made on a subscriber line having a pair of electrically conductive paths comprising:

(a) a first current path having a first resistor and a first capacitor connected in series, said serially connected first resistor and said first capacitor being connected across said electrically conductive line paths;

(b) a diode and a first light emitting voltage breakover means connected in series, said serially connected diode and said first light emitting voltage breakover means being connected across said capacitor; and

(c) a second current path having an audio indicator means, a second light emitting voltage breakover means and a light dependent resistor being disposed proximate said first light emitting breakover means to receive light rays ema-

nating therefrom, said audio indicator means, and said second light emitting voltage breakover means being



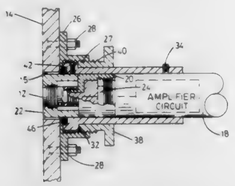
connected in series across said electrically conductive line paths.

4,388,502

ADAPTER FOR MOUNTING A MICROPHONE FLUSH WITH THE EXTERNAL SURFACE OF THE SKIN OF A PRESSURIZED AIRCRAFT

Robert B. Cohn, Lancaster, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 14, 1981, Ser. No. 330,613
Int. Cl.³ H04R *1/02*
U.S. Cl. 179—179 **7 Claims**



1. In a mounting device for mounting a sonic transducer comprising a microphone pick-up head flush with respect to the external surface of the skin of an aircraft for detecting shock waves passing thereover, the improvement comprising:

A. a segmented, cylindrical body defining a housing for an electronic package having a base segment and a distal segment characterized by a substantially planar end surface and including a concentric aperture, an amplifier circuit and a microphone pick-up head confined within said housing, said pick-up head being projected into said aperture and characterized by a planar end surface arranged in coplanar relation with the end surface of said cylindrical housing; and

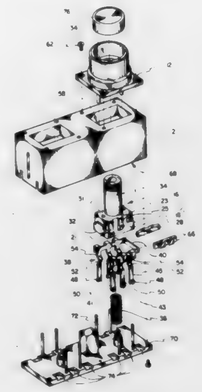
B. mounting means for securing said housing within a pressurized compartment for an aircraft with the planar end surface of said housing disposed in coplanar relation with the external surface of the skin of the aircraft, said mounting means including a mounting sleeve having an internal surface of a cylindrical configuration for receiving said housing in adjustable, telescopic relation, means for securing said sleeve in fixed relation with said housing, and means for affixing said sleeve to the internal surface of the skin of an aircraft.

4,388,503

MULTIPLE POSITION PUSHBUTTON SWITCH

William D. Penland, Weaverville, and Harold F. Loew, Asheville, both of N.C., assignors to Square D Company, Palatine, Ill.

Filed Aug. 14, 1981, Ser. No. 292,776
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 R **13 Claims**



1. A multiple position electric pushbutton switch comprising;

a movable cam,

a movable contact assembly having at least two electrically and physically interconnected spring elements with each element having an electric contact portion and a cam engaging portion,

at least two stationary contacts with each stationary contact engagable with one of the contact portions,

a housing containing the cam, the movable contact assembly and the stationary contacts and

at least two cam surfaces on the cam with each cam surface engagable with one of the cam engaging portions, said cam surfaces having a location on the cam so a first of said surfaces engages a cam portion on a first of the spring elements upon movement of the cam to a first position in the housing and a second of the cam surfaces engages a cam portion on a second of the spring elements upon movement of the cam from the first position to a second position in the housing.

4,388,504

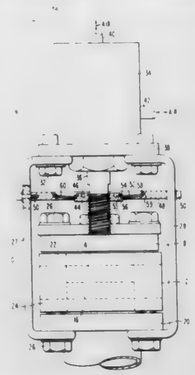
SWITCH OPERATING MEANS INCLUDING LATCHING MEANS MAINTAINING SWITCH CONTACTS OPEN OR CLOSED

Robert M. Hruda, and John L. Cusimano, both or Horseheads, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 24, 1981, Ser. No. 276,766
Int. Cl.³ H01H *15/18*
U.S. Cl. 200—76 **3 Claims**

1. An improved operating mechanism for a low DC voltage, high continuous current electrical shunting switch which comprises a hermetically sealed switch body, with reciprocably movable switch contacts extending through opposed portions of the switch body, which operating mechanism includes reciprocating actuating means connected to one of the switch contacts for moving the switch contact toward and away from the other switch contact within the switch body to a closed contact position and an open contact position, the improvement comprising a latching means connected between the reciprocating actuating means and a rigid mounting means, which latching means maintains the switch contacts in either

the closed contact position or open contact position until predetermined force is applied via the reciprocating actuating means to overcome the latch condition and permit movement of the switch contact, and wherein the latching means comprises a Belleville type washer, the outer perimeter of which is rigidly retained by rigid mounting means, and the inner perimeter of which is connected to the reciprocating actuating



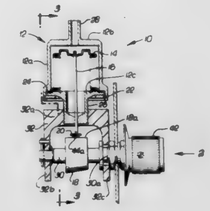
means and is movable therewith from a latched open contact position to a latched closed contact position, and wherein the reciprocating actuating means includes a threaded drive rod connected to one switch contact, and an adjustable inner anchor means is threaded onto the drive rod, with the inner perimeter of the Belleville type washer retained by the adjustable inner anchor means.

4,388,505

ADJUSTABLE PRESSURE-ACTUATED SWITCH

Grigor Sarian, Los Angeles, and Dee J. Neville, Simi Valley, both of Calif., assignors to Puritan-Bennett Corp., Kansas City, Mo.

Filed Feb. 9, 1981, Ser. No. 232,839
Int. Cl.³ H01H *35/32*
U.S. Cl. 200—83 C **17 Claims**



1. An adjustable pressure-actuated switch, comprising:

a pressure chamber connected to a source of pressure to be use in actuating said switch;

diaphragm means disposed in said pressure chamber and exposed on one side to the pressure in said chamber;

a first electrical contact affixed to said diaphragm means and movable therewith along a path;

a second electrical contact disposed in the path of movement of said first electrical contact;

pressure selection means for adjusting the relative spacing between said first and second electrical contacts, to allow for their closure at a selected pressure;

first calibration means, for adjusting the relative spacing between said first and second electrical contacts when said pressure selection means is set at a first pressure setting and a first reference pressure is applied to said pressure chamber; and

second calibration means, operable independently of said first calibration means, for adjusting the relative spacing between said first and second electrical contacts when said pressure selection means is set at a second pressure setting and a second reference pressure is applied to said pressure chamber;

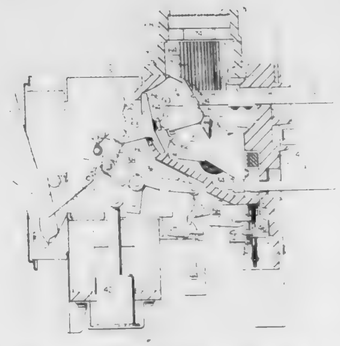
whereby calibration of said switch is maintained for all intermediate settings of said pressure selection means between said first and second pressure settings.

4,388,506

CIRCUIT INTERRUPTER

Wasaburo Murai, Osaka, and Masao Horikawa, Yamatokoriyama, both of Japan, assignors to Terasaki Denki Sangyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 10,139, Feb. 7, 1979, abandoned. This application Nov. 23, 1981, Ser. No. 323,991
Int. Cl.³ H01H *33/04, 33/42*
U.S. Cl. 200—144 R **5 Claims**



1. A circuit interrupter having an uncovered operating mechanism and comprising:

a contact structure including a pair of separable contacts which are connectable to an external circuit;

an arc extinguisher which is disposed in a direct facing relationship with an electric arc established between said pair of separated contacts;

an electrically insulated chamber housing, having said contact structure together with said arc extinguisher disposed therein, and defining a contact chamber with said contact structure at one end and an arc extinguisher chamber with said arc extinguisher at the other end, and having a first opening for exhaust the arc gas at said arc extinguisher chamber side;

an operating mechanism, which is disposed exterior to said insulating chamber housing, for operating said contact structure; and interconnecting means, electrically isolating said operating mechanism from said contact structure and including an electrically insulating member movably extending through said insulating chamber housing, for operatively interconnecting but electrically insulating said contact structure and said operating mechanism, and for transmitting the movements of the operating mechanism to the contact structure;

said operating mechanism being groundable and also isolated from the contact structure by said insulating chamber housing at the clearance existing therebetween;

said insulating chamber housing substantially enclosing said contact structure with substantially the minimum dimensions necessary for accommodating the contact movement so as to promote the movement of a blast of ionized gas which has been generated by the electric arc established

between said contacts from said insulating chamber housing to the exterior of said insulating chamber housing through said arc extinguisher and said first opening;

said arc extinguisher chamber being directly and fluid dynamically smoothly connected for at least substantially maintaining a smooth gas flow from said contact chamber.

4,388,507

EXCESS-CURRENT PROTECTIVE SWITCH

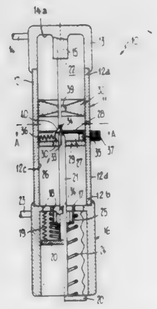
Adrian W. Roth, Aarau, and Tibor Morva, Oberentfelden, both of Switzerland, assignors to Sprecher & Schuh AG, Aarau, Switzerland

Filed Sep. 28, 1981, Ser. No. 306,153

Claims priority, application Switzerland, Oct. 17, 1980, 7766/80

Int. Cl.³ H01H *33/70*

U.S. Cl. 200—148 R **13 Claims**



1. An excess-current protective switch operative between a cut-on position and a cut-off position comprising:

a stationary contact element;

a movable contact element engageable with said stationary contact element in the cut-on position of the switch;

said movable contact element being displaceable between a cut-on position and a cut-off position;

said movable contact element being subjected to a force tending to displace the same into its cut-off position;

a locking device for locking said movable contact element in the cut-on position;

said locking device comprising a substantially U-shaped locking element formed of a soft magnetic material and surrounding said movable contact element with play;

means mounting said locking element for movement transversely with respect to the flow of current to said movable contact element;

said substantially U-shaped locking element having free leg ends;

stop means provided for at least one free leg end of said locking element;

a stop nose provided for and movable in conjunction with said movable contact element; and

said stop means cooperating in the cut-on position with said stop nose.

4,388,508

SWITCH ACTUATING MECHANISM

Dallas W. Wilson, 2015 NW. 23rd Ave., Portland, Oreg. 97210

Filed Sep. 25, 1981, Ser. No. 305,544

Int. Cl.³ H01H *3/04*

U.S. Cl. 200—153 C **13 Claims**

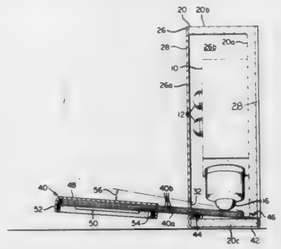
1. A switch actuating mechanism for switches having a movable contact, comprising:

(a) a switch holder,

(b) a flexible arm having an inner end mounted on said switch holder and an outer manually engageable end projecting from said switch holder,

(c) a switch actuating arm supported on said flexible arm in overlapping relation and having an outer end secured to the outer end of said flexible arm and an inner end supported freely on the inner end of said flexible arm and arranged to be disposed adjacent to a movable switch contact,

(d) and a fulcrum disposed between said flexible arm and said switch holder over which said flexible arm can flex,



(e) said fulcrum being spaced from the inner end of said switch actuating arm to form a lever for said inner end of said switch actuating arm,

(f) said flexible arm being of sufficient spring strength such that upon flexing it over said fulcrum by movement of its outer operating end the inner lever end of said switch actuating arm is pivoted for actuating a movable switch contact.

4,388,509

SYNTHETIC-RESIN AND METALLIC LAYERED HOUSING FOR HAND-HELD APPLIANCE

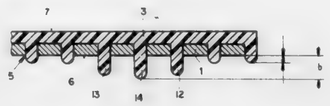
Roland Ullmann, Obertshausen, and Klaus Zimmermann, Bremthal, both of Fed. Rep. of Germany, assignors to Braun AG, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 938,103, Aug. 30, 1978, abandoned. This application Jan. 12, 1982, Ser. No. 338,900

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739137

Int. Cl.³ H01H *9/04, 9/06*

U.S. Cl. 200—157 **5 Claims**



1. In a switchable hand-held appliance, in combination:

a housing having a rigid wall formed with an array of perforations extending between an inner and an outer face thereof;

an elastomeric nonmetallic sheet overlying said wall at said inner face thereof and formed with a multiplicity of bosses each penetrating a respective perforation and extending beyond said outer face; and

switch means in said housing juxtaposed with a portion of said sheet carrying some of said bosses, said portion being inwardly deflectable away from said wall by finger pressure exerted upon said some of said bosses for actuating said switch means, the remainder of said sheet being fixed to said wall and preventing a depression of all other bosses.

4,388,510

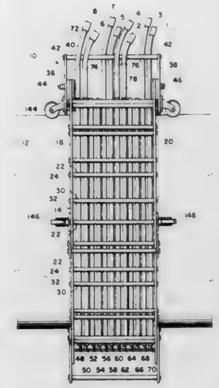
HEATING COLLAR WITH QUADRAFILAR WINDINGS

William L. Hughes, Stillwater, Okla., assignor to Commercial Resins Company, Tulsa, Okla.

Filed Jun. 12, 1981, Ser. No. 273,233

Int. Cl.³ H05B *6/10, 6/44*

U.S. Cl. 219—8.5 **2 Claims**



1. Apparatus for producing induction currents in a pipe to heat the same comprising an axially extending collar adapted to removably surround said pipe, said collar including at least two arcuate frames hingedly connected in end to end circumferential relationship and having a pair of free ends adapted to be opened for placing the frames around the pipe, a plurality of electrically conducting wires carried upon said frames across the axial width thereof and extending circumferentially between the free ends, a connector assembly mounted at each free end, each connector assembly having a plurality of connectors, each connector of each assembly being connected to an end of a wire and being connected electrically to a connector of the other assembly when the frames are in closed position around the pipe, the wires on one axial half of said collar being connected to each other to form two interlaced bifilar windings; the wires at the other axial end of the collar being interconnected to form two interlaced bifilar windings arranged in end to end axial relationship with the bifilar windings of the first axial end of the collar thereby resulting in an overall quadrafilar winding for the collar, means for connecting the bifilar windings at one axial end of said collar to a source of alternating electric potential to produce induction heating in the pipe, and means for connecting the bifilar windings at the other axial end of the collar to a source of alternating electric potential to produce induction heating in the pipe.

4,388,511

MICROWAVE HEATING APPARATUS FOR CIRCULABLE MEDIA

Wolfgang Sander, Ortenberg, and Ernst-Günter Jung, Breuberg, both of Fed. Rep. of Germany, assignors to Jung GmbH, Offenbach am Main, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,358

Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019720

Int. Cl.³ H05B *9/06*

U.S. Cl. 219—10.55 R **5 Claims**

1. A microwave apparatus for media which can be circulated and heated by high frequencies, comprising a microwave transmitter, an elongated shaft having the same rectangular cross-section transverse of the elongated direction thereof over the elongated dimension of said shaft, said shaft having a first end and a second end spaced apart in the elongated direction, said microwave transmitter opening into said shaft adjacent the first end thereof, said shaft forming a hollow wave guide extending in the elongated direction thereof from the first end toward the second end and a resonator chamber extending from the end of said wave guide closer to the second end of said shaft to the second end of said shaft, a microwave permeable conductor located within said resonator chamber and extending from the second end of said shaft for transporting the medium to be heated through the resonator chamber, and said microwave permeable conductor comprising a substantially hairpin-shaped loop having an inlet and an outlet each located at the second end of said shaft.



4,388,512

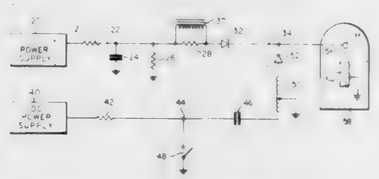
ALUMINUM WIRE BALL BONDING APPARATUS AND METHOD

Thomas E. Salzer, Bedford, Mass., and John R. Saxelby, Jr., Dallas, Tex., assignors to Raytheon Company, Lexington, Mass.

Filed Mar. 9, 1981, Ser. No. 242,073

Int. Cl.³ B23K *9/06*

U.S. Cl. 219—56.22 **22 Claims**



1. The method of forming a substantially spherical shape on the end of an aluminum wire in preparation for ball bonding said wire to a substantially planar surface, comprising the steps of:

positioning an electrode, said wire and said substantially planar surface in a protective environment of an inert gas;

providing an arc gap between said electrode and said end of said wire;

applying a first potential voltage from a direct current source across said gap, said first voltage being less than the minimum sparking potential of said gap; and

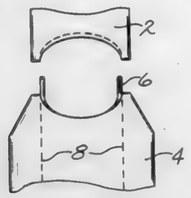
applying an impulse second potential voltage across said gap, said second voltage being greater than the minimum sparking potential of said gap to provide a spark across said gap, said spark initiating an arc of current from said source across said gap, said arc continuing after said impulse for a period of time less than 200 microseconds until said current decays to a level insufficient to sustain said arc.

4,388,513

HIGH VOLTAGE WELDING

Carl H. Brastow, Foxboro, Mass.; Joel D. Mallett, Warwick, R.I., and Douglas J. Livingston, New London, N.H., assignors to Conceptual Engineering Associates, Inc., Foxboro, Mass.

Filed Jan. 29, 1981, Ser. No. 229,553
Int. Cl.³ B23K *9/14, 9/12*
U.S. Cl. 219—58 **15 Claims**



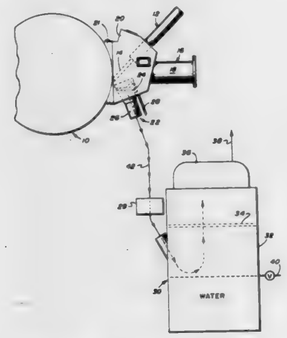
1. A process for welding small diameter wire into a closed loop comprising the steps of presenting, supporting and forming a selected length of wire in the range of approximately 0.010 inch to 0.062 inch diameter, having two opposite ends into an essentially closed loop with the ends of the wire closely disposed to each other, positioning an electrode having a tip end within an open ended sleeve with the tip end spaced inwardly from the open end of the sleeve, placing the open end of the sleeve member closely adjacent to the ends of the wire, means for producing a short duration flow of energy between the electrode and the ends of the wire including establishing a first high voltage arc between the electrode and the ends of the wire and thereafter creating a second low voltage, high amperage arc between the electrode and the ends of the wire and then deenergizing the electrode before the next length of wire to be welded is presented.

4,388,514

METHOD FOR COLLECTING PROCESS GENERATED FUME AND/OR SLAG

William J. Coughlin; Stephen A. Hoffman, both of Lancaster, and Perry J. Rieppel, Worthington, all of Ohio, assignors to Arcair Company, Lancaster, Ohio

Division of Ser. No. 25,320, Mar. 30, 1979, abandoned. This application Jun. 1, 1981, Ser. No. 269,198
Int. Cl.³ B23K *9/32*
U.S. Cl. 219—69 R **3 Claims**



1. A method for collecting fume, solid particulate matter, molten metal and molten slag generated by operation of an air-carbon arc cutting and gouging apparatus comprising the steps of:

isolating from the ambient environment an area surrounding the apparatus where fume, solid particulate matter, molten metal and molten slag is generated by the air-carbon arc cutting and gouging apparatus thus forming an atmosphere containing air, other gases, fume, solid particulate matter, molten metal and molten slag;

directing said atmosphere to a withdrawal apparatus wherein an air-water mixture is directed at said atmosphere and continuously withdrawing the atmosphere inside said isolated area through withdrawal apparatus wherein said air-water mixture cools said molten metal and molten slag and entrains said solid particulate matter;

separating said water and solid particulate matter, cooled molten metal and cooled molten slag from said air and other gases; and

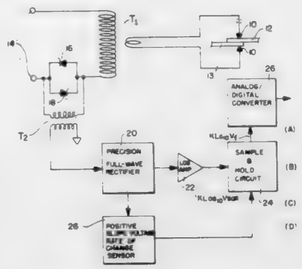
passing said air and other gases through a filter to remove any airborne particulate matter.

4,388,515

RESISTANCE WELDING CONTROL SYSTEM

James K. Mathews, Van Nuys, Calif., assignor to Pertron Controls Corporation, Canoga Park, Calif.

Filed Mar. 19, 1981, Ser. No. 245,261
Int. Cl.³ B23K *11/24*
U.S. Cl. 219—110 **7 Claims**



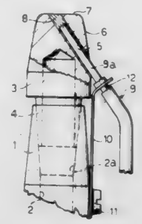
1. A control system for use in conjunction with a controller which controls a resistance type of welding machine during the production of a weld, the welding machine including a welding transformer having a primary circuit connected to a source of alternating current voltage and further having a secondary circuit, and the controller including switching means connected in said primary circuit for controlling the flow of current in the secondary circuit of the welding transformer, the control system including: circuit means connected across the switching means for providing an alternating current voltage corresponding to the voltage appearing across the switching means and having a phase relation with the alternating current voltage of said source which varies with variations in the dynamic resistance of the weld being produced, and the leading edge of each half cycle of the alternating current voltage produced by said circuit means having an amplitude determined by such variations in said phase relation; differentiating circuitry connected to said circuit means for generating a pulse signal upon the occurrence of the leading edge of each half cycle of the alternating current voltage produced by said circuit means; and sample and hold circuitry connected to said circuit means and to said differentiating circuitry for producing an output signal representative of the amplitude of the leading edge of each half cycle of the alternating current voltage produced by said circuit means.

4,388,516

ELECTRODE TIP FOR ELECTRIC SPOT WELDING

Mario Ferrero, Turin, and Giovanni Balestrino, Orbassano, both of Italy, assignors to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed Mar. 27, 1981, Ser. No. 248,632
Claims priority, application Italy, May 14, 1980, 67758 A/80
Int. Cl.³ B23K *9/24*
U.S. Cl. 219—119 **1 Claim**



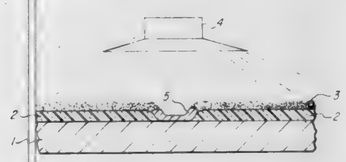
1. An electrode tip for electric spot welding comprising a tip having a hole which extends from one side of said tip up to the end surface of said tip for receiving one end of a flexible bundle of optical fibers which is intended to transmit a signal indicative of the temperature reached at said end surface of said tip, an insert interference fitted within the hole and arranged adjacent to said end surface of said tip in order to insure the continuity of said end surface and resilient means comprised of a flat spring fixed at one end to said electrode and provided at the other end with a support seating for said bundle of optical fibers for biasing the end of said bundle of said optical fibers located in said hole against said insert.

4,388,517

SUBLIMATION PATTERNING PROCESS

Eric F. Schulte, Richardson, and Vernon R. Porter, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 22, 1980, Ser. No. 189,495
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LJ **4 Claims**



1. A method for patterning a layer of material on a substrate, comprising the steps of:

(a) selecting a substrate having high thermal conductivity;

(b) depositing an insulating material having a low thermal conductivity over predetermined areas of the substrate;

(c) depositing on said insulating material and on said substrate a thin film of a material capable of absorbing radiated energy easily; and

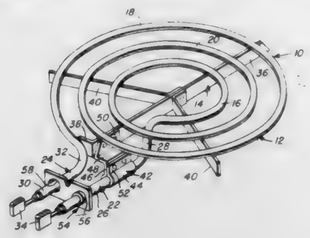
(d) subjecting said thin film to radiant energy sufficient to cause selective sublimation of said thin film layer of material directly over said insulating material.

4,388,518

ELECTRIC SURFACE HEATER ASSEMBLY

Henry O. Willbanks, and Richard P. Johnson, both of Cookeville, Tenn., assignors to Teledyne Still-Man Manufacturing, Cookeville, Tenn.

Filed Dec. 21, 1981, Ser. No. 333,106
Int. Cl.³ H05B *3/68*
U.S. Cl. 219—455 **11 Claims**



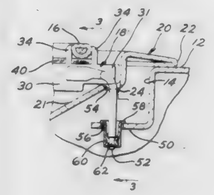
1. An electric surface heater assembly comprising a tubular heating element and a support spider, said heating element comprising a generally planar central heating portion defined by multiple convolutions including an outer convolution and an inner convolution with outer and inner terminal legs extending respectively therefrom, said terminal legs including terminal end portions offset below the central heating portion and extending in lateral spaced relation to each other, and depending vertical shoulder portions between said terminal end portions and the respective inner and outer convolutions, said spider defining a support means for the central heating portion, said central heating portion freely overlying said spider, and a bracket securing said spider to said heating element remote from the central heating portion, said bracket being positioned solely between and secured to the inner terminal leg and said spider, said bracket including an elongated sleeve encircling the terminal end portion of said inner terminal leg, and a panel portion projecting vertically from said sleeve to said spider.

4,388,519

NOISE ISOLATION MEANS FOR CONVOLUTED SHEATHED ELECTRIC HEATER

James A. Dooley, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Feb. 1, 1982, Ser. No. 344,854
Int. Cl.³ H05B *3/68*
U.S. Cl. 219—463 **6 Claims**



1. An electric cooking range having a cooktop formed with an opening including an inwardly extending flange portion for supporting a heating unit in said opening, comprising:

a sheathed heating element mounted in said opening, said heating element having convolutions disposed in a single plane defining a cooking surface;

a pan means including a body portion adapted to be positioned in said opening and a ring portion dimensioned for supporting said pan on said cooktop;

a support frame member arranged in said body portion of

said pan means including a plurality of support arms extending generally radially being arranged vertically on edge, with the outer lower edge portion of said support arms being supported on said body portion of said pan means, and the heating element being supported on the upper edge in a single plane;

holding means on the upper edge of at least one of said support arms immovably securing the outer portion of said convoluted heating element to said at least one of said support arms;

positioning element on at least one of said support arms extending downwardly therefrom through corresponding aligned opening in said body portion of said pan for engaging said flange portion for positioning and rigidly sandwiching said pan means between said support frame and said flange portion for supporting said heating unit in said opening;

resilient thermal insulating pad means positioned on said upper edge of said support arms being interposed at the point of contact between said upper edge and said heating element to cushion vibrations and to thermally insulate said heater element from said support frame.

4,388,520

ELECTRIC COOKERS WITH WARNING LIGHTS

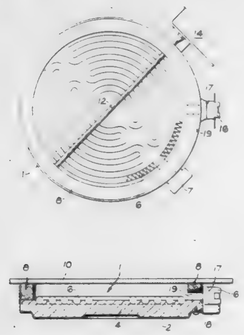
Joseph A. McWilliams, Droitwich, England, assignor to Micropore International Ltd., Droitwich, England

Filed Aug. 3, 1981, Ser. No. 289,134

Claims priority, application United Kingdom, Aug. 13, 1980, 8026463; Fed. Rep. of Germany, Feb. 7, 1981, 3104265; United Kingdom, Feb. 9, 1981, 8103869

Int. Cl.³ H05B *3/76*

U.S. Cl. 219—464 **18 Claims**



1. An electric cooker comprising:

a cooking surface;

at least one heater arranged on an underside of the cooking surface, said at least one heater comprising:

a housing comprising a base and an upwardly extending outer rim, the rim having an upper edge which is in contact with the underside of the cooking surface so as to form an enclosed chamber between the underside of the cooking surface and the housing;

a heating element mounted in the housing;

a thermal cut-out to protect against overheating of the cooking surface, which thermal cut-out extends through a first opening in the outer rim and passes above the heating element;

a mechanical switch co-operable with the thermal cut-out to deenergise the heating element in the event of overheating; and

a second opening formed in the housing to connect the enclosed chamber with the outside of the heater;

a temperature responsive element arranged externally of the enclosed chamber and positioned relative to said second opening such that, on energising the heating element, the temperature responsive element is heated by hot air issuing from the enclosed chamber by way of said second opening so that the temperature of the temperature responsive element is representative of the temperature of the cooking surface; and

means for indicating when the temperature responsive element is at at least a predetermined temperature.

4,388,521

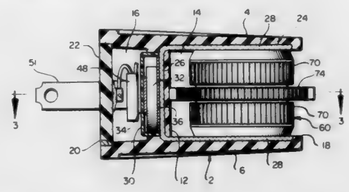
MODULAR DISINFECTOR DEVICE

Michael D. Thomas, and Francis E. Ryder, both of Arab, Ala., assignors to Ryder International Corporation, Arab, Ala.

Filed Jul. 2, 1981, Ser. No. 279,805

Int. Cl.³ A61L *3/00, 2/04*

U.S. Cl. 219—521 **12 Claims**



1. Modular lens disinfecting device comprising a plastic housing having front and rear ends and a cavity with a first pair of opposed walls, a metal heat sink lining said opposed walls and being presented toward said cavity, a second pair of opposed walls transverse to said first pair of walls and cooperating therewith to define a front opening into said cavity, said second pair of walls having slots extending from said opening toward said rear end to form additional openings into said cavity, electrically operating heating means in thermal relation with said heat sink, and a plastic lens case sized for removable insertion into said cavity through said front opening, said case having opposed surfaces engaging said heat sink and radial flange means projecting through said slots.

4,388,522

ELECTRICALLY HEATED BACKLITE STRUCTURE

Premakaran T. Boaz, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 214,364, Dec. 8, 1980, abandoned. This application Feb. 8, 1982, Ser. No. 346,965

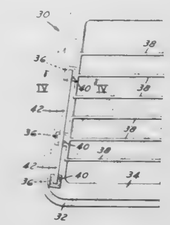
Int. Cl.³ H05B *3/06*

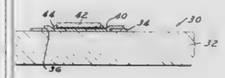
U.S. Cl. 219—522 **12 Claims**

1. In an electrically heated backlite of the type formed on a glass sheet having an inner surface which will face the interior of a vehicle when in an installed position and an outer surface which will face the exterior of the vehicle when in an installed position, the improvement comprising:

an opaque, electrically nonconductive coating bonded to at least two portions of said inner face of said glass sheet, said two portions of said electrically nonconductive coating being spaced apart from one another on said inner surface of said glass sheet, each of said portions of said electrically nonconductive coating having at least one open area formed therein in which said inner surface of said glass sheet is exposed;

an electrical resistance heater line having spaced terminal ends, said heater line being bonded over a majority of its bonding surface area to said inner surface of said glass sheet, said heater line extending in a length dimension from one of said portions of said electrically nonconductive coating to the other of said portions of said electrically nonconductive coating, one of said terminal ends of said heater line (**1**) overlying and bonded to at least part of one of said portions of said electrically nonconductive coating, and (**2**) overlying and bonded to all of said inner surface of said glass sheet exposed in said open area formed in said one of said portions of said electrically nonconductive coating, said other of said terminal ends of said heater line (**1**) overlying and bonded to at least a part of said other of said portions of said electrically nonconductive coating, and (**2**) overlying and bonded to all of said inner surface of said glass sheet exposed in said open area formed in said other of said portions of said electrically nonconductive coating, said bond between said terminal ends and said inner surface of said glass sheet





being stronger than said bond between said terminal ends and said portions of said electrically nonconductive coating;

at least a pair of electrical conductors;

bond means for bonding one of said conductors to each of said terminal ends of said heater line at said location where each of said terminal ends overlies said inner surface of said glass sheet exposed by said open area of said portion of electrically nonconductive coating which said terminal end overlies.

4,388,523

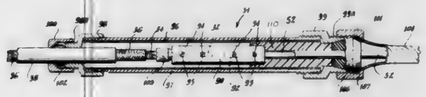
ELECTRICAL HEATING CABLE CONNECTOR

Henry Keep, Jr., Madison; Daniel A. Santagata, Branford; Matthew E. Harris, Clinton, and William H. Welsh, Jr., Madison, all of Conn., assignors to Multistress, Inc., Madison, Conn.

Filed Jun. 10, 1981, Ser. No. 272,260

Int. Cl.³ H05B *3/08*

U.S. Cl. 219—541 **9 Claims**



1. A connector for joining an end of an electrical resistance heating wire of an electrical heating cable enclosed in watertight tubing with an end of the wire of an insulated electrical conductor, comprising a heat-absorbing electrically conductive core member to receive and be clamped onto the wire ends, a rigid sleeve forming an elongate cavity to receive said core member with the wire ends fastened thereto, electrical insulation inside said sleeve between it and the core member and the wire ends, a coupling ring fixed detachably onto each end of said sleeve, means connectable detachably with one of the coupling rings for clamping it substantially immovably onto an end portion of said tubing, and means associated with the other of the coupling rings for forming a substantially water-tight joint between it and the insulated conductor.

4,388,524

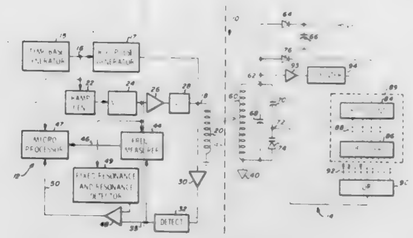
ELECTRONIC IDENTIFICATION AND RECOGNITION SYSTEM WITH CODE CHANGEABLE REACTANCE

Charles A. Walton, 19115 Overlook Rd., Los Gatos, Calif. 95030

Filed Sep. 16, 1981, Ser. No. 302,706

Int. Cl.³ G06K *5/00*

U.S. Cl. 235—380 **15 Claims**



1. An electronic recognition-identification system comprising:

a recognition network with a sweep oscillator for generating signals of various frequencies, a first antenna means for radiating signals responsive to the oscillator frequencies and for radiating to another antenna means, means connected to said first antenna means for detecting perturbations in the signals across said first antenna means and for delivering information signals responsive to said perturbations; and

an identification network including a second antenna means for radiating to said first antenna means, a data register means to advance and provide a sequence of data, a reactance modulation circuit connected to the second antenna means and to said data register means such that the frequency of said modulation circuit varies responsive to said sequence of data.

4,388,525

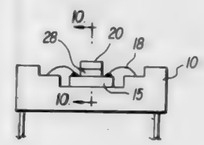
PRECISION OPTICAL SPACERS FOR IMAGE SENSOR FILTERS

William S. Phy, Los Altos Hills, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Feb. 11, 1981, Ser. No. 233,347

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—211 J **4 Claims**



1. A structure comprising

an image sensing device containing bonding pads;

a filter;

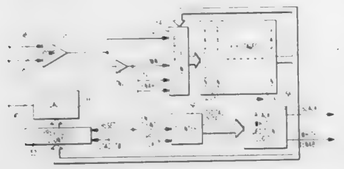
an electrically conductive pattern on the filter separating the filter from the image sensing device, the pattern disposed on the filter not in contact with the bonding pads.

4,388,526

MEASURING APPARATUS WITH RESPONSE ADJUSTMENT

Eugene N. Schroeder, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 8, 1981, Ser. No. 271,317
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—214 R **7 Claims**



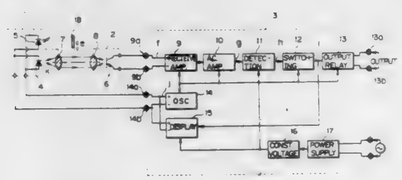
1. An electrical measuring apparatus in which a current acceptor has one current-accepting limit after a first status sensed by said system and a substantially different current-accepting limit after a second status sensed by said system wherein the improvement comprises means to store a count representative of said current-accepting limit after a prior sensing, means to charge said current acceptor in an amount corresponding to the magnitude of said count such that said acceptor will be fully charged in a predetermined time when said current-accepting capacity corresponds to that represented by said count, timing means to time said charging, and means controlled by said timing means to change said count at least one increment when the said timing means measures a time to charge substantially different from said predetermined time.

4,388,527

PHOTOELECTRIC SWITCH

Toshifumi Fukuyama, and Norio Onji, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jun. 16, 1981, Ser. No. 274,215
Claims priority, application Japan, Jun. 16, 1980, 55/81102
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—214 R **2 Claims**



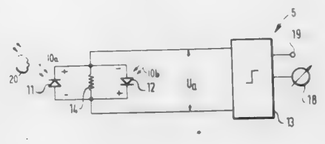
1. A photoelectric switch comprising a photoelectric detection means, a circuit means disposed independently of said detection means, and cable means interconnecting said detection and circuit means, there being formed in said photoelectric detection means a parallel circuit comprised of a light emission photodiode and a display photodiode of opposite polarity thereto as connected in parallelcircuit relation, which parallel circuit is connected to a pulse oscillation circuit included in said circuit means with a couple of lines, whereby a pulse current of single polarity is applied from said pulse oscillation circuit to said parallel circuit to thereby actuate only said light emission photodiode, and there being disposed in said circuit means a display circuit which functions in response to a detection output obtained in said circuit means so that through said two lines a pulse current of opposite polarity to the first-mentioned pulse current flows to said parallel circuit in a phase where said first-mentioned pulse current is non-existent to thereby actuate said display photodiode.

4,388,528

PHOTOELECTRONIC APPARATUS

Arthur Walter, Waldkirch, Fed. Rep. of Germany, assignor to Erwin Sick Gesellschaft-Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Division of Ser. No. 874,673, Feb. 2, 1978, abandoned. This application Oct. 30, 1980, Ser. No. 202,280
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1977, 2704565
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—221 **12 Claims**



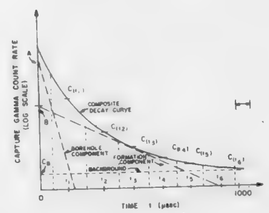
1. Photoelectronic apparatus having photoelectric convertor means including a first operational photoelectric convertor which in operation is adapted to receive a light beam from a source, a processing circuit adapted to process an output from the photoelectric convertor means to generate a control signal in response to an obstruction of the light beam, and protective means adapted to prevent the photoelectronic apparatus from failing to recognize the obstruction in the presence of unwanted stray light, the protective means comprising a second auxiliary photoelectric convertor disposed in the immediate vicinity of the first operational photoelectric convertor, and circuit means for forming a weighted difference signal between the outputs of the first operational photoconvertor and the second auxiliary photoconvertor, the last mentioned means determining a predtermined threshold for stray light below which the photoelectric convertor will always deliver the control signal in the presence of the obstruction irrespective of the level of stray light and above which as a safety measure the control signal will always be delivered irrespective of whether the beam is obstructed or not.

4,388,529

SYSTEM FOR SIMULTANEOUS MEASUREMENT OF BOREHOLE AND FORMATION NEUTRON LIFETIMES

Harold E. Peelman, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 182,172, Aug. 28, 1980, abandoned. This application Jun. 23, 1982, Ser. No. 391,204
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—270 **18 Claims**



1. A system for simultaneously measuring the thermal neutron decay time of materials in and about a well borehole, comprising:

means for generating, in a well borehole, a relatively short duration discrete burst of fast neutrons which are rapidly moderated by interaction with nuclei of materials in the borehole and surrounding earth formations and slowed down to thermal energy, creating a thermal neutron population in the borehole and surrounding earth formations;

means for detecting, in the borehole, radiations representative of the thermal neutron population in the borehole and surrounding earth formations, in at least four separate time intervals subsequent to said burst of fast neutrons and means for generating at least four count signals representative of said thermal neutron population during said at least four separate time intervals; and

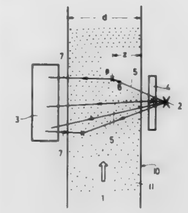
means for combining said at least four count signals according to a predetermined relationship to simultaneously separate and derive at least two measurement signals representative of the thermal neutron population decay time of the borehole medium and the earth formation medium in the vicinity of the borehole.

4,388,530

PROCESS AND APPARATUS FOR THE CONTINUOUS MEASUREMENT OF ELEMENT CONTENTS

Andrzej Lubecki, Stutensee-Bl.; Kurt Wiese, Stutensee-Büchig, and Karl Winkler, Steinweiler, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung, Karlsruhe, Fed. Rep. of Germany

Filed Apr. 18, 1980, Ser. No. 141,698
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1979, 2915986
Int. Cl.³ G01N *23/20*; G21K *1/00*
U.S. Cl. 378—45 **22 Claims**



1. A process for the continuous measurement, by X-ray fluorescence analysis, of the element content of a slurry, independently of the slurry density and slurry composition comprising:

(a) passing a sample of the slurry to be measured between an excitation source of primary radiation and a detector, with a target being arranged between the source and the sample so that (1) a portion of the source radiation excites the target to emit a target radiation which penetrates the sample and then is absorbed by the detector, (2) a portion of the source radiation penetrates the sample and excites in the slurry among other elements the element which is to be measured to emit elemental X-ray radiation which is then absorbed by the detector, and (3) a portion of the source radiation penetrates and passes through the sample and is absorbed by the detector; and

(b) evaluating the radiation absorbed by the detector to directly determine the elemental content of the sample.

4,388,531

IONIZER HAVING INTERCHANGEABLE IONIZATION CHAMBER

George C. Stafford, and David R. Stephens, both of San Jose, Calif., assignors to Finnigan Corporation, Sunnyvale, Calif.

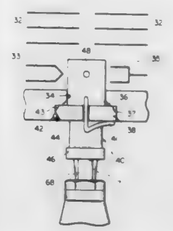
Filed Mar. 6, 1981, Ser. No. 241,083
Int. Cl.³ H01J *27/00*
U.S. Cl. 250—427 **10 Claims**

1. An ionizer adapted to be placed in a vacuum envelope for providing ions of a sample to be analyzed including

(a) an electron source

(b) ion accelerating and focusing electrodes

(c) an interchangeable ionization chamber including an adapter and a hollow member slidably removably secured to the adapter, said hollow member including a first opening for allowing electrons to enter the chamber and an exit opening to allow ions to exit said chamber, and



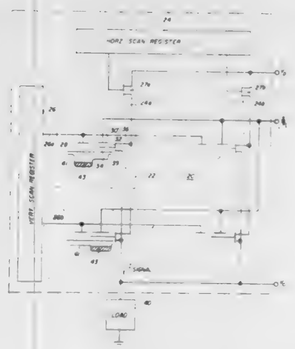
(d) means for receiving and supporting said ionization chamber in cooperative relationship with said electron source and accelerating and focusing electrodes whereby electrons enter said chamber through said first opening and form sample ions in the chamber which then exit the chamber through said exit opening toward said accelerating and focusing electrodes.

4,388,532

SOLID STATE IMAGE SENSOR WITH IMAGE SENSING ELEMENTS HAVING CHARGE COUPLED PHOTOCAPACITORS AND A FLOATING GATE AMPLIFIER

Enrique Garcia, Sandy Hook, Conn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 27, 1981, Ser. No. 258,152
Int. Cl.³ H04N *3/16*
U.S. Cl. 250—578 **6 Claims**



1. A solid state image sensing array comprising a plurality of image sensing elements, each of said elements comprising:

a first MOS capacitor;

a second MOS capacitor disposed adjacent said first MOS capacitor; and

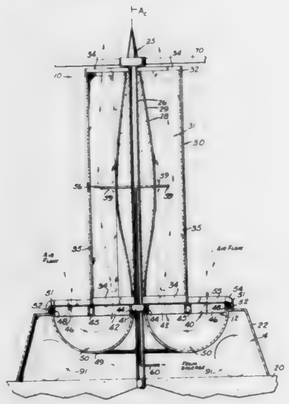
a floating gate FET, the floating gate of said FET being disposed beneath the electrode of said second MOS capacitor, whereby when a photocharge accumulated in said first MOS capacitor is shifted to said second MOS capacitor, the gate of said floating gate FET is modulated to provide a nondestructive amplified readout of said photocharge through said FET.

4,388,533

POWER GENERATING SYSTEM

Larry K. Campbell, 3445 Almand Dr., Apt. B-1, and William D. Farrier, 3445 Almand Dr., Apt. D-2, both of College Park, Ga. 30337

Filed Mar. 20, 1981, Ser. No. 246,118
Int. Cl.³ F03G *7/02;* **H02P** *9/04*
U.S. Cl. 290—1 R **8 Claims**



1. A power generating system for supplying electrical power to an external electrical power demand load comprising:
an elongate vertically oriented centerbody adapted to absorb radiant solar energy therein to be heated;
an annular enclosure around said centerbody defining a vertically extending air passage within said enclosure around said centerbody open to the atmosphere at its upper end, said annular enclosure including transmission sections therein around said centerbody capable of transmitting radiant solar energy therethrough toward said centerbody;
mirror means for directing solar radiant energy through said transmission sections in said enclosure across said air passage and onto said centerbody to heat said centerbody so that the air in said air passage is heated by said centerbody to rise out of the upper end of said passage;
air inlet means defining an inlet passage therein in communication with the lower end of said air passage for directing atmospheric air into the lower end of said air passage so that the pressure differential generated within said air passage as the air is heated by said centerbody induces an air flow through said inlet passage and along said air passage from the lower end to the upper end thereof;
rotor means rotatably mounted in said inlet means and including a plurality of vanes operatively associated with the air passing through said air inlet means so that the air flowing through said air inlet means causes said rotor means to rotate; and
electrical power generating means operatively connected to said rotor means so that rotation of said rotor means causes said generating means to generate electrical power for the external electrical power demand load.

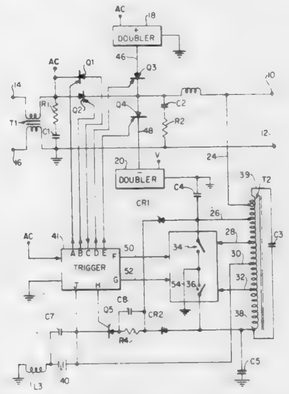
4,388,534

UNINTERRUPTIBLE POWER SUPPLY

Roger R. Love, Florham Park, and John Metroke, Oxford, both of N.J., assignors to Computer Power, Inc., High Bridge, N.J.

Filed Aug. 11, 1981, Ser. No. 291,926
Int. Cl.³ H02J *9/06*
U.S. Cl. 307—66 **10 Claims**

1. An uninterruptible power supply operable to supplant a primary power source with a secondary power source when the primary power source fails, said supply comprising:
a pair of output terminals;
switching means responsive to the electrical potential of said primary power source for selectively coupling said primary source or said secondary source to said output terminals, said switching means including a pair of switching semiconductors each having a separate control electrode and a pair of switching electrodes; and



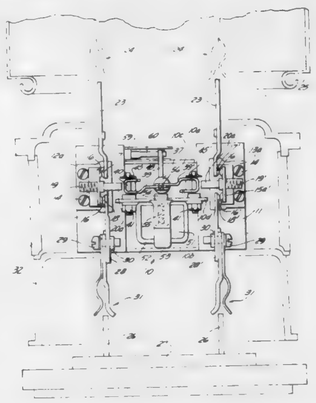
energy storage means coupled to said primary power source and operable to supply energy to said output terminals during the time for switching between said primary power source and said secondary power source;
wherein said switching means provides a current path from said primary power source to said output terminals which by-passes said secondary power source.

4,388,535

ELECTRIC POWER INTERRUPTING SWITCH

Dominik M. Wiktor, Cranford, and Siegfried Schlindwein, Succasunna, both of N.J., assignors to Automatic Switch Company, N.J.

Filed May 18, 1981, Ser. No. 265,500
Int. Cl.³ H01H *19/64;* **H02B** *1/20*
U.S. Cl. 307—113 **16 Claims**



1. A switch for interrupting electric power to the customer of a utility, there being an electric watt-hour meter between the utility source and the customer's load, the switch comprising:

(a) two female contact members for accommodating the male plug-in contacts of a watt-hour meter,
(b) two male contact members capable of being accommodated by the female contacts into which the watt-hour meter is usually plugged,
(c) switch means between at least one of the female contact members and a corresponding one of the male contact members,
(d) electrically-controlled operator means for opening the switch means in response to an electrical signal, and
(e) means operable in response to opening of the switch means for latching the switch means in its open condition to hold the switch means open even after termination of the electrical signal,
whereby when the switch means is opened by the operator means, at least one female contact member is electrically disconnected from its corresponding male contact member to thereby interrupt the flow of utility power to the customer load, the interruption continuing as long as the latching means holds the switch means open.

4,388,536

PULSE GENERATOR FOR IC FABRICATION

William Peil, North Syracuse; Thomas A. Brown, Fulton, and Marc A. Dissosway, Liverpool, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,359
Int. Cl.³ H03K *5/08*
U.S. Cl. 307—268 **16 Claims**

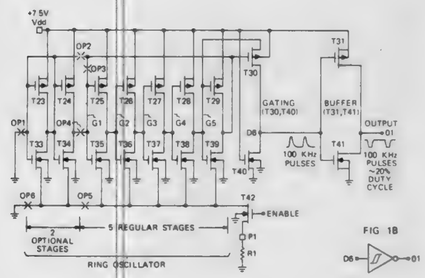


FIG 1B

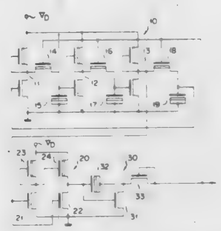
1. A pulse generator for integrated circuit fabrication of predetermined frequency and producing an output pulse having a desired duty cycle, comprising:
(a) a positive terminal for connection to a source of positive bias potentials; and a common terminal;
(b) a ring oscillator comprising an odd number (m) of complementary metal oxide semiconductor (CMOS) field effect transistor inverter stages,
(i) each stage including a p-channel device, having the source thereof conductively connected to said positive terminal, and an n-channel device having the drain thereof connected to the drain of the associated p-channel device, the drain connection forming an output of that stage,
(ii) the gates of the p- and n-channel devices of each stage being connected together, the gate node forming an input of that stage,
(iii) the input of each stage being connected to the output of a preceeding stage to form a ring;
(c) the sources of said n-channel devices being connected together; and a resistance of a preselected value connecting said source connection to said common terminal, the resistance value determining the oscillator frequency, and
(d) gating means responsive to electrical conditions in at least two stages of said ring oscillator for generating an output pulse having said desired duty cycle.

4,388,537

SUBSTRATE BIAS GENERATION CIRCUIT

Akira Kanuma, Stanford, Calif., assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 3, 1980, Ser. No. 212,520
Claims priority, application Japan, Dec. 27, 1979, 54-171657
Int. Cl.³ H03B *5/24;* **H03L** *7/04*
U.S. Cl. 307—297 **6 Claims**



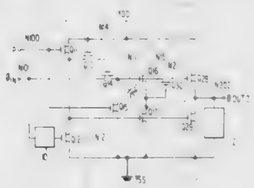
1. A substrate bias generation circuit comprising:
a voltage-controlled oscillator circuit having a controlled terminal for receiving an input signal for controlling said voltage-controlled oscillator circuit to produce an oscillation output signal, said voltage-controlled oscillator circuit including a ring oscillator circuit comprising an odd number of inverter means each having a delay function with a delay time changed in accordance with said input signal received by said control terminal;
a driving circuit for producing a driving signal in accordance with said oscillation output signal from said oscillator circuit; and
a charge pump circuit for producing a substrate bias voltage in accordance with said driving signal from said driving circuit, said substrate bias voltage being supplied to said control terminal of said oscillator circuit to control the delay time of each of said inverter means.

4,388,538

DELAY SIGNAL GENERATING CIRCUIT

Hiroaki Ikeda, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 29, 1980, Ser. No. 191,622
Claims priority, application Japan, Sep. 28, 1979, 54-124961
Int. Cl.³ H03K *17/687, 19/094*
U.S. Cl. 307—482 **10 Claims**



1. A digital circuit comprising a first node, a first series circuit including a first and a second enhancement type transistors connectable between a drain supply voltage and a source supply voltage, capacitor means coupled between said first node and a common junction point of said first series circuit, first means for connecting a gate of said first transistor to said first node, control means for operatively controlling said first series circuit in such a manner that a potential at said first node is raised above said drain supply voltage in absolute value by boot-strap effect, an output node, a second series circuit including a third and a fourth enhancement type transistors connectable between a drain supply voltage and a source supply voltage, a second means for connecting a common junction point

of said second series circuit to said output node, a depletion type transistor, third means for connecting a drain of said depletion type transistor to said first node, fourth means for connecting a source of said depletion type transistor to a gate of said third transistor, and fifth means for supplying a gate of said depletion type transistor with a signal having the substantially same level as a signal at said common junction point of said first series circuit.

4,388,539

INTEGRATED CIRCUIT COMPRISING A PLURALITY OF VOLTAGE-CURRENT CONVERTERS

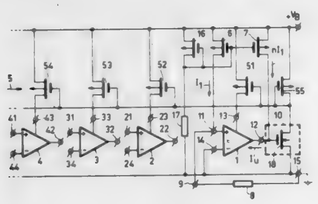
Wouter M. Boeke, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 13, 1981, Ser. No. 234,088

Claims priority, application Netherlands, Feb. 25, 1980, 8001115

Int. Cl.³ H03K *17/14;* **H02J** *1/04;* **H03F** *3/45*

U.S. Cl. 307—491 **3 Claims**



1. An integrated circuit comprising a plurality of voltage-current converters each having an input and output and a bias-signal input for controlling the transconductance of said voltage-current converters by means of a bias signal on said bias-signal input, the transconductances of the voltage-current converters being in a substantially fixed ratio to each other, a bias-signal generator for applying bias signals which are in a substantially fixed ratio to each other to said bias-signal inputs, and a control network for controlling the bias-signal generator in such a way that the transconductances of the voltage-current converters are highly insensitive to process variations and variations in operating conditions, at least one of the voltage-current converters being included in the control network as a reference converter, characterized in that the control network comprises a first and a second current source, supplying currents (I_1 and nI_1 respectively) in a substantially fixed ratio to each other, an input coupled to the input of the reference converter for coupling to a reference resistor which input is included in the output circuit of the first current source, and a comparing control amplifier coupled between the output of the reference converter and a control input of the bias-signal generator for comparing the output current of the reference converter and the current from the second current source and controlling the bias-signal generator in such a way that a substantially fixed ratio is maintained between the output currents of the reference converter and the second current source.

4,388,540

CONTROLLABLE MULTIPLIER CIRCUIT WITH EXPANDED GAIN CONTROL RANGE

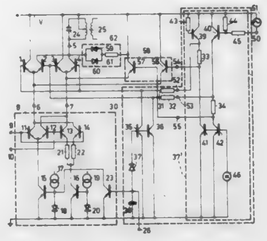
Peter H. M. Schreurs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,326

Claims priority, application Netherlands, Nov. 23, 1979, 7908535

Int. Cl.³ G06G *7/16;* **H03G** *3/30*

U.S. Cl. 307—493 **12 Claims**



1. A multiplying circuit comprising first and second transistors arranged in a long-tailed pair configuration having a collector output and interconnected emitter electrodes coupled to a first current source, a bias voltage adjusting circuit for applying equal base bias voltages to the base electrodes of the first and second transistors, means connecting said base electrodes to a signal input, a controlled current distribution circuit including a shunting transistor having a collector-emitter path DC coupled in parallel with said first and second transistors, and a control circuit for applying a control voltage between a base electrode of the shunting transistor and the base electrodes of the first and second transistors.

4,388,541

CIRCUIT ARRANGEMENT WITH MOS-TRANSISTORS FOR THE RAPID EVALUATION OF THE LOGIC STATE OF A SAMPLING NODE

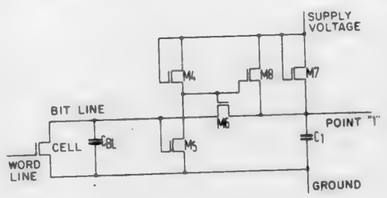
Burkhard Giebel, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 23, 1980, Ser. No. 171,342

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932605

Int. Cl.³ H03K *5/12, 19/094*

U.S. Cl. 307—530 **5 Claims**



1. Circuit having MOS-transistors for the rapid evaluation of the logic state of a sampling node, comprising a circuit input connected to the sampling node, a circuit output, a supply voltage source, an inverter being connected to said circuit input and having an output, a first transistor being connected between said circuit input and said circuit output and having a gate connected to said output of said inverter, a second transistor being connected between said supply voltage source and said circuit output and having a gate connected to said output of said inverter, and a third transistor shunted across said second transistor as a load resistor.

4,388,542

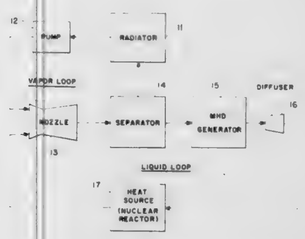
SOLAR DRIVEN LIQUID METAL MHD POWER GENERATOR

Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Ja H. Lee, and Frank Hohl, both of Newport News, Va.

Filed May 15, 1981, Ser. No. 263,830

Int. Cl.³ H02N *4/02*

U.S. Cl. 310—11 **10 Claims**



1. A solar driven magnetohydrodynamic (MHD) power generator that utilizes the flow of a gas and liquid-metal mixture through the channel of the MHD generator to generate electrical power comprising:

means including a mixer having a channel for mixing the gas and liquid metal and for providing a flow of the mixture from the channel of the mixer through the channel of said MHD generator;

means for collecting solar energy;

means for focusing the collected solar energy onto the gas and liquid metal mixture inside the channel of said mixer to heat said gas and liquid metal mixture before it passes through the channel of said MHD generator;

means for separating the gas from the liquid metal after it passes through the channel of said MHD generator; and

means for returning the separated gas and liquid metal back to said mixing means.

4,388,543

HIGH-POWER LINEAR ELECTRIC MOTOR

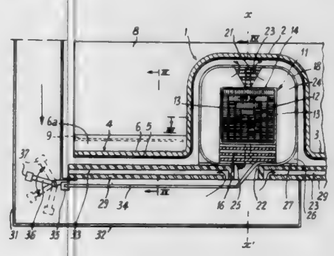
Jean Guimbal, Saint-Etienne, France, assignor to Agence Nationale de Valorisation de la Recherche - A.N.V.A.R., Paris, France

Filed Dec. 28, 1981, Ser. No. 335,168

Claims priority, application France, Dec. 29, 1980, 80 27953

Int. Cl.³ H02K *41/00*

U.S. Cl. 310—13 **17 Claims**



1. In a high-power linear electric motor, comprising an inductor constituted by annular coils surrounding a magnetic core of square or rectangular section, and an armature having an omega section comprising an upturned U central part and two horizontal side flanges, said upturned U central part enveloping said inductor on three sides so as to ensure the passage both of the magnetic flux and the induced currents, said armature comprises, outside, a magnetic layer extending upon the whole conductive layer, that is to say as well upon the upturned U central part as upon the two horizontal side flanges of the armature.

4,388,544

DEVICE FOR CONNECTING A COLLECTOR RING TO A CURRENT LEAD IN A SUPERCONDUCTING ROTOR

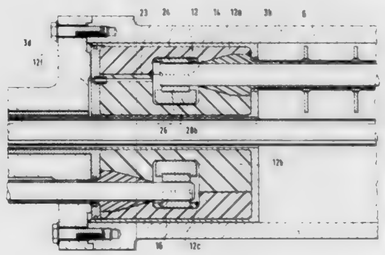
Roger Gillet, Belfort, France, assignor to Alsthom-Atlantique & Electricite de France, Paris, France

Filed Sep. 10, 1981, Ser. No. 300,827

Claims priority, application France, Sep. 15, 1980, 80 19821

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—71 **3 Claims**



1. A device for connecting a collector ring to a current lead in a superconducting rotor, said rotor having an axis of rotation which defines a longitudinal direction, wherein said device includes:

an electrically insulating connection box fitted to the rotor and having a front surface at its end nearest the collector ring and a rear surface at its end nearest the current lead;

at least one front electrically conducting rod connected to the collector ring and being disposed longitudinally in the box;

at least one rear electrically conducting rod connected to the current lead and disposed longitudinally in the box and being side by side with said front rod over a portion of its length;

inner and outer metal contact blocks mounted within said box and being positioned radially opposing each other and on opposite sides of said front and rear rods such that the outer metal contact block contacts the radially outer surfaces of said front and rear rods, said inner metal contact block contacts the radially inner surfaces of said front and rear rods and said rods slide longitudinally over the contacting surface of said inner and outer metal contact blocks absent normal speed rotor rotation; and

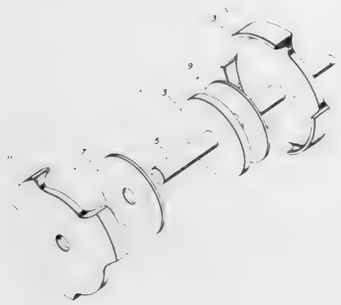
at least one radially movable flyweight placed inside the contact box in a radially inner position relative to said inner block and in operative engagement therewith, whereby; the centrifugal force resulting from rotation of the rotor exerted on said flyweight supplies a radially outward force at normal operating speed of the rotor which effectively clamps the front and rear rods between said inner and outer contact blocks to prevent relative longitudinal movement between said rods and said contact blocks to ensure good electric contact when the rotor reaches its normal working speed.

4,388,545

ROTOR FOR A PERMANENT MAGNET AC MOTOR

Vernon B. Honsinger, Ballston Lake, and Russell E. Tompkins, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 10, 1981, Ser. No. 272,153
Int. Cl.³ H02K *21/14*
U.S. Cl. 310—156 **3 Claims**



1. A rotor for a permanent magnet self-starting motor comprising:

a shaft of non-magnetic material;

a permanent magnet disk mounted on said shaft and having a direction of magnetization parallel to the axis of said shaft;

a pair of starting disks of current conducting material mounted on said shaft one on each side of said permanent magnet disk;

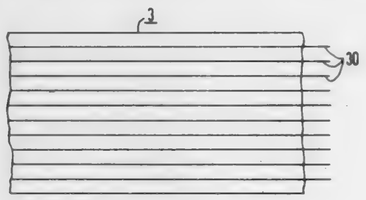
a pair of pole pieces of flux conducting material mounted on said shaft and surrounding said starting disks, said pole pieces each having claw-shaped extensions spaced about and extending from the periphery of the pole pieces to extend over the periphery of said magnet and said starting disks, said claw shaped extensions being interlaced with one another to form rotor poles of alternating polarity.

4,388,546

ARRANGEMENT FOR CONTROLLING THE INTERNAL POTENTIAL IN GENERATOR RODS

Wilhelm Schwanzer, Muelheim, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim, Fed. Rep. of Germany

Filed Jan. 15, 1982, Ser. No. 339,690
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1981, 3102886
Int. Cl.³ H02K *3/40*
U.S. Cl. 310—196 **7 Claims**



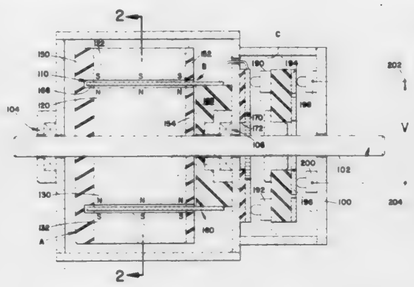
1. Arrangement for controlling the internal potential in generator rods by means of a band consisting of semi-conductive material, which is wound helically around the wire assembly composed of insulated conductor elements, and d-c coupled with one of the conductor elements at a contact point, characterized in that the band is reinforced by several electrically conductive threads spaced in the longitudinal direction of the band, and that the electrically conductive threads are d-c coupled at the contact point with each other and with one conductor element.

4,388,547

CURRENT GENERATOR

John R. Gruber, 1421 E. 32 St., Cleveland, Ohio 44114

Filed Dec. 15, 1980, Ser. No. 216,619
Int. Cl.³ H02K *1/22*
U.S. Cl. 310—266 **13 Claims**



1. A dynamoelectric apparatus comprising:

(a) a plurality of pairs of magnetic pole members disposed at angular intervals along a closed path, each pair of magnetic pole members including magnetic pole members of opposite polarity disposed in a spaced relationship such that a gap is defined therebetween, each pair of magnetic pole member producing magnetic flux lines therebetween, whereby the magnetic flux lines across the gap defined between each pair of magnetic pole members;

(b) a plurality of non-ferrous, conductive segments disposed to pass between the magnetic pole members of each pairs, the conductive segments each having one end thereof electrically connected in common;

(c) means for allowing relative movement between the pairs of magnetic pole members and the conductive segments such that the conductive segments pass cyclically between the magnetic pole members of each pair, whereby the flux lines are cut by the conductive segments inducing electrical currents therein; and,

(d) an electrical connecting circuit operatively connected with the other end of the conductive segments for connecting more than two conductive segments electrically in series for all positions of the conductive segment relative to the magnetic pole members, the electrical connecting circuit including a plurality of diodes which interconnect the conductive segment other ends.

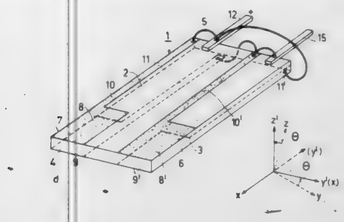
4,388,548

MULTIPLE MODE PIEZOELECTRIC RESONATOR

Daniel C. L. Vangheluwe, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 19, 1981, Ser. No. 225,958
Claims priority, application Netherlands, Jan. 17, 1980, 8000297
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—365 **8 Claims**

1. A piezoelectric resonator comprising a substantially rectangular body cut from a piezoelectric crystal to form first and second major surfaces parallel to each other and two opposed end faces bounding said major surfaces with the body exhibiting a crystal cut rotated about the X-axis, said major surfaces being perpendicular to the Z′ axis and the end faces being perpendicular to the X or Y′ axis, an electrode array provided on the first and second major surfaces in the direct vicinity of one of said two bounding end faces and arranged so that a combined resonant mode of vibration is produced in the body comprising an XY′ thickness-shear vibration and a thickness



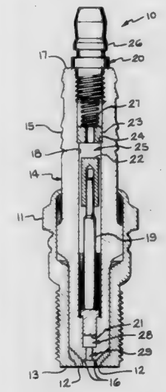
vibration in the X or Y′ direction, and wherein said body is adapted to be supported in the vicinity of the other one of said two end faces.

4,388,549

PLASMA PLUG

Richard W. Bensman, Toledo, Ohio, assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Nov. 3, 1980, Ser. No. 203,270
Int. Cl.³ H01T *13/20*
U.S. Cl. 313—138 **4 Claims**



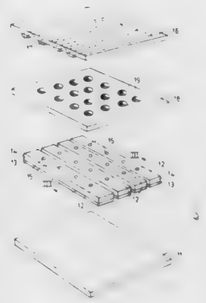
1. A plasma plug for use with an ignition system which, when energized, applies to the plug a high voltage ionizing discharge followed by a lower voltage, high energy discharge, said plug comprising a shell engagable with an internal combustion engine, an annular ground electrode structurally integral with said shell, an insulator mounted in said shell, and a center electrode seated within said insulator, said center electrode and said insulator both having firing ends, the former of which is short of the latter and in spark gap relationship with said ground electrode, said insulator having a stepped cavity extending from the firing end of said center electrode through the firing end of said insulator, the stepped cavity including a cavity of relatively large cross section and a cavity of smaller cross section extending through the firing end of said insulator, the large cavity having an upper portion adjacent the firing end of said center electrode and a lower portion adjacent the smaller cavity, the ratio of the volume of the large cavity to that of the smaller being from about 100:1 to about 1:1, and the ratio of the length of the large cavity to that of the smaller being from about 1:3 to about 1:1, whereby a jet of plasma is emitted generally longitudinally from the cavity of said insulator when the plug is energized by successive high voltage and high energy discharges.

4,388,550

GAS DISCHARGE DISPLAY PANEL HAVING HOLLOW CATHODES

Gerhard H. F. de Vries, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 1, 1980, Ser. No. 192,745
Claims priority, application Netherlands, Oct. 10, 1979, 7907489
Int. Cl.³ H01J *61/08, 61/30*
U.S. Cl. 313—585 **9 Claims**



1. A gas discharge display panel comprising a plurality of display anode conductors,

a cathode conductor having at least a row-wise series of hollow cathodes, each of said hollow cathodes being a cavity with a first aperture opposite to a respective display anode conductor, wherein said cathode conductor consists of at least one first metal strip and at least one second metal strip extending on and along said first metal strip, said second metal strip having a row-wise series of said first apertures opening toward said first metal strip, and wherein said hollow cathodes are disposed between said first metal strip and said second metal strip at said first apertures,

at least one row of selectively ignitable gas discharge cells disposed between said plurality of display anode conductors and said cathode conductor,

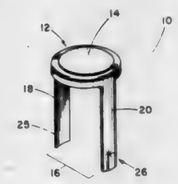
wherein said hollow cathodes extend by a transverse dimension a parallel to said cathode conductor and away from said anode conductors by a depth dimension b where $a > b$.

4,388,551

QUICK-HEATING CATHODE STRUCTURE

Francis M. Ray, Schaumburg, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Nov. 24, 1980, Ser. No. 209,575
Int. Cl.³ H01J *1/14, 19/06*; H01K *1/04*
U.S. Cl. 313—346 R **3 Claims**



1. For use in a cathode ray tube electron gun, a onepiece directly heated cathode comprising:

a thermionic electron-emissive coating; and

a support structure for said coating comprising a portion of an open-ended hollow cylindrical body having a closed end for receiving and supporting said coating,

said closed end having an integral pair of body sections extending axially in the same direction from diametrically opposed sides of said closed end to define two parallel legs that constitute, in conjuncton with said closed end, an electrically conductive path that exhibits an inherent resistance to an electrical current to generate heat for transfer to said coating,

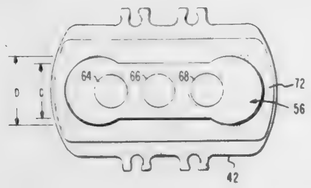
said legs having an arcuate cross-section effective to structurally stabilize said cathode and suppress temperature-induced lateral displacement of the support structure which would otherwise degrade performance of said electron gun.

4,388,552

COLOR PICTURE TUBE HAVING AN IMPROVED EXPANDED FOCUS LENS TYPE INLINE ELECTRON GUN

Paul T. Greninger, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 10, 1981, Ser. No. 282,228
Int. Cl.³ H01J *29/50, 29/62*
U.S. Cl. 313—414 **2 Claims**



1. In a color picture tube having an inline electron gun for generating and directing three electron beams, a center beam and two side beams, along coplanar paths toward a screen of said tube, said gun including a main focus lens for focusing said electron beams, the main focus lens being formed by two spaced electrode members each having three separate inline apertures therein, each electrode also including a peripheral rim, the peripheral rims of the two electrodes facing each other, and the apertured portion of each electrode being within a recess set back from the rim, the improvement comprising

the width of the recess at least at the rim in at least one of the electrodes being wider at the side beam paths than at the center beam path, measured perpendicular to the plane containing the electron beam paths.

4,388,553

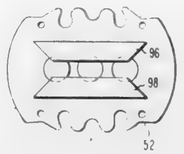
COLOR PICTURE TUBE HAVING AN EXPANDED FOCUS LENS TYPE INLINE ELECTRON GUN WITH AN IMPROVED STIGMATOR

Hsing-Yao Chen, Landisville, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 10, 1981, Ser. No. 282,230
Int. Cl.³ H01J *29/50, 29/62*
U.S. Cl. 313—414 **5 Claims**

1. In a color picture tube having an inline electron gun for generating and directing three electron beams, a center beam and two side beams, along coplanar paths toward a screen of said tube, said gun including a main focus lens for focusing said electron beams, the main focus lens being formed by two spaced electrode members each having three separate inline apertures therein, each electrode also including a peripheral rim, the peripheral rims of the two electrodes facing each other, and the apertured portion of each electrode being within a recess set back from the rim, the improvement comprising

the main focus lens electrode closest to said screen including a slot on the side facing the screen, said slot extending in the inline direction of the three electron beam paths and



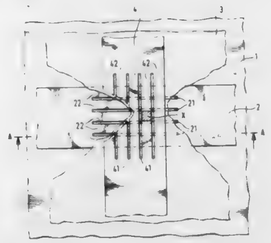
including means for providing a weaker stigmator effect on the two side beams than on the center beam.

4,388,554

ELECTROLUMINESCENT DISPLAY COMPONENT

Tuomo Suntola, and Jorma O. Antson, both of Espoo, Finland, assignors to Ou Lohja Ab, Virkkala, Finland

Filed Jun. 11, 1981, Ser. No. 272,787
Claims priority, application Finland, Aug. 20, 1980, 802628
Int. Cl.³ H01J *1/62*
U.S. Cl. 313—505 **4 Claims**



1. An improved electroluminescent display component comprising a substrate having successive layers disposed thereon, including a film-type first electrode, an electroluminescent layer, and a second film-type electrode, the improvement comprising an arrangement of said first and second electrodes wherein opposed areas of said respective electrodes are divided into strips by means of elongated gaps disposed side by side over the extent of such opposed areas of each said first and second electrodes, said gaps being arranged in said first electrode in a diverging relationship with respect to the said gaps in said second electrode.

4,388,555

GYROTRON WITH IMPROVED STABILITY

Robert S. Symons, Los Altos, and Howard R. Jory, Menlo Park, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

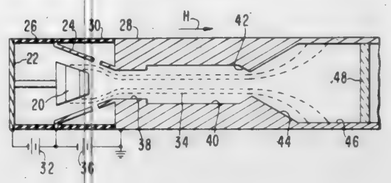
Filed Mar. 9, 1981, Ser. No. 241,880
Int. Cl.³ H01J *25/00*
U.S. Cl. 315—4 **8 Claims**

1. A gyro-device microwave generator comprising: means for generaing a beam of charged particles following helical paths,

circuit means for supporting at a selected operating frequency an electromagnetic wave in a higher order mode having a transverse electric field component for interaction with the transverse velocity component of said particles,

a wave isolating aperture on at least one end of said circuit means,

said circuit means and said aperture being hollow to provide longitudinal passage of said beam,



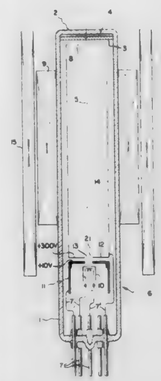
the improvement being the maximum inner diameter a of said aperture being less than 8.8/f where a is the diameter in centimeters and f is the frequency of said wave in gigahertz.

4,388,556

LOW NOISE ELECTRON GUN

Nidamboor V. Rao, Cumberland, R.I., assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 11,468, Feb. 12, 1979, which is a continuation-in-part of Ser. No. 877,080, Feb. 13, 1978. This application Feb. 6, 1981, Ser. No. 232,350
Int. Cl.³ H01J *29/46, 29/56*
U.S. Cl. 315—14 **10 Claims**
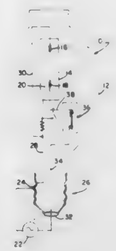


1. An electron gun for generating an electron beam comprising a cathode, a first electrode spaced from said cathode along an axis extending through said cathode, said first electrode having an aperture generally concentric with said axis, means for applying to said first electrode a first voltage which is positive with respect to and is sufficient to extract electrons from said cathode, a second electrode spaced from said first electrode along said axis and means for applying to said second electrode a second voltage which is positive with respect to said cathode and is sufficiently higher than said first voltage to produce an electric field in the region between said first and second electrodes defining an electron lens for converging the electrons emitted from said cathode to a cross-over in said region, said second electrode having formed therein a beam limiting aperture generally concentric with said axis for passing said electrons therethrough to thereby produce said electron beam of a cross-section determined by the size of said beam limiting aperture.

4,388,557

HIGH INTENSITY DISCHARGE LAMP INCLUDING ARC EXTINGUISHING MEANS

John W. Shaffer, Williamsport, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Mar. 16, 1981, Ser. No. 244,432
Int. Cl.³ H01J *7/44, 17/34, 23/16, 29/96;* **H01K** *1/62*
U.S. Cl. 315—74 **5 Claims**



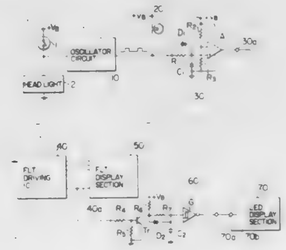
1. In a high intensity discharge lamp comprising an arc discharge tube mounted within an outer envelope enclosing a substantially oxygen-free environment, electrical circuitry for said lamp and arc extinguishing means operative to interrupt electrical power to said arc discharge tube in the event of rupture of said outer envelope, said arc extinguishing means comprising: a serially connected switch associated with said circuitry for said lamp, said switch comprising a bimetallic, layered element of at least two materials, a first of said materials being substantially resistant to oxidation and a second of said materials being relatively rapidly oxidizable, whereby, in the event of atmospheric oxygen being admitted within said outer envelope, said second of said materials will combine with said oxygen and grow dimensionally to an extent to cause permanent flexure of said switch, thereby opening said circuitry and extinguishing said lamp.

4,388,558

DISPLAY INTENSITY CONTROL APPARATUS

Tooru Mizuno, Nagoya, and Yasuo Hagisato, Toyota, both of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Nov. 17, 1981, Ser. No. 322,297
Claims priority, application Japan, Nov. 20, 1980, 55-164367
Int. Cl.³ H01K *7/00*
U.S. Cl. 315—77 **8 Claims**



1. A display intensity control apparatus for a display system of an automobile including a plurality of display units having display means of different types, respectively, said apparatus comprising:

switch means adapted to be turned on under dark ambient conditions;

pulse generating means responsive to turning on of said

switch means to generate a first pulse signal with a predetermined duty ratio at a predetermined frequency for controlling an average intensity of a first one of said display means in accordance with said duty ratio; and

duty ratio converting means for changing said duty ratio of said first pulse signal to generate a second pulse signal having the changed duty ratio for controlling an average intensity of a second one of said display means in accordance with said changed duty ratio.

4,388,559

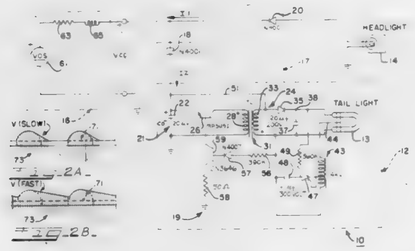
BICYCLE LIGHTING SYSTEM

David W. Lefavour, 3144 Jacquline Dr., Rockford, Ill. 61101

Filed Jul. 17, 1980, Ser. No. 169,650

Int. Cl.³ H05B *41/34, 35/00*

U.S. Cl. 315—78 **12 Claims**



1. In a lighting system having a source of alternating current adapted to be driven mechanically by a bicycle or the like when it is propelled along the ground and having an incandescent lighting device energizable electrically by the source, strobe lighting apparatus comprising:

a flash tube for producing successive high intensity bursts of light;

energy converting means for supplying a train of high voltage pulses for energizing repeatedly said flast tube; and

an impedance matching arrangement including first unidirectional means for coupling the output of the source of said energy converting means for energizing it periodically during half cycles of the alternating current output of the source, and second unidirectional means for coupling the output of the source to the lighting device to energize it during the alternate half cycles of the source.

4,388,560

FILAMENT DISPENSER CATHODE

William P. Robinson, Newbury Park; Hugh McNulty, Jr., Santa Monica; Robert L. Seliger, Agoura, and Weldon S. Williamson, Malibu, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed May 26, 1981, Ser. No. 266,772

Int. Cl.³ H01J *3/04, 27/26*

U.S. Cl. 315—111.81 **12 Claims**

1. A discharge chamber;

an ion source within said discharge chamber, said ion source comprising:

a housing;

an anode within said housing;

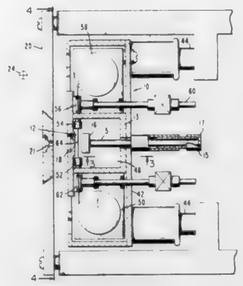
an ion outlet opening from said housing;

supply means for supplying ion fuel feed gas to said housing;

a cathode positioned between said anode and said ion outlet opening from said housing, said cathode comprising an elongated metallic coil strip;

drive means comprising a pair of motor driven take-up wheels engaged with said strip for advancing said strip from a source to a separate waste region by applying advancing force separately from said source and waste region for advancing said strip;

a Penning discharge chamber connected to said ion outlet opening from said housing to receive ionized feed gas therein, said Penning discharge chamber having an anode surrounding said chamber, and having a screen outlet, an



accelerator electrode positioned beyond said screen electrode to accelerate ions from said Penning plasma discharge chamber to produce an ion stream; and

a target chamber connected to receive accelerated ions form said accelerator electrode, and to contain a target therein for bombardment from said accelerated ion stream.

4,388,561

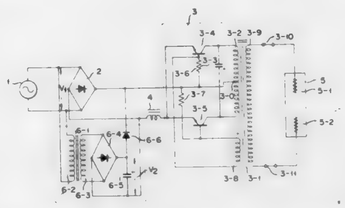
APPARATUS FOR OPERATING DISCHARGE LAMPS

Yasunobu Koshimura, Tokyo; Hisao Kobayashi, Fujisawa, and Nanjou Aoike, Yokohama, all of Japan, assignors to Toshiba Electric Equipment Corporation, Tokyo, Japan

Filed Feb. 23, 1981, Ser. No. 237,269

Int. Cl.³ H05B *41/29*

U.S. Cl. 315—171 **5 Claims**



1. Appparatus for operating a discharge lamp comprising:

rectifying means for rectifying a low frequency AC voltage to obtain a pulsating voltage;

an auxiliary power source for generating an auxiliary voltage;

a switch circuit for adding said auxiliary voltage to said pulsating voltage in order to produce a resultant voltage only when said pulsating voltage is lower than said auxiliary voltage, with the minimum value V_{min} of the resultant voltage and the maximum value V_{max} of said resultant voltage being set to meet a condition such that $\frac{1}{3}V_{max} \geqq V_{min} \geqq \frac{1}{5} V_{max}$;

an inverter for inverting said added auxiliary voltage and pulsating voltage to a high frequency voltage; and

means for operating a discharge lamp according to the output of said inverter.

4,388,562

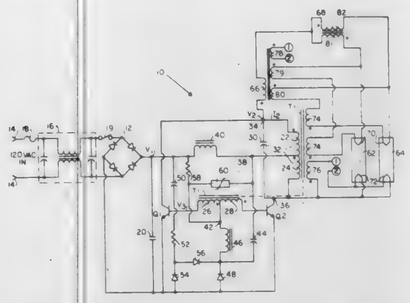
ELECTRONIC BALLAST CIRCUIT

Elliot Josephson, Los Altos, Calif., assignor to Astec Components, Ltd., Santa Clara, Calif.

Filed Nov. 6, 1980, Ser. No. 204,561

Int. Cl.³ H05B *37/00, 39/00, 41/14*

U.S. Cl. 315—205 **13 Claims**



1. A sine wave converter power supply comprising:

rectifier means for converting an AC input voltage to an unsmoothed DC voltage;

converter means operatively connected to receive said unsmoothed DC voltage and to function over the range of DC voltages produced by said rectifier means extending from substantially zero volts to at least the peak amplitude of the AC input voltage to said rectifier means, said means including a tank circuit including a capacitor connected in parallel with an inductor, for producing from said unsmoothed DC voltage a high frequency alternating output voltage of sufficient amplitude to power one or more fluorescent lamps or the like, said means further including two transistors, each including a base, emitter and collector, said transistors connected such that one transistor is normally off while the other transistor is normally on, and means for alternately turning on each of said transistors, said means for turning on comprising current source means capacitively fed from said tank circuit for generating a base current of sufficient amplitude to turn on one of said transistors, and steering means for coupling said base current alternately to the base of each said transistor;

means for preventing breakdown across either transistor; and

current limiting means to limit the current supplied by said converter means to each said lamp when said lamp is on.

4,388,563

SOLID-STATE FLUORESCENT LAMP BALLAST

Tom M. Hyltin, Dallas, Tex., assignor to Commodore Electronics, Ltd., Nassau, The Bahamas

Filed May 26, 1981, Ser. No. 267,354

Int. Cl.³ H05B *37/00*

U.S. Cl. 315—205 **12 Claims**

1. A solid-state dimmable fluorescent lamp ballast circuit comprising:

rectification means for supplying a unipolar electrical voltage;

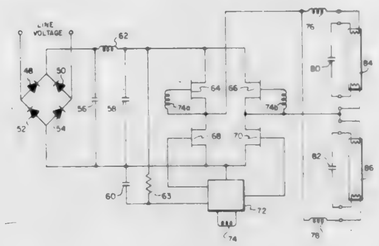
a first switch adapted to couple a first side of the output of said rectification means to one side of a gaseous discharge lamp;

a second switch adapted to couple said first side of the output of said rectification means to the other side of a gaseous discharge lamp;

a third switch adapted to couple a second side of the output of said rectification means to said one side of a gaseous discharge lamp;

a fourth switch adapted to couple said second side of the output of the said rectification means to said other side of a gaseous discharge lamp;

control means for providing first and second complementary pulse trains and third and fourth variable duty cycle pulse trains, said first pulse train being coupled to said first switch, said second pulse train being coupled to said second switch, said third pulse train being coupled to said third switch and said fourth pulse train being coupled to said fourth switch wherein said fourth switch is closed for a variable percentage of the time said first switch is closed and said third switch is closed for a variable percentage of the time said second switch is closed, said control means comprising:



oscillator means for providing an output having a first frequency;

multiple stage divider means coupled to said oscillator means for providing an output at a second frequency;

first means coupled to the output of said multiple stage divider for providing said first and second pulse trains;

second means selectively coupled to at least one intermediate stage of said multiple stage divider for providing said third and fourth pulse trains; and

means for varying the duty cycle of third and fourth pulse trains.

4,388,564

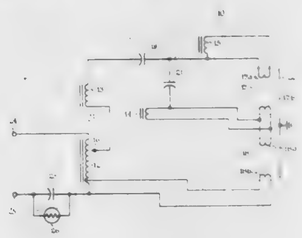
ENERGY SAVING FLUORESCENT LAMP CIRCUIT

Edward E. Hammer, Mayfield Village, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 9, 1981, Ser. No. 241,922

Int. Cl.³ H05B *41/16*

U.S. Cl. 315—227 R **1 Claim**



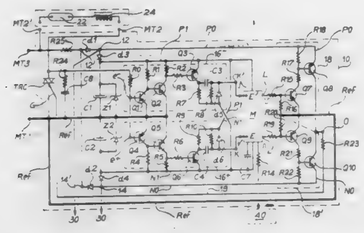
1. A fluorescent lamp operating circuit comprising a ballast circuit enclosed in a housing and having conductors externally of the housing for connection to an electrical power source, wherein the improvement comprises a capacitor connected in series with one of said conductors externally of said housing, thereby reducing electrical power to the circuit, and a positive temperature coefficient resistor connected across said capacitor.

4,388,565

CONTROL CIRCUIT FOR A DISCHARGE LAMP

Jan Rividi, Paris, France, assignor to Elam Limited, Dublin, Ireland

Filed Dec. 18, 1980, Ser. No. 217,868
Claims priority, application France, Dec. 19, 1979, 79 31108
Int. Cl.³ H05B *41/392*
U.S. Cl. 315—291 **13 Claims**



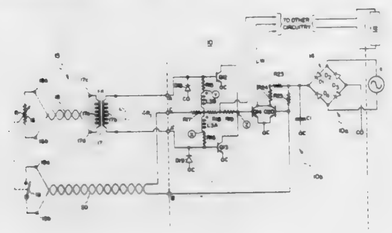
1. A control device for a discharge lamp, comprising an electronic switch having a control electrode and connected between a terminal for connection, with an AC supply source, and a terminal for connection with a loading circuit including the discharge lamp to be controlled, and a control circuit for delivering control pulses applied to said control electrode for controlling the state of said switch, wherein said comprises a circuit for detecting the passages through zero of the voltage at the terminals of said loading circuit, generating means connected to said detecting circuit and responsive to passages through zero of the current through said discharge lamp for providing control pulses having an adjustable duration and means for receiving said control pulses and connected to said control electrode for maintaining the electronic switch in a non-conductive state during the duration of said control pulses.

4,388,566

PASSIVE CONTROL NETWORK FOR REMOTE CONTROL OF LOAD OUTPUT LEVEL

James F. Bedard; Charles W. Eichelberger, both of Schenectady, N.Y., and De-Yu Chen, Blacksburg, Va., assignors to General Electric Company, New York, N.Y.

Filed Feb. 17, 1981, Ser. No. 235,191
Int. Cl.³ G05F *1/00*
U.S. Cl. 315—291 **13 Claims**



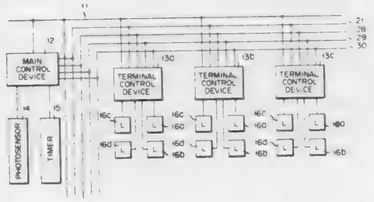
1. Power load control apparatus comprising:
(a) a load circuit adapted to supply an alternating current of variable frequency to an electrical load;
(b) said load circuit comprising input terminals and means for providing a periodic waveform across said input terminals;
(c) a transformer comprising a primary winding and a secondary winding;
(d) said primary winding being connected in circuit with said input terminals;
(e) a variable impedance element;
(f) a passive circuit comprising said variable impedance element in circuit with said secondary winding and energized by the periodic waveform coupled by the transformer from said input terminals;
(g) said load circuit being adapted to vary the frequency of the alternating current adapted to be supplied to a load as a function of the magnitude of the impedance reflected by the variable impedance element to the input terminals whereby adjustment of the impedance magnitude of the variable impedance element controls the frequency of the alternating current adapted to be supplied by the load circuit to an electrical load.

4,388,567

REMOTE LIGHTING-CONTROL APPARATUS

Kyoji Yamazaki, Urawa, and Fumio Kamiya, Yokohama, both of Japan, assignors to Toshiba Electric Equipment Corporation, Tokyo, Japan

Filed Feb. 25, 1981, Ser. No. 238,089
Claims priority, application Japan, Feb. 25, 1980, 55-22613
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—291 **7 Claims**



1. A remote lighting-control apparatus which comprises:
a main control device provided with means for transmitting selectively address data and any of a plurality of mode data and a lighting-control data generating section which generates a plurality of lighting-control data corresponding to said mode data, said main control device transmitting separately the lighting-control data and a group of the address and mode data; and
a plurality of terminal control devices, each of which comprises means for receiving the address and mode data, means for selecting the lighting-control data in accordance with the mode data, and means for controlling the lighting of at least one lighting load in accordance with the contents of a lighting-control data selected by the signal-selecting means.

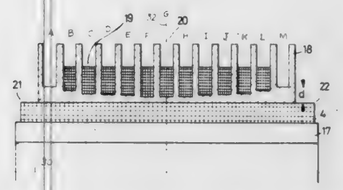
4,388,568

LINE END STAGE INCLUDING TRANSFORMER FOR A TELEVISION RECEIVER

Walter Goseberg; Alfred Pollak, and Wolfgang Reichow, all of Hanover, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 31, 1980, Ser. No. 202,730
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944220
Int. Cl.³ H01J *29/80*; H01F *27/30, 27/24, 27/32*
U.S. Cl. 315—411 **10 Claims**

1. In a television receiver having line sweep coils and a picture tube, a line end stage comprising
a transformer coupled to said line sweep coils including
a core having a longitudinal axis;
a single continuous untapped primary winding mounted on said core, said primary winding being coaxial with said longitudinal axis;
an insulating winding form surrounding said single primary winding, said winding form being coaxial with said longitudinal axis and being provided with spaced longitudinally-distributed radially-extending chambers; and
a single continuous untapped secondary winding located within the chambers of said winding form, the distances between the bottoms of the chambers within said winding form and said primary winding decreasing from the ends of said winding form toward the center thereof along said longitudinal axis;



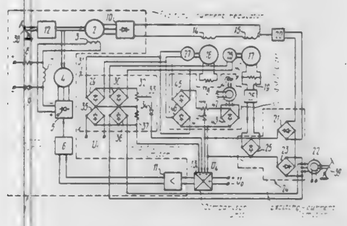
a first high voltage rectifier having its anode connected to ground and its cathode connected to one end of said secondary winding; and
a second high voltage rectifier having its anode connected to the other end of said secondary winding and its cathode connected to the anode of said picture tube.

4,388,569

SYSTEM FOR AUTOMATIC CONTROL OF DYNAMIC BRAKING OF INDEPENDENT TRANSPORT FACILITY

Gennady A. Shipaev, ulitsa Magnitogorskaya, 27, kv. 96; Vyacheslav V. Seliverstov, 2 Dorozhny proezd, 16, korpus 1, kv. 67; Nikolai A. Osipov, ulitsa Tkatskaya, 28/14, kv. 116; Anatoly P. Prolygin, ulitsa Trofimova, 2/1, kv. 130; Anatoly D. Mashikhin, ulitsa Marshala Timoshenko, 28, kv. 45; Mikhail P. Askinazi, ulitsa Trifonovskaya, 60, korpus 2, kv. 73; Jury M. Andreev, Nagatinskaya ulitsa 15, korpus, 1, kv. 53, all of Moscow, and Samuil I. Kagan, ulitsa 40 let Oktyabrya, 31, kv. 62, Zhodino, Minskaya oblast, all of U.S.S.R.

Filed Sep. 24, 1981, Ser. No. 307,944
Int. Cl.³ H01P *3/00*
U.S. Cl. 318—87 **4 Claims**



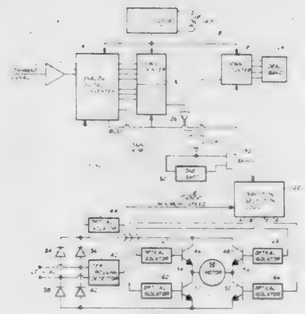
1. A system for automatic control of dynamic braking of an independent transport facility comprising: traction motors with field windings; a traction-motor exciting-current regulator whose output is connected to said field windings of said traction motors; rotational-speed transducers associated with said traction motors; a traction-motor reactive e.m.f. limiter whose input is coupled to the output of said rotational-speed transducer; a voltage transducer associated with at least one of said traction motors; an exciting-current transducer of associated with at least one said traction motors; a traction-motor exciting-current and brake-horsepower limiter formed with at least a first set of three interconnected rectifying bridges, outputs of two of said first set of rectifying bridges being connected in series and connected to the output of the third of said first set of rectifying bridge; a first input of said traction-motor exciting-current and brake-horsepower limiter being coupled to the output of said voltage transducer; while a second input thereof is connected to said exciting-current transducer; a braking intensity setter connected to a third input of said traction-motor exciting-current and brake-horsepower limiter; a comparison unit having its first input connected to the output of said traction-motor exciting-current and brake-horsepower limiter and its second input coupled through a diode to said traction-motor reactive e.m.f. limiter, the output of the comparison unit being connected to the input of said traction-motor exciting-current regulator.

4,388,570

DIGITALLY CONTROLLED PULSE WIDTH MODULATED MOTOR SPEED CONTROL FOR SERVO POSITIONING SYSTEMS

Neal V. Sangree, Alliance, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Mar. 16, 1981, Ser. No. 244,493
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—255 **8 Claims**



1. A pulse width modulated control system for positioning a servo device in response to an analog feedback signal indicative of the actual position of the servo device comprising:
means for converting said analog feedback signal into a digital signal; having a first and second total number of predetermined bits;
first counter means for receiving said digital signal of predetermined bits of said first total from said converting means and counting downward through said first total of predetermined bits and establishing a first control signal thereafter;
second counter means for receiving said digital signal of predetermined bits of said second total number less than said first total and counting downward through said predetermined bits of said second total and establishing a second control signal thereafter;
means for supplying power to said servo device;
means for controlling the transmission of power from said power supplying means to said servo device; and
circuit means responsive to said first and second control signals for selectively actuating said controlling means to regulate the operation of said servo device.

4,388,571

CONTROL CIRCUIT FOR AUTOMOBILE ELECTRO-MAGNETIC DRIVING EQUIPMENT

Yoshiharu Tada, and Yuichi Kitano, both of Higashimatsuyama, Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1981, Ser. No. 335,158
Claims priority, application Japan, Apr. 13, 1981, 56-55398
Int. Cl.³ G05B *9/02*
U.S. Cl. 318—293 **5 Claims**

1. Control circuit for automobile electro-magnetic driving equipment comprising in combination of a first transistor con-

nected to a power supply, a second transistor connected to an earth and connected in series to said first transistor, a third transistor connected to the power supply, a fourth transistor connected to the earth and connected in series to said third transistor, an automobile electro-magnetic driving equipment connected between a common junction point of said first and second transistors and a common junction point of said third and fourth transistors, a first control circuit for transmitting either a high level or low level output to each of the bases of said first and second transistors, turning on either one of the first and second transistors and turning off the other thereof, and a second control circuit for transmitting either a high level or low level output to each of the bases of said third and fourth transistors, turning on either one of the third and fourth transistors and turning off the other thereof wherein both normal and reverse electric currents are fed to said automobile electro-



magnetic driving equipment by turning on the first transistor or the fourth transistor or by turning on the second transistor and the third transistor in reference to the outputs from said first and second control circuits characterized in that the same is provided with a first short-circuited prevention transistor in which said first transistor is held off when said second transistor is kept on and the first transistor is reversed from its off condition to its on condition by making a delay of a specified period from the reversing time when the second transistor is reversed from its on condition to its off condition, and a second short-circuit prevention transistor in which said third transistor is held off when the fourth transistor is kept on and the third transistor is reversed from its on condition to its off condition by making a delay of a specified period from the reversing time when the fourth transistor is reversed from its on condition to its off condition.

4,388,572

CONSTANT SPEED REGULATOR FOR DC MOTORS

Wolfgang Rosenfeldt, Bad Bergzabern, Fed. Rep. of Germany, assignor to Sybron Corporation, Rochester, N.Y.

Filed May 15, 1980, Ser. No. 150,051

Int. Cl.³ H02P *5/16*

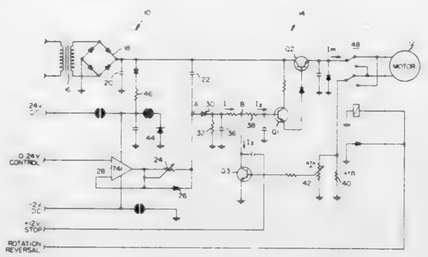
U.S. Cl. 318—317 **1 Claim**

1. An open loop speed regulator for use with a direct current motor comprising:

an AC to DC rectifier circuit including a shunt capacitor;

means for measuring AC ripple across the capacitor;

a control circuit for supplying a variable magnitude DC input voltage to a DC motor, the control circuit being connected to said rectifier circuit and being responsive to the magnitude of AC ripple across the capacitor so as to increase the magnitude of DC input voltage to the DC



motor as a function of increase of the magnitude of AC ripple.

4,388,573

ELECTRIC VEHICLE CONTROL DEVICE

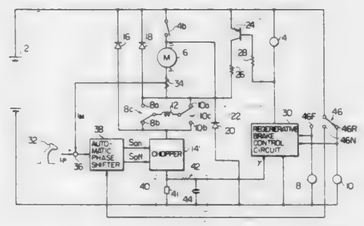
Michimasa Horiuchi; Masahiko Ibamoto, both of Katsuta, and Kiyoshi Nemoto, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 15, 1981, Ser. No. 254,295

Claims priority, application Japan, Apr. 16, 1980, 55-49187

Int. Cl.³ H02P *3/14*

U.S. Cl. 318—376 **4 Claims**



1. An electric vehicle control device comprising:

a main circuit for supplying power from a d.c. power supply to a driving motor through a chopper;

a phase shifter for controlling the conduction ratio of said chopper in such a manner that a current flowing through said driving motor is proportional to an instruction value, said instruction value being determined by how much an accelerator pedal is trodden;

means for instructing a regenerative braking operation;

changeover means for changing over said main circuit between a power running state and a regenerative braking state;

conduction-ratio detecting means for detecting that the conduction ratio of said chopper in said power running state exceeds a preset value, to deliver an output while the conduction ratio exceeds the preset value;

holding means for holding and delivering said output of said conduction-ratio detecting means for a predetermined time; and

means for placing said changeover means on the regenerative braking side in response to the presence of both of the output of said holding means and the output of said means for instructing said regenerative braking operation.

4,388,574

CONTROL CIRCUIT FOR VARIABLE-SPEED WINDSHIELD WIPER

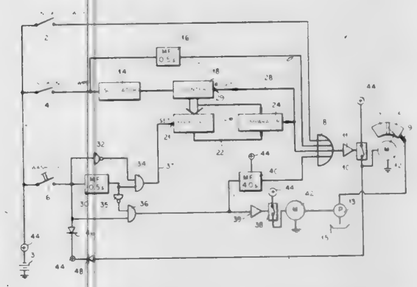
Wilhelm Bois, Gaimersheim, and Josef Büchl, Lenting, both of Fed. Rep. of Germany, assignors to Audi NSU Auto Union AG, Neckarsulm, Fed. Rep. of Germany

Filed Apr. 30, 1981, Ser. No. 259,095

Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3017982

Int. Cl.³ H02P *1/04*

U.S. Cl. 318—443 **10 Claims**



1. In combination with a windshield wiper operated by a motor powered in turn from an electric source, a control circuit comprising:

continuous-wipe switch means connected between said source and said motor and closable for continuous operation of said wiper by said motor;

a discontinuous-wipe switch having a first side connected to said source and a second side;

an oscillator connected to the second side of said discontinuous-wipe switch and powerable therethrough by said source to oscillate;

resettable counter means connected to said oscillator for counting synchronously as same oscillates and for generating a correspondingly changing numerical output;

a settable memory connected to said counter means for generating a fixed numerical output;

circuit means connected between said memory, said motor, and said counter means for energizing said motor and resetting said counter means when said numerical outputs are equal to each other; and

means including a set switch operable to establish in said memory as said fixed numerical output the numerical output of said counter generally at the instant when said set switch is operated.

4,388,575

ARRANGEMENT FOR CONTROLLING ELEMENTS OF POWER VEHICLE SUCH AS SAFETY BELT, WINDOW PANE AND THE LIKE

Corneliu Lungu, Bühlertal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

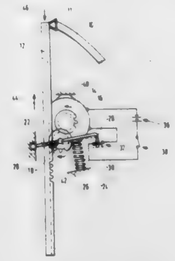
Filed Feb. 1, 1982, Ser. No. 344,778

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111919

Int. Cl.³ G05B *5/00*

U.S. Cl. 318—475 **8 Claims**

1. An arrangement for controlling an equipment part of a power vehicle, comprising a displaceable member connectable with a power vehicle element to be controlled and displaceable together with the latter from a first end position to a second end position in a predetermined direction; means for driving said displaceable member; and safety means arranged to interrupt a power flux from said driving means to said displaceable member when a resistance beyond a limiting value acts upon said displaceable member in a direction opposite to said predetermined direction, said safety means including a withdrawable toothed wheel connected with a lever pivotable so that in the event of a resistance beyond the limiting value said toothed wheel is withdrawable from the power flux and thereby the displacement of said displaceable member is interrupted, whereas in the event of a resistance within the limiting value



said toothed wheel is retained in the power flux by a force adjustable in correspondence with the limiting value and thereby the displacement of said displaceable member is sustained; and means for retaining said toothed wheel in the power flux by a force adjustable in correspondence with the limiting value.

4,388,576

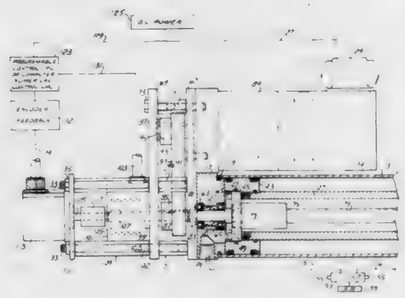
ELECTRIC SERVO DRIVE AIR CYLINDER

Leland F. Blatt, P.O. Box 220, Fraser, Mich. 48026

Filed Sep. 23, 1981, Ser. No. 304,794

Int. Cl.³ G05B *19/24*

U.S. Cl. 318—571 **15 Claims**



1. An electronic servo-drive air cylinder comprising a cylinder tube having a blind end cap with a first pressure port and a rod end cap with a second pressure port;

a tubular piston rod sealed within said cylinder and projecting through said rod end cap terminating in a rod end adapted for connection to a load to be reciprocated;

a reciprocal piston in said tube secured to said piston rod;

a ball nut axially mounted upon said piston rod adjacent said piston;

a ball screw axially threaded through said nut and extended substantially the length of said piston rod and at one end slidably supported thereon, its other end extending through said piston and blind end cap and outwardly thereof;

a D.C. motor mounted upon said blind end cap having a drive shaft;

and drive means interconnecting said drive shaft and ball screw;

said cylinder ports adapted for alternate connection to a source of pressurized air, whereby pneumatic pressure

supports a variety of piston rod loads, and the motor operated ball screw controls the piston rod and accurately positions said rod at any increment of extension or retraction.

4,388,577

ROTATING FIELD MACHINE DRIVE

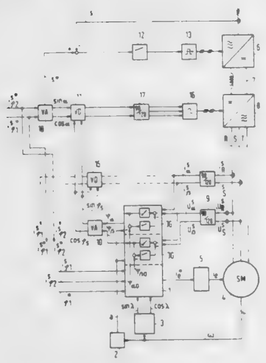
Felix Blaschke, and Theodor Salzmann, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 1, 1981, Ser. No. 279,352

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1980, 3026202

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—717 **9 Claims**



1. A rotating field machine drive comprising:

(a) a frequency converter;

(b) a rotating field machine fed by the converter;

(c) first and second a-c voltage integrators, each comprising an integrator having as an input a component of the EMF vector of the machine formed by the stator current and stator voltage and an output which is a corresponding component of the magnetic flux vector of the machine, a feedback line connecting the integrator output with the integrator input, with a zero controller in said feedback line;

(d) a converter control coupled to the outputs of the a-c voltage integrators having as inputs nominal values for control of the stator current component parallel to the flux vector and of the component normal thereto;

(e) a computing model circuit energized by a voltage corresponding to the stator current and to the rotor position, which computing model circuit simulates mathematically the processes that lead to the development of the machine flux and determines, by means of the rotor position, model quantities for the flux components; and

(f) means for adding the flux component model quantities onto the inputs of the zero controllers such that each zero controller eliminates dc-component in the difference between the flux component determined at the correlated a-c voltage integrator and the model quantity for this flux component.

4,388,578

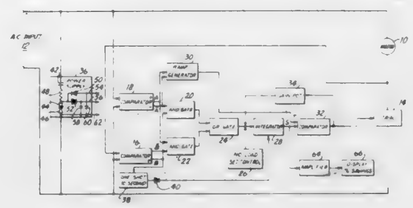
POWER FACTOR CONTROLLER

Dan Green, Cranford, N.J., and Sandor Goldner, Brooklyn, N.Y., assignors to Cynex Manufacturing Corporation, Hillside, N.J.

Filed Jul. 7, 1980, Ser. No. 166,046

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—729 **19 Claims**



1. A power factor controller for an AC induction motor comprising:

a control means adapted to be electrically connected in series with each phase winding of the AC motor for controlling the power to said winding;

circuit means coupled to said control means for providing an output which varies in accordance with the difference in phase between the current through said winding and the voltage across said winding, said phase difference varying with motor loading, and for providing said output to said control means for varying the duration of "on" time of each cycle of input power to said winding in accordance with said phase difference to thereby provide input power to the motor commensurate with the loading on the motor so as to improve efficiency,

start-up means for producing an output signal to said circuit means whereby said circuit means maintains the "on" time of said control means at maximum for a predetermined duration to enable the motor to reach full speed in minimum time, and

means coupled to said start-up means for causing said start-up means to produce its output signal when said motor is initially energized simultaneously with initial energization of said circuit means as well as for causing said start-up means to produce its output signal when said motor is initially energized after said circuit means have already been energized.

4,388,579

CONTROL SYSTEM FOR A WOUND-ROTOR MOTOR

James N. Ellis, Chatsworth, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 17, 1981, Ser. No. 284,158

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—732 **15 Claims**

1. In a load switching arrangement for selectively connecting a direct current load to at least first and second taps of a winding of a transformer, a load switching circuit means comprising:

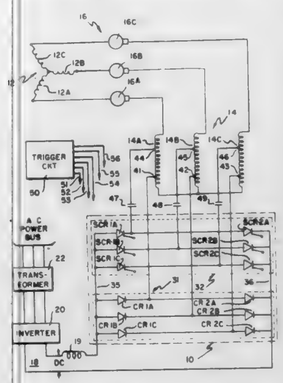
first recitifier means connected to said first tap of said transformer winding and having positive and negative terminals connected to said direct current load;

second normally non-conducting controlled rectifier means connected between said positive and negative terminals in parallel with said first recitifier means;

switch means interposed between said second rectifier means and said second tap of said transformer winding and operable to connect said second recitifer means to said second tap;

and enabling circuit means for initiating conduction of said second rectifier means after said switch means is operated;

said load being connected to said first tap through said first rectifier means when said first rectifier means is conducting, and said load being connected to said second tap through said second rectifier means when said second



recitifier means is conducting, the potential at said second tap being higher than the potential at said first tap whereby said first rectifier means is rendered non-conducting, disconnecting the load from said first tap, when said second rectifier means is conducting.

4,388,580

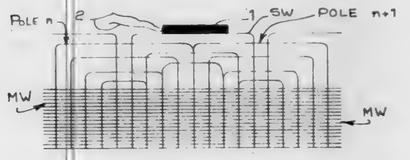
MAGNETIC DEVICE FOR CONTROLLING STARTING OF A SINGLE PHASE INDUCTION MOTOR

Antonio Ramirez, 5725 Buade St., St-Leonard, Montreal, Canada (H1S 1E3)

Filed Nov. 16, 1981, Ser. No. 321,580

Int. Cl.³ H02P *1/42*

U.S. Cl. 318—787 **6 Claims**



1. A starter device for a single phase A.C. motor having a main winding and a starting winding disposed for connection to a single A.C. source, comprising:

a semiconductor switching device having a control electrode and a transconductive path between two power electrodes;

circuit means for connecting said transconductive path of said semiconductor switching device in series with said single A.C. source, and said starting winding to energize or disconnect said starting winding;

sensing means disposed between two adjacent poles of the main winding of the stator of the motor to sense the magnetic flux forced out of saturated magnetic cores of said two adjacent poles by the initial inrush of current passing through said main winding upon starting of the motor, said sensing means having an axis of detection extending in the direction of the lines of said magnetic flux; and

means for connecting said sensing means between said control electrode and one of said power electrodes of said semiconductor switching device, whereby the current induced through said sensing means by the magnetic flux upon starting of the motor will render said semiconductor switching device conductive by supplying said control electrode of said semiconductor switching device to energize said switching winding of the motor to start the motor, whereas after the motor runs at nominal speed, the current through said main winding will decrease, causing a decrease of the current induced in said sensing means supplying said control electrode because of the reduction of the magnetic flux induced in said magnetic cores of said two adjacent poles of said main winding of the motor; then the conduction through said semiconductor switching device will stop and thus disconnect the starting winding of the motor.

4,388,581

DYNAMOELECTRIC MACHINE

Har S. Bhatnagar, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed May 18, 1981, Ser. No. 264,821

Int. Cl.³ H02P *1/44*

U.S. Cl. 318—789 **13 Claims**



1. A dynamoelectric machine adapted for energization at a predetermined low speed in a single phase mode and for energization at a predetermined high speed generally in a two phase mode across a single phase power source in response to selective manual operation of a line switch adapted for connection in circuit relation between the dynamoelectric machine and the power source, the dynamoelectric machine comprising:

a housing including a pair of opposite end plates;

a terminal board supported on said housing at least generally adjacent one of said end plates and including a pair of terminal means adapted for respective connection with the power source;

a ferromagnetic stator arranged with said housing between said end plates and spaced from said terminal board, said stator including a bore, and a plurality of winding receiving slots;

a winding circuit disposed in at least some of said slots of said stator and including auxiliary winding means having a first winding section and a second winding section with one side of each of said first and second sections connected together in series circuit relation, a low speed main winding means, a high speed main winding means, the other side of said first winding section and one side of each of said low speed main winding means and said high speed main winding means being connected with one of said terminal means, the other side of each of said high speed main winding means and said second winding section being connected with each other at a circuit junction, and a capacitor connected between said circuit junction and the other side of said second winding section wherein said high speed run winding means, said first and second sections of said auxiliary winding means and said capacitor defines a permanently interconnected parallel winding circuit combination;

a rotatable shaft extending through said bore of said stator and rotatably journaled in said opposite end plates;

a rotor on said shaft conjointly rotatable therewith and

disposed at least in part within said bore of said stator so as to be arranged in magnetic coupling relation therewith upon the energization of the dynamoelectric machine;

a relay disposed at least in part within said housing and including first and second contacts, said first contact being connected with said parallel winding circuit combination at said circuit junction, coil means connected between said second contact and said one terminal means of said terminal board and adapted for excitation upon the energization of the dynamoelectric machine across the power source, a first switch member urged toward making engagement with said first contact and associated in magnetic coupling relation with said coil means, said first switch member being movable to break from said first contact and make with said second contact upon the excitation of said coil means;

a centrifugal switch actuating mechanism supported on at least one of said rotor and said shaft so as to be conjointly rotatable therewith and having a push collar disposed about said shaft, said centrifugal switch actuating mechanism being operable generally in response to rotation of said rotor upon the enegization of the dynamoelectric machine to move said push collar between an at-rest position and an axially displaced position thereof with respect to said shaft; and

switch means for at least in part controlling said winding circuit and supported on said terminal board, said switch means including third, fourth, and fifth contacts, said third contact being connected with said circuit junction, said fourth contact being connected with said first and second winding sections of said auxiliary winding means between the one sides thereof, respectively, said fifth contact being connected with the other side of said low speed main winding means, a second switch member arranged generally in driven relation with said push collar of said centrifugal switch actuating mechanism and urged toward making engagement with both of said third and fourth contacts when said push collar is in its at-rest position, and said second switch member being connected in circuit relation with said second contact of said relay, said first switch member being magnetically attracted from said first contact into making engagement with said second contact in response to the excitation of said coil means of said relay when the line switch is manually operated to initially effect starting excitation of only said high speed main winding means and said second winding section of said auxiliary winding means in said parallel winding circuit combination when said push collar is in its at-rest position with said second switch member in making engagement with both of said third and fourth contacts so as to effect split-phase starting energization of the dynamoelectric machine, said push collar being movable from its at-rest position to its axially displaced position in response to the operation of said centrifugal switch operating mechanism generally as said rotor attains the preselected low speed in response to the split-phase starting energization of the dynamoelectric machine with the movement of said push collar driving said second switch member from both said third and fourth contacts terminating the split-phase starting energization of the dynamoelectric machine and into making engagement with said fifth contact exciting said low speed main winding means so as to effect the single phase energization at the predetermined low speed of the dynamoelectric machine across the power source, said first switch member thereafter returning from said second contact to remake with said first contact in response to the deexcitation of said coil means of said relay in the event of the manual operation of the line switch to effect a preselected momentary deenergization of the dynamoelectric machine across the power source reducing the rotational speed of said rotor and said centrifugal switch operating mechanism below the predetermined low speed so as to effect return movement of said push collar from its displaced position toward its at-rest position and the disengagement of said second switch member from said fifth contact to deexcite said low speed main winding means, and said parallel winding circuit combination being subsequently excited when the line switch is again manually operated to reconnect the dynamoelectric machine across the power source and effect the reenergization of the dynamoelectric machine generally in the two phase mode thereof at the predetermined high speed.

4,388,582

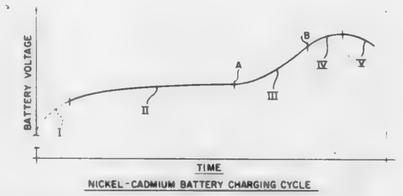
APPARATUS AND METHOD FOR CHARGING BATTERIES

David A. Saar, Timonium; Richard T. Walter, Baltimore, and John L. Bowman, Jr., Towson, all of Md., assignors to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 911,268, May 31, 1978, abandoned. This application Jan. 5, 1982, Ser. No. 337,296

Int. Cl.³ H02J *7/04;* **H03K** *5/00*

U.S. Cl. 320—20 **24 Claims**



NICKEL-CADMIUM BATTERY CHARGING CYCLE

1. A method of rapidly and efficiently charging a battery of the type in which the voltage characteristic thereof varies with the state of charge of the battery and in which the voltage characteristic varies with time during charging to exhibit an inflection point prior to the battery attaining substantial full charge, the inflection point characterized by a change in the slope of the voltage characteristic from successive increases in slope to a decrease, the method comprising the steps of:

supplying electrical energy to the battery for charging thereof;

monitoring said voltage characteristic of the battery periodically during charging;

computing the slope of the variation of said monitored voltage characteristic with time;

storing the maximum value of the so-computed slope values;

comparing each successively computed slope value with said stored maximum value;

identifying the inflection point exhibited in the variation of said voltage characteristic prior to the battery attaining substantial full charge by identifying a change in the so-compared slope values from successive increases in slope to a decrease; and

controlling the supply of electrical energy to the battery on the basis of the so-determined occurrence.

4,388,583

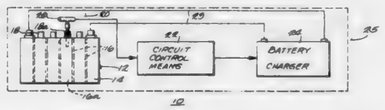
BATTERY CHARGER WITH TRANSDUCER FOR CONTROLLING CHARGE RATE

William R. Krueger, Hartford, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Mar. 6, 1981, Ser. No. 241,135

Int. Cl.³ H02J *7/00*

U.S. Cl. 320—46 **37 Claims**



1. An apparatus for charging a battery including a case containing at least one cell formed of a pair of electrodes immersed in an electrolyte, said apparatus comprising sound transducer means associated with the battery for providing a variable signal output in response to sound generated within the battery case, circuit control means coupled to said signal output for providing a variable control output in response to said signal output, and charging means connected to the battery electrodes and operable for charging the battery at a rate subject to said variable control output.

21. An apparatus for charging a battery including a case containing at least one cell formed of a pair of electrodes immersed in an electrolyte, said apparatus comprising fluid vibration transducer means associated with the battery for providing a variable signal output in response to fluid vibration in the battery electrolyte, circuit control means coupled to said signal output for providing a variable control output in response to said signal output, and charging means connected to the battery electrodes and coupled to said control output for supplying charging current to the battery subject to said control output.

4,388,584

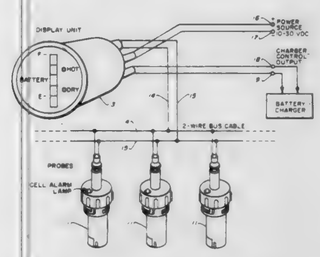
BATTERY MONITORING AND CHARGER CONTROL SYSTEM

Ernest A. Dahl, 3247 Breaker Dr., Ventura, Calif. 93003, and George H. Barry, 21225 Saratoga Hills Rd., Saratoga, Calif. 95070

Filed Oct. 23, 1981, Ser. No. 314,319

Int. Cl.³ H02J *7/04*

U.S. Cl. 320—48 **6 Claims**



1. A battery cell controlled automatic battery charging system which allows faster charging while simultaneously restricting overcharging to reduce cell damage, comprising:

a. a battery charging means operable to charge a bank of batteries;

b. a plurality of battery cell probes equal in number to the number of cells in the bank of batteries, one cell probe being provided for each battery cell, respectively;

c. a display means including electrical circuitry connected to said battery charging means;

d. each said battery cell probe being connected to said display means; and, each said battery cell probe being operable to sense and monitor the condition of its respective battery cell and indicate by electrical signals to said display means whenever a cell is out of specification by being any of low in charge, overheated, and low in electrolyte;

e. a cell alarm means provided on each said battery cell probe to indicate to an operator each of said battery cells that is out of specification;

f. said display means and electrical circuitry being operable to visually display the condition of the most out of specification battery cell in the bank of batteries and also to provide a control signal to said battery charging means to cause said battery charging means to charge said bank of batteries whenever one of said probes indicates that a cell has a low charge; said display means and elecfrical circuitry operable to cause said battery charging means to stop charging whenever a battery cell becomes overheated or low in electrolyte, whereby faster charging is allowed with reduced possibility of over charging and cell damage.

4,388,585

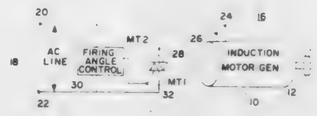
ELECTRICAL POWER GENERATING SYSTEM

Frank J. Nola, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 16, 1981, Ser. No. 243,683

Int. Cl.³ H02P *9/00*

U.S. Cl. 322—47 **1 Claim**



1. An electrical generating system comprising:

an induction motor/generator device having a power shaft and a pair of power terminals;

rotary power means for coupling a rotating movement to said power shaft;

an alternating current power supply line having a pair of power terminals;

triac means, including at least one triac, having a control input and a pair of power terminals;

said power terminals of said device and power line being interconnected through said power terminals of said triac, and

control means connected between one of said power terminals and said control input of said triac for delaying the turn "on" point of said triac with respect to the period of each half cycle of alternating current power to normally limit the power transfer from said power line to said device;

whereby a higher net transfer of power from said device to said power line may be obtained.

4,388,586

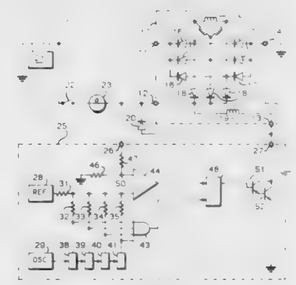
FIXED FREQUENCY VOLTAGE REGULATOR

Mihaly Lamoth, Coppet, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 17, 1981, Ser. No. 331,870

Int. Cl.³ G05F *1/56*

U.S. Cl. 323—283 **3 Claims**



1. A fixed frequency voltage regulator useable in an automotive battery charging system, comprising: a temperature stable voltage reference providing an output; an oscillator providing an output; a digitally switched attenuator coupled to the output of the oscillator and providing an output which is combined with the output of the voltage reference; a first compara-

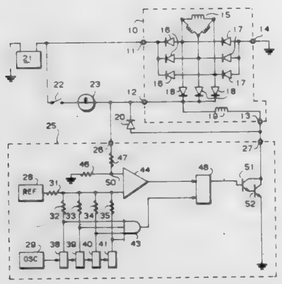
tor having a first and a second input and providing an output, the first input receiving the combined output from the attenuator and the voltage reference; a first flip-flop coupled to the output of the first comparator and providing an output; current switching means coupled to the output of the first flip-flop for controlling the current switching means; current sensing means coupled in series with the current switching means for sensing current in the current switching means; a second comparator having a first input coupled to the current sensing means and providing an output, a second flip-flop coupled to the output of the second comparator and providing an output; and a second logic gate having a first input coupled to the output of the first flip-flop and having a second input coupled to the output of the second flip-flop, the second logic gate providing an output for controlling the current switching means.

4,388,587

FIXED FREQUENCY VOLTAGE REGULATOR

Mihaly Lamoth, Coppet, and Heinz Lehning, Nyon, both of Switzerland, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 17, 1981, Ser. No. 331,869
Int. Cl.³ G05F *1/56*
U.S. Cl. 323—283 **5 Claims**



1. A fixed frequency voltage regulator useable in an automotive battery charging system, comprising: a temperature stable voltage reference providing an output; an oscillator providing an output; a digitally switched attenuator coupled to the output of the oscillator and providing an output which is combined with the output of the voltage reference; a comparator having a first and a second input and providing an output, the first input receiving the combined output from the attenuator and the voltage reference; a first flip-flop coupled to the output of the comparator and providing an output; and current switching means coupled to the output of the first flip-flop for controlling the current switching means.

4,388,588

FLUSH MOUNTABLE PLASMA DENSITY PROFILE PROBE DEVICE

Leonard S. Taylor, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 9, 1981, Ser. No. 242,086
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—72.5 **3 Claims**

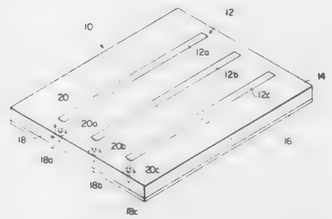
1. A plasma density profile probe device configured to be flush mountable to a surface of a test model and arranged conformally with the geometric shape thereof for measuring information about the density profile of an adjacent plasma flow field, comprising:

a dielectric support member;

a plurality of striplines, numbering at least three, embedded in one side of said dielectric support member;

a conducting ground plane affixed contiguously to the other side of said dielectric support member, said conducting ground plane having a plurality of mating conducting ground plane irises configured therein, each of said plurality of mating conducting ground plane irises being disposed subjacent to each of said plurality of striplines, and said conducting ground plane further including a plurality of line conductors each passing through corresponding ones of said plurality of mating conducting ground plane irises and being affixed to corresponding ones of said plurality of striplines for providing electrical connections thereto;

a voltage generator operatively connected via one of said



plurality of line conductors to a corresponding outer one of said plurality of striplines for driving it with a fixed voltage potential sufficient to induce fringing field lines of an electric field into the adjacent plasma flow field out above said conducting ground plane; and

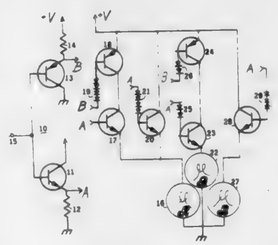
a plurality of amplifiers each being operatively connected via the other ones of said plurality of line conductors to corresponding other ones of said plurality of striplines for amplifying the current change in the fringing electric field lines as they are being influenced by the adjacent plasma flow field at each of said other ones of said plurality of striplines.

4,388,589

COLOR-EMITTING DC LEVEL INDICATOR

Bernhard P. Molldrem, Jr., 201 W. 77th St., New York, N.Y. 10024

Filed Jun. 23, 1980, Ser. No. 161,673
Int. Cl.³ G01R *19/00*
U.S. Cl. 324—96 **13 Claims**



1. A DC level indicator wherein a sensed DC level of a particular polarity and within a particular range is indicated by the apparent color of light comprising

DC input means receiving said DC level within said particular range and having said particular polarity, said range having a plurality of subranges each smaller than said range;

color light generating means formed of a plurality of light emitting means, each radiating light of a respective primary color, and positioned together so that when more than one of said light emitting means emits light the resulting emitted light appears as a blend of the respective colors; and

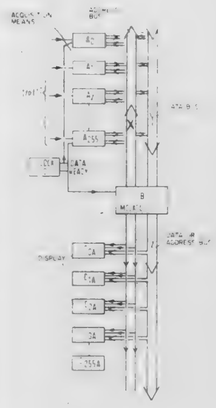
drive means connected to said DC input means for supplying current to each of said light emitting means that varies in response to the received DC level so that each said light emitting means radiates its respective color light when said DC level is within a respective subrange, but substantially ceases to radiate when said DC level is outside said respective subrange but within said predetermined range and so that within an overlapping portion of said subranges two of said light emitting means emit their respective color light, said drive means being powered by voltage of said particular polarity.

4,388,590

DIGITAL AUDIO LEVEL METERING

John W. Richards, Chalfont St. Peter, and Ian Craven, Fulham, both of England, assignors to EMI Limited, Hayes, England

Filed Jul. 3, 1980, Ser. No. 165,762
Claims priority, application United Kingdom, Jul. 7, 1979, 7923799
Int. Cl.³ G01R *19/16*
U.S. Cl. 324—103 P **9 Claims**



1. An arrangement for displaying a visual indication of the amplitude level of digital audio signals comprising,

acquisition means for receiving digital audio signals and for generating therefrom further digital signals representitive of a characteristic of the amplitude of the digital audio signals received,

control means for performing periodic interrogations of the output of the acquisition means and for transmitting said further signals to a display location,

and display means comprising an input means, disposed at said display location, for receiving said transmitted further signals, means for providing a visual indication of the amplitude value level represented by said further signals, and means for causing said indicated value to decay at a predetermined rate if greater than the amplitude level represented by a signal subsequently transmitted to the input means, and to be substituted thereby if less.

4,388,591

SELF-SEALING TEST PROBE

Patrick E. Lannan, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 22, 1980, Ser. No. 219,120
Int. Cl.³ G01R *31/22*
U.S. Cl. 324—158 P **6 Claims**

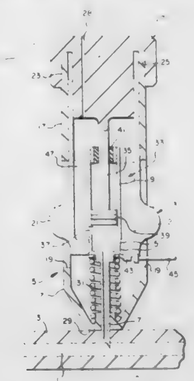
1. A test probe of the type for penetrating insulation of an insulated electrical conductor to test the condition of the conductor core and for sealing the hole made in the insulation after the test has been completed, comprising:

housing means having reservoir means containing sealant means;

test probe means secured to said housing means, said test probe means including barrel means and hollow needle probe means, said barrel means having an aperture enabling said sealant means to enter said barrel means;

electrical conductor means connected to said test probe means;

mounting means in which said housing means is mounted to enable said housing means to move relative to said mounting means from a non-testing position to a testing position;



means sealing said aperture when said housing means is in said non-testing position;

means on said housing means for operating said housing means so that said housing means is moved relative to said mounting means from said non-testing position to said testing position thereby causing said hollow needle probe means to penetrate the insulation and make electrical contact with the electrical conductor core to test the condition thereof whereafter said housing means is moved back to said non-testing position causing said sealing means to express said sealant means from said barrel means along said hollow needle probe means into the hole formed in the insulation by the hollow needle probe means thereby sealing such hole.

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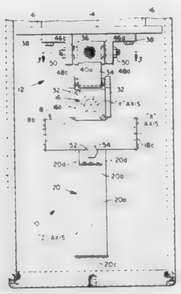
MULTIAXIS MAGNETOMETER APPARATUS WITH ORTHOGONALLY DISPOSED RECTANGULAR HOUSINGS FOR MOUNTING SEPARATE SENSOR ASSEMBLIES

Erick O. Schonstedt, Reston, Va., assignor to Schonstedt Instrument Company, Reston, Va.

Filed Jun. 24, 1980, Ser. No. 162,488
Int. Cl.³ G01R *33/02, 33/04*
U.S. Cl. 324—247 **16 Claims**

1. A structure for mounting a plurality of separate magnetic sensor assemblies in a multi-axis magnetometer and the like, comprising a plurality of non-magnetic elongated housings of rectangular cross section, means mounting a separate sensor assembly in each of said housings with the sensitive axis of the assembly substantially aligned with the longitudinal axis of the housing, connecting means connecting said housings together into a discrete unit with the longitudinal axes of the housings

disposed in mutually orthogonal planes and with elongated planar surfaces of the respective housings in surface-to-surface



contact, and support means independent of said connecting means for supporting said unit in an outer casing and the like.

4,388,593

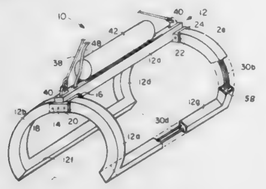
COIL DEVICE FOR UNDERWATER MAGNETIC TESTING

John Mittleman, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 13, 1980, Ser. No. 206,424

Int. Cl.³ G01R *33/12;* **G01N** *27/84;* **H01F** *5/04*

U.S. Cl. 324—262 **6 Claims**



1. A magnetic coil device for use under water in magnetic particle inspection of structural members, said device includng an electrical winding and characterized by the improvement wherein said winding comprises:

first and second substantially annular, coaxially spaced electrically conductive solenoid coils each having a predetermined diameter and each characterized by a radial discontinuity aligned with the discontinuity of the other;

first and second axially extending conductor means connecting conductor portions of one of said coils in alternate sequence with conductor portions of the other coil for simultaneous series energization whereby substantially annular current flow occurs in one direction at any instant in all said conductor portions of one of said coils and occurs in the opposite direction in all said conductor portions in the other of said coils;

said coils being flexible, at least in part, whereby said coils can be spread open and closed at said discontinuities to permit placement around an elongate structural member;

conductor lead means for energizing said winding from a remote electrical power source; and

support means for maintaining said coils coaxially spaced and supporting said winding relative to a structural member being inspected.

4,388,594

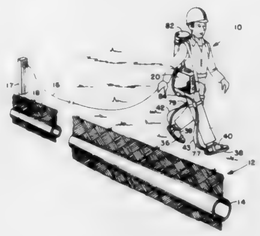
SEMI-PERMEABLE ELECTROLYTIC CELL AND METHOD FOR SURVEYING BURIED STRUCTURES

Robert L. Deskins, Huntington Beach; Gary L. Matlack, Ontario, and Robert D. Ashbaugh, Mission Viejo, all of Calif., assignors to Harco Corporation, Medina, Ohio

Filed Jun. 9, 1980, Ser. No. 157,678

Int. Cl.³ G01V *3/15;* **G01R** *31/02;* **G01N** *27/00*

U.S. Cl. 324—348 **36 Claims**



1. A process of performing electrical surveys of buried structures comprising the steps of connecting a wire with respect to the buried structure, and then walking on the surface over the structure on an electrically conductive liquid cell while the wire is paid out along the structure, said cell being in the form of footwear for at least one foot of the surveyor and connected to such wire through a meter for measuring pipe to soil type potential difference to obtain such survey.

4,388,595

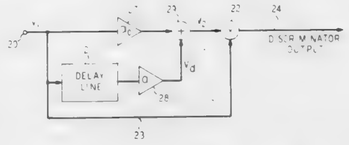
APPARATUS AND METHOD FOR REMOVING BIAS DISTORTION FROM A PRODUCT DEMODULATOR

Grant P. Brooks, Randolph, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 26, 1981, Ser. No. 247,800

Int. Cl.³ H03D *3/06;* **H03K** *9/00;* **H04L** *27/14*

U.S. Cl. 329—104 **10 Claims**



1. Apparatus for correlating an input signal with a time delayed version of itself including means for additively combining a portion of the input signal with said delayed version to form a delay compensated signal; and

means for multiplying said delay compensated signal with the input signal to generate an output signal.

4,388,596

FREQUENCY CONTROLLED SIGNAL GENERATING CIRCUIT

Noriyuki Yamashita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 28, 1980, Ser. No. 211,112

Claims priority, application Japan, Nov. 29, 1979, 54-154661; Jun. 30, 1980, 55-89426

Int. Cl.³ H03L *7/10*

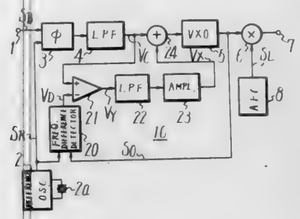
U.S. Cl. 331—1 A **17 Claims**

1. A circuit arrangement for generating a frequency controlled signal which has its phase made synchronous with an input signal, comprising:

a variable frequency oscillator for generating the frequency controlled signal;

means for providing a reference signal;

a phase control circuit including a phase comparator for generating, as its output, a control signal based on the phase relation of said input and reference signals, said control signal being supplied to said variable frequency oscillator to control the phase of said frequency controlled signal;



means for detecting a frequency difference between said frequency controlled and reference signals and providing a corresponding output; and

means for comparing the outputs of the phase comparator and the frequency difference detecting means to produce an additional control signal which is mixed with the first mentioned control signal for further controlling said variable frequency oscillator.

4,388,597

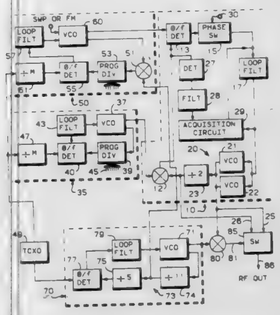
FREQUENCY SYNTHESIZER HAVING PLURAL PHASE LOCKED LOOPS

Robert H. Bickley, Scottsdale, and Albert H. Hunt, Tempe, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 156,221, Jun. 3, 1980, abandoned. This application Jun. 14, 1982, Ser. No. 388,392

Int. Cl.³ H03L *7/18, 7/22*

U.S. Cl. 331—2 **10 Claims**



10. A frequency synthesizer controllable to produce any of a plurality of steps of frequency withing a band of frequencies in response to control signals thereto, said synthesizer comprising:

a plurality of phase locked loops, connected to provide output frequencies in incremental steps, a first one of said loops including a programmable divider programmable in predetermined division steps in response to a control signal applied thereto, and

a second one of said loops including a programmable divider programmable in predetermined division steps, different than the steps of said programmable divider of said first loop, in response to a control signal applied thereto, one of said first and second loops providing a programmable reference frequency output in one of a normal frequency range and an additional frequency range extending substantially beyond said normal range; and

said programmable divider of said first loop and said programmable divider of said second loop being preprogrammed to reject predetermined combinations of a first loop output frequency having a fundamental frequency and a second loop output frequency having a harmonic coinciding with said fundamental of said first loop output frequency, said programmable dividers being preprogrammed to replace each said rejected combination with a different combination, and said additional frequency range of said second loop providing an allowable combination corresponding in output frequency to every rejected combination.

4,388,598

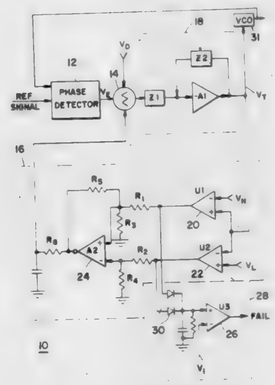
LOSS-OF-PHASE-LOCK INDICATOR CIRCUIT

William F. Egan, Cupertino, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 3, 1980, Ser. No. 203,086

Int. Cl.³ H03L *7/12*

U.S. Cl. 331—4 **2 Claims**



1. A loss-of-phase-lock indicator circuit comprising:

(a) a phase detector receiving as inputs a reference signal and an output signal from a voltage controlled oscillator (VCO), said phase detector producing as output an error signal when said signal from said VCO and said reference signal vary a predetermined amount;

(b) a summing circuit receiving as inputs a predetermined dither voltage signal, a sweep-feedback signal and said error signal from said phase detector and having an output signal;

(c) a feedback circuit receiving said output signal from said summing circuit and having as output a tuning voltage signal, said tuning voltage signal being received as a control input by said VCO;

(d) a first comparator receiving as inputs said tuning voltage signal and a voltage corresponding to an upper limit value for said tuning voltage and having an output;

(e) a second comparator receiving as inputs said tuning voltage signal and a voltage corresponding to a lower limit value for said tuning voltage signal and having an output;

(f) an operational amplifier serially connected to and receiving said outputs of said first and said second comparator and having as output said sweep feedback signal received by said summing circuit such that said tuning voltage

signal sweeps between said upper and said lower limit values when said VCO is out-of-lock; and

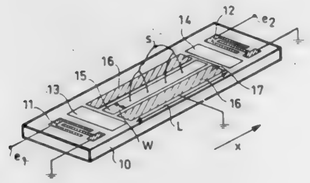
(g) means for generating a failure signal for all out-of-lock conditions operably connected to said first and said second comparators.

4,388,599

PIEZOELECTRIC ELASTIC-WAVE CONVOLVER DEVICE

Herve Gautier, and Charles Maerfeld, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 18, 1981, Ser. No. 264,691
Claims priority, application France, May 20, 1980, 80 11225
Int. Cl.³ H01L *41/08;* H03H *9/30*
U.S. Cl. 333—150 **40 Claims**



1. A convolver device based on the propagation of acoustic waves at the surface of a piezoelectric solid and comprising:

a piezoelectric substrate,

means for exciting two backward-traveling acoustic waves at the frequency f,

means consisting of at least two electrodes for collecting the signal at the frequency 2f, said signal being produced as a result of the nonlinear interaction of the two acoustic waves,

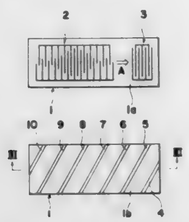
wherein the output of said device is connected to one of said electrodes by means of a plurality of electrical contacts placed lengthwise along the axis of propagation of the two acoustic waves.

4,388,600

SURFACE ACOUSTIC WAVE DEVICE

Kikuo Wakino, Muko; Michio Kadota, Kyoto, and Tomoharu Sato, Takatsuki, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 18, 1981, Ser. No. 245,065
Claims priority, application Japan, Mar. 22, 1980, 55-36688
Int. Cl.³ H03H *9/145, 9/42*
U.S. Cl. 333—151 **15 Claims**



1. A surface acoustic wave device comprising:

a substrate having first and second oppositely facing flat surfaces, said substrate being made of a material capable of propagating acoustic waves along said first flat surface;

a first transducer for launching acoustic waves and a second transducer for receiving acoustic waves launched by said first transducer, said first and second transducers being deposited on said first flat surface;

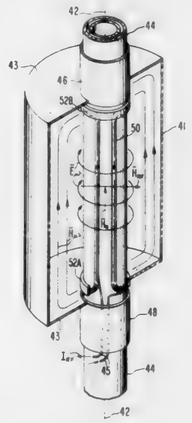
said substrate being formed with a plurality of elongated grooves in said second flat surface in an angled relation with the direction of propagation of said acoustic waves and with groove length greatly exceeding groove depth, said grooves being divided into at least two groups in which the depth of the grooves in the first group is different from that in the second group.

4,388,601

SYMMETRIZING MEANS FOR RF COILS IN A MICROWAVE CAVITY

Robert C. Sneed, Jr., Campbell; Robert G. MacNaughton, Cupertino, and James H. Jacobsen, Palo Alto, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 30, 1981, Ser. No. 307,144
Int. Cl.³ H01P *7/06, 5/00*
U.S. Cl. 333—227 **10 Claims**



1. A microwave resonant cavity for sustaining a desired distribution of microwave vector magnetic and electric field and an RF coil structure disposed within said cavity, said coil comprising first portions orthogonal to the direction of said microwave magnetic field and second portions substantially conformal with the direction of said microwave magnetic field and electrically conducting symmetrizing means disposed about said second portions of said RF coil, said symmetrizing means substantially conformal with said microwave electric field direction in the neighborhood of said second portions.

4,388,602

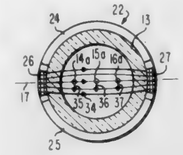
ELECTRON BEAM INFLUENCING APPARATUS INCORPORATING VERTICAL BEAM MOVEMENT FUNCTION

Dennis L. Dodds, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 18, 1981, Ser. No. 303,476
Int. Cl.³ H01F *1/00*
U.S. Cl. 335—212 **4 Claims**

1. In a television display system incorporating a kinescope having a display screen and an electron gun assembly disposed within a neck of said kinescope for producing three electron beams aligned along a horizontal axis plane, means for effecting movement of said beams comprising:

a strip of magnetizable material, disposed adjacent said kinescope neck and encircling said beams, said strip incorporating a first set of magnetized zones for producing substantially only purity correction of said beams, and incorporating a second set of magnetized zones for producing substantially only vertical position adjustment of said beams on said display screen, said first and second sets of magnetized zones being located in a common longitudinal plane through said kinescope neck.

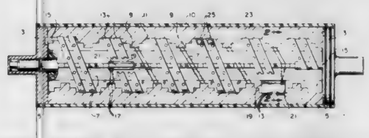


4,388,603

CURRENT LIMITING FUSE

Stephen P. Hassler, Muskego, and Theodore O. Sokoly, Mayville, both of Wis., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed May 15, 1981, Ser. No. 263,877
Int. Cl.³ H01H *85/04*
U.S. Cl. 337—158 **10 Claims**



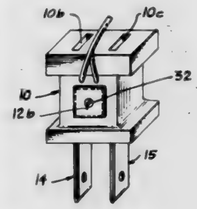
1. A current limiting fuse comprising a main fusible element of a predetermined length, element interrupting means for interrupting the flow of current through said main fusible element in response to a prolonged over-current condition in said main fusible element, said element interrupting means being located at a predetermined point along said main fusible element, an auxiliary fusible element having first and second ends and non-linear resistor means having a predetermined voltage break down level, each end of said auxiliary fusible element being connected electrically to said main fusible element at points therealong on opposite sides of said element interrupting means, at least one of said first and second ends of said auxiliary fusible element being connected electrically to said main fusible element through said non-linear resistor means.

4,388,604

FUSED PLUG ASSEMBLY WITH PUSH-IN FUSE UNIT

Joseph M. Ahroni, P.O. Box 3907, Seattle, Wash. 98124

Continuation of Ser. No. 101,497, Dec. 10, 1979. This application May 1, 1981, Ser. No. 259,516
Int. Cl.³ H01H *85/02*
U.S. Cl. 337—197 **5 Claims**



1. A fused plug assembly comprising:

a plug body formed with a central fuse socket;

a pair of coplanar, spaced prong members projecting as prongs from one end of the plug body, said prong members each being exposed by a contact portion to the fuse socket;

a pair of wire leads extending from the plug body and having a pair of spaced wire contacts exposed to said fuse socket in general alignment with and spaced from respective of said contact portions;

a push-in fuse means having a fuse body slidably received in the fuse socket in a direction perpendicular to the plane of the prong members and having a central hole therethrough extending in said direction, said fuse means having an active pair of spaced fuse elements mounted directly on said fuse body and each arranged to engage a said contact portion and respective wire contact, said fuse body also having a spare pair of fuse elements mounted directly thereon and arranged to become active responsive to removal of the fuse means from the fuse socket, changing the orientation of the fuse means relative to the socket to a reoriented position in which said central hole also extends in said direction and said spare fuse elements occupy the position previously occupied by said active fuse elements, and then reinserting the reoriented fuse unit; and

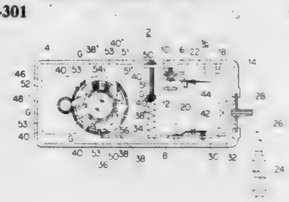
a removable threaded locking device passing through said central hole into said plug body for holding the fuse means in said socket.

4,388,605

DEFROST THERMOSTAT USED IN A REVERSIBLE REFRIGERATING CYCLE FOR HEAT PUMPS

Shigeki Machida, and Takeo Makita, both of Tokorozawa, Japan, assignors to Kabushiki Kaisha Saginomiya Seisakusho, Tokyo, Japan

Filed Oct. 19, 1981, Ser. No. 312,893
Int. Cl.³ H01H *37/62*
U.S. Cl. 337—301 **9 Claims**



1. A defrost thermostat used in a reversible refrigerating cycle for heat pumps comprising

a snap-action toggle switch mechanism having a movable contact plate normally urged toward a selected one of two positions;

an actuator means for actuating said movable contact plate;

thermally responsive means to move said actuating means; and

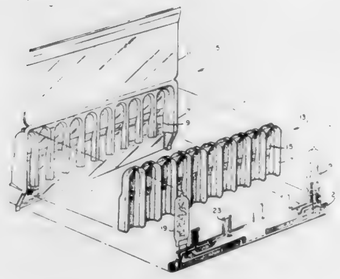
a timer driven cam arrangement to move said actuating means, said timer driven cam arrangement including a disc cam having recesses at predetermined intervals in a periphery thereof, a first masking member provided coaxially with said disc cam and having a corresponding number of masking portions to mask said recesses in the disc periphery, each masking portion being adapted to define an unmasked gap in the recess.

4,388,606

SEQUENTIAL PHOTOFLASH ARRAY AND FABRICATION EMPLOYING RADIATION-ACTIVATED SWITCHES

John W. Shaffer, and Boyd G. Brower, both of Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 13, 1981, Ser. No. 253,328
Int. Cl.³ H01L *31/08*
U.S. Cl. 338—15 **16 Claims**



1. A radiation-activated switch for a self-sequencing multilamp photoflash array comprising a pair of electrical conductors spaced by a chemical switch paste and characterized by the improvement wherein said chemical switch paste includes a heat sensitive silver compound, a powdered metal in stoichiometric excess and selected from the group consisting of aluminum and titanium and an organic binder with said chemical switch paste responsive to radiation from a nearby photoflash lamp activated from a low voltage source to provide a low resistance to electrical current flow between said pair of electrical conductors.

4,388,607

CONDUCTIVE POLYMER COMPOSITIONS, AND TO DEVICES COMPRISING SUCH COMPOSITIONS

Lester T. Toy, San Francisco; Wendell W. Moyer; Bernard J. Lyons, both of Atherton, and David A. Horsma, Palo Alto, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 909,971, May 26, 1978, abandoned, which is a continuation of Ser. No. 751,095, Dec. 16, 1976, abandoned, and a continuation of Ser. No. 909,970, May 26, 1978. This application Oct. 17, 1979, Ser. No. 85,679
Int. Cl.³ H01B *1/04;* **H01C** *7/13*
U.S. Cl. 338—22 SD **49 Claims**

1. An electrical device comprising an element composed of a conductive polymer and at least two electrodes adapted to be connected to an external source of electrical power so as to cause an electrical current to pass through the element, said element being composed of a cross-linked conductive polymer composition which exhibits PTC behavior with an R_{14} value of at least 2.5 and which comprises

(a) conductive carbon black having a particle size greater than 18 millimicrons, a d-spacing greater than 360, and a surface area (A) which is less than

$$1.2S+e^{S/50}$$

where S is the DBP absorption of the carbon black, said carbon black being present in amount at least 15% by weight of the composition and being dispersed in

(b) at least one crystalline copolymer which consists essentially of units derived from at least one olefin and at least 10 weight %, based on the copolymer, of units derived from at least one olefinically unsaturated comonomer containing a polar group;

subject to the proviso that when

(i) said crystalline copolymer (b) has a melt index of more than 20 and

(ii) $2L+5\log_{10}R<45$

where L is the content of carbon black in percent by weight based on the weight of the composition and R is the resistivity of the composition at 25° C. in ohm.cm.,

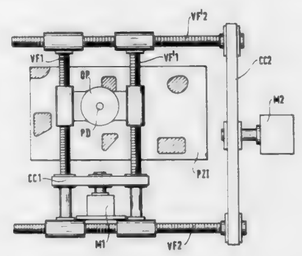
said composition has a gel fraction of at least 0.6.

4,388,608

VEHICLE LOCATION MONITORING SYSTEM

Patrice Bernard, 7, rue Fortuny, 75017 Paris, France

Filed Mar. 6, 1981, Ser. No. 241,299
Claims priority, application France, Mar. 6, 1980, 80 05027
Int. Cl.³ G08G *1/00, 1/12*
U.S. Cl. 340—24 **13 Claims**



1. A system for monitoring the location of a vehicle, said system comprising on board said vehicle:

primary system means for providing an estimated location of the vehicle from an initial known location and heading and from measuring subsequent travel of the vehicle; and

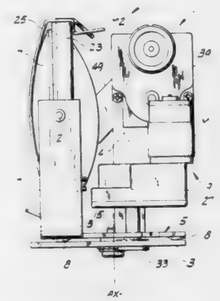
secondary system means for correcting the estimated location of the vehicle as given by the primary system including means for comparing the estimated location with stored locations of "forbidden" areas where the vehicle cannot possibly be.

4,388,609

SIGNAL LIGHT WITH PRECESSING OSCILLATION CONTROL

W. Kenneth Menke, Glendale, Mo., assignor to Public Safety Equipment Company, St. Louis, Mo.

Filed Aug. 31, 1981, Ser. No. 297,724
Int. Cl.³ B60Q *1/00*
U.S. Cl. 340—84 **27 Claims**



1. A signal light comprising a base, a lamp frame pivoted on the base on a first axis, a lamp pivoted on the lamp frame on a second axis extending generally perpendicular to said first axis,

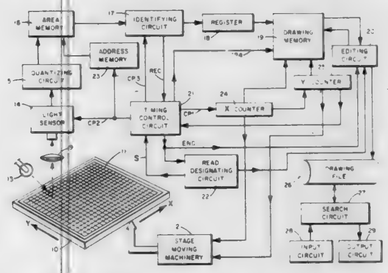
first drive means comprising a first electric motor for oscillating the lamp frame on said first axis generally at a first rate of oscillation, and second drive means comprising a second electric motor for oscillating the lamp on said second axis at a second rate of oscillation, the ratio of said first rate of oscillation to said second rate of oscillation being adapted to change during operation of the signal light due to drift in the output speed of one motor relative to the output speed of the other motor whereby on oscillation of the lamp frame and lamp about their respective axes the beam of light projected by the lamp is adapted to trace a changing pattern.

4,388,610

APPARATUS FOR READING DRAWINGS

Shou Tsunekawa, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 21, 1981, Ser. No. 226,645
Claims priority, application Japan, Jan. 28, 1980, 55-7771
Int. Cl.³ G06K *9/00*
U.S. Cl. 382—8 **8 Claims**



1. A machine implemented method for reading symbols on a drawing wherein the drawing comprises a preprinted lattice pattern with orthogonal lines forming unit rectangular areas and each symbol or portion thereof is drawn within one or more of said unit areas, each symbol is drawn so that the portion of the symbol within a unit area has a predetermined size and position with respect to the sides of said unit area, said method comprising the steps of;

scanning several discrete points within each unit area and producing binary data for each scanned point;

storing standard pattern data;

comparing said binary data with said standard pattern data to identify the symbol or symbol portion with the scanned unit area and producing a code representing the symbol or symbol portion when identity is established;

detecting the position of the scanned unit area; and

storing the code at an address defined by said detecting step.

4,388,611

ELECTRICITY BILLING METER HAVING UNIQUE A/D CONVERSION SYSTEM

James E. Haferd, Columbus, Ohio, assignor to Scientific Columbus, Inc., Columbus, Ohio

Filed Apr. 21, 1981, Ser. No. 256,058
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 SH **7 Claims**

1. A method for converting a plurality of time varying, periodic power distribution system signals to digital data representing said signals, said method comprising:

(a) simultaneously sampling said time varying signals at a nominal group of spaced sampling positions and storing said samples to form constant signals;

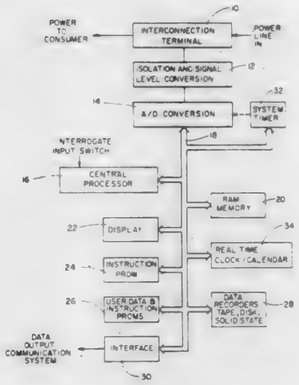
(b) sequentially incrementing a digital count;

(c) generating a ramp by converting said digital count to analog form;

(d) continuously comparing the amplitude of said ramp to the amplitude of each of said plurality of constant signals;

(e) detecting each intersection of the ramp amplitude with a constant signal amplitude;

(f) storing said digital count and a data signal representing the constant signal which was intersected in response to each detected intersection, wherein during each period of said ramp a plurality of counts are stored each of said counts providing a digital data byte representing the amplitude of each of said plurality of non-time-varying analog signals; and



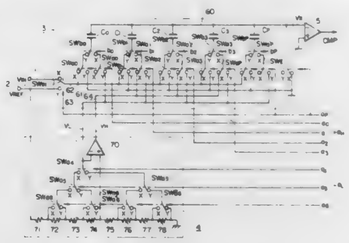
(g) repeating steps (a) through (f) to take a plurality of additional groups of said samples during subsequent representative, repetitive cycles but at angularly spaced positions in the composite cycle with respect to the nominal group of samples beginning at a selected angular position to form a plurality of groups of samples for a composite cycle and for each of said time varying analog samples.

4,388,612

SIGNAL CONVERTER

Katsuaki Takagi, Kokubunji, and Yuzo Kita, Fuchu, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 28, 1981, Ser. No. 287,824
Claims priority, application Japan, Jul. 28, 1980, 55-102531
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **26 Claims**



1. A digital-to-analog converter comprising m capacitors corresponding to m upper bits of a digital signal having n lower bits, said capacitors having binary-weighted capacitance ratios and whose ends on one side are connected in common to an analog voltage output line; a first potential line; a second potential supply line; a third potential supply line; a fourth potential supply line; a resistor string which is connected to a first potential at one end thereof and a second potential at the other end thereof and which divides the terminal voltage across both its ends by 2^n; divided-voltage deriving means

connected to said resistor string to sequentially derive first and second voltages equal to $i/2^n$ (where i denotes a numerical value expressed by the n bits of said digital signal) and $(2^n-i)/2^n$ of said terminal voltage, respectively, from said resistor string in accordance with the n lower bits of the digital signal and to deliver them to said third potential supply line and said fourth potential supply line, respectively; switching means for selectively connecting the ends of the respective capacitors on the other side thereof with said first, second, third and fourth potential supply lines; and means for controlling said switching means sequentially in accordance with the m upper bits of the digital signal and the voltage appearing on said analog voltage output line.

4,388,613

OPTICAL DISPLACEMENT TRANSDUCERS

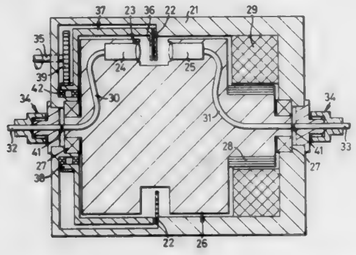
Derek A. Rush, London, and Roger D. Swadling, Cheltenham, both of England, assignors to Smiths Industries Public Limited Company, London, England

Filed Dec. 30, 1981, Ser. No. 335,977

Claims priority, application United Kingdom, Jan. 13, 1981, #100961

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 P **8 Claims**



1. An optical displacement transducer for providing a digital output representative of the displacement of a variable from a datum value comprising,

(a) a light beam emitter and a light beam receiver disposed on a common optical axis,

(b) a stationary digital encoding element comprising an optical grating disposed between the light beam emitter and and receiver, the grating extending in a circular path with the grating lines extending substantially radially of said path,

(c) means for causing rotation of said light beam emitter and receiver together about the center of said circular path whereby the light beam as seen by said receiver is in the form of a series of light pulses,

(d) a first reference position encoded on said digital encoding element,

(e) a second reference position in the form of a light blocking mask adjacent and angularly displaced about the center of said circular path from said first reference position whereby a predetermined light pulse count is produced during said rotation of the light beam emitter and receiver through the angle between said first and second reference positions, and

(f) control means for adjusting said second reference position relatively to said first reference position in response to displacement of said variable whereby to vary said pulse count in response to said displacement

4,388,614

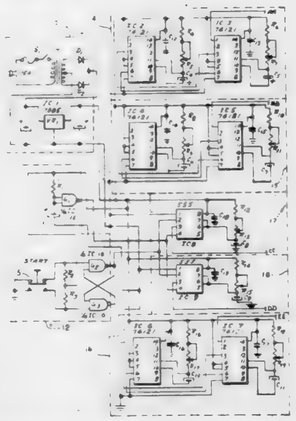
AUTOMATICALLY SEQUENCED SIGNALING SYSTEM

William A. Pezzillo, Mt. Pleasant, Pa., and Charles C. Crickmer, Huntington, W. Va., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 15, 1980, Ser. No. 216,103

Int. Cl.³ G08B *3/00*

U.S. Cl. 340—384 E **5 Claims**



1. An automatically sequenced signaling system comprising in combination:

a control means to initiate a signaling sequence, said control means providing a start signal:

a plurality of interval signal generators to generate interval signals, each of said plurality of interval signal generators being variable in time, each of said plurality of interval signal generators receiving said start signal, each of said plurality of interval generators generating a different interval signal;

first and second sequence timers to provide first and second sequence time signals;

a first gate means to receive said interval signals and said first sequence time signal, said first gate means providing a first output signal;

a second gate means to receive said interval signals and said second sequence time signal, said second gate means providing a second output signal;

a switching means to receive said first and second sequence time signals and said first and second output signals, said switching means having a plurality of switch positions to respectively receive the applied signals; and

an alarm driving means connected to said switching means to receive an alarm signal from one of said plurality of switch positions, said alarm signal activating a signaling device.

4,388,615

TESTING EMERGENCY BATTERY EQUIPMENT

Barry S. Ford, 21 Park Rd., Ducklington, Witney, Oxfordshire, and Sydney Birkett, Old School, Minster Lovell, Oxfordshire, both of England

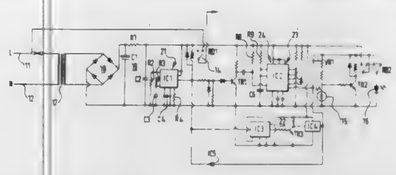
Filed Mar. 5, 1981, Ser. No. 240,989

Int. Cl.³ G08B *29/00, 21/00*

U.S. Cl. 340—516 **6 Claims**

1. Testing apparatus for testing stand-by battery powered lighting equipment which is adapted for energization in response to mains failure, the apparatus comprising an electrical circuit including a sensor means for sensing the visible light emitted by the stand-by equipment when activated, means for indicating when the light emitted is below a predetermined

value, a timing circuit for disconnecting the mains supply from the stand-by equipment automatically at regular intervals and a



power supply circuit connected to the timing circuit for energizing the sensor means when the timing circuit has disconnected the mains supply.

4,388,616

FIRE DETECTION SYSTEM WITH PROGRAMMED SENSITIVITY CHANGES

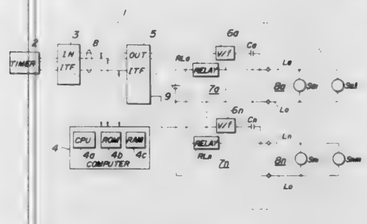
Haruchika Machida, Sagamihara, Japan, assignor to Hochiki Corporation, Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,646

Claims priority, application Japan, Mar. 19, 1980, 55-35108

Int. Cl.³ G08B *17/06*

U.S. Cl. 340—587 **12 Claims**



1. A fire detection system, comprising:

at least one fire sensor having a changeable detection sensitivity for producing a fire detection signal and including sensitivity change control means for changing the detection sensitivity in response to any one of a plurality of predetermined detection sensitivity change commands;

a receiver including a timer for producing a clock signal corresponding to the time of day, command means for providing the predetermined detection sensitivity change commands in response to the clock signal, said change commands being programmed according to the time of day, a power source connected to said fire sensor for supplying a power source voltage to said fire sensor, and a receiving relay for receiving the fire detection signal;

at least one power/signal line for coupling said fire sensor to said receiver; and,

wherein said command means includes a computer having a read only memory for storing a detection sensitivity pattern programmed according to the time of day, said computer reading out from said read only memory, in response to said clock signal from said timer, present a detection sensitivity signal, converting means for converting said present detection sensitivity signal to a frequency signal, and at least one first capacitor inserted between said converting means and said at least one power/signal line, and said fire sensor further includes a low-pass filter and a second capacitor which are connected to said power/signal line, a smoke sensing portion and a fire judging section to both of which a power source voltage derived from said low-pass filter is applied and a switching element for producing said fire detection signal, said frequency signal being supplied through said second capacitor to said sensitivity change control means, and a sensitivity change control signal derived from said sensitivity change control means and an output signal from said smoke sensing portion are supplied to said fire judging section, so that the switching of said switching element is controlled by the output signal from said fire judging section.

4,388,617

FIRE ALARM DEVICE HAVING THERMAL SENSITIVITY ENHANCEMENT

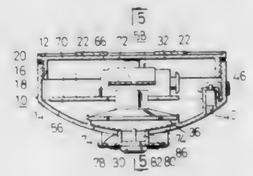
Yoshitaka Nakanishi, 12-9, Yawata 5-chome; Hiroshi Nakanishi, 16-18, Yawata 6-chome, both of Ichikawa-shi, Chiba-ken, and Takashi Nakanishi, c/o Suzue Yamakawa, 1-11, Kandaizumi-cho, Chiyoda-ku, Tokyo, all of Japan

Filed Jun. 29, 1981, Ser. No. 278,456

Claims priority, application Japan, Dec. 16, 1980, 55-176530

Int. Cl.³ G08B *17/06, 21/00*

U.S. Cl. 340—594 **18 Claims**



1. A fire alarm device, comprising:

a case comprising a main body portion to be mounted stationary and a removable body portion which can be removed from the main body portion, said removable body portion having openings on the front side thereof;

fire sensing means for sensing fire, said fire sensing means comprising a fire detecting element and a heat sensing plate, and said fire sensing means being mounted on said case in front of the openings of the removable body portion; and

alarm means including a loudspeaker for issuing an acoustic alarm from said loudspeaker in response to a detection signal from the fire sensing means, said loudspeaker having a conical diaphragm and said loudspeaker is mounted behind the openings of the removable body portion with said conical diaphragm facing the openings.

4,388,618

BATTERY STATE OF CHARGE INDICATOR OPERATING ON BIDIRECTIONAL INTEGRATIONS OF TERMINAL VOLTAGE

Eugene P. Finger, Brewster, N.Y., assignor to Curtis Instruments, Inc., Mt. Kisco, N.Y.

Filed Jan. 7, 1981, Ser. No. 223,041

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—636 **18 Claims**

1. A battery state of charge indicator comprising

means for measuring battery terminal voltage on a continuing basis during both positive and negative voltage excursions with relation to a summed reference value,

means including a fixed reference voltage source and a summing means for providing a summed reference value for comparison with said measurement,

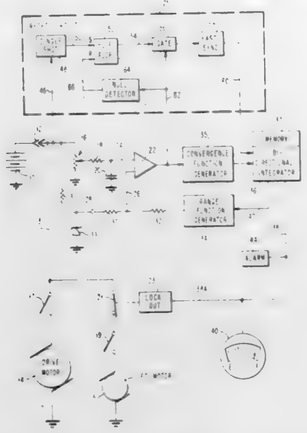
means for comparing said battery terminal voltage measurement with said summed reference value and for deriving a difference signal value,

means responsive to said difference signal value for generating convergence function signals which vary dependent on the magnitude and polarity of said difference signal value,

a bidirectional integrator connected to receive said convergence function signals and operable to integrate in one direction for positive convergence function signals and in the other direction for negative convergence function

signals to provide an integrated output signal as a measure of the state of charge,

said means for providing a summed reference value including feedback means connected from the output of said



integrator to said summing means for summation of a predetermined function of the integrated output signal with the fixed reference voltage from said fixed reference voltage source to thereby modify said summed reference value.

4,388,619

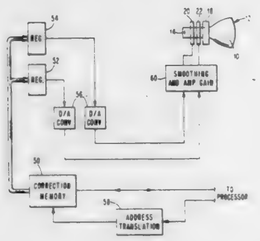
CORRECTOR FOR BUNDLE DEFLECTION DISTORTION IN MULTIBEAM CATHODE RAY TUBES

Vernon D. Beck, Ridgefield, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1981, Ser. No. 279,280

Int. Cl.³ G09G *1/20*

U.S. Cl. 340—727 **8 Claims**



1. A display system including a multiple beam cathode ray display tube comprising an array of cathodes and beam forming means, for projecting a matrix array of electron beams onto the screen of said display tube,

deflection means for simultaneously deflecting said bundle of electron beams to form a scanning pattern,

means external to said tube disposed in electromagnetically interactive relationship with said bundle of electron beams for simultaneously focusing each of said electron beams of said bundle of electron beams and for rotating said bundle of electron beams by an amount sufficient to counter undesired rotational distortion of said bundle, said means including a pair of coils, each coil comprising a single winding, wound to selectively provide opposing axial magnetic fields, and means connected to said coils for supplying corrective signals thereto comprising means for dynamically energizing said coils as a function of the instantaneous location of said projected matrix array on the screen of said display tube.

4,388,620

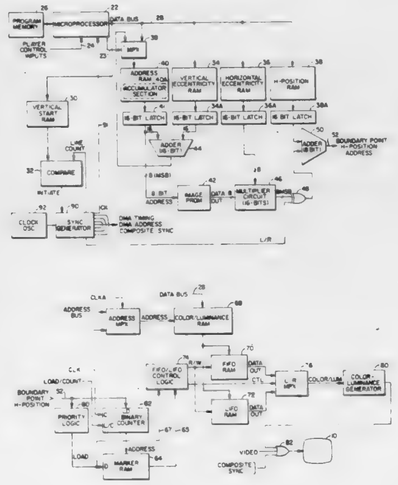
METHOD AND APPARATUS FOR GENERATING ELLIPTICAL IMAGES ON A RASTER-TYPE VIDEO DISPLAY

David L. Sherman, Sunnyvale, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Jan. 5, 1981, Ser. No. 222,480

Int. Cl.³ G06F *3/14*

U.S. Cl. 340—744 **12 Claims**



1. Apparatus for forming a movable elliptical image on a video display screen of the type having a scanning electron beam forming a plurality of horizontal scan lines in response to timing signals including vertical and horizontal retrace intervals, said image being variable in eccentricity, the apparatus comprising:

first memory means for containing binary data indicative of a plurality of horizontal elements of a model image;

second memory means for storing a data word group descriptive of at least the eccentricity and display screen location of said elliptical image;

first combining means coupled to said second memory means and resposive to at least a portion of said data word group for forming first address signals and for applying said address signals to said first memory means to access therefrom said binary data indicative of selected ones of said horizontal elements of said model image for each horizontal scan line used to form said elliptical image;

second combining means coupled to said first and second memory means and responsive to a remaining portion of said data word group and said accessed binary data to form therefrom second address signals indicative of the location of said horizontal elements on said display screen;

random access memory means coupled to said second combining means and responsive to said second address signals for storing marker information at memory locations corresponding to positions on the display screen; and

means accessing said random access memory means in synchronism with said scanning electron beam.

4,388,621

DRIVE CIRCUIT FOR CHARACTER AND GRAPHIC DISPLAY DEVICE

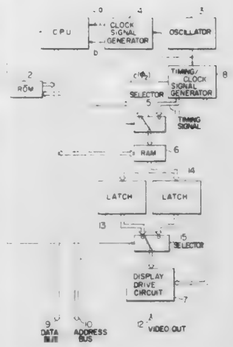
Shigeru Komatsu; Shigeru Hirahata, and Tsuguji Tachiuchi, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 10, 1980, Ser. No. 158,263

Claims priority, application Japan, Jun. 13, 1979, 54-73558

Int. Cl.³ G09G *1/00*

U.S. Cl. 340—802 **3 Claims**



1. A drive circuit for a character and graphic display device comprising:

(a) a central processing unit (CPU);

(b) a basic clock pulse generator having an output terminal for providing basic clock pulses;

(c) a CPU clock signal generator having an input terminal connected to said output terminal of said basic clock pulse generator and an output terminal for providing a CPU clock signal in the form required by said CPU, for generating a CPU clock signal based on said clock pulses;

(d) a display timing signal/clock signal generator including a means having an input terminal connected to said output terminal of said basic clock pulse generator and an output terminal for providing a display clock signal, for generating said display clock signal based on said basic clock pulses, said display clock signal having a first period of shorter duration and a second period of longer duration, and means having an output terminal for providing a display timing signal, for generating said display timing signal required by said character and graphic display device based on said basic clock pulses;

(e) a common display/data memory means having an input terminal for receiving an address signal, an input terminal connected to a data bus of said CPU and an output terminal for providing a display data signal corresponding to the address signal, said memory means including a display memory and a data memory in a common area;

(f) a first selecting switch for selectively connecting one of said address bus of said CPU and said output terminal of said timing signal/clock signal generator providing said display timing signal to said input terminal of said memory means; said selecting switch having a control input terminal connected to said output terminal providing said display clock signal and being actuated by said display clock signal to connect said address bus to said input terminal of said memory means during said first period;

(g) a first latch circuit having an output terminal and an input terminal connected to said output terminal of said memory means for latching a display data signal corresponding to an applied even number address signal;

(h) a second latch circuit having an output terminal and an input terminal connected to said output terminal of said memory means for latching a display data signal corresponding to an applied odd number address signal;

(i) a display drive circuit having an input terminal for receiving said display data signal, an input terminal connected to said output terminal of said timing signal/clock signal generator providing said display timing signal and an output terminal for providing a video signal, for producing said video signal in accordance with the applied display data signal and display timing signal; and

(j) means including a second selecting switch responsive to a clock signal generated on the basis of said basic clock pulses for alternately connecting said output terminal of said first latch circuit and said output terminal of said second latch circuit to said input terminal of said display drive circuit receiving said display data signal.

4,388,622

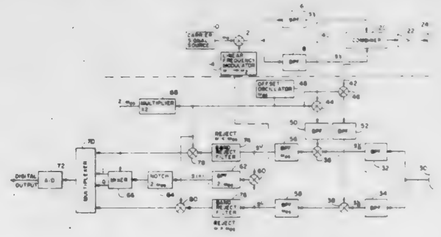
DOUBLE SIDEBAND LINEAR FREQUENCY MODULATION SYSTEM FOR RADAR APPLICATIONS

Robert H. Fletcher, Jr., Westlake Village, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 15, 1981, Ser. No. 254,237

Int. Cl.³ G01S *13/34, 13/58*

U.S. Cl. 343—14 **7 Claims**



1. In a radar system wherein a continuous wave of electromagnetic energy is transmitted toward an object and reflected energy is received from the object, the improvement of a double sideband linear frequency modulation system comprising: transmitting means providing upper and lower sidebands of a carrier signal with simultaneously increasing and decreasing transmitted frequency waveforms; receiving means adapted for receiving reflected portions of said transmitted waveforms, and for separating said reflected portions into said upper and lower sidebands of said carrier signal, said upper and lower portions of reflected energy having both range and doppler signal components therein simultaneously; and signal processing means for coherently combining the reflected sideband portions for separating the range and doppler signal components, said signal processing means comprising a first mixer having inputs adapted for receiving said reflected sideband portions for providing a sideband sum output, and a notch filter responsive to said sum output for eliminating clutter and thereby enhancing the frequency component of the signal output therefrom for determining radial velocity of the object.

4,388,623

ANTENNAS

Richard W. Crook, Coalville, and Ian Coghill, Cannock, both of England, assignors to The Marconi Company Limited, Chelmsford, England

Filed Jun. 26, 1980, Ser. No. 165,952

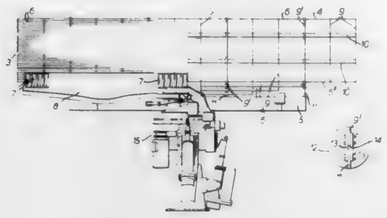
Claims priority, application United Kingdom, Jun. 28, 1979, 7922563; Nov. 19, 1979, 7939908

Int. Cl.³ H01Q *1/34, 19/12*

U.S. Cl. 343—709 **15 Claims**

1. An antenna having a relatively large area reflector formed

of a plurality of conductive slats having air gaps therebetween wherein said slats are formed of carbon fibre re-inforced plas-



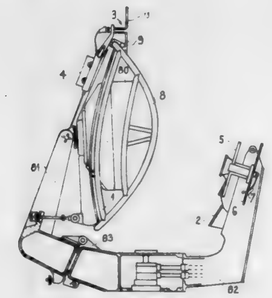
tics material, with said material providing the reflective surfaces of said slats for energy incident thereupon.

4,388,624

RADAR ANTENNA INCORPORATING ELEMENTS RADIATING A PSEUDO-OMNIDIRECTIONAL PATTERN

Albert Dupressoir, Paris, France, assignor to "Thomson-CSF", Paris, France

Filed Oct. 23, 1980, Ser. No. 199,992
Claims priority, application France, Oct. 26, 1979, 79 26609
Int. Cl.³ H01Q *5/00, 25/00*
U.S. Cl. 343—727 **6 Claims**



1. A radar antenna comprising:

a reflector illuminated by at least one transmission-reception source, one of said at least one transmission-reception source radiating a directional pattern; and

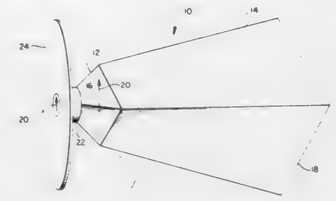
a system of elements radiating a pattern of the pseudo-omnidirectional type with a crevasse in the direction of the major lobe of the directional pattern radiated by one of said at least one transmission-reception source, wherein the system of radiating elements is constituted by at least one group of two dipoles placed above and in the vicinity of the reflector, symmetrically with respect to the plane of symmetry thereof, the distance between two consecutive dipoles being between 0.5 and 0.8 times the wavelength at the center frequency of the operating band, in such a way that they radiate towards the front thereof and independently thereof a pseudo-omnidirectional pattern.

4,388,625

MULTIMODE DIAGONAL FEED HORN

Helmut Schwartz, Satellite Beach, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jan. 12, 1981, Ser. No. 223,433
Int. Cl.³ H01Q *13/02*
U.S. Cl. 343—786 **10 Claims**



1. A pyramidal microwave horn for receiving or transmitting microwave energy comprising:

means for propagating microwave energy through said horn such that said microwave energy will have a mode of propagation having an electrical vector which is parallel to one of the diagonals of first and second differently flaring pyramidal sections of said pyramidal horn; and

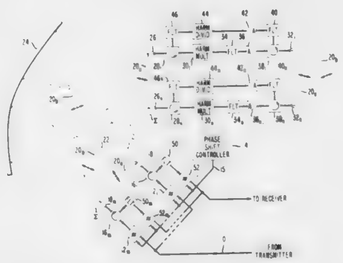
means for tapering said microwave energy propagating through said horn to equalize the beam widths of the antenna pattern in the intercardinal planes with the beam widths in the E and H planes and to reduce cross-polarized lobes in the intercardinal planes.

4,388,626

PHASED ARRAY ANTENNAS USING FREQUENCY MULTIPLICATION FOR REDUCED NUMBERS OF PHASE SHIFTERS

Michael J. Gans, Monmouth Beach, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 5, 1981, Ser. No. 240,765
Int. Cl.³ H01Q *3/46*
U.S. Cl. 343—854 **6 Claims**



1. A phased array antenna system comprising:

a focusing means (**24**) comprising a predetermined aperture;

a plurality of m feed elements (18_1–18_m) disposed to form a first planar array directed at the focusing means; and

a plurality of m phase shifters (12_1–12_m or 52_1–52_m), each phase shifter being coupled to a separate one of the plurality of m feed elements and capable of introducing a particular separate phase shift to a signal in a first frequency band propagating therethrough in response to a remotely generated control signal to permit a particular directional planar wavefront to be launched or received by the feed elements of the first planar array

characterized in that

the antenna system further comprises:

a first plurality of n feed elements (26_1–26_n) forming a second planar array disposed to cover the aperture of, and directed at, the focusing means on the image plane of the first planar array, where $m<n$;

a second plurality of n feed elements (32_1–32_n) forming a third planar array comprising a configuration corresponding to the second planar array and covering the aperture of, and directed away from, the focusing means; and

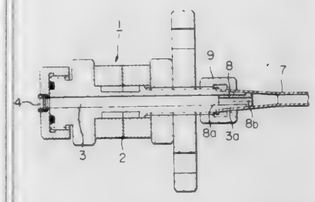
a plurality of n harmonic frequency converting means (30_1–30_n or 44_1–44_n), each harmonic frequency converting means being disposed in a signal path interconnecting a separate corresponding feed element of the second and third planar arrays for converting the frequency of a signal between a first frequency band normally associated with the signal at the feed element of the second planar array and a harmonic second frequency band which is higher than said first frequency band and normally associated with the signal at the feed element of the third planar array.

4,388,627

INK-JET PRINTING HEAD

Michio Umezawa, Kawasaki, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1981, Ser. No. 331,688
Claims priority, application Japan, Dec. 27, 1980, 55-185034
Int. Cl.³ G01D *15/18;* **B05B** *17/06*
U.S. Cl. 346—75 **5 Claims**



1. An ink-jet printing head of the type in which the front end of an ink distribution tube is formed with a nozzle hole and the other end or spigot end portion thereof is inserted into one end of an ink supply tube and then joined rigidly and liquid-tightly thereto, characterized in that a resonance adjusting means has an ink passage which has a fine diameter and which is extended through said resonance adjusting means in the axial direction thereof, and said resonance adjusting means is inserted into said other end of spigot end portion of said ink distribution tube in such a way that the front end of said resonance adjusting means is spaced apart from said nozzle hole at said one end of said ink distribution tube by a distance equal to a resonance distance of ink in said ink distribution tube and thereafter is securely joined to said the other end of spigot end portion.

4,388,628

MULTI-COLOR THERMAL TRANSFER RECORDER

Haruhiko Moriguchi; Yoshiki Kikuchi, and Takashi Ohmori, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

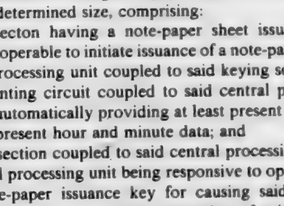
Filed Aug. 24, 1981, Ser. No. 295,297
Claims priority, application Japan, Sep. 1, 1980, 55-119719
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **11 Claims**

1. A multi-color, thermal transfer, recorder wherein a plurality of single-color images different in color from each other are recorded in superimposed fashion on a recording sheet producing an image in multiple colors, comprising:

a thermal recording head;

a roll disposed in an opposing relation to said thermal recording head;

an ink donor sheet adapted to travel through a contacting portion between said thermal recording head and said roll opposing said recording head; and



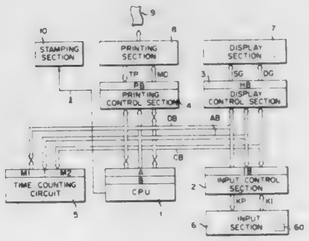
said ink donor sheet having two or more layers of single-color ink different in color from each other, each of said two or more ink layers having a length equal to a length of an outer circumference of said opposing roll.

4,388,629

NOTE-PAPER SHEET ISSUANCE DEVICE

Seiichi Shibata, Nirasaki, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1980, Ser. No. 210,411
Claims priority, application Japan, Nov. 30, 1979, 54-155823
Int. Cl.³ G01D *1/00*
U.S. Cl. 346—81 **11 Claims**



1. An apparatus for issuing note-paper sheets of substantially the same predetermined size, comprising:

a keying secton having a note-paper sheet issuance key which is operable to initiate issuance of a note-paper sheet;

a central processing unit coupled to said keying section;

a time counting circuit coupled to said central processing unit for automatically providing at least present time data such as present hour and minute data; and

a printing section coupled to said central processing unit;

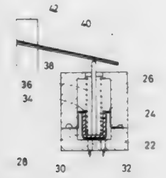
said central processing unit being responsive to operation of said note-paper issuance key for causing said printing section to perform a printing operation of printing said present time data at a predetermined location on a paper sheet at the time of issuance of a note-paper sheet and also a feeding operation to feed said paper sheet by a predetermined number of lines without printing for said predetermined number of lines for providing a blank message-recording space of predetermined length on said paper sheet before the start of or after the end of the printing operation at the time when said note-paper sheet issuance key is operated, thereby providing a note-paper sheet of substantially the same length each time said note-paper sheet issuance key is operated.

4,388,630

INK LIQUID SUPPLY SYSTEM WHICH COMPENSATES FOR TEMPERATURE VARIATION

Mikio Osaki, Kashihara; Toshiaki Tabuchi, and Yoichi Shimazawa, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 11, 1981, Ser. No. 242,554
Claims priority, application Japan, Mar. 22, 1980, 55-37699
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **6 Claims**



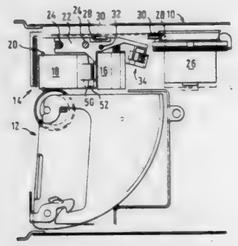
1. An ink supply system for an ink jet printer including a pump means, a pressure accumulator for removing a pressure pulsation created by said pump means and a pressure compensation temperature-sensitive means for varying the pressure within said pressure accumulator in response to variations of ambient temperature even when the main power supply to the system is interrupted, placing the system in a non-operative condition.

4,388,631

CHART RECORDER

John Houldsworth, Washington, Nr. Pulborough, England, assignor to Chessell Limited, Worthing, England

Filed Mar. 12, 1981, Ser. No. 243,055
Int. Cl.³ G01D *9/34, 15/24*
U.S. Cl. 346—141 **11 Claims**



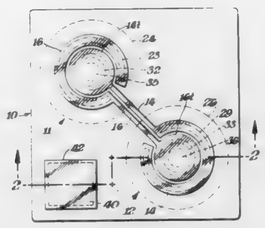
1. A chart recorder for producing a record of a plurality of 2 parameters, the recorder comprising;
means for supporting a recording medium and for feeding the same forward;
a writing head; means mounting the writing head for movement transversely of the recording medium, and means for moving the writing head transversely of the recording medium;
a rotatable holder forming part of the writing head;
a plurality of writing tip means supported by the **11** rotatable holder and circumferentially spaced about the **12** periphery of the rotatable holder; and
an axial field motor movable transversely with the rotatable holder, for rotating the rotatable holder to **15** select a writing tip means in dependence upon parameter being recorded.

4,388,632

SIGNAL LIMITING INTEGRATED CIRCUIT

William E. Richardson, Rutland, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Oct. 3, 1980, Ser. No. 193,788
Int. Cl.³ H01L *27/04, 29/48*
U.S. Cl. 357—15 **3 Claims**



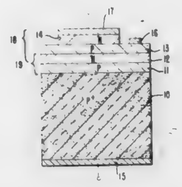
1. A signal limiting integrated circuit comprising a silicon body of one conductivity type, an epitaxial layer on said body being lightly doped with impurities of the opposite conductivity type, an isolation wall through said epitaxial layer being heavily doped with impurities of said one type forming only two pockets of unaltered epitaxial material, only first, second and third metal films overlying said epitaxial layer,
said first metal film making Schottky barrier contact to one of said pockets and ohmic contact to the other of said pockets, said second metal film making Schottky barrier contact to said other of said pockets and ohmic contact to said one pocket, each of said first and second metal films having an enlarged termination portion located directly over said pocket to which said Schottky barrier contact is made, said third metal film consisting of an enlarged termination located directly over an enlarged portion of said isolation wall and making ohmic contact thereto.

4,388,633

MONOLITHIC TRANSISTOR COUPLED ELECTROLUMINESCENT DIODE

Prahalad K. Vasudev, Santa Monica, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Sep. 29, 1980, Ser. No. 191,558
Int. Cl.³ H01L *33/00;* **H01S** *33/19;* **H01L** *27/14, 29/161*
U.S. Cl. 357—17 **17 Claims**



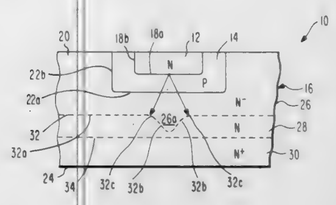
1. An optical radiation amplifier including:
(a) a bipolar transistor having base, emitter and collector regions connected in a common emitter configuration; and
(b) a light emitting device having regions of opposite conductivity forming a p-n junction, said light emitting device connected to said collector in a monolithic fashion.

4,388,634

TRANSISTOR WITH IMPROVED SECOND BREAKDOWN CAPABILITY

Robert Amantea, Griggstown, N.J., and Carl F. Wheatley, Jr., Drums, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 4, 1980, Ser. No. 212,813
Int. Cl.³ H01L *29/72*
U.S. Cl. 357—34 **2 Claims**



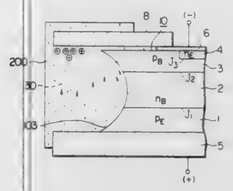
1. A transistor comprising an emitter of a first conductivity type, a base of a second conductivity type and a collector of said first conductivity type, said emitter and said base forming a first junction adjacent a first surface of said transistor, and said base and said collector forming a second junction between said first junction and a second surface of said transistor, said collector including (a) a first region of relatively high resistivity material including a channel portion extending toward said second surface adjacent the central portion of said emitter, (b) a second region of lower resistivity material forming a first interface with the higher resistivity material of said first region, said first interface including a first portion extending around said channel portion, said first portion being located laterally inwardly of the outer edges of said emitter, and (c) a third region of lowest resistivity material extending from said second surface toward said second junction, said second region and said third region forming a second interface between said first interface and said second surface and wherein said channel portion terminates adjacent said second interface.

4,388,635

HIGH BREAKDOWN VOLTAGE SEMICONDUCTOR DEVICE

Atsuo Watanabe, Hitachi; Masayoshi Naito, Katsuta; Tsutomu Yatsuo, and Masahiro Okamura, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 1, 1980, Ser. No. 164,946
Claims priority, application Japan, Jul. 2, 1979, 54-82650; Jul. 6, 1979, 54-84996; Mar. 5, 1980, 55-26638; Mar. 5, 1980, 55-26642; Mar. 5, 1980, 55-26643
Int. Cl.³ H01L *29/74*
U.S. Cl. 357—38 **21 Claims**



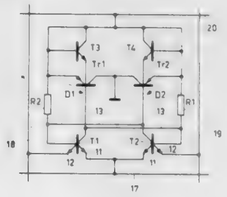
1. A semiconductor device comprising;
a semiconductor substrate having a pair of major surfaces and a side surface;
a pair of main electrodes adjacent to said pair of major surfaces of said semiconductor substrate;
a pair of conductive members electrically connected to said pair of main electrodes and arranged externally to the peripheral edges of said pair of major surfaces of said semiconductor substrate, at least one of the conductive members having an opening at a central portion to expose at least part of the main electrode connected to said conductive member; and
a passivation material disposed to contact to said side surface of said semiconductor substrate and said pair of conductive members.

4,388,636

STATIC MEMORY CELL AND MEMORY CONSTRUCTED FROM SUCH CELLS

Jan Lohstroh, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 28, 1980, Ser. No. 182,260
Claims priority, application Netherlands, Sep. 11, 1979, 7906752
Int. Cl.³ H01L *27/12, 29/72, 27/02*
U.S. Cl. 357—49 **4 Claims**



1. A static bipolar memory cell comprising:
A. a semiconductor body of a first conductivity type having a surface-adjoining surface layer of one conductivity type comprising first and second juxtaposed mutually-insulated islands which are separated from the remainder of the semiconductor body on their lower sides by first and second buried layers of a second conductivity type opposite to that of the first, said buried layers having a lower resistivity than that of said surface layer;
B. first and second transistors in said first and second islands, respectively, which transistors each comprise a base zone of said first conductivity type, at least one surface-adjoining emitter zone of the second conductivity type and a collector zone of the second conductivity type which is formed at least partly by the associated buried layer of the second conductivity type;
C. cross-links between the base zone of the first transistor and the collector zone of the second transistor and between the base zone of the second transistor and the collector zone of the first transistor;
D. first and second load elements between a supply line and the collector zones of the first and the second transistors, respectively, which load elements each comprise a resistor and a diode connected in parallel, the resistors of the first and the second load elements, respectively, being formed by a resistance region of the first conductivity type extending between the base zone of the second transistor and a supply connection in the second island and by a resistance region of the first conductivity type extending between the base zone of the first transistor and a supply connection in the first island, the diodes of the first and second load elements being formed by the p-n junctions between the buried layer below the first island and the resistance region in the first island, and between the buried layer below the second island and the resistance region in the second island, respectively;
E. third and fourth transistors in the first and second islands, respectively, at the area of the said supply connections, which transistors comprise a base zone of the first conductivity type and an emitter zone and a collector zone of the second conductivity type, the emitter-base junctions of said transistors being formed by said p-n junctions between the buried layers of the second conductivity type

and the resistance region of the first conductivity type, the collector zones of said transistors being formed by surface zones of the second conductivity type which are provided in the resistance regions and which form p-n junctions with the resistance regions, said collector-base junctions being short-circuited by the supply connections.

4,388,637

VIDEO SIGNAL MONITORING DEVICE AND METHOD

Bruce A. Blair, Jackson, Mo., assignor to Lenco, Inc., Jackson, Mo.

Filed Jun. 8, 1981, Ser. No. 271,703
Int. Cl.³ H04N *9/62*
U.S. Cl. 358—10 **42 Claims**



11. A device for monitoring video signals having a train of sync pulses and intermittent bursts of a subcarrier signal therebetween with a subcarrier burst located between individual ones of said sync pulses, said device comprising:

a first circuit having an input operatively connectable to a source of a video signal to be monitored, a first oscillator for generating a first continuous signal in phase with the intermittent subcarrier burst signals of the video signal and an output;

a secod circuit having an input operatively connectable to the source of a video signal to be monitored, a second oscillator for generating a second continuous signal in phase with selected ones of the sync pulses of the video signal and an output;

a third circuit having a first input connected to the output of the first circuit, a second input connected to the output of the second circuit, said third circuit including means for demodulating the first signal with the second signal to produce a third signal having a phase related to the phase difference between the first and second signals and an output; and,

means connected to the output of the demodulating means for displaying the third signal.

4,388,638

DE-EMPHASIS FOR DIGITIZED COMPOSITE COLOR TELEVISION SIGNALS

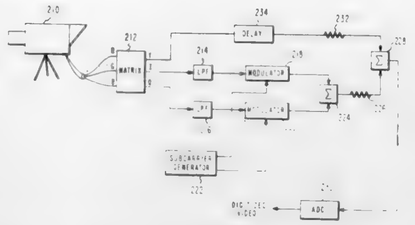
Robert A. Dischert, Burlington, and Glenn A. Reitmeier, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 19, 1981, Ser. No. 226,387
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—27 **4 Claims**

1. A method for generating a digital signal representative of a composite color television signal, the method comprising:

generating a luminance signal component having a predetermined value when representing a white image;

generating a chrominance signal component having a value such that when combined with the value of said luminance signal the peak value of the combined signal for any saturated color of the image does not exceed said predetermined value; and



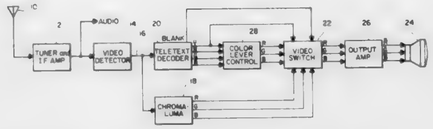
combining said luminance and chrominance signal components.

4,388,639

COLOR CONTROL CIRCUIT FOR TELETEXT-TYPE DECODER

Charles M. Cox, Buffalo Grove, and Rudolf Turner, Vernon Hills, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed May 18, 1981, Ser. No. 264,773
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—27 **5 Claims**



1. A color control circuit for selectively modifying the red, green and blue color signals developed at the output of a teletext-type decoder, said teletext-type decoder further developing a bi-level output control signal identifying the portions of said color signals representing background and foreground display information, said color control circuit comprising:

means responsive to said bi-level output control signal for developing at a common circuit node a control voltage having a first level identifying portions of said color signals representing background display information and a second level identifying portions of said color signals representing foreground display information; and

output means comprising a red output stage, a green output stage and a blue output stage, each of said output stages summing the control voltage developed at said common circuit node with the corresponding one of said red, green and blue color signals for causing the respective color signal to assume a first intensity level when the control voltage developed at said common circuit node is at said first level and a second intensity level greater than said first intensity level when the control voltage developed at said common circuit node is at said second level.

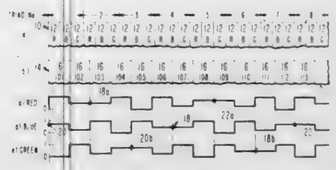
4,388,640

COLOR FILTER HAVING VERTICAL COLOR STRIPES WITH A NONINTEGRAL RELATIONSHIP TO CCD PHOTOSENSORS

Roland N. Rhodes, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 118,301, Feb. 4, 1980, Pat. No. 4,277,801. This application Dec. 5, 1980, Ser. No. 213,302
Int. Cl.³ H04N *9/07*
U.S. Cl. 358—44 **4 Claims**

1. A method of demodulating a signal obtained from an imager having discrete photosensors and a vertical stripe filter disposed in front of said imager, said filter stripes being arranged in horizontally repeating cycles of color order, the ratio of the width of a cycle to the width of a photosensor being a



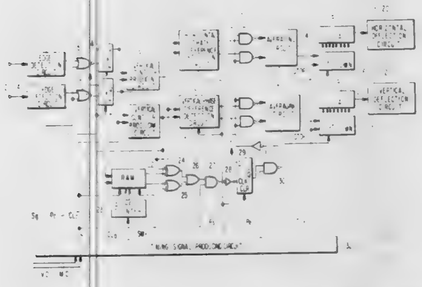
non-integer between one and three so that the signal has a suppressed carrier signal, and upper and lower subcarriers; said method comprising demodulating the information modulated on at least one of said subcarriers.

4,388,641

CENTERING UNIT FOR A COLOR TELEVISION CAMERA APPARATUS HAVING PLURAL PICK-UP TUBES

Setsuo Yamamoto, and Yasuichi Ushiyama, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,546
Claims priority, application Japan, Mar. 31, 1980, 55/41684
Int. Cl.³ H04N *9/09*
U.S. Cl. 358—51 **9 Claims**



1. A centering unit for a color television camera apparatus having plural pick-up tubes corresponding to different color channels comprising:

means for auto correlating signals representative of video signals of the same color channel occurring at discrete detection areas on television screens to produce correlation signals for the respective detection areas when correlation is detected for each area, said signals being correlated over a time period of at least one frame period,

means for detecting a phase difference between video signals corresponding to two different color channels in each of said plural detection areas to produce phase difference signals for the respective detection areas;

gate means for passing said phase-difference signals derived from said phase difference detecting means in response to said correlation signal for corresponding detection areas to the respective phase difference signals;

means for averaging the phase difference signals passed through said gate means over said plural detection areas; and

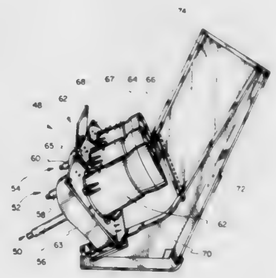
means for producing a correction voltage in accordance with the output of said averaging means to shift a deflection timing of at least one of said two different color channels.

4,388,642

HEAT SINKING MEANS AND METHOD FOR PROJECTION TELEVISION CRTS

James J. Reno, Jr., Schaumburg, and Richard G. Schmid, Glenview, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Jul. 6, 1981, Ser. No. 280,398
Int. Cl.³ H04N *9/31*
U.S. Cl. 358—60 **6 Claims**



4. A dry heat sink assembly for use in a projection television system having red, green, and blue television image source means including three cathode ray picture tubes each with an associated projection lens means for projecting into coincidence respective red, green, and blue images to form a composite color image on a viewing screen of said system, each tube having a glass face plate on the inner surface of which is deposited a cathodoluminescent screen for forming one of said television images, each of said face plates developing an undesirably high temperature during operation resulting in thermal cracking, with said tube forming said green image developing a higher faceplate temperature than said other two tubes, each of said projection lens means having a front face and a heat-deformable rear face disposed closely adjacent to the face plate of said tube associated therewith, said heat sink assembly comprising:

a rectangular metallic heat-conductive panel located between each of said face plates and said rear face of the associated projection lens means and in intimate contact with said face plate and in close proximity to said heat-deformable rear face of said associated lens means, each of said panels having a large area relative to the area of the face plate associated therewith and having vertically extending extremities, each of said panels having a window therein in coincidence with its associated cathodoluminescent screen for passing the television image to said screen;

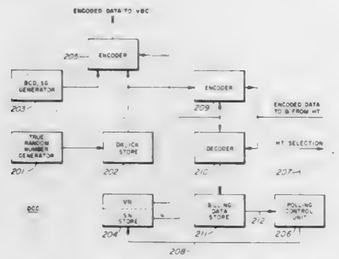
and means for maintaining each of said heat-conductive panels in intimate contact with said associated face plate and with said panel extremities extending beyond the perimeter of said associated face plate so that each of said heat-conductive panels, solely, by conduction and radiation and without reliance upon ancillary cooling apparatus conducts heat from its associated face plate to inhibit thermal cracking of said associated face plate, and to inhibit deforming of said heat-deformable rear face of said associated projection lens.

4,388,643

METHOD OF CONTROLLING SCRAMBLING AND UNSCRAMBLING IN A PAY TV SYSTEM

Yehuda J. Aminetzah, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 6, 1981, Ser. No. 251,085
Int. Cl.³ H04N *7/16;* **H04L** *9/00*
U.S. Cl. 358—123 **11 Claims**



1. A method of controlling scrambling and unscrambling of a video signal in a pay TV system, comprising the steps of:

storing a subscriber number at a subscriber station;

recurrently transmitting to the subscriber station a first variable encoded in dependence upon the subscriber number;

decoding the first variable at the subscriber station using the stored subscriber number, and storing the first variable before or after said decoding;

scrambling the video signal in dependence upon the first variable and a second variable;

transmitting the second variable to the subscriber station simultaneously with transmission of the scrambled video signal; and

at the subscriber station, unscrambling the video signal in dependence upon the decoded stored first variable and the transmitted second variable.

4,388,644

APPARATUS FOR MONITORING A MULTICHANNEL RECEIVER

Neal H. Ishman, Springfield; Robert B. Buxton, Burke; Duane A. Durst, Sterling; James F. McArthur, and Michael E. Johnson, both of Falls Church, all of Va., assignors to E-Systems, Inc., Dallas, Tex.

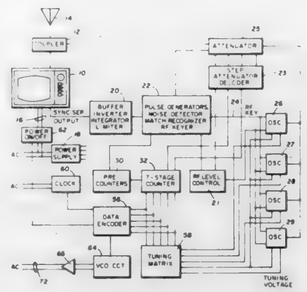
Continuation of Ser. No. 733,164, Oct. 18, 1976, Pat. No. 4,216,497. This application Feb. 12, 1980, Ser. No. 120,927
The portion of the term of this patent subsequent to Aug. 5, 1997, has been disclaimed.
Int. Cl.³ H04N *7/00;* **H04B** *1/00*
U.S. Cl. 358—84 **31 Claims**

1. A method of monitoring the operation of a multichannel television receiver comprising the steps of:

(a) injecting a signal into the input of the television receiver in synchronism with the television signal being received by the television receiver on the channel to which the television receiver is tuned;

(b) varying the frequency of the injected signal among frequencies unique for each channel of the television receiver;

(c) detecting the presence of an injected signal at the output of the television receiver to thereby provide an indication of a predetermined relationship between the frequency of the injected signal and the frequency of the television signal to which the television receiver is tuned and thus the channel to which the television receiver is tuned; and



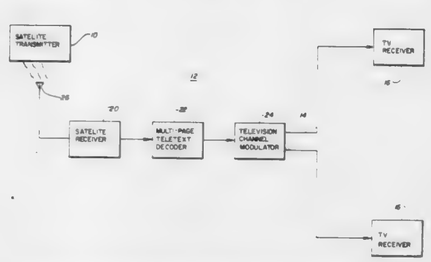
(d) storing data related to the channel to which the television receiver is tuned for subsequent transmission to a location remote from the television receiver.

4,388,645

TELETEXT COMMUNICATION SYSTEM WITH TIMED MULTIPAGE LOCAL MEMORY

Charles M. Cox, Buffalo Grove, and William L. Thomas, Northbrook, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Apr. 13, 1981, Ser. No. 253,330
Int. Cl.³ H04N *7/08*
U.S. Cl. 358—147 **20 Claims**



1. A teletext communications system comprising:

means transmitting multiple pages of a teletext encoded data service at selected times of the day, each of said teletext pages comprising a first non-displayable auxiliary teletext data row including a time-on code and a time-off code together defining a selected time interval and also including a unique page memory address code, said transmitting means continuously transmitting a second non-displayable auxiliary teletext data row including a current time of day code;

a teletext decoder having a plurality of page memories, each of said memories corresponding to the page memory address code of one of said teletext pages, said teletext decoder including means for acquiring and storing each of said transmitted teletext pages at the page memory corresponding to the page memory address code associated with the first auxiliary data row of the respective teletext page; and

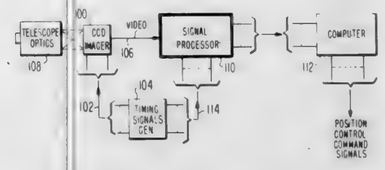
means for automatically rebroadcasting each of said stored teletext pages for which said selected time interval coincides with the time of day code of said second auxiliary data row.

4,388,646

LOW-DISTORTION DETECTION OF PULSES SUPERIMPOSED ON AN UNKNOWN AND VARIABLE BACKGROUND SIGNAL

John A. Strother, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 4, 1981, Ser. No. 271,035
Int. Cl.³ H04N *5/21*
U.S. Cl. 358—160 **8 Claims**



1. Pulse detection apparatus responsive to an applied analog time signal comprising an unknown and variable level, relatively low-frequency background components on which is superimposed one or more relatively high-frequency pulse components, in which the significant features of interest of each pulse are characterized by its shape, amplitude and time of occurrence characteristics; said apparatus comprising:

first means including storage means responsive to a running segment of given duration of the immediate past history of the level of an input signal to said first means for deriving a pedestal signal at a predicted present level of said input signal to said first means said predicted present level of the input signal to the first means being a function of the D.C. level and the slope of said running segment,

switch means operative in a first switch position thereof for applying said analog time signal as said input signal to said first means and operative in a second switch position thereof for applying said pedestal signal as said input signal to said first means,

second means for subtracting said pedestal signal from the actual present level of said analog time signal to derive a difference signal,

third means responsive to the level of said difference signal with respect to a given threshold level for deriving a status signal indicative of whether or not the level of said difference signal is equal to or exceeds said given threshold level,

fourth means coupled between said third means and said switch means for maintaining said switch means in its second switch position whenever the level of said difference signal is equal to or exceeds said threshold level and for maintaining said switch means in its first switch position whenever the level of said difference signal is below said threshold level, and

output means responsive to said difference signal and said status signal for deriving one or more outputs from the pulse detection apparatus which are indicative of at least one of said characteristics of each pulse.

2. The pulse detection apparatus defined in claim **1**,

wherein said analog time signal is comprised of a stream of successive pixels of a scanned image field in which each individual pixel corresponds to a different particular location within the image field, each pulse having a duration equal to a plurality of successive pixels;

wherein said output means includes fifth means for deriving a first output signal having a value during each one of said plurality of successive pixels which is indicative of the value of said difference signal during that pixel and sixth means for deriving a second output signal having a value during each one of said successive pixels which is indicative of the particular location corresponding to that pixel.

4,388,647

PREDICTABLY BIASED DC COUPLED VIDEO SIGNAL PEAKING CONTROL SYSTEM

Leopold A. Harwood, Bridgewater, N.J.; Robert L. Shanley, II, and James Hettiger, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 9, 1981, Ser. No. 310,137
Int. Cl.³ H04N *5/14*
U.S. Cl. 358—166 **8 Claims**



1. Direct current coupled apparatus for controlling the high frequency peaking content of a video signal, comprising:

a source of complementary phased video signals;

means responsive to video signals from said source for generating complementary phased video signal peaking components;

control means responsive to said peaking components and having differential control inputs, for providing controllable amounts of said complementary phased peaking components at an output in response to a control voltage applied to said control inputs;

means for differentially combining said complementary phase video signals with said controllable amounts of said complementary phase peaking components to produce a controllably peaked video signal;

a source of quiescent DC bias voltage;

first and second mutually symmetrical bias coupling networks coupled to said voltage source, for supplying balanced quiescent DC bias voltages derived from said voltage source to said differential control inputs of said control means, respectively; and

detector means for developing said control voltage in response to the high frequency content of said video signal, said detector means comprising a semiconductor device included in said first bias coupling network.

4,388,648

FREQUENCY SELECTIVE DC COUPLED VIDEO SIGNAL CONTROL SYSTEM INSENSITIVE TO VIDEO SIGNAL DC COMPONENTS

Leopold A. Harwood, Bridgewater, N.J.; Robert L. Shanley, II, and James Hettiger, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 9, 1981, Ser. No. 310,138
Int. Cl.³ H04N *5/14*
U.S. Cl. 358—166 **10 Claims**

5. Apparatus for automatically controlling the high frequency peaking content of a video signal including high frequency and DC components, said apparatus comprising:
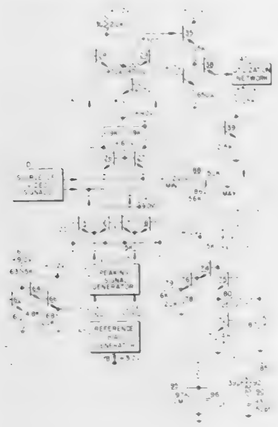
peaking means responsive to said video signal for generating a peaking component;

means for combining said video signal with said peaking component to produce a peaked video signal;

a DC coupled control path with an input responsive to said video signal and an output coupled to said peaking means, comprising

an amplifier with an input for receiving said video signal including high frequency and DC components, and an output;

a detector coupled to said amplifier output for producing



a control voltage representative of the magnitude of output signals from said amplifier; and

means for coupling said control voltage to said peaking means for controlling the magnitude of said peaking component and thereby the peaking content of said peaked video signal; and

filter means coupled to said amplifier in said DC coupled control path for shaping the frequency response of said amplifier so that output signals from said amplifier as coupled to said detector comprise video signal high frequency components within a given range of frequencies substantially exclusive of DC components.

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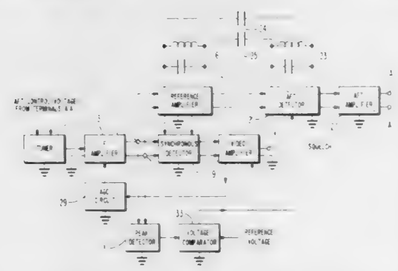
AFT LOCKOUT PREVENTION SYSTEM

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 1, 1981, Ser. No. 268,914

Int. Cl.³ H04N *5/50*

U.S. Cl. 358—195.1 **7 Claims**



1. In a television receiver including a tuner providing an IF output signal representative of a frequency converted version of RF signals selectively amplified thereby; an IF amplifier having an input responsive to said IF output signal of said tuner and having a gain subject to control in accordance with variations of a gain control potential; a synchronous detector responsive to signals amplified by said IF amplifier for recovering video signal information therefrom; an automatic gain control system responsive to an output of said synchronous detector for developing said gain control potential; and an automatic fine tuning system, including an AFT detector responsive to signals derived from an output of said IF amplifier, for providing a tuning control voltage for said tuner; apparatus comprising the combination of:

a peak detector, responsive to said output of said IF amplifier, and independent of said synchronous detector and said automatic gain control system, for developing an output potential indicative of a peak value attained by signals apearing at said output of said IF amplifier; and

means, including a voltage comparator responsive to said output potential and to a reference voltage, for disabling said AFT detector when said output potential of said peak detector exceeds a threshold value determined by said reference voltage.

4,388,650

TELEVISION RECEIVER AUDIO CHANNEL OPERATING ACCORDING TO THE INTERCARRIER SYSTEM

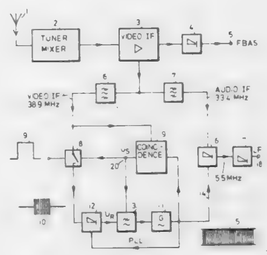
Burchard Schmidtmann, Barsinghausen, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed May 8, 1981, Ser. No. 261,808

Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017760

Int. Cl.³ H04N *5/62*

U.S. Cl. 358—197 **4 Claims**



1. In a television receiver for receiving a signal including an audio IF carrier and a video IF carrier modulated with picture information, the receiver having an audio channel operating according to the intercarrier principle and including means connected to receive the video IF carrier for generating therefrom a mixed carrier constituted by the video IF carrier from which picture information modulation has been removed, and mixing means connected for generating an intercarrier frequency signal by mixing the audio IF carrier with the mixed carrier, the improvement comprising switch means connected for supplying the video IF carrier to said mixed carrier generating means only during the horizontal blanking periods of the television signal when the video IF carrier is free of picture information modulation, and wherein said mixed carrier generating means include a phase control loop connected to said switching means.

4,388,651

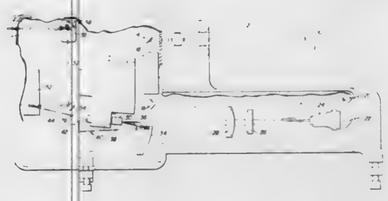
METHOD AND APPARATUS FOR GENERATING A SCANNED OPTICAL OUTPUT SIGNAL

Randy J. Sherman, Phoenix, Ariz., assignor to Lincoln Laser Co., Phoenix, Ariz.

Filed May 28, 1981, Ser. No. 267,678

Int. Cl.³ H04N *3/08*

U.S. Cl. 358—206 **13 Claims**



1. An optical scanner for generating a raster scan on a remotely positioned screen comprising:

a. a rotating mirror having a plurality of facets disposed around the mirror axis of rotation;

b. first directing means for receiving a coherent light input beam and for directing the light beam through a first optical axis onto the rotating mirror facets at a first position to produce a first scanned reflected output beam;

c. a first spherical mirror laterally centered about and positioned below the first optical axis for receiving the first scanned reflected output beam and for generating a second scanned reflected output beam which passes through a first pivot vertex;

d. second directing means for receiving the second scanned reflected output beam and for directing said beam back onto the rotating mirror facets at a second position spaced apart from the first position to generate an angularly amplified output beam passing through a first plane and having a sweep path symmetrically oriented with respect to a second optical axis;

e. focusing means for receiving and redirecting the angularly amplified output beam through a second pivot vertex;

and

f. a single surface mirror repetitively deflected through an arc of less than ninety degrees and positioned in proximity to the second pivot vertex for receiving the angularly amplified output beam, for deflecting said beam through a second plane oriented perpendicular to the first plane, and for directing said beam onto the screen to form an optical scanner output beam.

4,388,652

SYNCHRONIZED, VARIABLE SPEED CAPSTAN MOTOR DRIVE SYSTEM FOR FACSIMILE RECORDER

Allen E. Dukes, West Melbourne, and David C. Bailey, Cocoa Beach, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Apr. 30, 1979, Ser. No. 34,975

Int. Cl.³ H04N *1/10, 1/12*

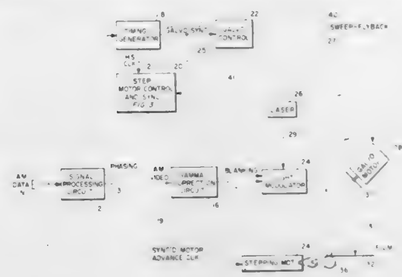
U.S. Cl. 358—285 **14 Claims**

1. In a facsimile recording apparatus, wherein an information recording scanning device is caused to scan a recording medium in line-by-line fashion as said recording medium is advanced in a stepwise manner, so that there are recorded on said recording medium a series of stepwise-diagonal traces of information on which a facsimile recording is composed,

the improvement comprising:

first means for generating a first signal representative of the position of said scanning device relative to a prescribed location on said recording medium; and

second means, responsive to said first signal generated by said first means, for causing each of the locations of adjacent transitions in the successively recorded traces, resulting from the stepwise advance of said recording medium,



to be aligned with one another in the direction of advance of said recording medium.

4,388,653

METHOD FOR CONTROLLING WRITING TIMINGS OF PICTURE SIGNALS TO BE STORED IN A MEMORY

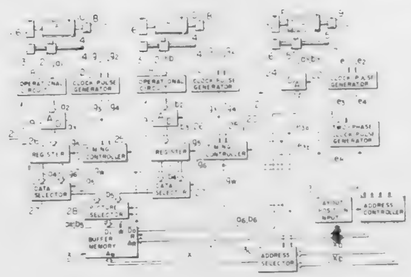
Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Aug. 26, 1980, Ser. No. 181,633

Claims priority, application Japan, Aug. 28, 1979, 54-108692

Int. Cl.³ H04N *1/22*

U.S. Cl. 358—302 **5 Claims**



1. A method for controlling writing timings of each of a plurality of picture signals to be written into and stored in a memory, said signals to be used in a picture reproducing machine wherein the picture signals picked up by picture scanning means are stored in the memory and then the picture signals are read out of the memory, and wherein reproduction pictures are recorded on a recording film by a reproduction recording means by using the picture signals read out, comprising the steps of:

(a) latching a plurality of the picture signals consecutively into a plurality of data storage latch circuits pre-positioned prior to the memory by a first clock pulse generated by the picture scanning means; and

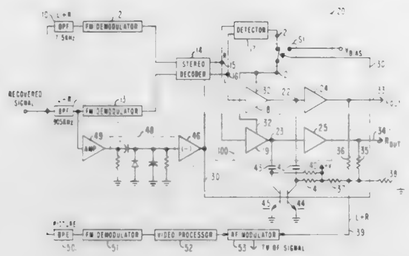
(b) writing into the memory each of the scanned picture signals read out of the latch circuits in the latching order by a timing control circuit processing a signal from a second clock pulse generated by the reproduction recording means and a pulse indicating latching of the next consecutive picture signal into one of said data storage circuits.

4,388,654

VIDEO DISC PLAYER WITH SELECTIVELY ENABLED AUDIO SIGNAL EXPANDER CIRCUITRY

Gopi N. Mehrotra, Carmel, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 17, 1981, Ser. No. 244,665
Int. Cl.³ H04N *5/76;* **H04B** *1/64*
U.S. Cl. 358—343 **9 Claims**



1. In a video disc player of the type for recovering recorded signals including a first sound carrier modulated by a monophonic audio signal, and, when stereophonic signals are present modulated by the left plus right (L+R) audio signal, and, when stereophonic signals are present, including a second sound carrier modulated by the left minus right (L−R) audio signal and wherein the recorded stereophonic but not the monophonic modulating signals have been compressed during recording to effectively preserve dynamic signal range, said player including respective demodulating circuits for demodulating the sound carriers and stereophonic decoder circuitry responsive to the demodulated audio signals for producing at first and second decoder output terminals thereof respectively the left and right audio signals when stereophonic signal is recovered and producing monophonic signals at said first and second decoder output terminals when said first carrier is modulated by a monophonic audio signal, said player including expander circuitry responsive to the envelope of the audio signals at said first and second decoder output terminals for generating a time varying transfer function to restore said audio signals substantially to an uncompressed condition when stereophonic signals are recovered, said player further including means responsive to the absence of said second carrier for generating a control signal, and means responsive to said control signal for conditioning said expander circuitry to manifest a substantially time invariant transfer function during the absence of said second carrier.

4,388,655

METHOD AND APPARATUS FOR RECORDING AND REPRODUCING VIDEO AND SOUND

George E. Zenzefilis, 27 Los Vientos, Camarillo, Calif. 93010

Continuation of Ser. No. 832,925, Sep. 13, 1977, abandoned. This application Aug. 16, 1979, Ser. No. 67,154
Int. Cl.³ H04N *5/78;* **G11B** *21/02*
U.S. Cl. 360—19.1 **54 Claims**

1. Apparatus for recording or reproducing video signals onto or from a recording disc, said apparatus comprising:

a recording disc;

means for rotating said recording disc at a constant rate about a center of rotation;

a first transducer for recording or reproducing video signals onto or from a selected portion of said recording disc, said first transducer being of the magnetic type and having a substantially straight recording gap for recording or reading imprints representing said video signals in a succession of tracks about the center of rotation, the imprints of the video signals for a given picture element being merged from track to track to form a continuous line intersecting different radii of the disc at substantially equal angles;

said first transducer being mounted on a pivoted lever, the gap of said first transducer being disposed substantially at right angles to said lever and tangent to the line to which



it is adjacent, the pivot point of said lever being displaced from said center of rotation and being selected so that motion of said lever about its pivot point will cause said gap to move along the lines of imprints; and

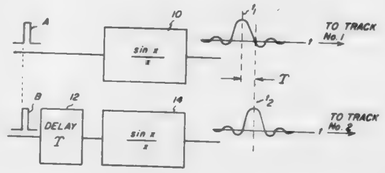
means for swinging said lever while said disc is being rotated.

4,388,656

MULTITRACK RECORDING WITH MINIMAL INTERMODULATION

James U. Lemke, Del Mar, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 3, 1980, Ser. No. 193,774
Int. Cl.³ H04N *5/785;* **G11B** *5/00*
U.S. Cl. 360—33.1 **31 Claims**



1. Multitrack recording apparatus for recording the information content of impulse signals comprising

(a) means for receiving a first impulse signal for transforming said first impulse signal into a damped ringing signal having a signal waveform having a period τ between successive zero crossings thereof,

(b) means for receiving a second impulse signal for transforming said second impulse signal into a damped ringing signal having a signal waveform having a period τ between successive zero crossings thereof, and

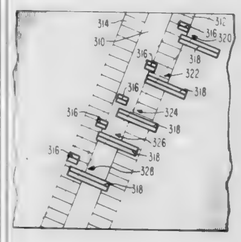
(c) multitrack recording means adapted to receive the transformed first and second impulse signals for so recording said transformed signals in respective tracks of a recording medium that the principal peaks of said two transformed signals occur at spaced apart locations of said medium, which locations are such that the principal peak of one transformed signal occurs proximate a zero crossing of the other, and vice versa, thereby minimizing intermodulation between said recorded signals.

4,388,657

SEARCH-MODE ARRANGEMENT FOR VTR

Lee V. Hedlund, Maple Shade; Donald G. Herzog, Collingswood, and Franz L. Putzrath, Haddonfield, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 25, 1980, Ser. No. 210,154
Int. Cl.³ G11B *15/14*
U.S. Cl. 360—72.1 **5 Claims**



1. A search mode playback arrangement for a VTR wherein continuate information is recorded in adjacent tracks disposed angularly across the direction of tape travel, the arrangement comprising:

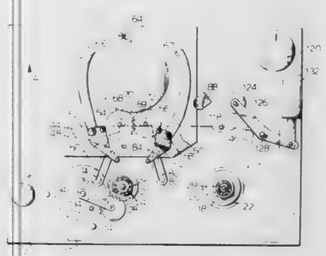
a pair of transducer gaps, and control means for alternately enabling said gaps in accordance with the amplitude of the reproduced signals from said gaps to continuously pickup coherent information while the playback arrangement scans across adjacent tracks, each said gap being selectively dimensioned and arranged relative to said other gap in accordance with the track format and the signal criteria adopted to alternately enable said gaps.

4,388,658

MAGNETIC TAPE RECORDING AND/OR REPRODUCING APPARATUS

Jirou Kajino; Hitoshi Minabe, both of Neyagawa, and Shigeki Murata, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 4, 1980, Ser. No. 203,889
Claims priority, application Japan, Nov. 8, 1979, 54-144973
Int. Cl.³ G11B *5/08, 15/00*
U.S. Cl. 360—85 **4 Claims**



1. A magnetic tape recording and/or reproducing apparatus for recording and/or reproducing signals on a magnetic tape wound on reels contained in a tape cartridge, said apparatus comprising:

a reversible motor;

a pair of drive turntables engagable with the reels in the tape cartridge when the cartridge is inserted in said apparatus for rotating said reels;

tape loading means connected to said reversible motor for, when said reversible motor is rotated in one direction of rotation, being moved from an inoperative position to an operative position for drawing the magnetic tape out of the tape cartridge and loading the magnetic tape in a specific tape path in said apparatus, and, when said reversible motor is rotated in the other direction of rotation, being moved from the operative position to the inoperative position; and

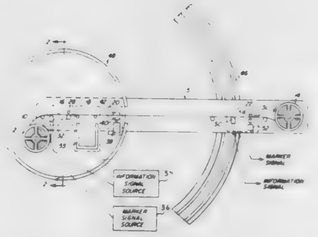
tape drawing-in means connected to and driven by said reversible motor when said reversible motor is rotated in said other direction and frictionally engaged with one of said reel drive turntables for driving said one reel drive turntable for drawing the magnetic tape back into the tape cartridge when said tape loading means is moved to the inoperative position.

4,388,659

TAPE RECORDER APPARATUS CAPABLE OF PLAYING BACK SELECTED INFORMATION WHILE RECORDING OTHER INFORMATION

James U. Lemke, Del Mar, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,331
Int. Cl.³ G11B *15/06, 5/78*
U.S. Cl. 360—90 **5 Claims**



1. Apparatus for recording information on a tape record medium and for reproducing the information recorded on a selected portion of the tape record medium without interrupting the recording of information, said apparatus comprising:

(a) a drum structure having a peripheral wall with an opening therein:

(b) means disposed within said drum structure for recording information on the tape record medium;

(c) means disposed outside said drum structure for playing back information peviously recorded on the tape record medium;

(d) means for feeding the tape record medium along a path which extends between said recording and reproducing means, and which tape path extends through said opening in the peripheral wall of said drum structure;

(e) means disposed in the tape path between said recording means and said opening in the peripheral wall of said drum structure for stopping the movement of a portion of the tape recording medium;

(f) means, operative in response to said tape stopping means for winding at least part of the tape record medium that extends from said tape stopping means to said reproducing means on said peripheral wall of said drum structure to bring the selected portion of the tape record medium into a position for playback by said playback means; and

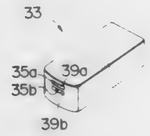
(g) means for unwinding the tape record medium from said drum structure to effect playback of the selected portion of the tape record medium.

4,388,660

TAPE RECORDER EMPLOYING MINIATURE TAPE CASSETTE AND CAPABLE OF AUTOMATIC REVERSIBLE OPERATION

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Aug. 15, 1980, Ser. No. 178,527
Claims priority, application Japan, Sep. 25, 1979, 54/122754
Int. Cl.³ G11B *5/12, 15/00, 21/22, 5/27*
U.S. Cl. 360—110 **4 Claims**



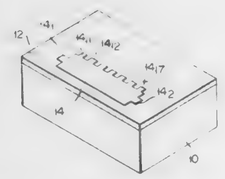
1. A tape recorder employing a miniature tape cassette and capable of automatic reversible operation, comprising a pair of spaced-apart record/playback magnetic heads, a first one of the heads including first means being disposed so as to be aligned with a track or tracks of a magnetic tape which are available for record or playback operation during the time a magnetic tape runs in a forward direction, a second one of the heads including second means being disposed so as to be aligned with a track or tracks of a magnetic tape on the magnetic tape which are available for record or playback operation during the time the tape runs in a reverse direction, said first and second magnetic heads being identical in structure and being disposed in an opposite orientation relative to each other, so that said first and second means are each aligned with a different track or tracks of said magnetic tape.

4,388,661

MULTICHANNEL MAGNETIC HEAD AND A MANUFACTURING METHOD THEREFOR

Yoshifumi Sakurai, Minoo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1980, Ser. No. 206,373
Claims priority, application Japan, Nov. 14, 1979, 54-147327
Int. Cl.³ G11B *5/38, 5/28, 5/22*
U.S. Cl. 360—112 **4 Claims**



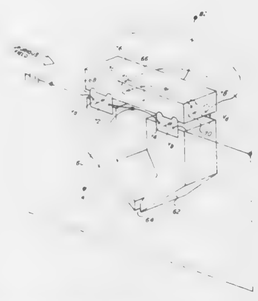
1. A multichannel magnetic head means comprising:
magnetic circuit means including a gap for detecting a magnetic flux (ϕ), for leading said magnetic flux;
an amorphous magnetic thin film held in said gap and consisting essentially of an alloy containing a rare earth element and a transition metal, said amorphous magnetic film having a single pair of current terminals and a plurality of spaced apart Hall voltage terminals;
current leading means connected to said pair of current terminals, for leading a biasing current of said thin film along said gap; and
voltage outputting means connected to said Hall voltage terminals, for outputting a Hall voltage for each channel corresponding to said magnetic flux, said voltage outputting means corresponding in number to the number of channels of the magnetic head and connected in a direction along the flow of said biasing current with a predetermined distance;
said amorphous magnetic thin film being arranged such that its film surface is substantially normal to the direction of traverse of the magnetic flux to be detected, and the composition ratio of said rare earth element is selected to be within a range of about 10 to 40 atomic % so that said amorphous magnetic thin film has a magnetic anisotropy in a direction normal to the surface thereof; and
the spacing between adjacent ones of said Hall voltage terminals being more than about four times the width of said amorphous magnetic thin film so that crosstalk between channels due to domain wall motion is substantially eliminated.

4,388,662

THIN FILM MAGNETORESISTIVE HEAD

Frederick Jeffers, Escondido, and Richard J. McClure, San Diego, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 28, 1981, Ser. No. 229,039
Int. Cl.³ G11B *5/12, 5/30*
U.S. Cl. 360—113 **9 Claims**



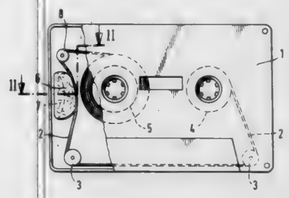
1. A magnetic head comprising
(a) first and second magnetic pole parts disposed to define a transducer gap therebetween,
(b) magnetic means positioned relative to said first and second pole parts and respectively forming therewith first and second high reluctance gaps therebetween,
(c) a first thin film magnetoresistive element magnetically coupling said magnetic means to said first pole part at said first gap, said first magnetoresistive element having a magnetization vector that is in the plane of its thin film, and
(d) a second thin film magnetoresistive element magnetically coupling said magnetic means to said second pole part at said second gap, said second magnetoresistive element having a magnetization vector that is in the plane of its thin film, the quiescent orientation of said second element magnetization vector being in substantially the same direction as the quiescent direction of the magnetization vector of said first element,
whereby magnetic flux entering said transducer gap causes a differential change in the electrical resistances of said first and second magnetoresistive elements, but spurious magnetic fields to which said head is exposed causes similar changes to the resistances of said first and second magnetoresistive elements.

4,388,663

CLEANING CASSETTE FOR A TAPE MACHINE

Peter Becella, Frankfurt am Main, Fed. Rep. of Germany, assignor to König-Electronic Friedrich W. König, Reichelsheim, Fed. Rep. of Germany

Filed Oct. 30, 1980, Ser. No. 202,058
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1979, 2931744
Int. Cl.³ G11B *5/41*
U.S. Cl. 360—128 **7 Claims**



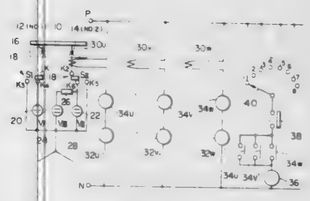
1. A cleaning cassette for cleaning components of a tape recorder, comprising a housing; a cleaning tape adapted for advancement within said housing; guide means positioned in said housing for supporting said cleaning tape in said advancement movement thereof; at least one dirt-removing element positioned in said housing in permanent contact with said cleaning tape so as to wipe contaminants off the same as the tape advances in the housing; and at least one guide element mounted in said housing in the vicinity of said dirt-removing element and adapted for guiding and cleaning tape in said permanent contact with a surface of said dirt-removing element, said housing being forward with at least one opening for wetting said dirt-removing element with a cleaning liquid.

4,388,664

APPARATUS FOR PROTECTING VACUUM INTERRUPTER TYPE ON-LINE TAP CHANGER

Tetsuo Watanabe, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Aug. 3, 1981, Ser. No. 289,650
Claims priority, application Japan, Aug. 4, 1980, 55-106389; Aug. 4, 1980, 55-106390
Int. Cl.³ H02P *13/06*
U.S. Cl. 361—93 **8 Claims**



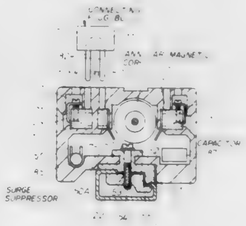
1. A vacuum interrupter type on-line tap changer comprising: a plurality of current switching elements, each of said current switching elements being coupled to a corresponding tap of a transformer through a lead wire;
a plurality of vacuum interrupters and a current limiting resistor, said vacuum interrupters and said current limiting resistor being coupled to said current switching elements so that a cross current can flow selectively through said current limiting resistor and said vacuum interrupters in accordance with contact positions of said current switching elements;
a plurality of current transformers, said current transformers being disposed to sense a current in said lead wires;
a plurality of current detecting relays and overcurrent relays, one of said current detecting relays and one of said overcurrent relays being provided for each of said current transformers, said current detecting relays and said overcurrent relays being operatively coupled to a corresponding current transformer, each of said overcurrent relays having a contact for interrupting current flowing in said transformer.

4,388,665

APPARATUS FOR REDUCING ELECTRICAL FAULT VOLTAGES IN ELECTRICAL CONDUCTORS

Johnny Putz, Sissach, Switzerland, assignor to Oskar Woertz, Inhaber Hans Woertz, Basel, Switzerland

Filed Aug. 20, 1980, Ser. No. 179,787
Claims priority, application Switzerland, Sep. 11, 1979, 8192/79
Int. Cl.³ H02H *3/22*
U.S. Cl. 361—119 **8 Claims**



1. Apparatus for reducing electrical fault voltages in electric lines, comprising an insulating housing having a foot and a clamping means arranged for mounting and securing said housing on a support rail, said foot and said clamping means being electrically conductive to allow a good electrical contact with the support rail which serves as a protective ground conductor, said housing being provided with a pair of input and output connection means for external leads, at least one electric filter being disposed within said housing and including at least one series branch having input and output ends connected to said input and output connection means, respectively, and at least one shunt branch having opposite ends, respectively connected to said series branch at a point remote from the input end thereof and to said foot, and said housing further containing at least one surge suppressor having a pair of electrical terminals, one of which being connected to said input end of the series branch of said filter and the other one being connected to said foot.

4,388,666

DEMAGNETIZER FOR USE IN VEHICLES

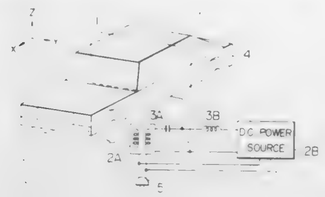
Akira Kuno, Oobu; Muneaki Matsumoto, Okazaki, and Koji Numata, Toyokawa, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed May 26, 1981, Ser. No. 267,426
Claims priority, application Japan, May 28, 1980, 55-71946
Int. Cl.³ H01F *13/00*
U.S. Cl. 361—149 **1 Claim**

1. A demagnetizer for removing residual magnetism in a vehicle comprising:
a magnetic field coil adapted to surround a portion of said vehicle from which the residual magnetism is to be removed, said magnetic coil having first and second input terminals,
a series circuit of an alternating current blocking inductor and a direct current source connected between said first and second input terminals of said magnetic field coil for supplying thereto a direct current,
a series circuit of a direct current blocking capacitor and an alternating current source connected between said first

and second input terminals of said magnetic field coil for supplying thereto an alternating current simultaneously with said direct current,

said magnetic field coil producing a direct current magnetic field and an alternating current magnetic field simultaneously, said direct current magnetic field being opposite in direction to cancel the external magnetic field, said alternating current magnetic field being effective to remove the residual magnetism in said portion of said vehicle.



4,388,667

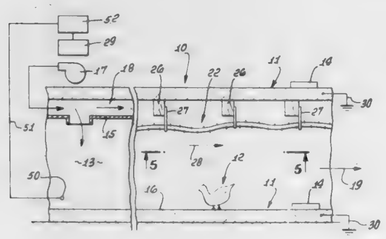
CONTROL OF STATIC NEUTRALIZATION

Donald G. Saurenman, Whittier, Calif., assignor to Consan Pacific Incorporated, Whittier, Calif.

Continuation-in-part of Ser. No. 241,684, Mar. 9, 1981, which is a continuation-in-part of Ser. No. 124,242, Feb. 25, 1980, Pat. No. 4,282,830. This application May 1, 1981, Ser. No. 259,503

Int. Cl.³ H05F *3/06*

U.S. Cl. 361—231 **40 Claims**



1. The method of reducing static electricity in a work zone, that includes:

(a) providing first electrically conductive cable means with ion dispensing tips spaced therealong, and to which positive voltage is applicable,

(b) providing second electrically conductive cable means with ion dispensing tips spaced therealong, and to which negative voltage is applicable, and

(c) locating said first and second cable means at adjusted distances from the work in said zone and at adjusted separations from one another so that static electricity at or proximate the work is effectively reduced to non-objectionable levels when said positive and negative voltages are applied to the cable means,

(d) said cable means defining cables each of which is flexible and includes an elongated metallic core to which voltage is applicable, each cable including a protective sleeve of insulating material on and extending along and about the core, the sleeve defining a wall,

(e) the tips defined by needles having shanks, and inserting said shanks to penetrate through said sleeve wall and to extend sidewardly adjacent the core to make electrical contact therewith so as to receive application of said voltage, whereby the tips are openly exposed outwardly of the cable to dispense ions into the atmosphere near the cable.

4,388,668

CAPACITIVE PRESSURE TRANSDUCER

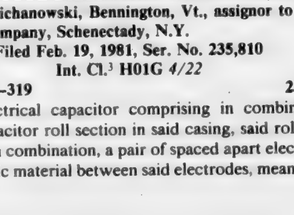
Robert L. Bell, Chatsworth; Robert Willing, Anaheim, and Fred Kavli, Woodland Hills, all of Calif., assignors to Kaylico Corporation, Chatsworth, Calif.

Continuation of Ser. No. 898,469, Apr. 20, 1978, abandoned, Continuation-in-part of Ser. No. 834,498, Sep. 9, 1977, Pat. No. 4,177,496, which is a continuation of Ser. No. 666,188, Mar. 12, 1976, abandoned. This application Dec. 3, 1979, Ser. No. 99,600

The portion of the term of this patent subsequent to Dec. 4, 1996, has been disclaimed.

Int. Cl.³ H01G *7/00*

U.S. Cl. 361—283 **38 Claims**



1. A pressure sensor for use over a predetermined pressure measurement range in environments subject to periodic high overload pressure comprising:

first and second ceramic insulating members having flat opposed surfaces, one of said members being relatively thin with respect to the other member and being flexible when exposed to pressure;

a thin electrically conductive plate deposited on each of said insulating members flat opposed surfaces facing one another;

means for establishing an open gap between said electrically conductive plates, said open gap ranging between 0.1 and 20 milinches, said means consisting of fused glass frit positioned around the marginal edge portion between said two members, said fused glass frit also hermetically sealing the space between said members to form a chamber;

said frit and insulative members being substantially similar materials from the standpoint of coefficient of thermal expansion; and

means including said members and said fused glass frit for permitting said electrically conductive plates to deflect toward one another without touching throughout said predetermined measurement range while allowing said plates to engage one another and bottom out under high overload pressure conditions, so that said pressure sensor is protected against impairment.

4,388,669

POLYGLYCOL DIELECTRIC CAPACITOR FLUID

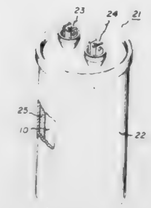
Stanley W. Cichanowski, Bennington, Vt., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 19, 1981, Ser. No. 235,810

Int. Cl.³ H01G *4/22*

U.S. Cl. 361—319 **23 Claims**

1. An electrical capacitor comprising in combination, a casing, a capacitor roll section in said casing, said roll section comprising in combination, a pair of spaced apart electrodes, a solid dielectric material between said electrodes, means on said casing to connect said electrodes to a source of power, and dielectric fluid in said casing and adjacent said electrodes and solid dielectric, said dielectric fluid comprising a polyglycol fluid having a molecular weight above about 1,000.



4,388,670

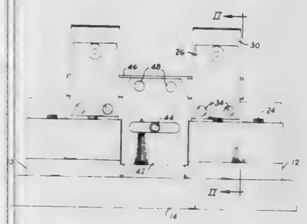
BYPASS AND METER RELEASE FOR WATTHOUR METER SOCKET

Larry E. Billhartz, Portland, Oreg., assignor to Siemens-Allis, Inc., Atlanta, Ga.

Filed May 18, 1981, Ser. No. 264,938

Int. Cl.³ H02B *9/00*

U.S. Cl. 361—367 **9 Claims**



1. A meter socket assembly for releasably securing conductive blades of a watthour meter, comprising:

a pair of electrically separate lugs for receiving electrical conductors;

at least one leaf spring upstanding from each of said lugs;

a pair of conductive jaws upstanding from each of said lugs, said jaws being disposed adjacent at least one said leaf spring and including first, generally parallel portions approaching and aligned with one another to form a blade-receiving zone, and second portions more widely spaced apart than said first portions to form a zone for receiving a bypass bar;

means extending from said leaf springs to apply pressure to said conductive jaws intermediate the ends of the first, parallel portions thereof for biasing said jaws together;

bypass means for providing an electrical path between pairs of said jaws including a slide disposed between said lugs and a conductive bypass bar affixed thereto and having ends extending between ones of said pairs of jaws in said bypass-receiving zone;

said slide being movable in a direction generally parallel to said jaws for urging said conductive bypass bar between said first, generally parallel portions of said jaws in order to separate said portions;

whereby a conductive path is established between pairs of said jaws and said jaws are separated sufficiently to allow conductive blades captured therebetween to be withdrawn.

4,388,671

CATHODE RAY TUBE DISPLAY TERMINAL HAVING AN ENCLOSURE FOR PROTECTION OF A LOGIC BOARD

Roger L. Hall, Nashua, N.H., and Domenic R. Romano, Chelmsford, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jun. 29, 1981, Ser. No. 278,239

Int. Cl.³ H05K *7/10, 7/20*

U.S. Cl. 361—383 **7 Claims**



1. A cathode ray tube display terminal assembled with pluggable units for maintenance by customer personnel including a pluggable logic board enclosure comprising:

a logic board for mounting a plurality of logic elements having connector fingers for plugging into a fixed connector mounted to a chassis of said terminal for providing electrical connections and also including grounding fingers;

a top portion including first locating means for positioning said logic board and clearance openings for allowing said grounding fingers to project through to make electrical contact with said chassis when said enclosure is fully inserted in said terminal, thereby discharging any electrostatic charge on said logic board;

a bottom portion including second locating means for positioning said logic board;

molded-in slides for guiding said enclosure into said terminal and a molded-in snap catch which locks said enclosure in said chassis when said enclosure is fully inserted so that said connector fingers plug into said fixed connector; and

locking means for fixing the relative positions of said top portion, said bottom portion and said logic board.

4,388,672

PRINTED CIRCUIT BOARD ASSEMBLY

Richard T. Skill, Austin, Tex., assignor to Motorola Inc., Schaumburg, Ill.

Filed May 1, 1981, Ser. No. 259,751

Int. Cl.³ H05K *1/14*

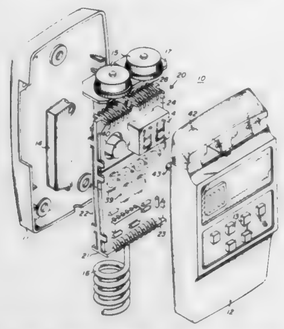
U.S. Cl. 361—412 **10 Claims**

1. A circuit board assembly comprising:

at least first and second substantially planar circuit boards having conductive metallizations thereon, each of each circuit boards having a top surface and a bottom surface, some non-planar electrical components mounted on the top surface of each circuit board;

an electrically insulated circuit board carrier having raised peripheral shoulders substantially surrounding an effective planar central portion of said carrier, said first and second circuit boards mounted substantially back to back on said raised peripheral shoulders such that said bottom surfaces of said circuit boards are spaced apart from and face each other; said first and second circuit boards electrically interconnected by a plurality of jumper wire elements extending therebetween and soldered to adjacent end portions of each of said first and second circuit boards, and

wherein said circuit board carrier has a guide portion formed therein at an end of said carrier adjacent to said adjacent end portions of said first and second circuit boards, said guide portion comprising a plurality of individual spaced projections extending from said adjacent



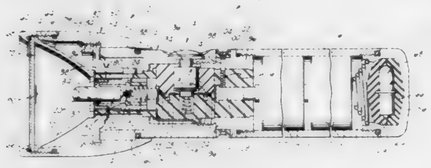
end of said circuit board carrier, said projections forming notches therebetween with each of said jumper wire elements positioned in an associated one of said notches and therefore being spaced apart by said projections, whereby a compact, inexpensive circuit board assembly is provided.

4,388,673

VARIABLE LIGHT BEAM FLASHLIGHT AND RECHARGING UNIT

Anthony Maglica, Ontario, Calif., assignor to Mag Instrument, Inc., Ontario, Calif.

Filed Jun. 22, 1981, Ser. No. 275,877
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—183 **11 Claims**



1. In combination:
a flashlight and a charger therefor;
said flashlight including a conductive strip member and a battery compartment;
conductive means extending between said strip and said compartment for establishing electrical connection between said strip and battery in said compartment for charging the battery; and
a charger including a contact member for electrically contacting the said strip; and means for connecting said contact member to a source of electrical energy.

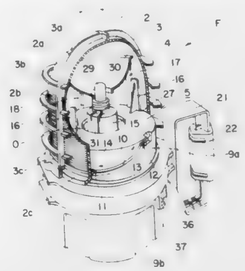
4,388,674

PORTABLE ELECTRIC FLASHLIGHT

Tadao Sano, Fukuoka, Japan, assignor to Kyushu Hitachi Maxell, Ltd., Fukuoka, Japan

Filed Mar. 31, 1981, Ser. No. 249,736
Claims priority, application Japan, Apr. 1, 1980, 55-45261[U]
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—186 **14 Claims**

1. A portable electric flashlight which comprises a battery case open at one side face for accomodating at least one electric battery therein, a hood receiving member releasably mounted on the battery case for covering the open side face of said battery case, a battery depressing plate for mounting an electric bulb to be illuminated by the at least one battery accommodated in said battery case and electrically conductive means for establishing an electrical connection between the at least one battery and said electric bulb, the battery depressing plate being held in position between said battery case and said



hood receiving member, and a light transmitting hood member having a front light transmitting portion and a diffused light transmitting portion at a predetermined peripheral surface portion thereof, and means for mounting the light transmitting hood member so as to enable vertical movement thereof with respect to said hood receiving member whereby light may be selectively projected through the front light transmitting portion and the diffused light transmitting portion.

4,388,675

INDIRECT LIGHTING FIXTURE

Ian Lewin, 11408 St. Andrew's Way, Scottsdale, Ariz. 85254

Filed Dec. 15, 1980, Ser. No. 216,241
Int. Cl.³ F21S *3/00*
U.S. Cl. 362—225 **6 Claims**



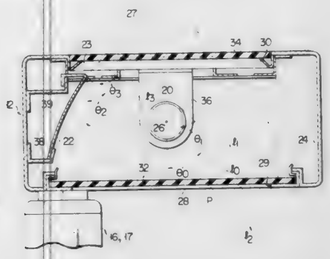
1. An indirect multiple bulb fluorescent light fixture including in combination:
an elongated rectangular housing having a base located beneath the bulbs of the light fixture;
first pairs of elongated substantially flat reflector strips arranged as first inverted V-shaped reflector member on said base located beneath each bulb, with the apex of each of said first V-shaped reflector members located in alignment with the axis of the bulb which it underlies on a line perpendicular to the plane of said base; and
a second pair of elongated substantially flat reflective strips arranged as a second inverted V-shaped reflector member located on said base between the bulbs and extending parallel thereto, the angles formed between the strips of said first and second reflector members and said base and between said reflector members and the bulbs being selected to minimize light reflected back into the bulbs from said reflector members and to cause uniform widely dispersed illumination on the ceiling above the fixture.

4,388,676

LIGHTING DEVICE

Koji Sato, Yokohama, and Tadahiro Kaneko, Tokyo, both of Japan, assignors to Toshiba Electric Equipment Corporation, Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 213,025
Claims priority, application Japan, Dec. 17, 1979, 54-163919
Int. Cl.³ F21V *13/00*
U.S. Cl. 362—260 **10 Claims**



1. A lighting apparatus for illuminating the surface of a desk top of the type having at least a mutually parallel front edge and a rear edge, comprising:
an elongated housing which is set above the rear edge of said desk top, extending along the rear edge, and includes a light projecting opening formed therein on a side thereof facing the desk top;
a straight cylindrical light source housed in said housing so as to extend lengthwise thereof;
a reflector which has a parabolic cross section housed in said housing and positioned so as to face a backside portion of said light source wherein said light source, said housing, said reflector and said desk top are positioned such that a first vertical angle θ_0 defined by a straight line connecting an axis of said light source and the front edge of said desk top lies in a range of $45° \pm 10°$;
a second vertical angle (θ_1) defined by a straight line passing through a front end of the light-projecting opening and tangentially contacting an upper peripheral surface of said light source lies in a range of $\theta_0 \pm 10°$;
a third vertical angle (θ_2) defined by a straight line passing an upper edge of said reflector and tangentially contacting a lower peripheral surface of said light source lies in a range of $\theta_0 \pm 10°$; and
a fourth vertical angle (θ_3) defined by said reflector axis lies in a range of $\theta_0 \pm 10°$.

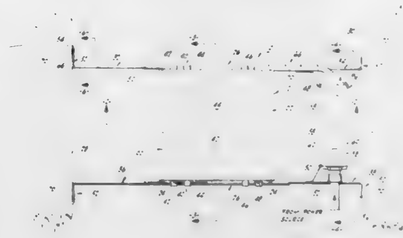
4,388,677

RECESSED LIGHTING UNIT

James B. Druffel, Oakland, Calif., assignor to Prescolite, A Div. of U.S. Industries, San Leandro, Calif.

Filed Jan. 2, 1981, Ser. No. 222,042
Int. Cl.³ F21V *25/02;* **F21S** *1/02*
U.S. Cl. 362—276 **9 Claims**

1. A recessed lighting unit for supporting and energizing a lamp and electrical socket therefor comprising:
a. a housing having means for mounting the electrical lamp and socket thereto, and having an opening for passage of light therethrough emanating from the lamp;
b. means for providing electrical power to the electrical lamp and socket;
c. thermoprotector means for detecting heat in the vicinity of said housing and interrupting electrical power provided by said means for providing electrical power to the electrical lamp and socket upon the detection of a selected temperature by said thermoprotector means;



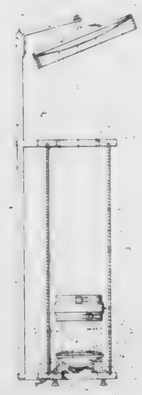
d. means for mounting said thermoprotector means adjacent and housing a selected distance from the electrical lamp and socket.

4,388,678

READING AND VIEWING LAMP

Wheeler M. Turner, 4689 Puente Plz., Santa Barbara, Calif. 93110

Filed Oct. 14, 1980, Ser. No. 196,391
Int. Cl.³ F21Y *9/00*
U.S. Cl. 362—293 **17 Claims**



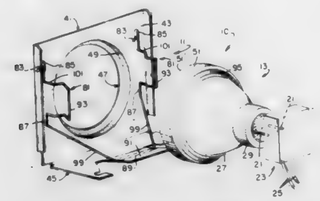
1. In apparatus for directly illuminating an area with a diverging light beam wherein written material or other objects are adapted to be directly viewed in the directly illuminated area, the combination of:
a convex mirror mounted to receive a collimated beam of light and to reflect the collimated beam of light into a diverging beam of light which is directed towards that area; and
means including a source of light for directing a collimated beam of light toward said convex mirror for reflection toward that area, whereby the area is illuminated primarily by light of substantially non-crossing, diverging and unidirectional quality throughout said area.

4,388,679

PROJECTION LIGHTING UNIT WITH GLASS REFLECTOR CAPABLE OF DUAL INSERTION

Ronald G. Blaisdell, Saugus, and Harold L. Hough, Beverly, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Feb. 23, 1981, Ser. No. 237,208
Int. Cl.³ F21V *7/00, 17/06, 21/00;* **G03B** *15/02*
U.S. Cl. 362—306 **21 Claims**



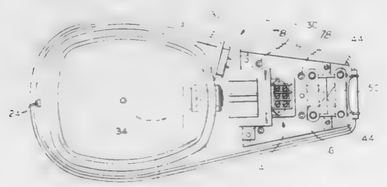
1. In a projection lighting unit including a lampholder assembly, a glass reflector removably positioned within said lampholder assembly and including a forward, concave reflecting portion and a rear neck portion, and a projection lamp positioned within said glass reflector, said lampholder assembly including a bracket member having a substantially planar faceplate portion with an aperture therein and a base portion extending therefrom and means for engaging said glass reflector at an external surface thereof to retain said reflector in a predetermined manner of alignment within said lampholder assembly relative to said aperture within said substantially planar faceplate portion of said bracket, the improvement wherein said means for engaging said glass reflector at an external surface thereof to retain said reflector within said lampholder assembly in said predetermined manner of alignment comprises a pair of deflectable engagement members secured to said faceplate portion of said bracket member on opposing sides of said aperture, each of said engagement members occupying a first, closed position prior to insertion of said glass reflector having said projection lamp therein within said lampholder assembly and deflecting to a second, open position during said insertion such that said glass reflector is insertable and removable within said lampholder in two directions, the first of said directions being substantially parallel to said substantially planar faceplate portion of said bracket, and the second of said directions being substantially perpendicular to said substantially planar faceplate portion, said deflectable engagement members substantially returning to said first, closed position when said glass reflector is fully positioned within said lampholder assembly.

4,388,680

LUMINAIRE FOR ROADWAY LIGHTING

William C. Moore, Memphis, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,135
Int. Cl.³ B60Q *1/00*
U.S. Cl. 362—368 **5 Claims**



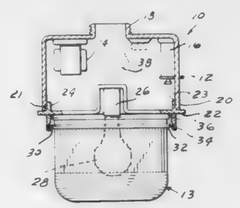
1. An outdoor luminaire comprising an upper and a lower housing joined to enclose a central cavity having an illuminating lamp on an essentially horizontal axis with said luminaire adapted for mounting on a substantially horizontal axis, cylindrical mast; said upper and lower housings being fabricated of plastic material; a load bearing insert of greater tensile strength than the plastic material of said housings extending within said cavity from a mounting to said mast adjacent one end of said luminaire to the insert termination intermediately within the luminaire; said insert having an arcuate outer wall closely conforming to the shape of a section of the inner wall of said upper housing adjacent thereto with the inner wall of the upper housing adapted to rest on the outer wall of the insert; said insert including a concave inner wall with a plurality of transverse reinforcing ribs and means for securing on said insert components of said luminaire, a plurality of embosses in the inner wall of the upper housing for receiving bolts for securing the insert to rest on said upper housing, a reflector within said housing affixed to the upper housing to reflect light generated by said lamp with said insert termination spaced and externally from the reflector.

4,388,681

HAZARDOUS LOCATION LIGHT FIXTURE

E. Robert Meyer, Packanack Lake, N.J., assignor to Keene Corporation, Union, N.J.

Filed Dec. 15, 1980, Ser. No. 216,564
Int. Cl.³ F21V *17/00*
U.S. Cl. 362—374 **4 Claims**



1. An explosion-resistant fixture comprising: a ballast compartment containing therein the electrical components for the fixture; a l...np housing containing a lamp socket mounted to said ballast compartment; and filling means filling all voids in said ballast compartment.

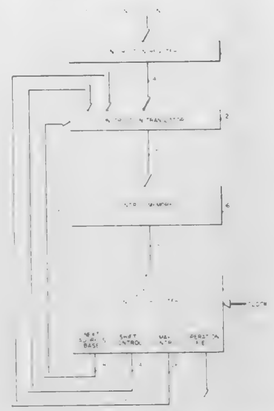
4,388,682

MICROPROGRAMMABLE INSTRUCTION TRANSLATOR

David P. Eldridge, Acton, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Sep. 4, 1979, Ser. No. 71,911
Int. Cl.³ G06F *9/20*
U.S. Cl. 364—200 **8 Claims**

1. In combination:
an instruction register for sequentially storing digital instructions during execution in a digital processor, each of said digital instructions corresponding to a sequence of microinstructions to be executed;
an addressable memory for storing digital microinstructions constituting said sequences of microinstructions;
a microinstruction register connected to the output of said addressable memory for sequentially storing said digital microinstructions after being read out of said memory and during execution;
means coupled to said instruction and microinstruction registers for providing digital addresses to said addressable memory for reading said sequences of microinstructions out of said memory and sequentially into said microinstruction register for execution;
said providing means comprising means for selecting a contiguous set of bits from the digital instruction resident in said instruction register for inclusion in one of said digital addresses wherein the number of bits in said selected set is determined by a first field of bits of the microinstruction resident in said microinstruction register and wherein the position in said resident instruction from which said set is selected is determined by a second field of bits of said resident microinstruction; and
said providing means further comprising means for selecting bits from a third bit field of said resident microinstruction for inclusion in said one digital address.

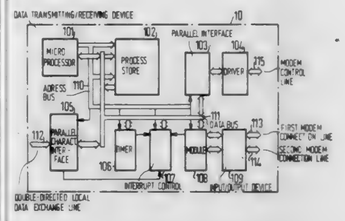


4,388,683

DATA TRANSMISSION/RECEIVING DEVICE HAVING PARALLEL/SERIAL AND SERIAL PARALLEL CHARACTER CONVERSION, PARTICULARLY FOR DATA EXCHANGE BETWEEN COMMUNICATING DATA PROCESSING SYSTEMS

Wolfgang Beifuss; Paul Birzele, and Gerhard Geitz, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 27, 1980, Ser. No. 134,482
Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2920994
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **9 Claims**



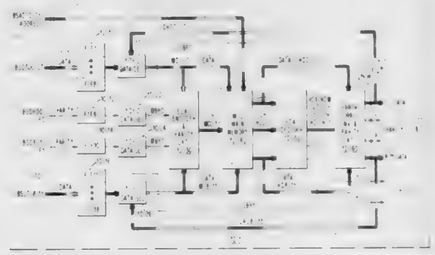
1. In a data transmitting/receiving device of the type having parallel/serial and serial/parallel character conversion and connected via a data transmission line to a local data processing system and connected to a data modem terminating a data communication line for controlling the transmitting and receiving procedures, in which an address bus and a data bus are provided, and in which a procedure memory and a random access memory as a data buffer are connected to the address bus and to the data bus for intercepting data jams, and which includes an interrupt control connected to the address bus and to the data bus for interrupting processing operations of a microprocessor means which is also connected to the address bus and to the data bus in response to processing operations of a higher priority, and in which a timer is connected to the address bus and to the data bus and is operable to set the data transmission speed, the improvement therein comprising:
first and second modem connection lines;
first means in the microprocessor means responsive to corresponding input switching commands to convert data messages into a correspondingly-selected bit or character orientation; and
second means connected to said first and second modem connection lines and to said first means and operable to transmit data selectively in accordance with the synchronous data link control method and the high-level data link control method over a selected modem connection line.

4,388,684

APPARATUS FOR DEFERRING ERROR DETECTION OF MULTIBYTE PARITY ENCODED DATA RECEIVED FROM A PLURALITY OF INPUT/OUTPUT DATA SOURCES

Chester M. Nibby, Jr., Peabody, and Robert B. Johnson, Billerica, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 27, 1981, Ser. No. 248,107
Int. Cl.³ G06F *11/10*
U.S. Cl. 364—200 **36 Claims**



1. A data processing system including a plurality of data handling devices, each connected in common to receive and transfer words including a plurality of bytes over a bus network, said system further including a memory subsystem comprising:
a memory for storing said words;
input means coupled to said bus for receiving one of said words from any one of said data handling devices for storage in said memory during a memory cycle of operation, each said word including a plurality of bytes and a plurality of parity bit signals each or indicating the validity of a different one of said bytes;
encoder means coupled to said input means and to said memory, said encoder means for generating a group of coded check bits derived from said plurality of said bytes and said plurality of parity bit signals, said encoder means forcing a predetermined number of said coded check bits to predetermined states when said plurality of parity bit signals indicate that said bytes are in error;
means connected to said encoder means and to said input means for applying said bytes and group of coded check bits to said memory for said storage during said memory cycle of operation; and,
decoder means coupled to said memory, said decoder means for generating a plurality of syndrome signals for locating an error in said bytes, the location of said error being established by said bytes and said coded check bits read out from said memory during a subsequent cycle of operation, said plurality of syndrome signals having a first

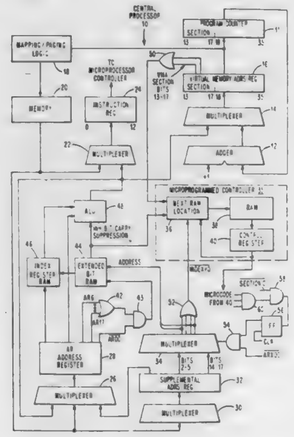
predetermined characteristic for signalling when said plurality of bytes of a word received from any one of said data handling devices have incorrect parity when written into said memory enabling the detection of multibyte parity errors in said words to be deferred until accessed by one of said devices so as to have a minimum effect on system performance.

4,388,685

CENTRAL PROCESSOR WITH APPARATUS FOR EXTENDED VIRTUAL ADDRESSING

Alan Kotok, Harvard; Daniel L. Murphy, Framingham, and Robert E. Stewart, Stow, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 931,059, Aug. 4, 1978. This application Jun. 26, 1980, Ser. No. 163,097
Int. Cl.³ G06F *9/36*
U.S. Cl. 364—200 **8 Claims**



1. A central processing means for processing instructions, indirect words and operands stored in a memory means having a plurality of storage locations specified by virtual memory addresses wherein the memory means is partitioned into a plurality of sections, each of the instructions and indirect words having a memory address field and an address type field, the memory address field in each instruction defining a number of locations corresponding to the number of locations in one memory section and each indirect word having a format field that defines first and second sets of bit positions in the addressing and address type fields, the number of addressing field bit positions in the first and second sets uniquely defining a location in either one specific section of the memory means and in any section of the memory means, respectively, said central processing means comprising:

A. first storage means for the memory address field and the address type field,

B. second storage means for storing an address that uniquely defines a location in the memory means,

C. address generating means connected to said first and second storage means for generating an effective address in response to the address type field and the memory address field in an instruction during at least one iteration, said address generating means including:

i. means responsive to the contents of the memory address field in said first storage means for storing in said second storage means an intermediate address,

ii. field control means connected to said first storage means for establishing, during each iteration and in response to indirect and direct states defined by the address type field, whether the contents of the second storage means constitute, respectively, the address of an indirect word or the effective address,

iii. transfer means connected to said second storage means and said field control means for transferring, for each iteration that occurs during an indirect state, an indirect word to said first storage means from the location specified by the contents of said second storage means,

iv. selection means connected to said first storage means for selecting, during each iteration, the memory address field and the address type field from the corresponding sets of locations in the indirect word in response to the contents of a format field of the indirect word in said first storage means, and

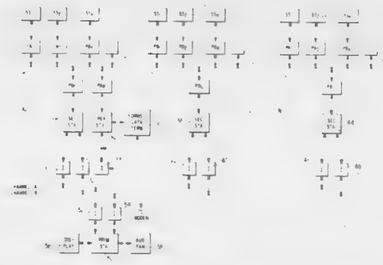
v. controller means connected to said field control means and said selection means for terminating further iterations of said address generating means when the address type field in said first storage means defines the direct state thereby to indicate that said second storage means contains the effective address.

4,388,686

COMMUNICATION SYSTEM FOR DISTRIBUTED CONTROL ARRANGEMENT

William R. Haid, Hamilton, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Oct. 20, 1980, Ser. No. 198,901
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **26 Claims**



1. In a communication system for a distributed control arrangement adapted to control the operation of a plurality of operating units of a common installation, each of said operating units being under the control of a set of subsystems adapted to perform specific control functions relative to the corresponding operating unit;

a plurality of communication nodes each corresponding to a separate one of said operating units, each of said nodes being coupled to the set of subsystems that exercise control over the corresponding operating unit;

a separate secondary station coupled to each of said nodes;

each of said nodes including a common node bus;

the secondary station and respective ones of the set of subsystems associated with a node individually constituting separate circuits external to said node, each of said external circuits including a local data processor and being adapted to communicate through said node bus;

a data link interconnecting respective nodes through the secondary station associated with each node; and

a primary station coupled to said data link and including a data processor, said primary station being adapted to address respective ones of said secondary stations through said data link in accordance with a predetermined protocol and a sequence determined by said primary station;

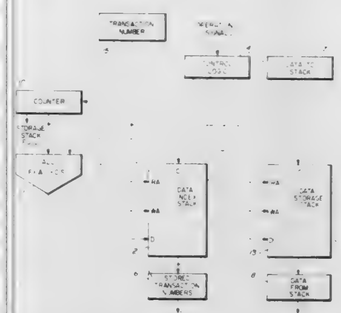
whereby said primary station upon its own command is capable of communicating with respective ones of a selectively variable number of nodes coupled to said data link to transmit or receive information with respect to selected subsystems associated with each of said nodes, said primary station being adapted to prevent contention between competing nodes for access to said data link.

4,388,687

MEMORY UNIT

Jerome J. Twibell, and Robert J. Johnston, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jan. 5, 1981, Ser. No. 222,462
Int. Cl.³ G06F *9/06*
U.S. Cl. 364—200 **12 Claims**



1. In association with a data processing system, a memory unit for temporary storage of data signal groups comprising:

a first group of storage locations for storing said data signal groups,

a second group of storage locations coupled to said first group of storage locations, each storage location of said second group of storage locations storing an address value corresponding to a storage location of said first group of storage locations;

counter means for addressing said second group of storage locations; and

control apparatus generating control signal sets for said memory unit in response to signals from said data processing system, wherein a first control signal set causes a first data signal group from said data processing system to be entered in a first storage location of said first group of storage locations, said first storage location being identified by a first address value stored in a first location of said second group of storage locations, said first location of said second group of storage locations being identified by a first counter value contained in said counter means, said first address value stored in said first location of said second group of storage locations being coupled to said data processing system, and wherein a second control signal set causes a second data signal group stored in a second location of said first group of storage locations to be coupled to said data processing system by a second address value coupled by said data processing system to said first group of storage locations, said second address value coupled by said data processing system being stored concurrently in a second location of said second group of storage locations, said second location being determined by a second counter value of said counter means.

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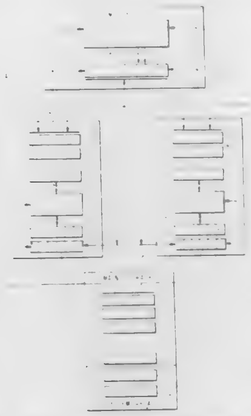
SHARED TOD CLOCK MODIFICATION BIT

Thomas O. Curlee, III, and Ethel L. Richardson, both of Poughkeepsie, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 10, 1981, Ser. No. 320,153
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—200 **2 Claims**

1. In a computer which has a TOD clock count maintained in a register that is shared by at least two processors where each processor implements a timer function by subtracting a stored count from a count of the TOD clock register and where at least one processor is capable of changing the TOD count in the register by instruction and at the completion of the instruction updating the stored counts for the processor, a method for correcting errors introduced into the timer calculations of the other processor by a concurrently occurring change in the TOD clock count made by said one processor;

storing one type of binary manifestation as a status signal in



said register along with the TOD count each time the TOD clock is changed by said one processor which is changing the TOD count;

supplying said one type of binary manifestation to said other processor only the first time it interrogates said register after said register has been modified by said first processor;

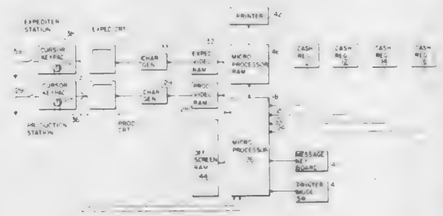
modifying the first occurring timer calculation of said other processor by a stored difference signal which reflects the magnitude of any error which exists in the timer calculation as a result of said changing of the TOD clock count.

4,388,689

RESTAURANT VIDEO DISPLAY SYSTEM

Richard W. Hayman; Burton Goldstein, both of Potomac; Joe J. Lynn, Gaithersburg; Robert J. Brown, Columbia, and Robert S. Bugash, Wheaton, all of Md., assignors to OCR Marketing Associates, Inc., Washington, D.C.

Filed Jan. 28, 1981, Ser. No. 229,034
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—401 **13 Claims**



9. In a video display system comprising:

a plurality of item data entry means, connected to an input of data computing means, for entering individual items of an item group;

a plurality of production CRTs connected in circuit with the output of the computing means for displaying the entered

items, each item assigned a symbol corresponding to a work station whereat the item is prepared;
cursor control means located at the work station and connected in circuit with the computing means for marking an item upon completion of its preparation by selective cursor placement;
the computing means determining when preparation of all entered items of a group have beem completed and thereafter erasing such displayed items from the CRT;
an expediting CRT connected in circuit with the computing means for displaying the items of each group as the preparation of each group has been completed;
printing means connected to the output of the computing means for printing selected data entered into the computing means;
a keyboard connected to an input of the computing means for entering a message therein which is displayed on the expediting CRT; and
a second cursor control means located at an expediter station and connected in circuit with the computing means for positioning the cursor at the last item of a group displayed on the expediting CRT, causing the erasing of the group displayed thereon.

4,388,690

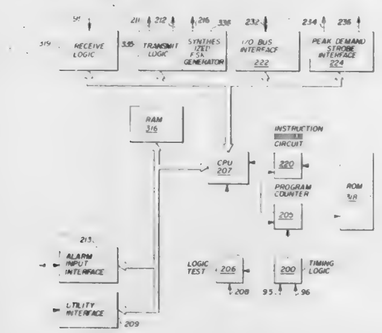
AUTOMATIC METER READING TRANSPONDER

James R. Lumsden, Edmonton, Canada, assignor to AEL Microtel Limited, Burnaby, Canada

Continuation-in-part of Ser. No. 83,990, Oct. 11, 1979, abandoned, which is a continuation-in-part of Ser. No. 881,791, Feb. 27, 1978, abandoned. This application Oct. 21, 1980, Ser. No. 199,389

Int. Cl.[3] **H04Q** *9/00;* **G01R** *11/64*

U.S. Cl. 364—483 **16 Claims**



1. A transponder unit for use with a non-dedicated communication link comprising:
receiver means for receiving external instruction signals from said communication link;
transmitter means for transmitting data via said communication link;
a central processing unit (CPU) connected to said receiver means and said transmitter means;
a clock generator means for controlling said CPU;
a read only memory (ROM) connected to said CPU, said ROM containing a program for controlling said CPU;
a real time clock connected to said CPU for determining sequential predetermined time periods;
three input terminals connected to said CPU for receiving data to be stored in a random access memory (RAM), one of said three input terminals having pulses impressed thereon, the number of said pulses being representative of a utility consumption, said one of said three input terminals also being connected, via said CPU, to a time-of-day memory, said time-of-day memory being comprised of a plurality of discretely addressable registers, wherein said CPU correlates each addressable register sequentially with a consecutive one of said predetermined time periods, so that each register sequentially contains a count which is representative of consumption during its associated time period or any fraction thereof; wherein, upon receipt of one of said external instruction signals, said CPU activates said transmitter means to transmit data, said data being, in part, the contents of each register in said time-of-day meory transmitted in sequence; wherein one of said external instruction signals is an initialization signal which sets said real time clock, wherein initialization of said time-of-day memory can take place at any time during one of said predetermined time periods, wherein a first address of said time-of-day memory contains a count representing the fraction of a time period remaining after initialization, a second address contains a count representing consumption in said fraction of a time period, each subsequent address containing a count representing consumption in each subsequent time period, respectively;
said unit further comprising identification code word means connected to said CPU for setting an identification code word into said RAM, wherein said CPU provides comparator means which compares another of said external instruction signals with said identification code word, a positive comparison validating that the correct transponder unit has been selected.

4,388,691

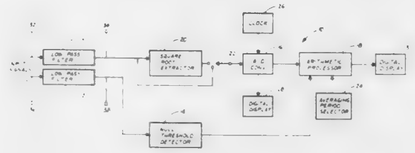
VELOCITY PRESSURE AVERAGING SYSTEM

Steven P. Nuspl, Barberton, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Jan. 23, 1981, Ser. No. 227,864

Int. Cl.[3] **G06F** *7/38*

U.S. Cl. 364—510 **11 Claims**



1. Apparatus for measuring the velocity pressure of a flowing gas or air stream comprising means for sampling measurements of the velocity pressure of said stream, means for averaging said sampled measurements of said velocity pressure to determine an average value of said velocity pressure measurements, and means for detecting the static pressure differential at the point in the said stream at which said velocity pressure measurements are being taken, said detecting means permitting said velocity pressure measurements to be transmitted to said averaging means only when said static pressure differential is detected to be within a predetermined range.

4,388,692

ELECTRONICALLY CONTROLLED PROGRAMMABLE DIGITAL THERMOSTAT HAVING VARIABLE THRESHOLD HYSTERESIS WITH TIME

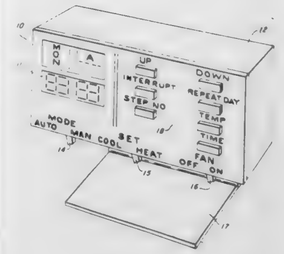
James J. Jones, Elizabethton, and John O. McIntosh, Johnson City, both of Tenn., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 3, 1980, Ser. No. 183,703

Int. Cl.[3] **G05D** *23/32*

U.S. Cl. 364—557 **17 Claims**

1. A thermostat system for controlling heating and cooling systems supplying an indoor area to maintain desired ambient temperatures during selected time periods in said area, said thermostat system comprising;
(a) temperature sensing means including at least one temperature sensor for sensing the ambient temperature of said area and for providing a digital signal indicative thereof;
(b) means for generating time signals;
(c) digital circuit means having a plurality of input and output terminals, said digital circuit means being coupled to said time signal means and said temperature sensing means for receiving said time signals and for monitoring said ambient temperature, said digital circuit means including logic circuitry for storing digital coded information entered therein while said information is being processed, said digital circuit means being responsive to real time and ambient temperature and to said digital coded information for controlling the heating and cooling systems in accordance with an electronic threshold hysteresis



temperature which is variable with time in discrete steps around said desired ambient temperature, said discrete steps successively approaching the ambient temperature;
(d) data entry means coupled to said digital circuit means for entering said digital coded information into said digital circuit means;
(e) display means for displaying desired parameters of time and temperature including information entered from said data entry means; and
(f) electrically controllable switch means coupled to at least one of said output terminals for selectively activating and deactivating said heating and cooling systems in accordance with a signal from said digital processor means derived from a comparison of the ambient temperature with the electronic threshold hysteresis temperature.

4,388,693

NON-RECURSIVE DIGITAL FILTER

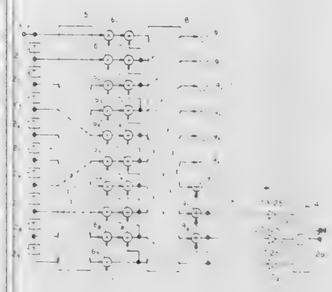
Kenji Nakayama, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 31, 1980, Ser. No. 221,808

Claims priority, application Japan, Jan. 7, 1980, 55-404

Int. Cl.[3] **G06F** *15/31*

U.S. Cl. 364—724 **4 Claims**



1. A non-recursive digital filter having predetermined N filter coefficients h_i(i=0 to N−1) to perform

$$y(n) = \sum_{i=0}^{N-1} h_i x(n-i) = \sum_{j=0}^{N-1} \mathrm{sign}(h_i) h^*_j x^*(n-j) =$$

$$\sum_{j=0}^{N-1} h^*_j \tilde{x}^*(n-j) = \sum_{j=0}^{N-1} \Delta_j u(n-j)$$

in response to a sequence x(n−i) of N consecutive binary coded words, where h^*_j represent the coefficients of the absolute values of h_i arranged in the order of magnitude; $x^*(n-j)$ represent x(n−i) corresponding to h^*_j; sign (h_i) represent the polarities of h; Δ_j represent differences between adjoining coefficients h^*_j; $\tilde{x}^*(n-j)$ represent the products of sign (h_i) and $x^*(n-j)$; and

$$u(n-j) = \sum_{k=j}^{N-1} \tilde{x}^*(n-k),$$

said filter comprising:
arranging means for arranging said sequence x(n−i) corresponding to the coefficients h^*_j to obtain $x^*(n-j)$; first means for obtaining the product of each of the outputs $x^*(n-j)$ given from the arranging means and the corresponding polarity of each of the coefficients h_i; second means for accumulating the outputs $\tilde{x}^*(n-j)$ given from said first means to obtain u(n−j); coefficient generating means for producing said differences Δ_j; third means for multiplying the outputs u(n−j) supplied from said second means by said differences Δ_j; and fourth means for accumulating outputs $\Delta_j u(n-j)$ given from said third means.

4,388,694

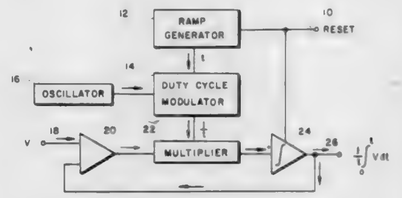
CIRCUITRY FOR SIMULTANEOUSLY PERFORMING INTEGRATION AND DIVISION

Robert S. Loveland, West Covina, Calif., assignor to The Perkin-Elmer Corp., Norwalk, Conn.

Filed Apr. 16, 1981, Ser. No. 254,803

Int. Cl.[3] **G06G** *7/18, 7/16*

U.S. Cl. 364—834 **6 Claims**



1. A circuitry for integrating with respect to time a signal representing an analog quantity while simultaneously dividing the integral by time, said circuitry comprising:
first circuitry means responsive to a first input signal for generating an output voltage having an amplitude proportional to the time duration of said input signal;
second circuitry means coupled to said first circuitry means and responsive to said output voltage for generating a cyclic output signal with high-to-low levels inversely proportional to the time duration of said first input signal;
an amplifier for receiving and amplifying a voltage signal representing the analog quantity to be integrated;
multiplier circuitry coupled to said amplifier and to said second circuitry means for multiplying the amplified analog voltage signal by said cyclic output signal;
and
integrating circuitry coupled to said multiplier circuitry for integrating the product of said analog voltage signal and said cyclic output signal to produce an output signal of

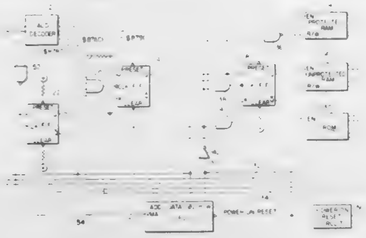
$1/t\int V\,dt$, wherein "V" is the analog voltage signal and "t" is the time duration of said first input signal.

4,388,695

HARDWARE MEMORY WRITE LOCK CIRCUIT

Joseph B. Heinemann, New York, N.Y., assignor to Timeplex, Inc., Rochelle Park, N.J.

Filed Feb. 21, 1980, Ser. No. 123,368
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—900 **21 Claims**



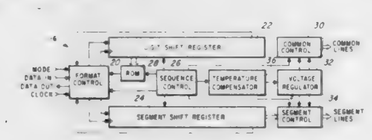
1. A memory protect system for a read/write memory having an area containing critical data which is to be protected; said memory having extended thereto, and being included in an overall system which has, address and data buses, and control means for accessing said memory; comprising hardware means responsive to and for registering the occurrence of at least one predetermined access cycle in which a predetermined unlocking address appears on said address bus; hardware means for locking said critical data memory area by preventing write operations in the absence of the prior registering of the occurrence of said at least one predetermined access cycle in which said predetermined unlocking address appears on said address bus; and hardware means for unlocking said critical data memory area by allowing write operations only for a predetermined number of other access cycles which are subsequent to the registering of the occurrence of said at least one predetermined access cycle, each of such allowed write operations being at an address different from said predetermined address.

4,388,696

DATA PROCESSING SYSTEM HAVING DUAL OUTPUT MODES

Howard R. Test, II, Lubbock, Tex., and Michael J. Drury, Ft. Collins, Colo., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 14, 1980, Ser. No. 168,853
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—900 **7 Claims**



1. A data processing system comprising

data processing means for producing data in an encoded format and a display format when operating in a first and second mode, respectively, and a mode signal indicative of said first and second mode,

display driver means coupled to said data and said mode signals, said display driver means converting said encoded format to a display format when said first mode signal is present or transmitting said display format when said second mode signal is present, and

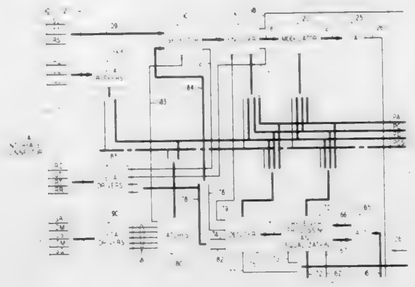
display means coupled to said display driver means for displaying said display format data.

4,388,697

VOICEBAND DATA SET CIRCUITRY WITH DUAL BUS ARCHITECTURE

Robert N. Breen, Lanoka Harbor, and Henry R. Goldenberg, Howell, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 8, 1980, Ser. No. 184,929
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 **25 Claims**



1. Signal processing apparatus comprised of

a plurality of registers, and

a first bus (PD) common to said registers,

characterized by

a second bus (LEB or LDB),

a plurality of circuit means each operative for processing a signal received from said second bus in accordance with a respective selected one of a predetermined plurality of formats and for returning the processed signal to said second bus,

local controller means for operating said circuit means in a selected sequence, and

second controller means for writing information signals into ones of said registers via said first bus, ones of said information signals identifying respective ones of the selected formats.

4,388,698

DATA BUFFER CIRCUIT

John H. Allen, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 22, 1981, Ser. No. 276,277
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—900 **12 Claims**

1. A data storage circuit comprising, in combination:

a first input terminal to receive a data ready pulse signal;

first gating means having a first input effectively connected to said first input terminal, a second input, and first, second, and third outputs, for providing, in response to said data ready pulse signal, a first latch signal, a second latch signal, and a third latch signal;

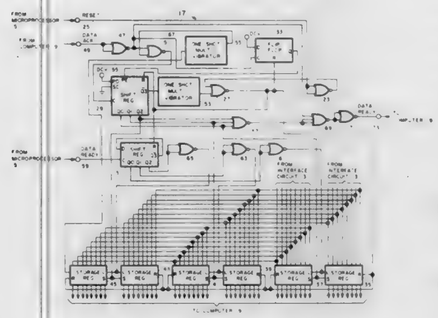
a second input terminal to receive a data acknowledge pulse signal;

a third input terminal;

second gating means having a first input effectively connected to said second input terminal, a second input, a third input effectively connected to said third input terminal, a first output connected to the second input of said first gating means, and second, third, fourth, and fifth outputs, for providing, in response to said data acknowledge pulse signal, a first select signal, a second select signal, and a third select signal;

first storage means having a latch input connected to the first output of said first gating means, a select input connected to the second output of said second gating means, a reset input connected to the first output of said second gating means, a plurality of data inputs, and a plurality of data outputs, adapted for receiving at the data inputs thereof a first data word, for storing therein for a first predetermined time period, in response to said first latch signal, said first data word, and for transferring to the data outputs thereof, in response to said first select signal, said first data word;

second storage means having a latch input connected to the second output of said first gating means, a select input connected to the third output of said second gating means, a reset input connected to the first output of said second gating means, a plurality of data inputs, and a plurality of data outputs, for receiving at the data inputs thereof a



second data word, for storing therein for a second predetermined time period, in response to said second latch signal, said second data word, and for transferring to the data outputs thereof, in response to said second select signal, said second data word; and

third storage means having a latch input connected to the third output of said first gating means, a select input connected to the fourth output of said second gating means, a reset input connected to the first output of said second gating means, an interrupt output connected to the second input of said second gating means, a plurality of data inputs, and a plurality of data outputs, for receiving at the data inputs thereof a third data word, for storing therein for a third predetermined time period, in response to said third latch signal, said third data word, and for transferring to the data outputs thereof, in response to said third select signal, said third data word.

4,388,699

BUBBLE MEMORY SENSE AMPLIFIER

Ramanatha V. Balakrishnan, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 19, 1981, Ser. No. 225,876
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—8 **5 Claims**

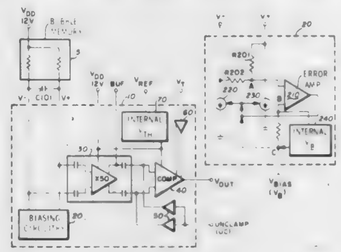
1. A circuit for biasing differential first and second inputs comprising:

current source means coupled to the first and second magneto-resistive detectors and having a control input for providing one current to the first magneto-resistive detector having an amplitude responsive to the amplitude of a signal applied to the control input and for providing another current to the second magneto-resistive detector having an amplitude substantially identical to the one current;

a first resistor having a first terminal coupled to the first magneto-resistive detector and having a second terminal;

a second resistor having a first terminal coupled to the second magneto-resistive detector and having a second terminal coupled to the second terminal of the first resistor; and

a differential amplifier having first input coupled to the second terminals of the first and second resistors, a second input,



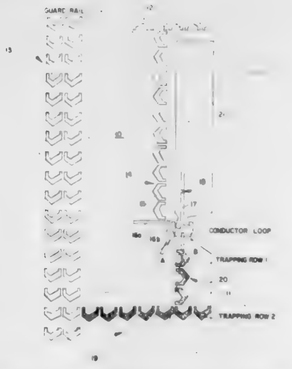
and an output coupled to the control input of the current source means for providing a signal to the control input having an amplitude responsive to the difference between the amplitudes of the signals applied to the first and second inputs of the differential amplifier.

4,388,700

NUCLEATION BUBBLE GENERATOR FOR BUBBLE DOMAIN DEVICES

Laszlo V. Gal, West Covina, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 2, 1981, Ser. No. 239,235
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—11 **4 Claims**



1. A magnetic bubble domain device comprising:

a layer of material in which magnetic bubble domains can be moved;

a bubble domain generation means coupled to said layer and defining a nucleation source for magnetic bubble domains in said layer, said generated bubble domains along with possibly unwanted duplicate bubble domains being produced in response to a current pulse;

a first bubble domain guide structure coupled to said layer and disposed directly adjacent said generation means and defining a first bubble domain propagation path for guiding the movement of said generated bubble domains in said layer in response to a cyclical change in orientation or a reorientating field within the place of said layer, said first guide structure functioning to receive said bubble domains representative of information which are generated by said generation means;

characterized in that said device further comprises a second bubble domain guide structure coupled to said layer and

disposed directly adjacent said generation means and said first bubble domain guide structure, said second bubble domain guide structure being operative for receiving and guiding the movement of said unwanted duplicate bubble domains produced in said layer by said generation means simultaneously with the production of ones of said generated bubble domains representative of information and transferred to said first bubble domain guide structure.

4,388,701

RECIRCULATING LOOP MEMORY ARRAY HAVING A SHIFT REGISTER BUFFER FOR PARALLEL FETCHING AND STORING

Frederick J. Aichelmann, Jr., and Fernando Neves, both of Hopewell Junction, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 30, 1980, Ser. No. 192,581
Int. Cl.³ G11C *7/00, 8/00*
U.S. Cl. 365—77 **6 Claims**



1. A memory array comprising,
a plurality of recirculating loop memory elements,
said elements being clocked in synchronism so that the corresponding bits recirculate in their respective loops with the same time phase,
a shift register having a serial data input and a serial data output and comprising a number of cells equal in number to the number of said elements
a data input line coupled to said input,
a data output line coupled to said output,
first means for selectively connecting each said coil to a respective one of said elements for writing data from said cells into said elements,
second means for selectively connecting each said cell to a respective one of said elements for reading data from said elements into said cells, and
means for shifting data stored in said shift register throughout said number of cells in the time interval between successive clockings of said elements.

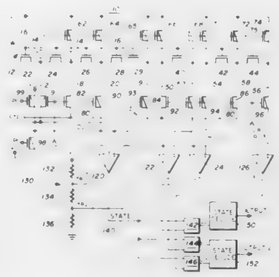
4,388,702

MULTI-BIT READ ONLY MEMORY CIRCUIT

Douglas P. Sheppard, Grapevine, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Aug. 21, 1981, Ser. No. 294,831
Int. Cl.³ G11C *17/00*
U.S. Cl. 365—104 **22 Claims**

1. A read only memory (ROM) circuit, comprising:
a word line;
a plurality of storage transistors having the control terminals thereof connected to said word line, each of said storage transistors having one of a plurality of threshold voltages wherein said threshold voltages correspond to respective predetermined data states;
a plurality of reference transistors having the control terminals thereof connected to said word line, each of said reference transistors having one of said threshold voltages;
means for driving each of said transistors to an initial condition;
means for generating a control signal which is applied to each of said transistors for sequentially driving a plurality of said transistors from said initial condition to a final condition in an order corresponding to the threshold voltages of said transistors;
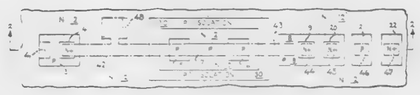


means for determining the condition, initial or final, of said reference transistors when a selected one of said storage transistors is driven from said initial condition to said final condition; and
means for decoding the condition, initial or final, determined for said reference transistors when said selected storage transistor is driven to said final condition to generate an output signal corresponding to the data state of said selected storage transistor.

4,388,703

MEMORY DEVICE

Richard J. Patch, and George D. Rose, Jr., both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Continuation-in-part of Ser. No. 37770, May 10, 1979, abandoned. This application Aug. 26, 1980, Ser. No. 181,423
Int. Cl.³ G11C *11/40, 17/06*
U.S. Cl. 365—105 **12 Claims**



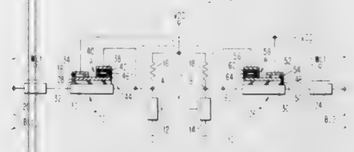
1. A monolithic integrated circuit comprising a plurality of logic devices each comprising an input, a plurality of programmable circuits each comprising a resistor and a diode device and adapted to be programmed in response to application of programming signals, said logic devices normally being adversely affected by the application of programming signals, each of said resistors coupling a selected one of said logic device inputs through a respective, associated diode device to a common reference point, each of said diode devices initially exhibiting a high impedance, means for modifying said logic devices comprising means for applying programming signals to the junctions between selected ones of said resistors and their associated diode devices to cause said last named diode devices to irreversibly exhibit a bidirectional low impedance which establishes the associated reference states at said last names junctions, said resistors being dimensioned to block such adverse programming signal effects on said logic elements by said first means.

4,388,704

NON-VOLATILE RAM CELL WITH ENHANCED CONDUCTION INSULATORS

Claude L. Bertin, South Burlington; Harish N. Kotecha, Essex Junction, and Francis W. Wiedman, Stowe, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1980, Ser. No. 192,579
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—154 **17 Claims**



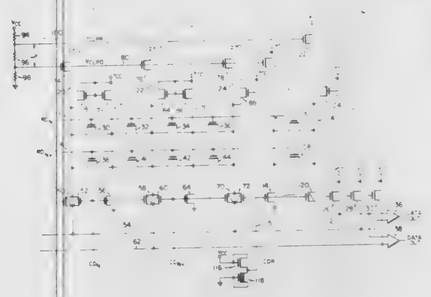
1. A memory system comprising;
a semiconductor substrate,
a volatile memory cell having a data node formed in said substrate,
a non-volatile device including:
a floating gate capacitively coupled to said substrate,
a first control gate,
a thin insulating layer disposed between said floating gate and said first control gate,
a second control gate, and
a dual charge injector structure disposed between said floating gate and said second control gate,
means for coupling one of said control gates of said non-volatile device to said data node, and
means for applying control pulses to the other of said control gates of said non-volatile device for selectively transferring data between said data node and said floating gate.

4,388,705

SEMICONDUCTOR MEMORY CIRCUIT

Douglas P. Sheppard, Grapevine, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Oct. 1, 1981, Ser. No. 307,641
Int. Cl.³ G11C *7/00, 17/00*
U.S. Cl. 365—210 **7 Claims**



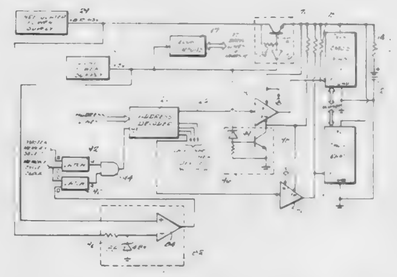
1. A semiconductor memory circuit comprising:
a plurality of word lines which are selectively activated in response to an address signal;
a plurality of memory cell bit lines;
a plurality of memory cells each connected to one of said word lines for activation thereby and connected to one of said memory cell bit lines for data transfer therethrough;
a data line;
means responsive to an address signal for selectively connecting one of said memory cell bit lines to said data line;
a reference bit line;
a plurality of reference cells connected respectively to said word lines for activation thereby said reference cells connected to provide a reference signal at said reference bit line, said reference signal having a static state when one of said reference cells is activated for a time period greater than the discharge time of said reference bit line and said reference signal having a dynamic state when said reference cells are accessed at a rate having a period less than the discharge time of said reference bit line;
means for clamping said memory cell bit lines to limit a voltage excursion thereof to a first clamp voltage, and for clamping said reference bit line to limit a voltage excursion thereof to a second clamp voltage different from said first clamp voltage; and
a sense amplifier having first and second inputs connected respectively to said data line and to said reference bit line for generating a data output signal which is a function of the amplitudes of said reference signal and the voltage on said data line.

4,388,706

MEMORY PROTECTION ARRANGEMENT

Clyde R. Butler, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Dec. 1, 1980, Ser. No. 211,937
Int. Cl.³ G11C *11/34*
U.S. Cl. 365—226 **5 Claims**



1. An arrangement for protecting a plurality of memory elements, accessed by a control system, from the interruption of power from a primary power source, the memory elements having a power input requiring, for normal operation, connection to a voltage within a predetermined operating range, and at least one chip enable input, comprising:
means for referencing the voltage level of power from said primary power source to the memory elements to the voltage of a logic supply source;
first comparator means for coupling to the logic supply power source, normally providing a first voltage within the predetermined operating range, for (a) determining whenever the voltage of the logic supply source falls below a second voltage within the predetermined operating range and (b) providing a first comparator signal indicative thereof;
an address decoder for (a) receiving addresses of memory elements to be accessed by the control system and (b) providing chip enable signals for coupling to the chip enable of each of said memory elements, the address decoder having a master enable input; and
latch means, for receiving the first comparator signal and providing in response thereto a master disable signal, indicative of the voltage of the logic supply power source falling below the second voltage; the master disable signal being coupled to the master enable input of the address decoder, the master disable signal operating to disable all

memory elements coupled thereto at the next memory cycle of the control system.

4. A memory protection arrangement, comprising:

plural memory elements, each having a chip enable input;

first latched voltage comparator means for comparing the voltage level of a primary power supply providing power to said memory elements with a predetermined threshold voltage and providing a disable signal to said chip enable inputs to prevent lost data that would otherwise occur as a result of a short chip enable from a power interruption; and

second voltage comparator means for sensing the voltage level of an external logic power supply and disabling said memory elements to protect them from spurious signals which may occur during application and removal of power from said primary power supply.

4,388,707

MEMORY SELECTING SYSTEM

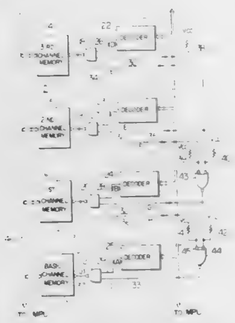
Shigeru Komatsu; Kazushi Mizukami; Tsuguji Tachiuchi, all of Yokohama; Kunihiko Nagai, Zushi, and Takuo Koyama, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 30, 1981, Ser. No. 279,071

Claims priority, application Japan, Jun. 30, 1980, 55-87869

Int. Cl.³ G11C *8/00*

U.S. Cl. 365—230 **4 Claims**



4. A memory selection system comprising:

first and second memories;

first and second detection means for producing detection signals when addresses in said first and second memories are designated, respectively;

first and second control means for enabling said first and second memories for access, respectively, when said first and second detection means produce said detection signals, respectively; and

third control means responsive to the detection signal from said first detection means to disable said second memory for access independently of the presence or absence of the detection signal from said second detection means.

4,388,708

METHOD AND APPARATUS FOR DETERMINING PHYSICAL QUANTITIES

Damir M. J. Skrgatic, 203 Clement Rise, Dedridge, Livingston, West Lothian, and John S. Strachan, 20 Gloucester La., Edinburgh EH3 6ED, both of Scotland

Filed Mar. 18, 1981, Ser. No. 244,962

Claims priority, application United Kingdom, Mar. 20, 1980, 8009495; Sep. 11, 1980, 8029414

Int. Cl.³ G01B *17/00;* **G01S** *15/10*

U.S. Cl. 367—2 **6 Claims**

1. Apparatus for determining a physical parameter, comprising:

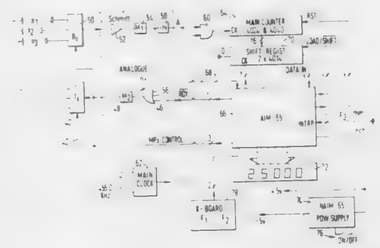
a first pulse transmitter transducer and a first pulse receiver transducer separated by a transmission path through a fluid medium,

retransmission means, responsive to receipt of a pulse by the first receiver transducer, for causing transmission of a further pulse by the first transmitter transducer,

counting means, connected to the first receiver transducer, for counting the number n of pulses received,

timing means for determining the time T required to receive said number n of pulses received,

calculating means arranged to derive a measured value of said physical parameter from n and T, and



reference means, including a second transmitter transducer and a second receiver transducer at fixed locations operating in conjunction with said retransmission, counting and timing means, for providing reference values of the time required for transmission of a number of pulses between said fixed locations which reference values vary with environmental changes in the transmission medium and operational drift in the retransmission, counting and timing means,

said calculating means including means for comparing n, T and said reference values of time and the number of pulses and for adjusting said measured values of said physical parameter accordingly.

4,388,709

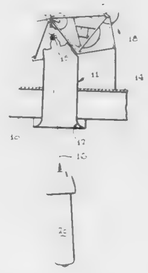
FUNNEL CONSTRUCTION FOR A DIPPING SONAR

Chester L. Reed, Burbank, and Robert M. Bridges, Northridge, both of Calif., assignors to The Bendix Corporation, Sylmar, Calif.

Filed Jan. 19, 1981, Ser. No. 225,894

Int. Cl.³ B63B *21/16*

U.S. Cl. 367—131 **9 Claims**



1. A funnel construction for a dipping sonar carried in a helicopter, said sonar including a hoist with a cable-carrying drum, a cable attached to said drum, and an underwater transducer attached to said cable, said hoist being capable of lowering said transducer into and out of a body of water from said helicopter, and

a housing in said helicopter for receiving and storing said transducer, said funnel forming an opening into said housing

characterized in that said funnel construction includes a first cylindrical member having a slightly expanded diameter at its top rim and its lower rim, said cylindrical member passing through an opening in the bottom of said helicopter,

a flared cylindrical entrance aperture member of thin wall, aluminum alloy having its smaller end in telescoping relation with said lower rim and bonded thereto, and terminating its flared end in a large diameter annular lip extending in the same direction as its smaller end,

a partially conical strut member of aluminum alloy having a short length of axially inwardly extending annular skirt at its larger diameter end, terminating adjacent said annular lip, an inwardly tapered axially extending section at its smaller diameter end which is slightly larger than the diameter of said lower rim and positioned adjacent thereto, and terminating in a radially outwardly extending flange,

a quantity of resilient foam material positioned between said strut member and said entrance aperture member and extending over said lower rim to a first surface adjacent said flange and also to a second surface between said large diameter annular lip and said axially inwardly extending annular skirt,

sealing means sealing said first and second surfaces, and means fastening said flange to said helicopter.

4,388,710

SUBMARINE CABLE TENSION TELEMETERING SYSTEM

Joseph A. Pecon, Jr., Bernardsville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 13, 1981, Ser. No. 283,115

Int. Cl.³ H04B *11/00;* **H02G** *1/10*

U.S. Cl. 367—134 **6 Claims**



1. In a submarine cable laying system, apparatus for measuring cable tension during laying operations comprising

a separable housing for longitudinal attachment to a submarine cable before laying,

a strain gauge within said housing for producing an electric magnitude proportional to tension in said cable,

a saddle within said housing for holding said cable in a bowed condition against said strain gauge such than an increase in cable tension tends to reduce the bow in said cable and thereby increases the compressive force on said strain gauge, and

control means for translating the electric magnitude caused by compression of said strain gauge into an acoustic signal transmissible through the submarine environment.

4,388,711

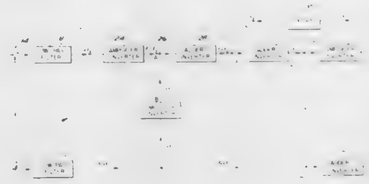
OPTIMUM FLOW NOISE CANCELLING HYDROPHONE MODULE

John W. Fay, Old Lyme, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 28, 1981, Ser. No. 287,959

Int. Cl.³ G01S *3/80*

U.S. Cl. 367—135 **5 Claims**



1. An optimum flow noise cancelling hydrophone module of a towed line array comprising:

a pair of hydrophones, a lead hydrophone and a lag hydrophone adjustably positioned adjacent one another in said towed line array;

a first filtering means for filtering the acoustic signal plus flow noise output of said lead hydrophone;

a second filtering means for filtering the acoustic signal plus flow noise output of said lag hydrophone;

a first amplifying means for amplifying and inverting the acoustic signal plus flow noise output of said first filtering means;

a second amplifying means for amplifying and twice inverting the acoustic signal plus flow noise output of said second filtering means;

a first summing means for adding the acoustic signal plus flow noise outputs of said first and said second amplifying means wherein said acoustic signals cancel leaving combined flow noise, then inverted, as the output of said first summing means;

delay loop means for cancelling said lag hydrophone flow noise component of said combined flow noise output of said first summing means and inverting said lead hydrophone flow noise then remaining; and

a second summing means for adding and inverting said acoustic signal plus flow noise output of said first filtering means and said lead hydrophone flow noise component output of said delay loop means to obtain, as the output of said second summing means, the desired acoustic signal.

4,388,712

COMBINED ELECTRONIC APPARATUS INDICATOR AND CASSETTE TAPE TRANSDUCER APPARATUS, PARTICULARLY COMBINED RADIO-RECORDER FOR AUTOMOTIVE USE

Horst Timm, Hildesheim, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Jul. 1, 1980, Ser. No. 165,092

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1979, 2927984

Int. Cl.³ G11B *31/00*

U.S. Cl. 369—10 **8 Claims**

1. Combined electronic indicator and cassette tape transducer apparatus (**10**), particularly for automotive installations, having

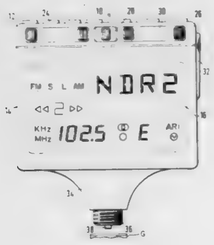
a housing (**12**);

a pivotable cover plate (**14**) secured to the housing;

guide means (**58**) on the cover plate for sliding movement of a cassette parallel to said cover plate to receive a tape cassette in said housing;

drive means (**20, 40, 44, 46, 50, 52**) secured within the hous-

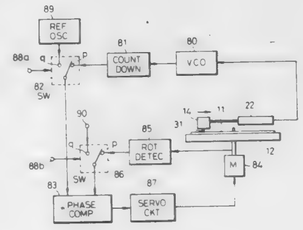
ing and engageable with a tape in the cassette when the cassette is inserted in the cover plate and the cover plate is pivoted into a closed position;
means carrying electrical signals representative of operation of an electronic apparatus;
operating and control elements (**24**, **24'**, **26**, **28**, **30**, **32**) connected to the electrical signal carrying means and controlling the drive means;
an indicator display panel (**16**) mounted on the cover plate (**14**);
and display indicator means (**18**) on the display panel, connected to and controlled by the electrical signals carried by the signal carrying means to indicate operation of an electronic apparatus generating said signal;
the housing (**12**, **72**) forming a combined and housing support for said drive means and for said operating and control elements located in, and on said housing;
and a flexible, hollow gooseneck (G) attached to said housing to provide a flexible holding support for said housing, the drive means therein, and said operating and control elements thereon.



8. Combined automobile radio receiver, cassette tape transducer apparatus and electronic indicator and operating control unit comprising a housing (**72**);
a pivotable cover plate (**14**) secured to the housing;
guide means (**58**) on a cover plate for sliding movement of a cassette parallel to said cover plate to receive a cassette in said housing;
drive means (**40**, **44**, **46**, **50**, **52**) secured within the housing and engageable with a tape in the cassette when the cassette is inserted in the cover plate and the cover plate is pivoted into a closed position;
a radio receiver located within said housing;
operating and control elements connected to the radio receiver and controlling the drive means;
an indicating display panel (**16**) mounted on a cover plate (**14**);
and display indicator means (**18**) on the display panel (**16**) connected to and controlled by electrical signals derived from said radio receiver and carrying means to indicate operation of said radio receiver generating said signals,
the housing (**72**) forming a combined housing and support for said drive means, said radio receiver and said operating and control elements.

4,388,713
ROTATION CONTROL SYSTEM IN A ROTARY RECORDING MEDIUM REPRODUCING APPARATUS
Kazuo Tatsuguchi, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan
Filed Dec. 23, 1980, Ser. No. 219,507
Claims priority, application Japan, Dec. 27, 1979, 54-173082; Dec. 27, 1979, 54-173083
Int. Cl.[3] **G11B** *17/00, 19/24*
U.S. Cl. 369—50 **4 Claims**

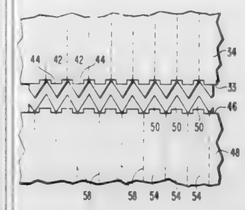
1. A rotation control system in an apparatus using a reproducing stylus for reproducing information signals from a rotary recording medium, said rotary recording medium having information signals recorded thereon so that the relative velocity between reproducing means and said rotary recording medium is maintained constant, said rotation control system comprising:
a motor for rotating said rotary recording medium;
positional signal obtaining means for obtaining a positional signal corresponding to the position of said reproducing stylus on said rotary recording medium;
variable frequency oscillating means responsive to said positional signal for producing a signal having a frequency which varies in accordance with said positional signal;
rotation detecting means for detecting the rotation of said motor;
comparing means for comparing the output signal of said variable frequency oscillating means with the output signal of said rotation detecting means, to produce an output difference signal;
controlling means for controlling the rotation of said motor in response to said difference signal;
a reference oscillator means for generating a reference frequency signal;



synchronized signal separating and supplying means for separating a synchronized signal from a signal reproduced from said rotary recording medium by use of said reproducing stylus;
a first switching means for selectively supplying the output of said variable frequency oscillating means and the output of said reference oscillator means to said comparing means; and
a second switching means for selectively supplying the output of said rotation detecting means and the synchronized signal of said synchronized signal separating and supplying means coupled said switching means to said comparing means,
said first and second switching means respectively supplying the outputs of said variable frequency oscillating means and said rotation detecting means to said comparing means before a starting of a normal reproduction, and said first and second switching means being switched over to respectively supply the output of said reference oscillator means and the synchronized signal of said synchronized signal separating and supplying means to said comparing means upon normal reproduction.

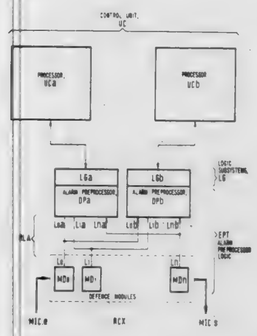
4,388,714
TECHNIQUE FOR UNIFORM STYLUS CONFIGURATION
Eugene O. Keizer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Division of Ser. No. 141,939, Apr. 21, 1980, Pat. No. 4,330,915.
This application Aug. 17, 1981, Ser. No. 293,152
Int. Cl.[3] **G11B** *3/44*
U.S. Cl. 369—173 **5 Claims**

1. In a stylus having a shank and a tip at one end of said shank, said tip being prefabricated from a material different from the material of said shank and having a face thereof oriented along a predetermined crystallographic plane, the improvement comprising said tip being attached to said shank by an interlocking mortise-and-tenon joint fabricated as an



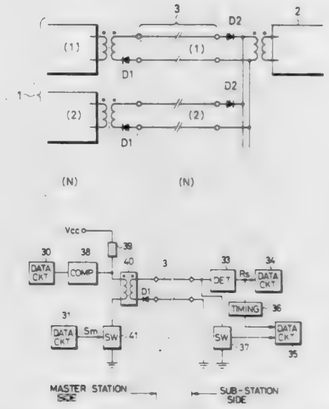
integral part of said tip, whereby a specific orientation of said crystallographic plane with respect to said shank is achieved.

4,388,715
ALARM PREPROCESSOR LOGIC
Yves Renaudin, La Montgolfiere, and Daniel Bordon, Les Ulis, both of France, assignors to Compagnie industrielle Des Telecommunications Cit-Alcatel, Paris, France
Filed Jul. 31, 1980, Ser. No. 174,059
Claims priority, application France, Aug. 3, 1979, 79 19946
Int. Cl.[3] **H04J** *3/14;* **H04Q** *11/04*
U.S. Cl. 370—13 **12 Claims**



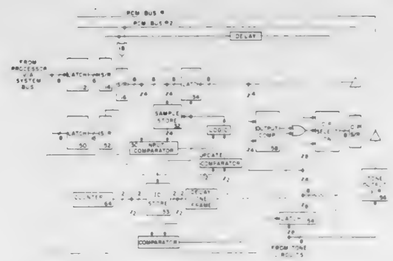
1. An alarm preprocessing logic system for use in a computer controlled digital switching exchange including a central computer, the alarm preprocessing logic system comprising: defence modules each allotted to a respective portion of the exchange for detecting a plurality of types of alarm therein; means for forwarding detected alarms via redundant alarm data transmission means (CAa, CAb, SLM1, SLM2, COL) to alarm processing logic including (i) means for confirming said alarms (PT2) (ii) means for attributing a category to said alarms depending on type of said alarm and on the exchange unit which originated the alarm and (iii) means for grouping said alarms according to the category attributed thereto (PT1, MDI, MAP), and for classifying said alarms in an order of priority; the alarm processing system further comprising: data interchange logic connecting the alarm processing logic to the exchange central computer and arranged to ensure that said alarms are sent to the central computer in said order of priority.

4,388,716
TWO-WAY TRANSMISSION SYSTEM
Fumihiko Takezoe, and Minoru Koyama, both of Hino, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan
Filed Nov. 13, 1980, Ser. No. 206,603
Claims priority, application Japan, Nov. 15, 1979, 54-147023; Feb. 22, 1980, 55-20486
Int. Cl.[3] **H04L** *5/14*
U.S. Cl. 370—29 **6 Claims**



5. An insulated type signal transmission system comprising: a transmission line, one pulse transformer coupled to said transmission line, a first diode means coupled in series with a second winding of said pulse transformer at a first terminal thereof and a second diode means coupled in series with said second winding at a second terminal thereof, and a plurality of signal transmitting circuits connected in parallel and coupled to said first terminal and said second terminal of said second winding of said pulse transformer.

4,388,717
CONFERENCE CIRCUIT FOR PCM SYSTEM
Michael G. Burke, Corinth, Miss., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Jan. 14, 1981, Ser. No. 224,970
Int. Cl.[3] **H04Q** *11/04*
U.S. Cl. 370—62 **4 Claims**



1. A conference circuit for a telecommunications system in which speech data for conference calls is transmitted internally in digital form over a plurality of time division channels in recurring time frames, said circuit comprising: means for storing digital samples of speech from each conference call, first comparison means, means for transferring digital samples for a

call from said storing means for comparison in said first comparison means with a current sample received from said call, means for storing the current sample in said storing means in place of the previously stored sample when the current sample indicates greater amplitude than the previously stored sample, a second comparison circuit, a tone generator, means for enabling a digital signal output from the tone generator representative of a tone for transmission to said second comparison circuit, said second comparison circuit compares the greater amplitude sample from the first comparison circuit with the digital tone representation to determine which signal input to the second comparison circuit is louder, and means for transmitting at the end of a frame a signal representing the louder signal from said second comparison circuit to said time division channels.

4,388,718

DIGITAL TELECOMMUNICATION SYSTEM

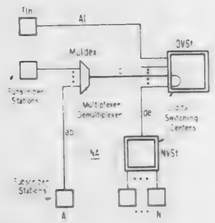
Peter Gerke, Graefelfing, and Joachim Petersen, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 26, 1981, Ser. No. 228,675

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003290

Int. Cl.[3] **H04J** *3/00*; **H04Q** *11/04*

U.S. Cl. 370—110.1 **1 Claim**



1. A digital communication system comprising:

means defining a plurality of 64 kbit/s channels each of which includes a 56 kbit/s primary channel and an 8 kbit/s auxiliary channel;

a plurality of subscriber stations and a switching center interconnected via said channels;

means for selectively operating the primary channels to carry pulse code modulated or Δmodulated speech signals, rapid fixed image signals and rapid data signals from subscriber-to-subscriber;

means for selectively operating the auxiliary channels to carry information signals including exchange-oriented switching signals, slow data transmission signals, slow fixed image signals and subscriber-to-subscriber control signals, and special service indication signals including remote control signals; and

means in said switching center operated to constantly read said auxiliary channels and selectively insert into and extract from said auxiliary channels the information signals in accordance with the special service indication signals read from said auxiliary channels.

4,388,719

DYNAMIC SIGNAL GENERATOR

George E. Soltysik, Russell, Pa., and John C. R. Anderson, Jamestown, N.Y., assignors to Loranger Manufacturing Company, Warren, Pa.

Filed Jan. 16, 1981, Ser. No. 225,673

Int. Cl.[3] **G06F** *11/00*; **G01R** *31/28*

U.S. Cl. 371—27 **7 Claims**

1. A dynamic signal generating circuit for semiconductors comprising:

a first starting address selector **11** and a second starting address selector **22**,

a first address counter means **12** and second address counter means **23**,

first interval counter means **13** and second interval counter means **24**,

first interval time means **14** and second interval time means **25**,

first output signal means **15** and second output signal means **26**,

an address counter **16**,

a programming card **17**,

address multiplexers **18**,

address signal means **21**,

data pattern generators **19**, and

data signal means **20**,

clock drivers **57**,

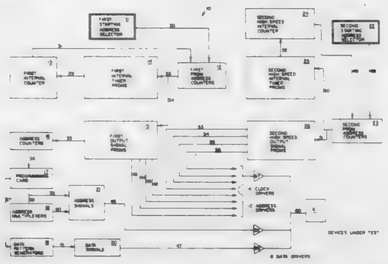
address drivers **58**,

data driver means **59**,

said starting address selectors **11** and **22** being connected to said first address counter means **12** and said second address counter means **23** respectively,

said first address counter means **12** being connected to said first interval timer means **14** and to said first output signal means **15** respectively,

said first interval timer means **14** being connected through said first interval counter **13** to said first address counter means **12**,



said second address counter means **23** being connected through said second interval timer means **25** to second interval counter means **24**, said second address counter means **23** being also connected to said second output signal means **26**,

said second interval timer means **25** being connected through said second interval counter **24** to said second address counter **23**,

said first output signal means **15** being connected through said address counter means **16** to said programming card **17**,

said programming card **17** being connected to said data pattern generators **19**, to said address multiplexers **18**, and to said address signal means **21**,

said address multiplexers **18** being connected to said address signal means **21**,

said data pattern generator **19** being connected to said data signal means **20** and then connected through said data drivers means **59** to devices under test,

said address signal means **21** being connected through address drivers **58** to said device under test,

said first output signal means **15** and said second output signal means **26** being adapted to be connected through said clock drivers **57** to said device under test whereby a wide range of frequency and amplitude and intervals of signals is adjusted in said circuit and it is adapted to provide at least ten signals of all extremes at one time and to change from said ten signals to any one of different characters instantaneously.

4,388,720

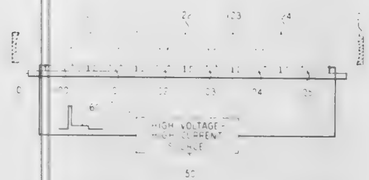
EXTERNAL CONTROL OF RECOMBINATION RATE FOR ELECTRON-ION RECOMBINATION LASERS

William T. Silfvast, Holmdel; Leo H. Szeto, Howell, both of N.J., and Obert R. Wood, II, New York, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 6, 1981, Ser. No. 251,168

Int. Cl.[3] **H01S** *3/097*

U.S. Cl. 372—76 **11 Claims**



1. A plasma-recombination laser which comprises

a resonant laser cavity;

means for producing a plasma laser medium in said resonant laser cavity;

characterized in that

said means for producing a plasma laser medium comprises a material, and means for applying energy to said material in at least two times segments such that the energy during a first time segment is sufficient to produce a plasma from said material, which plasma expands into said resonant laser cavity, and the energy during a second time segment maintains the electron temperature of said plasma high enough to prevent substantial electron-ion recombination in said plasma until recombination is desired.

4,388,721

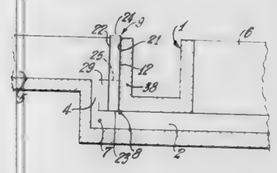
THROAT UPWELL BAFFLE

Herbert L. Hall, Jr., Newark, and Isac M. Sheinkop, Reynoldsburg, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 3, 1981, Ser. No. 289,568

Int. Cl.[3] **C03B** *5/027*

U.S. Cl. 373—31 **7 Claims**



2. In a channel for conducting fluid glass which channel comprises a refractory duct and a channel extending vertically therefrom and formed by upstream and downstream vertical walls, the improvement comprising a chimney having vertical walls and open at its lower end being positioned in contact with said upstream vertical wall.

4,388,722

AUTOMATIC CLEANING DEVICE FOR USE IN AN EXTRACTING FURNACE OF AN APPARATUS FOR ANALYZING GASES IN METALS

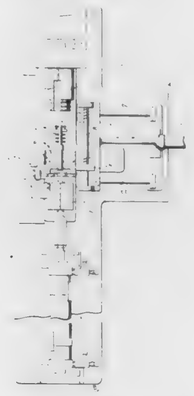
Masahiro Tanimoto, Kyoto, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Jun. 17, 1981, Ser. No. 274,370

Claims priority, application Japan, Jul. 5, 1980, 55-91989

Int. Cl.[3] **H05B** *3/00*

U.S. Cl. 373—118 **27 Claims**



1. In an extracting furnace for use with a gas analyzing device, said furnace being of the type including upper and lower electrodes relatively movable between a closed position, whereat a crucible containing a sample to be analyzed may be contacted and heated by said upper and lower electrodes, and an open position, whereat said upper and lower electrodes are spaced from each other, the improvement comprising an automatic cleaning device for cleaning said upper and lower electrodes when said electrodes are in said open position, said cleaning device comprising:

a support bracket mounted for movement laterally of said electrodes;

a cleaning unit supported on said support bracket and movable thereby between a first position located laterally of said electrodes and a second position located between said electrodes;

crucible removal means on said cleaning unit for removing a spent crucible from said electrodes upon movement of said cleaning unit to said second position thereof;

said cleaning unit including upper and lower cleaning elements operable for cleaning said upper and lower electrodes; and

said cleaning unit being mounted on said support bracket for vertical movement relative thereto, such that when said cleaning unit is in said second position thereof, relative movement between said upper and lower electrodes toward said closed position thereof moves said cleaning unit vertically until said upper and lower cleaning elements are contacted with and clean said upper and lower electrodes.

4,388,723

CONTROL DEVICE FOR STEERABLE NULL ANTENNA PROCESSOR

James Keen, Belford, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 1, 1981, Ser. No. 279,397

Int. Cl.[3] **H04K** *3/00*

U.S. Cl. 375—1 **10 Claims**

1. A radio receiving system for use in an electronic counter-

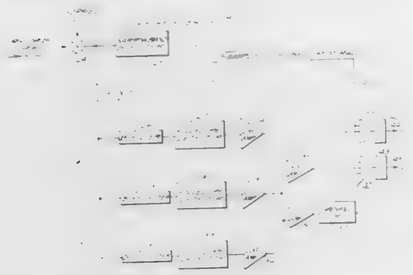
counter measure (ECCM) system to overcome jamming and other interference (I), in which ECCM system a radio transmitter broadcasts signals (S) on a narrow selected frequency which is rapidly changed to provide fast frequency hopping (FFH), the ECCM receiving system comprising:

an antenna system which receives over the broadband spread spectrum of radio frequencies of the transmitter,

a steerable null antenna processor means connected to said antenna system to create an effective antenna null pattern with the null in the direction of broadband interference,

a fast frequency hopping (FFH) radio receiver means connected to said antenna processor means to avoid narrowband jamming by rapidly changing its narrow receiving frequency in synchronism with the corresponding frequency changes at the transmitter, said FFH radio means producing an intermediate frequency (IF) containing the signal (S) and interference (I); and

a control device connected to said (FFH) radio receiver means, said control device having a first and second output port connected to said antenna processor means and having at least three narrowband IF filter means for receiving a portion of the intermediate frequency (IF), the first of said IF filter means being connected to a first summing means to provide the signal (S) level at said first output port and the second and third of said IF filter means, each differently offset from the IF frequency, being connected to a second summing means to produce the interference (I) level at said second output port.



4,388,724

ADAPTIVE EQUALIZER DEVICE

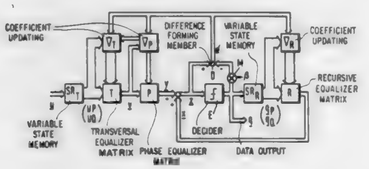
Heinz Göckler, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 9, 1981, Ser. No. 223,772

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1980, 3000856

Int. Cl.³ H04B *3/14*

U.S. Cl. 375—14 **7 Claims**



1. In a device for the adaptive equalization of multiphase and/or multiamplitude modulated data signals, which device includes a decider, an equalizer having an output connected to the input of said decider for equalizing received data signals, and a difference forming member connected to produce an output signal representative of the difference between the input and output signals of said decider, said output signal of said difference forming member being supplied to said equalizer as a control value for adaptively setting the equalizer coefficients; the improvement comprising a multiplier, connected in a signal branch of said device containing a data signal which is fed to said input of said decider, for multiplying the data signal in said branch by a positive scalar value, such that a desired scaling of the equalizer coefficients takes place.

4,388,725

BUS TRANSMISSION SYSTEM

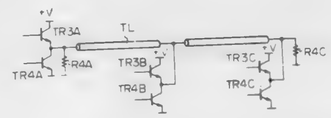
Seiichi Saito, Kawasaki, and Yuji Kitano, Yokohama, both of Japan, assignors to A. Aoki & Associates, Tokyo, Japan

Filed Nov. 26, 1980, Ser. No. 210,674

Claims priority, application Japan, Nov. 29, 1979, 54-154575

Int. Cl.³ H03K *7/08, 17/00, 19/00*

U.S. Cl. 375—36 **12 Claims**



1. A bus transmission system including transmitting means for transmitting data over a transmission line, said system comprising at least two drive circuits connected to said transmission line, and a source voltage comprising:

first and second terminal resistors each having a first terminal operatively connected to opposite ends of the transmission line, each having a second terminal operatively connected to ground and each having a terminal resistance which is nearly equal to the characteristic impedance of the transmission line for forcing the transmission line to ground level between data transmissions;

said at least two drive circuits each having an output voltage and an output impedance and each having three states, said states including a first-level state in which the output voltage is at a first level which is ground level and the output impedance is a low impedance, a second-level state in which the output voltage is at a second level corresponding to the source voltage and the output impedance is the low impedance and a high-impedance state in which the output impedance is a high impedance resulting in substantially decoupling the respective drive circuit from said transmission line, and each having means for detecting the signal transmitting condition and state means, responsive to said detecting means, for state changing which when said data is not to be transmitted places said drive circuits in the high-impedance state, and when said data is initially transmitted, the high-impedance state of said drive circuits being converted into the first-level state in which the output impedance is at the low impedance, thereafter said data being transmitted by said transmitting means based upon the first-level state and the second-level state, and when the transmission of said data is finished, each drive circuit being placed in the first-level state again and thereafter being placed in the high-impedance state by said state means.

4,388,726

SYSTEM FOR THE ULTRA-HIGH FREQUENCY TRANSMISSION OF NUMERICAL DATA

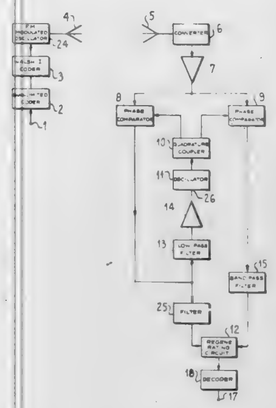
Jean P. Dehaene, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 20, 1980, Ser. No. 161,557

Claims priority, application France, Jun. 22, 1979, 79 16058

Int. Cl.³ H04B *12/00*

U.S. Cl. 375—44 **4 Claims**



1. A system for communicating data over a radio channel comprising:

a transmitter including:

a coding device adapted to receive the data transmitted at a timing 1/T and providing a coded-signal output, the coding device including a first coder for coding blocks of n successive symbols of data of period T into blocks of N symbols of period $T' < T$ and having two (2) states, n and N being whole numbers and $N > n$, each block of N symbols being sum-limited, and a second coder connected to the first coder and providing a Walsh I coding of the sum-limited symbols from the first coder, and

a frequency modulating oscillator for generating a signal modulated with the coded signal provided by said coding device, and

a receiver including:

means for receiving the modulated signal transmitted by the transmitter,

a coherent-phase demodulator, coupled to the receiving means, for restoring the succession of binary elements of period T', and

a decoding device, coupled to the coherent phase demodulator, including a decoder providing a decoding function inverse of that provided by the first coder of said transmitter.

4,388,727

RECEIVERS SUITABLE FOR USE IN REMOTELY-OPERABLE SWITCHING DEVICES AND DATA TRANSMISSION SYSTEMS

Eric Metcalf, Alresford, England, assignor to Sangamo Weston Limited, Enfield, England

Filed Feb. 17, 1981, Ser. No. 235,276

Claims priority, application United Kingdom, Feb. 18, 1980, 8005455

Int. Cl.³ H04L *27/14;* **H04B** *1/26*

U.S. Cl. 375—88 **1 Claim**

1. A receiver for receiving a signal comprising a carrier signal which can have at least one of two predetermined frequencies f_{1a} and f_{1b} and which is modulated with a digital signal, the receiver comprising:

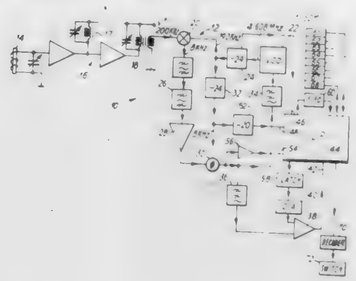
an input circuit for receiving the modulated carrier signal;

variable-frequency oscillator means for producing a signal of frequency f_2;

a first mixer circuit responsive to the signal received by the input circuit and the signal of frequency f_2 to produce a first intermediate signal whose frequency is at least one of $|f_{1a}-f_2|$ and $|f_{1b}-f_2|$;

frequency divider means responsive to a signal produced by the variable frequency oscillator means to produce first and second frequency-divided signals whose frequencies are $|[(f_{1a}+f_{1b})/2]-f_2|$ and $|f_{1a}-f_{1b}|/2$ respectively;

a second mixer circuit responsive to the first intermediate signal and the first frequency-divided signal to produce a second intermediate signal of frequency $|f_{1a}-f_{1b}|/2$;



phase detector means responsive to the second intermediate signal and the second frequency-divided signal to produce an output signal having a DC component dependent upon the phase difference between said second intermediate and second frequency-divided signals, said output signals also containing said digital signal;

low-pass filter means responsive to said output signal for substantially attenuating said digital signal while applying said DC component to said oscillator means to vary the frequency thereof in the sense which tends to reduce said phase difference, and thus tends to reduce the frequency difference between said second intermediate and second frequency-divided signals; and

means for deriving said digital signal from said output signal.

4,388,728

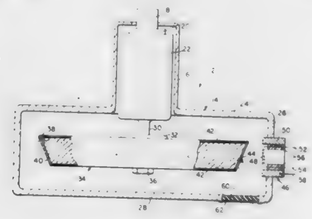
SOFT X-RAY LITHOGRAPHY SYSTEM

Saurabh D. Emmanuel, Stamford, Conn., assignor to The Machlett Laboratories, Incorporated, Stamford, Conn.

Filed Nov. 20, 1978, Ser. No. 962,446

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—34 **14 Claims**





1. An X-ray lithography method comprising the steps of:

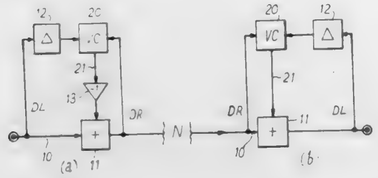
disposing an X-ray source having a target made of a chemical compound material for emitting X-rays characteristic of the elements in said compound along a predetermined path;
disposing in said path a filter made of material transmissive to X-rays characteristic of only one of said elements;
disposing in alignment with said filter a mask having a portion transmissive to X-rays characteristic of said only one of said elements; and
disposing in alignment with said portion of the mask a workpiece having a surface portion coated with a material sensitive to X-rays characteristic of said only one of said elements.

4,388,729

SYSTEMS FOR REDUCING NOISE IN VIDEO SIGNALS USING AMPLITUDE AVERAGING OF UNDELAYED AND TIME DELAYED SIGNALS

Paul A. Spencer, and Ray M. Dolby, both of London, England, assignors to Dolby Laboratories, Inc., San Francisco, Calif.

Continuation of Ser. No. 629,541, Nov. 6, 1975, abandoned, which is a continuation of Ser. No. 450,903, Mar. 13, 1974, abandoned. This application Jun. 30, 1978, Ser. No. 921,045
Claims priority, application United Kingdom, Mar. 23, 1973, 14272/73
Int. Cl.³ H04B *1/64;* **H04N** *5/21;* **H04J** *3/18;* **H04B** *1/64*
U.S. Cl. 455—72 **60 Claims**



50. A signal processor for processing an input signal and comprising means for providing an output signal from a plurality of related signals with similar wave shapes and including at least first and second related signals with differing signal delays relative to the input signal and a further related signal with the same signal delay relative to the input signal as the first related signal, means for deriving each of said related signals from a signal selected from one of said input and output signals, at least one related signal being derived from the output signal, variable combining means for variably and additively combining the first and second related signals to provide the output signal and responsive to a difference between the first and second related signal to exclude from the combination, when the said difference is not small, the second related signal and to replace the excluded second related signal by the further related signal.

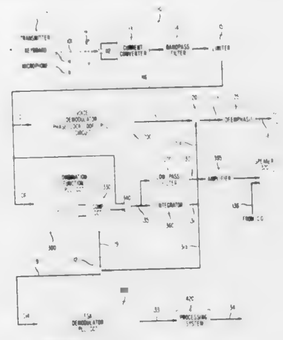
4,388,730

NOISE DETECTOR AND DATA SIGNAL RECEIVER FOR A FREQUENCY MODULATION SYSTEM

Donald H. Nash, Colts Neck, and Duen H. Yen, Shrewsbury, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 6, 1981, Ser. No. 251,320
Int. Cl.³ H04B *1/10, 1/16*
U.S. Cl. 455—208 **13 Claims**

1. In a frequency modulated signal receiver, a noise detector and signal receiver
characterized by
a phaselock loop circuit (**300**) responsive to the received signal, the phaselock loop circuit for providing a first output signal (**505, 506**) representative of the carrier-to-noise ratio of the received signal and for providing a second output signal representing a demodulated received signal,
the phaselock loop circuit comprising a phaselock loop, a comparator amplifier (**330**) and an exclusive OR gate (**340**)



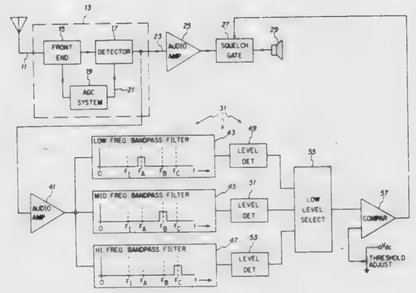
connected in series configuration, the exclusive OR gate being responsive to the comparator amplifier and the comparator amplifier being responsive to the phaselock loop.

4,388,731

RECEIVER WITH SQUELCH FOR OFFSET CARRIER ENVIRONMENT

Dennis D. King, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 1, 1981, Ser. No. 279,894
Int. Cl.³ H04B *1/10*
U.S. Cl. 455—221 **16 Claims**



1. A receiver comprising:
demodulator means,
demodulator intelligence processing means including gating means, and
squelch circuit means connected for receiving an input $e_d(t)$ from the demodulator means, $e_d(t)$ containing noise energy, and, possibly, intelligence energy, and interference energy said squelch circuit means further connected for controlling said gating means and comprising:
(a) first means for monitoring the energy content in each of a plurality N of different fixed portions of the part of the $e_d(t)$ spectrum adjacent the part of the $e_d(t)$ spectrum normally predominated by intelligence energy when intelligence is present in $e_d(t)$,
(b) second means, responsive to said first means, for selecting the portion containing the least energy, and
(c) third means, responsive to said second means, for (i) controlling said gating means to a receiver-enable condition when the energy in the selected portion is below a predetermined threshold, and (ii) controlling said gating means to a receiver-quieting condition when the energy in the selected portion is above said predetermined threshold.

4,388,732

FIBER OPTIC DATA LINK

Allen B. Hansel, Wayside, N.J., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jul. 6, 1981, Ser. No. 280,394
Int. Cl.³ H04B *9/00*
U.S. Cl. 455—608 **8 Claims**

1. In a single optical fiber data link for transmitting data from a transmitter to a receiver over an optical fiber, the link including:
means to detect light issuing from one end of an optical fiber at two different intensity levels and output a signal at two known levels;
a low pass filter responsive to said output signal to separate square wave signals at a frequency below the cutoff frequency of said low pass filter from said output signal, said separated square wave signal representing the data transmitted over the data link;
a high pass filter responsive to said output signal to separate control pulses at a fr :quency above the cutoff frequency of said high pass filter from said output signal;
means to determine whether said control pulses are at least at one frequency and to produce a first control signal at one level and to produce said first control signal at a second level if said control pulses occur at a rate below said one frequency; and
means to determine whether said control pulses occur at a



rate at least at a second frequency less than said one frequency and to produce a second control signal at one level and to produce said second control signal at a second level if said control pulses occur at a rate below said second frequency.

DESIGN PATENTS

GRANTED JUN. 14, 1983

ERRATA

For CLASS	See PATENT NO.
D07–383	269,347

DESIGNS

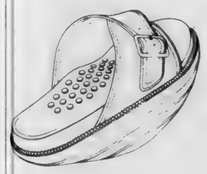
JUNE 14, 1983

269,304
HELMET LINER
Sarah Schonwetter, and Steven B. Schonwetter, both of 585 Warren Ave., Kingston, Pa. 18704
Filed Nov. 3, 1980, Ser. No. 203,375
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—260





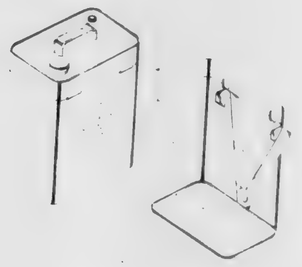
269,305
SANDAL
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, Tokyo; Kenshun Ishii, Tokyo, and Yukio Ishige, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Feb. 20, 1981, Ser. No. 236,388
Claims priority, application Japan, Dec. 16, 1980, 55-52515
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—292



269,306
BELT MOUNTED HOLDER FOR GOLF TEES, RIFLE CAPS, OR SIMILAR ARTICLE
Forest L. Middleton, 611 Bowens Mill Rd., Middleville, Mich. 49333
Filed Nov. 3, 1980, Ser. No. 203,411
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—400



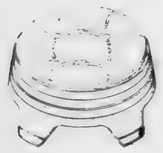
269,307
HITCHING TRAVEL CASE
James L. Laughlin, 229 Dibblee La., Eugene, Oreg. 97404
Filed Aug. 26, 1980, Ser. No. 181,503
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—32



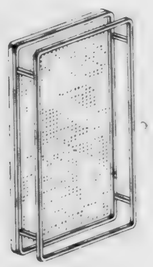
269,308
KEY HOLDER
John G. Goessling, Ladue, and David P. Lage, Manchester, both of Mo., assignors to Quick Point, Inc., Fenton, Mo.
Filed Jun. 26, 1981, Ser. No. 277,874
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—61



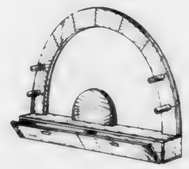
269,309
STOOL OR THE LIKE
Rodney Pickler, Rte. 1, Box 731, Robbins, N.C. 27325
Filed Jun. 15, 1981, Ser. No. 273,721
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—36



269,310
MERCHANDISE DISPLAY RACK
Richard E. Wells, 151 Avenida, La Habra, Calif. 91631
Filed Jun. 16, 1980, Ser. No. 159,871
Term of patent 14 years
Int. Cl. D06—*06*
U.S. Cl. D6—85



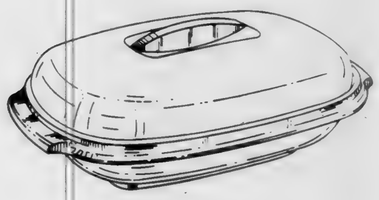
269,311
ARCHERY RACK OR THE LIKE
Robert J. Castro, 109 Dale Dr., Rockville, Md. 20850
Filed Mar. 24, 1981, Ser. No. 247,157
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—129

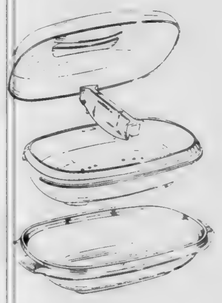


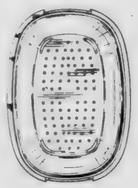
269,312
ARTICLE DISPLAY RACK
Vincent L. Marks, Jr., Rhinebeck, N.Y., assignor to Daniel E. Gelles Associates, Inc., New York, N.Y.
Filed Mar. 30, 1981, Ser. No. 248,705
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—175



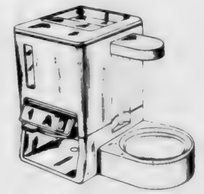
269,313
SERVING DISH
James B. Swett, Altamonte Springs, Fla.; Robert F. Bateman, Greenville, R.I., and Richard A. Boucher, Fitchburg, Mass., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Jun. 2, 1977, Ser. No. 802,753
Term of patent 14 years
Int. Cl. D07—*01. 04*
U.S. Cl. D7—3

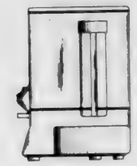


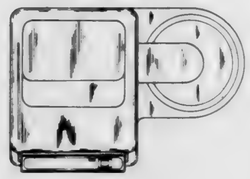




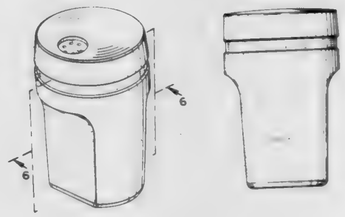
269,314
COFFEE MAKER
Teizo Sato, Suita, Japan, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 4, 1981, Ser. No. 240,534
Claims priority, application Japan, Sep. 5, 1980, 55-36629
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—309



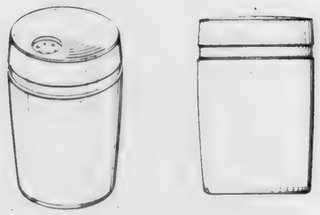




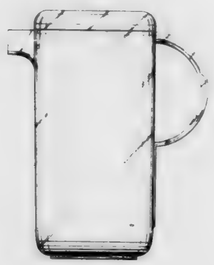
269,315
CONDIMENT SHAKER OR THE LIKE
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Apr. 24, 1981, Ser. No. 257,075
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—54



269,316
GRANUAL DISPENSER OR THE LIKE
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Apr. 24, 1981, Ser. No. 257,076
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—54

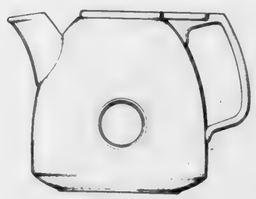


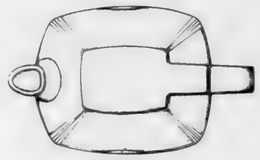
269,317
CARAFE
Ambrogio Pozzi, Gallarate, Italy, assignor to F.LLI Guzzini S.p.A., Recanati, Italy
Filed Mar. 30, 1981, Ser. No. 248,792
Claims priority, application Italy, Sep. 29, 1980, 22951
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—317





269,318
MICROWAVE TEA KETTLE
Curtis R. Blanchard, Osterville, Mass., assignor to General Housewares Corp., Hyannis, Mass.
Filed Jun. 2, 1981, Ser. No. 269,697
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—312

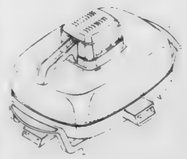




269,319
WOK
Peter M. Fox, West Bend, Wis., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Mar. 12, 1981, Ser. No. 243,024
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—360

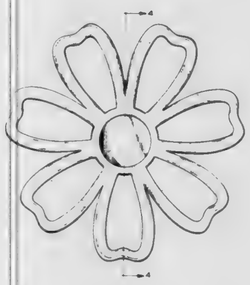


269,320
SKILLET-OVEN
Dan E. Gremonprez, West Bend, Wis.; David L. Painter, and William Cesaroni, both of Glenview, Ill., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Jul. 6, 1981, Ser. No. 279,927
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—360





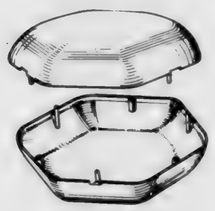
269,321
TRIVET
Joseph A. Zannini, Providence, R.I., assignor to Gerity Products, Inc., Toledo, Ohio
Filed Apr. 13, 1981, Ser. No. 254,401
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—388



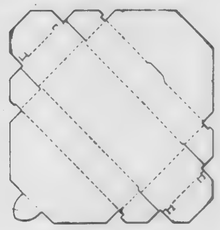
269,322
BOTTLE
Pierre Le Grand, Fecamp, France, assignor to Newfoundland Liquor Corporation, St. John's, Canada
Filed Apr. 6, 1981, Ser. No. 251,167
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—318



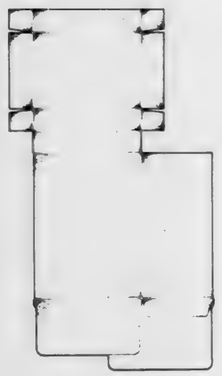
269,323
PACKAGING CONTAINER
Renzo Cillario, Alba, Italy, assignor to Ferrero S.p.A., Alba, Italy
Filed Jun. 5, 1980, Ser. No. 156,518
Claims priority, application Italy, Dec. 20, 1979, 53830/79[U]
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—424



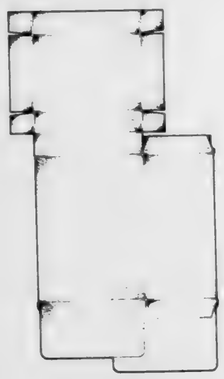
269,324
BLANK FOR DIAGONALLY FOLDED CARTON
Kenneth W. Klein, Aurora, Ind., assignor to Alton Packaging Corporation, Alton, Ill.
Filed Nov. 10, 1980, Ser. No. 205,508
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



269,325
BLANK FOR A PACKAGING CONTAINER
Hans R. I. Linner, Helsingborg, Sweden, assignor to AB Akerlund & Rausing, Sweden
Filed Apr. 9, 1981, Ser. No. 252,275
Claims priority, application Sweden, Oct. 17, 1980, 802025
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



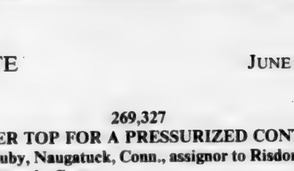
269,326
BLANK FOR A PACKAGING CONTAINER
Hans R. I. Linner, Helsingborg, Sweden, assignor to AB Akerlund & Rausing, Sweden
Filed Apr. 9, 1981, Ser. No. 252,276
Claims priority, application Sweden, Oct. 17, 1980, 802026
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



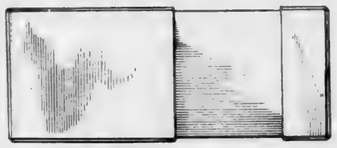
269,327
DISPENSER TOP FOR A PRESSURIZED CONTAINER
Paul M. Kotuby, Naugatuck, Conn., assignor to Risdon Corporation, Naugatuck, Conn.
Filed Apr. 8, 1981, Ser. No. 252,045
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—448



269,328
CLOCK
Michael Cheung, Shaukiwan, Hong Kong, assignor to Promoters Ltd., Hong Kong
Filed Oct. 24, 1979, Ser. No. 87,822
Claims priority, application United Kingdom, Apr. 30, 1979, 79/989738
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



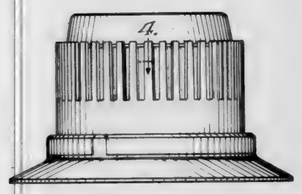
269,329
ALARM CLOCK CASE
Jean G. Malamoud, Saint-Jorioz, France, assignor to S. T. Dupont, Paris, France
Filed Aug. 8, 1980, Ser. No. 176,445
Claims priority, application France, Feb. 20, 1980, 800440
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—18



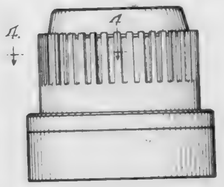
269,330
DEVICE FOR SETTING FABRIC LOOPS
Thomas O. Blair, 8026 SE. Powell Blvd., Portland, Oreg. 97206
Filed Apr. 9, 1981, Ser. No. 252,381
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—64



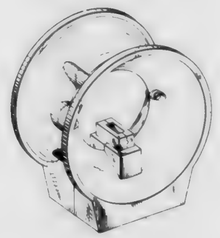
269,331
HOUSING FOR A FIRE AND SMOKE DETECTOR
Kenneth R. Fenne, Glen Ellyn, Ill., assignor to Pittway Corporation, Northbrook, Ill.
Filed Oct. 8, 1981, Ser. No. 309,729
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



269,332
HOUSING FOR A FIRE AND SMOKE DETECTOR
Kenneth R. Fenne, Glen Ellyn, Ill., assignor to Pittway Corporation, Northbrook, Ill.
Filed Oct. 8, 1981, Ser. No. 309,730
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



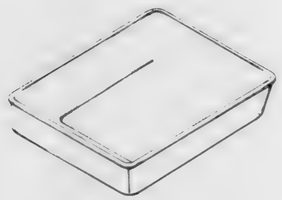
269,333
REFLECTOR FOR A WARNING LIGHT
Robert A. Ferenc, Middletown, Conn., assignor to Whelen Engineering Company, Inc., Deep River, Conn.
Filed Oct. 23, 1980, Ser. No. 200,029
Term of patent 14 years
Int. Cl. D10—*06*; D26—*05*
U.S. Cl. D10—114



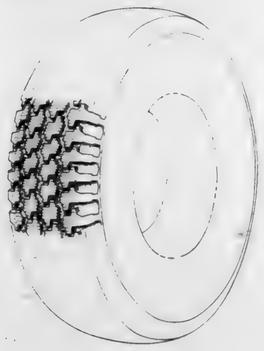
269,334
RABBIT
Doreen N. Roberts, Pwllheli, Wales, assignor to Pendelfin Studios Limited, Lancashire, England
Filed Jan. 7, 1981, Ser. No. 222,859
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—158



269,335
WHEELBARROW ENLARGEMENT INSERT
Mack W. Eubanks, 832 Karlaney Ave., Cayce, S.C. 29033
Filed Apr. 4, 1980, Ser. No. 137,512
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—24



269,336
TIRE TREAD AND BUTTRESS
Charles G. Yurkovich, Boardman, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation of Ser. No. 34,704, Apr. 30, 1979, abandoned, and Ser. No. 34,705, Apr. 30, 1979, abandoned. This application Oct. 31, 1980, Ser. No. 202,895
The portion of the term of this patent subsequent to Oct. 27, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



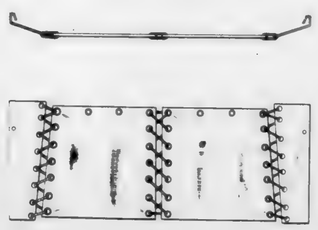
269,337
VEHICLE TIRE
Muneyoshi Maeda, Kodaira; Hiroshi Kojima, Hino, and Masaru Abe, Sayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Feb. 13, 1981, Ser. No. 234,218
Claims priority, application Japan, Aug. 13, 1980, 55-32873
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



269,338
VEHICLE TIRE
Hiroshi Kojima, Hino; Hideaki Nishio, Urawa, and Makoto Yamauchi, Sayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Feb. 13, 1981, Ser. No. 234,147
Claims priority, application Japan, Aug. 13, 1980, 55-32874
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



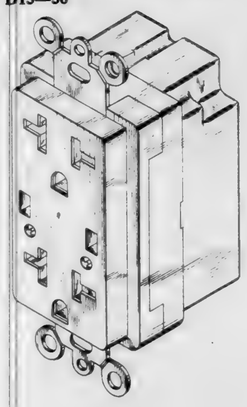
269,339
AUXILIARY CATAMARAN TRAMPOLINE
Douglas F. Hess, 3569 NE. Linda Dr., Jensen Beach, Fla. 33457
Filed Aug. 27, 1980, Ser. No. 181,793
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—318



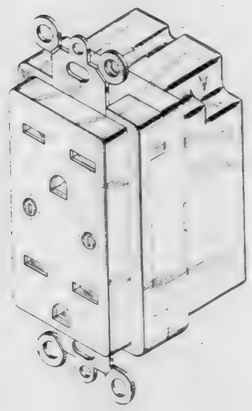
269,340
AIRPLANE FUSELAGE NOSE SECTION
William M. Harold, Edmonds, and Ronald H. Robinson, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Jul. 14, 1978, Ser. No. 924,549
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—319



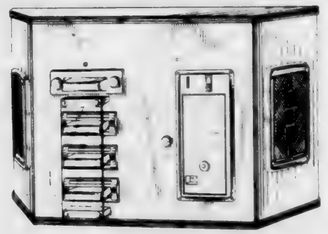
269,341
COMBINED RECEPTACLE AND GROUND FAULT CIRCUIT INTERRUPTER
Richard Doyle, Greenlawn, and Lester Rivera, Brooklyn, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Nov. 17, 1980, Ser. No. 207,330
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—30



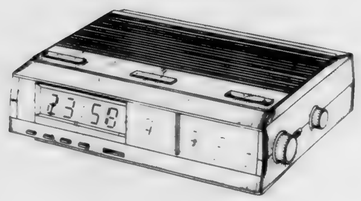
269,342
ELECTRONIC RECEPTACLE
Richard C. Doyle, Greenlawn; Lester Rivera, Glendale, and Saul Rosenbaum, East Meadow, all of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Oct. 7, 1981, Ser. No. 309,541
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—30



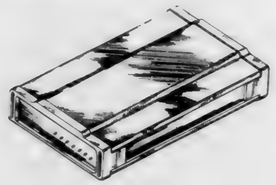
269,343
COIN OPERATED CASSETTE PLAYER OR THE LIKE
Gil Sanchez, Bronx, N.Y., assignor to SOS Incorported, Bayamon, P.R.
Filed Mar. 27, 1980, Ser. No. 134,585
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6



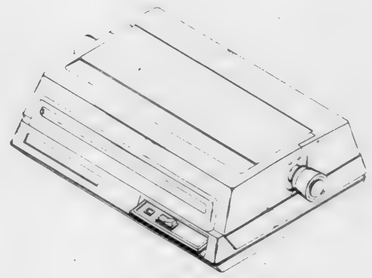
269,344
CLOCK RADIO RECEIVER
Peter H. J. Van de Ven, Valkenswaard, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 13, 1981, Ser. No. 243,420
Claims priority, application United Kingdom, Sep. 17, 1980, 996590
Term of patent 14 years
Int. Cl. D14—*03;* D10—*01*
U.S. Cl. D14—73



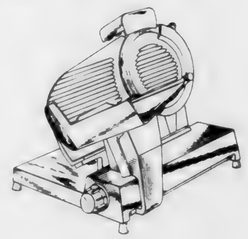
269,345
MODEM
Calvin L. Payne, Jr., Atlanta, Ga.; Vincent J. Gambello, Fort Lee, N.J.; Phillip J. Snoke, Atlanta, Ga.; William G. Jones, Marietta, Ga., and Ricky L. Sansoni, Decatur, Ga., assignors to Hayes Microcomputer Products, Inc., Norcross, Ga.
Filed Jun. 29, 1981, Ser. No. 278,217
Term of patent 14 years
Int. Cl. D14—*02;* D13—*03*
U.S. Cl. D14—107



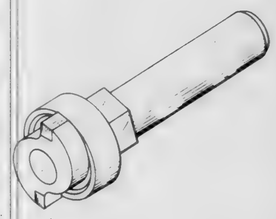
269,346
PRINTER
Angelo M. LaBarbera, Liverpool, N.Y., assignor to SCM Corporation, New York, N.Y.
Filed Jul. 6, 1981, Ser. No. 280,178
Term of patent 14 years
Int. Cl. D14—*02;* D18—*02*
U.S. Cl. D14—111



269,347
FOOD SLICER
Louis Cantatore, Edison, and J. Richard Beltram, Livingston, both of N.J., assignors to International Edge Tool Co., Roseland, N.J.
Filed May 19, 1980, Ser. No. 151,517
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D7—383



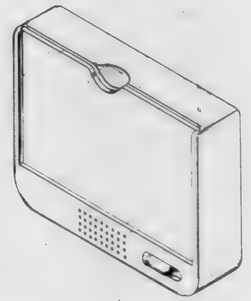
269,348
CLEANING BIT FOR DADO AND RABBET JOINTS OR THE LIKE
Bradford C. Strohmaier, 3387 Mayfair Blvd., Fresno, Calif. 93703
Filed Jul. 24, 1980, Ser. No. 171,992
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—139



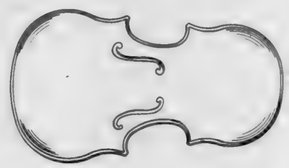
269,349
COMBINED MELTER AND DISPENSER FOR THERMOPLASTIC MATERIAL
Robert H. Belter, Carmel, Calif., assignor to Slautterback Corporation, Monterey, Calif.
Filed Jan. 5, 1981, Ser. No. 222,564
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—144



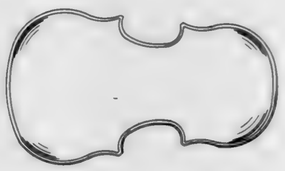
269,350
TRANSPARENCY VIEWER
Peter Lermann, Naring, and Karl-Heinz Schultheiss, Taufkirchen, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Jul. 31, 1980, Ser. No. 175,201
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—14



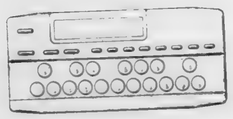
269,351
STRINGED MUSICAL INSTRUMENT SOUNDBOARD
Louie H. Lower, Box 151, Hayden Lake, Id. 83835
Filed Oct. 14, 1980, Ser. No. 196,381
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20



269,352
STRINGED MUSICAL INSTRUMENT BACKBOARD
Louie H. Lower, Box 151, Hayden Lake, Id. 83835
Filed Oct. 14, 1980, Ser. No. 196,382
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20

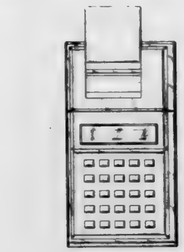


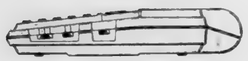
269,353
ELECTRONIC CALCULATOR WITH ELECTRONIC MUSICAL INSTRUMENT AND TIMEPIECE
Shinichi Yokoyama, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Jun. 22, 1981, Ser. No. 275,687
Claims priority, application Japan, Dec. 24, 1980, 55-54812
Term of patent 14 years
Int. Cl. D10—*02*; D17—*01*; D18—*01*
U.S. Cl. D18—2





269,354
ELECTRONIC CALCULATOR
Katsuhiro Ishida, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Mar. 17, 1981, Ser. No. 244,595
Claims priority, application Japan, Sep. 18, 1980, 55-387113
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7





269,355
ELECTRONIC CALCULATOR
Masafumi Yamagami, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Sep. 2, 1981, Ser. No. 298,621
Claims priority, application Japan, Mar. 6, 1981, 56-9340
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7





269,356
DESK TOP ELECTRONIC CALCULATOR
Eiichi Yoshioka, Abiko; Kaname Suwa, Yokohama, and Masumi Ishiwatari, Zushi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 15, 1981, Ser. No. 302,453
Claims priority, application Japan, Mar. 20, 1981, 56-11688
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

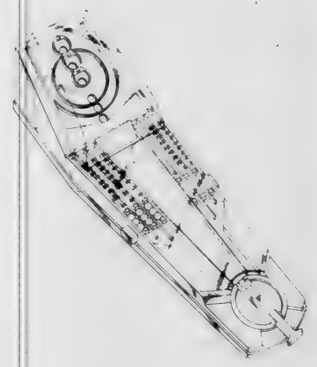




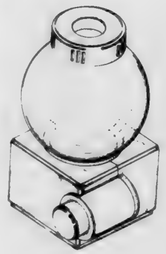
269,357
WRITING INSTRUMENT
Vivienne D. Jagger, Cuckfield, England, assignor to Little People Limited, Hong Kong
Filed Mar. 20, 1981, Ser. No. 245,960
Claims priority, application United Kingdom, Feb. 11, 1981, 998858; Feb. 11, 1981, 998859
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—45



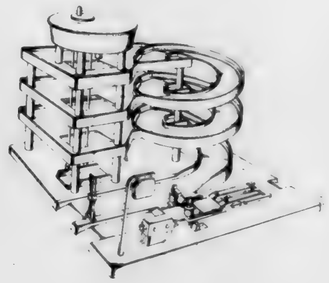
269,358
BALL GAME HOUSING
Gordon A. Barlow, Glenview, Ill., assignor to Gordon Barlow Design, Skokie, Ill.
Filed Apr. 20, 1981, Ser. No. 255,456
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—9



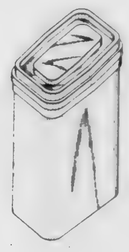
269,359
HOUSING FOR AMUSEMENT WATER TOY
Hitoshi Itakura, Gardena, Calif., and Masaaki Yoshimura, Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Mar. 10, 1981, Ser. No. 242,376
Claims priority, application Japan, Sep. 11, 1980, 55-37442
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59



269,360
TOY GARAGE
Cheuk S. Ng, Hong Kong, Hong Kong, assignor to Tai Sang Industrial Co., Ltd., Hong Kong, Hong Kong
Filed Mar. 9, 1981, Ser. No. 241,654
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—118



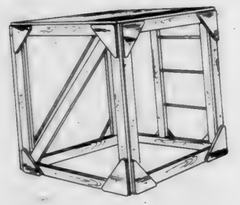
269,361
TOY CANISTER
Claire M. Marschak, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 12, 1981, Ser. No. 224,292
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—121



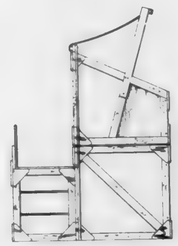
269,362
SIMULATIVE TRUNDLE TOY
Donald E. Welch, 3102 Bayou, Deer Park, Tex. 77536
Filed Mar. 13, 1981, Ser. No. 243,535
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150



269,363
PLAYGROUND CLIMBER
Berthold B. Dieter, 7545 Bono Rd., Terre Haute, Ind. 47802, and Charles L. Gibson, Terre Haute, Ind., assignors to Berthold B. Dieter, Terre Haute, Ind.
Division of Ser. No. 45,305, Jun. 4, 1979, Pat. No. Des. 261,917.
This application Aug. 28, 1981, Ser. No. 297,149
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—245



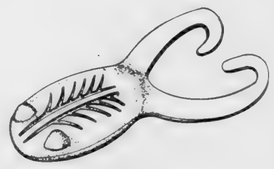
269,364
PLAYGROUND CLIMBER
Berthold B. Dieter, 7545 Bono Rd., Terre Haute, Ind. 47802, and Charles L. Gibson, Terre Haute, Ind., assignors to Berthold B. Dieter, Terre Haute, Ind.
Division of Ser. No. 45,305, Jun. 4, 1979, Pat. No. Des. 261,917.
This application Aug. 28, 1981, Ser. No. 297,152
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—245



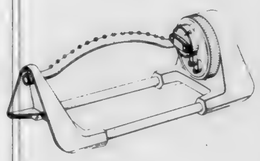
269,365
FISHING LURE
Oscar P. Obst, 27981 Camino Santo Domingo, San Juan Capistrano, Calif. 92675
Filed Feb. 12, 1981, Ser. No. 233,732
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



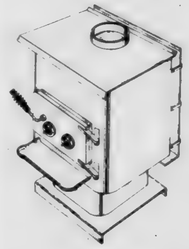
269,366
FISHING LURE BODY
Billy R. Ward, Amsterdam, Mo., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Apr. 30, 1981, Ser. No. 258,867
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



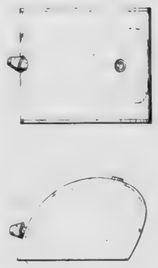
269,367
OSCILLATOR SPRINKLER
Spencer L. Mackay, Canoga Park; Steven E. Maple, Claremont, and Paul G. Mayr, Glendora, all of Calif., assignors to Rain Bird Consumer Products Mfg. Corp., Duarte, Calif.
Filed Dec. 3, 1980, Ser. No. 212,403
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—8



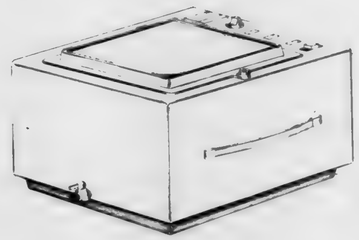
269,368
FREE STANDING STOVE
Janice E. Schrader, 2296 Debra Dr., Springfield, Oreg. 97477
Filed Aug. 17, 1981, Ser. No. 293,151
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



269,369
OXYGEN HOOD
John K. Koh, 2593 Esch, Ann Arbor, Mich. 48104
Filed Nov. 28, 1980, Ser. No. 211,360
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1.1



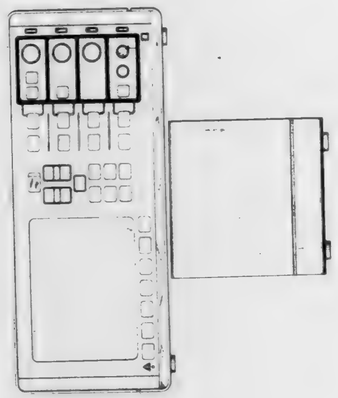
269,370
HOME PASTEURIZER
Raymond F. Groff, 45 Holiday Dr., Apt. 88, Kingston, Pa. 18704
Filed Mar. 2, 1981, Ser. No. 239,303
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—9



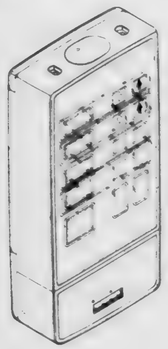
269,371
DENTAL ROOT-CANAL BROACH HANDLE
Henri Leonard, Besancon, France, assignor to Micro-Mega S.A., France
Filed Sep. 12, 1980, Ser. No. 186,693
Claims priority, application Switzerland, Apr. 10, 1980, DM/000 139
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10



269,372
PATIENT MONITORING UNIT
Edmund Reis, and Bernd Rosenfeldt, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Sep. 12, 1980, Ser. No. 186,526
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17



269,373
CARDIAC PACER
Kenneth W. Belt, and George L. Congdon, both of Fort Atkinson, Wis., assignors to Norland Corporation, Fort Atkinson, Wis.
Filed Nov. 25, 1980, Ser. No. 210,275
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17



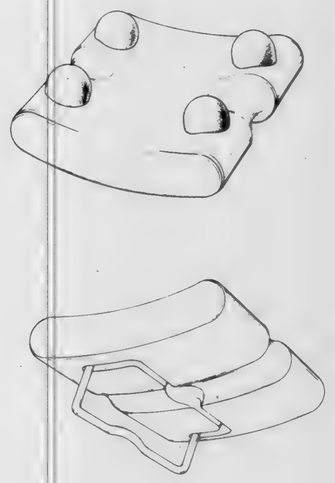
269,374
AMMONIA INHALANT PACKAGE
James B. Brown, R.F.D. #2, Box 313, Mt. Kisco, N.Y. 10549
Filed Jan. 21, 1981, Ser. No. 226,741
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—34



269,375
ROLLER MASSAGER
Isamu Masuda, Daimyo 1-chome 9-20, Chuo-ku, Fukuoka-shi, Fukuoka, Japan
Filed Jul. 18, 1980, Ser. No. 170,246
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D24—36



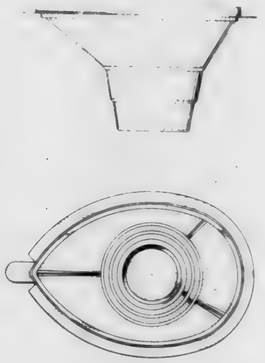
269,376
BACK MASSAGER
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, Tokyo; Kenshun Ishii, Tokyo, and Tetsumi Fujiyama, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Oct. 27, 1980, Ser. No. 200,850
Claims priority, application Japan, Jun. 5, 1980, 55-22427
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D24—36



269,377
MASSAGING APPLIANCE
Frederick G. Mackay, Tarzana, Calif., and Keith M. Mullins, Ft. Collins, Colo., assignors to Teledyne Industries, Inc., Fort Collins, Colo.
Filed Nov. 17, 1980, Ser. No. 207,450
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—41



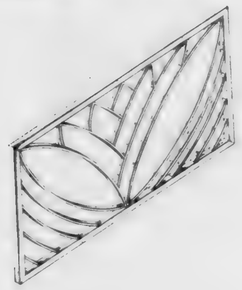
269,378
URINE SPECIMEN CONTAINER
Gerald Work, c/o Caelus Corp., 800 Fidelity Bldg., Spokane, Wash. 99201
Filed Aug. 29, 1980, Ser. No. 182,482
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—54



269,379
ARTICULATE KNEE BRACE
Gary R. Bledsoe, Arlington, Tex., assignor to Medical Designs, Inc., Arlington, Tex.
Filed Jan. 2, 1981, Ser. No. 222,027
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—64



269,380
WINDOW SECURITY GRATING
Thomas G. d'Avila, P.O. Box 9246, Denver, Colo. 80203
Filed Aug. 25, 1980, Ser. No. 181,197
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—53



269,381
CIGAR AND CIGARETTE FILTER PERFORATOR
Rafael T. Cervantes, Malaga, Spain, assignor to The Westbury Foundation, Andorra and Sociedad de Dispositivos Reductores de Tabaco, S.A., Spain
Filed Jun. 29, 1981, Ser. No. 278,377
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—51



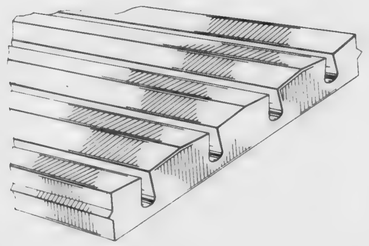
269,382
CIGAR AND CIGARETTE FILTER PERFORATOR
Rafael T. Cervantes, Malaga, Spain, assignor to The Westbury Foundation, Andorra and Sociedad de Dispositivos Reductores de Tabaco, S.A., Spain
Filed Jun. 29, 1981, Ser. No. 278,379
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—51



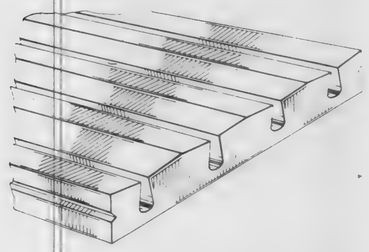
269,383
CIGAR AND CIGARETTE FILTER PERFORATOR
Rafael T. Cervantes, Malaga, Spain, assignor to The Westbury Foundation, Andorra and Sociedad de Dispositivos Reductores de Tabaco, S.A., Spain
Filed Jun. 29, 1981, Ser. No. 278,577
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—51



269,384
INTERLOCKING FLUME PLATFORM PANEL FOR ANIMAL CONFINEMENT PENS
Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz. 85034
Filed May 26, 1981, Ser. No. 267,002
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



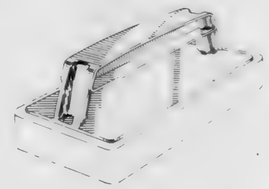
269,385
INTERLOCKING FLUME PLATFORM PANEL FOR ANIMAL CONFINEMENT PENS
Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz. 85034
Filed May 26, 1981, Ser. No. 267,384
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



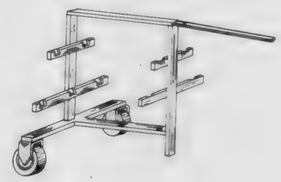
269,386
DISH FOR ANIMALS
George Khider, 129 Porterfield Pl., Freeport, N.Y. 11520
Filed May 7, 1981, Ser. No. 261,567
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—16



269,387
HOLDER FOR A HAND SCRUBBER
Donald R. McClelland, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jun. 4, 1981, Ser. No. 270,251
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—52



269,388
WIRE HANDLING CART
Gary E. Smith, 3543 Norton Way, and Edward D. Parks, 7755 Fairoaks Dr., both of Pleasanton, Calif. 94566
Filed Dec. 24, 1980, Ser. No. 219,928
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—24



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF JUNE, 1983

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Aoki & Associates: *See—*
Saito, Seiichi; and Kitano, Yuji, 4,388,725, Cl. 375-36.000.

A & H Mfg. Co.: *See—*
Kortick, Morris, 4,387,641, Cl. 101-27.000.

A-Lok Products, Inc.: *See—*
Ditcher, Jack; and Westhoff, James A., 4,387,900, Cl. 277-101.000.

A.M.S. (Ateliers de Moulage Specialise): *See—*
Geiger, Reinold, 4,387,821, Cl. 215-330.000.

A/S Wittenborgs Automatfabriker: *See—*
Wittenborg, Poul E., 4,388,338, Cl. 426-590.000.

Abbestam, Kaj; and Palmers, Goran, to Institutet for Verkstadsteknisk Forskning. Machine tool. 4,387,635, Cl. 100-214.000.

Abbey, Harold G. Fluidic control system including variable venturi. 4,387,685, Cl. 123-439.000.

Abbott Laboratories: *See—*
Seberg, Charles H.; and Harms, Jack L., 4,388,074, Cl. 604-165.000.

Abdalla, Lawrence H. Egyptian hair dryer. 4,387,729, Cl. 132-33.00R.

Abe, Masaharu: *See—*
Oizumi, Masayuki; Abe, Masaharu; and Fushiki, Yasuo, 4,388,129, Cl. 156-73.100.

Abe, Mitsunobu: *See—*
Oguri, Yasuo; Awata, Mitsuru; and Abe, Mitsunobu, 4,388,257, Cl. 264-82.000.

Abrams, Jack Z.; and Sherwin, Robert M., to Bechtel International Corporation. SO_2 removal. 4,388,283, Cl. 423-242.000.

Acimovic, Simeon; Lindemann, Karl-Heinz; and Kunz, Volker G., to Elektro-Brite GmbH & Co. KG. Acid tin bath and tin/lead bath respectively for the electrode-position of lustrous coatings of tin and tin/lead respectively. 4,388,161, Cl. 204-43.00S.

Adcock, Gerald L. Well case driving anvil. 4,387,776, Cl. 175-293.000.

Adickes, Henning, to Deere & Company. Exhaust system pipe and exhaust system with such a pipe. 4,387,915, Cl. 285-330.000.

Adolfsson, Ebbe S.; Andersson, Kurt H.; and Ekwall, Carl G. B., to Atlas Copco Aktiebolag. Rock drilling apparatus. 4,387,775, Cl. 175-135.000.

Adrian, Ronald J., to TSI Incorporated. Particle size measuring method and appratatus. 4,387,993, Cl. 356-336.000.

Advanced Energy Systems Inc.: *See—*
Carman, Vincent E., 4,387,783, Cl. 180-165.000.

Advanced Products Beer-Sheva Ltd.: *See—*
Nathan, Roger H., 4,387,876, Cl. 248-571.000.

Advanced Technology Laboratories, Inc.: *See—*
Brandestini, Marco A., 4,387,597, Cl. 73-626.000.

Advanced Terminals, Inc.: *See—*
Greene, Jay R.; Windecker, James W., Jr.; Roberts, James H.; and Wood, Harold F., 4,388,008, Cl. 400-578.000.

AEL Microtel Limited: *See—*
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Agence Nationale de Valorisation de la Recherche - A.N.V.A.R.: *See—*
Guimbal, Jean, 4,388,543, Cl. 310-13.000.

Agfa-Gevaert Aktiengesellschaft: *See—*
Helling, Gunter; Reiff, Helmut; Himmelmann, Wolfgang; and Renner, Gunter, 4,388,403, Cl. 430-546.000.

Agnes, Jennifer M.: *See—*
Maurice, Terrence J.; Murray, Edward D.; and Agnes, Jennifer M., 4,388,333, Cl. 426-104.000.

Ahrens, James E. Sign holder. 4,387,520, Cl. 40-16.600.

Ahroni, Joseph M. Fused plug assembly with push-in fuse unit. 4,388,604, Cl. 337-197.000.

Ahuja, Omprakash G., to TII Industries Inc. Audio-visual line test termination device. 4,388,501, Cl. 179-175.30R.

Aichelmann, Frederick J., Jr.; and Neves, Fernando, to International Business Machines Corp. Recirculating loop memory array having a shift register buffer for parallel fetching and storing. 4,388,701, Cl. 365-77.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Hori, Takanobu; Arai, Fuminao; Kodama, Hisashi; and Okabe, Yoshio, 4,387,675, Cl. 123-90.580.
Katagiri, Masayoshi; and Ogura, Osamu, 4,387,625, Cl. 91-369.00B.
Yogo, Kenji; and Nomura, Isshi, 4,387,696, Cl. 123-585.000.

Aisin Warner Kabushiki Kaisha: *See—*
Sakakibara, Shiro, 4,387,607, Cl. 74-781.00R.

Aizawa, Hiroshi: *See—*
Uchidoi, Masanori; Aizawa, Hiroshi; Urushihara, Kazunobu; Suzuki, Nobuyuki; and Shimizu, Masami, 4,387,977, Cl. 354-60.00R.

Aizawa, Masuo: *See—*
Suzuki, Shuichi; Aizawa, Masuo; Koyama, Masao; Sato, Yuichi; and Koezuka, Junji, 4,388,166, Cl. 204-403.000.

Aizawa, Tatsuo: *See—*
Nishibayashi, Hatsumi; Amagai, Yoshimi; Hikake, Norio; Kouchi, Toshihiro; and Aizawa, Tatsuo, 4,388,396, Cl. 430-126.000.

Ajinomoto Company Incorporated: *See—*
Sano, Kounosuke; and Tsuchida, Takayasu, 4,388,405, Cl. 435-107.000.

Akashi, Goro: *See—*
Hibino, Noburo; and Akashi, Goro, 4,388,368, Cl. 428-336.000.
Miyoshi, Takahito; Okutu, Toshimitu; Takimoto, Masaaki; Saida, Takashi; Akashi, Goro; and Fujiyama, Masaaki, 4,388,360, Cl. 428-172.000.

Akita, Shinji; and Hatanaka, Masayuki, to Nippon Kokan Kabushiki Kaisha. Steel pipe rolling mill. 4,387,584, Cl. 72-100.000.

Akita, Yasuhiro: *See—*
Takemura, Yozo; Kobayashi, Isao; Akita, Yasuhiro; and Kato, Kaoru, 4,388,113, Cl. 75-51.000.

Aktiebolaget Bofors: *See—*
Bjurstrom, Lennart, 4,387,624, Cl. 89-41.0LE.

Akzona, Incorporated: *See—*
Bachmann, Adolf; Boehler, Joachim; and Linhart, Heinz, 4,388,057, Cl. 425-97.000.

Alexander, William J., III. Swatch remover and method. 4,387,590, Cl. 73-159.000.

Alfa-Laval AB: *See—*
Kristoffersson, Ingmar, 4,387,765, Cl. 165-166.000.

Alheid, Robert J., to Beloit Corporation. Blade type fountain coater metering device. 4,387,663, Cl. 118-413.000.

Allan, George G., to Board of Regents, University of Washington. Method to reduce animal browsing damage to plants employing selenium compound. 4,388,303, Cl. 424-162.000.

Allan, George G.; and Ko, Young C., to Board of Regents, University of Washington. Method for preparing a controlled release composition. 4,388,352, Cl. 427-391.000.

Allegretti & Co.: *See—*
Mattson, Charles A.; Michel, James; and Domagalski, Anthony, 4,387,852, Cl. 239-143.000.

Allen, John H., to United States of America, Navy. Data buffer circuit. 4,388,698, Cl. 364-900.000.

Allied Corporation: *See—*
Bustany, Samir T., 4,387,698, Cl. 125-18.000.

Alpha Solarco Inc.: *See—*
Uroshevich, Miroslav, 4,388,481, Cl. 136-246.000.

Alsthom-Atlantique & Electricite de France: *See—*
Gillet, Roger, 4,388,544, Cl. 310-71.000.

Alwani, Dru W.: *See—*
Hort, Eugene V.; Anderson, Lowell R.; and Alwani, Dru W., 4,388,206, Cl. 252-148.000.

Amagai, Yoshimi: *See—*
Nishibayashi, Hatsumi; Amagai, Yoshimi; Hikake, Norio; Kouchi, Toshihiro; and Aizawa, Tatsuo, 4,388,396, Cl. 430-126.000.

Amantea, Robert; and Wheatley, Carl F., Jr., to RCA Corporation. Transistor with improved second breakdown capability. 4,388,634, Cl. 357-34.000.

American Cyanamid Company: *See—*
Shepherd, Robert G., 4,388,459, Cl. 542-427.000.

American Hoechst Corporation: *See—*
Gillich, Thomas N.; and Walls, John E., 4,388,156, Cl. 204-14.00N.
Hopper, Michael J.; Martin, Michael R.; Bolt, Lawrence; Smith, Michael; and Tavasolian, Ali, 4,388,375, Cl. 428-423.700.

American Hospital Supply Corporation: *See—*
Borsanyi, Alexander S., 4,387,734, Cl. 137-206.000.

American Schack Company, Inc.: *See—*
Natarajan, Cuddalore P.; and Meder, Siegfried R., 4,388,066, Cl. 432-1.000.

Amerock Corporation: *See—*
Lense, Robert F., 4,387,942, Cl. 312-334.000.

Aminetzah, Yehuda J., to Northern Telecom Limited. Method of controlling scrambling and unscrambling in a pay TV system. 4,388,643, Cl. 358-123.000.

Ammons, William S.: *See—*
Koyama, Shozo; Manning, John W., Jr.; Ammons, William S.; and Santiesteban, Hector L., 4,388,318, Cl. 424-251.000.

AMP Incorporated: *See—*
Dechelette, Helen, 4,387,509, Cl. 29-850.000.
Lannan, Patrick E., 4,388,591, Cl. 324-158.00P.
Rix, Robert D., 4,387,501, Cl. 29-566.400.
Sergeant, Ronald G., 4,387,610, Cl. 81-5.10R.

Andersen, Cyril F. Game apparatus. 4,387,897, Cl. 273-276.000.

Anderson, George R.: *See—*
Yong, Samuel H.; Anderson, George R.; and Levin, Liza, 4,388,336, Cl. 426-551.000.

Anderson, John C. R.: *See—*
Soltysik, George E.; and Anderson, John C. R., 4,388,719, Cl. 371-27.000.

Anderson, Lowell R.: *See—*
Hort, Eugene V.; Anderson, Lowell R.; and Alwani, Dru W., 4,388,206, Cl. 252-148.000.

Anderson, Ronald L.: *See—*
Fields, Ellis K.; and Anderson, Ronald L., 4,388,470, Cl. 549-240.000.

Andersson, Kurt H.: *See—*
Adolfsson, Ebbe S.; Andersson, Kurt H.; and Ekwall, Carl G. B., 4,387,775, Cl. 175-135.000.

Andreev, Jury M.: *See—*
Shipaev, Gennady A.; Seliverstov, Vyacheslav V.; Osipov, Nikolai A.; Prolygin, Anatoly P.; Mashikhin, Anatoly D.; Askinazi, Mikhail P.; Andreev, Jury M.; and Kagan, Samuil I., 4,388,569, Cl. 318-87.000.

Andrienko, Petr D.: *See—*
Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryazantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko, Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G., 4,388,108, Cl. 75-10.00R.

Anelva Corporation: *See—*
Takahashi, Nobuyuki, 4,388,034, Cl. 414-331.000.

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Koshimura, Yasunobu; Kobayashi, Hisao; and Aoike, Nanjou, 4,388,561, Cl. 315-171.000.

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Kudoh, Akihide; Kawamata, Motoo; Ohshima, Kazushi; Kotani, Makoto; Tsuda, Takeshi; and Aoki, Fukuichi, 4,388,478, Cl. 568-804.000.

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Matsumoto, Osamu; and Aoki, Ichizo, 4,388,092, Cl. 62-24.000.

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Koike, Norio; Sasano, Akira; Taniguchi, Yoshio; Nakano, Toshio; Aoki, Masakazu; and Takemoto, Iwao, 4,387,987, Cl. 355-133.000.

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Suzuki, Takaya; Inoue, Yosuke; and Aoyama, Takashi, 4,388,342, Cl. 427-8.000.

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Robin, Roger; and Ap, Ngy S., 4,387,670, Cl. 123-41.080.

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Metz, Paul, 4,387,761, Cl. 164-437.000.

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Coughlin, William J.; Hoffman, Stephen A.; and Rieppel, Perry J., 4,388,514, Cl. 219-69.00R.

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Orlowski, Ronald C.; and Seyler, Jay K., 4,388,235, Cl. 260-112.50T.

Armstrong, Errol C.: *See—*
Cayton, David W.; Armstrong, Errol C.; and MacKenzie, Angus B., 4,388,035, Cl. 414-417.000.

Arold, Hermann: *See—*
Elbe, Hans-Ludwig; Arold, Hermann; Kranz, Eckart; and Stolzer, Claus, 4,388,465, Cl. 548-262.000.

Arrazola, Ignacio M.; Brown, Raymond E.; and Dillard, Homer E., to McDonnell Douglas Corporation. Electron addressed liquid crystal light valve. 4,387,964, Cl. 350-331.00R.

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Kajihara, Kunio, 4,388,019, Cl. 405-25.000.
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Sekiguchi, Tetsuo, 4,387,968, Cl. 350-429.000.

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Taniguchi, Yasuo; Asano, Toshio; Funami, Haruo; and Itou, Kouichi, 4,388,442, Cl. 525-60.000.

ASEA Aktiebolag: *See—*
Larsson, Hans-Gunnar, 4,388,054, Cl. 419-32.000.

Ash, Stephen R., to Willo Partners. Calorie counting method and apparatus. 4,387,777, Cl. 177-43.000.

Ashbaugh, Robert D.: *See—*
Deskins, Robert L.; Matlack, Gary L.; and Ashbaugh, Robert D., 4,388,594, Cl. 324-348.000.

Ashland Oil, Inc.: *See—*
Carlos, Donald D., 4,388,244, Cl. 260-404.500.
Culbertson, Billy M.; Post, Larry K.; and Aulabaugh, Ann E., 4,388,451, Cl. 526-271.000.

Askinazi, Mikhail P.: *See—*
Shipaev, Gennady A.; Seliverstov, Vyacheslav V.; Osipov, Nikolai A.; Prolygin, Anatoly P.; Mashikhin, Anatoly D.; Askinazi, Mikhail P.; Andreev, Jury M.; and Kagan, Samuil I., 4,388,569, Cl. 318-87.000.

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Avezou, Jean-Claude, 4,387,627, Cl. 92-222.000.

Astec Components, Ltd.: *See—*
Josephson, Elliot, 4,388,562, Cl. 315-205.000.

Aswell, Cecil J.; and Chapman, Hugh N., to Mostek Corporation. Method for programming circuit elements in integrated circuits. 4,387,503, Cl. 29-575.000.

Atari, Inc.: *See—*
Sherman, David L., 4,388,620, Cl. 340-744.000.

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Bourland, Larry G., 4,388,443, Cl. 525-67.000.
Kapur, Vijay K.; and Khanna, Ashok K., 4,388,080, Cl. 23-293.00R.
Kapur, Vijay K.; and Choudary, Uppala V., 4,388,286, Cl. 423-348.000.

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Adolfsson, Ebbe S.; Andersson, Kurt H.; and Ekwall, Carl G. B., 4,387,775, Cl. 175-135.000.

Atlee, John L., III; and Fiore, Maximillian D., to Wisconsin Alumni Research Foundation. Method and apparatus for determining the level of neuromuscular block in a patient. 4,387,723, Cl. 128-734.000.

Audi NSU Auto Union AG: *See—*
Bois, Wilhelm; and Buchl, Josef, 4,388,574, Cl. 318-443.000.

Aulabaugh, Ann E.: *See—*
Culbertson, Billy M.; Post, Larry K.; and Aulabaugh, Ann E., 4,388,451, Cl. 526-271.000.

Austin, John J., to Champion International Corporation. Convertible pill cup package. 4,387,804, Cl. 206-218.000.

Automated Packaging Systems, Inc.: *See—*
Lerner, Bernard, 4,387,550, Cl. 53-459.000.

Automatic Material Handling, Inc.: *See—*
Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; and Pinto, Akiva, 4,387,486, Cl. 19-105.000.

Automatic Switch Company: *See—*
Wiktor, Dominik M.; and Schlindwein, Siegfried, 4,388,535, Cl. 307-113.000.

Avezou, Jean-Claude, to Associated Engineering France, S.A. Piston ring groove reinforcement. 4,387,627, Cl. 92-222.000.

Avtex Fibers Inc.: *See—*
Bockno, Gregory C., 4,388,260, Cl. 264-168.000.

Awata, Mitsuru: *See—*
Oguri, Yasuo; Awata, Mitsuru; and Abe, Mitsunobu, 4,388,257, Cl. 264-82.000.

Awazuhara, Hiroshi; Tsumura, Sukebumi; and Kimura, Tomoaki, to Hitachi, Ltd. Method of widthwise rolling of rolled material and apparatus therefor. 4,387,586, Cl. 72-206.000.

Ayers, Anne L. Process for decorating articles. 4,388,350, Cl. 427-262.000.

Azar, Jack C.: *See—*
Rourke, John L.; Azar, Jack C.; and Murphy, William K., 4,388,274, Cl. 422-177.000.

Azegami, Tadashi, to Hokushin Electric Works, Ltd. Capacitance type displacement conversion device. 4,387,601, Cl. 73-724.000.

Baba, Hiroji: *See—*
Nagira, Norichika; Ikegami, Hiroshi; Baba, Hiroji; and Yahano, Kanji, 4,388,169, Cl. 204-207.000.

Babcock Power Limited: *See—*
Campbell, John W. E., 4,387,577, Cl. 60-680.000.

Babcock & Wilcox Company, The: *See—*
Berthold, John, 4,387,594, Cl. 73-293.000.
Larson, Jeffrey G., 4,388,269, Cl. 376-442.000.
Nuspl, Steven P., 4,388,691, Cl. 364-510.000.
Sangree, Neal V., 4,388,570, Cl. 318-255.000.

Bache, Ronald R.: *See—*
Shearing, Scott J. G.; and Bache, Ronald R., 4,387,802, Cl. 206-45.000.

Bachmann, Adolf; Boehler, Joachim; and Linhart, Heinz, to Akzona, Incorporated. Device for the continuous application of liquid finish to a spinneret. 4,388,057, Cl. 425-97.000.

Bachmann, Klaus J.; Lewerenz, Hans-Joachim; and Menezes, Maria T. A. S., to Bell Telephone Laboratories, Incorporated. Photoelectrochemical cells. 4,388,382, Cl. 429-111.000.

Badger Northland, Inc.: *See—*
Sweeney, Raymond G.; and Rammer, William L., 4,387,799, Cl. 198-735.000.

Baer, John R.: *See—*
Mangels, John A.; and Baer, John R., 4,388,414, Cl. 501-98.000.

Bahr, James T., to Rhone-Poulenc Agrochimie. Herbicidal cyclic sulfonamides of phenoxybenzoic acids. 4,388,105, Cl. 71-91.000.

Bailey, David C.: *See—*
Dukes, Allen E.; and Bailey, David C., 4,388,652, Cl. 358-285.000.

Baird, Leonard B. Container crushing device. 4,387,637, Cl. 100-264.000.

Balakrishnan, Ramanatha V., to National Semiconductor Corporation. Bubble memory sense amplifier. 4,388,699, Cl. 365-8.000.

Balass, Valentin, to Bucher-Buyer AG. Diaphragm press for agricultural products, such as grapes, fruits and other fruit-like products. 4,387,634, Cl. 100-211.000.

Balasubramanian, N. Optical system for surface topography measurement. 4,387,994, Cl. 356-360.000.

Balazs, Les; and Winiasz, Michael E., to Clark Reliance Corp., The. Dual fulcrum steam trap. 4,387,733, Cl. 137-185.000.

Baldwin, Dan D., to Nautilus Sports/Medical Industries, Inc. Abdominal weight lifting apparatus. 4,387,893, Cl. 272-118.000.

Baldwin, Darwin E. Bowling shoe protector. 4,387,515, Cl. 36-7.500.

Baldwin Piano & Organ Company: *See—*
Kimble, Thomas E., 4,387,623, Cl. 84-179.000.
Simmons, Carlton J., Jr., 4,387,618, Cl. 84-1.030.

Bales, Stephen E., to Dow Chemical Company, The. Process for preparing ester carbonate copolymers. 4,388,455, Cl. 528-176.000.

Balestrino, Giovanni: *See—*
Ferrero, Mario; and Balestrino, Giovanni, 4,388,516, Cl. 219-119.000.

Ballantyne, James. Sludge processing system. 4,387,633, Cl. 100-48.000.

Ballato, Arthur, to United States of America, Army. Analog correction of quartz resonator angle of cut. 4,388,146, Cl. 156-626.000.

Balzers Aktiengesellschaft: *See—*
Moll, Eberhard; and Lardon, Marcel, 4,388,164, Cl. 204-192.0SP.

Bandoh, Kazuo. Process and apparatus for molding plastics. 4,388,265, Cl. 264-297.200.

Bandura, Vitaly: *See—*
Wright, Henry L.; Bandura, Vitaly; and Woodman, Daniel W., Jr., 4,387,506, Cl. 29-714.000.

Barbee, Robert B.; and Minnick, Larry A., to Eastman Kodak Company. Copolyesters having improved gas barrier properties. 4,388,456, Cl. 528-289.000.

Barker, Joel A.; and Birch, Jeffrey, to J. B. Two Corporation. Bicycle seat. 4,387,925, Cl. 297-201.000.

Barker, Michael D.: *See—*
Powell, James E.; and Barker, Michael D., 4,388,104, Cl. 71-88.000.

Barking, Hans: *See—*
Brunner, Karl; Barking, Hans; and Didschies, Gunter, 4,388,127, Cl. 156-53.000.

Barmag Barmer Maschinenfabrik AG: *See—*
Lorenz, Hellmut, 4,387,557, Cl. 57-340.000.

Barry, George H.: *See—*
Dahl, Ernest A.; and Barry, George H., 4,388,584, Cl. 320-48.000.

Bartel, Gunter; Patz, Eckhard; Koch, Karl; Stern, Georg; Stotz, Manfred; and Triffterer, Adolf, to Daimler-Benz Aktiengesellschaft. Fuel feed pump. 4,388,053, Cl. 417-542.000.

Barthold, Klaus: *See—*
Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, 4,388,213, Cl. 252-392.000.
Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, 4,388,214, Cl. 252-392.000.

Bartok, William; Song, Yih H.; Siminski, Vince J.; and Longwell, John P., to Exxon Research and Engineering Co. Multi-stage process for combusting fuels containing fixed-nitrogen species. 4,388,062, Cl. 431-10.000.

BASF Aktiengesellschaft: *See—*
Hochstein, Waldheim; Kaibel, Gerd; Mueller, Franz-Josef; and Hartmann, Horst, 4,388,154, Cl. 203-35.000.
Loch, Werner, 4,388,435, Cl. 524-548.000.
Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, 4,388,213, Cl. 252-392.000.
Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, 4,388,214, Cl. 252-392.000.
Steiner, Gerd; Franke, Albrecht; Lenke, Dieter; Teschendorf, Hans-Juegen; Worstmann, Wolfgang; and Kreiskott, Horst, 4,388,237, Cl. 260-239.0BC.
Strehler, Hugo; Hoerauf, Werner; and Valentin, Guenter, 4,388,425, Cl. 523-333.000.

BASF Wyandotte Corporation: *See—*
McBrayer, Robert L., 4,388,420, Cl. 521-127.000.

Basol, Bulent M.; Tseng, Eric S.; and Rod, Robert L., to Monosolar, Inc. Thin film heterojunction photovoltaic cells and methods of making the same. 4,388,483, Cl. 136-260.000.

Batelson, Per G.: *See—*
Sunden, Olof; Batelson, Per G.; Johansson, Hans E.; Larsson, Hans M.; and Svending, Per J., 4,388,150, Cl. 162-175.000.

Batey, Robert W.: *See—*
Schiffmann, Robert F.; Mirman, Alfred H.; Grillo, Richard J.; and Batey, Robert W., 4,388,335, Cl. 426-243.000.

Bauer, Heinz; and Herter, Kurt, to Bauer-Kompressoren GmbH. Interchangeable and disposable filter cartridge and method of removing moisture and oil from compressed breathable air. 4,388,086, Cl. 55-75.000.

Bauer-Kompressoren GmbH: *See—*
Bauer, Heinz; and Herter, Kurt, 4,388,086, Cl. 55-75.000.

Baumann, Rene, to Wiba AG. Bench-type exerciser device. 4,387,894, Cl. 272-130.000.

Baumann, Robert P.; Blais, Marcel; and Spiess, Irwin, to United States of America, Army. Use of ultrasonic energy to improve nitrocellulose purification. 4,388,458, Cl. 536-38.000.

Bautze, F. Jeffery. Method of producing a package for display and handling of foil art. 4,388,130, Cl. 156-85.000.

Baxter Travenol Laboratories, Inc.: *See—*
Pavlo, John A.; and Stauber, Ronald C., 4,387,873, Cl. 248-226.400.

Bayer Aktiengesellschaft: *See—*
Bueb, Michael; Bruck, Robert; Muschelknautz, Edgar; Paulini, Dieter; and Feltgen, Karlheinz, 4,387,476, Cl. 8-151.200.
Elbe, Hans-Ludwig; Arold, Hermann; Kranz, Eckart; and Stolzer, Claus, 4,388,465, Cl. 548-262.000.
Fuchs, Rainer; Naumann, Klaus; Hammann, Ingeborg; and Stendel, Wilhelm, 4,388,322, Cl. 424-304.000.
Heitkamper, Peter; Konig, Klaus; Fauss, Rudolf; and Findeisen, Kurt, 4,388,238, Cl. 260-239.00E.
Jonas, Gerhard, 4,388,290, Cl. 423-468.000.
Sundermann, Rudolf; Konig, Klaus; Engbert, Theodor; Becker, Gernot; and Hammen, Gunther, 4,388,246, Cl. 260-453.00P.

BBC Brown, Boveri & Co. Ltd.: *See—*
Bellati, Hans, 4,388,004, Cl. 384-397.000.

Beasley, J. Donald, to Gould Inc. Method for fabricating an optical waveguide evanescent wave coupler having an interleaved film. 4,387,954, Cl. 350-96.150.

Beatty, John C., III. Ventilated cast structure and method of producing the same. 4,387,710, Cl. 128-91.00R.

Bebok, Janos B., to Macro Engineering Company Ltd. Guide assembly for cylindrical plastic tubes. 4,388,061, Cl. 425-392.000.

Becella, Peter, to Konig-Electronic Friedrich W. Konig. Cleaning cassette for a tape machine. 4,388,663, Cl. 360-128.000.

Bechtel International Corporation: *See—*
Abrams, Jack Z.; and Sherwin, Robert M., 4,388,283, Cl. 423-242.000.

Beck, Bernhard: *See—*
Fratzer, Gerhard; Beck, Bernhard; Dold, Erwin; and Klebe, Hans, 4,388,275, Cl. 422-180.000.

Beck, Vernon D., to International Business Machines Corporation. Corrector for bundle deflection distortion in multibeam cathode ray tubes. 4,388,619, Cl. 340-727.000.

Becker, Bernard; Meyer-Pittroff, Roland; and Frohlich, Gunter, to Kraftwerk Union Aktiengesellschaft. Solar power plant including a solar heater on a tower. 4,387,574, Cl. 60-641.110.

Becker, Gernot: *See—*
Sundermann, Rudolf; Konig, Klaus; Engbert, Theodor; Becker, Gernot; and Hammen, Gunther, 4,388,246, Cl. 260-453.00P.

Becton, Dickinson and Company: *See—*
Lynn, Robert W., 4,387,822, Cl. 215-330.000.

Bedard, James F.; Eichelberger, Charles W.; and Chen, De-Yu, to General Electric Company. Passive control network for remote control of load output level. 4,388,566, Cl. 315-291.000.

Bedogni, Erminio. Cutter bar. 4,387,554, Cl. 56-296.000.

Beduhn, Daniel E.; and Morrow, James G., Sr., to Manitowoc Company, Inc., The. Movable ring supported lift crane. 4,387,813, Cl. 212-195.000.

Beduhn, Daniel E.; and Morrow, James G., Sr., to Manitowoc Company, Inc., The. Traveling attachment for ring supported lift crane. 4,387,814, Cl. 212-195.000.

Beecham Group Limited: *See—*
Harbridge, John B., 4,388,300, Cl. 424-114.000.

Beifuss, Wolfgang; Birzele, Paul; and Geitz, Gerhard, to Siemens Aktiengesellschaft. Data transmission/receiving device having parallel/-serial and serial parallel character conversion, particularly for data exchange between communicating data processing systems. 4,388,683, Cl. 364-200.000.

Beisel, Hermann: *See—*
Jeschke, Willi; Junghans, Rudi; Beisel, Hermann; and Hofmann, Gunther, 4,387,648, Cl. 101-365.000.

Beizinger, Kurt: *See—*
Rehm, Siegfried; and Beizinger, Kurt, 4,387,558, Cl. 57-408.000.

Bell, Albert H., III, to General Motors Corporation. Articulated power turbine gate. 4,387,563, Cl. 60-39.250.

Bell, Robert L.; Willing, Robert; and Kavli, Fred, to Kaylico Corporation. Capacitive pressure transducer. 4,388,668, Cl. 361-283.000.

Bell Telephone Laboratories, Incorporated: *See—*
Bachmann, Klaus J.; Lewerenz, Hans-Joachim; and Menezes, Maria T. A. S., 4,388,382, Cl. 429-111.000.
Breen, Robert N.; and Goldenberg, Henry R., 4,388,697, Cl. 364-900.000.
Brooks, Grant P., 4,388,595, Cl. 329-104.000.
Gans, Michael J., 4,388,626, Cl. 343-854.000.
Heller, Adam, 4,388,383, Cl. 429-111.000.
Nash, Donald H.; and Yen, Duen H., 4,388,730, Cl. 455-208.000.
Pecon, Joseph A., Jr., 4,388,710, Cl. 367-134.000.
Silfvast, William T.; Szeto, Leo H.; and Wood, Obert R., II, 4,388,720, Cl. 372-76.000.

Bellati, Hans, to BBC Brown, Boveri & Co. Ltd. Shaft bearing arrangement. 4,388,004, Cl. 384-397.000.

Beloit Corporation: *See—*
Alheid, Robert J., 4,387,663, Cl. 118-413.000.

Belon, Paul: *See—*
Derrien, Jean-Yves; and Belon, Paul, 4,388,226, Cl. 252-470.000.

Belosljudova, Tamara M.: *See—*
Gryaznov, Vladimir M.; Karavanov, Andrei N.; Belosljudova, Tamara M.; Ermolaev, Anatoly V.; Maganjuk, Anatoly P.; and Sarycheva, Irina K., 4,388,479, Cl. 568-828.000.

Bendix Corporation, The: *See—*
Frear, David L., 4,387,944, Cl. 339-59.00R.
Lao, Binneg Y., 4,387,602, Cl. 73-861.090.
MacAvoy, David W., 4,387,945, Cl. 339-59.00R.
Myers, Lawrence R., 4,387,626, Cl. 91-376.00R.
Reed, Chester L.; and Bridges, Robert M., 4,388,709, Cl. 367-131.000.
Ritsema, Irving R., 4,387,791, Cl. 188-77.00R.

Ritsema, Irving R., 4,387,901, Cl. 277-165.000.
Werth, Dee A.; Schildkraut, Alan L.; and MacAvoy, David W., 4,387,943, Cl. 339-59.00R.

Benn, Raymond C., to International Nickel Company, Inc., The. Carburization resistant high temperature alloy. 4,388,125, Cl. 148-428.000.

Bensman, Richard W., to Champion Spark Plug Company. Plasma plug. 4,388,549, Cl. 313-138.000.

Benson, Gregory R.: *See*—
Kaufman, Edward R.; Benson, Gregory R.; and Shaines, Alfred, 4,388,423, Cl. 523-153.000.

Benton, Ronald, to Honeywell Inc. Multistage thermostat using multirate integral action and exponential setpoint change. 4,387,763, Cl. 165-29.000.

Benz, Bernard D.: *See*—
Schwartz, Vern R.; and Benz, Bernard D., 4,387,499, Cl. 29-564.600.

Berchowitz, David M., to Mechanical Technology Incorporated. Independently variable phase and stroke control for a double acting Stirling engine. 4,387,566, Cl. 60-518.000.

Berger, Leo; and Olson, Gary L., to Hoffmann-La Roche Inc. Cycloalka[4,5]pyrrolo[2,3-g]isoquinolines. 4,388,467, Cl. 548-439.000.

Bergheim, Hans; and Griep, Winfried, to Vaw Leichtmetall GmbH. Pipe connection and method for production. 4,388,013, Cl. 403-277.000.

Berlenbach, Norbert: *See*—
von Hagel, Gunter; Berlenbach, Norbert; and Werner, Gerhard, 4,388,195, Cl. 210-709.000.

Bernard, Patrice. Vehicle location monitoring system. 4,388,608, Cl. 340-24.000.

Berry, Richard C., to Cooper Industries, Inc. Combination breather-drain. 4,387,829, Cl. 220-374.000.

Berthold, John, to Babcock & Wilcox Company, The. Water level indicator having a remote and a local readout display. 4,387,594, Cl. 73-293.000.

Bertin, Claude L.; Kotecha, Harish N.; and Wiedman, Francis W., to International Business Machines Corporation. Non-volatile RAM cell with enhanced conduction insulators. 4,388,704, Cl. 365-154.000.

Bertolini, Natale: *See*—
Ferlazzo, Natale; Bertolini, Natale; and Ghirga, Marcello, 4,388,223, Cl. 252-437.000.

Bey, Philippe; and Jung, Michel, to Merrell Toraude et Compagnie. α-Halomethyl derivatives of amino acids. 4,388,466, Cl. 548-337.000.

Bhatnagar, Har S., to General Electric Company. Dynamoelectric machine. 4,388,581, Cl. 318-789.000.

Bi-Modal Corporation, The: *See*—
Cripe, Christopher A., 4,387,933, Cl. 303-22.00A.

Bianchi, Alberta: *See*—
Nannini, Giuliano; Perrone, Ettore; Severino, Dino; Meinardi, Giuseppe; Monti, Gisella; Bianchi, Alberta; Forgione, Angelo; and Confalonieri, Carlo, 4,388,314, Cl. 424-246.000.

Bickler, Donald B.: *See*—
United States of America, National Aeronautics and Space Administration; and Bickler, Donald B., 4,388,346, Cl. 427-58.000.

Bickley, Robert H.; and Hunt, Albert H., to Motorola Inc. Frequency synthesizer having plural phase locked loops. 4,388,597, Cl. 331-2.000.

Bilitz, Mark R.; and Dickson, Dale A., to Medtronic, Inc. Control cover for nerve stimulator. 4,387,718, Cl. 128-419.00R.

Biller, Cleveland J.; and Johnson, David D., to United States of America, Agriculture. Intermediate cable support. 4,387,812, Cl. 212-176.000.

Billhartz, Larry E., to Siemens-Allis, Inc. Bypass and meter release for watthour meter socket. 4,388,670, Cl. 361-367.000.

Binasik, Chester S.; and Siegert, Louis D., to Coen Company, Inc. Method for firing a rotary kiln with pulverized solid fuel. 4,387,654, Cl. 110-347.000.

Biosearch Medical Products Inc.: *See*—
Waters, William E., 4,388,076, Cl. 604-165.000.

Birch, Jeffrey: *See*—
Barker, Joel A.; and Birch, Jeffrey, 4,387,925, Cl. 297-201.000.

Birkert, Rolf: *See*—
Schlegel, Wolfgang; Wilke, Arthur; and Birkert, Rolf, 4,387,886, Cl. 269-71.000.

Birkett, Sydney: *See*—
Ford, Barry S.; and Birkett, Sydney, 4,388,615, Cl. 340-516.000.

Birzele, Paul: *See*—
Beifuss, Wolfgang; Birzele, Paul; and Geitz, Gerhard, 4,388,683, Cl. 364-200.000.

Bishop, Thomas G., to HPM Corporation. Combination thermoplastic and glass loaded thermosetting injection molding machine and method for operating same. 4,387,834, Cl. 222-278.000.

Bishop, Thomas R.; Chancey, Roger D.; and Kovar, Wayne A., to Bowen Tools, Inc. Shock absorber assembly for absorbing shocks encountered by a drill string. 4,387,885, Cl. 267-125.000.

Bisonaya, Rudy Y.; and Farrell, Gerald J., to Elkay Manufacturing Company. Spread center faucet. 4,387,738, Cl. 137-801.000.

Bissell, Eugene R.; Mitchell, Alexander R.; Pearson, Karen W.; and Smith, Robert E., to University of California, The Regents of the. Synthetic substrates for enzyme analysis. 4,388,233, Cl. 260-112.50R.

Bissell, Lawrence E. Two-phase thermal energy conversion system. 4,387,576, Cl. 60-649.000.

Bjurstrom, Lennart, to Aktiebolaget Bofors. Device for increasing the tracking accuracy of an aiming system. 4,387,624, Cl. 89-41.0LE.

Black & Decker Inc.: *See*—
Saar, David A.; Walter, Richard T.; and Bowman, John L., Jr., 4,388,582, Cl. 320-20.000.

Black, Jerry G.: *See*—
Hawkins, William G.; and Black, Jerry G., 4,388,145, Cl. 156-617.00R.

Blackburn, Neil P.; Piper, Alfred E. C.; and Meeks, Alan M. G., to ITW Limited. Buckles. 4,387,490, Cl. 24-200.000.

Blackschleger, Douglas H. Petroleum preheating device for engines. 4,387,692, Cl. 123-557.000.

Blaimschein, Gottfried, to GFM Gesellschaft fur Fertigungstechnik und Mashinenbau Gesellschaft m.b.H. Process for milling long workpieces. 4,388,027, Cl. 409-131.000.

Blair, Bruce A., to Lenco, Inc. Video signal monitoring device and method. 4,388,637, Cl. 358-10.000.

Blair, Daniel R.: *See*—
Lomneth, Richard B.; Blair, Daniel R.; Parnell, Gary L.; and Tao, Bernard Y., 4,388,339, Cl. 426-602.000.

Blair, Gilbert; and Dusel, Martin C., to Dravo Corporation. Coke spillage removal device. 4,388,153, Cl. 202-248.000.

Blais, Marcel: *See*—
Baumann, Robert P.; Blais, Marcel; and Spiess, Irwin, 4,388,458, Cl. 536-38.000.

Blaisdell, Kenneth C. Engine lathe tail stock ram drive. 4,387,613, Cl. 82-31.000.

Blaisdell, Ronald G.; and Hough, Harold L., to GTE Products Corporation. Projection lighting unit with glass reflector capable of dual insertion. 4,388,679, Cl. 362-306.000.

Bland, William M., to Budd Company, The. Tire pressure control in a vehicle. 4,387,931, Cl. 303-1.000.

Blaschke, Felix; and Salzmann, Theodor, to Siemens Aktiengesellschaft. Rotating field machine drive. 4,388,577, Cl. 318-717.000.

Blatt, Leland F. Electric servo drive air cylinder. 4,388,576, Cl. 318-571.000.

Blaupunkt-Werke GmbH: *See*—
Timm, Horst, 4,388,712, Cl. 369-10.000.

Blendax-Werke R. Schneider GmbH & Co.: *See*—
Orlowski, Jan A., 4,388,069, Cl. 433-228.000.

Blessing, Hubert, to Levi Strauss & Co. Apparatus for fusing strips. 4,388,141, Cl. 156-432.000.

Block Drug Company, Inc.: *See*—
Kigyos, Frank, 4,387,479, Cl. 15-167.00R.

Board of Regents, University of Washington: *See*—
Allan, George G., 4,388,303, Cl. 424-162.000.
Allan, George G.; and Ko, Young C., 4,388,352, Cl. 427-391.000.

Boaz, Premakaran T., to Ford Motor Company. Electrically heated backlite structure. 4,388,522, Cl. 219-522.000.

Bock, Erich: *See*—
Studtmann, Rainer; and Bock, Erich, 4,387,556, Cl. 57-273.000.

Bockno, Gregory C., to Avtex Fibers Inc. Method of making viscose rayon. 4,388,260, Cl. 264-168.000.

Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., to International Flavors & Fragrances Inc. Mixture of aliphatic C_{10} branched olefin epoxides and use thereof in augmenting or enhancing the aroma of perfumes and/or articles. 4,388,228, Cl. 252-522.00R.

Bodin, Michael L. Splash guard. 4,388,028, Cl. 409-136.000.

Boehler, Joachim: *See*—
Bachmann, Adolf; Boehler, Joachim; and Linhart, Heinz, 4,388,057, Cl. 425-97.000.

Boehringer Ingelheim GmbH: *See*—
Wetzel, Bernd; Woitun, Eberhard; Maier, Roland; Reuter, Wolfgang; Lechner, Uwe; and Goeth, Hanns, 4,388,315, Cl. 424-246.000.

Boehringer Ingelheim GmbH: *See*—
Voss, Gunther; and Gruber, Peter, 4,388,343, Cl. 427-14.100.

Boehringer Ingelheim International GmbH: *See*—
Koyama, Shozo; Manning, John W., Jr.; Ammons, William S.; and Santiesteban, Hector L., 4,388,318, Cl. 424-251.000.

Boeing Aerospace Co. (A Division of the Boeing Company): *See*—
Simpson, Frederick H., 4,388,255, Cl. 264-29.100.

Boeing Company, The: *See*—
Skaale, Douglas E., 4,388,030, Cl. 410-69.000.

Boeke, Wouter M., to U.S. Philips Corporation. Integrated circuit comprising a plurality of voltage-current converters. 4,388,539, Cl. 307-491.000.

Boelitz, Martin V.: *See*—
Howard, Peter B.; Boelitz, Martin V.; and De Swarte, Thomas W., 4,387,865, Cl. 244-3.100.

Bogoljubov, Gennady D.: *See*—
Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryzantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko, Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G., 4,388,108, Cl. 75-10.00R.

Bois, Wilhelm; and Buchl, Josef, to Audi NSU Auto Union AG. Control circuit for variable-speed windshield wiper. 4,388,574, Cl. 318-443.000.

Boisset, Bernard, to Societe Industrielle Bertrand Faure. Adjustable vehicle seats and their adjustment mechanisms. 4,387,874, Cl. 248-396.000.

Boitsov, Leonid I.: *See*—
Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryzantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko,

Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G., 4,388,108, Cl. 75-10.00R.

Boldebuck, Edith M., deceased: *See*—
Bolon, Donald A.; and Boldebuck, Edith M., deceased, 4,388,371, Cl. 428-383.000.

Boliden Aktiebolag: *See*—
Jensfelt, Torsten E.; and Petersson, Stig A., 4,388,110, Cl. 75-21.000.

Boller, Edward, to Hydrovane Compressor Company Limited. Rotary compressors. 4,388,046, Cl. 417-295.000.

Bolon, Donald A.; and Boldebuck, Edith M., deceased (by Foster, Jeanette M., executrix), to General Electric Company. Self-bonding acrylic polymer overcoat for coated metal substrates. 4,388,371, Cl. 428-383.000.

Bolt, Lawrence: *See*—
Hopper, Michael J.; Martin, Michael R.; Bolt, Lawrence; Smith, Michael; and Tavasolian, Ali, 4,388,375, Cl. 428-423.700.

Bolton, Ross A. Device for extracting air from the interior of a structure. 4,387,629, Cl. 98-78.000.

Boms, Hermann: *See*—
Buchholz, Rainer; Mohn, Hans-Werner; Boms, Hermann; and Zodrow, Rudolf, 4,388,143, Cl. 156-475.000.

Bond, Gary M.: *See*—
Marshall, Albert H.; and Bond, Gary M., 4,387,974, Cl. 351-210.000.

Bonnet, Jean-Claude; and Pithouse, Kenneth B., to Raychem Limited. Silicone resin. 4,388,449, Cl. 525-477.000.

Boomershine, Norris L. Window assembly with magnetically attachable glazing panels. 4,387,541, Cl. 52-202.000.

Bordon, Daniel: *See*—
Renaudin, Yves; and Bordon, Daniel, 4,388,715, Cl. 370-13.000.

Borg-Warner Corporation: *See*—
Dockus, Kostas F.; and Sproul, William D., 4,388,159, Cl. 204-33.000.

Borror, Alan L.; and Ellis, Ernest W., to Polaroid Corporation. Photographic products and processes with silver halide solvent precursors. 4,388,398, Cl. 430-212.000.

Borsanyi, Alexander S., to American Hospital Supply Corporation. Apparatus and method for spontaneous meniscus generation. 4,387,734, Cl. 137-206.000.

Borugian, Dennis A., to Rockwell International Corporation. Electrical brake lining wear indicator. 4,387,789, Cl. 188-1.110.

Boschi, Alide B., to Vitro Tec Fideicomiso. Apparatus and process for the alignment of mechanisms and/or arms for the molds changes in machines for the manufacture of glassware, thermoplastic articles or similars. 4,388,096, Cl. 65-29.000.

Boschung Holding A.G. Freiburg: *See*—
Boschung, Marcel, 4,388,018, Cl. 404-113.000.

Boschung, Marcel, to Boschung Holding A.G. Freiburg. Eccentric-disk tamper. 4,388,018, Cl. 404-113.000.

Botzler, Paul C. Multi-compartment combination package and stirrer device. 4,387,809, Cl. 206-526.000.

Boudreau, Robert A.: *See*—
Rauh, R. David; and Boudreau, Robert A., 4,388,384, Cl. 429-111.000.

Bouge, Gilbert: *See*—
Dupin, Thierry; Bouge, Gilbert; and Poisson, Regis, 4,388,288, Cl. 423-416.000.

Bourgault, Joseph L. Farming implement and elevation control therefor. 4,387,772, Cl. 172-311.000.

Bourgeaux, Pierre: *See*—
Palau, Joseph; and Bourgeaux, Pierre, 4,387,741, Cl. 139-66.00R.

Bourland, Joe D.: *See*—
Geddes, Leslie A.; Bourland, Joe D.; and Pearce, John A., 4,387,714, Cl. 128-303.130.

Bourland, Larry G., to Atlantic Richfield Company. Moldable polyblends. 4,388,443, Cl. 525-67.000.

Bowen Tools, Inc.: *See*—
Bishop, Thomas R.; Chancey, Roger D.; and Kovar, Wayne A., 4,387,885, Cl. 267-125.000.

Bowers, Kerry W.: *See*—
Pratt, Roy E.; Sayles, Scott M.; Bowers, Kerry W.; and Scott, Richard P., deceased, 4,388,176, Cl. 208-80.000.

Bowes, Emmerson; and Pelrine, Bruce P., to Mobil Oil Corporation. Preparation of natural ferrierite hydrocracking catalyst and hydrocarbon conversion with catalyst. 4,388,177, Cl. 208-111.000.

Bowman, John L., Jr.: *See*—
Saar, David A.; Walter, Richard T.; and Bowman, John L., Jr., 4,388,582, Cl. 320-20.000.

Boyer, Lyndon D.: *See*—
Wasson, George E.; Theodore, Frank W.; Boyer, Lyndon D.; and Sooter, Matthew C., 4,388,152, Cl. 201-6.000.

Bradley, Steven A.: *See*—
Shum, Ming S.; Janikowski, Daniel S.; and Bradley, Steven A., 4,388,347, Cl. 427-96.000.

Braginsky, Yakov I.: *See*—
Grinberg, Efim N.; Braginsky, Yakov I.; Zhislin, Yakov M.; Lavrov, Vladimir V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; Filatov, Alexandr A.; Yaroshenko, Jury F.; Torban, Samuil S.; Kovalev, Viktor M.; Urusov, Georgy I.; Rozanova, Alla V.; Radakova, Tatyana N.; Krivosheina, Larisa I.; Bykov, Vladimir P.; Bykova, Vladimira M.; and Gultsev, Igor V., 4,387,485, Cl. 17-48.000.

Brandenstein, Manfred; Ernst, Horst M.; and Walter, Lothar, to SKF Kugellagerfabriken GmbH. Rolling bearing incorporating damping means. 4,387,938, Cl. 308-184.00R.

Brandestini, Marco A., to Advanced Technology Laboratories, Inc. Beamforming apparatus and method for ultrasonic imaging systems. 4,387,597, Cl. 73-626.000.

Brandolese, Ernesto, to Snamprogetti S.P.A. Aqueous rust-inhibiting and lubricating compositions. 4,388,199, Cl. 252-33.600.

Branke, Walter; and Winter, Karl, to Karly Mayer Textilmaschinenfabrik GmbH. Brake for a warp knitting machine. 4,387,579, Cl. 66-157.000.

Brastow, Carl H.; Mallett, Joel D.; and Livingston, Douglas J., to Conceptual Engineering Associates, Inc. High voltage welding. 4,388,513, Cl. 219-58.000.

Brasz, Albert J. H.; and Wallink, Hermanus A., to Stamicarbon, B.V. Method for the forming of plastics. 4,388,262, Cl. 264-176.00R.

Braun AG: *See*—
Ullmann, Roland; and Zimmermann, Klaus, 4,388,509, Cl. 200-157.000.

Bredahl, Timothy D.: *See*—
Ethen, John L.; and Bredahl, Timothy D., 4,388,359, Cl. 428-143.000.

Breen, Robert N.; and Goldenberg, Henry R., to Bell Telephone Laboratories, Incorporated. Voiceband data set circuitry with dual bus architecture. 4,388,697, Cl. 364-900.000.

Breisch, Robert C.: *See*—
Graf, Walter A., Jr.; and Breisch, Robert C., 4,388,273, Cl. 422-117.000.

Brennan, Martin J., to Racal Research Limited. Temperature compensation for a liquid crystal display via capacitance compensation of the liquid crystal material. 4,387,963, Cl. 350-331.00T.

Bridges, Robert M.: *See*—
Reed, Chester L.; and Bridges, Robert M., 4,388,709, Cl. 367-131.000.

Bridgestone Tire Company Limited: *See*—
Matsuda, Hideki; Makino, Shigeo; and Sugimura, Noboru, 4,387,758, Cl. 152-353.00R.
Obata, Kazuo; Yamaguchi, Yutaka; Yamaguchi, Kojirou; and Sato, Akio, 4,387,759, Cl. 152-353.00R.
Ogawa, Masaki; and Ikegami, Mikihiko, 4,387,756, Cl. 152-209.00R.
Ogawa, Masaki; and Ikegami, Mikihiko, 4,387,757, Cl. 152-209.00R.

Bridgwater, Jon D.: *See*—
Mansour, Alex E.; and Bridgwater, Jon D., 4,387,882, Cl. 256-17.000.

Briggs, Peter J.; and Carpenter, Steven, to Matburn (Holdings) Limited. Surgical collection bags. 4,387,712, Cl. 604-333.000.

Bringhurst, Edward D.; and Miller, Swend L., to Mannesmann Tally Corporation. Bi-directional, constant velocity, carriage shuttling mechanisms. 4,387,642, Cl. 101-93.040.

Brint, Norman T.; and Williams, Leon J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Firearms with rechargeable magazine. 4,387,524, Cl. 42-18.000.

Broggi, Renato: *See*—
Falciani, Marco; and Broggi, Renato, 4,388,460, Cl. 544-23.000.

Bronchart, Robert: *See*—
Lepain, Andre; Bronchart, Robert; and Remacle, Roger, 4,388,407, Cl. 436-3.000.

Brooks, Grant P., to Bell Telephone Laboratories, Incorporated. Apparatus and method for removing bias distortion from a product demodulator. 4,388,595, Cl. 329-104.000.

Brossi, Arnold; Schmidhammer, Helmut; Jacobson, Arthur E.; and Hsu, Fu-Lian, to United States of America, Health and Human Services. 6-Keto-morphinan analgesics. 4,388,463, Cl. 546-74.000.

Brous, Donald; and Cox, Robert H. Pressure and fluid flow activated, simplified proportioning system. 4,388,184, Cl. 210-96.200.

Brouthers, Paul E.; and MacWilliams, Robert W., to D.W.A. Associates, Inc. Firearm. 4,387,526, Cl. 42-59.000.

Brower, Boyd G.: *See*—
Shaffer, John W.; and Brower, Boyd G., 4,388,606, Cl. 338-15.000.

Brown, Billy G., to Murrell's Welding Works, Inc. Heater. 4,387,669, Cl. 122-235.00A.

Brown, Boveri & Cie AG: *See*—
Mennicke, Stefan; and Weddigen, Gert, 4,388,381, Cl. 429-104.000.

Brown, Charles R.; Kohne, Theodore J.; and Lancto, Donald C., to International Business Machines Corporation. Multi-function financial document processor. 4,387,639, Cl. 101-2.000.

Brown, Ivan R., to Hardine Brothers, Inc. Machine tool chuck. 4,387,905, Cl. 279-1.00C.

Brown, James P.; Gibbins, Graham; and Hampson, Robert S., to Imperial Chemical Industries Limited. Preparing particleboard utilizing a vegetable wax or derivative and polyisocyanate as a release agent on metal press parts. 4,388,138, Cl. 156-289.000.

Brown, Raymond E.: *See*—
Arrazola, Ignacio M.; Brown, Raymond E.; and Dillard, Homer E., 4,387,964, Cl. 350-331.00R.

Brown, Robert J.: *See*—
Hayman, Richard W.; Goldstein, Burton; Lynn, Joe J.; Brown, Robert J.; and Bugash, Robert S., 4,388,689, Cl. 364-401.000.

Brown, Ronald H., to General Electric Company. Apparatus and methods for handling and controlling wire in winding applications. 4,387,745, Cl. 140-92.100.

Brown, Thomas A.: *See*—
Peil, William; Brown, Thomas A.; and Dissosway, Marc A., 4,388,536, Cl. 307-268.000.

Brown, Thomas H., to Smith Kline & French Laboratories Limited. Pyrimidones having histamine H_2-antagonist activity. 4,388,317, Cl. 424-248.510.

Brown, William J., to Bureau of Faculty Research of Wertern Washington University. Apparatus for converting a carburetor for gaseous fuel. 4,387,689, Cl. 123-525.000.

Brown & Williamson Tobacco Corporation: *See—*
Reynolds, Martin L.; and Johnson, Robert R., 4,387,728, Cl. 131-336.000.

Brownawell, Darrell W.; Shaub, Harold; Wisotsky, Max J.; and Gutierrez, Antonio, to Exxon Research & Engineering Co. Co-dispersant stabilized friction modifier lubricating oil composition. 4,388,201, Cl. 252-49.600.

Brownlee, Robert R.; Hughes, Howard C., Jr.; Neff, Paul H.; and Tyers, G. Frank O., to Research Corporation. Pacer internal cardiac electrogram sensing system. 4,387,717, Cl. 128-419.0PG.

Bruck, Robert: *See—*
Bueb, Michael; Bruck, Robert; Muschelknautz, Edgar; Paulini, Dieter; and Feltgen, Karlheinz, 4,387,476, Cl. 8-151.200.

Brueggemann, Harry P., to Xerox Corporation. Projection lens assembly. 4,387,970, Cl. 350-463.000.

Brukovsky, Igor P.: *See—*
Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryazantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko, Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G., 4,388,108, Cl. 75-10.00R.

Brumbaugh, Eldon M.: *See—*
Falendysz, Eugene L., Sr.; Brumbaugh, Eldon M.; and North, Max R., 4,388,052, Cl. 417-540.000.

Brunner, Karl; Barking, Hans; and Didschies, Gunter, to Siemens Aktiengesellschaft. Method for wrapping three-dimensionally curved conductors. 4,388,127, Cl. 156-53.000.

Buchanan, James F.: *See—*
Arroyo, Nestor A.; Desai, Nitin V.; and Buchanan, James F., 4,388,410, Cl. 436-85.000.

Bucher-Buyer AG: *See—*
Balass, Valentin, 4,387,634, Cl. 100-211.000.

Buchholz, Rainer; Mohn, Hans-Werner; Boms, Hermann; and Zodrow, Rudolf, to Jagenberg-Werke AG. Method and apparatus for affixing strip labels to container closures. 4,388,143, Cl. 156-475.000.

Buchl, Josef: *See—*
Bois, Wilhelm; and Buchl, Josef, 4,388,574, Cl. 318-443.000.

Bud Antle, Inc.: *See—*
Cayton, David W.; Armstrong, Errol C.; and MacKenzie, Angus B., 4,388,035, Cl. 414-417.000.

Budd Company, The: *See—*
Bland, William M., 4,387,931, Cl. 303-1.000.

Bueb, Michael; Bruck, Robert; Muschelknautz, Edgar; Paulini, Dieter; and Feltgen, Karlheinz, to Bayer Aktiengesellschaft. Method and an apparatus for a washing process subsequent to the spinning of synthetic fibers. 4,387,476, Cl. 8-151.200.

Bugash, Robert S.: *See—*
Hayman, Richard W.; Goldstein, Burton; Lynn, Joe J.; Brown, Robert J.; and Bugash, Robert S., 4,388,689, Cl. 364-401.000.

Buhler, Marcel; and Olofsson, Mats, to Societe d'Assistance Technique pour Produits Nestle S.A. Process for the production of a pasteurized cheese in powder form. 4,388,329, Cl. 426-40.000.

Bujadoux, Karel, to Societe Chimique des Charbonnages - CdF CHIMIE. Catalyst for polymerizing ethylene, comprising compounds of several transition metals, and a polymerization process using said catalyst. 4,388,219, Cl. 252-429.00C.

Buljan, Sergej-Tomislav: *See—*
Sarin, Vinod K.; and Buljan, Sergej-Tomislav, 4,388,085, Cl. 51-307.000.

Buncak, Paul. Method and apparatus for performing thin-layer chromatography. 4,388,193, Cl. 210-658.000.

Bureau of Faculty Research of Wertern Washington University: *See—*
Brown, William J., 4,387,689, Cl. 123-525.000.

Buriks, Rudolf S.: *See—*
Naiman, Michael I.; and Buriks, Rudolf S., 4,388,452, Cl. 526-342.000.

Burk, Ronnie F., to Deere & Company. Fluid supply system using one fluid medium to move a second fluid medium. 4,388,049, Cl. 417-396.000.

Burke, Michael G., to International Telephone and Telegraph Corporation. Conference circuit for PCM system. 4,388,717, Cl. 370-62.000.

Burkhart, Russell D.: *See—*
Roach, Maurice P.; Burkhart, Russell D.; and Meehan, James B., 4,387,537, Cl. 51-17.000.

Burkhart, William H., to Smith & Denison. Low resistance electrode system. 4,388,168, Cl. 204-196.000.

Burlington Industries, Inc.: *See—*
Newcomb, Kermit T., 4,387,744, Cl. 139-429.000.

Burns, Lyle D., to Phillips Petroleum Company. Motor fuel. 4,388,081, Cl. 44-78.000.

Burroughs Corporation: *See—*
Hoge, Carl E.; and Lin, Gregory K., 4,388,132, Cl. 156-153.000.
Unger, John C.; Schwartz, Sidney J.; and Chow, Ling G., 4,388,131, Cl. 156-89.000.

Buser, Karl: *See—*
Stettler, Hans; Buser, Karl; and Chavannes, Jean-Pierre, 4,388,205, Cl. 252-135.000.

Bustany, Samir T., to Allied Corporation. Slurry saw blade head assembly. 4,387,698, Cl. 125-18.000.

Butcosk, Richard A., to Mobil Oil Corporation. Anti-rust additives and compositions thereof. 4,388,198, Cl. 252-28.000.

Butler, Clyde R., to General Electric Company. Memory protection arrangement. 4,388,706, Cl. 365-226.000.

Buxton, Robert B.: *See—*
Ishman, Neal H.; Buxton, Robert B.; Durst, Duane A.; McArthur, James F.; and Johnson, Michael E., 4,388,644, Cl. 358-84.000.

BWG Bergwerk- Und Walzwerk- Maschinenbau GmbH: *See—*
Noe, Oskar, 4,387,800, Cl. 198-750.000.

Bykov, Vladimir P.: *See—*
Grinberg, Efim N.; Braginsky, Yakov I.; Zhislin, Yakov M.; Lavrov, Vladimir V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; Filatov, Alexandr A.; Yaroshenko, Jury F.; Torban, Samuil S.; Kovalev, Viktor M.; Urusov, Georgy I.; Rozanova, Alla V.; Radakova, Tatyana N.; Krivosheina, Larisa I.; Bykov, Vladimir P.; Bykova, Vladimira M.; and Gultsev, Igor V., 4,387,485, Cl. 17-48.000.

Bykova, Vladimira M.: *See—*
Grinberg, Efim N.; Braginsky, Yakov I.; Zhislin, Yakov M.; Lavrov, Vladimir V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; Filatov, Alexandr A.; Yaroshenko, Jury F.; Torban, Samuil S.; Kovalev, Viktor M.; Urusov, Georgy I.; Rozanova, Alla V.; Radakova, Tatyana N.; Krivosheina, Larisa I.; Bykov, Vladimir P.; Bykova, Vladimira M.; and Gultsev, Igor V., 4,387,485, Cl. 17-48.000.

C. E. Conover & Co., Inc.: *See—*
Conover, Charles E., 4,387,902, Cl. 277-203.000.

C. Itoh & Co., Ltd.: *See—*
Uchiyama, Hiroshi, 4,388,119, Cl. 106-316.000.

Cabillic, Jacques: *See—*
Fournier, Jean-Pierre; and Cabillic, Jacques, 4,387,937, Cl. 340-682.000.

Calanni, John R. Disposable discharge collector for a drainable stoma pouch with wiper. 4,387,713, Cl. 604-333.000.

Campbell, John W. E., to Babcock Power Limited. Boilers. 4,387,577, Cl. 60-680.000.

Campbell, Larry K.; and Farrier, William D. Power generating system. 4,388,533, Cl. 290-1.00R.

Campbell Soup Company: *See—*
Egee, Walter W.; and Rickansrud, David A., 4,388,332, Cl. 426-88.000.

Canadian Patents & Development Limited: *See—*
Malatesta, Vincenzo; Willis, Clive; and Hackett, Peter A., 4,388,242, Cl. 260-397.200.
Timbers, Gordon E.; Stark, Robert; Caron, Jacques C.; Cumming, Daniel B.; Cowmeadow, Richard R.; and Gingell, Alexander W., 4,387,630, Cl. 99-348.000.

Canon Kabushiki Kaisha: *See—*
Hosono, Nagao; Kinoshita, Koichi; and Takahashi, Toru, 4,387,664, Cl. 118-658.000.
Masegi, Koichi, 4,387,983, Cl. 355-8.000.
Uchidoi, Masanori; Aizawa, Hiroshi; Urushihara, Kazunobu; Suzuki, Nobuyuki; and Shimizu, Masami, 4,387,977, Cl. 354-60.00R.

Carey, Glen A.: *See—*
Gilford, Saul R.; Emary, Robert J.; and Carey, Glen A., 4,387,991, Cl. 356-246.000.

Carey, Lee F., to Textron Inc. Extendible rocket engine exhaust nozzle assembly. 4,387,564, Cl. 60-242.000.

Carlos, Donald D., to Ashland Oil, Inc. Petrolatum or hydrocarbon wax oxidate composition. 4,388,244, Cl. 260-404.500.

Carman, Vincent E., to Advanced Energy Systems Inc. Fuel-efficient energy storage automotive drive system. 4,387,783, Cl. 180-165.000.

Caron, Jacques C.: *See—*
Timbers, Gordon E.; Stark, Robert; Caron, Jacques C.; Cumming, Daniel B.; Cowmeadow, Richard R.; and Gingell, Alexander W., 4,387,630, Cl. 99-348.000.

Carpenter, David L.: *See—*
Slaughter, Ronald W.; and Carpenter, David L., 4,387,920, Cl. 293-117.000.

Carpenter, Larry L.; and Parham, Thomas G., to Corning Glass Works. Method and apparatus for producing tubular glass article. 4,388,094, Cl. 65-3.120.

Carpenter, Steven: *See—*
Briggs, Peter J.; and Carpenter, Steven, 4,387,712, Cl. 604-333.000.

Carr, Marvin K.; and Smith, Cheryl D., to Diane Kenneth Ltd. Vehicle spare tire carrier. 4,387,837, Cl. 224-42.210.

Carrillo-Cantu, David H.; and Trevino-Alanis, Asdrubal, to Hylsa, S.A. Passivation of sponge iron. 4,388,116, Cl. 106-97.000.

Carter, Charles P. Automatic fence picket pointing machine. 4,387,751, Cl. 144-30.000.

Cartwright, David; and Collins, David J., to Imperial Chemical Industries PLC. Substituted diphenyl ethers. 4,388,472, Cl. 560-21.000.

Casio Computer Co., Ltd.: *See—*
Hagihira, Touru, 4,388,000, Cl. 368-72.000.
Kashio, Toshio, 4,387,619, Cl. 84-1.030.
Shibata, Seiichi, 4,388,629, Cl. 346-81.000.

Casutt, Toni. Method of manufacturing a pack for ovoidal objects. 4,387,549, Cl. 53-456.000.

Caterpillar Tractor Co.: *See—*
Larson, Larry A., 4,387,589, Cl. 73-119.00A.
Stevens, Samuel B.; and Lytle, James R., Sr., 4,387,842, Cl. 226-113.000.

Catotti, Arthur J.: *See—*
West, Jon K.; Catotti, Arthur J.; and Wynn, Michael J., 4,388,120, Cl. 134-15.000.

Cavagnero, Erman V.; and Waligura, Stanley M., to Torin Corporation. Spring coiling machine with improved coil starter means. 4,387,585, Cl. 72-131.000.

Cavallotti, Pietro L.: *See—*
Chen, Tu; and Cavallotti, Pietro L., 4,388,367, Cl. 428-323.000.

Cavanak, Thomas, to Sandoz Ltd. Galenical compositions. 4,388,307, Cl. 424-177.000.

Cawdron, Diane, to General Foods Limited. Dry dessert mix composition. 4,388,337, Cl. 426-573.000.

Cayton, David W.; Armstrong, Errol C.; and MacKenzie, Angus B., to Bud Antle, Inc. Dibble type soil plug planter. 4,388,035, Cl. 414-417.000.

Celanese Corporation: *See—*
Kalnin, Ilmar L., 4,388,227, Cl. 252-510.000.
Shimp, David A., 4,388,374, Cl. 428-414.000.

Cenci, Harry J.: *See—*
Swift, Graham; Cenci, Harry J.; and Jenkins, Raymond F., 4,388,434, Cl. 524-476.000.

Centre National d'Etudes Spatiale: *See—*
Regipa, Robert, 4,387,868, Cl. 244-31.000.

Centro Ricerche Fiat S.p.A.: *See—*
Ferrero, Mario; and Balestrino, Giovanni, 4,388,516, Cl. 219-119.000.

Chaiken, Robert F., to United States of America, Interior. Method for controlled burnout of abandoned coal mines and waste banks. 4,387,655, Cl. 110-347.000.

Chamberland, Andre M.; and Gauthier, Michel, to Hydro-Quebec. Solid sensor for anhydrides. 4,388,155, Cl. 204-1.00T.

Champaneria, Nitin J.; Harper, Lee R.; and Hosegood, Edward A., to Du Pont de Nemours, E. I., and Company. Durable antisoiling coatings for textile filaments. 4,388,372, Cl. 428-395.000.

Champion International Corporation: *See—*
Austin, John J., 4,387,804, Cl. 206-218.000.
Donisi, Frederick A., 4,387,749, Cl. 141-68.000.
Sullivan, John; and Lillibridge, Harold R., 4,388,071, Cl. 493-333.000.

Champion Spark Plug Company: *See—*
Bensman, Richard W., 4,388,549, Cl. 313-138.000.

Chan, Paul C. F.: *See—*
United States of America, National Aeronautics and Space Administration; Corcoran, William H.; Fong, William S.; Pichaichanarong, Puvin; Chan, Paul C. F.; and Lawson, Daniel D., 4,388,171, Cl. 208-8.0LE.

Chancey, Roger D.: *See—*
Bishop, Thomas R.; Chancey, Roger D.; and Kovar, Wayne A., 4,387,885, Cl. 267-125.000.

Chandler, Earl E. Apparatus for supportingly organizing and displaying miscellaneous articles. 4,387,940, Cl. 312-184.000.

Chang, Clarence D.; and Perkins, Patrick D., to Mobil Oil Corporation. Process for producing alpha-picoline. 4,388,461, Cl. 546-251.000.

Chapman, Hugh N.: *See—*
Aswell, Cecil J.; and Chapman, Hugh N., 4,387,503, Cl. 29-575.000.

Chatterjea, Probir K., to Dresser Industries, Inc. Modulated transmission with modulator-load-piston loading at linear rate after full reset. 4,387,731, Cl. 137-115.000.

Chavannes, Jean-Pierre: *See—*
Stettler, Hans; Buser, Karl; and Chavannes, Jean-Pierre, 4,388,205, Cl. 252-135.000.

Chen, De-Yu: *See—*
Bedard, James F.; Eichelberger, Charles W.; and Chen, De-Yu, 4,388,566, Cl. 315-291.000.

Chen, Hsing-Yao, to RCA Corporation. Color picture tube having an expanded focus lens type inline electron gun with an improved stigmator. 4,388,553, Cl. 313-414.000.

Chen, Richard, to National Patent Development Co. Permeable contact lens. 4,388,436, Cl. 524-553.000.

Chen, Tu; and Cavallotti, Pietro L., to Xerox Corporation. Perpendicular magnetic recording medium and fabrication. 4,388,367, Cl. 428-323.000.

Chessell Limited: *See—*
Houldsworth, John, 4,388,631, Cl. 346-141.000.

Chevron Research Company: *See—*
Lewis, Robert T., 4,388,179, Cl. 208-177.000.
Rainis, Andrew, 4,388,180, Cl. 209-5.000.
Rainis, Andrew; and Detz, Clifford M., 4,388,181, Cl. 209-12.000.
Wollenberg, Robert H., 4,388,471, Cl. 549-255.000.

Chiavaroli, Donald J., to Texas Instruments Incorporated. Fuel evaporation device. 4,387,690, Cl. 123-549.000.

Chinn, Leland J., to G. D. Searle & Co. Method for the induction of menses. 4,388,311, Cl. 424-238.000.

Chiyoda Chemical Engineering & Construction: *See—*
Matsumoto, Osamu; and Aoki, Ichizo, 4,388,092, Cl. 62-24.000.

Choby, David; Crawford, James; and Mariel, James, to Excel Industries, Inc. Vehicle window assembly. 4,387,923, Cl. 296-201.000.

Chou, Eng J.; and Weinstein, Bruce, to Research-Cottrell, Inc. Method for regeneration of sodium sulfite from spent flue gas desulfurization processes. 4,388,282, Cl. 423-242.000.

Choudary, Uppala V.: *See—*
Kapur, Vijay K.; and Choudary, Uppala V., 4,388,286, Cl. 423-348.000.

Chow, Ling G.: *See—*
Unger, John C.; Schwartz, Sidney J.; and Chow, Ling G., 4,388,131, Cl. 156-89.000.

Christ, Richard: *See—*
Knackstedt, Hans-Gunther; Muller, Erhard; Christ, Richard; and Kroll, Hartmut, 4,388,268, Cl. 376-272.000.

Christensen, Burton G.; DiNinno, Frank P.; Muthard, David A.; and Ratcliffe, Ronald W., to Merck & Co., Inc. 6-Amido-2-S-oxides of substituted 2-organothio-pen-2-em-3-carboxylic acids. 4,388,310, Cl. 424-200.000.

Christian, Pfeiffer: *See—*
Thomas, Franz, 4,388,183, Cl. 209-139.00A.

Christiansen, Soren B., to F. L. Smidth & Co. Method and apparatus for operating a kiln plant with solid fuel firing in the precalcining zone. 4,388,067, Cl. 432-14.000.

Chu, Mike S., to Erie Technological Products, Inc. High voltage dielectric (SRT 103). 4,388,415, Cl. 501-136.000.

Ciba-Geigy Corporation: *See—*
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,388,106, Cl. 71-105.000.
Kristinsson, Haukur; Muller, Beat; and Pachlatko, Johannes P., 4,388,464, Cl. 548-136.000.

Cichanowski, Stanley W., to General Electric Company. Polyglycol dielectric capacitor fluid. 4,388,669, Cl. 361-319.000.

Cinderella AB: *See—*
Hellqvist, Ake O. V., 4,388,192, Cl. 210-615.000.

Citizen Watch Co., Ltd.: *See—*
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Clark Reliance Corp., The: *See—*
Balazs, Les; and Winiasz, Michael E., 4,387,733, Cl. 137-185.000.

Clesid S.A.: *See—*
Leveques, Marc, 4,387,883, Cl. 266-158.000.

Cleveland, Dixon: *See—*
Jamieson, John M.; and Cleveland, Dixon, 4,387,598, Cl. 73-637.000.

Clifford, Alfred: *See—*
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Clifford, David P., to Dow Chemical Company Limited, The. Method for preparing 2-chlorobenzoyl chloride. 4,388,251, Cl. 260-544.00D.

Cline, Charles D., to Rockwell International Corporation. Fiber optic interlock. 4,387,956, Cl. 350-96.200.

Clinton, Henry H. Electronic band marking controller. 4,387,665, Cl. 118-674.000.

Cobianco, Roger. Adjustable brush. 4,387,480, Cl. 15-169.000.

Cochrane, Peter R., to Hazeltine Corporation. Truss array for supporting devices within a fluid medium. 4,388,023, Cl. 405-195.000.

Cocker, Michael J., to Legg, Peter George; and Tindall, Melvyn Alan. Panic bolt units. 4,387,917, Cl. 292-40.000.

Cocola, Francesco; Tarli, Paolo; and Neri, Paolo, to Istituto Sieroterapico e Vaccinogeno Toscano "Sclavo" S.p.A. Method and composition for determining human chrionic somatropin. 4,388,295, Cl. 424-1.000.

Codispoti, Thomas E.; Giustino, James M.; Griffith, Richard M.; and Tsai, James T., to General Tire & Rubber Company, The. Method for forming a compartmented puncture sealant package by co-extrusion. 4,388,261, Cl. 264-171.000.

Coen Company, Inc.: *See—*
Binasik, Chester S.; and Siegert, Louis D., 4,387,654, Cl. 110-347.000.

Coghill, Ian: *See—*
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Cohn, Robert B., to United States of America, National Aeronautics and Space Administration. Adapter for mounting a microphone flush with the external surface of the skin of a pressurized aircraft. 4,388,502, Cl. 179-179.000.

Collins, David J.: *See—*
Cartwright, David; and Collins, David J., 4,388,472, Cl. 560-21.000.

Combustion Engineering, Inc.: *See—*
Goodstine, Stephen L.; and Jukkola, Glen D., 4,387,667, Cl. 122-4.00D.
Kochey, Edward L., Jr., 4,387,668, Cl. 122-6.00A.
Moore, Richard F., 4,387,651, Cl. 110-171.000.

Commercial Resins Company: *See—*
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Commodore Electronics, Ltd.: *See—*
Hyltin, Tom M., 4,388,563, Cl. 315-205.000.

Compagnie industrielle Des Telecommunications Cit-Alcatel: *See—*
Renaudin, Yves; and Bordon, Daniel, 4,388,715, Cl. 370-13.000.

Computer Power, Inc.: *See—*
Love, Roger R.; and Metroke, John, 4,388,534, Cl. 307-66.000.

Conceptual Engineering Associates, Inc.: *See—*
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Confalonieri, Carlo: *See—*
Nannini, Giuliano; Perrone, Ettore; Severino, Dino; Meinardi, Giuseppe; Monti, Gisella; Bianchi, Alberta; Forgione, Angelo; and Confalonieri, Carlo, 4,388,314, Cl. 424-246.000.

Connell, Calvin C. Valve train. 4,387,674, Cl. 123-90.160.

Conoco Inc.: *See—*
Wasson, George E.; Theodore, Frank W.; Boyer, Lyndon D.; and Sooter, Matthew C., 4,388,152, Cl. 201-6.000.

Conover, Charles E., to C. E. Conover & Co., Inc. Elastomeric seal ring with self-lubricating wear-reducing feature. 4,387,902, Cl. 277-203.000.

Conroy, Walter J.: *See—*
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Consan Pacific Incorporated: *See—*
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Consolidation Coal Company: *See—*
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Consortium fur Elektrochemische: *See—*
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Construction Materials, Inc.: *See—*
Levey, Bertram J., 4,388,016, Cl. 404-48.000.
Container Industries, Inc.: *See—*
Venus, Frank, Jr., 4,387,833, Cl. 222-95.000.
Conti, Vincent N., to Itnoc Dairy Cap Co. Inc. Snap-on tamper-proof closure. 4,387,818, Cl. 215-256.000.
Cook, Steven L.: *See—*
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Cooke, Claude E., Jr.: *See—*
Erbstoesser, Steven R.; Cooke, Claude E., Jr.; Sinclair, Richard G.; and Epstein, Michael M., 4,387,769, Cl. 166-295.000.
Cooke, Jeremy C. R.; and Tilley, Frederick H., to Foster Wheeler Power Products Limited. Furnace. 4,387,652, Cl. 110-224.000.
Cooper Industries, Inc.: *See—*
Berry, Richard C., 4,387,829, Cl. 220-374.000.
Cooper, James L., to Eastman Kodak Company. Hydroformylation process with rhodium catalyst and oxygen stabilization thereof. 4,388,476, Cl. 568-451.000.
Cooper, James L., to Eastman Kodak Company. Hydroformylation process employing unmodified rhodium-cobalt catalyst. 4,388,477, Cl. 568-451.000.
Copeland, Claude T.: *See—*
Nimerick, Kenneth H.; and Copeland, Claude T., 4,388,203, Cl. 252-70.000.
Coquillart, Michel, to Mavilor Systemes. Machine for flats or conical windings in the form of a disc for electric motors. 4,387,504, Cl. 29-598.000.
Corbo, Thomas A., to Manco Tape, Inc. Adjustable threshold assembly. 4,387,535, Cl. 49-468.000.
Corcoran, William H.: *See—*
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Cordis Corporation: *See—*
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Cormier, Raymond G., to Nashua Corporation. Sheet stripping apparatus and method. 4,387,981, Cl. 355-3.0SH.
Corning Glass Works: *See—*
Carpenter, Larry L.; and Parham, Thomas G., 4,388,094, Cl. 65-3.120.
Shay, George C., 4,387,505, Cl. 29-623.100.
Corsette, Douglas F. Sealing means for a snap-on fitment. 4,387,819, Cl. 215-273.000.
Corzine, Gerald G.; and Hagar, Charles E., to United States of America, Navy. Method for testing fluid control valves. 4,387,591, Cl. 73-168.000.
Cosden Technology, Inc.: *See—*
Schwarz, Richard A., 4,388,418, Cl. 521-56.000.
Couceiro, Nuno P., to General Motors Corporation. Cold starting system for alcohol fueled engine. 4,387,676, Cl. 123-179.00H.
Coughlin, William J.; Hoffman, Stephen A.; and Rieppel, Perry J., to Arcair Company. Method for collecting process generated fume and/or slag. 4,388,514, Cl. 219-69.00R.
Cowan, David A., to Maryland Cup Corporation. Heat-sealable, ovenable containers and method of manufacture. 4,387,551, Cl. 53-478.000.
Cowdin, Kenneth T., to United States of America, National Aeronautics and Space Administration. Aircraft body-axis rotation measurement system. 4,387,513, Cl. 33-322.000.
Cowher, Melvyn E.: *See—*
Shuskus, Alexander J.; and Cowher, Melvyn E., 4,388,344, Cl. 427-38.000.
Cowmeadow, Richard R.: *See—*
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Cowsar, Donald R.: *See—*
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Cox, Charles M.; and Turner, Rudolf, to Zenith Radio Corporation. Color control circuit for teletext-type decoder. 4,388,639, Cl. 358-27.000.
Cox, Charles M.; and Thomas, William L., to Zenith Radio Corporation. Teletext communication system with timed multipage local memory. 4,388,645, Cl. 358-147.000.
Cox, Robert H.: *See—*
Brous, Donald; and Cox, Robert H., 4,388,184, Cl. 210-96.200.
Craig, Laurence B.; and Farina, Alfred J. Combustion heating system. 4,388,063, Cl. 431-19.000.
Craven, Ian: *See—*
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Crawford, James: *See—*
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Cremer, Peter: *See—*
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Crickmer, Charles C.: *See—*
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Cripe, Christopher A., to Bi-Modal Corporation, The. Relay-load/ratio valve for use in brake applications on air-spring equipped vehicles. 4,387,933. Cl. 303-22.00A.
Crivello, James V., to General Electric Company. Aromatic polyvinyl ethers and heat curable molding compositions obtained therefrom. 4,388,450, Cl. 525-502.000.
Crocker, Alfred J. Energy transfer apparatus. 4,387,672, Cl. 123-55.0AA.
Crook, Richard W.; and Coghill, Ian, to Marconi Company Limited, The. Antennas. 4,388,623, Cl. 343-709.000.
Crosslen, Louis J., to Frank Mayer & Associates, Inc. Shingled rack display device. 4,387,810. Cl. 211-49.00D.
Crown Cork & Seal Company, Incorporated: *See—*
Ruemer, John, Jr., 4,387,827, Cl. 220-269.000.
Csanak, George: *See—*
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Culbertson, Billy M.; Post, Larry K.; and Aulabaugh, Ann E., to Ashland Oil, Inc. Polymers derived from allylphenol or substituted allylphenol and maleic anhydride. 4,388,451, Cl. 526-271.000.
Cumming, Daniel B.: *See—*
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Cummins, Earl W., to Du Pont de Nemours, E. I., and Company. Method of increasing milk production of dairy cattle. 4,388,327, Cl. 426-2.000.
Curlee, Thomas O., III; and Richardson, Ethel L., to International Business Machines Corp. Shared TOD clock modification bit. 4,388,688, Cl. 364-200.000.
Curtis Instruments, Inc.: *See—*
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Curtiss-Wright Corporation: *See—*
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Cyclops Corporation: *See—*
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Cynex Manufacturing Corporation: *See—*
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D.W.A. Associates, Inc.: *See—*
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Dagani, Michael J., to Ethyl Corporation. Process for producing substituted pyrroles. 4,388,468, Cl. 548-531.000.
Dahl, Ernest A.; and Barry, George H. Battery monitoring and charger control system. 4,388,584. Cl. 320-48.000.
Dahlberg, Anders I. Dual chamber sealing element with hardening filler. 4,387,899, Cl. 277-34.300.
Daimler-Benz Aktiengesellschaft: *See—*
Bartel, Gunter; Patz, Eckhard; Koch, Karl; Stern, Georg; Stotz, Manfred; and Triffterer, Adolf, 4,388,053, Cl. 417-542.000.
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Danly Machine Corporation: *See—*
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Dart Industries Inc.: *See—*
Gerteisen, Steven R.; and Wetzel, David R., 4,388,422, Cl. 523-137.000.
Dasting. Klaus: *See—*
Holland-Letz, Gunter; and Dasting, Klaus, 4,387,645, Cl. 101-327.000.
Davis, James E. P. Pneumatic percussor. 4,387,708, Cl. 128-55.000.
Davis, Thomas A.; and Cowsar, Donald R., to University of Alabama; and Southern Research Institute. Adaptive support system. 4,388,358, Cl. 428-71.000.
Dayton Rogers Manufacturing Co.: *See—*
Ireland, Ralph, 4,387,616, Cl. 83-608.000.
De Forenede Bryggerier A/S: *See—*
Johansen, Jack T., 4,388,406, Cl. 435-189.000.
de la Rosa, Jorge. Ring cover protector for records. 4,387,807, Cl. 206-312.000.
Deason, Max W. Apparatus for forming pool deck and coping. 4,387,877, Cl. 249-9.000.
Dechelette, Helen, to AMP Incorporated. Method of manufacturing an electrical interconnection assembly. 4,387,509, Cl. 29-850.000.
de Cointet de Fillain, Paul; and Pigerol, Charles, to Sanofi. Associations for stabilizing vinyl resins. 4,388,430, Cl. 524-99.000.
Deepsea Ventures, Inc.: *See—*
Latimer, John P., 4,387,518, Cl. 37-57.000.
Deere & Company: *See—*
Adickes, Henning, 4,387,915, Cl. 285-330.000.
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de Figueiredo, Mario P.; Guevara, Balagtas F.; Long, James L.; Morgan, Ronnie G.; and York, Lawrence R., to Ralston Purina Company. Process for the production of a frozen chopped egg product. 4,388,340, Cl. 426-614.000.
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De Haan, Abel; and Tataria, Harshad, to Cordis Corporation. Lithium cell having depletion gauge. 4,388,380, Cl. 429-91.000.
Dehaene, Jean P., to Thomson-CSF. System for the ultra-high frequency transmission of numerical data. 4,388,726, Cl. 375-44.000.

Dekker, Lambert: *See—*
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,388,228, Cl. 252-522.00R.
Delta Promotions, Inc.: *See—*
Hedstrom, Mark D., 4,387,529, Cl. 43-112.000.
Denard, Ruthie. Disposable urine collection device for human males. 4,387,726, Cl. 128-760.000.
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Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
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Depew, Dean A.; and Murphy, Harold K., to Murphy, Harold K. Apparatus for crushing and removing rims from wheels. 4,387,636, Cl. 100-232.000.
Derrien, Jean-Yves; and Belon, Paul, to Rhone-Poulenc Industries. Preparation of mixed oxide catalysts comprising the oxides of molybdenum and/or tungsten. 4,388,226, Cl. 252-470.000.
Desai, Nitin V.: *See—*
Arroyo, Nestor A.; Desai, Nitin V.; and Buchanan, James F., 4,388,410, Cl. 436-85.000.
Deskins, Robert L.; Matlack, Gary L.; and Ashbaugh, Robert D., to Harco Corporation. Semi-permeable electrolytic cell and method for surveying buried structures. 4,388,594, Cl. 324-348.000.
De Swarte, Thomas W.: *See—*
Howard, Peter B.; Boelitz, Martin V.; and De Swarte, Thomas W., 4,387,865, Cl. 244-3.100.
Detz, Clifford M.: *See—*
Rainis, Andrew; and Detz, Clifford M., 4,388,181, Cl. 209-12.000.
Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Musical tone generator with independent time varying harmonics. 4,387,622, Cl. 84-1.220.
Deveaux, Rene, to Societe d'Assistance Technique pour Produits Nestle S.A. Mould for packaging desserts. 4,388,334, Cl. 426-112.000.
de Vries, Gerhard H. F., to U.S. Philips Corporation. Gas discharge display panel having hollow cathodes. 4,388,550, Cl. 313-585.000.
Devro, Inc.: *See—*
Miller, Albert T., 4,388,331, Cl. 426-63.000.
Dewert, Heribert: *See—*
Holter, Heinz; Gresch, Heinz; Igelbuscher, Heinrich; and Dewert, Heribert, 4,388,281, Cl. 423-210.000.
Dewey, Richard H.; Hwang, Bruce Y.; and Kuo, George Y., to Smith-Kline Beckman Corporation. 6-Chloro-7,8-dihydroxy-1-(p-hydroxyphenyl)-2,3,4,5-tetrahydro-1H-3-benzazepine sulfate esters. 4,388,240, Cl. 260-239.0BB.
Diane Kenneth Ltd.: *See—*
Carr, Marvin K.; and Smith, Cheryl D., 4,387,837, Cl. 224-42.210.
Diaz, Zaida, to Shell Oil Company. H_2S Removal. 4,388,293, Cl. 423-573.00R.
Dick, Edward R. Apparatus for heating and spraying viscous coating material. 4,387,851, Cl. 239-135.000.
Dickson, Dale A.: *See—*
Bilitz, Mark R.; and Dickson, Dale A., 4,387,718, Cl. 128-419.00R.
Didschies, Gunter: *See—*
Brunner, Karl; Barking, Hans; and Didschies, Gunter, 4,388,127, Cl. 156-53.000.
Diehl GmbH & Co.: *See—*
Weidner, Peter; and Wich, Harald, 4,387,649, Cl. 102-215.000.
Diesel Kiki Kabushiki Kaisha: *See—*
Tada, Yoshiharu; and Kitano, Yuichi, 4,388,571, Cl. 318-293.000.
Digital Equipment Corporation: *See—*
Kotok, Alan; Murphy, Daniel L.; and Stewart, Robert E., 4,388,685, Cl. 364-200.000.
Dillard, Homer E.: *See—*
Arrazola, Ignacio M.; Brown, Raymond E.; and Dillard, Homer E., 4,387,964, Cl. 350-331.00R.
Dimond, Harold L.; and Murphy, Thomas J., to Drackett Company, The. Thickened alkali metal hypochlorite compositions. 4,388,204, Cl. 252-98.000.
Dineen, John J., to Mechanical Technology Incorporated. Stirling engine displacer gas bearing. 4,387,568, Cl. 60-520.000.
DiNinno, Frank P.: *See—*
Christensen, Burton G.; DiNinno, Frank P.; Muthard, David A.; and Ratcliffe, Ronald W., 4,388,310, Cl. 424-200.000.
Director-General of the Agency of Industrial Science and Technology: *See—*
Tanihara, Koichi, 4,388,474, Cl. 564-241.000.
Dischert, Robert A.; and Reitmeier, Glenn A., to RCA Corporation. De-emphasis for digitized composite color television signals. 4,388,638, Cl. 358-27.000.
Dissosway, Marc A.: *See—*
Peil, William; Brown, Thomas A.; and Dissosway, Marc A., 4,388,536, Cl. 307-268.000.
Ditcher, Jack; and Westhoff, James A., to A-Lok Products, Inc. Method and apparatus for providing watertight seal for manhole pipe connection. 4,387,900, Cl. 277-101.000.
Diving Unlimited International, Inc.: *See—*
Long, Richard W.; and Stinton, Robert T., 4,388,134, Cl. 156-248.000.
Dobfar S.p.A.: *See—*
Falciani, Marco; and Broggi, Renato, 4,388,460, Cl. 544-23.000.
Dockus, Kostas F.; and Sproul, William D., to Borg-Warner Corporation. Surface preparation of aluminum articles. 4,388,159, Cl. 204-33.000.
Dodds, Dennis L., to RCA Corporation. Electron beam influencing apparatus incorporating vertical beam movement function. 4,388,602, Cl. 335-212.000.
Dolby Laboratories, Inc.: *See—*
Spencer, Paul A.; and Dolby, Ray M., 4,388,729, Cl. 455-72.000.
Dolby, Ray M.: *See—*
Spencer, Paul A.; and Dolby, Ray M., 4,388,729, Cl. 455-72.000.
Dold, Erwin: *See—*
Fratzer, Gerhard; Beck, Bernhard; Dold, Erwin; and Klebe, Hans, 4,388,275, Cl. 422-180.000.
Dolomite S.p.A.: *See—*
Annovi, Giuseppe, 4,387,517, Cl. 36-117.000.
Dom, Harry A., to National Machinery Company, The. Semi-automatic tool changer. 4,387,502, Cl. 29-568.000.
Domagalski, Anthony: *See—*
Mattson, Charles A.; Michel, James; and Domagalski, Anthony, 4,387,852, Cl. 239-143.000.
Donisi, Frederick A., to Champion International Corporation. Filler sleeve for use in conjunction with a bag adapted to contain a granular product. 4,387,749, Cl. 141-68.000.
Dooley, James A., to General Electric Company. Noise isolation means for convoluted sheathed electric heater. 4,388,519, Cl. 219-463.000.
Doremus, Robert H.; Csanak, George; Kale, B. Michael; and Moore, James E. Silver halide glasses. 4,388,413, Cl. 501-40.000.
Dornbusch, Arthur H., to Procter & Gamble Company, The. Shipping device. 4,387,808, Cl. 206-432.000.
Dorr, Ralph. Rotating sail fluid current motor. 4,388,041, Cl. 416-119.000.
Dow Chemical Company, The: *See—*
Bales, Stephen E., 4,388,455, Cl. 528-176.000.
Naffziger, David H., 4,388,297, Cl. 424-78.000.
Nimerick, Kenneth H.; and Copeland, Claude T., 4,388,203, Cl. 252-70.000.
Dow Chemical Company Limited, The: *See—*
Clifford, David P., 4,388,251, Cl. 260-544.00D.
Down, Peter E.; and Salem, Eli, to Ecodyne Corporation. Regeneration of deep bed condensate polishers. 4,388,417, Cl. 521-26.000.
Downey, Donald O. Container for storing particulate materials. 4,387,847, Cl. 232-43.100.
Drackett Company, The: *See—*
Dimond, Harold L.; and Murphy, Thomas J., 4,388,204, Cl. 252-98.000.
Dranchak, John S. Drum supporting harness. 4,387,839, Cl. 224-265.000.
Dravo Corporation: *See—*
Blair, Gilbert; and Dusel, Martin C., 4,388,153, Cl. 202-248.000.
Dresler, Helmut; and Turnwald, Ernst, to Linde Aktiengesellschaft. Piston pump with intake valve. 4,388,051, Cl. 417-505.000.
Dresser Industries, Inc.: *See—*
Chatterjea, Probir K., 4,387,731, Cl. 137-115.000.
McCaskill, James N., Jr., 4,387,514, Cl. 34-31.000.
McPhee, William A., 4,387,773, Cl. 175-4.600.
Pisani, Marino J., 4,387,779, Cl. 180-9.500.
Read, Norman W., 4,387,767, Cl. 166-72.000.
Druffel, James B., to Prescolite, A Div. of U.S. Industries. Recessed lighting unit. 4,388,677, Cl. 362-276.000.
Drury, Michael J.: *See—*
Test, Howard R., II; and Drury, Michael J., 4,388,696, Cl. 364-900.000.
DuCorday, Gerard M. Bag handle. 4,387,846, Cl. 229-54.00R.
Dudek, Gunter, to Prameta Prazisionsmetaal-und Kunstofferzeugnisse G. Baumann & Co. Clasp for locking a ligature loop. 4,387,489, Cl. 24-133.000.
Duff, Kenneth R. Amphibious motor-driven cycle. 4,387,661, Cl. 114-270.000.
Duke, J. Douglas. Arrow point puller and bow stabilizer. 4,387,697, Cl. 124-89.000.
Dukes, Allen E.; and Bailey, David C., to Harris Corporation. Synchronized, variable speed capstan motor drive system for facsimile recorder. 4,388,652, Cl. 358-285.000.
Dummer, Gerhard: *See—*
Schmidhammer, Ludwig; Dummer, Gerhard; and Straszer, Rudolf, 4,388,278, Cl. 423-488.000.
Dunham Bush, Inc.: *See—*
Shaw, David N.; and Gagnon, Joseph A. L. N., 4,388,048, Cl. 417-310.000.
Dunphy, Gerald F.; and Esser, Hans J., to Ogden Industries Pty. Ltd. Deadlock mechanism. 4,387,918, Cl. 292-224.000.
Dupin, Thierry; Bouge, Gilbert; and Poisson, Regis, to Rhone-Poulenc Industries. Preparation of shaped titanium dioxide catalyst/carrier and catalysis of gaseous sulfur compounds therewith. 4,388,288, Cl. 423-416.000.
Du Pont de Nemours, E. I., and Company: *See—*
Champaneria, Nitin J.; Harper, Lee R.; and Hosegood, Edward A., 4,388,372, Cl. 428-395.000.
Cummins, Earl W., 4,388,327, Cl. 426-2.000.
Hawkins, William E., 4,387,841, Cl. 226-97.000.
Melby, Lester R., 4,388,448, Cl. 525-327.300.
Richter, John W., 4,388,212, Cl. 252-356.000.
Dupont, Robert. Non-return valve with a directional injector. 4,387,854, Cl. 239-570.000.
Dupressoir, Albert, to "Thomson-CSF". Radar antenna incorporating elements radiating a pseudo-omnidirectional pattern. 4,388,624, Cl. 343-727.000.
Durango Systems, Inc.: *See—*
Waibel, Helmut K., 4,388,006, Cl. 400-195.000.

Durant, Graham J.; and Ganellin, Charon R., to Smith Kline & French Laboratories Limited. N-Heterocyclic alkyl-N'-thiadiazolyl, thiazolyl and isothiazolyl alkylthioureas, ureas and guanidines. 4,388,319, Cl. 424-270.000.

Durkin, Joseph A.: *See—*
Lewis, Paul H.; Durkin, Joseph A.; and Froelich, Joseph A., 4,388,178, Cl. 208-115.000.

Durr, Helmut E.; and Mock, George E., to Western Electric Company, Inc. Conditioning apparatus for case metal bars. 4,388,029, Cl. 409-295.000.

Dursch, Walter; and Kleiner, Hans-Jerg, to Hoechst Aktiengesellschaft. Process for the manufacture of vinyl phosphonic acid derivatives. 4,388,252, Cl. 260-968.000.

Durst, Duane A.: *See—*
Ishman, Neal H.; Buxton, Robert B.; Durst, Duane A.; McArthur, James F.; and Johnson, Michael E., 4,388,644, Cl. 358-84.000.

Dusel, Martin C.: *See—*
Blair, Gilbert; and Dusel, Martin C., 4,388,153, Cl. 202-248.000.

Dyckerhoff & Widmann Aktiengesellschaft: *See—*
Wlodkowski, Johann; and Jungwirth, Dieter, 4,388,014, Cl. 403-369.000.

Dysarz, Edward D., to James G. Brown & Associates, Inc. Support structure for offshore platforms. 4,388,024, Cl. 405-198.000.

E. C. Chemical Ind. Co., Ltd.: *See—*
Uchiyama, Hiroshi, 4,388,119, Cl. 106-316.000.

E.C.H. Will (GmbH & Co.): *See—*
Lampe, Seigfried, 4,387,890, Cl. 271-225.000.

E. R. Squibb & Sons, Inc.: *See—*
Jensen, Ole R., 4,388,135, Cl. 156-250.000.

E-Systems, Inc.: *See—*
Ishman, Neal H.; Buxton, Robert B.; Durst, Duane A.; McArthur, James F.; and Johnson, Michael E., 4,388,644, Cl. 358-84.000.

Eaglestone, Dustin D. Fuel filter. 4,388,187, Cl. 210-232.000.

Eastman Kodak Company: *See—*
Barbee, Robert B.; and Minnick, Larry A., 4,388,456, Cl. 528-289.000.
Cooper, James L., 4,388,476, Cl. 568-451.000.
Cooper, James L., 4,388,477, Cl. 568-451.000.
Garcia, Enrique, 4,388,532, Cl. 250-578.000.
Hembre, Robert T.; and Cook, Steven L., 4,388,217, Cl. 252-413.000.
Jeffers, Frederick; and McClure, Richard J., 4,388,662, Cl. 360-113.000.
Lemke, James U., 4,388,656, Cl. 360-33.100.
Lemke, James U., 4,388,659, Cl. 360-90.000.

Eaton Corporation: *See—*
Pipes, George R., 4,388,033, Cl. 414-282.000.
Zukausky, Keith E., 4,387,878, Cl. 251-30.000.

Ecanow, Charles S., to NeoMed Corporation. Coacervated iodine. 4,388,302, Cl. 424-150.000.

Eckert, Konrad: *See—*
Leblanc, Jean; Pigeroulet, Jean; Straubel, Max; and Eckert, Konrad, 4,387,686, Cl. 123-446.000.

Eckle, Otto; and Winger, Paul, to Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH. Turning head, in particular a facing head. 4,387,612, Cl. 82-2.00E.

Ecodyne Corporation: *See—*
Down, Peter E.; and Salem, Eli, 4,388,417, Cl. 521-26.000.

Edmonston, Donald R.; and Weaver, Frederick R., to Western Electric Company, Inc. Spool assembly. 4,387,863, Cl. 242-118.400.

Eduard Fresenius Chemisch Pharmazeutische Industrie KG: *See—*
Tauschinski, Stefan, 4,387,879, Cl. 251-149.100.

Efamol Limited: *See—*
Horrobin, David F., 4,388,324, Cl. 424-312.000.

Egan, William F., to United States of America, Navy. Loss-of-phase-lock indicator circuit. 4,388,598, Cl. 331-4.000.

Egee, Walter W.; and Rickansrud, David A., to Campbell Soup Company. Heat treatment temperature indicating food package and process for providing same. 4,388,332, Cl. 426-88.000.

Eggleston, Merritt J. Woodstove having exhaust flow compensation and a method for providing same. 4,387,700, Cl. 126-77.000.

Eheim, Franz, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,387,683, Cl. 123-387.000.

Eheim, Franz, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,387,688, Cl. 123-502.000.

Eibensteiner, Bruno A.: *See—*
Wiles, Laurence E.; Page, Frank C., III; and Eibensteiner, Bruno A., 4,387,817, Cl. 215-217.000.

Eibl, Johann; Elsinger, Fritz; and Linnau, Yendra, to Immuno Aktiengesellschaft fur Chemisch Medizinische Produkte. Method of producing plasma fractions free of side-effects using fast-reacting antithrombin. 4,388,232, Cl. 260-112.00B.

EIC Laboratories, Inc.: *See—*
Rauh, R. David; and Boudreau, Robert A., 4,388,384, Cl. 429-111.000.

Eichelberger, Charles W.: *See—*
Bedard, James F.; Eichelberger, Charles W.; and Chen, De-Yu, 4,388,566, Cl. 315-291.000.

Eichler, Detlef: *See—*
Wehking, Hans; Eichler, Detlef; and Klingenberg, Wolfgang, 4,388,005, Cl. 400-144.200.

Eickmann, Karl. Fluid motor driven propeller-aircraft for vertical take off and landing with a multipurpose pipe structure. 4,387,866, Cl. 244-7.00C.

Eisenberg, Abraham. Paint roller cleaning system. 4,387,477, Cl. 15-104.920.

Eiwa Chemical Industry Co., Ltd.: *See—*
Murakami, Shinji, 4,388,419, Cl. 521-103.000.

Eka Aktiebolag: *See—*
Sunden, Olof; Batelson, Per G.; Johansson, Hans E.; Larsson, Hans M.; and Svending, Per J., 4,388,150, Cl. 162-175.000.

Ekwall, Carl G. B.: *See—*
Adolfsson, Ebbe S.; Andersson, Kurt H.; and Ekwall, Carl G. B., 4,387,775, Cl. 175-135.000.

Elam Limited: *See—*
Rividi, Jan, 4,388,565, Cl. 315-291.000.

Elbe, Hans-Ludwig; Arold, Hermann; Kranz, Eckart; and Stolzer, Claus, to Bayer Aktiengesellschaft. Preparation of phenoxy-azolylbutanone derivatives. 4,388,465, Cl. 548-262.000.

Eldridge, David P., to Raytheon Company. Microprogrammable instruction translator. 4,388,682, Cl. 364-200.000.

Electric Power Research Institute: *See—*
Graf, Walter A., Jr.; and Breisch, Robert C., 4,388,273, Cl. 422-117.000.
Jamieson, John M.; and Cleveland, Dixon, 4,387,598, Cl. 73-637.000.

Electro-Sound Inc.: *See—*
Rehklau, George D., 4,387,843, Cl. 226-118.000.

Elektro-Brite GmbH & Co. KG: *See—*
Acimovic, Simeon; Lindemann, Karl-Heinz; and Kunz, Volker G., 4,388,161, Cl. 204-43.00S.

Eli Lilly and Company: *See—*
Lunn, William H. W.; and Wheeler, William J., 4,388,316, Cl. 424-246.000.

Elkay Manufacturing Company: *See—*
Bisonaya, Rudy Y.; and Farrell, Gerald J., 4,387,738, Cl. 137-801.000.

Elliott, Theodore. Wheel steering apparatus for boats. 4,387,658, Cl. 114-144.00R.

Ellis, Ernest W.: *See—*
Borror, Alan L.; and Ellis, Ernest W., 4,388,398, Cl. 430-212.000.

Ellis, James N., to United States of America, Energy. Control system for a wound-rotor motor. 4,388,579, Cl. 318-732.000.

Ellis, Vincent S.; and Mieszkis, Kazimierz W., to Imperial Chemical Industries Limited. Electrically-conductive fibres. 4,388,370, Cl. 428-368.000.

Elsinger, Fritz: *See—*
Eibl, Johann; Elsinger, Fritz; and Linnau, Yendra, 4,388,232, Cl. 260-112.00B.

Emary, Robert J.: *See—*
Gilford, Saul R.; Emary, Robert J.; and Carey, Glen A., 4,387,991, Cl. 356-246.000.

EMI Limited: *See—*
Richards, John W.; and Craven, Ian, 4,388,590, Cl. 324-103.00P.

Eminentverktyg A.B.: *See—*
Nicolin, Curt, 4,387,906, Cl. 279-2.00A.

Emmanuel, Saurabh D., to Machlett Laboratories, Incorporated, The. Soft X-ray lithography system. 4,388,728, Cl. 378-34.000.

Endo, Akinori: *See—*
Kato, Hirokazu; and Endo, Akinori, 4,387,617, Cl. 84-1.010.

Energy Sciences Partners, Ltd.: *See—*
Maes, Michel E.; Shaw, Robert L.; and Reinsch, Royal L., 4,388,254, Cl. 264-3.00C.

Engbert, Theodor: *See—*
Sundermann, Rudolf; Konig, Klaus; Engbert, Theodor; Becker, Gernot; and Hammen, Gunther, 4,388,246, Cl. 260-453.00P.

Engel, Paul R., to Intel Corporation. Method for steam leaching phosphorus from phosphosilicate glass during semiconductor fabrication. 4,388,147, Cl. 156-646.000.

Engelhard Corporation: *See—*
Voss, Kenneth E., 4,387,653, Cl. 110-342.000.

Englar, Robert J.; and Huson, Gregory G., to United States of America, Navy. Mono-element combined supercritical high lift airfoil. 4,387,869, Cl. 244-207.000.

Enjoji, Susumu, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic probe having means for receiving a puncturing cannula therethrough. 4,387,721, Cl. 128-660.000.

Enomae, Satoru, to Kabushiki Kaisha Komatsu Seisakusho. Apparatus for feeding billets or the like into a forging press or the like. 4,387,796, Cl. 198-374.000.

Enso-Gutzeit Oy: *See—*
Lumikko, Juha, 4,388,197, Cl. 210-777.000.

Eppler, Richard A., to Mobay Chemical Corporation. Black pigment free of heavy metals. 4,388,118, Cl. 106-306.000.

Epstein, Michael M.: *See—*
Erbstoesser, Steven R.; Cooke, Claude E., Jr.; Sinclair, Richard G.; and Epstein, Michael M., 4,387,769, Cl. 166-295.000.

Erbstoesser, Steven R.; Cooke, Claude E., Jr.; Sinclair, Richard G.; and Epstein, Michael M., to Exxon Production Research Co. Method for reducing the permeability of subterranean formations. 4,387,769, Cl. 166-295.000.

Erickson, David A., to Illinois Tool Works Inc. Swivel connector. 4,388,012, Cl. 403-142.000.

Erie Technological Products, Inc.: *See—*
Chu, Mike S., 4,388,415, Cl. 501-136.000.

Ermolaev, Anatoly V.: *See—*
Gryaznov, Vladimir M.; Karavanov, Andrei N.; Belosljudova, Tamara M.; Ermolaev, Anatoly V.; Maganjuk, Anatoly P.; and Sarycheva, Irina K., 4,388,479, Cl. 568-828.000.

Ernst, Horst M.: *See—*
Brandenstein, Manfred; Ernst, Horst M.; and Walter, Lothar, 4,387,938, Cl. 308-184.00R.

Erwin Kampf GmbH & Co.: *See—*
Kampf, Eberhard, 4,387,861, Cl. 242-75.470.

Erwin Sick Gesellschaft-Optik-Elektronik: *See—*
Walter, Arthur, 4,388,528, Cl. 250-221.000.

Eschem Inc.: *See—*
Schure, Ralph M.; and Steele, Gerald H., 4,388,426, Cl. 523-462.000.

Escher, Gerd; Frohnert, Heinz; and Wenning, Hans-Peter, to Veba Oel Ag. Method and apparatus for distillation of oil shale. 4,388,173, Cl. 208-11.00R.

Escher Wyss GmbH: *See—*
Selder, Harald, 4,387,856, Cl. 241-28.000.

Eskay, Robert R., to Permacel. Repulpable acrylic acid based pressure-sensitive adhesive. 4,388,432, Cl. 524-388.000.

Esselte Pendaflex Corporation: *See—*
Holland-Letz, Gunter; and Dasting, Klaus, 4,387,645, Cl. 101-327.000.

Esser, Hans J.: *See—*
Dunphy, Gerald F.; and Esser, Hans J., 4,387,918, Cl. 292-224.000.

Ethen, John L.; and Bredahl, Timothy D., to Minnesota Mining and Manufacturing Company. Embossed pavement-marking sheet material. 4,388,359, Cl. 428-143.000.

Ethyl Corporation: *See—*
Dagani, Michael J., 4,388,468, Cl. 548-531.000.
Hornbaker, Edwin D.; and Jones, Jesse D., 4,388,446, Cl. 525-175.000.

Ethyl Products Company: *See—*
Wiles, Laurence E.; Page, Frank C., III; and Eibensteiner, Bruno A., 4,387,817, Cl. 215-217.000.

Euteco Impianti S.p.A.: *See—*
Ferlazzo, Natale; Bertolini, Natale; and Ghirga, Marcello, 4,388,223, Cl. 252-437.000.

Evans, Donald J., to Molins Machine Company. Automated web chop-out control for cut-to-mark cut-off machine. 4,387,614, Cl. 83-38.000.

Evans, Orde R., to Oreco III, Inc. Guard for offshore structure. 4,388,025, Cl. 405-212.000.

Excel Industries, Inc.: *See—*
Choby, David; Crawford, James; and Mariel, James, 4,387,923, Cl. 296-201.000.

Exxon Production Research Co.: *See—*
Erbstoesser, Steven R.; Cooke, Claude E., Jr.; Sinclair, Richard G.; and Epstein, Michael M., 4,387,769, Cl. 166-295.000.

Exxon Research and Engineering Co.: *See—*
Bartok, William; Song, Yih H.; Siminski, Vince J.; and Longwell, John P., 4,388,062, Cl. 431-10.000.
Brownawell, Darrell W.; Shaub, Harold; Wisotsky, Max J.; and Gutierrez, Antonio, 4,388,201, Cl. 252-49.600.
Poeppelmeier, Kenneth R.; and Longo, John M., 4,388,294, Cl. 423-599.000.

Ezell, Harry E.; and Ezell, Norwood B. Electrical generating system for vehicles. 4,387,781, Cl. 180-65.00B.

Ezell, Norwood B.: *See—*
Ezell, Harry E.; and Ezell, Norwood B., 4,387,781, Cl. 180-65.00B.

F. L. Smidth & Co.: *See—*
Christiansen, Soren B., 4,388,067, Cl. 432-14.000.

Fabricius, Hans-Ake; and Kottgen, Eckart U., to Shanksville Corporation, N.V. Process for suppressing graft rejection in organ transplantation. 4,388,309, Cl. 424-180.000.

Fadly, Aly M.: *See—*
Nazerian, Keyvan; and Fadly, Aly M., 4,388,298, Cl. 424-89.000.

FAG Kugelfischer Georg Schafer & Co.: *See—*
Fenkner, Max; and Wehner, Hilmar, 4,387,596, Cl. 73-593.000.

Fahey, Robert E. Chair made from a garbage can. 4,387,927, Cl. 297-445.000.

Fairchild Camera & Instrument Corp.: *See—*
Phy, William S., 4,388,525, Cl. 250-211.00J.

Falciani, Marco; and Broggi, Renato, to Dobfar S.p.A. Cephalosporine desacetoxy esters and salts thereof. 4,388,460, Cl. 544-23.000.

Falendysz, Eugene L., Sr.; Brumbaugh, Eldon M.; and North, Max R., to J. I. Case Company. Fixed displacement pump with variable capacitance flow regulator. 4,388,052, Cl. 417-540.000.

Fanson, Richard L.: *See—*
Kennedy, William L.; and Fanson, Richard L., 4,387,580, Cl. 68-12.00R.

Farber, Leon; and Gradeff, Peter S., to Rhone Poulenc Inc. Process for the preparation of p-hydroxy-benzyl-nitriles and corresponding amines. 4,388,250, Cl. 260-465.00F.

Faria, Sixdeniel; and Karam, Ronald E., to Gte Products Corporation. Cadmium sulfide photoconductor blended with light-absorbing material. 4,388,394, Cl. 430-94.000.

Farina, Alfred J.: *See—*
Craig, Laurence B.; and Farina, Alfred J., 4,388,063, Cl. 431-19.000.

Farmitalia Carlo Erba S.p.A.: *See—*
Nannini, Giuliano; Perrone, Ettore; Severino, Dino; Meinardi, Giuseppe; Monti, Gisella; Bianchi, Alberta; Forgione, Angelo; and Confalonieri, Carlo, 4,388,314, Cl. 424-246.000.

Farr, Glyn P. R., to Lucas Industries, Limited. Anti-skid braking systems for vehicles. 4,387,934, Cl. 303-116.000.

Farrell, Gerald J.: *See—*
Bisonaya, Rudy Y.; and Farrell, Gerald J., 4,387,738, Cl. 137-801.000.

Farrier, William D.: *See—*
Campbell, Larry K.; and Farrier, William D., 4,388,533, Cl. 290-1.00R.

Faulconer, Boyd M. Motor vehicle deceleration data acquisition and processing apparatus and methodology. 4,387,587, Cl. 73-9.000.

Fauss, Rudolf: *See—*
Heitkamper, Peter; Konig, Klaus; Fauss, Rudolf; and Findeisen, Kurt, 4,388,238, Cl. 260-239.00E.

Fay, John W., to United States of America, Navy. Optimum flow noise cancelling hydrophone module. 4,388,711, Cl. 367-135.000.

Fechner, Erhard A.: *See—*
Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; and Pinto, Akiva, 4,387,486, Cl. 19-105.000.

Fehrle, Martin: *See—*
Rieder, Werner; and Fehrle, Martin, 4,388,454, Cl. 528-176.000.

Felice, C. Palermo: *See—*
Korpman, Ralf; and Felice, C. Palermo, 4,388,349, Cl. 427-208.400.

Feller, Murray F., to Wilgood Corporation. Heat-meter and flow-meter apparatus. 4,388,003, Cl. 374-41.000.

Felt Products Mfg. Co.: *See—*
Lister, Marc D., 4,387,764, Cl. 165-119.000.

Feltgen, Karlheinz: *See—*
Bueb, Michael; Bruck, Robert; Muschelknautz, Edgar; Paulini, Dieter; and Feltgen, Karlheinz, 4,387,476, Cl. 8-151.200.

Fenkner, Max; and Wehner, Hilmar, to FAG Kugelfischer Georg Schafer & Co. Method of and device for ultrasonically testing spherical bodies. 4,387,596, Cl. 73-593.000.

Ferlazzo, Natale; Bertolini, Natale; and Ghirga, Marcello, to Euteco Impianti S.p.A. Catalyst for the conversion of unsaturated hydrocarbons into diolefins or unsaturated aldehydes and nitriles, and process for preparing the same. 4,388,223, Cl. 252-437.000.

Fernandez, Frank J. Combination back pack and seat. 4,387,924, Cl. 297-188.000.

Fernandez, Ramon B.: *See—*
Shepherd, Gary D.; Fernandez, Ramon B.; and Rule, Ian R., 4,388,289, Cl. 423-447.400.

Ferrero, Mario; and Balestrino, Giovanni, to Centro Ricerche Fiat S.p.A. Electrode tip for electric spot welding. 4,388,516, Cl. 219-119.000.

Fewel, Kenneth J., to Hutson Corporation, The. Vibratory actuator. 4,387,539, Cl. 51-163.200.

Fiat Auto S.p.A.: *See—*
Prato, Luigi, 4,387,536, Cl. 49-502.000.

Ficek, Mieczyslaw: *See—*
Knypl, Maria; Knypl, Eugeniusz; Starzak, Marian; Mieczkowska, Ewa; Pawlus, Urszula; Palubicki, Romuald; Ficek, Mieczyslaw; and Goldynia, Jozef, 4,388,438, Cl. 524-833.000.

Field, A. Kirk; Tytell, Alfred A.; and Lampson, George P., to Merck & Co., Inc. Pharmaceutical composition comprising modified polyriboinosinic-polyribocytidylic acid, for induction of interferon in primates. 4,388,306, Cl. 424-177.000.

Fields, Ellis K.; and Anderson, Ronald L., to Standard Oil Company (Indiana). Certain substituted cyclobutane dicarboxylic acid anhydrides. 4,388,470, Cl. 549-240.000.

Filatov, Alexandr A.: *See—*
Grinberg, Efim N.; Braginsky, Yakov I.; Zhislin, Yakov M.; Lavrov, Vladimir V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; Filatov, Alexandr A.; Yaroshenko, Jury F.; Torban, Samuil S.; Kovalev, Viktor M.; Urusov, Georgy I.; Rozanova, Alla V.; Radakova, Tatyana N.; Krivosheina, Larisa I.; Bykov, Vladimir P.; Bykova, Vladimira M.; and Gultsev, Igor V., 4,387,485, Cl. 17-48.000.

Filtrol Corporation: *See—*
Wilson, Geoffrey; and Kayamoto, Masami, 4,388,222, Cl. 252-437.000.

Findeisen, Kurt: *See—*
Heitkamper, Peter; Konig, Klaus; Fauss, Rudolf; and Findeisen, Kurt, 4,388,238, Cl. 260-239.00E.

Finger, Eugene P., to Curtis Instruments, Inc. Battery state of charge indicator operating on bidirectional integrations of terminal voltage. 4,388,618, Cl. 340-636.000.

Finkelmann, Heino; Rehage, Gunther; and Kreuzer, Franz-Heinrich, to Consortium fur Elektrochemische. Crosslinked organopolysiloxanes having liquid-crystalline properties. 4,388,453, Cl. 528-15.000.

Finney, Roy P., to Medical Engineering Corporation. Penile implant. 4,387,705, Cl. 128-1.00R.

Finnigan Corporation: *See—*
Stafford, George C.; and Stephens, David R., 4,388,531, Cl. 250-427.000.

Fiore, Maximillian D.: *See—*
Atlee, John L., III; and Fiore, Maximillian D., 4,387,723, Cl. 128-734.000.

Fireprint AG: *See—*
Viol, Dietmar, 4,387,640, Cl. 101-9.000.

Firestone, Raymond A., to Merck & Co., Inc. Phenyl hydroxypropyl sulfoxide enzyme inhibitors. 4,388,326, Cl. 424-335.000.

Firestone, Raymond A., to Merck & Co., Inc. Allylsulfoxide enzyme inhibitors. 4,388,475, Cl. 564-341.000.

Fischbach, Wolfgang, to Heinrich Baumgarten KG Eisen- und Blechwarenfabrik. Supporting bracket for side handles of utensils. 4,387,484, Cl. 16-114.00A.

Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Offset printing machine inking system with selectively engageable bypass rollers. 4,387,647, Cl. 101-350.000.

Flambeau Corporation: *See—*
Lanius, Charles A., 4,387,805, Cl. 206-230.000.

Fletcher, Robert H., Jr., to United States of America, Army. Double sideband linear frequency modulation system for radar applications. 4,388,622, Cl. 343-14.000.

Flory, Donald M.; and Peeples, Denny L., to General Motors Corporation. Hydraulic brake booster. 4,387,569, Cl. 60-548.000.

FMC Corporation: *See—*
Hills, William A., 4,388,194, Cl. 210-697.000.

Folger, Philip M.; and Johnson, Bobby L., to General Electric Company. Overspeed protective system for internal combustion engines. 4,387,679, Cl. 123-198.00D.

Fomenko, Vladimir V.: *See—*
Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryazantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko, Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G., 4,388,108, Cl. 75-10.00R.

Fong, William S.: *See—*
United States of America, National Aeronautics and Space Administration; Corcoran, William H.; Fong, William S.; Pichaichanarong, Puvin; Chan, Paul C. F.; and Lawson, Daniel D., 4,388,171, Cl. 208-8.0LE.

Ford, Barry S.; and Birkett, Sydney. Testing emergency battery equipment. 4,388,615, Cl. 340-516.000.

Ford Motor Company: *See—*
Boaz, Premakaran T., 4,388,522, Cl. 219-522.000.
Mangels, John A.; and Baer, John R., 4,388,414, Cl. 501-98.000.

Forgione, Angelo: *See—*
Nannini, Giuliano; Perrone, Ettore; Severino, Dino; Meinardi, Giuseppe; Monti, Gisella; Bianchi, Alberta; Forgione, Angelo; and Confalonieri, Carlo, 4,388,314, Cl. 424-246.000.

Fory, Werner; Martin, Henry; and Pissiotas, Georg, to Ciba-Geigy Corporation. Oxime derivatives for protecting plant crops. 4,388,106, Cl. 71-105.000.

Foster, Jeanette M., executrix: *See—*
Bolon, Donald A.; and Boldebuck, Edith M., deceased, 4,388,371, Cl. 428-383.000.

Foster Wheeler Power Products Limited: *See—*
Cooke, Jeremy C. R.; and Tilley, Frederick H., 4,387,652, Cl. 110-224.000.

Fountain, Roy D., to W. R. Grace & Co. Compressible printing element containing thermosol lamina. 4,388,363, Cl. 428-215.000.

Fournier, Jean-Pierre; and Cabillic, Jacques, to Societe Europeenne de Propulsion. Bearing assembly for rotor centering device. 4,387,937, Cl. 340-682.000.

Foxboro Company, The: *See—*
Martin, John R., 4,387,973, Cl. 350-582.000.

Franek, Josef T.; Porucznik, Paul; and Styles, Alan E., to Metal Box Limited. Filling of containers. 4,387,747, Cl. 141-1.000.

Frank, Everett S., to United States of America, Army. Method and apparatus for radial inertia welding of dissimilar metals. 4,387,844, Cl. 228-113.000.

Frank Mayer & Associates, Inc.: *See—*
Crosslen, Louis J., 4,387,810, Cl. 211-49.00D.

Franke, Albrecht: *See—*
Steiner, Gerd; Franke, Albrecht; Lenke, Dieter; Teschendorf, Hans-Juegen; Worstmann, Wolfgang; and Kreiskott, Horst, 4,388,237, Cl. 260-239.0BC.

Franz, James H., Jr.: *See—*
Matty, Thomas C.; Franz, James H., Jr.; and Parham, Carol D., 4,387,870, Cl. 246-122.00R.

Franzmann, Ranier. Manual control lever for stringed instruments. 4,387,621, Cl. 84-1.160.

Fratzer, Gerhard; Beck, Bernhard; Dold, Erwin; and Klebe, Hans, to Degussa Aktiengesellschaft. Apparatus containing a carrier matrix for catalysts. 4,388,275, Cl. 422-180.000.

Frear, David L., to Bendix Corporation, The. Electrical connector insert. 4,387,944, Cl. 339-59.00R.

Freitag, Lonny R., to Sperry Corporation. Automatic locking pin retraction mechanism. 4,388,038, Cl. 414-685.000.

Fridman, Grigory B.: *See—*
Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryazantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko, Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G., 4,388,108, Cl. 75-10.00R.

Froelich, Joseph A.: *See—*
Lewis, Paul H.; Durkin, Joseph A.; and Froelich, Joseph A., 4,388,178, Cl. 208-115.000.

Frohlich, Gunter: *See—*
Becker, Bernard; Meyer-Pittroff, Roland; and Frohlich, Gunter, 4,387,574, Cl. 60-641.110.

Frohnert, Heinz: *See—*
Escher, Gerd; Frohnert, Heinz; and Wenning, Hans-Peter, 4,388,173, Cl. 208-11.00R.

Fromm, Ingrid, to Siemens Aktiengesellschaft. Optical device for monitoring critical speeds of a rotating member. 4,387,785, Cl. 181-142.000.

Fu, Cherng-Chyi, to Syntex (U.S.A.) Inc. Contact lens rejuvenating solution. 4,388,229, Cl. 252-549.000.

Fuchs, Rainer; Naumann, Klaus; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating pests with substituted 3-(1,2-dibromo-alkyl)-2,2-dimethyl-cyclopropane-1-carboxylic acid esters. 4,388,322, Cl. 424-304.000.

Fuji Electric Co., Ltd.: *See—*
Takezoe, Fumihiko; and Koyama, Minoru, 4,388,716, Cl. 370-29.000.
Watanabe, Tetsuo, 4,388,664, Cl. 361-93.000.

Fuji Photo Film Co., Ltd.: *See—*
Hasebe, Kazunori; and Minagawa, Yoshisato, 4,388,401, Cl. 430-505.000.
Hibino, Noburo; and Akashi, Goro, 4,388,368, Cl. 428-336.000.
Miyoshi, Takahito; Okutu, Toshimitu; Takimoto, Masaaki; Saida, Takashi; Akashi, Goro; and Fujiyama, Masaaki, 4,388,360, Cl. 428-172.000.
Morigaki, Masakazu; Yagihara, Morio; and Ozawa, Takashi, 4,388,404, Cl. 430-548.000.
Mukunoki, Yasuo; Nakayama, Yasuhiro; and Yokoyama, Shigeki, 4,388,402, Cl. 430-527.000.
Sato, Masamichi, 4,387,984, Cl. 355-12.000.
Shinozaki, Fumiaki; Namiki, Tomizo; and Ikeda, Tomoaki, 4,388,399, Cl. 430-271.000.
Sugiyama, Masatoshi; Ogawa, Akira; and Imai, Shinichi, 4,388,115, Cl. 106-22.000.
Tabei, Masatoshi; Wada, Minoru; Takahashi, Yonosuke; and Yoshida, Satoshi, 4,388,400, Cl. 430-346.000.
Tsuboi, Masayoshi, 4,388,387, Cl. 430-7.000.
Yazawa, Kenichiro; Kitajima, Masao; and Kondo, Asaji, 4,387,990, Cl. 356-244.000.

Fuji Xerox Co., Ltd.: *See—*
Moriguchi, Haruhiko; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,388,628, Cl. 346-76.0PH.

Fujikawa, Tetsuzo, to Kawasaki Jukogyo Kabushiki Kaisha. Apparatus for cooling an engine. 4,387,780, Cl. 180-54.00A.

Fujikura Cable Works, Ltd.: *See—*
Takahashi, Shiro; Sanada, Kazuo; Inada, Koichi; and Fukuda, Osamu, 4,388,098, Cl. 65-157.000.

Fujimori, Kazuyoshi: *See—*
Mikoshiba, Hitoshi; Fujimori, Kazuyoshi; Onodera, Kenji; and Takeuchi, Shin, 4,387,643, Cl. 101-110.000.

Fujimoto, Tadao; and Kawasugi, Tadaaki, to Kubota Ltd. Sludge treating apparatus. 4,388,186, Cl. 210-170.000.

Fujimoto, Tsuneo: *See—*
Sugano, Junichiro; Yui, Tomoyuki; Minamikawa, Yoshitugu; and Fujimoto, Tsuneo, 4,388,287, Cl. 423-415.00P.

Fujita, Shuichi: *See—*
Suganuma, Tetsuya; Fuwa, Yoshio; Fujita, Shuichi; and Takahashij Yoshitaka, 4,388,114, Cl. 75-243.000.

Fujitsu Limited: *See—*
Shirasaki, Masataka; and Obokata, Takeshi, 4,387,953, Cl. 350-96.140.

Fujiyama, Masaaki: *See—*
Miyoshi, Takahito; Okutu, Toshimitu; Takimoto, Masaaki; Saida, Takashi; Akashi, Goro; and Fujiyama, Masaaki, 4,388,360, Cl. 428-172.000.

Fukata, Masatoshi: *See—*
Terauchi, Kazuo; and Fukata, Masatoshi, 4,387,659, Cl. 114-199.000.

Fukuda, Osamu: *See—*
Takahashi, Shiro; Sanada, Kazuo; Inada, Koichi; and Fukuda, Osamu, 4,388,098, Cl. 65-157.000.

Fukuyama, Toshifumi; and Onji, Norio, to Omron Tateisi Electronics Co. Photoelectric switch. 4,388,527, Cl. 250-214.00R.

Fuller, David L. Thermosensing article and method of manufacture. 4,388,139, Cl. 156-307.500.

Funami, Haruo: *See—*
Taniguchi, Yasuo; Asano, Toshio; Funami, Haruo; and Itou, Kouichi, 4,388,442, Cl. 525-60.000.

Furuta, Yasuo: *See—*
Iwamoto, Mune; Ito, Norifumi; Ishida, Yuzuru; Furuta, Yasuo; and Matsubara, Tetsuyuki, 4,388,447, Cl. 525-316.000.

Fushida, Akira: *See—*
Kato, Yoshiaki; and Fushida, Akira, 4,388,392, Cl. 430-58.000.

Fushiki, Yasuo: *See—*
Oizumi, Masayuki; Abe, Masaharu; and Fushiki, Yasuo, 4,388,129, Cl. 156-73.100.

Fuwa, Yoshio: *See—*
Suganuma, Tetsuya; Fuwa, Yoshio; Fujita, Shuichi; and Takahashij Yoshitaka, 4,388,114, Cl. 75-243.000.

G. D. Searle & Co.: *See—*
Chinn, Leland J., 4,388,311, Cl. 424-238.000.
Hamilton, Robert W.; Henderson, Richard E. L.; and Pitzele, Barnett S., 4,388,308, Cl. 424-180.000.

G. Siempelkamp GmbH & Co.: *See—*
Ufermann, Werner, 4,388,055, Cl. 425-80.100.

GAF Corporation: *See—*
Hort, Eugene V.; Anderson, Lowell R.; and Alwani, Dru W., 4,388,206, Cl. 252-148.000.

GAF Huls Chemie GmbH: *See—*
Westernacher, Helmut; and Schamann, Franz, deceased, 4,388,216, Cl. 252-412.000.

Gagnon, Joseph A. L. N.: *See—*
Shaw, David N.; and Gagnon, Joseph A. L. N., 4,388,048, Cl. 417-310.000.

Gal, Laszlo V., to Rockwell International Corporation. Nucleation bubble generator for bubble domain devices. 4,388,700, Cl. 365-11.000.

Galentan AG: *See—*
Piepers, Harry C., 4,388,157, Cl. 204-15.000.

Gallagher, Richard N. Wallet holster for a semi automatic weapon. 4,387,523, Cl. 42-1.00J.

Ganellin, Charon R.: *See—*
Durant, Graham J.; and Ganellin, Charon R., 4,388,319, Cl. 424-270.000.

Gans, Michael J., to Bell Telephone Laboratories, Incorporated. Phased array antennas using frequency multiplication for reduced numbers of phase shifters. 4,388,626, Cl. 343-854.000.

Garcia, Enrique, to Eastman Kodak Company. Solid state image sensor with image sensing elements having charge coupled photocapacitors and a floating gate amplifier. 4,388,532, Cl. 250-578.000.

Gargrave, Robert J.: *See—*
Martin, Earl C.; Thompson, John K.; and Gargrave, Robert J., 4,387,583, Cl. 72-22.000.

Garrett Corporation, The: *See—*
Richardson, Neil R.; and Woodhull, Bradley A., 4,387,572, Cl. 60-602.000.

Gartland, Robert J.: *See—*
Hrivnak, John E.; and Gartland, Robert J., 4,388,356, Cl. 428-35.000.

Gauthier, Michel: *See—*
Chamberland, Andre M.; and Gauthier, Michel, 4,388,155, Cl. 204-1.00T.

Gautier, Herve; and Maerfeld, Charles, to Thomson-CSF. Piezoelectric elastic-wave convolver device. 4,388,599, Cl. 333-150.000.

Gaynor, John C.: *See—*
Palmer, Jay W.; and Gaynor, John C., 4,388,292, Cl. 423-555.000.

Geboers, Josephus J. A.; and Janssen, Daniel J. G., to U.S. Philips Corporation. Voltage stabilizer suitable for use in a telephone set. 4,388,498, Cl. 179-81.00R.

Geddes, Leslie A.; Bourland, Joe D.; and Pearce, John A., to Purdue Research Foundation. Electrosurgical dispersive electrode. 4,387,714, Cl. 128-303.130.

Gefitec S.A.: *See—*
Posso, Patrick P., 4,387,864, Cl. 242-199.000.

Geiger, Reinold, to A.M.S. (Ateliers de Moulage Specialise). Stopping device for bottle. 4,387,821, Cl. 215-330.000.

Geisinger, Wolfgang G. Carrying handle. 4,387,922, Cl. 294-31.200.

Geitz, Gerhard: *See—*
Beifuss, Wolfgang; Birzele, Paul; and Geitz, Gerhard, 4,388,683, Cl. 364-200.000.

General Dynamics Corp./Convair Division: *See—*
Prunty, John, 4,388,263, Cl. 264-257.000.

General Dynamics Electronics Division: *See—*
Kornbau, Thomas W.; and Sievers, Robert A., 4,388,388, Cl. 430-258.000.

General Electric Company: *See—*
Bedard, James F.; Eichelberger, Charles W.; and Chen, De-Yu, 4,388,566, Cl. 315-291.000.
Bhatnagar, Har S., 4,388,581, Cl. 318-789.000.
Bolon, Donald A.; and Boldebuck, Edith M., deceased, 4,388,371, Cl. 428-383.000.
Brown, Ronald H., 4,387,745, Cl. 140-92.100.
Butler, Clyde R., 4,388,706, Cl. 365-226.000.
Cichanowski, Stanley W., 4,388,669, Cl. 361-319.000.
Crivello, James V., 4,388,450, Cl. 525-502.000.
Dooley, James A., 4,388,519, Cl. 219-463.000
Folger, Philip M.; and Johnson, Bobby L., 4,387,679, Cl. 123-198.00D.
Haid, William R., 4,388,686, Cl. 364-200.000
Hammer, Edward E., 4,388,564, Cl. 315-227.00R.
Henry, Michael F., 4,388,124, Cl. 148-404.000.
Honsinger, Vernon B.; and Tompkins, Russell E., 4,388,545, Cl. 310-156.000.
Klein, Steven H.; and Smith, Alfred H., Jr., 4,388,433, Cl. 524-401.000.
Patch, Richard J.; and Rose, George D., Jr., 4,388,703, Cl. 365-105.000.
Peil, William; Brown, Thomas A.; and Dissosway, Marc A., 4,388,536, Cl. 307-268.000.
West, Jon K.; Catotti, Arthur J.; and Wynn, Michael J., 4,388,120. Cl. 134-15.000.

General Foods Inc.: *See—*
Maurice, Terrence J.; Murray, Edward D.; and Agnes, Jennifer M., 4,388,333, Cl. 426-104.000.

General Foods Limited: *See—*
Cawdron, Diane, 4,388,337, Cl. 426-573.000.

General Motors Corporation: *See—*
Bell, Albert H., III, 4,387,563, Cl. 60-39.250
Couceiro, Nuno P., 4,387,676, Cl. 123-179.00H.
Flory, Donald M.; and Peeples, Denny L., 4,387,569, Cl. 60-548.000.
Klingenmaier, Otto J., 4,388,379, Cl. 428-613.000.
Romblom, Edward R., 4,387,693, Cl. 123-569.000.
Shellhause, Ronald L., 4,387,932, Cl. 303-24.00F.
Slaughter, Ronald W.; and Carpenter, David L., 4,387,920, Cl. 293-117.000.

General Signal Corporation: *See—*
Loniello, Peter J., 4,387,871, Cl. 248-58.000.

General Tire & Rubber Company, The: *See—*
Codispoti, Thomas E.; Giustino, James M.; Griffith, Richard M.; and Tsai, James T., 4,388,261, Cl. 264-171.000.

Gentry, James C. Strut clamp and temporary support. 4,387,887, Cl. 269-100.000.

Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayana N.; Wada, William T.; and Yancey, Irvin R., to Mobil Oil Corporation. Flexible flowline bundle for compliant riser. 4,388,022, Cl. 405-195.000.

Geosource, Inc.: *See—*
Schuller, Ronald A., 4,388,050, Cl. 417-454.000.

Gerber, Paul E., to Modern Mill, Inc. Remote control apparatus for power washers. 4,387,850, Cl. 239-124.000.

Gerke, Peter; and Petersen, Joachim, to Siemens Aktiengesellschaft. Digital telecommunication system. 4,388,718, Cl. 370-110.100.

Gerot-Pharmazeutika Gesellschaft m.b.H.: *See—*
Schlager, Ludwig H., 4,388,313, Cl. 424-244.000.

Gerteisen, Steven R.; and Wetzel, David R., to Dart Industries Inc. Fiber-reinforced composite materials. 4,388,422, Cl. 523-137.000.

Gesteland, Robert C., to Northwestern University. Method and apparatus for precise control of vapor phase concentrations of volatile organics. 4,388,272, Cl. 422-102.000.

Gettner, Donald F. Patient handler. 4,387,473, Cl. 5-81.00B.

GFM Gesellschaft fur Fertigungstechnik und Mashinenbau Gesellschaft m.b.H.: *See—*
Blaimschein, Gottfried, 4,388,027, Cl. 409-131.000.

Ghirga, Marcello: *See—*
Ferlazzo, Natale; Bertolini, Natale; and Ghirga, Marcello, 4,388,223, Cl. 252-437.000.

Gibbins, Graham: *See—*
Brown, James P.; Gibbins, Graham; and Hampson, Robert S., 4,388,138, Cl. 156-289.000.

Gibbons, Edwin E. Fluid friction furnace. 4,387,701, Cl. 126-247.000.

Giebel, Burkhard, to Siemens Aktiengesellschaft. Circuit arrangement with MOS-transistors for the rapid evaluation of the logic state of a sampling node. 4,388,541, Cl. 307-530.000.

Gilford Instrument Laboratories, Inc.: *See—*
Gilford, Saul R.; Emary, Robert J.; and Carey, Glen A., 4,387,991, Cl. 356-246.000.

Gilford, Saul R.; Emary, Robert J.; and Carey, Glen A., to Gilford Instrument Laboratories, Inc. Automatic monochromatic light absorbance measurement analyzer. 4,387,991, Cl. 356-246.000.

Gill, Lynn T.: *See—*
Guzik, Andrzej T.; and Gill, Lynn T., 4,387,950, Cl. 339-136.00M.

Gillet, Roger, to Alsthom-Atlantique & Electricite de France. Device for connecting a collector ring to a current lead in a superconducting rotor. 4,388,544, Cl. 310-71.000.

Gillich, Thomas N.; and Walls, John E., to American Hoechst Corporation. Aluminum electrolysis in non-aqueous monomeric organic acid. 4,388,156, Cl. 204-14.00N.

Gingell, Alexander W.: *See—*
Timbers, Gordon E.; Stark, Robert; Caron, Jacques C.; Cumming, Daniel B.; Cowmeadow, Richard R.; and Gingell, Alexander W., 4,387,630, Cl. 99-348.000.

Giustino, James M.: *See—*
Codispoti, Thomas E.; Giustino, James M.; Griffith, Richard M.; and Tsai, James T., 4,388,261, Cl. 264-171.000.

Givens, Wyatt W., to Mobil Oil Corporation. Method and system for monitoring ore grade of an uranium bearing mixture. 4,388,266, Cl. 376-164.000.

Glass, Michael, to Warner-Lambert Company. Sorbitol containing mixture encapsulated flavor. 4,388,328, Cl. 426-3.000.

Glass, Robert M. Iris retractor. 4,387,706, Cl. 128-20.000.

Glennco Trust: *See—*
Kaufman, Edward R.; Benson, Gregory R.; and Shaines, Alfred, 4,388,423, Cl. 523-153.000.

Gockler, Heinz, to Licentia Patent-Verwaltungs-GmbH. Adaptive equalizer device. 4,388,724, Cl. 375-14.000.

Goeth, Hanns: *See—*
Wetzel, Bernd; Woitun, Eberhard; Maier, Roland; Reuter, Wolfgang; Lechner, Uwe; and Goeth, Hanns, 4,388,315, Cl. 424-246.000.

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Hall, Roger L.; and Conroy, Walter J., to Honeywell Information Systems Inc. Cathode ray tube display terminal with a removable power supply 4,387,951, Cl. 339-193.00R.

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Hamil, Roy A.: *See—*
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Hammond, Kenneth G.: *See—*
Valkovich, Phillip B.; and Hammond, Kenneth G., 4,388,200, Cl. 252-34.000.

Hampson, Robert S.: *See—*
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Hana Biologics, Inc.: *See—*
Yabusaki, Kenichi K., 4,388,412, Cl. 436-536.000.

Hanabusa, Tetsuro: *See—*
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Handy & Harman: *See—*
Stavish, Michael F.; and Reti, Aldo M., 4,388,270, Cl. 420-473.000.

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Trouet, Andre B. L.; Hannart, Jean A. A. J.; and Rao, Kandukuri S. B., 4,388,305, Cl. 424-177.000.

Hansel, Allen B., to Perkin-Elmer Corporation, The. Fiber optic data link. 4,388,732, Cl. 455-608.000.

Hara, Shigeyoshi: *See—*
Kawaguchi, Takeyuki; Minematsu, Hiroyoshi; Hayashi, Yuzuru; and Hara, Shigeyoshi, 4,388,189, Cl. 210-490.000.

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Brown, Ivan R., 4,387,905, Cl. 279-1.00C.

Harford, Jack R., to RCA Corporation. AFT Lockout prevention system. 4,388,649, Cl. 358-195.100.

Harman International Industries: *See—*
King, John A., 4,387,787, Cl. 181-155.000.

Harms, Jack L.: *See—*
Seberg, Charles H.; and Harms, Jack L., 4,388,074, Cl. 604-165.000.

Harper, Lee R.: *See—*
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Harris Corporation: *See—*
Dukes, Allen E.; and Bailey, David C., 4,388,652, Cl. 358-285.000.
Schwartz, Helmut, 4,388,625, Cl. 343-786.000.

Harris, Matthew E.: *See—*
Keep, Henry, Jr.; Santagata, Daniel A.; Harris, Matthew E.; and Welsh, William H., Jr., 4,388,523, Cl. 219-541.000.

Hart, Hiram. Energy-emitting latex-particulates. 4,388,296, Cl. 424-1.000.

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Kraemer, Dieter; Lehmann, Klaus; and Hartl, Roland, 4,388,271, Cl. 422-56.000.

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Hochstein, Waldheim; Kaibel, Gerd; Mueller, Franz-Josef; and Hartmann, Horst, 4,388,154, Cl. 203-35.000.

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Hasegawa, Hiroshi: *See—*
Takeuchi, Osamu; Hasegawa, Hiroshi; Izumi, Susumu; and Otsuki, Naoki, 4,388,068, Cl. 432-122.000.

Hasegawa, Shigekazu, to Hawegawa Chemical Industry Co., Ltd. Porous FRP sheet and manufacturing method thereof. 4,388,365, Cl. 428-258.000.

Hashemifard, Mirahmad. Garden cutting tool. 4,387,510, Cl. 30-314.000.

Hashimoto, Junichiro: *See—*
Tsubuko, Kazuo; Hashimoto, Junichiro; Kuramoto, Shinichi; and Okawara, Makoto, 4,388,395, Cl. 430-114.000.

Hashimoto, Shunichi: *See—*
Sudo, Masatoshi; Hashimoto, Shunichi; and Kambe, Shoji, 4,388,122, Cl. 148-12.00F.

Haskel Engineering & Supply Co.: *See—*
Kelly, John W., 4,387,507, Cl. 29-727.000.

Hassler, Stephen P.; and Sokoly, Theodore O., to McGraw-Edison Company. Current limiting fuse. 4,388,603, Cl. 337-158.000.

Hatanaka, Masayuki: *See—*
Akita, Shinji; and Hatanaka, Masayuki, 4,387,584, Cl. 72-100.000.

Hatfield, Raymond W., to Ladney, Michael, Jr. Method and apparatus for applying enamels. 4,388,353, Cl. 427-422.000.

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Tschan, J. Donald; and Hatton, Clifford P., 4,387,543, Cl. 52-295.000.

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Hawkins, William E., to Du Pont de Nemours, E. I., and Company. Film diversion apparatus. 4,387,841, Cl. 226-97.000.

Hawkins, William G.; and Black, Jerry G., to Xerox Corporation. Laser annealing for growth of single crystal semiconductor areas. 4,388,145, Cl. 156-617.00R.

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Rigazio, Anthony W.; Mathieson, Donald E.; and Hawkinson, Paul E., 4,388,002, Cl. 368-88.000.

Hayama, Masashi: *See—*
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Hayman, Richard W.; Goldstein, Burton; Lynn, Joe J.; Brown, Robert J.; and Bugash, Robert S., to OCR Marketing Associates, Inc. Restaurant video display system. 4,388,689, Cl. 364-401.000.

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Cochrane, Peter R., 4,388,023, Cl. 405-195.000.

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Jamison, Will B.; and Hazen, David R., 4,387,798, Cl. 198-587.000.

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Hedstrom, Mark D., to Delta Promotions, Inc. Electronic insect killer. 4,387,529, Cl. 43-112.000.

Heiberger, Francis E., to Danly Machine Corporation. Control system for synchronizing power presses and associated feed mechanism with interlock features. 4,387,632, Cl. 100-45.000.

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Jeschke, Willi; Junghans, Rudi; Beisel, Hermann; and Hofmann, Gunther, 4,387,648, Cl. 101-365.000.

Heinemann, Joseph B., to Timeplex, Inc. Hardware memory write lock circuit. 4,388,695, Cl. 364-900.000.

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Fischbach, Wolfgang, 4,387,484, Cl. 16-114.00A.

Heinrich Wemhoner GmbH & Co. KG: *See—*
Wemhoner, Heinrich, 4,388,144, Cl. 156-538.000.

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Heller, Adam, to Bell Telephone Laboratories, Incorporated. Devices having chemically modified p-type InP surfaces. 4,388,383, Cl. 429-111.000.

Helling, Gunter; Reiff, Helmut; Himmelmann, Wolfgang; and Renner, Gunter, to Agfa-Gevaert Aktiengesellschaft. Process for the preparation of dispersions of hydrophobic substances in water. 4,388,403, Cl. 430-546.000.

Hellqvist, Ake O. V., to Cinderella AB. Process and a device for purifying water. 4,388,192, Cl. 210-615.000.

Hembert, Gaetan, to Lucas Industries Limited. Electrical harness forming machine. 4,388,142, Cl. 156-446.000.

Hembre, Robert T.; and Cook, Steven L., to Eastman Kodak Company. Process for the recovery of catalyst values. 4,388,217, Cl. 252-413.000.

Henderson, Richard E. L.: *See—*
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Henkel Corporation: *See—*
Rogier, Edgar R., 4,388,209, Cl. 252-182.000.

Henry, Michael F., to General Electric Company. Cyclic oxidation-hot corrosion resistant nickel-base superalloys. 4,388,124, Cl. 148-404.000.

Herbert, Roger P., to Smith International, Inc. Time recorder for in-hole motors. 4,387,774, Cl. 175-40.000.

Hercules Incorporated: *See—*
Maslanka, William W., 4,388,439, Cl. 524-845.000.

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Herter, Kurt: *See—*
Bauer, Heinz; and Herter, Kurt, 4,388,086, Cl. 55-75.000.

Herzog, Donald G.: *See—*
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Hess, Larry W.: *See—*
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Hettiger, James: *See—*
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Hetz, Heinz K., to YWHC, Inc. Steam trap including interchangeable body member and insert assembly. 4,387,732, Cl. 137-183.000.

Heubl, Walter. Closure for cans provided with beaded edge. 4,387,826, Cl. 220-243.000.

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Lovelock, James E., 4,388,411, Cl. 436-149.000.
Miller, David G., 4,387,720, Cl. 128-660.000.

Heye, Hermann: *See—*
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Hidaka, Hiroshi: *See—*
Kumagai, Ikuo; Koyanagi, Yukiaki; and Hidaka, Hiroshi, 4,388,009, Cl. 400-679.000.

Hiestand, Karl, to SMW Schneider & Weisshaupt GmbH. Device for controlling a working machine. 4,387,907, Cl. 279-4.000.

Higo, Moriaki: *See—*
Suzuki, Shin-ichi; Kitoh, Shinya; Toda, Haruhiko; and Higo, Moriaki, 4,388,421, Cl. 523-118.000.

Hikake, Norio: *See—*
Nishibayashi, Hatsumi; Amagai, Yoshimi; Hikake, Norio; Kouchi, Toshihiro; and Aizawa, Tatsuo, 4,388,396, Cl. 430-126.000.

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Hill, Raymond R. Stethoscope with improved resonant cavity amplification. 4,387,784, Cl. 181-131.000.

Hills, William A., to FMC Corporation. Hydrogen sulfide abatement in geothermal steam systems. 4,388,194, Cl. 210-697.000.

Himmelmann, Wolfgang: *See—*
Helling, Gunter; Reiff, Helmut; Himmelmann, Wolfgang; and Renner, Gunter, 4,388,403, Cl. 430-546.000.

Hirahata, Shigeru: *See—*
Komatsu, Shigeru; Hirahata, Shigeru; and Tachiuchi, Tsuguji, 4,388,621, Cl. 340-802.000.

Hirao, Shozo; Saihara, Yasuhiro; Nakanishi, Toshio; Ihara, Ichiro; and Sano, Yoshio, to Matsushita Electric Works, Ltd. Method of manufacturing artificial wood veneer. 4,388,133, Cl. 156-245.000.

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Awazuhara, Hiroshi; Tsumura, Sukebumi; and Kimura, Tomoaki, 4,387,586, Cl. 72-206.000.
Horiuchi, Michimasa; Ibamoto, Masahiko; and Nemoto, Kiyoshi, 4,388,573, Cl. 318-376.000.
Koike, Norio; Sasano, Akira; Taniguchi, Yoshio; Nakano, Toshio; Aoki, Masakazu; and Takemoto, Iwao, 4,387,987, Cl. 355-133.000.
Komatsu, Shigeru; Hirahata, Shigeru; and Tachiuchi, Tsuguji, 4,388,621, Cl. 340-802.000.
Komatsu, Shigeru; Mizukami, Kazushi; Tachiuchi, Tsuguji; Nagai, Kunihiko; and Koyama, Takuo, 4,388,707, Cl. 365-230.000.
Ohta, Yoshihiro; and Ichikawa, Akira, 4,388,491, Cl. 179-1.0SC.
Sakamoto, Masakatsu; Uchida, Kenji; and Nagano, Shuichi, 4,387,595, Cl. 73-322.500.
Suzuki, Takaya; Inoue, Yosuke; and Aoyama, Takashi, 4,388,342, Cl. 427-8.000.
Takagi, Katsuaki; and Kita, Yuzo, 4,388,612, Cl. 340-347.0DA.
Watanabe, Atsuo; Naito, Masayoshi; Yatsuo, Tsutomu; and Okamura, Masahiro, 4,388,635, Cl. 357-38.000.

Hitachi Shipbuilding & Engineering Company Limited: *See—*
Takao, Kengo; Ohmachi, Mineo; Kihara, Hisatsugu; Toki, Kenshiro; Tomita, Yukio; and Mizota, Toshihiro, 4,387,562, Cl. 60-39.150.
Terauchi, Kazuo; and Fukata, Masatoshi, 4,387,659, Cl. 114-199.000.

Hitchcock, Myron H., to Interstate Electronics Corporation. Speech recognition microcomputer. 4,388,495, Cl. 179-1.0SD.

Hitco: *See—*
Shepherd, Gary D.; Fernandez, Ramon B.; and Rule, Ian R., 4,388,289, Cl. 423-447.400.

Hochiki Corporation: *See—*
Machida, Haruchika, 4,388,616, Cl. 340-587.000.

Hochstein, Waldheim; Kaibel, Gerd; Mueller, Franz-Josef; and Hartmann, Horst, to BASF Aktiengesellschaft. Isolation of acetaldehyde and methanol from reaction mixtures resulting from the homologization of methanol. 4,388,154, Cl. 203-35.000.

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Johnson, Craig; Dendor, Paul; and Hodgkins, Harry L., 4,388,126, Cl. 149-14.000.

Hoechst Aktiengesellschaft: *See—*
Dursch, Walter; and Kleiner, Hans-Jerg, 4,388,252, Cl. 260-968.000.
Schell, Loni, 4,388,391, Cl. 430-49.000.

Hoeck, Karl: *See—*
Konstantouros, Efthimios; and Hoeck, Karl, 4,388,276, Cl. 422-187.000.

Hoerauf, Werner: *See—*
Strehler, Hugo; Hoerauf, Werner; and Valentin, Guenter, 4,388,425, Cl. 523-333.000.

Hoffman, Stephen A.: *See—*
Coughlin, William J.; Hoffman, Stephen A.; and Rieppel, Perry J., 4,388,514, Cl. 219-69.00R.

Hoffmann-La Roche Inc.: *See—*
Berger, Leo; and Olson, Gary L., 4,388,467, Cl. 548-439.000.
Horecker, Bernard L., 4,388,234, Cl. 260-112.50R.
Stein, Stanley, 4,388,236, Cl. 260-112.50R.
Trybulski, Eugene J., 4,388,239, Cl. 260-239.0BB.

Hofmann, Gunther: *See—*
Jeschke, Willi; Junghans, Rudi; Beisel, Hermann; and Hofmann, Gunther, 4,387,648, Cl. 101-365.000.

Hoge, Carl E.; and Lin, Gregory K., to Burroughs Corporation. Method of attaching a protective film to an integrated circuit. 4,388,132, Cl. 156-153.000.

Hogue, Norman E., to Packard Industries, Inc. Latch for a tab and slot mounting bracket. 4,387,872, Cl. 248-221.300.

Hohl, Frank: *See—*
United States of America, National Aeronautics and Space Administration; Lee, Ja H.; and Hohl, Frank, 4,388,542, Cl. 310-11.000.

Hokushin Electric Works, Ltd.: *See—*
Azegami, Tadashi, 4,387,601, Cl. 73-724.000.

Holland-Letz, Gunter; and Dasting, Klaus, to Esselte Pendaflex Corporation. Printing mechanism. 4,387,645, Cl. 101-327.000.

Holly, Sandor, to Rockwell International Corporation. Wide bandwidth optical modal deformation sensor. 4,387,966, Cl. 350-360.000.

Holstein und Kappert GmbH: *See—*
Rademacher, Friedrich, 4,387,797, Cl. 198-461.000.

Holt Lloyd S.A.: *See—*
Guerrier, Jean, 4,387,677, Cl. 123-179.00L.

Holter, Heinz; Gresch, Heinz; Igelbuscher, Heinrich; and Dewert, Heribert. Noxious-component removal from flue gas and compositions useful therefor. 4,388,281, Cl. 423-210.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Hamane, Masumi; Shigihara, Akira; and Kato, Masaie, 4,387,606, Cl. 74-752.00E.
Otani, Junji; and Ikenoya, Yasuo, 4,387,565, Cl. 60-293.000.

Honegger, Heinz, to Honel Holding AG, Ltd., SA. Drainage device embedded in a concrete slab for moisture drainage. 4,388,015, Cl. 404-2.000.

Honel Holding AG, Ltd., SA: *See—*
Honegger, Heinz, 4,388,015, Cl. 404-2.000.

Honeywell Inc.: *See—*
Benton, Ronald, 4,387,763, Cl. 165-29.000.

Honeywell Information Systems Inc.: *See—*
Hall, Roger L.; and Conroy, Walter J., 4,387,951, Cl. 339-193.00R.
Hall, Roger L.; and Romano, Domenic R., 4,388,671, Cl. 361-383.000.
Nibby, Chester M., Jr.; and Johnson, Robert B., 4,388,684, Cl. 364-200.000.
Twibell, Jerome J.; and Johnston, Robert J., 4,388,687, Cl. 364-200.000.

Honsinger, Vernon B.; and Tompkins, Russell E., to General Electric Company. Rotor for a permanent magnet AC motor. 4,388,545, Cl. 310-156.000.

Hoover, Merle L., deceased (by Hoover, Nancy S., executrix), to Joy Manufacturing Company. Conveyor belt. 4,387,801, Cl. 198-821.000.

Hoover, Nancy S., executrix: *See—*
Hoover, Merle L., deceased, 4,387,801, Cl. 198-821.000.

Hoppel, Rainer, to Robert Bosch GmbH. Control apparatus for a fuel metering system in an internal combustion engine. 4,387,687, Cl. 123-493.000.

Hoppel, Rainer; and Knapp, Heinrich, to Robert Bosch GmbH. Fuel injection apparatus. 4,387,695, Cl. 123-585.000.

Hopper, Michael J.; Martin, Michael R.; Bolt, Lawrence; Smith, Michael; and Tavasolian, Ali, to American Hoechst Corporation. Polyester based polarizer. 4,388,375, Cl. 428-423.700.

Hoquet, Robert G.: *See—*
Thomas, Thomas J.; and Hoquet, Robert G., 4,388,078, Cl. 8-514.000.

Horecker, Bernard L., to Hoffmann-La Roche Inc. Peptide isolation. 4,388,234, Cl. 260-112.50R.

Horgan, John J.: *See—*
Hamilton, Stuart; and Horgan, John J., 4,387,560, Cl. 60-39.020.

Hori, Takanobu; Arai, Fuminao; Kodama, Hisashi; and Okabe, Yoshio, to Aisin Seiki Kabushiki Kaisha. Engine valve actuating mechanism having a hydraulic fulcrum lifting device. 4,387,675, Cl. 123-90.580.

Horiba, Ltd.: *See—*
Tanimoto, Masahiro, 4,388,722, Cl. 373-118.000.

Horibe, Kyoichi: *See—*
Sugiura, Shinji; and Horibe, Kyoichi, 4,388,445, Cl. 525-124.000.

Horikawa, Masao: *See—*
Murai, Wasaburo; and Horikawa, Masao, 4,388,506, Cl. 200-144.00R.

Horiuchi, Michimasa; Ibamoto, Masahiko; and Nemoto, Kiyoshi, to Hitachi, Ltd. Electric vehicle control device. 4,388,573, Cl. 318-376.000.

Hornbaker, Edwin D.; and Jones, Jesse D., to Ethyl Corporation. Polyethylene terephthalate blends. 4,388,446, Cl. 525-175.000.

Horner, Joseph L.: *See—*
Ludman, Jacques E.; Horner, Joseph L.; and Mikes, Thomas L., 4,387,955, Cl. 350-96.190.

Horrobin, David F., to Efamol Limited. Pharmaceutical and dietary composition. 4,388,324, Cl. 424-312.000.

Horsma, David A.: *See—*
Toy, Lester T.; Moyer, Wendell W.; Lyons, Bernard J.; and Horsma, David A., 4,388,607, Cl. 338-22.0SD.

Hort, Eugene V.; Anderson, Lowell R.; and Alwani, Dru W., to GAF Corporation. Corrosion inhibitors. 4,388,206, Cl. 252-148.000.

Hosegood, Edward A.: *See—*
Champaneria, Nitin J.; Harper, Lee R.; and Hosegood, Edward A., 4,388,372, Cl. 428-395.000.

Hosono, Nagao; Kinoshita, Koichi; and Takahashi, Toru, to Canon Kabushiki Kaisha. Developing apparatus for electrostatic image. 4,387,664, Cl. 118-658.000.

Hough, Harold L.: *See—*
Blaisdell, Ronald G.; and Hough, Harold L., 4,388,679, Cl. 362-306.000.

Houldsworth, John, to Chessell Limited. Chart recorder. 4,388,631, Cl. 346-141.000.

House, Cynthia B.; and Leichti, Robert J., to United States Gypsum Company. Thermoplastic hardboard from acetylated mat. 4,388,378, Cl. 428-537.000.

Howard, Peter B.; Boelitz, Martin V.; and De Swarte, Thomas W., to United States of America, Navy. Method for steering a solid propellant ballistic vehicle. 4,387,865, Cl. 244-3.100.

HPM Corporation: *See—*
Bishop, Thomas G., 4,387,834, Cl. 222-278.000.

Hrivnak, John E.; and Gartland, Robert J., to Goodyear Tire & Rubber Company, The. Heat setting a thermoformed PET article utilizing a male plug as a constraint. 4,388,356, Cl. 428-35.000.

Hruda, Robert M.; and Cusimano, John L., to Westinghouse Electric Corp. Switch operating means including latching means maintaining switch contacts open or closed. 4,388,504, Cl. 200-76.000.

Hsu, Fu-Lian: *See—*
Brossi, Arnold; Schmidhammer, Helmut; Jacobson, Arthur E.; and Hsu, Fu-Lian, 4,388,463, Cl. 546-74.000.

Hsu, Herbert H.; and Tan-Hsu, Inri. Retainer for surgeon's eye glasses. 4,387,471, Cl. 2-10.000.

Hudson, H. Gene. Mineral separation by particle settling characteristics. 4,388,182, Cl. 209-17.000.

Hughes Aircraft Company: *See—*
Robinson, William P.; McNulty, Hugh, Jr.; Seliger, Robert L.; and Williamson, Weldon S., 4,388,560, Cl. 315-111.810.
Turk, Roger R.; and Robinson, Morton, 4,388,097, Cl. 65-64.000.
Vasudev, Prahalad K., 4,388,633, Cl. 357-17.000.

Hughes, Howard C., Jr.: *See—*
Brownlee, Robert R.; Hughes, Howard C., Jr.; Neff, Paul H.; and Tyets, G. Frank O., 4,387,717, Cl. 128-419.0PG.

Hughes, William L., to Commercial Resins Company. Heating collar with quadrafilar windings. 4,388,510, Cl. 219-8.500.

Huie, Jaken Y.; and Jacobus, Dan, to Sperry Corporation. Method of making a polyimide/glass hybrid printed circuit board. 4,388,136, Cl. 156-252.000.

Hungerford, Gordon P., to Mobil Oil Corporation. Polymer film coated with aqueous polymer. 4,388,258, Cl. 264-129.000.

Hunt, Albert H.: *See—*
Bickley, Robert H.; and Hunt, Albert H., 4,388,597, Cl. 331-2.000.

Hunt, Milby N. Vehicle traction device. 4,387,930, Cl. 301-46.000.

Hunter, James R.: *See—*
Klipsch, Paul W.; and Hunter, James R., 4,387,786, Cl. 181-150.000.

Huson, Gregory G.: *See—*
Englar, Robert J.; and Huson, Gregory G., 4,387,869, Cl. 244-207.000.

Hutson Corporation, The: *See—*
Fewel, Kenneth J., 4,387,539, Cl. 51-163.200.

Hwang, Bruce Y.: *See—*
Dewey, Richard H.; Hwang, Bruce Y.; and Kuo, George Y., 4,388,240, Cl. 260-239.0BB.

Hy-Way Heat Systems, Inc.: *See—*
Miller, John H., 4,387,766, Cl. 165-172.000.

Hydro-Quebec: *See—*
Chamberland, Andre M.; and Gauthier, Michel, 4,388,155, Cl. 204-1.00T.

Hydrovane Compressor Company Limited: *See—*
Boller, Edward, 4,388,046, Cl. 417-295.000.

Hylsa, S.A.: *See—*
Carrillo-Cantu, David H.; and Trevino-Alanis, Asdrubal, 4,388,116, Cl. 106-97.000.

Hyltin, Tom M., to Commodore Electronics, Ltd. Solid-state fluorescent lamp ballast. 4,388,563, Cl. 315-205.000.

Hynst, Karel; and Travnicek, Mojmir, to ZVS-Adamovske strojirny, koncernovy podnik. Device for increasing the ink supply to the inking unit of a printing machine. 4,387,646, Cl. 101-350.000.

Ibamoto, Masahiko: *See—*
Horiuchi, Michimasa; Ibamoto, Masahiko; and Nemoto, Kiyoshi, 4,388,573, Cl. 318-376.000.

ICD Corporation: *See—*
Suimon, Yoshio, 4,387,532, Cl. 46-254.000.

Ichikawa, Akira: *See—*
Ohta, Yoshihiro; and Ichikawa, Akira, 4,388,491, Cl. 179-1.0SC.

Ide, Akira: *See—*
Ueyanagi, Kaoru; Ide, Akira; Kato, Masaaki; and Komatsu, Kazuro, 4,388,245, Cl. 260-453.0AB.

Igelbuscher, Heinrich: *See—*
Holter, Heinz; Gresch, Heinz; Igelbuscher, Heinrich; and Dewert, Heribert, 4,388,281, Cl. 423-210.000.

Ignell, Rolf L., to Tetra Pak Developpement SA. Closing arrangement for packing containers. 4,387,820, Cl. 215-320.000.

Ihara, Ichiro: *See—*
Hirao, Shozo; Saihara, Yasuhiro; Nakanishi, Toshio; Ihara, Ichiro; and Sano, Yoshio, 4,388,133, Cl. 156-245.000.

Ihara, Keisaku: *See—*
Ishida, Hideo; Kitada, Masashi; and Ihara, Keisaku, 4,388,215, Cl. 252-402.000.

IHC Holland N.V.: *See—*
Loevendie, Rudolf H., 4,387,519, Cl. 37-195.000.

Iida, Kazuyoshi: *See—*
Nishikawa, Syuzi; Matsubara, Toru; Iida, Kazuyoshi; and Tahara, Seiichiro, 4,388,427, Cl. 523-500.000.

Ikeda, Hiroaki, to Nippon Electric Co., Ltd. Delay signal generating circuit. 4,388,538, Cl. 307-482.000.

Ikeda, Tomoaki: *See—*
Shinozaki, Fumiaki; Namiki, Tomizo; and Ikeda, Tomoaki, 4,388,399, Cl. 430-271.000.

Ikegami, Hiroshi: *See—*
Nagira, Norichika; Ikegami, Hiroshi; Baba, Hiroji; and Yahano, Kanji, 4,388,169, Cl. 204-207.000.

Ikegami, Mikihiko: *See—*
Ogawa, Masaki; and Ikegami, Mikihiko, 4,387,756, Cl. 152-209.00R.
Ogawa, Masaki; and Ikegami, Mikihiko, 4,387,757, Cl. 152-209.00R.

Ikemizu, Naoyuki, to Toyo Kogyo Co., Ltd. Moldings for vehicle body structure. 4,388,355, Cl. 428-31.000.

Ikenoya, Yasuo: *See—*
Otani, Junji; and Ikenoya, Yasuo, 4,387,565, Cl. 60-293.000.

Ikeura, Kenji; and Morita, Tatsuo, to Nissan Motor Company, Limited. Fuel supply control system for an internal combustion engine. 4,387,681, Cl. 123-325.000.

Ilardo, Charles S.; and Scharf, Daniel J., to Occidental Chemical Corporation. Flame retardant polymer compositions. 4,388,429, Cl. 524-94.000.

Illinois Tool Works Inc.: *See—*
Erickson, David A., 4,388,012, Cl. 403-142.000.

Imai, Hirosuke; Matsuno, Mitsuo; and Kudoh, Michio, to Nippon Oil Co., Ltd. Process for preparing 4-methyl-1-pentene. 4,388,480, Cl. 585-516.000.

Imai, Shinichi: *See—*
Sugiyama, Masatoshi; Ogawa, Akira; and Imai, Shinichi, 4,388,115, Cl. 106-22.000.

Imamura, Noriaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Mechanical parking brake mechanisms. 4,387,792, Cl. 188-328.000.

Immuno Aktiengesellschaft fur Chemisch Medizinische Produkte: *See—*
Eibl, Johann; Elsinger, Fritz; and Linnau, Yendra, 4,388,232, Cl. 260-112.00B.

Immuno Concepts, Inc.: *See—*
Valencia, Donald W., 4,387,972, Cl. 350-536.000.

Imperial Chemical Industries Limited: *See—*
Brown, James P.; Gibbins, Graham; and Hampson, Robert S., 4,388,138, Cl. 156-289.000.
Ellis, Vincent S.; and Mieszkis, Kazimierz W., 4,388,370, Cl. 428-368.000.
Hartshorn, Angus J.; Jones, Eric; and Segal, John A., 4,388,220, Cl. 252-429.00B.

Imperial Chemical Industries PLC: *See—*
Cartwright, David; and Collins, David J., 4,388,472, Cl. 560-21.000.
Rowe, Frederick, 4,388,218, Cl. 252-417.000.

Inada, Koichi: *See—*
Takahashi, Shiro; Sanada, Kazuo; Inada, Koichi; and Fukuda, Osamu, 4,388,098, Cl. 65-157.000.

Inman, Darrel F., to Omark Industries, Inc. Plated jacket soft point bullet. 4,387,492, Cl. 29-1.230.

Inoue, Yosuke: *See—*
Suzuki, Takaya; Inoue, Yosuke; and Aoyama, Takashi, 4,388,342, Cl. 427-8.000.

Institute of Gas Technology: *See—*
Sammells, Anthony F.; and St. John, Michael R., 4,388,162, Cl. 204-78.000.

Institutet for Verkstadsteknisk Forskning: *See—*
Abbestam, Kaj; and Palmers, Goran, 4,387,635, Cl. 100-214.000.

Intel Corporation: *See—*
Engel, Paul R., 4,388,147, Cl. 156-646.000.

International Business Machines Corp.: *See—*
Aichelmann, Frederick J., Jr.; and Neves, Fernando, 4,388,701, Cl. 365-77.000.
Beck, Vernon D., 4,388,619, Cl. 340-727.000.
Bertin, Claude L.; Kotecha, Harish N.; and Wiedman, Francis W., 4,388,704, Cl. 365-154.000.
Brown, Charles R.; Kohne, Theodore J.; and Lancto, Donald C., 4,387,639, Cl. 101-2.000.
Curlee, Thomas O., III; and Richardson, Ethel L., 4,388,688, Cl. 364-200.000.
Kellogg, Robert M.; and Mulzet, Alfred P., 4,387,848, Cl. 494-81.000.
King, Bruce D.; and Levin, James P., 4,388,386, Cl. 430-5.000.
Mott, William E.; and Shakib, Iraj D., 4,388,010, Cl. 400-692.000.
Schroeder, Eugene N., 4,388,526, Cl. 250-214.00R.

International Flavors & Fragrances Inc.: *See—*
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,388,228, Cl. 252-522.00R.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,388,207, Cl. 252-174.110.
Van Loveren, Augustinus G.; Munteanu, Marina A.; and Seaber, Geoffrey B., 4,387,849, Cl. 239-6.000.

International Nickel Company, Inc., The: *See—*
Benn, Raymond C., 4,388,125, Cl. 148-428.000.

International Plant Research Institute, Inc.: *See—*
Pappo, Raphael; and Otteson, Kenneth M., 4,388,462, Cl. 546-14.000.

International Telephone and Telegraph Corporation: *See—*
Burke, Michael G., 4,388,717, Cl. 370-62.000.
Moore, William C., 4,388,680, Cl. 362-368.000.
Schiffmann, Robert F.; Mirman, Alfred H.; Grillo, Richard J.; and Batey, Robert W., 4,388,335, Cl. 426-243.000.

InterNorth, Inc.: *See—*
Moseman, Merlin H., 4,387,593, Cl. 73-290.00R.
Interstate Electronics Corporation: *See—*
Hitchcock, Myron H., 4,388,495, Cl. 179-1.0SD.
Inui, Tsuneo; Kuroda, Hitoshi; Hanabusa, Tetsuro; and Yazaki, Katsuhito, to Toyo Kohan Company, Ltd. Acidic tinplating process and process for producing an iron-tin alloy on the surface of a steel sheet. 4,388,158, Cl. 204-27.000.
Io, Yukito: *See—*
Seki, Masahiko; Wada, Koji; and Io, Yukito, 4,387,884, Cl. 266-246.000.
Ioffe, Jury S.: *See—*
Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryazantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko, Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G., 4,388,108, Cl. 75-10.00R.
Iowa Engineered Processes Corp.: *See—*
Roach, Maurice P.; Burkhart, Russell D.; and Meehan, James B., 4,387,537, Cl. 51-17.000.
Ireland, Ralph, to Dayton Rogers Manufacturing Co. Sheet metal shear. 4,387,616, Cl. 83-608.000.
Irvin, Howard B., to Phillips Petroleum Company. Preparing blends of a synthetic rubber with a poly(arylene oxide) by distillative displacement. 4,388,444, Cl. 525-92.000.
Ishida, Hideo; Kitada, Masashi; and Ihara, Keisaku, to Sanyo Mokuzai Bofu Kabushiki Kaisha. Wood preservative composition. 4,388,215, Cl. 252-402.000.
Ishida, Masamichi; Kamo, Jun; Takemura, Toru; Minami, Shunsuke; and Kamada, Kensuke. Process for manufacturing regenerated cellulose hollow fiber. 4,388,256, Cl. 264-41.000.
Ishida, Yuzuru: *See—*
Iwamoto, Mune; Ito, Norifumi; Ishida, Yuzuru; Furuta, Yasuo; and Matsubara, Tetsuyuki, 4,388,447, Cl. 525-316.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Takeuchi, Osamu; Hasegawa, Hiroshi; Izumi, Susumu; and Otsuki, Naoki, 4,388,068, Cl. 432-122.000.
Ishimaru, Kenji: *See—*
Nishikawa, Osamu; Ishimaru, Kenji; Takeshita, Toru; and Tsuruta, Hideki, 4,388,243, Cl. 260-397.200.
Ishizawa, Tadao, to Kabushiki Kaisha Daini Seikosha. Magnetic bearing for high-speed rotation. 4,387,936, Cl. 308-10.000.
Ishman, Neal H.; Buxton, Robert B.; Durst, Duane A.; McArthur, James F.; and Johnson, Michael E., to E-Systems, Inc. Apparatus for monitoring a multichannel receiver. 4,388,644, Cl. 358-84.000.
Isovolta Osterreichische Isolierstoffwerke: *See—*
Rieder, Werner; and Fehrle, Martin, 4,388,454, Cl. 528-176.000.
Istituto Sieroterapico e Vaccinogeno Toscano "Sclavo" S.p.A.: *See—*
Cocola, Francesco; Tarli, Paolo; and Neri, Paolo, 4,388,295, Cl. 424-1.000.
Itek Corporation: *See—*
Magin, Irving J.; and Nelson, Erik K., 4,387,985, Cl. 355-71.000.
Itnoc Dairy Cap Co. Inc.: *See—*
Conti, Vincent N., 4,387,818, Cl. 215-256.000.
Ito, Norifumi: *See—*
Iwamoto, Mune; Ito, Norifumi; Ishida, Yuzuru; Furuta, Yasuo; and Matsubara, Tetsuyuki, 4,388,447, Cl. 525-316.000.
Itou, Kouichi: *See—*
Taniguchi, Yasuo; Asano, Toshio; Funami, Haruo; and Itou, Kouichi, 4,388,442, Cl. 525-60.000.
ITW Limited: *See—*
Blackburn, Neil P.; Piper, Alfred E. C.; and Meeks, Alan M. G., 4,387,490, Cl. 24-200.000.
Iwamoto, Kenji; and Kuroyanagi, Makoto, to Nippon Soken, Inc. Internal combustion engine with supercharger. 4,387,570, Cl. 60-600.000.
Iwamoto, Mune; Ito, Norifumi; Ishida, Yuzuru; Furuta, Yasuo; and Matsubara, Tetsuyuki, to Mitsui Toatsu Chemicals, Inc. Process for producing rubber modified styrene resins. 4,388,447, Cl. 525-316.000.
Iwata, Susumu; Maruta, Keiichi; and Yuyama, Yukihiro, to Ricoh Co., Ltd. Released heat-sensitive recording paper. 4,388,362, Cl. 428-211.000.
Izumi, Susumu: *See—*
Takeuchi, Osamu; Hasegawa, Hiroshi; Izumi, Susumu; and Otsuki, Naoki, 4,388,068, Cl. 432-122.000.
J. B. Two Corporation: *See—*
Barker, Joel A.; and Birch, Jeffrey, 4,387,925, Cl. 297-201.000.
J. I. Case Company: *See—*
Falendysz, Eugene L., Sr.; Brumbaugh, Eldon M.; and North, Max R., 4,388,052, Cl. 417-540.000.
Jackson, Patrick L. Glove-mounted wrist watch. 4,387,838, Cl. 224-170.000.
Jacob, Bart M. Friction type game call. 4,387,531, Cl. 46-189.000.
Jacobsen, James H.: *See—*
Sneed, Robert C., Jr.; MacNaughton, Robert G.; and Jacobsen, James H., 4,388,601, Cl. 333-227.000.
Jacobsen, Kjell M., to PLM Aktiebolag. Plastic containers for storage of goods under pressure. 4,387,815, Cl. 215-1.00C.
Jacobson, Arthur E.: *See—*
Brossi, Arnold; Schmidhammer, Helmut; Jacobson, Arthur E.; and Hsu, Fu-Lian, 4,388,463, Cl. 546-74.000.
Jacobus, Dan: *See—*
Huie, Jaken Y.; and Jacobus, Dan, 4,388,136, Cl. 156-252.000.
Jagenberg-Werke AG: *See—*
Buchholz, Rainer; Mohn, Hans-Werner; Boms, Hermann; and Zodrow, Rudolf, 4,388,143, Cl. 156-475.000.
James G. Brown & Associates, Inc.: *See—*
Dysarz, Edward D., 4,388,024, Cl. 405-198.000.
Jamieson, John M.; and Cleveland, Dixon, to Electric Power Research Institute. Pipe scanner mechanism. 4,387,598, Cl. 73-637.000.
Jamison, Will B.; and Hazen, David R., to Consolidation Coal Company. Cascading conveyor system. 4,387,798, Cl. 198-587.000.
Janikowski, Daniel S.: *See—*
Shum, Ming S.; Janikowski, Daniel S.; and Bradley, Steven A., 4,388,347, Cl. 427-96.000.
Janssen, Daniel J. G., to U.S. Philips Corporation. Line interruption circuit for use in a telephone set. 4,388,499, Cl. 179-81.00R.
Janssen, Daniel J. G.: *See—*
Geboers, Josephus J. A.; and Janssen, Daniel J. G., 4,388,498, Cl. 179-81.00R.
Jarvis, Robert D. Air filter for a cooling system overflow container. 4,387,671, Cl. 123-41.270.
Javeri, Rupin J., to Motorola Inc. Ignition advance circuit with sensor inputs. 4,387,684, Cl. 123-416.000.
Jeffers, Frederick; and McClure, Richard J., to Eastman Kodak Company. Thin film magnetoresistive head. 4,388,662, Cl. 360-113.000.
Jenkins, Raymond F.: *See—*
Swift, Graham; Cenci, Harry J.; and Jenkins, Raymond F., 4,388,434, Cl. 524-476.000.
Jenkins, William A., to Monarch Marking Systems, Inc. Flexible endless printing band. 4,387,644, Cl. 101-111.000.
Jensen, Ole R., to E. R. Squibb & Sons, Inc. Method of manufacturing ostomy pouches. 4,388,135, Cl. 156-250.000.
Jensfelt, Torsten E.; and Petersson, Stig A., to Boliden Aktiebolag. Method for recovering the metal content of complex sulphidic metal raw materials. 4,388,110, Cl. 75-21.000.
Jeschke, Willi; Junghans, Rudi; Beisel, Hermann; and Hofmann, Gunther, to Heidelberger Druckmaschinen AG. Ink metering with individual ink knives respectively extending over the entire width of the inking zones. 4,387,648, Cl. 101-365.000.
Jewell, Walter E. B.; and Patarcity, Adam J., to Kennecott Corporation. Fluorocarbon polymer gasket and method of manufacturing such. 4,388,259, Cl. 264-153.000.
Jobes, Orin, Jr.: *See—*
Lee, Franky B.; and Jobes, Orin, Jr., 4,388,056, Cl. 425-83.100.
Johansen, Jack T., to De Forenede Bryggerier A/S. Process for isolating Cu,Zn-superoxide dismutase from aqueous solutions containing said enzyme together with accompanying proteins. 4,388,406, Cl. 435-189.000.
Johansson, Hans E.: *See—*
Sunden, Olof; Batelson, Per G.; Johansson, Hans E.; Larsson, Hans M.; and Svending, Per J., 4,388,150, Cl. 162-175.000.
Johnson, Arthur D., to Wells Manufacturing Corporation. Spark plug wire terminal and method for attaching terminal. 4,387,948, Cl. 339-97.00R.
Johnson, Bobby L.: *See—*
Folger, Philip M.; and Johnson, Bobby L., 4,387,679, Cl. 123-198.00D.
Johnson, Craig; Dendor, Paul; and Hodgkins, Harry L., to United States of America, Navy. Multi-component propellant charges. 4,388,126, Cl. 149-14.000.
Johnson, David D.: *See—*
Biller, Cleveland J.; and Johnson, David D., 4,387,812, Cl. 212-176.000.
Johnson & Johnson Baby Products Company: *See—*
Mesek, Frederick K.; and Mesek, Virginia R., 4,388,075, Cl. 604-385.000.
Mesek, Frederick K.; and Mesek, Virginia R., 4,388,075, Cl. 604-385.000.
Johnson, Michael E.: *See—*
Ishman, Neal H.; Buxton, Robert B.; Durst, Duane A.; McArthur, James F.; and Johnson, Michael E., 4,388,644, Cl. 358-84.000.
Johnson, Richard P.: *See—*
Willbanks, Henry O.; and Johnson, Richard P., 4,388,518, Cl. 219-455.000.
Johnson, Robert B.: *See—*
Nibby, Chester M., Jr.; and Johnson, Robert B., 4,388,684, Cl. 364-200.000.
Johnson, Robert R.: *See—*
Reynolds, Martin L.; and Johnson, Robert R., 4,387,728, Cl. 131-336.000.
Johnston, Robert J.: *See—*
Twibell, Jerome J.; and Johnston, Robert J., 4,388,687, Cl. 364-200.000.
Jonas, Gerhard, to Bayer Aktiengesellschaft. Purifying thionyl chloride with $AlCl_3$ catalyst. 4,388,290, Cl. 423-468.000.
Jones, Darrell L. Wellhead system for exploratory wells. 4,387,771, Cl. 166-341.000.
Jones, Eric: *See—*
Hartshorn, Angus J.; Jones, Eric; and Segal, John A., 4,388,220, Cl. 252-429.00B.
Jones, James J.; and McIntosh, John O., to Texas Instruments Incorporated. Electronically controlled programmable digital thermostat having variable threshold hysteresis with time. 4,388,692, Cl. 364-557.000.
Jones, Jesse D.: *See—*
Hornbaker, Edwin D.; and Jones, Jesse D., 4,388,446, Cl. 525-175.000.

Jordan, Heinz, to Technische Gerate-u Entwicklungsgesellschaft m.b.H. Flying craft. 4,387,867, Cl. 244-12.200.
Jory, Howard R.: *See—*
Symons, Robert S.; and Jory, Howard R., 4,388,555, Cl. 315-4.000.
Josephson, Elliot, to Astec Components, Ltd. Electronic ballast circuit. 4,388,562, Cl. 315-205.000.
Joy Manufacturing Company: *See—*
Hoover, Merle L., deceased, 4,387,801, Cl. 198-821.000.
Jukkola, Glen D.: *See—*
Goodstine, Stephen L.; and Jukkola, Glen D., 4,387,667, Cl. 122-4.00D.
Jung, Ernst-Gunter: *See—*
Sander, Wolfgang; and Jung, Ernst-Gunter, 4,388,511, Cl. 219-10.55R.
Jung GmbH: *See—*
Sander, Wolfgang; and Jung, Ernst-Gunter, 4,388,511, Cl. 219-10.55R.
Jung, Michel: *See—*
Bey, Philippe; and Jung, Michel, 4,388,466, Cl. 548-337.000.
Junghans, Rudi: *See—*
Jeschke, Willi; Junghans, Rudi; Beisel, Hermann; and Hofmann, Gunther, 4,387,648, Cl. 101-365.000.
Jungwirth, Dieter: *See—*
Wlodkowski, Johann; and Jungwirth, Dieter, 4,388,014, Cl. 403-369.000.
Junkers, John K. Hydraulic wrench for simultaneously tightening or loosening at least two threaded connectors. 4,387,611, Cl. 81-57.360.
Kabe, Kazuyuki: *See—*
Kato, Masaki; Morikawa, Tuneo; and Kabe, Kazuyuki, 4,387,755, Cl. 152-209.00R.
Kabushiki Kaisha Daini Seikosha: *See—*
Ishizawa, Tadao, 4,387,936, Cl. 308-10.000.
Kabushiki Kaisha Kobe Seiko Sho: *See—*
Sudo, Masatoshi; Hashimoto, Shunichi; and Kambe, Shoji, 4,388,122, Cl. 148-12.00F.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Enomae, Satoru, 4,387,796, Cl. 198-374.000.
Kabushiki Kaisha Saginomiya Seisakusho: *See—*
Machida, Shigeki; and Makita, Takeo, 4,388,605, Cl. 337-301.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
Mikoshiba, Hitoshi; Fujimori, Kazuyoshi; Onodera, Kenji; and Takeuchi, Shin, 4,387,643, Cl. 101-110.000.
Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho: *See—*
Moriya, Shigeru; Yoshida, Akio; Tanaka, Koichi; and Nishimura, Yuji, 4,387,912, Cl. 280-804.000.
Yasumatsu, Jun; Tsuge, Hiroshi; and Kawaharazaki, Takashi, 4,387,790, Cl. 188-65.300.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Suzuki, Hajime; Umemura, Yoshifumi; and Kimbara, Masahiko, 4,387,743, Cl. 139-110.000.
Kadota, Michio: *See—*
Wakino, Kikuo; Kadota, Michio; and Sato, Tomoharu, 4,388,600, Cl. 333-151.000.
Kagan, Samuil I.: *See—*
Shipaev, Gennady A.; Seliverstov, Vyacheslav V.; Osipov, Nikolai A.; Prolygin, Anatoly P.; Mashikhin, Anatoly D.; Askinazi, Mikhail P.; Andreev, Jury M.; and Kagan, Samuil I., 4,388,569, Cl. 318-87.000.
Kahl, Manfred E. Self setting fish hook means. 4,387,528, Cl. 43-36.000.
Kaibel, Gerd: *See—*
Hochstein, Waldheim; Kaibel, Gerd; Mueller, Franz-Josef; and Hartmann, Horst, 4,388,154, Cl. 203-35.000.
Kaji, Kiyokane, to Toyota Jidosha Kogyo Kabushiki Kaisha. Knocking detector of an internal combustion engine. 4,387,588, Cl. 73-35.000.
Kajihara, Kunio, to Asahi Kasei Kogyo Kabushiki Kaisha. Artificial reef assembly construction. 4,388,019, Cl. 405-25.000.
Kajino, Jirou; Minabe, Hitoshi; and Murata, Shigeki, to Matsushita Electric Industrial Co., Ltd. Magnetic tape recording and/or reproducing apparatus. 4,388,658, Cl. 360-85.000.
Kale, B. Michael: *See—*
Doremus, Robert H.; Csanak, George; Kale, B. Michael; and Moore, James E., 4,388,413, Cl. 501-40.000.
Kalnin, Ilmar L., to Celanese Corporation. Intercalation of graphitic carbon fibers. 4,388,227, Cl. 252-510.000.
Kamada, Kensuke: *See—*
Ishida, Masamichi; Kamo, Jun; Takemura, Toru; Minami, Shunsuke; and Kamada, Kensuke, 4,388,256, Cl. 264-41.000.
Kambe, Shoji: *See—*
Sudo, Masatoshi; Hashimoto, Shunichi; and Kambe, Shoji, 4,388,122, Cl. 148-12.00F.
Kamiya, Fumio: *See—*
Yamazaki, Kyoji; and Kamiya, Fumio, 4,388,567, Cl. 315-291.000.
Kamiyama, Takashi: *See—*
Koshiishi, Kiyozo; Ono, Noriaki; Kamiyama, Takashi; and Kato, Yoshimi, 4,388,165, Cl. 204-418.000.
Ono, Noriaki; and Kamiyama, Takashi, 4,388,167, Cl. 204-420.000.
Kamo, Jun: *See—*
Ishida, Masamichi; Kamo, Jun; Takemura, Toru; Minami, Shunsuke; and Kamada, Kensuke, 4,388,256, Cl. 264-41.000.
Kampf, Eberhard, to Erwin Kampf GmbH & Co. Machine for separating double-rolled aluminum sheet. 4,387,861, Cl. 242-75.470.
Kanai, Wataru, to Tokyo Ohka Kogyo Kabushiki Kaisha. Photosensitive composition for dry development. 4,388,397, Cl. 430-197.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Oizumi, Masayuki; Abe, Masaharu; and Fushiki, Yasuo, 4,388,129, Cl. 156-73.100.
Kaneko, Tadahiro: *See—*
Sato, Koji; and Kaneko, Tadahiro, 4,388,676, Cl. 362-260.000.
Kaneshige, Ryosuke: *See—*
Nagano, Riichiro; and Kaneshige, Ryosuke, 4,388,202, Cl. 252-52.00A.
Kansai Paint Co., Ltd.: *See—*
Sugiura, Shinji; and Horibe, Kyoichi, 4,388,445, Cl. 525-124.000.
Kanuma, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Substrate bias generation circuit. 4,388,537, Cl. 307-297.000.
Kanzaka, Yoshihiro, to Yoshida Kogyo K.K. Fabric-covered button. 4,387,488, Cl. 24-113.00R.
Kaplan, Robert A.; and Wellman, James E., to Scott & Fetzer Company, The. Energy efficient high static pressure fluid fuel burner. 4,388,064, Cl. 431-265.000.
Kapur, Vijay K.; and Khanna, Ashok K., to Atlantic Richfield Company. Process for recovery of high purity silicon. 4,388,080, Cl. 23-293.00R.
Kapur, Vijay K.; and Choudary, Uppala V., to Atlantic Richfield Company. Silicon purification. 4,388,286, Cl. 423-348.000.
Karam, Ronald E.: *See—*
Faria, Sixdeniel; and Karam, Ronald E., 4,388,394, Cl. 430-94.000.
Karavanov, Andrei N.: *See—*
Gryaznov, Vladimir M.; Karavanov, Andrei N.; Belosljudova, Tamara M.; Ermolaev, Anatoly V.; Maganjuk, Anatoly P.; and Sarycheva, Irina K., 4,388,479, Cl. 568-828.000.
Karly Mayer Textilmaschinenfabrik GmbH: *See—*
Branke, Walter; and Winter, Karl, 4,387,579, Cl. 66-157.000.
Karpati, Egon: *See—*
Nyeki, Olga; Kisfaludy, Lajos; Karpati, Egon; and Szporny, Laszlo, 4,388,304, Cl. 424-177.000.
Kashio, Toshio, to Casio Computer Co., Ltd. System for generating sample tones on an electronic musical instrument. 4,387,619, Cl. 84-1.030.
Kasschau, Kenneth. Propeller exhaust hub and shroud. 4,388,070, Cl. 440-89.000.
Kasuga, Muneo: *See—*
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,387,986, Cl. 355-75.000.
Katagiri, Masayoshi; and Ogura, Osamu, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Brake booster. 4,387,625, Cl. 91-369.00B.
Kato, Hirokazu; and Endo, Akinori, to Nippon Gakki Seizo Kabushiki Kaisha. Assigner for electronic musical instrument. 4,387,617, Cl. 84-1.010.
Kato, Hisaaki: *See—*
Nakahara, Teiji; Morihashi, Toshifumi; Nakayama, Teruo; Nishimura, Shinichi; Kato, Hisaaki; Uematsu, Ikuzo; and Yoshioka, Takashi, 4,387,487, Cl. 19-249.000.
Kato, Kaneyoshi: *See—*
Terao, Shinji; Shiraishi, Mitsuru; and Kato, Kaneyoshi, 4,388,312, Cl. 424-244.000.
Kato, Kaoru: *See—*
Takemura, Yozo; Kobayashi, Isao; Akita, Yasuhiro; and Kato, Kaoru, 4,388,113, Cl. 75-51.000.
Kato, Masaki: *See—*
Ueyanagi, Kaoru; Ide, Akira; Kato, Masaaki; and Komatsu, Kazuro, 4,388,245, Cl. 260-453.0AB.
Kato, Masaie: *See—*
Hamane, Masumi; Shigihara, Akira; and Kato, Masaie, 4,387,606, Cl. 74-752.00E.
Kato, Masaki; Morikawa, Tuneo; and Kabe, Kazuyuki, to Yokohama Rubber Co., Ltd., The. Pneumatic tires. 4,387,755, Cl. 152-209.00R.
Kato, Yoshiaki; and Fushida, Akira, to Mita Industrial Co., Ltd. Laminated photosensitive plate for electrophotography having an electron donative polymer and phenanthrene charge transport layer. 4,388,392, Cl. 430-58.000.
Kato, Yoshimi: *See—*
Koshiishi, Kiyozo; Ono, Noriaki; Kamiyama, Takashi; and Kato, Yoshimi, 4,388,165, Cl. 204-418.000.
Katsube, Junki: *See—*
Ono, Keiichi; Kawakami, Hajime; and Katsube, Junki, 4,388,469, Cl. 549-59.000.
Katsumata, Masaaki; and Yoneda, Kenji, to Nissan Motor Company, Limited. Knock control system and method for turbosupercharger installed engines. 4,387,571, Cl. 60-602.000.
Katz, David H., to Scripps Clinic & Research Foundation. Induction of immunological tolerance. 4,388,441, Cl. 525-54.100.
Kaufman, Edward R.; Benson, Gregory R.; and Shaines, Alfred, to Glennco Trust. Friction lining material. 4,388,423, Cl. 523-153.000.
Kavli, Fred: *See—*
Bell, Robert L.; Willing, Robert; and Kavli, Fred, 4,388,668, Cl. 361-283.000.
Kawaguchi, Takeyuki; Minematsu, Hiroyoshi; Hayashi, Yuzuru; and Hara, Shigeyoshi. Process for preparation of improved semipermeable composite membranes. 4,388,189, Cl. 210-490.000.
Kawaharazaki, Takashi: *See—*
Yasumatsu, Jun; Tsuge, Hiroshi; and Kawaharazaki, Takashi, 4,387,790, Cl. 188-65.300.
Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
Deutsch, Ralph, 4,387,622, Cl. 84-1.220.
Kawakami, Hajime: *See—*
Ono, Keiichi; Kawakami, Hajime; and Katsube, Junki, 4,388,469, Cl. 549-59.000.

Kawamata, Motoo: *See—*
Kudoh, Akihide; Kawamata, Motoo; Ohshima, Kazushi; Kotani, Makoto; Tsuda, Takeshi; and Aoki, Fukuichi, 4,388,478, Cl. 568-804.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Fujikawa, Tetsuzo, 4,387,780, Cl. 180-54.00A.

Kawasugi, Tadaaki: *See—*
Fujimoto, Tadao; and Kawasugi, Tadaaki, 4,388,186, Cl. 210-170.000.

Kayamoto, Masami: *See—*
Wilson, Geoffrey; and Kayamoto, Masami, 4,388,222, Cl. 252-437.000.

Kaylico Corporation: *See—*
Bell, Robert L.; Willing, Robert; and Kavli, Fred, 4,388,668, Cl. 361-283.000.

Kearns, Kenneth L. Respiration monitor and x-ray triggering apparatus. 4,387,722, Cl. 128-716.000.

Keen, James, to United States of America, Army. Control device for steerable null antenna processor. 4,388,723, Cl. 375-1.000.

Keene Corporation: *See—*
Meyer, E. Robert, 4,388,681, Cl. 362-374.000.

Keep, Henry, Jr.; Santagata, Daniel A.; Harris, Matthew E.; and Welsh, William H., Jr., to Multistress, Inc. Electrical heating cable connector. 4,388,523, Cl. 219-541.000.

Keizer, Eugene O., to RCA Corporation. Technique for uniform stylus configuration. 4,388,714, Cl. 369-173.000.

Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; and Pinto, Akiva, to Automatic Material Handling, Inc. Control system for fiber processing apparatus. 4,387,486, Cl. 19-105.000.

Kellogg, Robert M.; and Mulzet, Alfred P., to International Business Machines Corporation. Centrifuge assembly. 4,387,848, Cl. 494-81.000.

Kelly, John W., to Haskel Engineering & Supply Co. Method and apparatus for radially expanding tubes. 4,387,507, Cl. 29-727.000.

Kelsey-Hayes Company: *See—*
Rozmus, Walter J., Jr.; and Rozmus, Walter J.; 4,388,088, Cl. 55-101.000.

Kennecott Corporation: *See—*
Jewell, Walter E. B.; and Patarcity, Adam J., 4,388,259, Cl. 264-153.000.

Kennedy, William L.; and Fanson, Richard L., to Whirlpool Corporation. Automatic washer energy absorbing spin delay mechanism. 4,387,580, Cl. 68-12.00R.

Kennell, Samuel C.; and Witkiewicz, Ronald F., to SCM Corporation. Caulk containing microballoons. 4,388,424, Cl. 523-219.000.

Kern, John T. Panel assembly and a method of constructing said assembly. 4,387,545, Cl. 52-455.000.

Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung: *See—*
Lubecki, Andrzej; Wiese, Kurt; and Winkler, Karl, 4,388,530, Cl. 378-45.000.

Khan, Aman U.: *See—*
Necas, Donald E.; and Khan, Aman U., 4,387,860, Cl. 241-282.100.

Khanna, Ashok K.: *See—*
Kapur, Vijay K.; and Khanna, Ashok K., 4,388,080, Cl. 23-293.00R.

Khosropour, Mostafa M., to Nelson Industries, Inc. Air cleaner having a dust dumping valve. 4,388,091, Cl. 55-337.000.

Kibby, Robert M., to Reynolds Metals Company. Minimum-energy process for carbothermic reduction of alumina. 4,388,107, Cl. 75-10.00R.

Kigyos, Frank, to Block Drug Company, Inc. Interproximal toothbrush. 4,387,479, Cl. 15-167.00R.

Kihara, Hisatsugu: *See—*
Takao, Kengo; Ohmachi, Mineo; Kihara, Hisatsugu; Toki, Kenshiro; Tomita, Yukio; and Mizota, Toshihiro, 4,387,562, Cl. 60-39.150.

Kikuchi, Yoshiki: *See—*
Moriguchi, Haruhiko; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,388,628, Cl. 346-76.0PH.

Kimbara, Masahiko: *See—*
Suzuki, Hajime; Umemura, Yoshifumi; and Kimbara, Masahiko, 4,387,743, Cl. 139-110.000.

Kimble, Thomas E., to Baldwin Piano & Organ Company. Parallel motion linkage for the sliding keyboard cover of a piano. 4,387,623, Cl. 84-179.000.

Kimmell, Steven D.: *See—*
Murphy, Jack P., deceased; and Kimmell, Steven D., 4,387,702, Cl. 126-424.000.

Kimmerle, Frank M.; and Roberge, Pierre, to Societe Nationale de L'Amiante. Titanium coated asbestos fiber. 4,388,149, Cl. 162-153.000.

Kimura, Kazuo: *See—*
Yamazaki, Yasuo; Kimura, Kazuo; and Tanimoto, Tetuyuki, 4,387,967, Cl. 350-423.000.

Kimura, Takao; and Yamanishi, Toru, to Nippon Telegraph & Telephone Public Corporation; and Sumitomo Electric Industries, Ltd. Process for producing a glass fiber for light transmission. 4,388,093, Cl. 65-3.110.

Kimura, Tomoaki: *See—*
Awazuhara, Hiroshi; Tsumura, Sukebumi; and Kimura, Tomoaki, 4,387,586, Cl. 72-206.000.

King, Bruce D.; and Levin, James P., to International Business Machines Corporation. Mask set mismatch. 4,388,386, Cl. 430-5.000.

King, Dennis D. Receiver with squelch for offset carrier environment. 4,388,731, Cl. 455-221.000.

King, John A., to Harman International Industries. Loudspeaker having acoustic impedance frontal loading element. 4,387,787, Cl. 181-155.000.

Kinoshita, Koichi: *See—*
Hosono, Nagao; Kinoshita, Koichi; and Takahashi, Toru, 4,387,664, Cl. 118-658.000.
Ueno, Tsuyoshi; Mukai, Hideo; Nakatomi, Yoshitsugu; Saito, Hiroshi; Kinoshita, Koichi; and Konuma, Takaaki, 4,387,980, Cl. 355-3.0CH.

Kisfaludy, Lajos: *See—*
Nyeki, Olga; Kisfaludy, Lajos; Karpati, Egon; and Szporny, Laszlo, 4,388,304, Cl. 424-177.000.

Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Tamura, Misao, to Mitsubishi Rayon Company Ltd. Coating composition and process for preparing synthetic resin shaped articles by using same. 4,388,345, Cl. 427-54.100.

Kispert, Klaus: *See—*
Walter, Lothar; Olschewski, Armin; Kispert, Klaus; and Meining, Hans, 4,387,939, Cl. 308-217.000.

Kita, Yuzo: *See—*
Takagi, Katsuaki; and Kita, Yuzo, 4,388,612, Cl. 340-347.0DA.

Kitada, Masashi: *See—*
Ishida, Hideo; Kitada, Masashi; and Ihara, Keisaku, 4,388,215, Cl. 252-402.000.

Kitahiro, Isamu: *See—*
Ogawa, Kazufumi; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, 4,388,128, Cl. 156-64.000.

Kitajima, Masao: *See—*
Yazawa, Kenichiro; Kitajima, Masao; and Kondo, Asaji, 4,387,990, Cl. 356-244.000.

Kitamura, Yoichi; Kobayashi, Seishichi; and Ueno, Hiroshi, to Toyo Seikan Kaisha, Ltd. Side seam-coated tinplate welded can. 4,387,830, Cl. 220-456.000.

Kitano, Yuichi: *See—*
Tada, Yoshiharu; and Kitano, Yuichi, 4,388,571, Cl. 318-293.000.

Kitano, Yuji: *See—*
Saito, Seiichi; and Kitano, Yuji, 4,388,725, Cl. 375-36.000.

Kitoh, Shinya: *See—*
Suzuki, Shin-ichi; Kitoh, Shinya; Toda, Haruhiko; and Higo, Moriaki, 4,388,421, Cl. 523-118.000.

Klebe, Hans: *See—*
Fratzer, Gerhard; Beck, Bernhard; Dold, Erwin; and Klebe, Hans, 4,388,275, Cl. 422-180.000.

Klein, Imrich: *See—*
Klein, Reuben; and Klein, Imrich, 4,387,997, Cl. 366-79.000.

Klein, Reuben; and Klein, Imrich, to Scientific Process & Research, Inc. Plasticating extruder screw conveyors. 4,387,997, Cl. 366-79.000.

Klein, Robert W., to William H. Rorer, Inc. Method and composition for treating acne. 4,388,301, Cl. 424-154.000.

Klein, Steven H.; and Smith, Alfred H., Jr., to General Electric Company. Shelf-stable catalyst component for RTV silicone composition. 4,388,433, Cl. 524-401.000.

Kleiner, Hans-Jerg: *See—*
Dursch, Walter; and Kleiner, Hans-Jerg, 4,388,252, Cl. 260-968.000.

Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., to International Flavors & Fragrances Inc. Process of augmenting the aroma of detergents using methyl substituted norbornane carboxaldehyde dimethyl acetals or norbornene carbonitriles. 4,388,207, Cl. 252-174.110.

Klenk, Emil, to Maschinenbau Oppenweiler Binder GmbH & Co. Device for pivoting the knife in its longitudinal axis and for adjusting the knife depth on knife folding machines. 4,388,073, Cl. 493-444.000.

Kline, Charles M.: *See—*
Young, Terry A.; Mann, William W.; Kline, Charles M.; and Schoeneberger, Ernest A., 4,387,857, Cl. 241-101.00B.

Klingenberg, Wolfgang: *See—*
Wehking, Hans; Eichler, Detlef; and Klingenberg, Wolfgang, 4,388,005, Cl. 400-144.200.

Klingenmaier, Otto J., to General Motors Corporation. Electrodeposition of low stress, hard iron alloy and article so produced. 4,388,379, Cl. 428-613.000.

Klipsch and Associates, Inc.: *See—*
Klipsch, Paul W.; and Hunter, James R., 4,387,786, Cl. 181-150.000.

Klipsch, Paul W.; and Hunter, James R., to Klipsch and Associates, Inc. Anechoic chamber arrangement. 4,387,786, Cl. 181-150.000.

Klockner-Humboldt-Deutz AG: *See—*
Guttmann, Friedrich W.; and Weigel, Horst, 4,388,082, Cl. 48-76.000.

Klockner-Humboldt Deutz Aktiengesellschaft: *See—*
Tholen, Paul, 4,387,678, Cl. 123-193.00H.
Weber, Thomas, 4,388,042, Cl. 416-198.00A.

Knackstedt, Hans-Gunther; Muller, Erhard; Christ, Richard; and Kroll, Hartmut, to Transnuklear GmbH. Transportation and/or storage containers for radioactive materials. 4,388,268, Cl. 376-272.000.

Knapp, Heinrich: *See—*
Hoppel, Rainer; and Knapp, Heinrich, 4,387,695, Cl. 123-585.000.

Kneissl, Hannes: *See—*
Schmid, Klaus; and Kneissl, Hannes, 4,388,170, Cl. 208-8.0LE.

Knochel, E. Stanley. Walker. 4,387,891, Cl. 272-70.300.

Knypl, Eugeniusz: *See—*
Knypl, Maria; Knypl, Eugeniusz; Starzak, Marian; Mieczkowska, Ewa; Pawlus, Urszula; Palubicki, Romuald; Ficek, Mieczyslaw; and Goldynia, Jozef, 4,388,438, Cl. 524-833.000.

Knypl, Maria; Knypl, Eugeniusz; Starzak, Marian; Mieczkowska, Ewa; Pawlus, Urszula; Palubicki, Romuald; Ficek, Mieczyslaw; and Goldynia, Jozef, to Osrodek Badaw Cze-Rozwojowy Kauczukow I Tworzyw Winylowych. Aqueous dispersions of copolymers of styrene dibutyl maleate and acrylic or methacrylic acid or monobutyl maleate and method for preparation thereof. 4,388,438, Cl. 524-833.000.

Ko, Young C.: *See—*
Allan, George G.; and Ko, Young C., 4,388,352, Cl. 427-391.000.

Kobayashi, Hisao: *See—*
Koshimura, Yasunobu; Kobayashi, Hisao; and Aoike, Nanjou, 4,388,561, Cl. 315-171.000.

Kobayashi, Isao: *See—*
Takemura, Yozo; Kobayashi, Isao; Akita, Yasuhiro; and Kato, Kaoru, 4,388,113, Cl. 75-51.000.

Kobayashi, Seishichi: *See—*
Kitamura, Yoichi; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,387,830, Cl. 220-456.000.

Koch, Karl: *See—*
Bartel, Gunter; Patz, Eckhard; Koch, Karl; Stern, Georg; Stotz, Manfred; and Triffterer, Adolf, 4,388,053, Cl. 417-542.000.

Kochey, Edward L., Jr., to Combustion Engineering, Inc. Tube arrangement for furnace wall. 4,387,668, Cl. 122-6.00A.

Kodaira, Masao: *See—*
Nakazato, Yasuaki; Miyazaki, Yasushi; Osuga, Makoto; and Kodaira, Masao, 4,388,140, Cl. 156-345.000.

Kodama, Hisashi: *See—*
Hori, Takanobu; Arai, Fuminao; Kodama, Hisashi; and Okabe, Yoshio, 4,387,675, Cl. 123-90.580.

Koezuka, Junji: *See—*
Suzuki, Shuichi; Aizawa, Masuo; Koyama, Masao; Sato, Yuichi; and Koezuka, Junji, 4,388,166, Cl. 204-403.000.

Kohne, Theodore J.: *See—*
Brown, Charles R.; Kohne, Theodore J.; and Lancto, Donald C., 4,387,639, Cl. 101-2.000.

Koike, Norio; Sasano, Akira; Taniguchi, Yoshio; Nakano, Toshio; Aoki, Masakazu; and Takemoto, Iwao, to Hitachi, Ltd. Method of producing solid-state color imaging devices. 4,387,987, Cl. 355-133.000.

Kolve Sawchain Company: *See—*
Lemery, Douglas J., 4,387,615, Cl. 83-56.000.

Komatsu, Kazuro: *See—*
Ueyanagi, Kaoru; Ide, Akira; Kato, Masaaki; and Komatsu, Kazuro, 4,388,245, Cl. 260-453.0AB.

Komatsu, Shigeru; Hirahata, Shigeru; and Tachiuchi, Tsuguji, to Hitachi, Ltd. Drive circuit for character and graphic display device. 4,388,621, Cl. 340-802.000.

Komatsu, Shigeru; Mizukami, Kazushi; Tachiuchi, Tsuguji; Nagai, Kunihiko; and Koyama, Takuo, to Hitachi, Ltd. Memory selecting system. 4,388,707, Cl. 365-230.000.

Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH: *See—*
Eckle, Otto; and Winger, Paul, 4,387,612, Cl. 82-2.00E.

Kondo, Asaji: *See—*
Yazawa, Kenichiro; Kitajima, Masao; and Kondo, Asaji, 4,387,990, Cl. 356-244.000.

Kondo, Shigeru: *See—*
Ogawa, Kazufumi; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, 4,388,128, Cl. 156-64.000.

Konig-Electronic Friedrich W. Konig: *See—*
Becella, Peter, 4,388,663, Cl. 360-128.000.

Konig, Klaus: *See—*
Heitkamper, Peter; Konig, Klaus; Fauss, Rudolf; and Findeisen, Kurt, 4,388,238, Cl. 260-239.00E.
Sundermann, Rudolf; Konig, Klaus; Engbert, Theodor; Becker, Gernot; and Hammen, Gunther, 4,388,246, Cl. 260-453.00P.

Konstantouros, Efthimios; and Hoeck, Karl, to Siemens Aktiengesellschaft. Device for regenerating hydrochloric copper chloride etching solutions. 4,388,276, Cl. 422-187.000.

Konuma, Takaaki: *See—*
Ueno, Tsuyoshi; Mukai, Hideo; Nakatomi, Yoshitsugu; Saito, Hiroshi; Kinoshita, Koichi; and Konuma, Takaaki, 4,387,980, Cl. 355-3.0CH.

Koppanen, Jorma T.: *See—*
Saarisalo, Risto A.; and Koppanen, Jorma T., 4,387,880, Cl. 251-285.000.

Kornbau, Thomas W.; and Sievers, Robert A., to General Dynamics Electronics Division. Method of forming metallic patterns on curved surfaces. 4,388,388, Cl. 430-258.000.

Korpman, Ralf; and Felice, C. Palermo, to Permacel. Extrusion coating process. 4,388,349, Cl. 427-208.400.

Kortick, Morris, to A & H Mfg. Co. Label printing apparatus. 4,387,641, Cl. 101-27.000.

Koshiishi, Kiyozo; Ono, Noriaki; Kamiyama, Takashi; and Kato, Yoshimi, to Olympus Optical Company Ltd. Selective ion sensitive electrode and method of making it. 4,388,165, Cl. 204-418.000.

Koshimura, Yasunobu; Kobayashi, Hisao; and Aoike, Nanjou, to Toshiba Electric Equipment Corporation. Apparatus for operating discharge lamps. 4,388,561, Cl. 315-171.000.

Kotani, Makoto: *See—*
Kudoh, Akihide; Kawamata, Motoo; Ohshima, Kazushi; Kotani, Makoto; Tsuda, Takeshi; and Aoki, Fukuichi, 4,388,478, Cl. 568-804.000.

Kotecha, Harish N.: *See—*
Bertin, Claude L.; Kotecha, Harish N.; and Wiedman, Francis W., 4,388,704, Cl. 365-154.000.

Kotok, Alan; Murphy, Daniel L.; and Stewart, Robert E., to Digital Equipment Corporation. Central processor with apparatus for extended virtual addressing. 4,388,685, Cl. 364-200.000.

Kottgen, Eckart U.: *See—*
Fabricius, Hans-Ake; and Kottgen, Eckart U., 4,388,309, Cl. 424-180.000.

Kouchi, Toshihiro: *See—*
Nishibayashi, Hatsumi; Amagai, Yoshimi; Hikake, Norio; Kouchi, Toshihiro; and Aizawa, Tatsuo, 4,388,396, Cl. 430-126.000.

Kovalev, German V.: *See—*
Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryazantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko, Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G., 4,388,108, Cl. 75-10.00R.

Kovalev, Viktor M.: *See—*
Grinberg, Efim N.; Braginsky, Yakov I.; Zhislin, Yakov M.; Lavrov, Vladimir V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; Filatov, Alexandr A.; Yaroshenko, Jury F.; Torban, Samuil S.; Kovalev, Viktor M.; Urusov, Georgy I.; Rozanova, Alla V.; Radakova, Tatyana N.; Krivosheina, Larisa I.; Bykov, Vladimir P.; Bykova, Vladimira M.; and Gultsev, Igor V. 4,387,485, Cl. 17-48.000.

Kovar, Wayne A.: *See—*
Bishop, Thomas R.; Chancey, Roger D.; and Kovar, Wayne A., 4,387,885, Cl. 267-125.000.

Koyama, Masao: *See—*
Suzuki, Shuichi; Aizawa, Masuo; Koyama, Masao; Sato, Yuichi; and Koezuka, Junji, 4,388,166, Cl. 204-403.000.

Koyama, Minoru: *See—*
Takezoe, Fumihiko; and Koyama, Minoru, 4,388,716, Cl. 370-29.000.

Koyama, Shigeo; Yamagata, Ryutaro; Kozuka, Nobuhiko; and Sakata, Hiromi, to Mita Industrial Co., Ltd. Copying apparatus provided with a cassette-type paper feeding mechanism. 4,387,889, Cl. 271-10.000.

Koyama, Shozo; Manning, John W., Jr.; Ammons, William S.; and Santiesteban, Hector L., to Boehringer Ingelheim International GmbH. Method of treating endotoxin shock with a pyrimido-pyrimidine derivative. 4,388,318, Cl. 424-251.000.

Koyama, Takuo: *See—*
Komatsu, Shigeru; Mizukami, Kazushi; Tachiuchi, Tsuguji; Nagai, Kunihiko; and Koyama, Takuo, 4,388,707, Cl. 365-230.000.

Koyanagi, Yukiaki: *See—*
Kumagai, Ikuo; Koyanagi, Yukiaki; and Hidaka, Hiroshi, 4,388,009, Cl. 400-679.000.

Kozuka, Nobuhiko: *See—*
Koyama, Shigeo; Yamagata, Ryutaro; Kozuka, Nobuhiko; and Sakata, Hiromi, 4,387,889, Cl. 271-10.000.

Kraemer, Dieter; Lehmann, Klaus; and Hartl, Roland, to Rohm GmbH. Rapid diagnostic agents. 4,388,271, Cl. 422-56.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Becker, Bernard; Meyer-Pittroff, Roland; and Frohlich, Gunter, 4,387,574, Cl. 60-641.110.
Schwanzer, Wilhelm, 4,388,546, Cl. 310-196.000.

Kramer, Petrus A.; and Verbrugge, Pieter A., to Shell Oil Company. Trihalomethylation of aldehydes. 4,388,247, Cl. 260-463.000.

Kranz, Eckart: *See—*
Elbe, Hans-Ludwig; Arold, Hermann; Kranz, Eckart; and Stolzer, Claus, 4,388,465, Cl. 548-262.000.

Kranz, Max L., to U.S.D. Corp. Fiberoptic pressure gauge. 4,387,600, Cl. 73-714.000.

Kreiskott, Horst: *See—*
Steiner, Gerd; Franke, Albrecht; Lenke, Dieter; Teschendorf, Hans-Juegen; Worstmann, Wolfgang; and Kreiskott, Horst, 4,388,237, Cl. 260-239.0BC.

Kreuzer, Franz-Heinrich: *See—*
Finkelmann, Heino; Rehage, Gunther; and Kreuzer, Franz-Heinrich, 4,388,453, Cl. 528-15.000.

Kristinsson, Haukur; Muller, Beat; and Pachlatko, Johannes P., to Ciba-Geigy Corporation. Thiadiazolyl-glyoxylonitrile-2-oxime ether derivatives for protecting plant crops. 4,388,464, Cl. 548-136.000.

Kristoffersson, Ingmar, to Alfa-Laval AB. Arrangement for locating the plates included in a plate heat exchanger. 4,387,765, Cl. 165-166.000.

Krivosheina, Larisa I.: *See—*
Grinberg, Efim N.; Braginsky, Yakov I.; Zhislin, Yakov M.; Lavrov, Vladimir V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; Filatov, Alexandr A.; Yaroshenko, Jury F.; Torban, Samuil S.; Kovalev, Viktor M.; Urusov, Georgy I.; Rozanova, Alla V.; Radakova, Tatyana N.; Krivosheina, Larisa I.; Bykov, Vladimir P.; Bykova, Vladimira M.; and Gultsev, Igor V., 4,387,485, Cl. 17-48.000.

Kroger, Tapani; and Luostarinen, Raimo. Trotter exercising cart. 4,387,908, Cl. 280-63.000.

Kroll, Hartmut: *See—*
Knackstedt, Hans-Gunther; Muller, Erhard; Christ, Richard; and Kroll, Hartmut, 4,388,268, Cl. 376-272.000.

Krueger, William R., to Outboard Marine Corporation. Battery charger with transducer for controlling charge rate. 4,388,583, Cl. 320-46.000.

Krupp-Koppers GmbH: *See—*
Kuppenbender, Rainer, 4,388,151, Cl. 201-2.000.

Kubo, Tateo, to Toyo Seikan Kaisha, Ltd. Molding device for forming a liner inside of a closure shell. 4,388,058, Cl. 425-110.000.

Kubota Ltd.: *See—*
Fujimoto, Tadao; and Kawasugi, Tadaaki, 4,388,186, Cl. 210-170.000.

Kubota, Yuichi, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,388,376, Cl. 428-425.900.

Kucera, Carrell J., to Norden Laboratories, Inc. Modified pasteurella bacteria and vaccines prepared therefrom. 4,388,299, Cl. 424-92.000.

Kudoh, Akihide; Kawamata, Motoo; Ohshima, Kazushi; Kotani, Makoto; Tsuda, Takeshi; and Aoki, Fukuichi, to Mitsui Toatsu Chemicals, Inc. Process for the ortho-alkylation of phenolic compounds. 4,388,478, Cl. 568-804.000.

Kudoh, Michio: *See—*
Imai, Hirosuke; Matsuno, Mitsuo; and Kudoh, Michio, 4,388,480, Cl. 585-516.000.

Kumagai, Ikuo; Koyanagi, Yukiaki; and Hidaka, Hiroshi, to Nippon Electric Company, Limited. Cooling system for a line printer. 4,388,009, Cl. 400-679.000.

Kunda, Wasyl, to Sherritt Gordon Mines Limited. Process for the production of silver powder from silver chloride, sulphate or sulphide. 4,388,109, Cl. 75-0.50B.

Kuno, Akira; Matsumoto, Muneaki; and Numata, Koji, to Nippon Soken, Inc. Demagnetizer for use in vehicles. 4,388,666, Cl. 361-149.000.

Kunz, Volker G.: *See—*
Acimovic, Simeon; Lindemann, Karl-Heinz; and Kunz, Volker G., 4,388,161, Cl. 204-43.00S.

Kunze, Dieter: *See—*
Wlcek, Rudolf; and Kunze, Dieter, 4,388,488, Cl. 174-92.000.

Kuo, George Y.: *See—*
Dewey, Richard H.; Hwang, Bruce Y.; and Kuo, George Y., 4,388,240, Cl. 260-239.0BB.

Kuppenbender, Rainer, to Krupp-Koppers GmbH. Method and device for feeding purging and degraphitizing air into coke ovens. 4,388,151, Cl. 201-2.000.

Kuramoto, Shinichi: *See—*
Tsubuko, Kazuo; Hashimoto, Junichiro; Kuramoto, Shinichi; and Okawara, Makoto, 4,388,395, Cl. 430-114.000.

Kurita, Yukio; and Nakagawa, Satoshi, to Matsushita Electric Works, Ltd. Structural column and method of manufacture. 4,387,546, Cl. 52-731.000.

Kuroda, Hitoshi: *See—*
Inui, Tsuneo; Kuroda, Hitoshi; Hanabusa, Tetsuro; and Yazaki, Katsuhito, 4,388,158, Cl. 204-27.000.

Kuroyanagi, Makoto: *See—*
Iwamoto, Kenji; and Kuroyanagi, Makoto, 4,387,570, Cl. 60-600.000.

Kushi, Kenji: *See—*
Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Tamura, Misao, 4,388,345, Cl. 427-54.100.

Kuwabara, Shohei: *See—*
Suzuki, Kazuaki; and Kuwabara, Shohei, 4,388,079, Cl. 8-648.000.

Kuzma, Petr; and Odorisio, Giovanina, to National Patent Development Corporation. Biologically stabilized compositions comprising collagen as the major component with ethylenically unsaturated compounds used as contact lenses. 4,388,428, Cl. 523-106.000.

Kyushu Hitachi Maxell, Ltd.: *See—*
Sano, Tadao, 4,388,674, Cl. 362-186.000.

L & A, Inc.: *See—*
Laux, Joseph J., 4,387,516, Cl. 36-43.000.

Labofina, S.A.: *See—*
Lepain, Andre; Bronchart, Robert; and Remacle, Roger, 4,388,407, Cl. 436-3.000.

Ladney, Michael, Jr.: *See—*
Hatfield, Raymond W., 4,388,353, Cl. 427-422.000.

Laesch, Daniel A. Golf bag carrier. 4,387,836, Cl. 224-32.00A.

La Fever, Clifford E., to United States of America, Army. Gun safety. 4,387,527, Cl. 42-70.00R.

Lake, Edwin D.: *See—*
Grey, James S.; Stuart, R. Daniel; and Lake, Edwin D., 4,387,605, Cl. 74-694.000.

Lamoth, Mihaly, to Motorola, Inc. Fixed frequency voltage regulator. 4,388,586, Cl. 323-283.000.

Lamoth, Mihaly; and Lehning, Heinz, to Motorola, Inc. Fixed frequency voltage regulator. 4,388,587, Cl. 323-283.000.

Lamparter, Helmut: *See—*
Schone, Peter; Olmann, Jurgen; and Lamparter, Helmut, 4,388,494, Cl. 179-1.00G.

Lampe, Seigfried, to E.C.H. Will (GmbH & Co.). Apparatus for changing the orientation of stacked paper sheets or the like. 4,387,890, Cl. 271-225.000.

Lampson, George P.: *See—*
Field, A. Kirk; Tytell, Alfred A.; and Lampson, George P., 4,388,306, Cl. 424-179.000.

Lancaster, Patrick R.; and Lancaster, William G., to Lantech, Inc. Power assisted roller-stretch wrapping process. 4,387,548, Cl. 53-399.000.

Lancaster, Patrick R.; and Lancaster, William G., to Lantech, Inc. Wrapping apparatus. 4,387,552, Cl. 53-556.000.

Lancaster, William G.: *See—*
Lancaster, Patrick R.; and Lancaster, William G., 4,387,548, Cl. 53-399.000.
Lancaster, Patrick R.; and Lancaster, William G., 4,387,552, Cl. 53-556.000.

Lancto, Donald C.: *See—*
Brown, Charles R.; Kohne, Theodore J.; and Lancto, Donald C., 4,387,639, Cl. 101-2.000.

Lange, Gerhard: *See—*
Zeidler, Guenter; Lange, Gerhard; and Saller, Helmut, 4,387,958, Cl. 350-96.230.
Zeidler, Guenter; Ney, Ernst; Lange, Gerhard; and Saller, Helmut, 4,388,485, Cl. 174-23.00C.

Lange, Howard G.; and Schulman, Ronald, to Zenith Radio Corporation. Rear projection screen. 4,387,959, Cl. 350-128.000.

Lanius, Charles A., to Flambeau Corporation. Arrowhead case and arrowhead wrench. 4,387,805, Cl. 206-230.000.

Lannan, Patrick E., to AMP Incorporated. Self-sealing test probe. 4,388,591, Cl. 324-158.00P.

Lantech, Inc.: *See—*
Lancaster, Patrick R.; and Lancaster, William G., 4,387,548, Cl. 53-399.000.
Lancaster, Patrick R.; and Lancaster, William G., 4,387,552, Cl. 53-556.000.

Lao, Binneg Y., to Bendix Corporation, The. Pressure compensated circuit for ion mass airflow sensors. 4,387,602, Cl. 73-861.090.

Lardon, Marcel: *See—*
Moll, Eberhard; and Lardon, Marcel, 4,388,164, Cl. 204-192.0SP.

Larrabee, Edward M. Extracting handle for earth drill augers. 4,387,483, Cl. 16-114.00R.

Larson, Jeffrey G., to Babcock & Wilcox Company, The. Spacer grid corner gusset. 4,388,269, Cl. 376-442.000.

Larson, Larry A., to Caterpillar Tractor Co. Test stand. 4,387,589, Cl. 73-119.00A.

Larsson, Hans-Gunnar, to ASEA Aktiebolag. Method for manufacturing elongated bodies by extrusion of powder in a capsule. 4,388,054, Cl. 419-32.000.

Larsson, Hans M.: *See—*
Sunden, Olof; Batelson, Per G.; Johansson, Hans E.; Larsson, Hans M.; and Svending, Per J., 4,388,150, Cl. 162-175.000.

Latimer, John P., to Deepsea Ventures, Inc. Separable liquid flow screening means for excluding oversized, slender objects carried by a liquid, and dredge means including same. 4,387,518, Cl. 37-57.000.

Lauriello, Alfred F.; and Swendrowski, Steven D., to Mostek Corporation. Multipin coupler. 4,387,946, Cl. 339-66.00M.

Laux, Joseph J., to L & A, Inc. Universal insole. 4,387,516, Cl. 36-43.000.

Lavrov, Vladimir V.: *See—*
Grinberg, Efim N.; Braginsky, Yakov I.; Zhislin, Yakov M.; Lavrov, Vladimir V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; Filatov, Alexandr A.; Yaroshenko, Jury F.; Torban, Samuil S.; Kovalev, Viktor M.; Urusov, Georgy I.; Rozanova, Alla V.; Radakova, Tatyana N.; Krivosheina, Larisa I.; Bykov, Vladimir P.; Bykova, Vladimira M.; and Gultsev, Igor V., 4,387,485, Cl. 17-48.000.

Lawson, Daniel D.: *See—*
United States of America, National Aeronautics and Space Administration; Corcoran, William H.; Fong, William S.; Pichaichanarong, Puvin; Chan, Paul C. F.; and Lawson, Daniel D., 4,388,171, Cl. 208-8.0LE.

Lebetzki, Egon: *See—*
Schneider, Hartmut; and Lebetzki, Egon, 4,388,095, Cl. 65-18.200.

Leblanc, Jean; Pigeroulet, Jean; Straubel, Max; and Eckert, Konrad, to Robert Bosch GmbH. Fuel injection apparatus for internal combustion engines, in particular for diesel engines. 4,387,686, Cl. 123-446.000.

Lechner, Uwe: *See—*
Wetzel, Bernd; Woitun, Eberhard; Maier, Roland; Reuter, Wolfgang; Lechner, Uwe; and Goeth, Hanns, 4,388,315, Cl. 424-246.000.

Lectron Products, Inc.: *See—*
Slavin, Michael; and Rea, Irvin B., 4,387,788, Cl. 181-171.000.

Lee, Franky B.; and Jobes, Orin, Jr., to Procter & Gamble Company, The. Apparatus for continuously making an air-laid fibrous web having patterned basis weight distribution. 4,388,056, Cl. 425-83.100.

Lee, Ja H.: *See—*
United States of America, National Aeronautics and Space Administration; Lee, Ja H.; and Hohl, Frank, 4,388,542, Cl. 310-11.000.

Lefavour, David W. Bicycle lighting system. 4,388,559, Cl. 315-78.000.

Legg, Peter George: *See—*
Cocker, Michael J., 4,387,917, Cl. 292-40.000.

Lehmann, Klaus: *See—*
Kraemer, Dieter; Lehmann, Klaus; and Hartl, Roland, 4,388,271, Cl. 422-56.000.

Lehning, Heinz: *See—*
Lamoth, Mihaly; and Lehning, Heinz, 4,388,587, Cl. 323-283.000.

Leiber, Heinz, to Robert Bosch GmbH. Hydraulic power steering system. 4,387,782, Cl. 180-132.000.

Leichti, Robert J.: *See—*
House, Cynthia B.; and Leichti, Robert J., 4,388,378, Cl. 428-537.000.

Lemery, Douglas J., to Kolve Sawchain Company. Anti-kick saw chain and a kick-reducing method. 4,387,615, Cl. 83-56.000.

Lemke, James U., to Eastman Kodak Company. Multitrack recording with minimal intermodulation. 4,388,656, Cl. 360-33.100.

Lemke, James U., to Eastman Kodak Company. Tape recorder apparatus capable of playing back selected information while recording other information. 4,388,659, Cl. 360-90.000.

Lenco, Inc.: *See—*
Blair, Bruce A., 4,388,637, Cl. 358-10.000.

Lening, George O.; and Lening, James B. Gate latch assembly. 4,387,916, Cl. 292-5.000.

Lening, James B.: *See—*
Lening, George O.; and Lening, James B., 4,387,916, Cl. 292-5.000.

Lenke, Dieter: *See—*
Steiner, Gerd; Franke, Albrecht; Lenke, Dieter; Teschendorf, Hans-Juegen; Worstmann, Wolfgang; and Kreiskott, Horst, 4,388,237, Cl. 260-239.0BC.

Lense, Robert F., to Amerock Corporation. Drawer slide assembly. 4,387,942, Cl. 312-334.000.

Lepain, Andre; Bronchart, Robert; and Remacle, Roger, to Labofina, S.A. Process and apparatus for the rapid determination of the characteristics of a petroleum pollutant. 4,388,407, Cl. 436-3.000.

Lerner, Bernard, to Automated Packaging Systems, Inc. Container strips and method of making and using the same. 4,387,550, Cl. 53-459.000.

Leto, Anthony, to Curtiss-Wright Corporation. Fuel burner and combustor assembly for a gas turbine engine. 4,387,559, Cl. 60-39.320.

Leuvelink, Gerrit W. E., to Textieltechniek Haaksbergen B.V. Method and means for winding helical coils from thermoplastic materials. 4,388,264, Cl. 264-281.000.

Leveques, Marc, to Clesid S.A. Changeover device for an installation for recovery of the gases and fumes proceeding from a converter. 4,387,883, Cl. 266-158.000.

Levey, Bertram J., to Construction Materials, Inc. Expansion joint and seal for use in concrete structures. 4,388,016, Cl. 404-48.000.

Levi Strauss & Co.: *See—*
Blessing, Hubert, 4,388,141, Cl. 156-432.000.

Levin, James P.: *See—*
King, Bruce D.; and Levin, James P., 4,388,386, Cl. 430-5.000.

Levin, Liza: *See—*
Yong, Samuel H.; Anderson, George R.; and Levin, Liza, 4,388,336, Cl. 426-551.000.

Lewandowski, Raymond J.; and Spector, George. Book end planter. 4,387,534, Cl. 47-66.000.

Lewerenz, Hans-Joachim: *See—*
Bachmann, Klaus J.; Lewerenz, Hans-Joachim; and Menezes, Maria T. A. S., 4,388,382, Cl. 429-111.000.

Lewin, Ian. Indirect lighting fixture. 4,388,675, Cl. 362-225.000.

Lewis, Paul H.; Durkin, Joseph A.; and Froelich, Joseph A., to Texaco Inc. Catalytic cracking process. 4,388,178, Cl. 208-115.000.

Lewis, Robert T., to Chevron Research Company. Magnetic separation of mineral particles from shale oil. 4,388,179, Cl. 208-177.000.

Licata, Joseph G. Contact lens application. 4,387,921, Cl. 294-1.0CA.

Licentia Patent-Verwaltungs-GmbH: *See—*
Gockler, Heinz, 4,388,724, Cl. 375-14.000.
Goseberg, Walter; Pollak, Alfred; and Reichow, Wolfgang, 4,388,568, Cl. 315-411.000.
Scheffler, Hartmut, 4,388,497, Cl. 179-77.000.
Schmidtmann, Burchard, 4,388,650, Cl. 358-197.000.

Lillibridge, Harold R.: *See—*
Sullivan, John; and Lillibridge, Harold R., 4,388,071, Cl. 493-333.000.

Lin, Gregory K.: *See—*
Hoge, Carl E.; and Lin, Gregory K., 4,388,132, Cl. 156-153.000.

Lincoln Laser Co.: *See—*
Sherman, Randy J., 4,388,651, Cl. 358-206.000.

Linde Aktiengesellschaft: *See—*
Dresler, Helmut; and Turnwald, Ernst, 4,388,051, Cl. 417-505.000.

Lindemann, Karl-Heinz: *See—*
Acimovic, Simeon; Lindemann, Karl-Heinz; and Kunz, Volker G., 4,388,161, Cl. 204-43.00S.

Linhart, Heinz: *See—*
Bachmann, Adolf; Boehler, Joachim; and Linhart, Heinz, 4,388,057, Cl. 425-97.000.

Linnau, Yendra: *See—*
Eibl, Johann; Elsinger, Fritz; and Linnau, Yendra, 4,388,232, Cl. 260-112.00B.

Lion Corporation: *See—*
Suzuki, Shin-ichi; Kitoh, Shinya; Toda, Haruhiko; and Higo, Moriaki, 4,388,421, Cl. 523-118.000.

Lionetti, Thomas A.; and Schrader, Charles H., to Texaco Inc. Hydrocarbon conversion process. 4,388,175, Cl. 208-74.000.

Lister, Marc D., to Felt Products Mfg. Co. Gasket screening assembly for an internal combustion engine having an auxiliary oil cooler. 4,387,764, Cl. 165-119.000.

Lister, Neil K.: *See—*
Rosato, Dennis W.; and Lister, Neil K., 4,388,366, Cl. 428-285.000.

Livingston, Douglas J.: *See—*
Brastow, Carl H.; Mallett, Joel D.; and Livingston, Douglas J., 4,388,513, Cl. 219-58.000.

Loch, Werner, to BASF Aktiengesellschaft. Aqueous pigment pastes and their use. 4,388,435, Cl. 524-548.000.

Loevendie, Rudolf H., to IHC Holland N.V. Method for controlling the position of the suction head of a dredge in relation to the bottom. 4,387,519, Cl. 37-195.000.

Loew, Harold F.: *See—*
Penland, William D.; and Loew, Harold F., 4,388,503, Cl. 200-5.00R.

Lohstroh, Jan, to U.S. Philips Corporation. Static memory cell and memory constructed from such cells. 4,388,636, Cl. 357-49.000.

Loire, Rene, to Morrison-Knudsen Company, Inc. Single point mooring. 4,387,660, Cl. 114-230.000.

Lomneth, Richard B.; Blair, Daniel R.; Parnell, Gary L.; and Tao, Bernard Y., to Procter & Gamble Company, The. Margarine and method for making same. 4,388,339, Cl. 426-602.000.

Long, James L.: *See—*
de Figueiredo, Mario P.; Guevara, Balagtas F.; Long, James L.; Morgan, Ronnie G.; and York, Lawrence R., 4,388,340, Cl. 426-614.000.

Long, Richard W.; and Stinton, Robert T., to Diving Unlimited International, Inc. Underwater diver's dry suit and method of sealing. 4,388,134, Cl. 156-248.000.

Longo, Frank N.; Miller, Robert A.; and Reardon, Joseph D., to Metco, Inc. Coating plastic substrates with minerals. 4,388,373, Cl. 428-413.000.

Longo, John M.: *See—*
Poeppelmeier, Kenneth R.; and Longo, John M., 4,388,294, Cl. 423-599.000.

Longoni, Angelo: *See—*
Massardo, Pietro; Longoni, Angelo; and Piccardi, Paolo, 4,388,323, Cl. 424-305.000.

Longwell, John P.: *See—*
Bartok, William; Song, Yih H.; Siminski, Vince J.; and Longwell, John P., 4,388,062, Cl. 431-10.000.

Loniello, Peter J., to General Signal Corporation. Insulating module including a heater element support. 4,387,871, Cl. 248-58.000.

Loranger Manufacturing Company: *See—*
Soltysik, George E.; and Anderson, John C. R., 4,388,719, Cl. 371-27.000.

Lorenz, Hellmut, to Barmag Barmer Maschinenfabrik AG. False twisting apparatus and method. 4,387,557, Cl. 57-340.000.

Lostumo, Arthur J.; and Pulchinski, Steven J., to Zenith Radio Corporation. High voltage connector. 4,387,947, Cl. 339-90.00R.

Love, Roger R.; and Metroke, John, to Computer Power, Inc. Uninterruptible power supply. 4,388,534, Cl. 307-66.000.

Loveland, Robert S., to Perkin-Elmer Corp., The. Circuitry for simultaneously performing integration and division. 4,388,694, Cl. 364-834.000.

Lovelock, James E., to Hewlett-Packard Company. Apparatus and method for detecting fluid. 4,388,411, Cl. 436-149.000.

Lowder, Robert L., to Occidental Chemical Agricultural Products, Inc. Non-pressure nitrogen carrier fertilizer solutions and dispersions and process of manufacture. 4,388,101, Cl. 71-29.000.

Lubecki, Andrzej; Wiese, Kurt; and Winkler, Karl, to Kernforschungszentrum Karlsruhe Gesellschaft mit beschrankter Haftung. Process and apparatus for the continuous measurement of element contents 4,388,530, Cl. 378-45.000.

Lucas Industries, Limited: *See—*
Farr, Glyn P. R., 4,387,934, Cl. 303-116.000.
Hembert, Gaetan, 4,388,142, Cl. 156-446.000.

Lucia, Carroll J., to Patalidis, Claude A. Filter with heat controlled fluid flow bypass. 4,388,196, Cl. 210-742.000.

Ludman, Jacques E.; Horner, Joseph L.; and Mikes, Thomas L., to United States of America, Air Force. Holographic reflective grating multiplexer/demultiplexer. 4,387,955, Cl. 350-96.190.

Luebke, Robert W., to True Temper Corporation. Sheet useful as a reservoir liner. 4,388,357, Cl. 428-57.000.

Lukezic, Marino: *See—*
Plevnik, Stanislav; Vrtacnik, Peter; Malezic, Matija; Lukezic, Marino; Stanic, Uros; and Oblak, Pavel, 4,387,719, Cl 128-421.000.

Lumikko, Juha, to Enso-Gutzeit Oy. Procedure for separating finely divided matter from a suspension by filtering. 4,388,197, Cl. 210-777.000.

Lumsden, James R., to AEL Microtel Limited. Automatic meter reading transponder. 4,388,690, Cl. 364-483.000.

Lungu, Corneliu, to Robert Bosch GmbH. Arrangement for controlling elements of power vehicle such as safety belt, window pane and the like. 4,388,575, Cl. 318-475.000.

Lunn, William H. W.; and Wheeler, William J., to Eli Lilly and Company. Amino-substituted oxazole, oxadiazole and isoxazole-substituted cephalosporins. 4,388,316, Cl. 424-246.000.

Luostarinen, Raimo: *See—*
Kroger, Tapani; and Luostarinen, Raimo, 4,387,908, Cl. 280-63.000.

Lynn, Joe J.: *See—*
Hayman, Richard W.; Goldstein, Burton; Lynn, Joe J.; Brown, Robert J.; and Bugash, Robert S., 4,388,689, Cl. 364-401.000.

Lynn, Robert W., to Becton, Dickinson and Company. Container and closure assembly having intermediate positioning means. 4,387,822, Cl. 215-330.000.

Lyons, Bernard J.: *See—*
Toy, Lester T.; Moyer, Wendell W.; Lyons, Bernard J.; and Horsma, David A., 4,388,607, Cl. 338-22.0SD.

Lytle, James R., Sr.: *See—*
Stevens, Samuel B.; and Lytle, James R., Sr., 4,387,842, Cl. 226-113.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Fischer, Hermann, 4,387,647, Cl. 101-350.000.

Ma, Kwok C. Automatic egg roll making machine. 4,388,059, Cl. 425-112.000.

MacAvoy, David W., to Bendix Corporation, The. Electrical connector insert. 4,387,945, Cl. 339-59.00R.

MacAvoy, David W.: *See—*
Werth, Dee A.; Schildkraut, Alan L.; and MacAvoy, David W., 4,387,943, Cl. 339-59.00R.

Machida, Haruchika, to Hochiki Corporation. Fire detection system with programmed sensitivity changes. 4,388,616, Cl. 340-587.000.

Machida, Shigeki; and Makita, Takeo, to Kabushiki Kaisha Saginomiya Seisakusho. Defrost thermostat used in a reversible refrigerating cycle for heat pumps. 4,388,605, Cl. 337-301.000.

Machlett Laboratories, Incorporated, The: *See—*
Emmanuel, Saurabh D., 4,388,728, Cl. 378-34.000.

MacKenzie, Angus B.: *See—*
Cayton, David W.; Armstrong, Errol C.; and MacKenzie, Angus B., 4,388,035, Cl. 414-417.000.

MacNaughton, Robert G.: *See—*
Sneed, Robert C., Jr.; MacNaughton, Robert G.; and Jacobsen, James H., 4,388,601, Cl. 333-227.000.

Macro Engineering Company Ltd.: *See—*
Bebok, Janos B., 4,388,061, Cl. 425-392.000.

MacWilliams, Robert W.: *See—*
Brouthers, Paul E.; and MacWilliams, Robert W., 4,387,526, Cl. 42-59.000.

Maerfeld, Charles: *See—*
Gautier, Herve; and Maerfeld, Charles, 4,388,599, Cl. 333-150.000.

Maes, Michel E.; Shaw, Robert L.; and Reinsch, Royal L., to Energy Sciences Partners, Ltd. System for making a homogeneous aqueous slurry-type blasting composition. 4,388,254, Cl. 264-3.00C.

Mag Instrument, Inc.: *See—*
Maglica, Anthony, 4,388,673, Cl. 362-183.000.

Maganjuk, Anatoly P.: *See—*
Gryaznov, Vladimir M.; Karavanov, Andrei N.; Belosljudova, Tamara M.; Ermolaev, Anatoly V.; Maganjuk, Anatoly P.; and Sarycheva, Irina K., 4,388,479, Cl. 568-828.000.

Magedanz, Norbert; Seidel, Horst; and Weiss, Hans J., to Metallgesellschaft Aktiengesellschaft. Process of recovering oil from oil-containing minerals. 4,388,174, Cl. 208-11.00R.

Magin, Irving J.; and Nelson, Erik K., to Itek Corporation. Unique copyboard having unique light attenuator. 4,387,985, Cl. 355-71.000.

Maginnes, Edward A.: *See—*
Green, George H.; and Maginnes, Edward A., 4,387,533, Cl. 47-17.000.

Maglica, Anthony, to Mag Instrument, Inc. Variable light beam flashlight and recharging unit. 4,388,673, Cl. 362-183.000.

Maher, William M., to Quaker Oats Company, The. Toy inertia motor. 4,387,604, Cl. 74-354.000.

Maier, Klaus, to Strohm & Maier Labormobel GmbH. Work place arrangement. 4,387,941, Cl. 312-194.000.

Maier, Roland: *See—*
Wetzel, Bernd; Woitun, Eberhard; Maier, Roland; Reuter, Wolfgang; Lechner, Uwe; and Goeth, Hanns, 4,388,315, Cl. 424-246.000.

Maisel, Douglas A. In-band signaling system for FM transmission systems. 4,388,493, Cl. 179-1.0GD.

Major, Emery. Fluid control apparatus. 4,387,736, Cl. 137-550.000.

Makinen, Tuula S. M.: *See—*
Talonen, Timo T.; and Makinen, Tuula S. M., 4,388,111, Cl. 75-26.000.

Makino, Shigeo: *See—*
Matsuda, Hideki; Makino, Shigeo; and Sugimura, Noboru, 4,387,758, Cl. 152-353.00R.

Makita, Takeo: *See—*
Machida, Shigeki; and Makita, Takeo, 4,388,605, Cl. 337-301.000.

Malatesta, Vincenzo; Willis, Clive; and Hackett, Peter A., to Canadian Patents & Development Limited. Method of production of vitamin-D. 4,388,242, Cl. 260-397.200.

Malezic, Matija: *See—*
Plevnik, Stanislav; Vrtacnik, Peter; Malezic, Matija; Lukezic, Marino; Stanic, Uros; and Oblak, Pavel, 4,387,719, Cl. 128-421.000.

Mallett, Joel D.: *See—*
Brastow, Carl H.; Mallett, Joel D.; and Livingston, Douglas J., 4,388,513, Cl. 219-58.000.

Mallinckrodt, Inc.: *See—*
Merry, Jack D., 4,387,711, Cl. 128-207.150.

Manco Tape, Inc.: *See—*
Corbo, Thomas A., 4,387,535, Cl. 49-468.000.

Mangels, John A.; and Baer, John R., to Ford Motor Company. Thermally stable silicon nitride material. 4,388,414, Cl. 501-98.000.

Mangum, U. Stancel. Ball game apparatus and method. 4,387,898, Cl. 273-411.000.

Manitowoc Company, Inc., The: *See—*
Beduhn, Daniel E.; and Morrow, James G., Sr., 4,387,813, Cl. 212-195.000.
Beduhn, Daniel E.; and Morrow, James G., Sr., 4,387,814, Cl. 212-195.000.

Mann, William W.: *See—*
Young, Terry A.; Mann, William W.; Kline, Charles M.; and Schoeneberger, Ernest A., 4,387,857, Cl. 241-101.00B.

Mannesmann Tally Corporation: *See—*
Bringhurst, Edward D.; and Miller, Swend L., 4,387,642, Cl. 101-93.040.

Manning, John W., Jr.: *See—*
Koyama, Shozo; Manning, John W., Jr.; Ammons, William S.; and Santiesteban, Hector L., 4,388,318, Cl. 424-251.000.

Mansour, Alex E.; and Bridgwater, Jon D. Cattle guard construction and method. 4,387,882, Cl. 256-17.000.

Marathon Oil Company: *See—*
Hill, Alfred D., 4,387,770, Cl. 166-305.00R.

Marconi Company Limited, The: *See—*
Crook, Richard W.; and Coghill, Ian, 4,388,623, Cl. 343-709.000.

Marcoux, Leo; and Ting, Youn, to Texas Instruments Incorporated. Diesel fuel filter system. 4,387,691, Cl. 123-557.000.

Margulies, Herman, to Sterling Drug Inc. Pre-moistened towelette dispensing package including flexibly adjustable tie device. 4,387,832, Cl. 221-63.000.

Mariel, James: *See—*
Choby, David; Crawford, James; and Mariel, James, 4,387,923, Cl. 296-201.000.

Marinakis, James. Table apparatus. 4,387,888, Cl. 269-324.000.

Marroquin, Elio G., to Vitro Tec Fideicomiso. Shear mechanism for machines for the manufacture of articles of glass or other materials. 4,388,100, Cl. 65-334.000.

Marshall, Albert H.; and Bond, Gary M., to United States of America, Navy. Circuit for calculating the position of the eye. 4,387,974, Cl. 351-210.000.

Martens, Karlo P., to U.S. Philips Corporation. Combustion flash bulb. 4,388,065, Cl. 431-362.000.

Martin, Earl C.; Thompson, John K.; and Gargrave, Robert J., to Ready Systems, Inc. Bending and forming tool. 4,387,583, Cl. 72-22.000.

Martin, Henry: *See—*
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,388,106, Cl. 71-105.000.

Martin, John R., to Foxboro Company, The. Apparatus for maintaining clean optical surfaces in process environments. 4,387,973, Cl. 350-582.000.

Martin Marietta Corporation: *See—*
Simon, Wayne E., 4,388,045, Cl. 417-54.000.

Martin, Michael R.: *See—*
Hopper, Michael J.; Martin, Michael R.; Bolt, Lawrence; Smith, Michael; and Tavasolian, Ali, 4,388,375, Cl. 428-423.700.

Maruta, Keiichi: *See—*
Iwata, Susumu; Maruta, Keiichi; and Yuyama, Yukihiro, 4,388,362, Cl. 428-211.000.

Maryland Cup Corporation: *See—*
Cowan, David A., 4,387,551, Cl. 53-478.000.

Maschinenbau Oppenweiler Binder GmbH & Co.: *See—*
Klenk, Emil, 4,388,073, Cl. 493-444.000.

Masegi, Koichi, to Canon Kabushiki Kaisha. Scan type image recording apparatus. 4,387,983, Cl. 355-8.000.

Mashikhin, Anatoly D.: *See—*
Shipaev, Gennady A.; Seliverstov, Vyacheslav V.; Osipov, Nikolai A.; Prolygin, Anatoly P.; Mashikhin, Anatoly D.; Askinazi, Mikhail P.; Andreev, Jury M.; and Kagan, Samuil I., 4,388,569, Cl. 318-87.000.

Mashyanov, Vladimir G.: *See—*
Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryazantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko, Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G., 4,388,108, Cl. 75-10.00R.

Maslanka, William W., to Hercules Incorporated. Wet-strength resin for paper and method of preparing same. 4,388,439, Cl. 524-845.000.

Massachusetts Institute of Technology: *See—*
Rinderle, James R., 4,387,762, Cl. 165-1.000.

Massardo, Pietro; Longoni, Angelo; and Piccardi, Paolo, to Montedison S.p.A. Acaricide compounds. 4,388,323, Cl. 424-305.000.

Masuda, Seiichi: *See—*
Okane, Koji; Okamura, Shozo; Sueyasu, Masanobu; Masuda, Seiichi; Tanaka, Tsutomu; and Tanaka, Koichi, 4,388,084, Cl. 48-197.00R.

Matburn (Holdings) Limited: *See—*
Briggs, Peter J.; and Carpenter, Steven, 4,387,712, Cl. 604-333.000.

Mathews, James K., to Pertron Controls Corporation. Resistance welding control system. 4,388,515, Cl. 219-110.000.

Mathieson, Donald E.: *See—*
Rigazio, Anthony W.; Mathieson, Donald E.; and Hawkinson, Paul E., 4,388,002, Cl. 368-88.000.

Matlack, Gary L.: *See—*
Deskins, Robert L.; Matlack, Gary L.; and Ashbaugh, Robert D., 4,388,594, Cl. 324-348.000.

Matsubara, Tetsuyuki: *See—*
Iwamoto, Mune; Ito, Norifumi; Ishida, Yuzuru; Furuta, Yasuo; and Matsubara, Tetsuyuki, 4,388,447, Cl. 525-316.000.

Matsubara, Toru: *See—*
Nishikawa, Syuzi; Matsubara, Toru; Iida, Kazuyoshi; and Tahara, Seiichiro, 4,388,427, Cl. 523-500.000.

Matsuda, Hideki; Makino, Shigeo; and Sugimura, Noboru, to Bridgestone Tire Company Limited. Heavy duty pneumatic low-sectional radial tire. 4,387,758, Cl. 152-353.00R.

Matsuda, Motonobu; and Tanaka, Yoshihiro, to Minolta Camera Kabushiki Kaisha. Automatic distance measuring device. 4,387,988, Cl. 356-1.000.

Matsumoto, Muneaki: *See—*
Kuno, Akira; Matsumoto, Muneaki; and Numata, Koji, 4,388,666, Cl. 361-149.000.

Matsumoto, Osamu; and Aoki, Ichizo, to Chiyoda Chemical Engineering & Construction. Method for processing LNG for Rankine cycle. 4,388,092, Cl. 62-24.000.

Matsuno, Mitsuo: *See—*
Imai, Hirosuke; Matsuno, Mitsuo; and Kudoh, Michio, 4,388,480, Cl. 585-516.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kajino, Jirou; Minabe, Hitoshi; and Murata, Shigeki, 4,388,658, Cl. 360-85.000.
Ogawa, Kazufumi; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, 4,388,128, Cl. 156-64.000.
Sekido, Satoshi; and Sotomura, Tadashi, 4,388,385, Cl. 429-111.000.

Sugano, Nobukazu, 4,387,793, Cl. 192-0.02R.

Matsushita Electric Works, Ltd.: *See—*
Hirao, Shozo; Saihara, Yasuhiro; Nakanishi, Toshio; Ihara, Ichiro; and Sano, Yoshio, 4,388,133, Cl. 156-245.000.
Kurita, Yukio; and Nakagawa, Satoshi, 4,387,546, Cl. 52-731.000.

Mattel, Inc.: *See—*
Murphy, Jack P., deceased; and Kimmell, Steven D., 4,387,702, Cl. 126-424.000.

Mattson, Charles A.; Michel, James; and Domagalski, Anthony, to Allegretti & Co. Fertilizer spreader. 4,387,852, Cl. 239-143.000.

Matty, Thomas C.; Franz, James H., Jr.; and Parham, Carol D., to Westinghouse Electric Corp. Transit vehicle shunt determination. 4,387,870, Cl. 246-122.00R.

Maublanc, Georges, to Pont-A-Mousson S.A. Modular single or double action door closure system. 4,387,482, Cl. 16-64.000.

Mauric, Claudine; and Wolf, Rainer, to Sandoz Ltd. Flameproofed organic materials. 4,388,431, Cl. 524-119.000.

Maurice, Terrence J.; Murray, Edward D.; and Agnes, Jennifer M., to General Foods Inc. Simulated adipose tissue. 4,388,333, Cl. 426-104.000.

Mauz, Wolfgang. Mixing block for explosive gas mixtures detonated in a combustion chamber. 4,388,083, Cl. 48-180.00R.

Mavilor Systemes: *See—*
Coquillart, Michel, 4,387,504, Cl. 29-598.000.

Maxwell, Thomas J. Liquid collecting and dispensing apparatus. 4,388,253, Cl. 261-88.000.

Mayer, Joseph B.: *See—*
Ragir, Meyer J.; and Mayer, Joseph B., 4,387,811, Cl. 211-119.000.

McArthur, James F.: *See—*
Ishman, Neal H.; Buxton, Robert B.; Durst, Duane A.; McArthur, James F.; and Johnson, Michael E., 4,388,644, Cl. 358-84.000.

McBrayer, Robert L., to BASF Wyandotte Corporation. Process for preparing a microcellular polyurethane foam with improved green strength. 4,388,420, Cl. 521-127.000.

McCarty, William H.; Guarino, John P.; and Nagy, Frank A., to Mobil Oil Corporation. Process for transfer coating with radiation-curable compositions. 4,388,137, Cl. 156-275.500.

McCaskill, James N., Jr., to Dresser Industries, Inc. Method for drying oil well drill cuttings. 4,387,514, Cl. 34-31.000.

McClure, Don W., to Rockwell International Corporation. Method for manufacturing a simulated wire wheel cover. 4,387,494, Cl. 29-159.00A.

McClure, Richard J.: *See—*
Jeffers, Frederick; and McClure, Richard J., 4,388,662, Cl. 360-113.000.

McCrady, Paul E.: *See—*
Reif, Robert B.; and McCrady, Paul E., 4,388,089, Cl. 55-119.000.

McDonnell Douglas Corporation: *See—*
Arrazola, Ignacio M.; Brown, Raymond E.; and Dillard, Homer E., 4,387,964, Cl. 350-331.00R.

McDuffie, Thomas F. Barge jacking apparatus. 4,387,881, Cl. 254-89.00H.

McGinley, Thomas J.: *See—*
Sien, Herbert P.; and McGinley, Thomas J., 4,388,408, Cl. 436-60.000.

McGraw-Edison Company: *See—*
Hassler, Stephen P.; and Sokoly, Theodore O., 4,388,603, Cl. 337-158.000.

McIntosh, John O.: *See—*
Jones, James J.; and McIntosh, John O., 4,388,692, Cl. 364-557.000.

McKeachern, Jeanette O.: *See—*
Ott, Norman; and McKeachern, Jeanette O., 4,388,185, Cl. 210-136.000.

McNally, Claire O.: *See—*
McNally, John F., 4,387,831, Cl. 221-25.000.

McNally, John F., to McNally, Claire O. Container for dispensing articles carried on a web. 4,387,831, Cl. 221-25.000.

McNerney, Robert. Sewer clean out device. 4,387,750, Cl. 141-331.000.

McNulty, Hugh, Jr.: *See—*
Robinson, William P.; McNulty, Hugh, Jr.; Seliger, Robert L.; and Williamson, Weldon S., 4,388,560, Cl. 315-111.810.

McPhee, William A., to Dresser Industries, Inc. Shaped charge well perforator. 4,387,773, Cl. 175-4.600.

McWilliams, Joseph A., to Micropore International Ltd. Electric cookers with warning lights. 4,388,520, Cl. 219-464.000.

Mechanical Technology Incorporated: *See—*
Berchowitz, David M., 4,387,566, Cl. 60-518.000.
Dineen, John J., 4,387,568, Cl. 60-520.000.
White, Harlan V., 4,387,567, Cl. 60-520.000.

Meder, Siegfried R.: *See—*
Natarajan, Cuddalore P.; and Meder, Siegfried R., 4,388,066, Cl. 432-1.000.

Medical Center Prosthetics, Inc.: *See—*
Wilson, Michael T., 4,387,472, Cl. 3-32.000.

Medical Engineering Corporation: *See—*
Finney, Roy P., 4,387,705, Cl. 128-1.00R.

Medtronic, Inc.: *See—*
Bilitz, Mark R.; and Dickson, Dale A., 4,387,718, Cl. 128-419.00R.
Sandstrom, Richard D., 4,387,727, Cl. 128-784.000.

Meehan, James B.: *See—*
Roach, Maurice P.; Burkhart, Russell D.; and Meehan, James B., 4,387,537, Cl. 51-17.000.

Meehan, James E., to Slater Electric Inc. Wire separation tool and method of preparing multiconductor cable. 4,387,746, Cl. 140-105.000.

Meeks, Alan M. G.: *See—*
Blackburn, Neil P.; Piper, Alfred E. C.; and Meeks, Alan M. G., 4,387,490, Cl. 24-200.000.

Mefferd, Roy J. Method and apparatus for holding and cooling a metal tube during welding. 4,387,845, Cl. 228-222.000.

Mehrotra, Gopi N., to RCA Corporation. Video disc player with selectively enabled audio signal expander circuitry. 4,388,654, Cl. 358-343.000.

Meier, Heinz; and Zurawski, Egon, to Triumph-Adler A.G. fur Buro- und Informationstechnik. Line feed carrier return mechanism for movable printing point typewriter. 4,388,007, Cl. 400-314.000.

Meinardi, Giuseppe: *See—*
Nannini, Giuliano; Perrone, Ettore; Severino, Dino; Meinardi, Giuseppe; Monti, Gisella; Bianchi, Alberta; Forgione, Angelo; and Confalonieri, Carlo, 4,388,314, Cl. 424-246.000.

Meining, Hans: *See—*
Walter, Lothar; Olschewski, Armin; Kispert, Klaus; and Meining, Hans, 4,387,939, Cl. 308-217.000.

Melby, Lester R., to Du Pont de Nemours, E. I., and Company. Glycidyl methacrylate polymers, their preparation and solvolysis products. 4,388,448, Cl. 525-327.300.

Mendenhall, Robert L. Batch method of recycling asphaltic concrete. 4,387,996, Cl. 366-4.000.

Menezes, Maria T. A. S.: *See—*
Bachmann, Klaus J.; Lewerenz, Hans-Joachim; and Menezes, Maria T. A. S., 4,388,382, Cl. 429-111.000.

Menke, W. Kenneth, to Public Safety Equipment Company. Signal light with precessing oscillation control. 4,388,609, Cl. 340-84.000.

Mennicke, Stefan; and Weddigen, Gert, to Brown, Boveri & Cie AG. Electrochemical storage cell. 4,388,381, Cl. 429-104.000.

Mercil, Robert A. Absorbent device for containers for sugar, salt, etc. 4,387,803, Cl. 206-204.000.

Merck & Co., Inc.: *See—*
Christensen, Burton G.; DiNinno, Frank P.; Muthard, David A.; and Ratcliffe, Ronald W., 4,388,310, Cl. 424-200.000.
Field, A. Kirk; Tytell, Alfred A.; and Lampson, George P., 4,388,306, Cl. 424-177.000.
Firestone, Raymond A., 4,388,326, Cl. 424-335.000.
Firestone, Raymond A., 4,388,475, Cl. 564-341.000.

Merrell Toraude et Compagnie: *See—*
Bey, Philippe; and Jung, Michel, 4,388,466, Cl. 548-337.000.

Merry, Jack D., to Mallinckrodt, Inc. Medical device with inflatable cuff. 4,387,711, Cl. 128-207.150.

Mesek, Frederick K.; and Mesek, Virginia R., to Johnson & Johnson Baby Products Company; and Johnson & Johnson Baby Products Company. Disposable diaper with wide elastic gathering means for improved comfort. 4,388,075, Cl. 604-385.000.

Mesek, Virginia R.: *See—*
Mesek, Frederick K.; and Mesek, Virginia R., 4,388,075, Cl. 604-385.000.

Metal Box Limited: *See—*
Franek, Josef T.; Porucznik, Paul; and Styles, Alan E., 4,387,747, Cl. 141-1.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Magedanz, Norbert; Seidel, Horst; and Weiss, Hans J., 4,388,174, Cl. 208-11.00R.

Metcalf, Eric, to Sangamo Weston Limited. Receivers suitable for use in remotely-operable switching devices and data transmission systems. 4,388,727, Cl. 375-88.000.

Metco, Inc.: *See—*
Longo, Frank N.; Miller, Robert A.; and Reardon, Joseph D., 4,388,373, Cl. 428-413.000.

Metroke, John: *See—*
Love, Roger R.; and Metroke, John, 4,388,534, Cl. 307-66.000.

Metz, Paul, to Arbed S.A. Nozzle for rotary continuous caster. 4,387,761, Cl. 164-437.000.

Meunier, Pierre, to Sodex-Magister. Key operated lock for securing a movable portion of a motor vehicle. 4,387,582, Cl. 70-186.000.

Meyer, E. Robert, to Keene Corporation. Hazardous location light fixture. 4,388,681, Cl. 362-374.000.

Meyer-Pittroff, Roland: *See—*
Becker, Bernard; Meyer-Pittroff, Roland; and Frohlich, Gunter, 4,387,574, Cl. 60-641.110.

Michel, James: *See—*
Mattson, Charles A.; Michel, James; and Domagalski, Anthony, 4,387,852, Cl. 239-143.000.

Micropore International Ltd.: *See—*
McWilliams, Joseph A., 4,388,520, Cl. 219-464.000.

Mieczkowska, Ewa: *See—*
Knypl, Maria; Knypl, Eugeniusz; Starzak, Marian; Mieczkowska, Ewa; Pawlus, Urszula; Palubicki, Romuald; Ficek, Mieczyslaw; and Goldynia, Jozef, 4,388,438, Cl. 524-833.000.

Mieszkis, Kazimierz W.: *See—*
Ellis, Vincent S.; and Mieszkis, Kazimierz W., 4,388,370, Cl. 428-368.000.

Mignien, Georges, to Societe Anonyme dite: Compagnie Lyonnaise de Trandmissions Optiques. Connector for optical fibres. 4,387,957, Cl. 350-96.210.

Mikes, Thomas L.: *See—*
Ludman, Jacques E.; Horner, Joseph L.; and Mikes, Thomas L., 4,387,955, Cl. 350-96.190.

Mikoshiba, Hitoshi; Fujimori, Kazuyoshi; Onodera, Kenji; and Takeuchi, Shin, to Shinshu Seiki Kabushika Kaisha; and Kabushiki Kaisha Suwa Seikosha. Small printer. 4,387,643, Cl. 101-110.000.

Miller, Albert T., to Devro, Inc. Collagen sausage casing. 4,388,331, Cl. 426-63.000.

Miller, David G., to Hewlett-Packard Company. Transducer acoustic lens. 4,387,720, Cl. 128-660.000.

Miller, John H., to Hy-Way Heat Systems, Inc. Hot oil heater with helical coil baffle. 4,387,766, Cl. 165-172.000.

Miller, Robert A.: *See—*
Longo, Frank N.; Miller, Robert A.; and Reardon, Joseph D., 4,388,373, Cl. 428-413.000.

Miller, Ross, to ProCreations, Inc. Flexible sheet construction system. 4,387,530, Cl. 46-1.00L.

Miller, Swend L.: *See—*
Bringhurst, Edward D.; and Miller, Swend L., 4,387,642, Cl. 101-93.040.

Milliken Research Corportion: *See—*
Sanders, Kenneth H., 4,388,364, Cl. 428-253.000.

Milwaukee Boiler Manufacturing Co.: *See—*
Stevens, Richard W., 4,387,928, Cl. 299-33.000.

Minabe, Hitoshi: *See—*
Kajino, Jirou; Minabe, Hitoshi; and Murata, Shigeki, 4,388,658, Cl. 360-85.000.

Minagawa, Yoshisato: *See—*
Hasebe, Kazunori; and Minagawa, Yoshisato, 4,388,401, Cl. 430-505.000.

Minami, Shunsuke: *See—*
Ishida, Masamichi; Kamo, Jun; Takemura, Toru; Minami, Shunsuke; and Kamada, Kensuke, 4,388,256, Cl. 264-41.000.

Minamikawa, Yoshitugu: *See—*
Sugano, Junichiro; Yui, Tomoyuki; Minamikawa, Yoshitugu; and Fujimoto, Tsuneo, 4,388,287, Cl. 423-415.00P.

Minden, Carl S. Multi-mode solar heat recovery device. 4,387,704, Cl. 126-435.000.

Minematsu, Hiroyoshi: *See—*
Kawaguchi, Takeyuki; Minematsu, Hiroyoshi; Hayashi, Yuzuru; and Hara, Shigeyoshi, 4,388,189, Cl. 210-490.000.

Minnesota Mining and Manufacturing Company: *See—*
Ethen, John L.; and Bredahl, Timothy D., 4,388,359, Cl. 428-143.000.

Minnick, Larry A.: *See—*
Barbee, Robert B.; and Minnick, Larry A., 4,388,456, Cl. 528-289.000.

Minolta Camera Co. Ltd.: *See—*
Tani, Hakuzo, 4,387,960, Cl. 350-164.000.
Yamazaki, Yasuo; Kimura, Kazuo; and Tanimoto, Tetuyuki, 4,387,967, Cl. 350-423.000.

Minolta Camera Kabushiki Kaisha: *See—*
Matsuda, Motonobu; and Tanaka, Yoshihiro, 4,387,988, Cl. 356-1.000.

Mirman, Alfred H.: *See—*
Schiffmann, Robert F.; Mirman, Alfred H.; Grillo, Richard J.; and Batey, Robert W., 4,388,335, Cl. 426-243.000.

Mirtain, Henri J.; and Zinnen, Norbert, to Pneu Uniroyal Englebert; and Uniroyal Englebert Reifen GmbH, a part interest. Tire tread pattern. 4,387,754, Cl. 152-209.00R.

Mr. John F. Sieberth: *See—*
Wiles, Laurence E.; Page, Frank C., III; and Eibensteiner, Bruno A., 4,387,817, Cl. 215-217.000.

Mita Industrial Co., Ltd.: *See—*
Kato, Yoshiaki; and Fushida, Akira, 4,388,392, Cl. 430-58.000.
Koyama, Shigeo; Yamagata, Ryutaro; Kozuka, Nobuhiko; and Sakata, Hiromi, 4,387,889, Cl. 271-10.000.
Nishibayashi, Hatsumi; Amagai, Yoshimi; Hikake, Norio; Kouchi, Toshihiro; and Aizawa, Tatsuo, 4,388,396, Cl. 430-126.000.

Mitchell, Alexander R.: *See—*
Bissell, Eugene R.; Mitchell, Alexander R.; Pearson, Karen W.; and Smith, Robert E., 4,388,233, Cl. 260-112.50R.

Mitrofanov, Viktor A.: *See—*
Grinberg, Efim N.; Braginsky, Yakov I.; Zhislin, Yakov M.; Lavrov, Vladimir V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; Filatov, Alexandr A.; Yaroshenko, Jury F.; Torban, Samuil S.; Kovalev, Viktor M.; Urusov, Georgy I.; Rozanova, Alla V.; Radakova, Tatyana N.; Krivosheina, Larisa I.; Bykov, Vladimir P.; Bykova, Vladimira M.; and Gultsev, Igor V., 4,387,485, Cl. 17-48.000.

Mitsubishi Chemical Industries Ltd.: *See—*
Oguri, Yasuo; Awata, Mitsuru; and Abe, Mitsunobu, 4,388,257, Cl. 264-82.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Uchikawa, Fusaoki, 4,388,377, Cl. 428-446.000.

Mitsubishi Gas Chemical Co., Inc.: *See—*
Arakawa, Satoshi, 4,388,291, Cl. 423-515.000.
Sugano, Junichiro; Yui, Tomoyuki; Minamikawa, Yoshitugu; and Fujimoto, Tsuneo, 4,388,287, Cl. 423-415.00P.

Mitsubishi Paper Mills, Ltd.: *See—*
Torii, Takahiro; and Senoh, Hideaki, 4,387,913, Cl. 282-27.500.

Mitsubishi Rayon Company Ltd.: *See—*
Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Tamura, Misao, 4,388,345, Cl. 427-54.100.

Mitsui Petrochemical Industries, Ltd.: *See—*
Nagano, Riichiro; and Kaneshige, Ryosuke, 4,388,202, Cl. 252-52.00A.

Mitsui Toatsu Chemicals, Inc.: *See—*
Iwamoto, Mune; Ito, Norifumi; Ishida, Yuzuru; Furuta, Yasuo; and Matsubara, Tetsuyuki, 4,388,447, Cl. 525-316.000.
Kudoh, Akihide; Kawamata, Motoo; Ohshima, Kazushi; Kotani, Makoto; Tsuda, Takeshi; and Aoki, Fukuichi, 4,388,478, Cl. 568-804.000.

Mittleman, John, to United States of America, Navy. Coil device for underwater magnetic testing. 4,388,593, Cl. 324-262.000.

Miyagi, Hideo; and Nagase, Masaomi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling the air intake of an internal combustion engine. 4,387,682, Cl. 123-339.000.

Miyamoto, Yukihiko, to Trio Kabushiki Kaisha. FM/AM Stereo receiver. 4,388,496, Cl. 179-1.0GS.

Miyashita, Kiyoshi: *See—*
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,387,986, Cl. 355-75.000.

Miyazaki, Yasushi: *See—*
Nakazato, Yasuaki; Miyazaki, Yasushi; Osuga, Makoto; and Kodaira, Masao, 4,388,140, Cl. 156-345.000.

Miyoshi, Takahito; Okutu, Toshimitu; Takimoto, Masaaki; Saida, Takashi; Akashi, Goro; and Fujiyama, Masaaki, to Fuji Photo Film Company Limited. Magnetic recording medium. 4,388,360, Cl. 428-172.000.

Mizota, Toshihiro: *See—*
Takao, Kengo; Ohmachi, Mineo; Kihara, Hisatsugu; Toki, Kenshiro; Tomita, Yukio; and Mizota, Toshihiro, 4,387,562, Cl. 60-39.150.

Mizukami, Kazushi: *See—*
Komatsu, Shigeru; Mizukami, Kazushi; Tachiuchi, Tsuguji; Nagai, Kunihiko; and Koyama, Takuo, 4,388,707, Cl. 365-230.000.

Mizuno, Akira; and Suzuki, Shigeo, to Shizuoka Seiki Co., Ltd. Solenoid-operated pump. 4,388,047, Cl. 417-299.000.

Mizuno, Kotaro: *See—*
Okamoto, Eisaku; and Mizuno, Kotaro, 4,387,620, Cl. 84-1.030.

Mizuno, Tooru; and Hagisato, Yasuo, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Display intensity control apparatus. 4,388,558, Cl. 315-77.000.

Mobay Chemical Corporation: *See—*
Eppler, Richard A., 4,388,118, Cl. 106-306.000.
Thomas, Thomas J.; and Hoquet, Robert G., 4,388,078, Cl. 8-514.000.

Mobil Oil Corporation: *See—*
Bowes, Emmerson; and Pelrine, Bruce P., 4,388,177, Cl. 208-111.000.
Butcosk, Richard A., 4,388,198, Cl. 252-28.000.
Chang, Clarence D.; and Perkins, Patrick D., 4,388,461, Cl. 546-251.000.
Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayana N.; Wada, William T.; and Yancey, Irvin R., 4,388,022, Cl. 405-195.000.
Givens, Wyatt W., 4,388,266, Cl. 376-164.000.
Hungerford, Gordon P., 4,388,258, Cl. 264-129.000.
McCarty, William H.; Guarino, John P.; and Nagy, Frank A., 4,388,137, Cl. 156-275.500.
Murray, James G., 4,388,440, Cl. 525-49.000.
Rankel, Lillian A.; and Valyocsik, Ernest W., 4,388,285, Cl. 423-329.000.

Mock, George E.: *See—*
Durr, Helmut E.; and Mock, George E., 4,388,029, Cl. 409-295.000.

Modern Mill, Inc.: *See—*
Gerber, Paul E., 4,387,850, Cl. 239-124.000.

Mohl, Helmut; Schab, Manfred; Sauer, Joseph; and Muller, Alfred, to Robert Bosch GmbH. Electronic control for a stepless vehicle transmission using a control member response to dynamic pressure. 4,387,608, Cl. 74-866.000.

Mohn, Hans-Werner: *See—*
Buchholz, Rainer; Mohn, Hans-Werner; Boms, Hermann; and Zodrow, Rudolf, 4,388,143, Cl. 156-475.000.

Molins Machine Company: *See—*
Evans, Donald J., 4,387,614, Cl. 83-38.000.

Moll, Eberhard; and Lardon, Marcel, to Balzers Aktiengesellschaft. Method of coating the surface of an elastic body with a continuous layer. 4,388,164, Cl. 204-192.0SP.

Molldrem, Bernhard P., Jr. Color-emitting DC level indicator. 4,388,589, Cl. 324-96.000.

Monarch Marking Systems, Inc.: *See—*
Jenkins, William A., 4,387,644, Cl. 101-111.000.

Monden, Norbert: *See—*
Hermening, Helmut; Monden, Norbert; Schaar, Lothar; Schneider, Wilhelm; and Seidel, Hans-Georg, 4,388,099, Cl. 65-267.000.

Monks, Reginald, to Radiochemical Centre Limited, The. Bile acids. 4,388,241, Cl. 260-397.100.

Monosolar, Inc.: *See—*
Basol, Bulent M.; Tseng, Eric S.; and Rod, Robert L., 4,388,483, Cl. 136-260.000.

Monsanto Company: *See—*
Purdum, William R., 4,388,102, Cl. 71-86.000.
Purdum, William R., 4,388,103, Cl. 71-86.000.
Robach, Michael C.; and Thompson, Quentin E., 4,388,321, Cl. 424-279.000.
Wise, Kenneth V., 4,388,248, Cl. 260-465.300.

Montedison S.p.A.: *See—*
Massardo, Pietro; Longoni, Angelo; and Picĉardi, Paolo, 4,388,323, Cl. 424-305.000.

Monti, Gisella: *See—*
Nannini, Giuliano; Perrone, Ettore; Severino, Dino; Meinardi, Giuseppe; Monti, Gisella; Bianchi, Alberta; Forgione, Angelo; and Confalonieri, Carlo, 4,388,314, Cl. 424-246.000.

Moore, James E.: *See—*
Doremus, Robert H.; Csanak, George; Kale, B. Michael; and Moore, James E., 4,388,413, Cl. 501-40.000.

Moore, Richard F., to Combustion Engineering, Inc. Removable seal plates. 4,387,651, Cl. 110-171.000.

Moore, William C., to International Telephone and Telegraph Corporation. Luminaire for roadway lighting. 4,388,680, Cl. 362-368.000.

Moorehead, Eric L., to Union Oil Company of California. Vanadium-phosphorus-tin-mordenite oxidation catalysts. 4,388,221, Cl. 252-435.000.

Moorehead, Eric L., to Union Oil Company of California. Molybdenum-exchanged crystalline aluminosilicate zeolite. 4,388,224, Cl. 252-455.00Z.

Morgan, Howard W. Float bag hold down for a filter. 4,388,191, Cl. 210-452.000.

Morgan, Ronnie G.: *See—*
de Figueiredo, Mario P.; Guevara, Balagtas F.; Long, James L.; Morgan, Ronnie G.; and York, Lawrence R., 4,388,340, Cl. 426-614.000.

Morhard, Alfred. Method for making helically wound surface-coated tubes, and apparatus for carrying out this method. 4,387,498, Cl. 29-527.200.

Morigaki, Masakazu; Yagihara, Morio; and Ozawa, Takashi, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,388,404, Cl. 430-548.000.

Moriguchi, Haruhiko; Kikuchi, Yoshiki; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Multi-color thermal transfer recorder. 4,388,628, Cl. 346-76.0PH.

Morihashi, Toshifumi: *See—*
Nakahara, Teiji; Morihashi, Toshifumi; Nakayama, Teruo; Nishimura, Shinichi; Kato, Hisaaki; Uematsu, Ikuzo; and Yoshioka, Takashi, 4,387,487, Cl. 19-249.000.

Morikawa, Tuneo: *See—*
Kato, Masaki; Morikawa, Tuneo; and Kabe, Kazuyuki, 4,387,755, Cl. 152-209.00R.

Morioka, Koitsu, to Yoshida Kogyo K.K. Method and apparatus for feeding conductive wire for anodizing process of slide fastener chain. 4,387,495, Cl. 29-408.000.

Morita, Tatsuo: *See—*
Ikeura, Kenji; and Morita, Tatsuo, 4,387,681, Cl. 123-325.000.

Moriya, Shigeru; Yoshida, Akio; Tanaka, Koichi; and Nishimura, Yuji, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho. Seatbelt system. 4,387,912, Cl. 280-804.000.

Morris, Robert D. Oil spill recovery means. 4,388,188, Cl. 210-242.300.

Morrison, Donald R. Troweling blade rotor assembly. 4,388,017, Cl. 404-112.000.

Morrison-Knudsen Company, Inc.: *See—*
Loire, Rene, 4,387,660, Cl. 114-230.000.

Morrow, James G., Sr.: *See—*
Beduhn, Daniel E.; and Morrow, James G., Sr., 4,387,813, Cl. 212-195.000.
Beduhn, Daniel E.; and Morrow, James G., Sr., 4,387,814, Cl. 212-195.000.

Morva, Tibor: *See—*
Roth, Adrian W.; and Morva, Tibor, 4,388,507, Cl. 200-148.00R.

Moseman, Merlin H., to InterNorth, Inc. Powder level measurement probe. 4,387,593, Cl. 73-290.00R.

Moss, Herbert H.: *See—*
Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayana N.; Wada, William T.; and Yancey, Irvin R., 4,388,022, Cl. 405-195.000.

Mostek Corporation: *See—*
Aswell, Cecil J.; and Chapman, Hugh N., 4,387,503, Cl. 29-575.000.
Lauriello, Alfred F.; and Swendrowski, Steven D., 4,387,946, Cl. 339-66.00M.
Sheppard, Douglas P., 4,388,702, Cl. 365-104.000.
Sheppard, Douglas P., 4,388,705, Cl. 365-210.000.

Motorola Inc.: *See—*
Bickley, Robert H.; and Hunt, Albert H., 4,388,597, Cl. 331-2.000.
Guzik, Andrzej T.; and Gill, Lynn T., 4,387,950, Cl. 339-136.00M.
Javeri, Rupin J., 4,387,684, Cl. 123-416.000.
Lamoth, Mihaly, 4,388,586, Cl. 323-283.000.
Lamoth, Mihaly; and Lehning, Heinz, 4,388,587, Cl. 323-283.000.
Skill, Richard T., 4,388,672, Cl. 361-412.000.

Mott, William E.; and Shakib, Iraj D., to International Business Machines Corporation. Font module for matrix printer. 4,388,010, Cl. 400-692.000.

Moyer, Wendell W.: *See—*
Toy, Lester T.; Moyer, Wendell W.; Lyons, Bernard J.; and Horsma, David A., 4,388,607, Cl. 338-22.0SD.

Mueller, Franz-Josef: *See—*
Hochstein, Waldheim; Kaibel, Gerd; Mueller, Franz-Josef; and Hartmann, Horst, 4,388,154, Cl. 203-35.000.

Mueller, Gerhard; and Puritscher, Ernst, to Siemens Aktiengesellschaft. Depositing device for a pre-folded continuous web of paper in a paper stacker. 4,388,072, Cl. 493-410.000.

Mueller, Gerhard H., to Siemens Aktiengesellschaft. Device for removing water from the solvent recovery system of a fast printer. 4,387,638, Cl. 101-1.000.

Mueller, Otto. Inter-axle transmission apparatus. 4,387,795, Cl. 192-60.000.

Mukai, Hideo: *See—*
Ueno, Tsuyoshi; Mukai, Hideo; Nakatomi, Yoshitsugu; Saito, Hiroshi; Kinoshita, Koichi; and Konuma, Takaaki, 4,387,980, Cl. 355-3.0CH.

Mukunoki, Yasuo; Nakayama, Yasuhiro; and Yokoyama, Shigeki, to Fuji Photo Film Co., Ltd. Photographic light-sensitive material. 4,388,402, Cl. 430-527.000.

Mull, John D. Device for use in the collection and transportation of medical specimens. 4,387,725, Cl. 128-759.000.

Muller, Alfred: *See—*
Mohl, Helmut; Schab, Manfred; Sauer, Joseph; and Muller, Alfred, 4,387,608, Cl. 74-866.000.

Muller, Beat: *See—*
Kristinsson, Haukur; Muller, Beat; and Pachlatko, Johannes P., 4,388,464, Cl. 548-136.000.

Muller, Erhard: *See—*
Knackstedt, Hans-Gunther; Muller, Erhard; Christ, Richard; and Kroll, Hartmut, 4,388,268, Cl. 376-272.000.

Multistress, Inc.: *See—*
Keep, Henry, Jr.; Santagata, Daniel A.; Harris, Matthew E.; and Welsh, William H., Jr., 4,388,523, Cl. 219-541.000.

Mulzet, Alfred P.: *See—*
Kellogg, Robert M.; and Mulzet, Alfred P., 4,387,848, Cl. 494-81.000.

Mund, Konrad: *See—*
Richter, Gerhard; Weidlich, Erhard; and Mund, Konrad, 4,388,163, Cl. 204-101.000.

Munteanu, Marina A.: *See—*
Van Loveren, Augustinus G.; Munteanu, Marina A.; and Seaber, Geoffrey B., 4,387,849, Cl. 239-6.000.

Murai, Wasaburo; and Horikawa, Masao, to Terasaki Denki Sangyo Kabushiki Kaisha. Circuit interrupter. 4,388,506, Cl. 200-144.00R.

Murakami, Shinji, to Eiwa Chemical Industry Co., Ltd. Unsaturated polyester resin foams and method of preparation. 4,388,419, Cl. 521-103.000.

Murata, Eiji: *See—*
Aoyama, Shunichi; and Murata, Eiji, 4,387,673, Cl. 123-90.160.

Murata Kikai Kabushiki Kaisha: *See—*
Nakahara, Teiji; Morihashi, Toshifumi; Nakayama, Teruo; Nishimura, Shinichi; Kato, Hisaaki; Uematsu, Ikuzo; and Yoshioka, Takashi, 4,387,487, Cl. 19-249.000.

Murata Manufactoring Co., Ltd.: *See—*
Sakabe, Yukio; and Hamaji, Yukio, 4,388,416, Cl. 501-136.000.
Wakino, Kikuo; Kadota, Michio; and Sato, Tomoharu, 4,388,600, Cl. 333-151.000.

Murata, Shigeki: *See—*
Kajino, Jirou; Minabe, Hitoshi; and Murata, Shigeki, 4,388,658, Cl. 360-85.000.

Murayama, Hiroshi, to Nippon Steel Corporation. Method for the manufacture of steel suitable for electric-welded tubular products having superior resistance to sour gas. 4,388,123, Cl. 148-12.00F.

Murch, Charles J., Jr. Space heating stove. 4,387,699, Cl. 126-61.000.

Murphy, Daniel L.: *See—*
Kotok, Alan; Murphy, Daniel L.; and Stewart, Robert E., 4,388,685, Cl. 364-200.000.

Murphy, Harold K.: *See—*
Depew, Dean A.; and Murphy, Harold K., 4,387,636, Cl. 100-232.000.

Murphy, Jack P., deceased (by Murphy, James P., administrator); and Kimmell, Steven D., to Mattel, Inc. Solar tracking system. 4,387,702, Cl. 126-424.000.

Murphy, James P., administrator: *See—*
Murphy, Jack P., deceased; and Kimmell, Steven D., 4,387,702, Cl. 126-424.000.

Murphy, Thomas J.: *See—*
Dimond, Harold L.; and Murphy, Thomas J., 4,388,204, Cl. 252-98.000.

Murphy, William K.: *See—*
Rourke, John L.; Azar, Jack C.; and Murphy, William K., 4,388,274, Cl. 422-177.000.

Murray, Benjamin D.: *See—*
Stohler, Robert A.; and Murray, Benjamin D., 4,388,032, Cl. 414-95.000.

Murray, Edward D.: *See—*
Maurice, Terrence J.; Murray, Edward D.; and Agnes, Jennifer M., 4,388,333, Cl. 426-104.000.

Murray, James G., to Mobil Oil Corporation. Polyester resin blend. 4,388,440, Cl. 525-49.000.

Murrell's Welding Works, Inc.: *See—*
Brown, Billy G., 4,387,669, Cl. 122-235.00A.

Muschelknautz, Edgar: *See—*
Bueb, Michael; Bruck, Robert; Muschelknautz, Edgar; Paulini, Dieter; and Feltgen, Karlheinz, 4,387,476, Cl. 8-151.200.

Musgrave, Daniel D. Magazine engagement device. 4,387,525, Cl. 42-50.000.

Muthard, David A.: *See—*
Christensen, Burton G.; DiNinno, Frank P.; Muthard, David A.; and Ratcliffe, Ronald W., 4,388,310, Cl. 424-200.000.

Myers, Lawrence R., to Bendix Corporation, The. Tandem brake booster. 4,387,626, Cl. 91-376.00R.

Naarden International N.V.: *See—*
Wobben, Hendrik J.; and Tan, Hian-Bie, 4,388,330, Cl. 426-51.000.

Naffziger, David H., to Dow Chemical Company, The. Stable tocicant compositions of chlorpyrifos. 4,388,297, Cl. 424-78.000.

Nagai, Kunihiko: *See—*
Komatsu, Shigeru; Mizukami, Kazushi; Tachiuchi, Tsuguji; Nagai, Kunihiko; and Koyama, Takuo, 4,388,707, Cl. 365-230.000.

Nagano, Riichiro; and Kaneshige, Ryosuke, to Mitsui Petrochemical Industries, Ltd. Lubricating oil composition and process for preparation thereof. 4,388,202, Cl. 252-52.00A.

Nagano, Shuichi: *See—*
Sakamoto, Masakatsu; Uchida, Kenji; and Nagano, Shuichi, 4,387,595, Cl. 73-322.500.

Nagase, Masaomi: *See—*
Miyagi, Hideo; and Nagase, Masaomi, 4,387,682, Cl. 123-339.000.

Nagira, Norichika; Ikegami, Hiroshi; Baba, Hiroji; and Yahano, Kanji, to Nippon Steel Corporation. Apparatus for surface treatment of a steel strip. 4,388,169, Cl. 204-207.000.

Nagy, Frank A.: *See—*
McCarty, William H.; Guarino, John P.; and Nagy, Frank A., 4,388,137, Cl. 156-275.500.

Naiman, Michael I.; and Buriks, Rudolf S., to Petrolite Corporation. Olefin-acrylonitrile copolymers and uses thereof. 4,388,452, Cl. 526-342.000.

Naito, Masayoshi: *See—*
Watanabe, Atsuo; Naito, Masayoshi; Yatsuo, Tsutomu; and Okamura, Masahiro, 4,388,635, Cl. 357-38.000.

Nakagawa, Satoshi: *See—*
Kurita, Yukio; and Nakagawa, Satoshi, 4,387,546, Cl. 52-731.000.

Nakahara, Teiji; Morihashi, Toshifumi; Nakayama, Teruo; Nishimura, Shinichi; Kato, Hisaaki; Uematsu, Ikuzo; and Yoshioka, Takashi, to Murata Kikai Kabushiki Kaisha. High draft apparatus in spinning machine. 4,387,487, Cl. 19-249.000.

Nakaie, Tamio. Binding band cutting apparatus. 4,387,493, Cl. 29-56.500.

Nakanishi, Hiroshi: *See—*
Nakanishi, Yoshitaka; Nakanishi, Hiroshi; and Nakanishi, Takashi, 4,388,617, Cl. 340-594.000.

Nakanishi, Takashi: *See—*
Nakanishi, Yoshitaka; Nakanishi, Hiroshi; and Nakanishi, Takashi, 4,388,617, Cl. 340-594.000.

Nakanishi, Toshio: *See—*
Hirao, Shozo; Saihara, Yasuhiro; Nakanishi, Toshio; Ihara, Ichiro; and Sano, Yoshio, 4,388,133, Cl. 156-245.000.

Nakanishi, Yoshitaka; Nakanishi, Hiroshi; and Nakanishi, Takashi. Fire alarm device having thermal sensitivity enhancement. 4,388,617, Cl. 340-594.000.

Nakano, Toshio: *See—*
Koike, Norio; Sasano, Akira; Taniguchi, Yoshio; Nakano, Toshio; Aoki, Masakazu; and Takemoto, Iwao, 4,387,987, Cl. 355-133.000.

Nakashima, Hiroyuki; Sumida, Morihiro; and Goto, Hiroki, to Nippon Steel Corporation. Steelmaking process with separate refining steps. 4,388,112, Cl. 75-51.000.

Nakatomi, Yoshitsugu: *See—*
Ueno, Tsuyoshi; Mukai, Hideo; Nakatomi, Yoshitsugu; Saito, Hiroshi; Kinoshita, Koichi; and Konuma, Takaaki, 4,387,980, Cl. 355-3.0CH.

Nakatsuka, Hisayoshi, to Namiki Precision Jewel Co., Ltd. Shielded line. 4,388,486, Cl. 174-34.000.

Nakayama, Kenji, to Nippon Electric Co., Ltd. Non-recursive digital filter. 4,388,693, Cl. 364-724.000.

Nakayama, Teruo: *See—*
Nakahara, Teiji; Morihashi, Toshifumi; Nakayama, Teruo; Nishimura, Shinichi; Kato, Hisaaki; Uematsu, Ikuzo; and Yoshioka, Takashi, 4,387,487, Cl. 19-249.000.

Nakayama, Yasuhiro: *See—*
Mukunoki, Yasuo; Nakayama, Yasuhiro; and Yokoyama, Shigeki, 4,388,402, Cl. 430-527.000.

Nakazato, Yasuaki; Miyazaki, Yasushi; Osuga, Makoto; and Kodaira, Masao, to Shin-Etsu Chemical Co., Ltd. Apparatus for wet treatment of wafer materials. 4,388,140, Cl. 156-345.000.

Nalco Chemical Company: *See—*
Yahrmarkt, Richard A.; and Stanbrough, Michael J., 4,388,148, Cl. 162-26.000.

Namiki Precision Jewel Co., Ltd.: *See—*
Nakatsuka, Hisayoshi, 4,388,486, Cl. 174-34.000.

Namiki, Tomizo: *See—*
Shinozaki, Fumiaki; Namiki, Tomizo; and Ikeda, Tomoaki, 4,388,399, Cl. 430-271.000.

Nannini, Giuliano; Perrone, Ettore; Severino, Dino; Meinardi, Giuseppe; Monti, Gisella; Bianchi, Alberta; Forgione, Angelo; and Confalonieri, Carlo, to Farmitalia Carlo Erba S.p.A. Heteromonocyclic and heterobicyclic derivatives of unsaturated 7-acylamido-3-cephem-4-carboxylic acid. 4,388,314, Cl. 424-246.000.

Nash, Donald H.; and Yen, Duen H., to Bell Telephone Laboratories, Incorporated. Noise detector and data signal receiver for a frequency modulation system. 4,388,730, Cl. 455-208.000.

Nashua Corporation: *See—*
Cormier, Raymond G., 4,387,981, Cl. 355-3.0SH.

Natarajan, Cuddalore P.; and Meder, Siegfried R., to American Schack Company, Inc. Radiation shield and method of use. 4,388,066, Cl. 432-1.000.

Nathan, Roger H., to Advanced Products Beer-Sheva Ltd. Constant force generator mechanism and adjustable seat constructed therewith. 4,387,876, Cl. 248-571.000.

National Machinery Company, The: *See—*
Dom, Harry A., 4,387,502, Cl. 29-568.000.

National Patent Development Co.: *See—*
Chen, Richard, 4,388,436, Cl. 524-553.000.

National Patent Development Corporation: *See—*
Kuzma, Petr; and Odorisio, Giovanina, 4,388,428, Cl. 523-106.000.

National Semiconductor Corporation: *See—*
Balakrishnan, Ramanatha V., 4,388,699, Cl. 365-8.000.

Naumann, Klaus: *See—*
Fuchs, Rainer; Naumann, Klaus; Hammann, Ingeborg; and Stendel, Wilhelm, 4,388,322, Cl. 424-304.000.

Nautilus Sports/Medical Industries, Inc.: *See—*
Baldwin, Dan D., 4,387,893, Cl. 272-118.000.

Nazerian, Keyvan; and Fadly, Aly M., to United States of America, Agriculture. Propagation of hemorrhagic enteritis virus in a turkey cell line and vaccine produced. 4,388,298, Cl. 424-89.000.

Necas, Donald E.; and Khan, Aman U., to Whirlpool Corporation. Food processor. 4,387,860, Cl. 241-282.100.

Neff, Paul H.: *See—*
Brownlee, Robert R.; Hughes, Howard C., Jr.; Neff, Paul H.; and Tyers, G. Frank O., 4,387,717, Cl. 128-419.0PG.

Nekhamin, Sergei M.: *See—*
Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryazantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko, Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G., 4,388,108, Cl. 75-10.00R.

Nelson, Erik K.: *See—*
Magin, Irving J.; and Nelson, Erik K., 4,387,985, Cl. 355-71.000.

Nelson Industries, Inc.: *See—*
Khosropour, Mostafa M., 4,388,091, Cl. 55-337.000.

Nelson, Philip A. Bounceless high pressure drop cascade impactor and a method for determining particle size distribution of an aerosol. 4,387,603, Cl. 73-863.220.

Nemoto, Kiyoshi: *See—*
Horiuchi, Michimasa; Ibamoto, Masahiko; and Nemoto, Kiyoshi, 4,388,573, Cl. 318-376.000.

NeoMed Corporation: *See—*
Ecanow, Charles S., 4,388,302, Cl. 424-150.000.

Neri, Paolo: *See—*
Cocola, Francesco; Tarli, Paolo; and Neri, Paolo, 4,388,295, Cl. 424-1.000.

Neves, Fernando: *See—*
Aichelmann, Frederick J., Jr.; and Neves, Fernando, 4,388,701, Cl. 365-77.000.

Neville, Dee J.: *See—*
Sarian, Grigor; and Neville, Dee J., 4,388,505, Cl. 200-83.00C.

New Mexico State University Foundation, Inc.: *See—*
Zartman, David L., 4,387,724, Cl. 128-736.000.

Newcomb, Kermit T., to Burlington Industries, Inc. Thread severing mechanism associated with shuttleless loom. 4,387,744, Cl. 139-429.000.

Ney, Ernst: *See—*
Zeidler, Guenter; Ney, Ernst; Lange, Gerhard; and Saller, Helmut, 4,388,485, Cl. 174-23.00C.

Nibby, Chester M., Jr.; and Johnson, Robert B., to Honeywell Information Systems Inc. Apparatus for deferring error detection of multibyte parity encoded data received from a plurality of input/output data sources. 4,388,684, Cl. 364-200.000.

Nicholson, Terence P. Gaskets. 4,387,904, Cl. 277-235.00B.

Nicolin, Curt, to Eminentverktyg A.B. Tool or workpiece chucking device. 4,387,906, Cl. 279-2.00A.

Nielsen, Niels J. O. Salt and/or gravel spreader. 4,387,855, Cl. 239-659.000.

Nikitushkin, Nikolai A.: *See—*
Grinberg, Efim N.; Braginsky, Yakov I.; Zhislin, Yakov M.; Lavrov, Vladimir V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; Filatov, Alexandr A.; Yaroshenko, Jury F.; Torban, Samuil S.; Kovalev, Viktor M.; Urusov, Georgy I.; Rozanova, Alla V.; Radakova, Tatyana N.; Krivosheina, Larisa I.; Bykov, Vladimir P.; Bykova, Vladimira M.; and Gultsev, Igor V., 4,387,485, Cl. 17-48.000.

Nimerick, Kenneth H.; and Copeland, Claude T., to Dow Chemical Company, The. Composition and method for melting frozen aqueous solutions. 4,388,203, Cl. 252-70.000.

Nippon Electric Co., Ltd.: *See—*
Ikeda, Hiroaki, 4,388,538, Cl. 307-482.000.
Kumagai, Ikuo; Koyanagi, Yukiaki; and Hidaka, Hiroshi, 4,388,009, Cl. 400-679.000.
Nakayama, Kenji, 4,388,693, Cl. 364-724.000.
Yamamoto, Setsuo; and Ushiyama, Yasuichi, 4,388,641, Cl. 358-51.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Kato, Hirokazu; and Endo, Akinori, 4,387,617, Cl. 84-1.010.
Okamoto, Eisaku; and Mizuno, Kotaro, 4,387,620, Cl. 84-1.030.

Nippon Kokan Kabushiki Kaisha: *See—*
Akita, Shinji; and Hatanaka, Masayuki, 4,387,584, Cl. 72-100.000.

Nippon Oil Co., Ltd.: *See—*
Imai, Hirosuke; Matsuno, Mitsuo; and Kudoh, Michio, 4,388,480, Cl. 585-516.000.

Nippon Piston Ring Co., Ltd.: *See—*
Sakamaki, Hiroshi, 4,388,040, Cl. 415-174.000.

Nippon Soken, Inc.: *See—*
Iwamoto, Kenji; and Kuroyanagi, Makoto, 4,387,570, Cl. 60-600.000.
Kuno, Akira; Matsumoto, Muneaki; and Numata, Koji, 4,388,666, Cl. 361-149.000.

Nippon Steel Corporation: *See—*
Murayama, Hiroshi, 4,388,123, Cl. 148-12.00F.
Nagira, Norichika; Ikegami, Hiroshi; Baba, Hiroji; and Yahano, Kanji, 4,388,169, Cl. 204-207.000.
Nakashima, Hiroyuki; Sumida, Morihiro; and Goto, Hiroki, 4,388,112, Cl. 75-51.000.
Seki, Masahiko; Wada, Koji; and Io, Yukito, 4,387,884, Cl. 266-246.000.

Takao, Kengo; Ohmachi, Mineo; Kihara, Hisatsugu; Toki, Kenshiro; Tomita, Yukio; and Mizota, Toshihiro, 4,387,562, Cl. 60-39.150.
Takemura, Yozo; Kobayashi, Isao; Akita, Yasuhiro; and Kato, Kaoru, 4,388,113, Cl. 75-51.000.
Takeuchi, Osamu; Hasegawa, Hiroshi; Izumi, Susumu; and Otsuki, Naoki, 4,388,068, Cl. 432-122.000.

Nippon Telegraph & Telephone Public Corporation: *See—*
Kimura, Takao; and Yamanishi, Toru, 4,388,093, Cl. 65-3.110.
Takahashi, Shiro; Sanada, Kazuo; Inada, Koichi; and Fukuda, Osamu, 4,388,098, Cl. 65-157.000.

Nippondenso Co., Ltd.: *See—*
Mizuno, Tooru; and Hagisato, Yasuo, 4,388,558, Cl. 315-77.000.

Nishibayashi, Hatsumi; Amagai, Yoshimi; Hikake, Norio; Kouchi, Toshihiro; and Aizawa, Tatsuo, to Mita Industrial Company Limited. Electrophotographic process of developing and transfering images uses fluorine containing offset preventing agent in developer. 4,388,396, Cl. 430-126.000.

Nishikawa, Masaji: *See—*
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,387,986, Cl. 355-75.000.

Nishikawa, Osamu; Ishimaru, Kenji; Takeshita, Toru; and Tsuruta, Hideki, to Teijin Limited. Process for the preparation of active-type vitamin D_3 compounds. 4,388,243, Cl. 260-397.200.

Nishikawa, Syuzi; Matsubara, Toru; Iida, Kazuyoshi; and Tahara, Seiichiro, to Toyo Ink Manufacturing Co., Ltd. Heat-set type printing inks. 4,388,427, Cl. 523-500.000.

Nishikubo, Yasuhiko, to Citizen Watch Co., Ltd. Electronic timepiece. 4,388,001, Cl. 368-87.000.

Nishimura, Shinichi: *See—*
Nakahara, Teiji; Morihashi, Toshifumi; Nakayama, Teruo; Nishimura, Shinichi; Kato, Hisaaki; Uematsu, Ikuzo; and Yoshioka, Takashi, 4,387,487, Cl. 19-249.000.

Nishimura, Yuji: *See—*
Moriya, Shigeru; Yoshida, Akio; Tanaka, Koichi; and Nishimura, Yuji, 4,387,912, Cl. 280-804.000.

Nishioka, Kimihiko; and Yamasita, Nobuo, to Olympus Optical Co., Ltd. Single-lens reflex optical system for endoscopes. 4,387,969, Cl. 350-462.000.

Nissan Motor Co., Ltd.: *See—*
Aoyama, Shunichi; and Murata, Eiji, 4,387,673, Cl. 123-90.160.
Aoyama, Shunichi; and Murata, Eiji, 4,387,673, Cl. 123-90.160.
Ikeura, Kenji; and Morita, Tatsuo, 4,387,681, Cl. 123-325.000.
Katsumata, Masaaki; and Yoneda, Kenji, 4,387,571, Cl. 60-602.000.
Sakurada, Kenichi; Yoshida, Hiroyuki; and Ozaki, Tadahiko, 4,387,862, Cl. 242-107.600.
Yoshiba, Yasutaka; and Shiobara, Masaji, 4,387,694, Cl. 123-571.000.

Nisshin Oil Mills, Limited: *See—*
Seto, Akira; and Sakita, Takashi, 4,388,341, Cl. 426-656.000.

Noe, Oskar, to BWG Bergwerk- Und Walzwerk- Maschinenbau GmbH. Walking-beam conveyor. 4,387,800, Cl. 198-750.000.

Nola, Frank J., to United States of America, National Aeronautics and Space Administration. Electrical power generating system. 4,388,585, Cl. 322-47.000.

Nomura, Isshi: *See—*
Yogo, Kenji; and Nomura, Isshi, 4,387,696, Cl. 123-585.000.

Norden Laboratories, Inc.: *See—*
Kucera, Carrell J., 4,388,299, Cl. 424-92.000.

Noritake, Co., Limited: *See—*
Tetsuro, Oshimi, 4,387,538, Cl. 51-35.000.

North, Max R.: *See—*
Falendysz, Eugene L., Sr.; Brumbaugh, Eldon M.; and North, Max R., 4,388,052, Cl. 417-540.000.

Northern Telecom Limited: *See—*
Aminetzah, Yehuda J., 4,388,643, Cl. 358-123.000.

Northwestern University: *See—*
Gesteland, Robert C., 4,388,272, Cl. 422-102.000.

Numata, Koji: *See—*
Kuno, Akira; Matsumoto, Muneaki; and Numata, Koji, 4,388,666, Cl. 361-149.000.

Nuspl, Steven P., to Babcock & Wilcox Company, The. Velocity pressure averaging system. 4,388,691, Cl. 364-510.000.

Nyeki, Olga; Kisfaludy, Lajos; Karpati, Egon; and Szporny, Laszlo, to Richter Gedeon Vegyeszeti Gyar RT. Angiotensin-II analogues with antagonizing effects, containing an ester group in position 8, and a process for the preparation thereof. 4,388,304, Cl. 424-177.000.

Obata, Kazuo; Yamaguchi, Yutaka; Yamaguchi, Kojirou; and Sato, Akio, to Bridgestone Tire Company Limited. Pneumatic radial tire. 4,387,759, Cl. 152-353.00R.

Oblak, Pavel: *See—*
Plevnik, Stanislav; Vrtacnik, Peter; Malezic, Matija; Lukezic, Marino; Stanic, Uros; and Oblák, Pavel, 4,387,719, Cl. 128-421.000.

Obokata, Takeshi: *See—*
Shirasaki, Masataka; and Obokata, Takeshi, 4,387,953, Cl. 350-96.140.

O'Brien, John P. Slidable golf practice device. 4,387,896, Cl. 273-195.00A.

Occidental Chemical Agricultural Products, Inc.: *See—*
Lowder, Robert L., 4,388,101, Cl. 71-29.000.

Occidental Chemical Corporation: *See—*
Ilardo, Charles S.; and Scharf, Daniel J., 4,388,429, Cl. 524-94.000.

OCR Marketing Associates, Inc.: *See—*
Hayman, Richard W.; Goldstein, Burton; Lynn, Joe J.; Brown, Robert J.; and Bugash, Robert S., 4,388,689, Cl. 364-401.000.

Odorisio, Giovanina: *See—*
Kuzma, Petr; and Odorisio, Giovanina, 4,388,428, Cl. 523-106.000.

Ogawa, Akira: *See—*
Sugiyama, Masatoshi; Ogawa, Akira; and Imai, Shinichi, 4,388,115, Cl. 106-22.000.

Ogawa, Kazufumi; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, to Matsushita Electric Industrial Co., Ltd. Solid-state color-image sensor and process for fabricating the same. 4,388,128, Cl. 156-64.000.

Ogawa, Masaki; and Ikegami, Mikihiko, to Bridgestone Tire Company Limited. Pneumatic tires. 4,387,756, Cl. 152-209.00R.

Ogawa, Masaki; and Ikegami, Mikihiko, to Bridgestone Tire Company Limited. Pneumatic tires. 4,387,757, Cl. 152-209.00R.

Ogawa, Ryota: *See—*
Ohishi, Michiro; Ogawa, Ryota; and Arai, Yasunori, 4,387,979, Cl. 355-3.00R.

Ogden Industries Pty. Ltd.: *See—*
Dunphy, Gerald F.; and Esser, Hans J., 4,387,918, Cl. 292-224.000.

Ogura, Osamu: *See—*
Katagiri, Masayoshi; and Ogura, Osamu, 4,387,625, Cl. 91-369.00B.

Oguri, Yasuo; Awata, Mitsuru; and Abe, Mitsunobu, to Mitsubishi Chemical Industries Ltd. Process for preparing calcium silicate shaped product. 4,388,257, Cl. 264-82.000.

Ohio State University Research Foundation, The: *See—*
Shore, Sheldon G.; and Toft, Mark A., 4,388,284, Cl. 423-295.000.

Ohishi, Michiro; Ogawa, Ryota; and Arai, Yasunori, to Asahi Kogaku Kogyo Kabushiki Kaisha. Copying optical system. 4,387,979, Cl. 355-3.00R.

Ohmachi, Mineo: *See—*
Takao, Kengo; Ohmachi, Mineo; Kihara, Hisatsugu; Toki, Kenshiro; Tomita, Yukio; and Mizota, Toshihiro, 4,387,562, Cl. 60-39.150.

Ohmori, Takashi: *See—*
Moriguchi, Haruhiko; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,388,628, Cl. 346-76.0PH.

Ohori, Hiroshi D. Adjustable support. 4,387,875, Cl. 248-480.000.

Ohshima, Kazushi: *See—*
Kudoh, Akihide; Kawamata, Motoo; Ohshima, Kazushi; Kotani, Makoto; Tsuda, Takeshi; and Aoki, Fukuichi, 4,388,478, Cl. 568-804.000.

Ohta, Yoshihiro; and Ichikawa, Akira, to Hitachi, Ltd. Speech pitch period extraction apparatus. 4,388,491, Cl. 179-1.0SC.

Oizumi, Masayuki; Abe, Masaharu; and Fushiki, Yasuo, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Production of bubble-free electrical laminates. 4,388,129, Cl. 156-73.100.

Okabe, Yoshio: *See—*
Hori, Takanobu; Arai, Fuminao; Kodama, Hisashi; and Okabe, Yoshio, 4,387,675, Cl. 123-90.580.

Okamoto, Eisaku; and Mizuno, Kotaro, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic performing apparatus for musical performance data with main routine data and subroutine data. 4,387,620, Cl. 84-1.030.

Okamoto, Shozo, to Yonezawa Toys Co., Ltd. Toy car and roadbed unit. 4,388,036, Cl. 414-537.000.

Okamura, Masahiro: *See—*
Watanabe, Atsuo; Naito, Masayoshi; Yatsuo, Tsutomu; and Okamura, Masahiro, 4,388,635, Cl. 357-38.000.

Okamura, Shozo: *See—*
Okane, Koji; Okamura, Shozo; Sueyasu, Masanobu; Masuda, Seiichi; Tanaka, Tsutomu; and Tanaka, Koichi, 4,388,084, Cl. 48-197.00R.

Okane, Koji; Okamura, Shozo; Sueyasu, Masanobu; Masuda, Seiichi; Tanaka, Tsutomu; and Tanaka, Koichi, to Sumitomo Metal Industries, Ltd. Process for gasification of solid carbonaceous material. 4,388,084, Cl. 48-197.00R.

Okawara, Makoto: *See—*
Tsubuko, Kazuo; Hashimoto, Junichiro; Kuramoto, Shinichi; and Okawara, Makoto, 4,388,395, Cl. 430-114.000.

Okutu, Toshimitu: *See—*
Miyoshi, Takahito; Okutu, Toshimitu; Takimoto, Masaaki; Saida, Takashi; Akashi, Goro; and Fujiyama, Masaaki, 4,388,360, Cl. 428-172.000.

Olmann, Jurgen: *See—*
Schone, Peter; Olmann, Jurgen; and Lamparter, Helmut, 4,388,494, Cl. 179-1.00G.

Olofsson, Mats: *See—*
Buhler, Marcel; and Olofsson, Mats, 4,388,329, Cl. 426-40.000.

Olschewski, Armin: *See—*
Walter, Lothar; Olschewski, Armin; Kispert, Klaus; and Meining, Hans, 4,387,939, Cl. 308-217.000.

Olsen, Richard S.: *See—*
Gruzensky, William G.; and Olsen, Richard S., 4,388,280, Cl. 423-131.000.

Olson, Gary L.: *See—*
Berger, Leo; and Olson, Gary L., 4,388,467, Cl. 548-439.000.

Olympia Werke AG: *See—*
Wehking, Hans; Eichler, Detlef; and Klingenberg, Wolfgang, 4,388,005, Cl. 400-144.200.

Olympus Optical Company Ltd.: *See—*
Koshiishi, Kiyozo; Ono, Noriaki; Kamiyama, Takashi; and Kato, Yoshimi, 4,388,165, Cl. 204-418.000.
Nishioka, Kimihiko; and Yamasita, Nobuo, 4,387,969, Cl. 350-462.000.
Ono, Noriaki; and Kamiyama, Takashi, 4,388,167, Cl. 204-420.000.
Osanai, Akira, 4,388,660, Cl. 360-110.000.
Sakurai, Yoshifumi, 4,388,661, Cl. 360-112.000.

Sato, Masaaki, 4,388,492, Cl. 179-1.0GA.
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,387,986, Cl. 355-75.000.

Omark Industries, Inc.: *See—*
Inman, Darrel F., 4,387,492, Cl. 29-1.230.
Reynolds, Michael J., 4,387,753, Cl. 144-193.00D.

Omnichem S.A.: *See—*
Trouet, Andre B. L.; Hannart, Jean A. A. J.; and Rao, Kandukuri S. B., 4,388,305, Cl. 424-177.000.

Omron Tateisi Electronics Co.: *See—*
Fukuyama, Toshifumi; and Onji, Norio, 4,388,527, Cl. 250-214.00R.

Ona, Isao, to Toray Silicone Company, Ltd. Amino-functional silicone emulsions. 4,388,437, Cl. 524-588.000.

Onji, Norio: *See—*
Fukuyama, Toshifumi; and Onji, Norio, 4,388,527, Cl. 250-214.00R.

Ono, Keiichi; Kawakami, Hajime; and Katsube, Junki, to Sumitomo Chemical Company, Limited. Diphenylalkanoether and diphenylalkanone oximeether derivatives. 4,388,469, Cl. 549-59.000.

Ono, Noriaki; and Kamiyama, Takashi, to Olympus Optical Company Limited. Ion selective electrode. 4,388,167, Cl. 204-420.000.

Ono, Noriaki: *See—*
Koshiishi, Kiyozo; Ono, Noriaki; Kamiyama, Takashi; and Kato, Yoshimi, 4,388,165, Cl. 204-418.000.

Onodera, Kenji: *See—*
Mikoshiba, Hitoshi; Fujimori, Kazuyoshi; Onodera, Kenji; and Takeuchi, Shin, 4,387,643, Cl. 101-110.000.

Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, to BASF Aktiengesellschaft. Cyclic amidine based corrosion inhibitors which inhibit corrosion caused by CO_2 and H_2S. 4,388,213, Cl. 252-392.000.

Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, to BASF Aktiengesellschaft. Imidazoline based corrosion inhibitors which inhibit corrosion caused by CO_2 and H_2S. 4,388,214, Cl. 252-392.000.

Oras OY: *See—*
Saarisalo, Risto A.; and Koppanen, Jorma T., 4,387,880, Cl. 251-285.000.

Oreco III, Inc.: *See—*
Evans, Orde R., 4,388,025, Cl. 405-212.000.

Orlowski, Jan A., to Blendax-Werke R. Schneider GmbH & Co. Dental restorative material. 4,388,069, Cl. 433-228.000.

Orlowski, Ronald C.; and Seyler, Jay K., to Armour Pharmaceutical Company. Synthesis of peptides. 4,388,235, Cl. 260-112.50T.

Orzalesi, Giovanni, to Societa' Italo-Britannica L. Manetti-H. Roberts & C. L-Arginine D,L-pyroglutamate as a pharmaceutical agent having an activity at the neuro-endocrinal level. 4,388,325, Cl. 424-319.000.

Osaki, Mikio; Tabuchi, Toshiaki; and Shimazawa, Yoichi, to Sharp Kabushiki Kaisha. Ink liquid supply system which compensates for temperature variation. 4,388,630, Cl. 346-140.00R.

Osanai, Akira, to Olympus Optical Co. Ltd. Tape recorder employing miniature tape cassette and capable of automatic reversible operation. 4,388,660, Cl. 360-110.000.

Osipov, Nikolai A.: *See—*
Shipaev, Gennady A.; Seliverstov, Vyacheslav V.; Osipov, Nikolai A.; Prolygin, Anatoly P.; Mashikhin, Anatoly D.; Askinazi, A.; Prolygin, Anatoly P.; Mashikhin, Anatoly D.; Askinazi, Mikhail P.; Andreev, Jury M.; and Kagan, Samuil I., 4,388,569, Cl. 318-87.000.

Oskar Woertz, Inhaber Hans Woertz: *See—*
Putz, Johnny, 4,388,665, Cl. 361-119.000.

Osnabrucker Metallwerke J. Kampschulte GmbH & Co. KG: *See—*
Rossler, Kurt, 4,387,858, Cl. 241-152.00A.

Osrodek Badaw Cze-Rozwojowy Kauczukow I Tworzyw Winylowych: *See—*
Knypl, Maria; Knypl, Eugeniusz; Starzak, Marian; Mieczkowska, Ewa; Pawlus, Urszula; Palubicki, Romuald; Ficek, Mieczyslaw; and Goldynia, Jozef, 4,388,438, Cl. 524-833.000.

Osuga, Makoto: *See—*
Nakazato, Yasuaki; Miyazaki, Yasushi; Osuga, Makoto; and Kodaira, Masao, 4,388,140, Cl. 156-345.000.

Otani, Junji; and Ikenoya, Yasuo, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas cleaning system for multi-cylinder internal combustion engine. 4,387,565, Cl. 60-293.000.

Otsuki, Naoki: *See—*
Takeuchi, Osamu; Hasegawa, Hiroshi; Izumi, Susumu; and Otsuki, Naoki, 4,388,068, Cl. 432-122.000.

Ott, Norman; and McKeachern, Jeanette O. Electric oil refiner. 4,388,185, Cl. 210-136.000.

Otteson, Kenneth M.: *See—*
Pappo, Raphael; and Otteson, Kenneth M., 4,388,462, Cl. 546-14.000.

Otting, Billy J.; and Clifford, Alfred, to Otting Machine Company, Incorporated. Pattern dyeing of textile materials such as carpet. 4,387,475, Cl. 8-151.000.

Otting Machine Company, Incorporated: *See—*
Otting, Billy J.; and Clifford, Alfred, 4,387,475, Cl. 8-151.000.

Ou Lohja Ab: *See—*
Suntola, Tuomo; and Antson, Jorma O., 4,388,554, Cl. 313-505.000.

Outboard Marine Corporation: *See—*
Krueger, William R., 4,388,583, Cl. 320-46.000.

Outokumpu Oy: *See—*
Talonen, Timo T.; and Makinen, Tuula S. M., 4,388,111, Cl. 75-26.000.

Ovalstrapping, Inc.: *See—*
Pasic, James A., 4,387,631, Cl. 100-32.000.

Owens-Corning Fiberglas Corporation: *See—*
Hall, Herbert L., Jr.; and Sheinkop, Isac M., 4,388,721, Cl. 373-31.000.

Owens-Illinois, Inc.: *See—*
Weckman, Richard L., 4,387,816, Cl. 215-1.00C.

Ozaki, Tadahiko: *See—*
Sakurada, Kenichi; Yoshida, Hiroyuki; and Ozaki, Tadahiko, 4,387,862, Cl. 242-107.600.

Ozawa, Takashi: *See—*
Morigaki, Masakazu; Yagihara, Morio; and Ozawa, Takashi, 4,388,404, Cl. 430-548.000.

P. H. Bowman Co., Inc.: *See—*
Tschan, J. Donald; and Hatton, Clifford P., 4,387,543, Cl. 52-295.000.

Pachlatko, Johannes P.: *See—*
Kristinsson, Haukur; Muller, Beat; and Pachlatko, Johannes P., 4,388,464, Cl. 548-136.000.

Packard Industries, Inc.: *See—*
Hogue, Norman E., 4,387,872, Cl. 248-221.300.

Paddock, Stephen W., to Whirlpool Corporation. Electronic sensing and display system for a refrigerator. 4,387,578, Cl. 62-127.000.

Page, Frank C., III: *See—*
Wiles, Laurence E.; Page, Frank C., III; and Eibensteiner, Bruno A., 4,387,817, Cl. 215-217.000.

Palau, Joseph; and Bourgeaux, Pierre, to S.A. des Etablissements Staubli. Rotary dobbies for weaving looms. 4,387,741, Cl. 139-66.00R.

Palmer, Jay W.; and Gaynor, John C., to United States Gypsum Company. Process for reducing radioactive contamination in phosphogypsum. 4,388,292, Cl. 423-555.000.

Palmers, Goran: *See—*
Abbestam, Kaj; and Palmers, Goran, 4,387,635, Cl. 100-214.000.

Palubicki, Romuald: *See—*
Knypl, Maria; Knypl, Eugeniusz; Starzak, Marian; Mieczkowska, Ewa; Pawlus, Urszula; Palubicki, Romuald; Ficek, Mieczyslaw; and Goldynia, Jozef, 4,388,438, Cl. 524-833.000.

Panicker, Narayana N.: *See—*
Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayana N.; Wada, William T.; and Yancey, Irvin R., 4,388,022, Cl. 405-195.000.

Pappo, Raphael; and Otteson, Kenneth M., to International Plant Research Institute, Inc. Trialkylsilyl-6-aminonicotinamides. 4,388,462, Cl. 546-14.000.

Parent, Daniel, to Produits Menagers Coronet (1980) Inc. Contractable closure member. 4,387,825, Cl. 220-234.000.

Parham, Carol D.: *See—*
Matty, Thomas C.; Franz, James H., Jr.; and Parham, Carol D., 4,387,870, Cl. 246-122.00R.

Parham, Thomas G.: *See—*
Carpenter, Larry L.; and Parham, Thomas G., 4,388,094, Cl. 65-3.120.

Parker, G. Anthony, to St. Joe Minerals Corporation. High surface area lead oxide composite and method for making the same. 4,388,210, Cl. 252-182.100.

Parker, Martin G. Turbocharger module for internal combustion engine. 4,387,573, Cl. 60-611.000.

Parnell, Gary L.: *See—*
Lomneth, Richard B.; Blair, Daniel R.; Parnell, Gary L.; and Tao, Bernard Y., 4,388,339, Cl. 426-602.000.

Pasic, James A., to Ovalstrapping, Inc. Strap tensioning apparatus. 4,387,631, Cl. 100-32.000.

Passavant-Werke Michelbacher Hutte: *See—*
von Hagel, Gunter; Berlenbach, Norbert; and Werner, Gerhard, 4,388,195, Cl. 210-709.000.

Patalidis, Claude A.: *See—*
Lucia, Carroll J., 4,388,196, Cl. 210-742.000.

Patarcity, Adam J.: *See—*
Jewell, Walter E. B.; and Patarcity, Adam J., 4,388,259, Cl. 264-153.000.

Patch, Richard J.; and Rose, George D., Jr., to General Electric Company. Memory device. 4,388,703, Cl. 365-105.000.

Patz, Eckhard: *See—*
Bartel, Gunter; Patz, Eckhard; Koch, Karl; Stern, Georg; Stotz, Manfred; and Triffterer, Adolf, 4,388,053, Cl. 417-542.000.

Paulini, Dieter: *See—*
Bueb, Michael; Bruck, Robert; Muschelknautz, Edgar; Paulini, Dieter; and Feltgen, Karlheinz, 4,387,476, Cl. 8-151.200.

Paulson, Jerome I.; and Hess, Larry W., to Hammertek Corporation. Short radius, low wear elbow. 4,387,914, Cl. 285-119.000.

Pavlo, John A.; and Stauber, Ronald C., to Baxter Travenol Laboratories, Inc. Device for suspension of a solution container. 4,387,873, Cl. 248-226.400.

Pawlus, Urszula: *See—*
Knypl, Maria; Knypl, Eugeniusz; Starzak, Marian; Mieczkowska, Ewa; Pawlus, Urszula; Palubicki, Romuald; Ficek, Mieczyslaw; and Goldynia, Jozef, 4,388,438, Cl. 524-833.000.

Pearce, John A.: *See—*
Geddes, Leslie A.; Bourland, Joe D.; and Pearce, John A., 4,387,714, Cl. 128-303.130.

Pearson, Karen W.: *See—*
Bissell, Eugene R.; Mitchell, Alexander R.; Pearson, Karen W.; and Smith, Robert E., 4,388,233, Cl. 260-112.50R.

Pecon, Joseph A., Jr., to Bell Telephone Laboratories, Incorporated. Submarine cable tension telemetering system. 4,388,710, Cl. 367-134.000.

Peelman, Harold E., to Halliburton Company. System for simultaneous measurement of borehole and formation neutron lifetimes. 4,388,529, Cl. 250-270.000.

Peeples, Denny L.: *See—*
Flory, Donald M.; and Peeples, Denny L., 4,387,569, Cl. 60-548.000.

Peil, William; Brown, Thomas A.; and Dissosway, Marc A., to General Electric Company. Pulse generator for IC fabrication. 4,388,536, Cl. 307-268.000.

Pelrine, Bruce P.: *See—*
Bowes, Emmerson; and Pelrine, Bruce P., 4,388,177, Cl. 208-111.000.

Pelts, Boris B.: *See—*
Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryazantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko, Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G., 4,388,108, Cl. 75-10.00R.

Penland, William D.; and Loew, Harold F., to Square D Company. Multiple position pushbutton switch. 4,388,503, Cl. 200-5.00R.

Perkin-Elmer Corporation, The: *See—*
Hansel, Allen B., 4,388,732, Cl. 455-608.000.
Loveland, Robert S., 4,388,694, Cl. 364-834.000.

Perkins, Patrick D.: *See—*
Chang, Clarence D.; and Perkins, Patrick D., 4,388,461, Cl. 546-251.000.

Permacel: *See—*
Eskay, Robert R., 4,388,432, Cl. 524-388.000.
Korpman, Ralf; and Felice, C. Palermo, 4,388,349, Cl. 427-208.400.

Perrone, Ettore: *See—*
Nannini, Giuliano; Perrone, Ettore; Severino, Dino; Meinardi, Giuseppe; Monti, Gisella; Bianchi, Alberta; Forgione, Angelo; and Confalonieri, Carlo, 4,388,314, Cl. 424-246.000.

Person, Lucien, to Produits Chimiques Ugine Kuhlmann. Process for extraction of iodine. 4,388,231, Cl. 252-631.000.

Pertron Controls Corporation: *See—*
Mathews, James K., 4,388,515, Cl. 219-110.000.

Petersen, Joachim: *See—*
Gerke, Peter; and Petersen, Joachim, 4,388,718, Cl. 370-110.100.

Petersson, Stig A.: *See—*
Jensfelt, Torsten E.; and Petersson, Stig A., 4,388,110, Cl. 75-21.000.

Petrolite Corporation: *See—*
Naiman, Michael I.; and Buriks, Rudolf S., 4,388,452, Cl. 526-342.000.

Petrossian-Avakian, Edmond, to Siemens Aktiengesellschaft. Arrangement for preventing the formation of a foreign layer on a high-voltage insulator. 4,388,487, Cl. 174-40.00R.

Petrov, Stanislav V.: *See—*
Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryazantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko, Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G., 4,388,108, Cl. 75-10.00R.

Pettit, George R., to University Patents, Inc. Phyllanthostatin compounds. 4,388,457, Cl. 536-4.100.

Pezzillo, William A.; and Crickmer, Charles C., to United States of America, Air Force. Automatically sequenced signaling system. 4,388,614, Cl. 340-384.00E.

Phillips Petroleum Company: *See—*
Burns, Lyle D., 4,388,081, Cl. 44-78.000.
Irvin, Howard B., 4,388,444, Cl. 525-92.000.
Solomon, Paul W., 4,388,225, Cl. 252-463.000.

Phy, William S., to Fairchild Camera & Instrument Corp. Precision optical spacers for image sensor filters. 4,388,525, Cl. 250-211.00J.

Piccardi, Paolo: *See—*
Massardo, Pietro; Longoni, Angelo; and Piccardi, Paolo, 4,388,323, Cl. 424-305.000.

Pichaichanarong, Puvin: *See—*
United States of America, National Aeronautics and Space Administration; Corcoran, William H.; Fong, William S.; Pichaichanarong, Puvin; Chan, Paul C. F.; and Lawson, Daniel D., 4,388,171, Cl. 208-8.0LE.

Piepers, Harry C., to Galentan AG. Method of applying coverings in the form of completely or not completely closed loops. 4,388,157, Cl. 204-15.000.

Pigerol, Charles: *See—*
de Cointet de Fillain, Paul; and Pigerol, Charles, 4,388,430, Cl. 524-99.000.

Pigeroulet, Jean: *See—*
Leblanc, Jean; Pigeroulet, Jean; Straubel, Max; and Eckert, Konrad, 4,387,686, Cl. 123-446.000.

Pillsbury Company, The: *See—*
Yong, Samuel H.; Anderson, George R.; and Levin, Liza, 4,388,336, Cl. 426-551.000.

Pinto, Akiva: *See—*
Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; and Pinto, Akiva, 4,387,486, Cl. 19-105.000.

Piper, Alfred E. C.: *See—*
Blackburn, Neil P.; Piper, Alfred E. C.; and Meeks, Alan M. G., 4,387,490, Cl. 24-200.000.

Pipes, George R., to Eaton Corporation. Shuttle assembly. 4,388,033, Cl. 414-282.000.

Pirich, Andrew R., to United States of America, Air Force. Coherent optical feature identifier apparatus. 4,387,989, Cl. 356-71.000.

Pisani, Marino J., to Dresser Industries, Inc. Sideboom crawler suspension. 4,387,779, Cl. 180-9.500.

Pissiotas, Georg: *See—*
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,388,106, Cl. 71-105.000.

Pithouse, Kenneth B.: *See—*
Bonnet, Jean-Claude; and Pithouse, Kenneth B., 4,388,449, Cl. 525-477.000.

Pitzele, Barnett S.: *See—*
Hamilton, Robert W.; Henderson, Richard E. L.; and Pitzele, Barnett S., 4,388,308, Cl. 424-180.000.

Pizzi, Domenico. Storable table. 4,387,650, Cl. 108-40.000.

Pizzuti, Donato F., to Polaroid Corporation. Folding camera with pivotally mounted viewfinder. 4,387,978, Cl. 354-187.000.

Plevnik, Stanislav; Vrtacnik, Peter; Malezic, Matija; Lukezic, Marino; Stanic, Uros; and Oblak, Pavel, to Gorenje Tovarna Gospodinjske Opreme N.Sol.O. Velenje. Control circuit of a therapeutic stimulator for the urinary incontinence. 4,387,719, Cl. 128-421.000.

PLM Aktiebolag: *See—*
Jacobsen, Kjell M., 4,387,815, Cl. 215-1.00C.

Pneu Uniroyal Englebert: *See—*
Mirtain, Henri J.; and Zinnen, Norbert, 4,387,754, Cl. 152-209.00R.

Poeppelmeier, Kenneth R.; and Longo, John M., to Exxon Research and Engineering Co. Oxygen deficient manganese perovskites. 4,388,294, Cl. 423-599.000.

Poisson, Regis: *See—*
Dupin, Thierry; Bouge, Gilbert; and Poisson, Regis, 4,388,288, Cl. 423-416.000.

Polaroid Corporation: *See—*
Borror, Alan L.; and Ellis, Ernest W., 4,388,398, Cl. 430-212.000.
Pizzuti, Donato F., 4,387,978, Cl. 354-187.000.

Polikoff, Lawrence A. Eye treatment device and method. 4,387,707, Cl. 128-25.00A.

Pollak, Alfred: *See—*
Goseberg, Walter; Pollak, Alfred; and Reichow, Wolfgang, 4,388,568, Cl. 315-411.000.

Polsfuss, Marvin F. Plastic cork lifter. 4,387,609, Cl. 81-3.360.

Pont-A-Mousson S.A.: *See—*
Maublanc, Georges, 4,387,482, Cl. 16-64.000.

Poole, Lee H. Solar heating device. 4,387,703, Cl. 126-429.000.

Poole, Michael M.; Solitt, Samuel G.; and Shaw, Jerry. Gem storage, display and inventory control system. 4,387,806, Cl. 206-232.000.

Popeney, Harry V. Vehicle with improved luggage and rack assembly. 4,387,840, Cl. 224-314.000.

Popov, Alexandr N.: *See—*
Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryazantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko, Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G., 4,388,108, Cl. 75-10.00R.

Porter, Vernon R.: *See—*
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Porucznik, Paul: *See—*
Franek, Josef T.; Porucznik, Paul; and Styles, Alan E., 4,387,747, Cl. 141-1.000.

Posso, Patrick P., to Gefitec S.A. Video cassette. 4,387,864, Cl. 242-199.000.

Post, Larry K.: *See—*
Culbertson, Billy M.; Post, Larry K.; and Aulabaugh, Ann E., 4,388,451, Cl. 526-271.000.

Powell, James E.; and Barker, Michael D., to Shell Oil Company. 3-Phenylmethoxytetrahydropyran herbicides. 4,388,104, Cl. 71-88.000.

PPG Industries, Inc.: *See—*
Richter, Sidney B.; and Van Gemert, Barry, 4,388,473, Cl. 560-65.000.

Prameta Prazisionsmetaal-und Kunstofferzeugnisse G. Baumann & Co.: *See—*
Dudek, Gunter, 4,387,489, Cl. 24-133.000.

Prato, Luigi, to Fiat Auto S.p.A. Motor vehicle door. 4,387,536, Cl. 49-502.000.

Pratt, Roy E.; Sayles, Scott M.; Bowers, Kerry W.; and Scott, Richard P., deceased (by Scott, Candice C., executrix), to Texaco Inc. Hydrocarbon conversion process. 4,388,176, Cl. 208-80.000.

Preiss, Gunther W. B., to Trevex Corporation. Conductivity dependent pump and process control. 4,388,043, Cl. 417-36.000.

Prescolite, A Div. of U.S. Industries: *See—*
Druffel, James B., 4,388,677, Cl. 362-276.000.

ProCreations, Inc.: *See—*
Miller, Ross, 4,387,530, Cl. 46-1.00L.

Procter & Gamble Company, The: *See—*
Dornbusch, Arthur H., 4,387,808, Cl. 206-432.000.
Lee, Franky B.; and Jobes, Orin, Jr., 4,388,056, Cl. 425-83.100.
Lomneth, Richard B.; Blair, Daniel R.; Parnell, Gary L.; and Tao, Bernard Y., 4,388,339, Cl. 426-602.000.

Produits Chimiques Ugine Kuhlmann: *See—*
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Produits Menagers Coronet (1980) Inc.: *See—*
Parent, Daniel, 4,387,825, Cl. 220-234.000.

Prolygin, Anatoly P.: *See—*
Shipaev, Gennady A.; Seliverstov, Vyacheslav V.; Osipov, Nikolai A.; Prolygin, Anatoly P.; Mashikhin, Anatoly D.; Askinazi,

Mikhail P.; Andreev, Jury M.; and Kagan, Samuil I., 4,388,569, Cl. 318-87.000.

Prunty, John, to General Dynamics Corp./Convair Division. Controlled elastomeric tooling for plastic fabrication. 4,388,263, Cl. 264-257.000.

Public Safety Equipment Company: *See—*
Menke, W. Kenneth, 4,388,609, Cl. 340-84.000.

Pulchinski, Steven J.: *See—*
Lostumo, Arthur J.; and Pulchinski, Steven J., 4,387,947, Cl. 339-90.00R.

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Geddes, Leslie A.; Bourland, Joe D.; and Pearce, John A., 4,387,714, Cl. 128-303.130.

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Mueller, Gerhard; and Puritscher, Ernst, 4,388,072, Cl. 493-410.000.

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Maher, William M., 4,387,604, Cl. 74-354.000.

Quick, Michael H., to UOP Inc. Recovery of metal values from organic reaction products. 4,388,279, Cl. 423-22.000.

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Brennan, Martin J., 4,387,963, Cl. 350-331.00T.

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Grinberg, Efim N.; Braginsky, Yakov I.; Zhislin, Yakov M.; Lavrov, Vladimir V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; Filatov, Alexandr A.; Yaroshenko, Jury F.; Torban, Samuil S.; Kovalev, Viktor M.; Urusov, Georgy I.; Rozanova, Alla V.; Radakova, Tatyana N.; Krivosheina, Larisa I.; Bykov, Vladimir P.; Bykova, Vladimira M.; and Gultsev, Igor V., 4,387,485, Cl. 17-48.000.

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Monks, Reginald, 4,388,241, Cl. 260-397.100.

Ragir, Meyer J.; and Mayer, Joseph B., to Selfix, Inc. Shower shelf. 4,387,811, Cl. 211-119.000.

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Trouet, Andre B. L.; Hannart, Jean A. A. J.; and Rao, Kandukuri S. B., 4,388,305, Cl. 424-177.000.

Rao, Nidamboor V., to U.S. Philips Corporation. Low noise electron gun. 4,388,556, Cl. 315-14.000.

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Christensen, Burton G.; DiNinno, Frank P.; Muthard, David A.; and Ratcliffe, Ronald W., 4,388,310, Cl. 424-200.000.

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Toy, Lester T.; Moyer, Wendell W.; Lyons, Bernard J.; and Horsma, David A., 4,388,607, Cl. 338-22.0SD.

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Bonnet, Jean-Claude; and Pithouse, Kenneth B., 4,388,449, Cl. 525-477.000.

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Eldridge, David P., 4,388,682, Cl. 364-200.000.
Salzer, Thomas E.; and Saxelby, John R., Jr., 4,388,512, Cl. 219-56.220.

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Amantea, Robert; and Wheatley, Carl F., Jr., 4,388,634, Cl. 357-34.000.
Arroyo, Nestor A.; Desai, Nitin V.; and Buchanan, James F., 4,388,410, Cl. 436-85.000.
Chen, Hsing-Yao, 4,388,553, Cl. 313-414.000.
Dischert, Robert A.; and Reitmeier, Glenn A., 4,388,638, Cl. 358-27.000.
Dodds, Dennis L., 4,388,602, Cl. 335-212.000.
Greninger, Paul T., 4,388,552, Cl. 313-414.000.
Harford, Jack R., 4,388,649, Cl. 358-195.100.
Harwood, Leopold A.; Shanley, Robert L., II; and Hettiger, James, 4,388,647, Cl. 358-166.000.
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Mehrotra, Gopi N., 4,388,654, Cl. 358-343.000.
Rhodes, Roland N., 4,388,640, Cl. 358-44.000.
Strother, John A., 4,388,646, Cl. 358-160.000.

Rea, Irvin B.: *See—*
Slavin, Michael; and Rea, Irvin B., 4,387,788, Cl. 181-171.000.

Read, Norman W., to Dresser Industries, Inc. Subsurface safety valve system with hydraulic packer. 4,387,767, Cl. 166-72.000.

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Martin, Earl C.; Thompson, John K.; and Gargrave, Robert J., 4,387,583, Cl. 72-22.000.

Reagan, John J., to Standard Oil Company, The. Modified in situ retorting of oil shale. 4,387,768, Cl. 166-256.000.

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Longo, Frank N.; Miller, Robert A.; and Reardon, Joseph D., 4,388,373, Cl. 428-413.000.

Reed, Chester L.; and Bridges, Robert M., to Bendix Corporation, The. Funnel construction for a dipping sonar. 4,388,709, Cl. 367-131.000.

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Regan, John F., to Wescom, Inc. Electronic hybrid. 4,388,500, Cl. 179-170.0NC.

Regipa, Robert, to Centre National d'Etudes Spatiale. Method and apparatus for launching and inflating a space balloon. 4,387,868, Cl. 244-31.000.

Rehage, Gunther: *See—*
Finkelmann, Heino; Rehage, Gunther; and Kreuzer, Franz-Heinrich, 4,388,453, Cl. 528-15.000.

Rehklau, George D., to Electro-Sound Inc. Loop bin for magnetic tape recording apparatus. 4,387,843, Cl. 226-118.000.

Rehm, Siegfried; and Beizinger, Kurt. Method for lining a housing of a fiber opening device and roller. 4,387,558, Cl. 57-408.000.

Reichow, Wolfgang: *See—*
Goseberg, Walter; Pollak, Alfred; and Reichow, Wolfgang, 4,388,568, Cl. 315-411.000.

Reif, Robert B.; and McCrady, Paul E., to Santek, Inc. Self-cleaning electro-inertial precipitator unit. 4,388,089, Cl. 55-119.000.

Reiff, Helmut: *See—*
Helling, Gunter; Reiff, Helmut; Himmelmann, Wolfgang; and Renner, Gunter, 4,388,403, Cl. 430-546.000.

Reil, Wilhelm, to Tetra Pak Developpement S.A. Device for manufacturing packages filled with liquid. 4,387,547, Cl. 53-131.000.

Reinsch, Royal L.: *See—*
Maes, Michel E.; Shaw, Robert L.; and Reinsch, Royal L., 4,388,254, Cl. 264-3.00C.

Reiss, Andre. Cement test device for the detection of imitation gold. 4,388,409, Cl. 436-80.000.

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Dischert, Robert A.; and Reitmeier, Glenn A., 4,388,638, Cl. 358-27.000.

Remacle, Roger: *See—*
Lepain, Andre; Bronchart, Robert; and Remacle, Roger, 4,388,407, Cl. 436-3.000.

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Helling, Gunter; Reiff, Helmut; Himmelmann, Wolfgang; and Renner, Gunter, 4,388,403, Cl. 430-546.000.

Reno, James J., Jr.; and Schmid, Richard G., to Zenith Radio Corporation. Heat sinking means and method for projection television CRTs. 4,388,642, Cl. 358-60.000.

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Brownlee, Robert R.; Hughes, Howard C., Jr.; Neff, Paul H.; and Tyers, G. Frank O., 4,387,717, Cl. 128-419.0PG.

Research-Cottrell, Inc.: *See—*
Chou, Eng J.; and Weinstein, Bruce, 4,388,282, Cl. 423-242.000.
Sapp, Dennis H., 4,387,628, Cl. 98-58.000.

Resonant Technology Co.: *See—*
Gurries, Raymond A., 4,387,859, Cl. 241-262.000.

Reti, Aldo M.: *See—*
Stavish, Michael F.; and Reti, Aldo M., 4,388,270, Cl. 420-473.000.

Reuter, Wolfgang: *See—*
Wetzel, Bernd; Woitun, Eberhard; Maier, Roland; Reuter, Wolfgang; Lechner, Uwe; and Goeth, Hanns, 4,388,315, Cl. 424-246.000.

Reuters Limited: *See—*
Wigan, Jack G.; Ure, David G.; and Richards, John M., 4,388,489, Cl. 178-3.000.

Reynolds, Martin L.; and Johnson, Robert R., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,387,728, Cl. 131-336.000.

Reynolds Metals Company: *See—*
Kibby, Robert M., 4,388,107, Cl. 75-10.00R.

Reynolds, Michael J., to Omark Industries, Inc. Splitting device with varying cross sections. 4,387,753, Cl. 144-193.00D.

Rheintechnik, Weiland & Kaspar KG: *See—*
Uhlmann, Georg, 4,387,716, Cl. 128-352.000.

Rhodes, Roland N., to RCA Corporation. Color filter having vertical color stripes with a nonintegral relationship to CCD photosensors. 4,388,640, Cl. 358-44.000

Rhone-Poulenc Agrochim *See—*
Bahr, James T., 4,388,105, Cl. 71-91.000.

Rhone Poulenc Inc.: *See—*
Farber, Leon; and Gradeff, Peter S., 4,388,250, Cl. 260-465.00F.

Rhone-Poulenc Industries: *See—*
Derrien, Jean-Yves; and Belon, Paul, 4,388,226, Cl. 252-470.000.
Dupin, Thierry; Bouge, Gilbert; and Poisson, Regis, 4,388,288, Cl. 423-416.000.

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Wigan, Jack G.; Ure, David G.; and Richards, John M., 4,388,489, Cl. 178-3.000.

Richards, John W.; and Craven, Ian, to EMI Limited. Digital audio level metering. 4,388,590, Cl. 324-103.00P.

Richardson, Ethel L.: *See—*
Curled, Thomas O., III; and Richardson, Ethel L., 4,388,688, Cl. 364-200.000.

Richardson, Neil R.; and Woodhull, Bradley A., to Garrett Corporation, The. Turbocharger control system. 4,387,572, Cl. 60-602.000.

Richardson, William E., to Sprague Electric Company. Signal limiting integrated circuit. 4,388,632, Cl. 357-15.000.

Richter Gedeon Vegyeszeti Gyar RT: *See—*
Nyeki, Olga; Kisfaludy, Lajos; Karpati, Egon; and Szporny, Laszlo, 4,388,304, Cl. 424-177.000.

Richter, Gerhard; Weidlich, Erhard; and Mund, Konrad, to Siemens Aktiengesellschaft. Method for the indirect oxidation of urea. 4,388,163, Cl. 204-101.000.

Richter, John W., to Du Pont de Nemours, E. I., and Company. Reducing surface tension with N-type betaines of 2-hydroxyl-1,1,2,3,3-pentahydroperfluoroalkylamines. 4,388,212, Cl. 252-356.000.

Richter, Sidney B.; and Van Gemert, Barry, to PPG Industries, Inc. Substituted benzoic or phenylacetic acid esters having plant growth regulating properties. 4,388,473, Cl. 560-65.000.

Rickansrud, David A.: *See—*
Egee, Walter W.; and Rickansrud, David A., 4,388,332, Cl. 426-88.000.

Ricoh Company, Ltd.: *See—*
Araki, Kunihiko, 4,387,975, Cl. 354-25.000.
Iwata, Susumu; Maruta, Keiichi; and Yuyama, Yukihiro, 4,388,362, Cl. 428-211.000.
Sakai, Kiyoshi, 4,388,393, Cl. 430-59.000.
Tsubuko, Kazuo; Hashimoto, Junichiro; Kuramoto, Shinichi; and Okawara, Makoto, 4,388,395, Cl. 430-114.000.
Umezawa, Michio, 4,388,627, Cl. 346-75.000.

Rieder, Werner; and Fehrle, Martin, to Isovolta Osterreichische Isolierstoffwerke. Polyester. 4,388,454, Cl. 528-176.000.

Rieppel, Perry J.: *See—*
Coughlin, William J.; Hoffman, Stephen A.; and Rieppel, Perry J., 4,388,514, Cl. 219-69.00R.

Rigazio, Anthony W.; Mathieson, Donald E.; and Hawkinson, Paul E., to Spartus Corporation. Connector for arrangement for a-c. clock mechanism. 4,388,002, Cl. 368-88.000.

Rinderle, James R., to Massachusetts Institute of Technology. Controllable heat transfer device. 4,387,762, Cl. 165-1.000.

Ringwald, Erwin, to Sandoz Ltd. 3-Aminopropoxyaryl derivative in the treatment of tremor. 4,388,320, Cl. 424-274.000.

Ripert, Roger L., to Grove Valve and Regulator Company. Line removable valve structure with extensible seal rings on pipeline support structure. 4,387,735, Cl. 137-315.000.

Ritsema, Irving R., to Bendix Corporation, The. Parking brake for front wheel drive vehicle including brake band for universal joint. 4,387,791, Cl. 188-77.00R.

Ritsema, Irving R., to Bendix Corporation, The. Retraction seal for a disc brake with anti-nibbling feature. 4,387,901, Cl. 277-165.000.

Rividi, Jan, to Elam Limited. Control circuit for a discharge lamp. 4,388,565, Cl. 315-291.000.

Rix, Robert D., to AMP Incorporated. Palm grip apparatus for insertion of wires. 4,387,501, Cl. 29-566.400.

Roach, Maurice P.; Burkhart, Russell D.; and Meehan, James B., to Iowa Engineered Processes Corp. Deburring and cleaning machine and process. 4,387,537, Cl. 51-17.000.

Robach, Michael C.; and Thompson, Quentin E., to Monsanto Company. Method for inhibiting growth of food poisoning organisms. 4,388,321, Cl. 424-279.000.

Roberge, Pierre: *See—*
Kimmerle, Frank M.; and Roberge, Pierre, 4,388,149, Cl. 162-153.000.

Robert Bosch GmbH: *See—*
Eheim, Franz, 4,387,683, Cl. 123-387.000.
Eheim, Franz, 4,387,688, Cl. 123-502.000.
Hoppel, Rainer, 4,387,687, Cl. 123-493.000.
Hoppel, Rainer; and Knapp, Heinrich, 4,387,695, Cl. 123-585.000.
Leblanc, Jean; Pigeroulet, Jean; Straubel, Max; and Eckert, Konrad, 4,387,686, Cl. 123-446.000.
Leiber, Heinz, 4,387,782, Cl. 180-132.000.
Lungu, Corneliu, 4,388,575, Cl. 318-475.000.
Mohl, Helmut; Schab, Manfred; Sauer, Joseph; and Muller, Alfred, 4,387,608, Cl. 74-866.000.

Roberts, James H.: *See—*
Greene, Jay R.; Windecker, James W., Jr.; Roberts, James H.; and Wood, Harold F., 4,388,008, Cl. 400-578.000.

Robin, Roger; and Ap, Ngy S., to Valeo. Cooling systems for internal combustion engine comprising a radiator equipped with an expansion-tank. 4,387,670, Cl. 123-41.080.

Robinson, Morton: *See—*
Turk, Roger R.; and Robinson, Morton, 4,388,097, Cl. 65-64.000.

Robinson, Stuart A., to Robinson Thread Company. Ornamental thread and method of forming same. 4,387,555, Cl. 57-235.000.

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Robinson, Stuart A., 4,387,555, Cl. 57-235.000.

Robinson, William P.; McNulty, Hugh, Jr.; Seliger, Robert L.; and Williamson, Weldon S., to Hughes Aircraft Company. Filament dispenser cathode. 4,388,560, Cl. 315-111.810.

Rockland Manufacturing Co., Inc.: *See—*
Tyer, Robert C., 4,387,752, Cl. 144-34.00E.

Rockwell International Corporation: *See—*
Borugian, Dennis A., 4,387,789, Cl. 188-1.110.
Cline, Charles D., 4,387,956, Cl. 350-96.200.
Gal, Laszlo V., 4,388,700, Cl. 365-11.000.
Holly, Sandor, 4,387,966, Cl. 350-360.000.
McClure, Don W., 4,387,494, Cl. 29-159.00A.
Van Eerden, Richard L.; Vial, Norman D., Jr.; and Slane, Irvin L., 4,387,926, Cl. 297-375.000.
Wong, Jon H., 4,387,511, Cl. 33-1.0BB.

Rod, Robert L.: *See—*
Basol, Bulent M.; Tseng, Eric S.; and Rod, Robert L., 4,388,483, Cl. 136-260.000.

Rodewald, Bernhard; Tippmer, Kurt; and Tamm, Hans F., to Ruhrkohle Aktiengesellschaft. Liquefaction of coal. 4,388,172, Cl. 208-10.000.

Rodgers, Earl T. Blind fastener device. 4,388,031, Cl. 411-43.000.

Rodriguez, David A.: *See—*
Grove, Charles F.; and Rodriguez, David A., 4,387,971, Cl. 350-500.000.

Rogier, Edgar R., to Henkel Corporation. Polyglycidyl ethers. 4,388,209, Cl. 252-182.000.

Rohm GmbH: *See—*
Kraemer, Dieter; Lehmann, Klaus; and Hartl, Roland, 4,388,271, Cl. 422-56.000.

Rohm and Haas Company: *See—*
Swift, Graham; Cenci, Harry J.; and Jenkins, Raymond F., 4,388,434, Cl. 524-476.000.

Romano, Domenic R.: *See—*
Hall, Roger L.; and Romano, Domenic R., 4,388,671, Cl. 361-383.000.

Romblom, Edward R., to General Motors Corporation. Exhaust gas recirculation control. 4,387,693, Cl. 123-569.000.

Rosato, Dennis W.; and Lister, Neil K. Insulation board. 4,388,366, Cl. 428-285.000.

Rose, George D., Jr.: *See—*
Patch, Richard J.; and Rose, George D., Jr., 4,388,703, Cl. 365-105.000.

Rosenfeldt, Wolfgang, to Sybron Corporation. Constant speed regulator for DC motors. 4,388,572, Cl. 318-317.000.

Rossler, Kurt, to Osnabrucker Metallwerke J. Kampschulte GmbH & Co. KG. Machine for the comminuting of bulk material. 4,387,858, Cl. 241-152.00A.

Roth, Adrian W.; and Morva, Tibor, to Sprecher & Schuh AG. Excess-current protective switch. 4,388,507, Cl. 200-148.00R.

Rourke, John L.; Azar, Jack C.; and Murphy, William K., to Xerox Corporation. Ozone collection and filtration system. 4,388,274, Cl. 422-177.000.

Routson, Edwin J. Portable concrete mixing and transport apparatus. 4,387,995, Cl. 366-2.000.

Rowe, Frederick, to Imperial Chemical Industries PLC. Regeneration of cracking catalyst in two successive zones. 4,388,218, Cl. 252-417.000.

Rozanova, Alla V.: *See—*
Grinberg, Efim N.; Braginsky, Yakov I.; Zhislin, Yakov M.; Lavrov, Vladimir V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; Filatov, Alexandr A.; Yaroshenko, Jury F.; Torban, Samuil S.; Kovalev, Viktor M.; Urusov, Georgy I.; Rozanova, Alla V.; Radakova, Tatyana N.; Krivosheina, Larisa I.; Bykov, Vladimir P.; Bykova, Vladimira M.; and Gultsev, Igor V., 4,387,485, Cl. 17-48.000.

Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryazantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko, Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G. Method and apparatus for smelting charge materials in electric arc furnace. 4,388,108, Cl. 75-10.00R.

Rozmus, Walter J.: *See—*
Rozmus, Walter J., Jr.; and Rozmus, Walter J., 4,388,088, Cl. 55-101.000.

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Ruck, Jules B., to W. E. Greer Ltd. Composition for washing fabric. 4,388,077, Cl. 8-138.000.

Ruemer, John, Jr., to Crown Cork & Seal Company, Incorporated. Container closure. 4,387,827, Cl. 220-269.000.

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Rodewald, Bernhard; Tippmer, Kurt; and Tamm, Hans F., 4,388,172, Cl. 208-10.000.

Rule, Ian R.: *See*—
Shepherd, Gary D.; Fernandez, Ramon B.; and Rule, Ian R., 4,388,289, Cl. 423-447.400.

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Ryder, Francis E.: *See*—
Thomas, Michael D.; and Ryder, Francis E., 4,388,521, Cl. 219-521.000.

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Thomas, Michael D.; and Ryder, Francis E., 4,388,521, Cl. 219-521.000.

Rynne, George B. Zinc-nickel alloy electroplating process. 4,388,160, Cl. 204-38.00R.

Ryss, Mark A.: *See*—
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Saarisalo, Risto A.; and Koppanen, Jorma T., to Oras OY. Single-grip mixing valve. 4,387,880, Cl. 251-285.000.

Saida, Takashi: *See*—
Miyoshi, Takahito; Okutu, Toshimitu; Takimoto, Masaaki; Saida, Takashi; Akashi, Goro; and Fujiyama, Masaaki, 4,388,360, Cl. 428-172.000.

Saihara, Yasuhiro: *See*—
Hirao, Shozo; Saihara, Yasuhiro; Nakanishi, Toshio; Ihara, Ichiro; and Sano, Yoshio, 4,388,133, Cl. 156-245.000.

St. Joe Minerals Corporation: *See*—
Parker, G. Anthony, 4,388,210, Cl. 252-182.100.

St. John, Michael R.: *See*—
Sammells, Anthony F.; and St. John, Michael R., 4,388,162, Cl. 204-78.000.

Saito, Hiroshi: *See*—
Ueno, Tsuyoshi; Mukai, Hideo; Nakatomi, Yoshitsugu; Saito, Hiroshi; Kinoshita, Koichi; and Konuma, Takaaki, 4,387,980, Cl. 355-3.0CH.

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Sakamaki, Hiroshi, to Nippon Piston Ring Co., Ltd. Rotary fluid pump. 4,388,040, Cl. 415-174.000.

Sakamoto, Masakatsu; Uchida, Kenji; and Nagano, Shuichi, to Hitachi, Ltd. Float of slurry pressure feeding system. 4,387,595, Cl. 73-322.500.

Sakata, Hiromi: *See*—
Koyama, Shigeo; Yamagata, Ryutaro; Kozuka, Nobuhiko; and Sakata, Hiromi, 4,387,889, Cl. 271-10.000.

Sakita, Takashi: *See*—
Seto, Akira; and Sakita, Takashi, 4,388,341, Cl. 426-656.000.

Sakurada, Kenichi; Yoshida, Hiroyuki; and Ozaki, Tadahiko, to Nissan Motor Company, Limited. Seat belt retractor. 4,387,862, Cl. 242-107.600.

Sakurai, Yoshifumi, to Olympus Optical Co., Ltd. Multichannel magnetic head and a manufacturing method therefor. 4,388,661, Cl. 360-112.000.

Salem, Eli: *See*—
Down, Peter E.; and Salem, Eli, 4,388,417, Cl. 521-26.000.

Saller, Helmut: *See*—
Zeidler, Guenter; Lange, Gerhard; and Saller, Helmut, 4,387,958, Cl. 350-96.230.
Zeidler, Guenter; Ney, Ernst; Lange, Gerhard; and Saller, Helmut, 4,388,485, Cl. 174-23.00C.

Salzer, Thomas E.; and Saxelby, John R., Jr., to Raytheon Company. Aluminum wire ball bonding apparatus and method. 4,388,512, Cl. 219-56.220.

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Blaschke, Felix; and Salzmann, Theodor, 4,388,577, Cl. 318-717.000.

Sammells, Anthony F.; and St. John, Michael R., to Institute of Gas Technology. Continuous flow electrochemical cell and process. 4,388,162, Cl. 204-78.000.

Samodovitz, Arthur. Multiple field acoustic focusser. 4,387,599, Cl. 73-642.000.

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Takahashi, Shiro; Sanada, Kazuo; Inada, Koichi; and Fukuda, Osamu, 4,388,098, Cl. 65-157.000.

Sander, Wolfgang; and Jung, Ernst-Gunter, to Jung GmbH. Microwave heating apparatus for circulable media. 4,388,511, Cl. 219-10.55R.

Sanders, James M.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,388,207, Cl. 252-174.110.

Sanders, Kenneth H., to Milliken Research Corportion. Heat set warp knit weft inserted fabric and coating thereof. 4,388,364, Cl. 428-253.000.

Sandoz Ltd.: *See*—
Cavanak, Thomas, 4,388,307, Cl. 424-177.000.
Mauric, Claudine; and Wolf, Rainer, 4,388,431, Cl. 524-119.000.
Ringwald, Erwin, 4,388,320, Cl. 424-274.000.
Stettler, Hans; Buser, Karl; and Chavannes, Jean-Pierre, 4,388,205, Cl. 252-135.000.

Sandstrom, Richard D., to Medtronic, Inc. Coaxial service kit. 4,387,727, Cl. 128-784.000.

Sangamo Weston Limited: *See*—
Metcalf, Eric, 4,388,727, Cl. 375-88.000.

Sangree, Neal V., to Babcock & Wilcox Company, The. Digitally controlled pulse width modulated motor speed control for servo positioning systems. 4,388,570, Cl. 318-255.000.

Sankov, Sergei A.: *See*—
Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryazantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko, Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G., 4,388,108, Cl. 75-10.00R.

Sano, Kounosuke; and Tsuchida, Takayasu, to Ajinomoto Company Incorporated. Method for producing L-histidine by fermentation. 4,388,405, Cl. 435-107.000.

Sano, Tadao, to Kyushu Hitachi Maxell, Ltd. Portable electric flashlight. 4,388,674, Cl. 362-186.000.

Sano, Yoshio: *See*—
Hirao, Shozo; Saihara, Yasuhiro; Nakanishi, Toshio; Ihara, Ichiro; and Sano, Yoshio, 4,388,133, Cl. 156-245.000.

Sanofi: *See*—
de Cointet de Fillain, Paul; and Pigerol, Charles, 4,388,430, Cl. 524-99.000.

Santagata, Daniel A.: *See*—
Keep, Henry, Jr.; Santagata, Daniel A.; Harris, Matthew E.; and Welsh, William H., Jr., 4,388,523, Cl. 219-541.000.

Santek, Inc.: *See*—
Reif, Robert B.; and McCrady, Paul E., 4,388,089, Cl. 55-119.000.

Santiesteban, Hector L.: *See*—
Koyama, Shozo; Manning, John W., Jr.; Ammons, William S.; and Santiesteban, Hector L., 4,388,318, Cl. 424-251.000.

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Ishida, Hideo; Kitada, Masashi; and Ihara, Keisaku, 4,388,215, Cl. 252-402.000.

Sapp, Dennis H., to Research-Cottrell, Inc. Chimney seal. 4,387,628, Cl. 98-58.000.

Sarai, Hiroshi; and Terabayashi, Gosaku, to Toyota Jidosha Kogyo Kabushiki Kaisha. Washing liquid injection device for the rear window glass of a vehicle. 4,387,853, Cl. 239-284.00R.

Sarian, Grigor; and Neville, Dee J., to Puritan-Bennett Corp. Adjustable pressure-actuated switch. 4,388,505, Cl. 200-83.00C.

Sarin, Vinod K.; and Buljan, Sergej-Tomislav, to GTE Laboratories Incorporated. Abrasion resistant articles based on silicon nitride. 4,388,085, Cl. 51-307.000.

Sarycheva, Irina K.: *See*—
Gryaznov, Vladimir M.; Karavanov, Andrei N.; Belosljudova, Tamara M.; Ermolaev, Anatoly V.; Maganjuk, Anatoly P.; and Sarycheva, Irina K., 4,388,479, Cl. 568-828.000.

Sasaki, Isao: *See*—
Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Tamura, Misao, 4,388,345, Cl. 427-54.100.

Sasano, Akira: *See*—
Koike, Norio; Sasano, Akira; Taniguchi, Yoshio; Nakano, Toshio; Aoki, Masakazu; and Takemoto, Iwao, 4,387,987, Cl. 355-133.000.

Sato, Akio: *See*—
Obata, Kazuo; Yamaguchi, Yutaka; Yamaguchi, Kojirou; and Sato, Akio, 4,387,759, Cl. 152-353.00R.

Sato, Koji; and Kaneko, Tadahiro, to Toshiba Electric Equipment Corporation. Lighting device. 4,388,676, Cl. 362-260.000.

Sato, Masaaki, to Olympus Optical Company Limited. Miniature stereo device with extensible speakers. 4,388,492, Cl. 179-1.0GA.

Sato, Masamichi, to Fuji Photo Film Co., Ltd. Handy copying system. 4,387,984, Cl. 355-12.000.

Sato, Tomoharu: *See*—
Wakino, Kikuo; Kadota, Michio; and Sato, Tomoharu, 4,388,600, Cl. 333-151.000.

Sato, Yuichi: *See*—
Suzuki, Shuichi; Aizawa, Masuo; Koyama, Masao; Sato, Yuichi; and Koezuka, Junji, 4,388,166, Cl. 204-403.000.

Sauer, Joseph: *See*—
Mohl, Helmut; Schab, Manfred; Sauer, Joseph; and Muller, Alfred, 4,387,608, Cl. 74-866.000.

Saunders, Bayard K. Centerboard snubber. 4,387,657, Cl. 114-132.000.

Saurenman, Donald G., to Consan Pacific Incorporated. Control of static neutralization. 4,388,667, Cl. 361-231.000.

Sawyer, Ernest W., to Western Electric Company, Inc. Methods of forming a patterned metal film on a support. 4,388,351, Cl. 427-304.000.

Saxelby, John R., Jr.: *See*—
Salzer, Thomas E.; and Saxelby, John R., Jr., 4,388,512, Cl. 219-56.220.

Sayles, Scott M.: *See*—
Pratt, Roy E.; Sayles, Scott M.; Bowers, Kerry W.; and Scott, Richard P., deceased, 4,388,176, Cl. 208-80.000.

Schaaf, Cecil F.; Schaaf, Craig R.; Van Linden, James E.; and Van Linden, Kirk S. Burial enclosure arrangement and method. 4,387,491, Cl. 27-35.000.

Schaaf, Craig R.: *See*—
Schaaf, Cecil F.; Schaaf, Craig R.; Van Linden, James E.; and Van Linden, Kirk S., 4,387,491, Cl. 27-35.000.

Schaar, Lothar: *See*—
Hermening, Helmut; Monden, Norbert; Schaar, Lothar; Schneider, Wilhelm; and Seidel, Hans-Georg, 4,388,099, Cl. 65-267.000.

Schab, Manfred: *See*—
Mohl, Helmut; Schab, Manfred; Sauer, Joseph; and Muller, Alfred, 4,387,608, Cl. 74-866.000.

Schamann, Elfriede, Ilka Schamann, heirs: *See*—
Westernacher, Helmut; and Schamann, Franz, deceased, 4,388,216, Cl. 252-412.000.

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Westernacher, Helmut; and Schamann, Franz, deceased, 4,388,216, Cl. 252-412.000.

Schaming, Edward J. Valve module for digital coolant control system. 4,387,739, Cl. 137-884.000.

Scharf, Daniel J.: *See*—
Ilardo, Charles S.; and Scharf, Daniel J., 4,388,429, Cl. 524-94.000.

Scheffler, Hartmut, to Licentia Patent-Verwaltungs-G.m.b.H. Telephone power supply arrangement. 4,388,497, Cl. 179-77.000.

Schell, Loni, to Hoechst Aktiengesellschaft. Process for the manufacture of a lithographic printing form by electrophotography. 4,388,391, Cl. 430-49.000.

Schierloh, J. Calvin. Beehive medicator. 4,387,474, Cl. 6-12.00R.

Schiffmann, Robert F.; Mirman, Alfred H.; Grillo, Richard J.; and Batey, Robert W., to International Telephone and Telegraph Corporation. Microwave baking with metal pans. 4,388,335, Cl. 426-243.000.

Schildkraut, Alan L.: *See*—
Werth, Dee A.; Schildkraut, Alan L.; and MacAvoy, David W., 4,387,943, Cl. 339-59.00R.

Schilger, Herbert K.; and Hall, John S. Reinforcing strips for pre-cast construction elements. 4,387,544, Cl. 52-405.000.

Schlager, Ludwig H., to Gerot-Pharmazeutika Gesellschaft m.b.H. Novel 3-hydroxy-1,4-benzodiazepine-2-ones and process for the preparation thereof. 4,388,313, Cl. 424-244.000.

Schlegel GmbH: *See*—
Schlegel, Wolfgang; Wilke, Arthur; and Birkert, Rolf, 4,387,886, Cl. 269-71.000.

Schlegel, Wolfgang; Wilke, Arthur; and Birkert, Rolf, to Schlegel GmbH. Vise with rotatable and vertical adjustment. 4,387,886, Cl. 269-71.000.

Schlindwein, Siegfried: *See*—
Wiktor, Dominik M.; and Schlindwein, Siegfried, 4,388,535, Cl. 307-113.000.

Schmid, Klaus; and Kneissl, Hannes. Process for producing lower-molecular-weight hydrocarbons from higher molecular-weight hydrocarbons and auxiliary agent therefor. 4,388,170, Cl. 208-8.0LE.

Schmid, Richard G.: *See*—
Reno, James J., Jr.; and Schmid, Richard G., 4,388,642, Cl. 358-60.000.

Schmidhammer, Helmut: *See*—
Brossi, Arnold; Schmidhammer, Helmut; Jacobson, Arthur E.; and Hsu, Fu-Lian, 4,388,463, Cl. 546-74.000.

Schmidhammer, Ludwig; Dummer, Gerhard; and Straszer, Rudolf, to Wacker Chemie GmbH. Purification by hydrogenation of hydrogen chloride containing acetylene obtained by the thermal cracking of 1,2-dichloroethane. 4,388,278, Cl. 423-488.000.

Schmidtmann, Burchard, to Licentia Patent-Verwaltungs-GmbH. Television receiver audio channel operating according to the intercarrier system. 4,388,650, Cl. 358-197.000.

Schmitt, Frederick L.: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,388,228, Cl. 252-522.00R.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,388,207, Cl. 252-174.110.

Schneider, Hartmut; and Lebetzki, Egon, to Siemens Aktiengesellschaft. Method of producing a glass layer on an interior surface of a hollow body. 4,388,095, Cl. 65-18.200.

Schneider, Ronald A. Liquid compositions for display devices. 4,388,230, Cl. 252-600.000.

Schneider, Rudolf; and Winkelmann, Siegfried, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Single-surface electromagnetically operated clutch/brake unit. 4,387,794, Cl. 192-18.00B.

Schneider, Wilhelm: *See*—
Hermening, Helmut; Monden, Norbert; Schaar, Lothar; Schneider, Wilhelm; and Seidel, Hans-Georg, 4,388,099, Cl. 65-267.000.

Schoeneberger, Ernest A.: *See*—
Young, Terry A.; Mann, William W.; Kline, Charles M.; and Schoeneberger, Ernest A., 4,387,857, Cl. 241-101.00B.

Schone, Peter; Olmann, Jurgen; and Lamparter, Helmut. Process and apparatus for improved dummy head stereophonic reproduction. 4,388,494, Cl. 179-1.00G.

Schonstedt, Erick O., to Schonstedt Instrument Company. Multiaxis magnetomeler apparatus with orthogonally disposed rectangular housings for mounting separate sensor assemblies. 4,388,592, Cl. 324-247.000.

Schonstedt Instrument Company: *See*—
Schonstedt, Erick O., 4,388,592, Cl. 324-247.000.

Schrader, Charles H.: *See*—
Lionetti, Thomas A.; and Schrader, Charles H., 4,388,175, Cl. 208-74.000.

Schreurs, Peter H. M., to U.S. Philips Corporation. Controllable multiplying circuit including first and second transistors arranged in long-tailed pair configuration having coupled emitter electrodes. 4,388,540, Cl. 307-493.000.

Schroeder, Eugene N., to International Business Machines Corporation. Measuring apparatus with response adjustment. 4,388,526, Cl. 250-214.00R.

Schubert & Salzer: *See*—
Studtmann, Rainer; and Bock, Erich, 4,387,556, Cl. 57-273.000.

Schuller, Ronald A., to Geosource, Inc. Manifold unit and assembly and fluid end assembly. 4,388,050, Cl. 417-454.000.

Schulman, Ronald: *See*—
Lange, Howard G.; and Schulman, Ronald, 4,387,959, Cl. 350-128.000.

Schulte, Eric F.; and Porter, Vernon R., to Texas Instruments Incorporated. Sublimation patterning process. 4,388,517, Cl. 219-121.0LJ.

Schure, Ralph M.; and Steele, Gerald H., to Eschem Inc. Stabilization of epoxy systems in non-flammable solvents. 4,388,426, Cl. 523-462.000.

Schwanzer, Wilhelm, to Kraftwerk Union Aktiengesellschaft. Arrangement for controlling the internal potential in generator rods. 4,388,546, Cl. 310-196.000.

Schwartz, Helmut, to Harris Corporation. Multimode diagonal feed horn. 4,388,625, Cl. 343-786.000.

Schwartz, Sidney J.: *See*—
Unger, John C.; Schwartz, Sidney J.; and Chow, Ling G., 4,388,131, Cl. 156-89.000.

Schwartz, Vern R.; and Benz, Bernard D., to Verbatim Corporation. Leader to hub locking system. 4,387,499, Cl. 29-564.600.

Schwarz, Richard A., to Cosden Technology, Inc. Foamable polymeric styrene particles. 4,388,418, Cl. 521-56.000.

Schwarze, Rigobert. Tube feeding device. 4,388,039, Cl. 414-748.000.

Scientific Columbus, Inc.: *See*—
Haferd, James E., 4,388,611, Cl. 340-347.0SH.

Scientific Process & Research, Inc.: *See*—
Klein, Reuben; and Klein, Imrich, 4,387,997, Cl. 366-79.000.

SCM Corporation: *See*—
Kennell, Samuel C.; and Witkiewicz, Ronald F., 4,388,424, Cl. 523-219.000.

Scott, Candice C., executrix: *See*—
Pratt, Roy E.; Sayles, Scott M.; Bowers, Kerry W.; and Scott, Richard P., deceased, 4,388,176, Cl. 208-80.000.

Scott & Fetzer Company, The: *See*—
Kaplan, Robert A.; and Wellman, James E., 4,388,064, Cl. 431-265.000.

Scott, Richard P., deceased: *See*—
Pratt, Roy E.; Sayles, Scott M.; Bowers, Kerry W.; and Scott, Richard P., deceased, 4,388,176, Cl. 208-80.000.

Scripps Clinic & Research Foundation: *See*—
Katz, David H., 4,388,441, Cl. 525-54.100.

Seaber, Geoffrey B.: *See*—
Van Loveren, Augustinus G.; Munteanu, Marina A.; and Seaber, Geoffrey B., 4,387,849, Cl. 239-6.000.

Seberg, Charles H.; and Harms, Jack L., to Abbott Laboratories. Winged catheter placement assembly. 4,388,074, Cl. 604-165.000.

Segal, John A.: *See*—
Hartshorn, Angus J.; Jones, Eric; and Segal, John A., 4,388,220, Cl. 252-429.00B.

Seidel, Hans-Georg: *See*—
Hermening, Helmut; Monden, Norbert; Schaar, Lothar; Schneider, Wilhelm; and Seidel, Hans-Georg, 4,388,099, Cl. 65-267.000.

Seidel, Horst: *See*—
Magedanz, Norbert; Seidel, Horst; and Weiss, Hans J., 4,388,174, Cl. 208-11.00R.

Seki, Masahiko; Wada, Koji; and Io, Yukito, to Nippon Steel Corporation. Structure of oxygen passage in steel converter vessel supporting trunnion. 4,387,884, Cl. 266-246.000.

Sekido, Satoshi; and Sotomura, Tadashi, to Matsushita Electric Industrial Company, Limited. Solid electrolyte photocell. 4,388,385, Cl. 429-111.000.

Sekiguchi, Tetsuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens mount barrel. 4,387,968, Cl. 350-429.000.

Selder, Harald, to Escher Wyss GmbH. Method for operating an installation for processing waste paper. 4,387,856, Cl. 241-28.000.

Selfix, Inc.: *See—*
Ragir, Meyer J.; and Mayer, Joseph B., 4,387,811, Cl. 211-119.000.

Seliger, Robert L.: *See—*
Robinson, William P.; McNulty, Hugh, Jr.; Seliger, Robert L.; and Williamson, Weldon S., 4,388,560, Cl. 315-111.810.

Seliverstov, Vyacheslav V.: *See—*
Shipaev, Gennady A.; Seliverstov, Vyacheslav V.; Osipov, Nikolai A.; Prolygin, Anatoly P.; Mashikhin, Anatoly D.; Askinazi, Mikhail P.; Andreev, Jury M.; and Kagan, Samuil I., 4,388,569, Cl. 318-87.000.

Senoh, Hideaki: *See—*
Torii, Takahiro; and Senoh, Hideaki, 4,387,913, Cl. 282-27.500.

Sergeant, Ronald G., to AMP Incorporated. Chordal mechanism. 4,387,610, Cl. 81-5.10R.

Serov, German V.: *See—*
Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryazantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko, Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G., 4,388,108, Cl. 75-10.00R.

Seto, Akira; and Sakita, Takashi, to Nisshin Oil Mills, Limited. Process for preparation of fish meat-like flaky foods. 4,388,341, Cl. 426-656.000.

Severino, Dino: *See—*
Nannini, Giuliano; Perrone, Ettore; Severino, Dino; Meinardi, Giuseppe; Monti, Gisella; Bianchi, Alberta; Forgione, Angelo; and Confalonieri, Carlo, 4,388,314, Cl. 424-246.000.

Seyler, Jay K.: *See—*
Orlowski, Ronald C.; and Seyler, Jay K., 4,388,235, Cl. 260-112.50T.

Shaffer, John W., to GTE Products Corporation. High intensity discharge lamp including arc extinguishing means. 4,388,557, Cl. 315-74.000.

Shaffer, John W.; and Brower, Boyd G., to GTE Products Corporation. Sequential photoflash array and fabrication employing radiation-activated switches. 4,388,606, Cl. 338-15.000.

Shaines, Alfred: *See—*
Kaufman, Edward R.; Benson, Gregory R.; and Shaines, Alfred, 4,388,423, Cl. 523-153.000.

Shakib, Iraj D.: *See—*
Mott, William E.; and Shakib, Iraj D., 4,388,010, Cl. 400-692.000.

Shanksville Corporation, N.V.: *See—*
Fabricius, Hans-Ake; and Kottgen, Eckart U., 4,388,309, Cl. 424-180.000.

Shanley, Robert L., II: *See—*
Harwood, Leopold A.; Shanley, Robert L., II; and Hettiger, James, 4,388,647, Cl. 358-166.000.
Harwood, Leopold A.; Shanley, Robert L., II; and Hettiger, James, 4,388,648, Cl. 358-166.000.

Sharp Kabushiki Kaisha: *See—*
Hara, Yoshiyuki, 4,387,965, Cl. 350-349.000.
Osaki, Mikio; Tabuchi, Toshiaki; and Shimazawa, Yoichi, 4,388,630, Cl. 346-140.00R.

Shaub, Harold: *See—*
Brownawell, Darrell W.; Shaub, Harold; Wisotsky, Max J.; and Gutierrez, Antonio, 4,388,201, Cl. 252-49.600.

Shaw, David N.; and Gagnon, Joseph A. L. N., to Dunham Bush, Inc. Stepping type unloading system for helical screw rotary compressor. 4,388,048, Cl. 417-310.000.

Shaw, Jerry: *See—*
Poole, Michael M.; Solitt, Samuel G.; and Shaw, Jerry, 4,387,806, Cl. 206-232.000.

Shaw, Robert L.: *See—*
Maes, Michel E.; Shaw, Robert L.; and Reinsch, Royal L., 4,388,254, Cl. 264-3.00C.

Shay, George C., to Corning Glass Works. Method of forming a battery cell. 4,387,505, Cl. 29-623.100.

Shearing, Scott J. G.; and Bache, Ronald R. Container for thin flat articles. 4,387,802, Cl. 206-45.000.

Sheinkop, Isac M.: *See—*
Hall, Herbert L., Jr.; and Sheinkop, Isac M., 4,388,721, Cl. 373-31.000.

Shell Oil Company: *See—*
Diaz, Zaida, 4,388,293, Cl. 423-573.00R.
Kramer, Petrus A.; and Verbrugge, Pieter A., 4,388,247, Cl. 260-463.000.
Powell, James E.; and Barker, Michael D., 4,388,104, Cl. 71-88.000.

Shelley, Edwin F. Electronic sundial apparatus. 4,387,999, Cl. 368-15.000.

Shellhause, Ronald L., to General Motors Corporation. Pressure proportioner. 4,387,932, Cl. 303-24.00F.

Shen, C. Anthony. Knee brace. 4,387,709, Cl. 128-87.00R.

Shepherd, Gary D.; Fernandez, Ramon B.; and Rule, Ian R., to Hitco. Method of removing alkali and alkaline earth metal impurities from oxidized pan material. 4,388,289, Cl. 423-447.400.

Shepherd, Robert G., to American Cyanamid Company. Certain cinnamic acid or propiolic acid derivatives. 4,388,459, Cl. 542-427.000.

Sheppard, Douglas P., to Mostek Corporation. Multi-bit read only memory circuit. 4,388,702, Cl. 365-104.000.

Sheppard, Douglas P., to Mostek Corporation. Semiconductor memory circuit. 4,388,705, Cl. 365-210.000.

Sherman, David L., to Atari, Inc. Method and apparatus for generating elliptical images on a raster-type video display. 4,388,620, Cl. 340-744.000.

Sherman, Randy J., to Lincoln Laser Co. Method and apparatus for generating a scanned optical output signal. 4,388,651, Cl. 358-206.000.

Sherritt Gordon Mines Limited: *See—*
Kunda, Wasyl, 4,388,109, Cl. 75-0.50B.

Sherwin, Robert M.: *See—*
Abrams, Jack Z.; and Sherwin, Robert M., 4,388,283, Cl. 423-242.000.

Shiba, Haruo, to TDK Electronics Co., Ltd. Magnetic tape cassette. 4,387,823, Cl. 220-4.00R.

Shibata, Seiichi, to Casio Computer Co., Ltd. Note-paper sheet issuance device. 4,388,629, Cl. 346-81.000.

Shigihara, Akira: *See—*
Hamane, Masumi; Shigihara, Akira; and Kato, Masaie, 4,387,606, Cl. 74-752.00E.

Shimazawa, Yoichi: *See—*
Osaki, Mikio; Tabuchi, Toshiaki; and Shimazawa, Yoichi, 4,388,630, Cl. 346-140.00R.

Shimizu, Akira: *See—*
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,387,986, Cl. 355-75.000.

Shimizu, Masami: *See—*
Uchidoi, Masanori; Aizawa, Hiroshi; Urushihara, Kazunobu; Suzuki, Nobuyuki; and Shimizu, Masami, 4,387,977, Cl. 354-60.00R.

Shimp, David A., to Celanese Corporation. Water reducible coating composiions. 4,388,374, Cl. 428-414.000.

Shin-Etsu Chemical Co., Ltd.: *See—*
Nakazato, Yasuaki; Miyazaki, Yasushi; Osuga, Makoto; and Kodaira, Masao, 4,388,140, Cl. 156-345.000.

Shinozaki, Fumiaki; Namiki, Tomizo; and Ikeda, Tomoaki, to Fuji Photo Film Co., Ltd. Light-sensitive image-forming material. 4,388,399, Cl. 430-271.000.

Shinshu Seiki Kabushika Kaisha: *See—*
Mikoshiba, Hitoshi; Fujimori, Kazuyoshi; Onodera, Kenji; and Takeuchi, Shin, 4,387,643, Cl. 101-110.000.

Shiobara, Masaji: *See—*
Yoshiba, Yasutaka; and Shiobara, Masaji, 4,387,694, Cl. 123-571.000.

Shioi, Yuji, to Yoshida Industry Co., Ltd. Vanity case. 4,387,730, Cl. 132-83.00R.

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Mizuno, Akira; and Suzuki, Shigeo, 4,388,047, Cl. 417-299.000.

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Suzuki, Ka..aki; and Kuwabara, Shohei, 4,388,079, Cl. 8-648.000.

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Binasik, Chester S.; and Siegert, Louis D., 4,387,654, Cl. 110-347.000.

Siemens Aktiengesellschaft: *See—*
Beifuss, Wolfgang; Birzele, Paul; and Geitz, Gerhard, 4,388,683, Cl. 364-200.000.
Blaschke, Felix; and Salzmann, Theodor, 4,388,577, Cl. 318-717.000.
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Fromm, Ingrid, 4,387,785, Cl. 181-142.000.
Gerke, Peter; and Petersen, Joachim, 4,388,718, Cl. 370-110.100.
Giebel, Burkhard, 4,388,541, Cl. 307-530.000.
Konstantouros, Efthimios; and Hoeck, Karl, 4,388,276, Cl. 422-187.000.
Mueller, Gerhard; and Puritscher, Ernst, 4,388,072, Cl. 493-410.000.
Mueller, Gerhard H., 4,387,638, Cl. 101-1.000.
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Richter, Gerhard; Weidlich, Erhard; and Mund, Konrad, 4,388,163, Cl. 204-101.000.
Schneider, Hartmut; and Lebetzki, Egon, 4,388,095, Cl. 65-18.200.
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Billhartz, Larry E., 4,388,670, Cl. 361-367.000.

Sien, Herbert P.; and McGinley, Thomas J., to Suntech, Inc. Coker feedstock analysis method. 4,388,408, Cl. 436-60.000.

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Kornbau, Thomas W.; and Sievers, Robert A., 4,388,388, Cl. 430-258.000.

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Simon, Wayne E., to Martin Marietta Corporation. Apparatus and method for mixing and pumping fluids. 4,388,045, Cl. 417-54.000.

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Skaale, Douglas E., to Boeing Company, The. Endwise pushdown guide and lateral restraint fitting for cargo. 4,388,030, Cl. 410-69.000.

SKF Kugellagerfabriken GmbH: *See—*
Brandenstein, Manfred; Ernst, Horst M.; and Walter, Lothar, 4,387,938, Cl. 308-184.00R.
Walter, Lothar; Olschewski, Armin; Kispert, Klaus; and Meining, Hans, 4,387,939, Cl. 308-217.000.

Skill, Richard T., to Motorola Inc. Printed circuit board assembly. 4,388,672, Cl. 361-412.000.

Skrgatic, Damir M. J.; and Strachan, John S. Method and apparatus for determining physical quantities. 4,388,708, Cl. 367-2.000.

Slane, Irvin L.: *See—*
Van Eerden, Richard L.; Vial, Norman D., Jr.; and Slane, Irvin L., 4,387,926, Cl. 297-375.000.

Slater Electric Inc.: *See—*
Meehan, James E., 4,387,746, Cl. 140-105.000.

Slaughter, Ronald W.; and Carpenter, David L., to General Motors Corporation. Cellular energy absorbing bumper and lamp assembly mounted thereto. 4,387,920, Cl. 293-117.000.

Slavin, Michael; and Rea, Irvin B., to Lectron Products, Inc. Diaphragm pressure ring for tone generators. 4,387,788, Cl. 181-171.000.

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Klein, Steven H.; and Smith, Alfred H., Jr., 4,388,433, Cl. 524-401.000.

Smith, Cheryl D.: *See—*
Carr, Marvin K.; and Smith, Cheryl D., 4,387,837, Cl. 224-42.210.

Smith & Denison: *See—*
Burkhart, William H., 4,388,168, Cl. 204-196.000.

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Smith International, Inc.: *See—*
Herbert, Roger P., 4,387,774, Cl. 175-40.000.

Smith Kline & French Laboratories Limited: *See—*
Brown, Thomas H., 4,388,317, Cl. 424-248.510.
Durant, Graham J.; and Ganellin, Charon R., 4,388,319, Cl. 424-270.000.

Smith, Michael: *See—*
Hopper, Michael J.; Martin, Michael R.; Bolt, Lawrence; Smith, Michael; and Tavasolian, Ali, 4,388,375, Cl. 428-423.700.

Smith, Morley L., to T. S. Simms & Co. Limited. Hand tools. 4,387,478, Cl. 15-145.000.

Smith, Robert E.: *See—*
Bissell, Eugene R.; Mitchell, Alexander R.; Pearson, Karen W.; and Smith, Robert E., 4,388,233, Cl. 260-112.50R.

Smith, Roger R., to United States of America, Army. Annular seal. 4,387,903, Cl. 277-212.0FB.

SmithKline Beckman Corporation: *See—*
Dewey, Richard H.; Hwang, Bruce Y.; and Kuo, George Y., 4,388,240, Cl. 260-239.0BB.

Smiths Industries Public Limited Company: *See—*
Rush, Derek A.; and Swadling, Roger D., 4,388,613, Cl. 340-347.00P.

SMW Schneider & Weisshaupt GmbH: *See—*
Hiestand, Karl, 4,387,907, Cl. 279-4.000.

Snamprogetti S.P.A.: *See—*
Brandolese, Ernesto, 4,388,199, Cl. 252-33.600.

Sneed, Robert C., Jr.; MacNaughton, Robert G.; and Jacobsen, James H., to Varian Associates, Inc. Symmetrizing means for RF coils in a microwave cavity. 4,388,601, Cl. 333-227.000.

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Orzalesi, Giovanni, 4,388,325, Cl. 424-319.000.

Societe Anonyme DBA: *See—*
Tobiasz, Andre, 4,387,737, Cl. 137-625.210.

S.A. des Etablissements Staubli: *See—*
Palau, Joseph; and Bourgeaux, Pierre, 4,387,741, Cl. 139-66.00R.

Societe Anonyme dite: Compagnie Lyonnaise de Trandmissions Optiques: *See—*
Mignien, Georges, 4,387,957, Cl. 350-96.210.

Societe Chimique des Charbonnages - CdF CHIMIE: *See—*
Bujadoux, Karel, 4,388,219, Cl. 252-429.00C.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Buhler, Marcel; and Olofsson, Mats, 4,388,329, Cl. 426-40.000.
Deveaux, Rene, 4,388,334, Cl. 426-112.000.

Societe Europeenne de Propulsion: *See—*
Fournier, Jean-Pierre; and Cabillic, Jacques, 4,387,937, Cl. 340-682.000.

Societe Industrielle Bertrand Faure: *See—*
Boisset, Bernard, 4,387,874, Cl. 248-396.000.

Societe Nationale de L'Amiante: *See—*
Kimmerle, Frank M.; and Roberge, Pierre, 4,388,149, Cl. 162-153.000.

Societe Sogefina, Societe de Gestion Financiere Armoricaine: *See—*
Herriau, Paul, 4,387,656, Cl. 111-86.000.

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Meunier, Pierre, 4,387,582, Cl. 70-186.000.

Sokoly, Theodore O.: *See—*
Hassler, Stephen P.; and Sokoly, Theodore O., 4,388,603, Cl. 337-158.000.

Solitt, Samuel G.: *See—*
Poole, Michael M.; Solitt, Samuel G.; and Shaw, Jerry, 4,387,806, Cl. 206-232.000.

Solomon, Paul W., to Phillips Petroleum Company. Olefin oxidation with supported CuO catalyst. 4,388,225, Cl. 252-463.000.

Soltysik, George E.; and Anderson, John C. R., to Loranger Manufacturing Company. Dynamic signal generator. 4,388,719, Cl. 371-27.000.

Sommers-Szoszky, Paul. Interchangeable illuminated sign. 4,387,522, Cl. 40-576.000.

Song, Yih H.: *See—*
Bartok, William; Song, Yih H.; Siminski, Vince J.; and Longwell, John P., 4,388,062, Cl. 431-10.000.

Sony Corporation: *See—*
Yamashita, Noriyuki, 4,388,596, Cl. 331-1.00A.

Sooter, Matthew C.: *See—*
Wasson, George E.; Theodore, Frank W.; Boyer, Lyndon D.; and Sooter, Matthew C., 4,388,152, Cl. 201-6.000.

Sotomura, Tadashi: *See—*
Sekido, Satoshi; and Sotomura, Tadashi, 4,388,385, Cl. 429-111.000.

Southern Research Institute: *See—*
Davis, Thomas A.; and Cowsar, Donald R., 4,388,358, Cl. 428-71.000.

Spartus Corporation: *See—*
Rigazio, Anthony W.; Mathieson, Donald E.; and Hawkinson, Paul E., 4,388,002, Cl. 368-88.000.

Spector, Abner. Effects box system and method. 4,388,490, Cl. 179-1.00B.

Spector, George: *See—*
Lewandowski, Raymond J.; and Spector, George, 4,387,534, Cl. 47-66.000.

Spectra-Physics, Inc.: *See—*
Slusher, Robert B., 4,387,952, Cl. 350-6.900.

Spencer, Paul A.; and Dolby, Ray M., to Dolby Laboratories, Inc. Systems for reducing noise in video signals using amplitude averaging of undelayed and time delayed signals. 4,388,729, Cl. 455-72.000.

Sperry Corporation: *See—*
Freitag, Lonny R., 4,388,038, Cl. 414-685.000.
Huie, Jaken Y.; and Jacobus, Dan, 4,388,136, Cl. 156-252.000.
Young, Terry A.; Mann, William W.; Kline, Charles M.; and Schoeneberger, Ernest A., 4,387,857, Cl. 241-101.00B.

Spiegel, Raymond W., to Whirlpool Corporation. Method of forming a spray arm. 4,387,496, Cl. 29-416.000.

Spiess, Irwin: *See—*
Baumann, Robert P.; Blais, Marcel; and Spiess, Irwin, 4,388,458, Cl. 536-38.000.

Sprague Electric Company: *See—*
Richardson, William E., 4,388,632, Cl. 357-15.000.

Sprecher & Schuh AG: *See—*
Roth, Adrian W.; and Morva, Tibor, 4,388,507, Cl. 200-148.00R.

Sproul, William D.: *See—*
Dockus, Kostas F.; and Sproul, William D., 4,388,159, Cl. 204-33.000.

Square D Company: *See—*
Penland, William D.; and Loew, Harold F., 4,388,503, Cl. 200-5.00R.

Stafford, George C.; and Stephens, David R., to Finnigan Corporation. Ionizer having interchangeable ionization chamber. 4,388,531, Cl. 250-427.000.

Stalev, Valery I.: *See—*
Rozenberg, Vladimir L.; Brukovsky, Igor P.; Nekhamin, Sergei M.; Ryss, Mark A.; Pelts, Boris B.; Serov, German V.; Popov, Alexandr N.; Bogoljubov, Gennady D.; Ryazantsev, Leonid A.; Ioffe, Jury S.; Fridman, Grigory B.; Boitsov, Leonid I.; Andrienko, Petr D.; Kovalev, German V.; Sankov, Sergei A.; Fomenko, Vladimir V.; Stalev, Valery I.; Greditor, Pavel K.; Petrov, Stanislav V.; and Mashyanov, Vladimir G., 4,388,108, Cl. 75-10.00R.

Stamicarbon, B.V.: *See—*
Brasz, Albert J. H.; and Wallink, Hermanus A., 4,388,262, Cl. 264-176.00R.

Stanbrough, Michael J.: *See*—
Yahrmarkt, Richard A.; and Stanbrough, Michael J., 4,388,148, Cl. 162-26.000.

Standard Oil Company, The: *See*—
Reagan, John J., 4,387,768, Cl. 166-256.000.

Standard Oil Company (Indiana): *See*—
Fields, Ellis K.; and Anderson, Ronald L., 4,388,470, Cl. 549-240.000.

Stanic, Uros: *See*—
Plevnik, Stanislav; Vrtacnik, Peter; Malezic, Matija; Lukezic, Marino; Stanic, Uros; and Oblak, Pavel, 4,387,719, Cl. 128-421.000.

Stanley, Michael R., to Xerox Corporation. Charged particle containment apparatus. 4,387,982, Cl. 355-3.0DD.

Stark, Robert: *See*—
Timbers, Gordon E.; Stark, Robert; Caron, Jacques C.; Cumming, Daniel B.; Cowmeadow, Richard R.; and Gingell, Alexander W., 4,387,630, Cl. 99-348.000.

Starzak, Marian: *See*—
Knypl, Maria; Knypl, Eugeniusz; Starzak, Marian; Mieczkowska, Ewa; Pawlus, Urszula; Palubicki, Romuald; Ficek, Mieczyslaw; and Goldynia, Jozef, 4,388,438, Cl. 524-833.000.

Stauber, Ronald C.: *See*—
Pavlo, John A.; and Stauber, Ronald C., 4,387,873, Cl. 248-226.400.

Stauffer Chemical Company: *See*—
Gutman, Arnold D.; and Williams, John W., 4,388,249, Cl. 260-465.00F.

Stavish, Michael F.; and Reti, Aldo M., to Handy & Harman. Rhenium-bearing copper-nickel-tin alloys. 4,388,270, Cl. 420-473.000.

Steel, Charles F. Hand racket. 4,387,895, Cl. 273-67.00B.

Steele, Gerald H.: *See*—
Schure, Ralph M.; and Steele, Gerald H., 4,388,426, Cl. 523-462.000.

Stein, Stanley, to Hoffmann-La Roche Inc. Enkephalin-like compounds in bovine adrenal medulla. 4,388,236, Cl. 260-112.50R.

Steiner, Gerd; Franke, Albrecht; Lenke, Dieter; Teschendorf, Hans-Juegen; Worstmann, Wolfgang; and Kreiskott, Horst, to BASF Aktiengesellschaft. 6(1-Piperazinyl), piperidino and (1(homopiperazinyl)11-cyanomethylene morphanthridines. 4,388,237, Cl. 260-239.0BC.

Stendel, Wilhelm: *See*—
Fuchs, Rainer; Naumann, Klaus; Hammann, Ingeborg; and Stendel, Wilhelm, 4,388,322, Cl. 424-304.000.

Stephens, David R.: *See*—
Stafford, George C.; and Stephens, David R., 4,388,531, Cl. 250-427.000.

Sterling Drug Inc.: *See*—
Margulies, Herman, 4,387,832, Cl. 221-63.000.

Stern, Georg: *See*—
Bartel, Gunter; Patz, Eckhard; Koch, Karl; Stern, Georg; Stotz, Manfred; and Triffterer, Adolf, 4,388,053, Cl. 417-542.000.

Stettler, Hans; Buser, Karl; and Chavannes, Jean-Pierre, to Sandoz Ltd. Phosphate-free cleaning compositions. 4,388,205, Cl. 252-135.000.

Stevens, Richard W., to Milwaukee Boiler Manufacturing Co. Tunnel excavator. 4,387,928, Cl. 299-33.000.

Stevens, Samuel B.; and Lytle, James R., Sr., to Caterpillar Tractor Co. Bulk material handler and feeder. 4,387,842, Cl. 226-113.000.

Stewart, Robert E.: *See*—
Kotok, Alan; Murphy, Daniel L.; and Stewart, Robert E., 4,388,685, Cl. 364-200.000.

Stinton, Robert T.: *See*—
Long, Richard W.; and Stinton, Robert T., 4,388,134, Cl. 156-248.000.

Stohler, Robert A.; and Murray, Benjamin D., to United States of America, Navy. Lifting and stowage system. 4,388,032, Cl. 414-95.000.

Stolzer, Claus: *See*—
Elbe, Hans-Ludwig; Arold, Hermann; Kranz, Eckart; and Stolzer, Claus, 4,388,465, Cl. 548-262.000.

Stork, Karl: *See*—
Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, 4,388,213, Cl. 252-392.000.
Oppenlaender, Knut; Stork, Karl; and Barthold, Klaus, 4,388,214, Cl. 252-392.000.

Stotz, Manfred: *See*—
Bartel, Gunter; Patz, Eckhard; Koch, Karl; Stern, Georg; Stotz, Manfred; and Triffterer, Adolf, 4,388,053, Cl. 417-542.000.

Strachan, John S.: *See*—
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Straszer, Rudolf: *See*—
Schmidhammer, Ludwig; Dummer, Gerhard; and Straszer, Rudolf, 4,388,278, Cl. 423-488.000.

Straubel, Max: *See*—
Leblanc, Jean; Pigeroulet, Jean; Straubel, Max; and Eckert, Konrad, 4,387,686, Cl. 123-446.000.

Streeter, Arnet. Air scrubber. 4,388,090, Cl. 55-228.000.

Strehler, Hugo; Hoerauf, Werner; and Valentin, Guenter, to BASF Aktiengesellschaft. Production of concentrates of titanium dioxide in polycaprolactam. 4,388,425, Cl. 523-333.000.

Strohm & Maier Labormobel GmbH: *See*—
Maier, Klaus, 4,387,941, Cl. 312-194.000.

Strother, John A., to RCA Corporation. Low-distortion detection of pulses superimposed on an unknown and variable background signal. 4,388,646, Cl. 358-160.000.

Strub, Eric W.; and Strub, Kenneth M. Banding apparatus. 4,387,553, Cl. 53-585.000.

Strub, Kenneth M.: *See*—
Strub, Eric W.; and Strub, Kenneth M., 4,387,553, Cl. 53-585.000.

Stuart, R. Daniel: *See*—
Grey, James S.; Stuart, R. Daniel; and Lake, Edwin D., 4,387,605, Cl. 74-694.000.

Studer, Philip A., to United States of America, National Aeronautics and Space Administration. Linear magnetic bearing. 4,387,935, Cl. 308-10.000.

Studtmann, Rainer; and Bock, Erich, to Schubert & Salzer. Apparatus for lifting a bobbin from a spindle. 4,387,556, Cl. 57-273.000.

Styles, Alan E.: *See*—
Franek, Josef T.; Porucznik, Paul; and Styles, Alan E., 4,387,747, Cl. 141-1.000.

Suarez, Alfred. Hoist accessory for pallet trucks. 4,388,037, Cl. 414-607.000.

Sudo, Masatoshi; Hashimoto, Shunichi; and Kambe, Shoji, to Kabushiki Kaisha Kobe Seiko Sho. Method of making high strength hot rolled steel sheet having excellent flash butt weldability, fatigue characteristic and formability. 4,388,122, Cl. 148-12.00F.

Sueyasu, Masanobu: *See*—
Okane, Koji; Okamura, Shozo; Sueyasu, Masanobu; Masuda, Seiichi; Tanaka, Tsutomu; and Tanaka, Koichi, 4,388,084, Cl. 48-197.00R.

Sugano, Junichiro; Yui, Tomoyuki; Minamikawa, Yoshitugu; and Fujimoto, Tsuneo, to Mitsubishi Gas Chemical Company, Inc. Process for producing sodium percarbonate. 4,388,287, Cl. 423-415.00P.

Sugano, Nobukazu, to Matsushita Electric Industrial Co., Ltd. Clutch motor arrangement. 4,387,793, Cl. 192-0.02R.

Suganuma, Tetsuya; Fuwa, Yoshio; Fujita, Shuichi; and Takahashij Yoshitaka, to Toyota Jidosha Kogyo Kabushiki Kaisha. Anti-wear sintered alloy. 4,388,114, Cl. 75-243.000.

Sugimura, Noboru: *See*—
Matsuda, Hideki; Makino, Shigeo; and Sugimura, Noboru, 4,387,758, Cl. 152-353.00R.

Sugiura, Shinji; and Horibe, Kyoichi, to Kansai Paint Co., Ltd. Heat-curable coating composition. 4,388,445, Cl. 525-124.000.

Sugiyama, Masatoshi; Ogawa, Akira; and Imai, Shinichi, to Fuji Photo Film Co., Ltd. Aqueous ink composition. 4,388,115, Cl. 106-22.000.

Suimon, Yoshio, to ICD Corporation. Toy remote-control motor bicycle. 4,387,532, Cl. 46-254.000.

Sullivan, John; and Lillibridge, Harold R., to Champion International Corporation. Gum applying apparatus. 4,388,071, Cl. 493-333.000.

Sumida, Morihiro: *See*—
Nakashima, Hiroyuki; Sumida, Morihiro; and Goto, Hiroki, 4,388,112, Cl. 75-51.000.

Sumitomo Chemical Company, Limited: *See*—
Ono, Keiichi; Kawakami, Hajime; and Katsube, Junki, 4,388,469, Cl. 549-59.000.

Sumitomo Electric Industries, Ltd.: *See*—
Kimura, Takao; and Yamanishi, Toru, 4,388,093, Cl. 65-3.110.

Sumitomo Metal Industries, Ltd.: *See*—
Okane, Koji; Okamura, Shozo; Sueyasu, Masanobu; Masuda, Seiichi; Tanaka, Tsutomu; and Tanaka, Koichi, 4,388,084, Cl. 48-197.00R.

Sunden, Olof; Batelson, Per G.; Johansson, Hans E.; Larsson, Hans M.; and Svending, Per J., to Eka Aktiebolag. Papermaking and products made thereby. 4,388,150, Cl. 162-175.000.

Sundermann, Rudolf; Konig, Klaus; Engbert, Theodor; Becker, Gernot; and Hammen, Gunther, to Bayer Aktiengesellschaft. Process for the preparation of polyisocyanates. 4,388,246, Cl. 260-453.00P.

Suntech, Inc.: *See*—
Sien, Herbert P.; and McGinley, Thomas J., 4,388,408, Cl. 436-60.000.

Suntola, Tuomo; and Antson, Jorma O., to Ou Lohja Ab. Electroluminescent display component. 4,388,554, Cl. 313-505.000.

Suominen, Heikki S. Tubular insulating curtain and method of manufacture. 4,388,354, Cl. 428-12.000.

Suzuki, Hajime; Umemura, Yoshifumi; and Kimbara, Masahiko, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for regulating tension in warps of a weaving machine. 4,387,743, Cl. 139-110.000.

Suzuki, Kazuaki; and Kuwabara, Shohei, to Showa Kagaku Kogyo Co., Ltd. Color salt-containing optical brightener composition. 4,388,079, Cl. 8-648.000.

Suzuki, Nobuyuki: *See*—
Uchidoi, Masanori; Aizawa, Hiroshi; Urushihara, Kazunobu; Suzuki, Nobuyuki; and Shimizu, Masami, 4,387,977, Cl. 354-60.00R.

Suzuki, Shigeo: *See*—
Mizuno, Akira; and Suzuki, Shigeo, 4,388,047, Cl. 417-299.000.

Suzuki, Shin-ichi; Kitoh, Shinya; Toda, Haruhiko; and Higo, Moriaki, to Lion Corporation. N-(2-Hydroxy-3-methacryloyloxypropyl)-aminobenzoic acid derivatives and dental adhesive composition containing same. 4,388,421, Cl. 523-118.000.

Suzuki, Shuichi; Aizawa, Masuo; Koyama, Masao; Sato, Yuichi; and Koezuka, Junji, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrochemical measuring apparatus provided with an enzyme electrode. 4,388,166, Cl. 204-403.000.

Suzuki, Takaya; Inoue, Yosuke; and Aoyama, Takashi, to Hitachi, Ltd. Method for chemical vapor deposition. 4,388,342, Cl. 427-8.000.

Svending, Per J.: *See*—
Sunden, Olof; Batelson, Per G.; Johansson, Hans E.; Larsson, Hans M.; and Svending, Per J., 4,388,150, Cl. 162-175.000.

Swadling, Roger D.: *See*—
Rush, Derek A.; and Swadling, Roger D., 4,388,613, Cl. 340-347.00P.

Swartz, Peter J. Rotatable cuvette array. 4,387,992, Cl. 356-246.000.

Sweeney, Raymond G.; and Rammer, William L., to Badger Northland, Inc. Tapered bed feeder. 4,387,799, Cl. 198-735.000.

Swendrowski, Steven D.: *See*—
Lauriello, Alfred F.; and Swendrowski, Steven D., 4,387,946, Cl. 339-66.00M.

Swift, Graham; Cenci, Harry J.; and Jenkins, Raymond F., to Rohm and Haas Company. Lithographic ink vehicle containing addition polymer and aliphatic hydrocarbon solvent. 4,388,434, Cl. 524-476.000.

Sybron Corporation: *See*—
Rosenfeldt, Wolfgang, 4,388,572, Cl. 318-317.000.

Symons, Robert S.; and Jory, Howard R., to Varian Associates, Inc. Gyrotron with improved stability. 4,388,555, Cl. 315-4.000.

Syntex (U.S.A.) Inc.: *See*—
Fu, Cherng-Chyi, 4,388,229, Cl. 252-549.000.

Szeto, Leo H.: *See*—
Silfvast, William T.; Szeto, Leo H.; and Wood, Obert R., II, 4,388,720, Cl. 372-76.000.

Szigeti, Elemer. Device for mixing and distributing a two-constituent product. 4,387,998, Cl. 366-130.000.

Szporny, Laszlo: *See*—
Nyeki, Olga; Kisfaludy, Lajos; Karpati, Egon; and Szporny, Laszlo, 4,388,304, Cl. 424-177.000.

T. D. Williamson, Inc.: *See*—
Vanzant, Hershel, 4,387,740, Cl. 138-89.000.

T. S. Simms & Co. Limited: *See*—
Smith, Morley L., 4,387,478, Cl. 15-145.000.

Tabei, Masatoshi; Wada, Minoru; Takahashi, Yonosuke; and Yoshida, Satoshi, to Fuji Photo Film Co., Ltd. Heat-mode recording material. 4,388,400, Cl. 430-346.000.

Tabuchi, Toshiaki: *See*—
Osaki, Mikio; Tabuchi, Toshiaki; and Shimazawa, Yoichi, 4,388,630, Cl. 346-140.00R.

Tachiuchi, Tsuguji: *See*—
Komatsu, Shigeru; Hirahata, Shigeru; and Tachiuchi, Tsuguji, 4,388,621, Cl. 340-802.000.
Komatsu, Shigeru; Mizukami, Kazushi; Tachiuchi, Tsuguji; Nagai, Kunihiko; and Koyama, Takuo, 4,388,707, Cl. 365-230.000.

Tada, Yoshiharu; and Kitano, Yuichi, to Diesel Kiki Kabushiki Kaisha. Control circuit for automobile electro-magnetic driving equipment. 4,388,571, Cl. 318-293.000.

Tahara, Seiichiro: *See*—
Nishikawa, Syuzi; Matsubara, Toru; Iida, Kazuyoshi; and Tahara, Seiichiro, 4,388,427, Cl. 523-500.000.

Takada, Juichiro. Seat belt system using lap belt having energy absorption capacity. 4,387,911, Cl. 280-802.000.

Takagi, Katsuaki; and Kita, Yuzo, to Hitachi, Ltd. Signal converter. 4,388,612, Cl. 340-347.0DA.

Takahashi, Akira: *See*—
Tsunetomi, Katashi; Takahashi, Akira; and Tsuji, Katsuyuki, 4,387,680, Cl. 123-198.00F.

Takahashi, Nobuyuki, to Anelva Corporation. Processing apparatus comprising a cassette member temporarily swingable to vertically hold a plurality of substrates. 4,388,034, Cl. 414-331.000.

Takahashi, Shiro; Sanada, Kazuo; Inada, Koichi; and Fukuda, Osamu, to Nippon Telegraph & Telephone Public Corporation; and Fujikura Cable Works, Ltd. Apparatus for producing multi-component glass fiber preform. 4,388,098, Cl. 65-157.000.

Takahashi, Toru: *See*—
Hosono, Nagao; Kinoshita, Koichi; and Takahashi, Toru, 4,387,664, Cl. 118-658.000.

Takahashi, Yonosuke: *See*—
Tabei, Masatoshi; Wada, Minoru; Takahashi, Yonosuke; and Yoshida, Satoshi, 4,388,400, Cl. 430-346.000.

Takahashij Yoshitaka: *See*—
Suganuma, Tetsuya; Fuwa, Yoshio; Fujita, Shuichi; and Takahashij Yoshitaka, 4,388,114, Cl. 75-243.000.

Takao, Kengo; Ohmachi, Mineo; Kihara, Hisatsugu; Toki, Kenshiro; Tomita, Yukio; and Mizota, Toshihiro, to Nippon Steel Corporation; and Hitachi Shipbuilding & Engineering Company Limited. System for generating power with top pressure of blast furnaces. 4,387,562, Cl. 60-39.150.

Takavarasha, Murashiki-Job C. Suspension systems. 4,387,909, Cl. 280-104.000.

Takeda Chemical Industries, Ltd.: *See*—
Terao, Shinji; Shiraishi, Mitsuru; and Kato, Kaneyoshi, 4,388,312, Cl. 424-244.000.

Takematsu, Yoshiyuki. Intensity control circuit for an electronic flash device. 4,387,976, Cl. 354-33.000.

Takemoto, Iwao: *See*—
Koike, Norio; Sasano, Akira; Taniguchi, Yoshio; Nakano, Toshio; Aoki, Masakazu; and Takemoto, Iwao, 4,387,987, Cl. 355-133.000.

Takemura, Toru: *See*—
Ishida, Masamichi; Kamo, Jun; Takemura, Toru; Minami, Shunsuke; and Kamada, Kensuke, 4,388,256, Cl. 264-41.000.

Takemura, Yozo; Kobayashi, Isao; Akita, Yasuhiro; and Kato, Kaoru, to Nippon Steel Corporation. Method of preventing damage of an immersed tuyere of a decarburization furnace in steel making. 4,388,113, Cl. 75-51.000.

Takeshita, Toru: *See*—
Nishikawa, Osamu; Ishimaru, Kenji; Takeshita, Toru; and Tsuruta, Hideki, 4,388,243, Cl. 260-397.200.

Takeuchi, Osamu; Hasegawa, Hiroshi; Izumi, Susumu; and Otsuki, Naoki, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha; and Nippon Steel Corporation. Metal heating furnace. 4,388,068, Cl. 432-122.000.

Takeuchi, Shin: *See*—
Mikoshiba, Hitoshi; Fujimori, Kazuyoshi; Onodera, Kenji; and Takeuchi, Shin, 4,387,643, Cl. 101-110.000.

Takezoe, Fumihiko; and Koyama, Minoru, to Fuji Electric Co., Ltd. Two-way transmission system. 4,388,716, Cl. 370-29.000.

Takimoto, Masaaki: *See*—
Miyoshi, Takahito; Okutu, Toshimitu; Takimoto, Masaaki; Saida, Takashi; Akashi, Goro; and Fujiyama, Masaaki, 4,388,360, Cl. 428-172.000.

Talonen, Timo T.; and Makinen, Tuula S. M., to Outokumpu Oy. Process for the recovery of lead from a lead-bearing sulfide concentrate. 4,388,111, Cl. 75-26.000.

Tamai, Kiminori; and Hayama, Masashi, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,388,369, Cl. 428-339.000.

Tamm, Hans F.: *See*—
Rodewald, Bernhard; Tippmer, Kurt; and Tamm, Hans F., 4,388,172, Cl. 208-10.000.

Tamura, Misao: *See*—
Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Tamura, Misao, 4,388,345, Cl. 427-54.100.

Tan, Hian-Bie: *See*—
Wobben, Hendrik J.; and Tan, Hian-Bie, 4,388,330, Cl. 426-51.000.

Tan-Hsu, Inri: *See*—
Hsu, Herbert H.; and Tan-Hsu, Inri, 4,387,471, Cl. 2-10.000.

Tanaka, Koichi: *See*—
Moriya, Shigeru; Yoshida, Akio; Tanaka, Koichi; and Nishimura, Yuji, 4,387,912, Cl. 280-804.000.
Okane, Koji; Okamura, Shozo; Sueyasu, Masanobu; Masuda, Seiichi; Tanaka, Tsutomu; and Tanaka, Koichi, 4,388,084, Cl. 48-197.00R.

Tanaka, Tsutomu: *See*—
Okane, Koji; Okamura, Shozo; Sueyasu, Masanobu; Masuda, Seiichi; Tanaka, Tsutomu; and Tanaka, Koichi, 4,388,084, Cl. 48-197.00R.

Tanaka, Yoshihiro: *See*—
Matsuda, Motonobu; and Tanaka, Yoshihiro, 4,387,988, Cl. 356-1.000.

Tani, Hakuzo, to Minolta Camera Co. Ltd. Multi-layer anti-reflection coating. 4,387,960, Cl. 350-164.000.

Taniguchi, Yasuo; Asano, Toshio; Funami, Haruo; and Itou, Kouichi, to Denki Kagaku Kogyo Kabushiki Kaisha. Stabilizer or dispersing agent for use in a suspension polymerization of a vinyl compound comprising a modified and partially hydrolyzed anionic polyvinyl alcohol. 4,388,442, Cl. 525-60.000.

Taniguchi, Yoshio: *See*—
Koike, Norio; Sasano, Akira; Taniguchi, Yoshio; Nakano, Toshio; Aoki, Masakazu; and Takemoto, Iwao, 4,387,987, Cl. 355-133.000.

Tanihara, Koichi, to Director-General of the Agency of Industrial Science and Technology. Method for the preparation of guanidine sulfamate. 4,388,474, Cl. 564-241.000.

Tanimoto, Masahiro, to Horiba, Ltd. Automatic cleaning device for use in an extracting furnace of an apparatus for analyzing gases in metals. 4,388,722, Cl. 373-118.000.

Tanimoto, Tetuyuki: *See*—
Yamazaki, Yasuo; Kimura, Kazuo; and Tanimoto, Tetuyuki, 4,387,967, Cl. 350-423.000.

Tao, Bernard Y.: *See*—
Lomneth, Richard B.; Blair, Daniel R.; Parnell, Gary L.; and Tao, Bernard Y., 4,388,339, Cl. 426-602.000.

Tarli, Paolo: *See*—
Cocola, Francesco; Tarli, Paolo; and Neri, Paolo, 4,388,295, Cl. 424-1.000.

Tataria, Harshad: *See*—
De Haan, Abel; and Tataria, Harshad, 4,388,380, Cl. 429-91.000.

Tatsuguchi, Kazuo, to Victor Company of Japan, Ltd. Rotation control system in a rotary recording medium reproducing apparatus. 4,388,713, Cl. 369-50.000.

Tauschinski, Stefan, to Eduard Fresenius Chemisch Pharmazeutische Industrie KG. Self-sealing connector for use with plastic cannulas and vessel catheters. 4,387,879, Cl. 251-149.100.

Tavasolian, Ali: *See*—
Hopper, Michael J.; Martin, Michael R.; Bolt, Lawrence; Smith, Michael; and Tavasolian, Ali, 4,388,375, Cl. 428-423.700.

Tawada, Yoshihisa: *See*—
Hamakawa, Yoshihiro; and Tawada, Yoshihisa, 4,388,482, Cl. 136-258.000.

Taylor, Leonard S., to United States of America, Navy. Flush mountable plasma density profile probe device. 4,388,588, Cl. 324-72.500.

TDK Electronics Co., Ltd.: *See*—
Kubota, Yuichi, 4,388,376, Cl. 428-425.900.
Shiba, Haruo, 4,387,823, Cl. 220-4.00R.
Tamai, Kiminori; and Hayama, Masashi, 4,388,369, Cl. 428-339.000.

Technische Gerate-u Entwicklungsgesellschaft m.b.H.: *See*—
Jordan, Heinz, 4,387,867, Cl. 244-12.200.

Teijin Limited: *See*—
Nishikawa, Osamu; Ishimaru, Kenji; Takeshita, Toru; and Tsuruta, Hideki, 4,388,243, Cl. 260-397.200.

Teledyne Still-Man Manufacturing: *See—*
Willbanks, Henry O.; and Johnson, Richard P., 4,388,518, Cl. 219-455.000.

Terabayashi, Gosaku: *See—*
Sarai, Hiroshi; and Terabayashi, Gosaku, 4,387,853, Cl. 239-284.00R.

Terao, Shinji; Shiraishi, Mitsuru; and Kato, Kaneyoshi, to Takeda Chemical Industries, Ltd. Quinone derivatives, their production and use. 4,388,312, Cl. 424-244.000.

Terasaki Denki Sangyo Kabushiki Kaisha: *See—*
Murai, Wasaburo; and Horikawa, Masao, 4,388,506, Cl. 200-144.00R.

Terauchi, Kazuo; and Fukata, Masatoshi, to Hitachi Shipbuilding & Engineering Co., Ltd. Device for engaging and disengaging cable. 4,387,659, Cl. 114-199.000.

Teschendorf, Hans-Juegen: *See—*
Steiner, Gerd; Franke, Albrecht; Lenke, Dieter; Teschendorf, Hans-Juegen; Worstmann, Wolfgang; and Kreiskott, Horst, 4,388,237, Cl. 260-239.0BC.

Test, Howard R., II; and Drury, Michael J., to Texas Instruments Incorporated. Data processing system having dual output modes. 4,388,696, Cl. 364-900.000.

Tetra Pak Developpement SA: *See—*
Ignell, Rolf L., 4,387,820, Cl. 215-320.000.

Tetra Pak Developpement S.A.: *See—*
Reil, Wilhelm, 4,387,547, Cl. 53-131.000.

Tetsuro, Oshimi, to Noritake, Co., Limited. Grinding machine assembly. 4,387,538, Cl. 51-35.000.

Texaco Inc.: *See—*
Lewis, Paul H.; Durkin, Joseph A.; and Froelich, Joseph A., 4,388,178, Cl. 208-115.000.
Lionetti, Thomas A.; and Schrader, Charles H., 4,388,175, Cl. 208-74.000.
Pratt, Roy E.; Sayles, Scott M.; Bowers, Kerry W.; and Scott, Richard P., deceased, 4,388,176, Cl. 208-80.000.
Valkovich, Phillip B.; and Hammond, Kenneth G., 4,388,200, Cl. 252-34.000.

Texas Instruments Incorporated: *See—*
Chiavaroli, Donald J., 4,387,690, Cl. 123-549.000.
Jones, James J.; and McIntosh, John O., 4,388,692, Cl. 364-557.000.
Marcoux, Leo; and Ting, Youn, 4,387,691, Cl. 123-557.000.
Rao, G. R. Mohan, 4,388,121, Cl. 148-1.500.
Schulte, Eric F.; and Porter, Vernon R., 4,388,517, Cl. 219-121.0LJ.
Test, Howard R., II; and Drury, Michael J., 4,388,696, Cl. 364-900.000.

Textieltechniek Haaksbergen B.V.: *See—*
Leuvelink, Gerrit W. E., 4,388,264, Cl. 264-281.000.

Textron Inc.: *See—*
Carey, Lee F., 4,387,564, Cl. 60-242.000.

Theodore, Frank W.: *See—*
Wasson, George E.; Theodore, Frank W.; Boyer, Lyndon D.; and Sooter, Matthew C., 4,388,152, Cl. 201-6.000.

Tholen, Paul, to Klockner-Humboldt Deutz Aktiengesellschaft. Light metal cylinder head for internal combustion engines. 4,387,678, Cl. 123-193.00H.

Thomas & Betts Corporation: *See—*
Haitmanek, Louis F., 4,387,949, Cl. 339-125.00R.

Thomas, Franz, to Christian, Pfeiffer. Swirling air centrifugal scatter classifier. 4,388,183, Cl. 209-139.00A.

Thomas, Michael D.; and Ryder, Francis E., to Ryder International Corporation. Modular disinfector device. 4,388,521, Cl. 219-521.000.

Thomas, Thomas J.; and Hoquet, Robert G., to Mobay Chemical Corporation. Anthraquinone dyestuff modification. 4,388,078, Cl. 8-514.000.

Thomas, William L.: *See—*
Cox, Charles M.; and Thomas, William L., 4,388,645, Cl. 358-147.000.

Thompson, John K.: *See—*
Martin, Earl C.; Thompson, John K.; and Gargrave, Robert J., 4,387,583, Cl. 72-22.000.

Thompson, Quentin E.: *See—*
Robach, Michael C.; and Thompson, Quentin E., 4,388,321, Cl. 424-279.000.

Thomson-CSF: *See—*
Dehaene, Jean P., 4,388,726, Cl. 375-44.000.
Dupressoir, Albert, 4,388,624, Cl. 343-727.000.
Gautier, Herve; and Maerfeld, Charles, 4,388,599, Cl. 333-150.000.

Thye-Lokenberg, Heinrich. Pig box grating. 4,387,666, Cl. 119-28.000.

TII Industries Inc.: *See—*
Ahuja, Omprakash G., 4,388,501, Cl. 179-175.30R.

Tilley, Frederick H.: *See—*
Cooke, Jeremy C. R.; and Tilley, Frederick H., 4,387,652, Cl. 110-224.000.

Timbers, Gordon E.; Stark, Robert; Caron, Jacques C.; Cumming, Daniel B.; Cowmeadow, Richard R.; and Gingell, Alexander W., to Canadian Patents & Development Limited. Food processing with steam. 4,387,630, Cl. 99-348.000.

Timeplex, Inc.: *See—*
Heinemann, Joseph B., 4,388,695, Cl. 364-900.000.

Timm, Horst, to Blaupunkt-Werke GmbH. Combined electronic apparatus indicator and cassette tape transducer apparatus, particularly combined radio-recorder for automotive use. 4,388,712, Cl. 369-10.000.

Tindall, Melvyn Alan: *See—*
Cocker, Michael J., 4,387,917, Cl. 292-40.000.

Ting, Youn: *See—*
Marcoux, Leo; and Ting, Youn, 4,387,691, Cl. 123-557.000.

Tippmer, Kurt: *See—*
Rodewald, Bernhard; Tippmer, Kurt; and Tamm, Hans F., 4,388,172, Cl. 208-10.000.

Tipton, Joe D. Cyclonic separator-filter. 4,388,087, Cl. 55-96.000.

Tobiasz, Andre, to Societe Anonyme DBA. Hydraulic assisted steering device for a motor vehicle. 4,387,737, Cl. 137-625.210.

Toda, Haruhiko: *See—*
Suzuki, Shin-ichi; Kitoh, Shinya; Toda, Haruhiko; and Higo, Moriaki, 4,388,421, Cl. 523-118.000.

Toft, Mark A.: *See—*
Shore, Sheldon G.; and Toft, Mark A., 4,388,284, Cl. 423-295.000.

Tokarz, Richard D., to United States of America, Energy. Temperature profile detector. 4,388,267, Cl. 376-247.000.

Toki, Kenshiro: *See—*
Takao, Kengo; Ohmachi, Mineo; Kihara, Hisatsugu; Toki, Kenshiro; Tomita, Yukio; and Mizota, Toshihiro, 4,387,562, Cl. 60-39.150.

Tokyo Ohka Kogyo Kabushiki Kaisha: *See—*
Kanai, Wataru, 4,388,397, Cl. 430-197.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Enjoji, Susumu, 4,387,721, Cl. 128-660.000.
Kanuma, Akira, 4,388,537, Cl. 307-297.000.
Suzuki, Shuichi; Aizawa, Masuo; Koyama, Masao; Sato, Yuichi; and Koezuka, Junji, 4,388,166, Cl. 204-403.000.
Tsunekawa, Shou, 4,388,610, Cl. 382-8.000.
Ueno, Tsuyoshi; Mukai, Hideo; Nakatomi, Yoshitsugu; Saito, Hiroshi; Kinoshita, Koichi; and Konuma, Takaaki, 4,387,980, Cl. 355-3.0CH.

Tomita, Yukio: *See—*
Takao, Kengo; Ohmachi, Mineo; Kihara, Hisatsugu; Toki, Kenshiro; Tomita, Yukio; and Mizota, Toshihiro, 4,387,562, Cl. 60-39.150.

Tompkins, Russell E.: *See—*
Honsinger, Vernon B.; and Tompkins, Russell E., 4,388,545, Cl. 310-156.000.

Toray Silicone Company, Ltd.: *See—*
Ona, Isao, 4,388,437, Cl. 524-588.000.

Torban, Samuil S.: *See—*
Grinberg, Efim N.; Braginsky, Yakov I.; Zhislin, Yakov M.; Lavrov, Vladimir V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; Filatov, Alexandr A.; Yaroshenko, Jury F.; Torban, Samuil S.; Kovalev, Viktor M.; Urusov, Georgy I.; Rozanova, Alla V.; Radakova, Tatyana N.; Krivosheina, Larisa I.; Bykov, Vladimir P.; Bykova, Vladimira M.; and Gultsev, Igor V., 4,387,485, Cl. 17-48.000.

Torii, Takahiro; and Senoh, Hideaki, to Mitsubishi Paper Mills, Ltd. No-carbon copying paper. 4,387,913, Cl. 282-27.500.

Torin Corporation: *See—*
Cavagnero, Erman V.; and Waligura, Stanley M., 4,387,585, Cl. 72-131.000.

Toshiba Electric Equipment Corporation: *See—*
Koshimura, Yasunobu; Kobayashi, Hisao; and Aoike, Nanjou, 4,388,561, Cl. 315-171.000.
Sato, Koji; and Kaneko, Tadahiro, 4,388,676, Cl. 362-260.000.
Yamazaki, Kyoji; and Kamiya, Fumio, 4,388,567, Cl. 315-291.000.

Toy, Lester T.; Moyer, Wendell W.; Lyons, Bernard J.; and Horsma, David A., to Raychem Corporation. Conductive polymer compositions, and to devices comprising such compositions. 4,388,607, Cl. 338-22.0SD.

Toyo Ink Manufacturing Co., Ltd.: *See—*
Nishikawa, Syuzi; Matsubara, Toru; Iida, Kazuyoshi; and Tahara, Seiichiro, 4,388,427, Cl. 523-500.000.

Toyo Kogyo Co., Ltd.: *See—*
Ikemizu, Naoyuki, 4,388,355, Cl. 428-31.000.

Toyo Kohan Company, Ltd.: *See—*
Inui, Tsuneo; Kuroda, Hitoshi; Hanabusa, Tetsuro; and Yazaki, Katsuhito, 4,388,158, Cl. 204-27.000.

Toyo Seikan Kaisha, Ltd.: *See—*
Kitamura, Yoichi; Kobayashi, Seishichi; and Ueno, Hiroshi, 4,387,830, Cl. 220-456.000.
Kubo, Tateo, 4,388,058, Cl. 425-110.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Imamura, Noriaki, 4,387,792, Cl. 188-328.000.
Kaji, Kiyokane, 4,387,588, Cl. 73-35.000.
Katagiri, Masayoshi; and Ogura, Osamu, 4,387,625, Cl. 91-369.00B.
Miyagi, Hideo; and Nagase, Masaomi, 4,387,682, Cl. 123-339.000.
Mizuno, Tooru; and Hagisato, Yasuo, 4,388,558, Cl. 315-77.000.
Moriya, Shigeru; Yoshida, Akio; Tanaka, Koichi; and Nishimura, Yuji, 4,387,912, Cl. 280-804.000.
Sarai, Hiroshi; and Terabayashi, Gosaku, 4,387,853, Cl. 239-284.00R.
Suganuma, Tetsuya; Fuwa, Yoshio; Fujita, Shuichi; and Takahashij Yoshitaka, 4,388,114, Cl. 75-243.000.
Yasumatsu, Jun; Tsuge, Hiroshi; and Kawaharazaki, Takashi, 4,387,790, Cl. 188-65.300.

Transnuklear GmbH: *See—*
Knackstedt, Hans-Gunther; Muller, Erhard; Christ, Richard; and Kroll, Hartmut, 4,388,268, Cl. 376-272.000.

Travnicek, Mojmir: *See—*
Hynst, Karel; and Travnicek, Mojmir, 4,387,646, Cl. 101-350.000.

Trevex Corporation: *See—*
Preiss, Gunther W. B., 4,388,043, Cl. 417-36.000.

Trevino-Alanis, Asdrubal: *See—*
Carrillo-Cantu, David H.; and Trevino-Alanis, Asdrubal, 4,388,116, Cl. 106-97.000.

Triffterer, Adolf: *See—*
Bartel, Gunter; Patz, Eckhard; Koch, Karl; Stern, Georg; Stotz, Manfred; and Triffterer, Adolf, 4,388,053, Cl. 417-542.000.

Trio Kabushiki Kaisha: *See—*
Miyamoto, Yukihiko, 4,388,496, Cl. 179-1.0GS.

Triumph-Adler A.G. fur Buro- und Informationstechnik: *See—*
Meier, Heinz; and Zurawski, Egon, 4,388,007, Cl. 400-314.000.

Trouet, Andre B. L.; Hannart, Jean A. A. J.; and Rao, Kandukuri S. B., to Omnichem S.A. Vinblastin-23-oyl amino acid derivatives for use as antitumor agents. 4,388,305, Cl. 424-177.000.

True Temper Corporation: *See—*
Luebke, Robert W., 4,388,357, Cl. 428-57.000.

Trybulski, Eugene J., to Hoffmann-La Roche Inc. Production of 1-halophenyl and 1-phenyl-3,4-dihydro-5H-2-benzazepine-5-ones. 4,388,239, Cl. 260-239.0BB.

Tsai, James T.: *See—*
Codispoti, Thomas E.; Giustino, James M.; Griffith, Richard M.; and Tsai, James T., 4,388,261, Cl. 264-171.000.

Tschan, J. Donald; and Hatton, Clifford P., to P. H. Bowman Co., Inc. Anchor bracket. 4,387,543, Cl. 52-295.000.

Tseng, Eric S.: *See—*
Basol, Bulent M.; Tseng, Eric S.; and Rod, Robert L., 4,388,483, Cl. 136-260.000.

TSI Incorporated: *See—*
Adrian, Ronald J., 4,387,993, Cl. 356-336.000.

Tsuboi, Masayoshi, to Fuji Photo Film Co., Ltd. Process for forming color images. 4,388,387, Cl. 430-7.000.

Tsubuko, Kazuo; Hashimoto, Junichiro; Kuramoto, Shinichi; and Okawara, Makoto, to Ricoh Co., Ltd. Liquid developer for use in electrophotography. 4,388,395, Cl. 430-114.000.

Tsuchida, Takayasu: *See—*
Sano, Kounosuke; and Tsuchida, Takayasu, 4,388,405, Cl. 435-107.000.

Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, to Olympus Optical Company Limited. Manuscript feed device for an electrophotographic apparatus. 4,387,986, Cl. 355-75.000.

Tsuda, Takeshi: *See—*
Kudoh, Akihide; Kawamata, Motoo; Ohshima, Kazushi; Kotani, Makoto; Tsuda, Takeshi; and Aoki, Fukuichi, 4,388,478, Cl. 568-804.000.

Tsuge, Hiroshi: *See—*
Yasumatsu, Jun; Tsuge, Hiroshi; and Kawaharazaki, Takashi, 4,387,790, Cl. 188-65.300.

Tsuji, Katsuyuki: *See—*
Tsunetomi, Katashi; Takahashi, Akira; and Tsuji, Katsuyuki, 4,387,680, Cl. 123-198.00F.

Tsumura, Sukebumi: *See—*
Awazuhara, Hiroshi; Tsumura, Sukebumi; and Kimura, Tomoaki, 4,387,586, Cl. 72-206.000.

Tsunekawa, Shou, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for reading drawings. 4,388,610, Cl. 382-8.000.

Tsunetomi, Katashi; Takahashi, Akira; and Tsuji, Katsuyuki. Mechanism for stopping valve operation. 4,387,680, Cl. 123-198.00F.

Tsuruta, Hideki: *See—*
Nishikawa, Osamu; Ishimaru, Kenji; Takeshita, Toru; and Tsuruta, Hideki, 4,388,243, Cl. 260-397.200.

Turk, Roger R.; and Robinson, Morton, to Hughes Aircraft Company. Hot-pressed fluoride glasses. 4,388,097, Cl. 65-64.000.

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Walter, Arthur, to Erwin Sick Gesellschaft-Optik-Elektronik. Photoelectronic apparatus. 4,388,528, Cl. 250-221.000.
Walter, Lothar; Olschewski, Armin; Kispert, Klaus; and Meining, Hans, to SKF Kugellagerfabriken GmbH. Multi-part rolling bearing cage with snap fit interconnection. 4,387,939, Cl. 308-217.000.
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Sawyer, Ernest W., 4,388,351, Cl. 427-304.000.
Wyatt, Kenneth L., 4,387,508, Cl. 29-738.000.
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Wetzel, David R.: *See*—
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Whirlpool Corporation: *See*—
Kennedy, William L.; and Fanson, Richard L., 4,387,580, Cl. 68-12.00R.
Necas, Donald E.; and Khan, Aman U., 4,387,860, Cl. 241-282.100.
Paddock, Stephen W., 4,387,578, Cl. 62-127.000.
Spiegel, Raymond W., 4,387,496, Cl. 29-416.000.
White Consolidated Industries, Inc.: *See*—
Zalewski, Gerald F., 4,387,481, Cl. 15-316.00R.
White, Harlan V., to Mechanical Technology Incorporated. Heat engine device. 4,387,567, Cl. 60-520.000.
White, Hugh L. Can filling nozzle head. 4,387,748, Cl. 141-57.000.
Wiba AG: *See*—
Baumann, Rene, 4,387,894, Cl. 272-130.000.
Wich, Harald: *See*—
Weidner, Peter; and Wich, Harald, 4,387,649, Cl. 102-215.000.
Wiedman, Francis W.: *See*—
Bertin, Claude L.; Kotecha, Harish N.; and Wiedman, Francis W., 4,388,704, Cl. 365-154.000.
Wiese, Kurt: *See*—
Lubecki, Andrzej; Wiese, Kurt; and Winkler, Karl, 4,388,530, Cl. 378-45.000.
Wigan, Jack G.; Ure, David G.; and Richards, John M., to Reuters Limited. Conversational video system. 4,388,489, Cl. 178-3.000.
Wiktor, Dominik M.; and Schlindwein, Siegfried, to Automatic Switch Company. Electric power interrupting switch. 4,388,535, Cl. 307-113.000.
Wiles, Laurence E.; Page, Frank C., III; and Eibensteiner, Bruno A., to Ethyl Products Company; and Mr. John F. Sieberth. Child resistant container cover. 4,387,817, Cl. 215-217.000.
Wilgood Corporation: *See*—
Feller, Murray F., 4,388,003, Cl. 374-41.000.
Wilhelm, Donald C. Alpha numeric character arrangement. 4,387,521, Cl. 40-107.000.
Wilke, Arthur: *See*—
Schlegel, Wolfgang; Wilke, Arthur; and Birkert, Rolf, 4,387,886, Cl. 269-71.000.
Wilkinson, Paul. Water storage tank. 4,388,044, Cl. 417-38.000.
Willbanks, Henry O.; and Johnson, Richard P., to Teledyne Still-Man Manufacturing. Electric surface heater assembly. 4,388,518, Cl. 219-455.000.
William H. Rorer, Inc.: *See*—
Klein, Robert W., 4,388,301, Cl. 424-154.000.
Williams, John W.: *See*—
Gutman, Arnold D.; and Williams, John W., 4,388,249, Cl. 260-465.00F.
Williams, Joseph R.: *See*—
Keller, Alex J.; Williams, Joseph R.; Fechner, Erhard A.; and Pinto, Akiva, 4,387,486, Cl. 19-105.000.
Williams, Leon J.: *See*—
Brint, Norman T.; and Williams, Leon J., 4,387,524, Cl. 42-18.000.
Williamson, Weldon S.: *See*—
Robinson, William P.; McNulty, Hugh, Jr.; Seliger, Robert L.; and Williamson, Weldon S., 4,388,560, Cl. 315-111.810.
Willing, Robert: *See*—
Bell, Robert L.; Willing, Robert; and Kavli, Fred, 4,388,668, Cl. 361-283.000.
Willis, Clive: *See*—
Malatesta, Vincenzo; Willis, Clive; and Hackett, Peter A., 4,388,242, Cl. 260-397.200.
Willo Partners: *See*—
Ash, Stephen R., 4,387,777, Cl. 177-43.000.
Wilson, Dallas W. Switch actuating mechanism. 4,388,508, Cl. 200-153.00C.

Wilson, Eddie K., Sr. Process and apparatus for producing portland and other hydraulic cements. 4,388,117, Cl. 106-100.000.
Wilson, Geoffrey; and Kayamoto, Masami, to Filtrol Corporation. Ni/Co Mo P On titania-alumina hydrodesulfurizing catalyst. 4,388,222, Cl. 252-437.000.
Wilson, Michael T., to Medical Center Prosthetics, Inc. Torque absorber with biofeedback. 4,387,472, Cl. 3-32.000.
Windecker, James W., Jr.: *See—*
Greene, Jay R.; Windecker, James W., Jr.; Roberts, James H.; and Wood, Harold F., 4,388,008, Cl. 400-578.000.
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Winkelmann, Siegfried: *See—*
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Winkler, Karl: *See—*
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Winston, Roland. Compound parabolic concentrator with cavity for tubular absorbers. 4,387,961, Cl. 350-296.000.
Winter, Karl: *See—*
Branke, Walter; and Winter, Karl, 4,387,579, Cl. 66-157.000.
Wirtgen, Reinhard. Milling roller mounting support on milling machines for milling road surfaces. 4,387,929, Cl. 299-39.000.
Wisconsin Alumni Research Foundation: *See—*
Atlee, John L., III; and Fiore, Maximillian D., 4,387,723, Cl. 128-734.000.
Wise, Kenneth V., to Monsanto Company. Ammoxidation processes. 4,388,248, Cl. 260-465.300.
Wisotsky, Max J.: *See—*
Brownawell, Darrell W.; Shaub, Harold; Wisotsky, Max J.; and Gutierrez, Antonio, 4,388,201, Cl. 252-49.600.
Witkiewicz, Ronald F.: *See—*
Kennell, Samuel C.; and Witkiewicz, Ronald F., 4,388,424, Cl. 523-219.000.
Wittenborg, Poul E., to A/S Wittenborgs Automatfabriker. Method for preparing beverages in portions. 4,388,338, Cl. 426-590.000.
Wlcek, Rudolf; and Kunze, Dieter, to Siemens Aktiengesellschaft. Sealing system for a longitudinally divided cable fitting element. 4,388,488, Cl. 174-92.000.
Wlodkowski, Johann; and Jungwirth, Dieter, to Dyckerhoff & Widmann Aktiengesellschaft. Multiple part tapered collar for a tendon anchorage system. 4,388,014, Cl. 403-369.000.
Wobben, Hendrik J.; and Tan, Hian-Bie, to Naarden International N.V. Process for the preparation of citrus juice containing beverages with improved cloud stability. 4,388,330, Cl. 426-51.000.
Wohrl, Josef. Fluid weighing device and method for its callibration and testing. 4,387,778, Cl. 177-207.000.
Woitun, Eberhard: *See—*
Wetzel, Bernd; Woitun, Eberhard; Maier, Roland; Reuter, Wolfgang; Lechner, Uwe; and Goeth, Hanns, 4,388,315, Cl. 424-246.000.
Wolf, Rainer: *See—*
Mauric, Claudine; and Wolf, Rainer, 4,388,431, Cl. 524-119.000.
Wollenberg, Robert H., to Chevron Research Company. Process for the preparation of alkenyl succinic anhydrides. 4,388,471, Cl. 549-255.000.
Wong, Jon H., to Rockwell International Corporation. Cam master spider identifier. 4,387,511, Cl. 33-1.0BB.
Wood, Harold F.: *See—*
Greene, Jay R.; Windecker, James W., Jr.; Roberts, James H.; and Wood, Harold F., 4,388,008, Cl. 400-578.000.
Wood, Obert R., II: *See—*
Silfvast, William T.; Szeto, Leo H.; and Wood, Obert R., II, 4,388,720, Cl. 372-76.000.
Woodhull, Bradley A.: *See—*
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Woodman, Daniel W., Jr.: *See—*
Wright, Henry L.; Bandura, Vitaly; and Woodman, Daniel W., Jr., 4,387,506, Cl. 29-714.000.
Worstmann, Wolfgang: *See—*
Steiner, Gerd; Franke, Albrecht; Lenke, Dieter; Teschendorf, Hans-Juegen; Worstmann, Wolfgang; and Kreiskott, Horst, 4,388,237, Cl. 260-239.0BC.
Wright, Christopher J., to United Kingdom Atomic Energy Authority. Catalyst device and method. 4,388,277, Cl. 422-211.000.
Wright, Henry L.; Bandura, Vitaly; and Woodman, Daniel W., Jr., to USM Corporation. Component inserting machine. 4,387,506, Cl. 29-714.000.
Wyatt, Kenneth L., to Western Electric Company, Inc. Apparatus for magnetically assembling fragile parts. 4,387,508, Cl. 29-738.000.
Wynn, Michael J.: *See—*
West, Jon K.; Catotti, Arthur J.; and Wynn, Michael J., 4,388,120, Cl. 134-15.000.
Xerox Corporation: *See—*
Brueggemann, Harry P., 4,387,970, Cl. 350-463.000.
Chen, Tu; and Cavallotti, Pietro L., 4,388,367, Cl. 428-323.000.
Hawkins, William G.; and Black, Jerry G., 4,388,145, Cl. 156-617.00R.
Rourke, John L.; Azar, Jack C.; and Murphy, William K., 4,388,274, Cl. 422-177.000.
Stanley, Michael R., 4,387,982, Cl. 355-3.0DD.
Yabusaki, Kenichi K., to Hana Biologics, Inc. Immunoassay of phospholipid, such as phosphatidylcholine, in fluids such as amniotic. 4,388,412, Cl. 436-536.000.
Yagihara, Morio: *See—*
Morigaki, Masakazu; Yagihara, Morio; and Ozawa, Takashi, 4,388,404, Cl. 430-548.000.
Yahano, Kanji: *See—*
Nagira, Norichika; Ikegami, Hiroshi; Baba, Hiroji; and Yahano, Kanji, 4,388,169, Cl. 204-207.000.
Yahrmarkt, Richard A.; and Stanbrough, Michael J., to Nalco Chemical Company. Process for producing pulp. 4,388,148, Cl. 162-26.000.
Yamada, Mitsuhiko, to Dainippon Screen Seizo Kabushiki Kaisha. Method for controlling writing timings of picture signals to be stored in a memory. 4,388,653, Cl. 358-302.000.
Yamagata, Ryutaro: *See—*
Koyama, Shigeo; Yamagata, Ryutaro; Kozuka, Nobuhiko; and Sakata, Hiromi, 4,387,889, Cl. 271-10.000.
Yamaguchi, Kojirou: *See—*
Obata, Kazuo; Yamaguchi, Yutaka; Yamaguchi, Kojirou; and Sato, Akio, 4,387,759, Cl. 152-353.00R.
Yamaguchi, Yutaka: *See—*
Obata, Kazuo; Yamaguchi, Yutaka; Yamaguchi, Kojirou; and Sato, Akio, 4,387,759, Cl. 152-353.00R.
Yamamoto, Setsuo; and Ushiyama, Yasuichi, to Nippon Electric Co., Ltd. Centering unit for a color television camera apparatus having plural pick-up tubes. 4,388,641, Cl. 358-51.000.
Yamanishi, Toru: *See—*
Kimura, Takao; and Yamanishi, Toru, 4,388,093, Cl. 65-3.110.
Yamashita, Noriyuki, to Sony Corporation. Frequency controlled signal generating circuit. 4,388,596, Cl. 331-1.00A.
Yamasita, Nobuo: *See—*
Nishioka, Kimihiko; and Yamasita, Nobuo, 4,387,969, Cl. 350-462.000.
Yamazaki, Kyoji; and Kamiya, Fumio, to Toshiba Electric Equipment Corporation. Remote lighting-control apparatus. 4,388,567, Cl. 315-291.000.
Yamazaki, Yasuo; Kimura, Kazuo; and Tanimoto, Tetuyuki, to Minolta Camera Co., Ltd. Optical system for use in single lens reflex cameras. 4,387,967, Cl. 350-423.000.
Yancey, Irvin R.: *See—*
Gentry, Larry L.; Moss, Herbert H.; Panicker, Narayana N.; Wada, William T.; and Yancey, Irvin R., 4,388,022, Cl. 405-195.000.
Yaroshenko, Jury F.: *See—*
Grinberg, Efim N.; Braginsky, Yakov I.; Zhislin, Yakov M.; Lavrov, Vladimir V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; Filatov, Alexandr A.; Yaroshenko, Jury F.; Torban, Samuil S.; Kovalev, Viktor M.; Urusov, Georgy I.; Rozanova, Alla V.; Radakova, Tatyana N.; Krivosheina, Larisa I.; Bykov, Vladimir P.; Bykova, Vladimira M.; and Gultsev, Igor V., 4,387,485, Cl. 17-48.000.
Yasuda, Yoshiko: *See—*
Ogawa, Kazufumi; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, 4,388,128, Cl. 156-64.000.
Yasumatsu, Jun; Tsuge, Hiroshi; and Kawaharazaki, Takashi, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Webbing locking device. 4,387,790, Cl. 188-65.300.
Yates, George, Jr. Plastic container and lid. 4,387,828, Cl. 220-284.000.
Yatsuo, Tsutomu: *See—*
Watanabe, Atsuo; Naito, Masayoshi; Yatsuo, Tsutomu; and Okamura, Masahiro, 4,388,635, Cl. 357-38.000.
Yazaki, Katsuhito: *See—*
Inui, Tsuneo; Kuroda, Hitoshi; Hanabusa, Tetsuro; and Yazaki, Katsuhito, 4,388,158, Cl. 204-27.000.
Yazawa, Kenichiro; Kitajima, Masao; and Kondo, Asaji, to Fuji Photo Film Co. Ltd. Chemical analysis slide frame assembly. 4,387,990, Cl. 356-244.000.
Yen, Duen H.: *See—*
Nash, Donald H.; and Yen, Duen H., 4,388,730, Cl. 455-208.000.
Yogo, Kenji; and Nomura, Isshi, to Aisin Seiki Kabushiki Kaisha. Electromagnetically controlled fuel injection system. 4,387,696, Cl. 123-585.000.
Yokohama Rubber Co., Ltd., The: *See—*
Kato, Masaki; Morikawa, Tuneo; and Kabe, Kazuyuki, 4,387,755, Cl. 152-209.00R.
Yokoyama, Shigeki: *See—*
Mukunoki, Yasuo; Nakayama, Yasuhiro; and Yokoyama, Shigeki, 4,388,402, Cl. 430-527.000.
Yoneda, Kenji: *See—*
Katsumata, Masaaki; and Yoneda, Kenji, 4,387,571, Cl. 60-602.000.
Yonezawa, Taketoshi: *See—*
Ogawa, Kazufumi; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, 4,388,128, Cl. 156-64.000.
Yonezawa Toys Co., Ltd.: *See—*
Okamoto, Shozo, 4,388,036, Cl. 414-537.000.
Yong, Samuel H.; Anderson, George R.; and Levin, Liza, to Pillsbury Company, The. Dough product containing an organic acid leavener. 4,388,336, Cl. 426-551.000.
York, Gerald O. Oil field mats. 4,388,484, Cl. 174-5.00R.
York, Lawrence R.: *See—*
de Figueiredo, Mario P.; Guevara, Balagtas F.; Long, James L.; Morgan, Ronnie G.; and York, Lawrence R., 4,388,340, Cl. 426-614.000.
Yoshiba, Yasutaka; and Shiobara, Masaji, to Nissan Motor Co., Ltd. EGR Control system for diesel engine. 4,387,694, Cl. 123-571.000.

Yoshida, Akio: *See—*
Moriya, Shigeru; Yoshida, Akio; Tanaka, Koichi; and Nishimura, Yuji, 4,387,912, Cl. 280-804.000.
Yoshida, Hiroyuki: *See—*
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Yoshida Industry Co., Ltd.: *See—*
Shioi, Yuji, 4,387,730, Cl. 132-83.00R.
Yoshida Kogyo K.K.: *See—*
Kanzaka, Yoshihiro, 4,387,488, Cl. 24-113.00R.
Morioka, Koitsu, 4,387,495, Cl. 29-408.000.
Yoshida, Satoshi: *See—*
Tabei, Masatoshi; Wada, Minoru; Takahashi, Yonosuke; and Yoshida, Satoshi, 4,388,400, Cl. 430-346.000.
Yoshioka, Takashi: *See—*
Nakahara, Teiji; Morihashi, Toshifumi; Nakayama, Teruo; Nishimura, Shinichi; Kato, Hisaaki; Uematsu, Ikuzo; and Yoshioka, Takashi, 4,387,487, Cl. 19-249.000.
Young, Terry A.; Mann, William W.; Kline, Charles M.; and Schoeneberger, Ernest A., to Sperry Corporation. Grinder-mixer controls. 4,387,857, Cl. 241-101.00B.
Yui, Tomoyuki: *See—*
Sugano, Junichiro; Yui, Tomoyuki; Minamikawa, Yoshitugu; and Fujimoto, Tsuneo, 4,388,287, Cl. 423-415.00P.
Yuyama, Yukihiro: *See—*
Iwata, Susumu; Maruta, Keiichi; and Yuyama, Yukihiro, 4,388,362, Cl. 428-211.000.
YWHC, Inc.: *See—*
Hetz, Heinz K., 4,387,732, Cl. 137-183.000.
Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See—*
Schneider, Rudolf; and Winkelmann, Siegfried, 4,387,794, Cl. 192-18.00B.
Zalewski, Gerald F., to White Consolidated Industries, Inc. Soot blower. 4,387,481, Cl. 15-316.00R.
Zartman, David L., to New Mexico State University Foundation, Inc. Method for remotely monitoring the long term deep body temperature in female mammals. 4,387,724, Cl. 128-736.000.
Zeidler, Guenter; Lange, Gerhard; and Saller, Helmut, to Siemens Aktiengesellschaft. Longitudinally water-tight cables and method of producing the same. 4,387,958, Cl. 350-96.230.
Zeidler, Guenter; Ney, Ernst; Lange, Gerhard; and Saller, Helmut, to Siemens Aktiengesellschaft. Longitudinally water-tight cables. 4,388,485, Cl. 174-23.00C.
Zenith Radio Corporation: *See—*
Cox, Charles M.; and Turner, Rudolf, 4,388,639, Cl. 358-27.000.
Cox, Charles M.; and Thomas, William L., 4,388,645, Cl. 358-147.000.
Lange, Howard G.; and Schulman, Ronald, 4,387,959, Cl. 350-128.000.
Lostumo, Arthur J.; and Pulchinski, Steven J., 4,387,947, Cl. 339-90.00R.
Ray, Francis M., 4,388,551, Cl. 313-346.00R.
Reno, James J., Jr.; and Schmid, Richard G., 4,388,642, Cl. 358-60.000.
Zenzefilis, George E. Method and apparatus for recording and reproducing video and sound. 4,388,655, Cl. 360-19.100.
Zhislin, Yakov M.: *See—*
Grinberg, Efim N.; Braginsky, Yakov I.; Zhislin, Yakov M.; Lavrov, Vladimir V.; Mitrofanov, Viktor A.; Nikitushkin, Nikolai A.; Filatov, Alexandr A.; Yaroshenko, Jury F.; Torban, Samuil S.; Kovalev, Viktor M.; Urusov, Georgy I.; Rozanova, Alla V.; Radakova, Tatyana N.; Krivosheina, Larisa I.; Bykov, Vladimir P.; Bykova, Vladimira M.; and Gultsev, Igor V., 4,387,485, Cl. 17-48.000.
Zimmermann, Klaus: *See—*
Ullmann, Roland; and Zimmermann, Klaus, 4,388,509, Cl. 200-157.000.
Zinnen, Norbert: *See—*
Mirtain, Henri J.; and Zinnen, Norbert, 4,387,754, Cl. 152-209.00R.
Zodrow, Rudolf: *See—*
Buchholz, Rainer; Mohn, Hans-Werner; Boms, Hermann; and Zodrow, Rudolf, 4,388,143, Cl. 156-475.000.
Zukausky, Keith E., to Eaton Corporation. Pilot operated valve assembly. 4,387,878, Cl. 251-30.000.
Zurawski, Egon: *See—*
Meier, Heinz; and Zurawski, Egon, 4,388,007, Cl. 400-314.000.
ZVS-Adamovske strojirny, koncernovy podnik: *See—*
Hynst, Karel; and Travnicek, Mojmir, 4,387,646, Cl. 101-350.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF JUNE, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Appel, Douglas C.: *See—*
Babish, John A.; Arnot, Larry K.; and Appel, Douglas C., Re. 31,274, Cl. 165-95.000.

Arnot, Larry K.: *See—*
Babish, John A.; Arnot, Larry K.; and Appel, Douglas C., Re. 31,274, Cl. 165-95.000.

Babish, John A.; Arnot, Larry K.; and Appel, Douglas C., to Wynn Oil Company. Engine cooling system flushing apparatus and method. Re. 31,274, Cl. 165-95.000.

Branick Mfg. Co.: *See—*
Peterson, Harold S., Re. 31,273, Cl. 157-1.100.

Gabriel, Anthony P.; and Justiss, Jimmy, to General Cable Corporation. Telephone cable with improved shield combination. Re. 31,277, Cl. 174-36.000.

General Cable Corporation: *See—*
Gabriel, Anthony P.; and Justiss, Jimmy, Re. 31,277, Cl. 174-36.000.

Hobart, James L.: *See—*
Mefferd, Wayne S.; and Hobart, James L., Re. 31,279, Cl. 372-107.000.

Ingersoll-Rand Company: *See—*
Schlage, Ernest L., Re. 31,276, Cl. 292-340.000.

Justiss, Jimmy: *See—*
Gabriel, Anthony P.; and Justiss, Jimmy, Re. 31,277, Cl. 174-36.000.

Lockheed Corporation: *See—*
Wirt, Leslie S., Re. 31,275, Cl. 181-224.000.

Mefferd, Wayne S.; and Hobart, James L. Laser optical resonator. Re. 31,279, Cl. 372-107.000.

Papst Motoren GmbH & Co., KG: *See—*
Schmider, Fritz, Re. 31,278, Cl. 310-268.000.

Peterson, Harold S., to Branick Mfg. Co. Curing rim. Re. 31,273, Cl. 157-1.100.

Pevsner, Paul H. Catheter delivery system and method. Re. 31,272, Cl. 604-28.000.

Schlage, Ernest L., to Ingersoll-Rand Company. Lock strike construction. Re. 31,276, Cl. 292-340.000.

Schmider, Fritz, to Papst Motoren GmbH & Co., KG. Brushless D-C motor. Re. 31,278, Cl. 310-268.000.

Wirt, Leslie S., to Lockheed Corporation. Zeno duct sound attenuating means. Re. 31,275, Cl. 181-224.000.

Wynn Oil Company: *See—*
Babish, John A.; Arnot, Larry K.; and Appel, Douglas C., Re. 31,274, Cl. 165-95.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Kohayakawa, Yoshimi; and Matsumura, Isao, to Canon Kabushiki Kaisha. Method and device for detecting distance between eye-examining instrument and eye. B1 4,196,979, Cl. 351—208.

Canon Kabushiki Kaisha: *See—*
Kohayakawa, Yoshimi; and Matsumura, Isao. B1 4,196,979, Cl. 351—208.

Verheyden, Julien P.; and Martin, John C., to Syntex (U.S.A.) Inc. 9-(1,3-dihydroxy-2-propoxymethyl)-guanine as antiviral agent. B1 4,355,032, Cl. 424—253.

Syntex (U.S.A.) Inc.: *See—*
Verheyden, Julien P.; and Martin, John C. B1 4,355,032, Cl. 424—253.

Golben, Michael, to Minnesota Mining and Manufacturing Company. Process of plating metal objects. B1 3,400,012, Cl. 427—242.

Minnesota Mining and Manufacturing Company: *See—*
Golben, Michael, B1 3,400,012, Cl. 427—242.

LIST OF DESIGN PATENTEES

AB Akerlund & Rausing: *See—*
Linner, Hans R. I., 269,325, Cl. D9-433.000.
Linner, Hans R. I., 269,326, Cl. D9-433.000.

Abe, Masaru: *See—*
Maeda, Muneyoshi; Kojima, Hiroshi; and Abe, Masaru, 269,337, Cl. D12-146.000.

AGFA-Gevaert AG: *See—*
Lermann, Peter; and Schultheiss, Karl-Heinz, 269,350, Cl. D16-14.000.

Alton Packaging Corporation: *See—*
Klein, Kenneth W., 269,324, Cl. D9-433.000.

Barlow, Gordon A., to Gordon Barlow Design. Ball game housing. 269,358, 6-14-83, Cl. D21-9.000.

Bateman, Robert F.: *See—*
Swett, James B.; Bateman, Robert F.; and Boucher, Richard A., 269,313, Cl. D7-3.000.

Belt, Kenneth W.; and Congdon, George L., to Norland Corporation. Cardiac pacer. 269,373, 6-14-83, Cl. D24-17.000.

Belter, Robert H., to Slautterback Corporation. Combined melter and dispenser for thermoplastic material. 269,349, 6-14-83, Cl. D15-144.000.

Beltram, J. Richard: *See—*
Cantatore, Louis; and Beltram, J. Richard, 269,347, Cl. D7-383.000.

Blair, Thomas O. Device for setting fabric loops. 269,330, 6-14-83, Cl. D10-64.000.

Blanchard, Curtis R., to General Housewares Corp. Microwave tea kettle. 269,318, 6-14-83, Cl. D7-312.000.

Bledsoe, Gary R., to Medical Designs, Inc. Articulate knee brace. 269,379, 6-14-83, Cl. D24-64.000.

Boeing Company, The: *See—*
Harold, William M.; and Robinson, Ronald H., 269,340, Cl. D12-319.000.

Boucher, Richard A.: *See—*
Swett, James B.; Bateman, Robert F.; and Boucher, Richard A., 269,313, Cl. D7-3.000.

Bridgestone Tire Company Limited: *See—*
Kojima, Hiroshi; Nishio, Hideaki; and Yamauchi, Makoto, 269,338, Cl. D12-147.000.
Maeda, Muneyoshi; Kojima, Hiroshi; and Abe, Masaru, 269,337, Cl. D12-146.000.

Brown, James B. Ammonia inhalant package. 269,374, 6-14-83, Cl. D24-34.000.

Bunger, Richard E. Interlocking flume platform panel for animal confinement pens. 269,384, 6-14-83, Cl. D30-2.000.

Bunger, Richard E. Interlocking flume platform panel for animal confinement pens. 269,385, 6-14-83, Cl. D30-2.000.

Canon Kabushiki Kaisha: *See—*
Yoshioka, Eiichi; Suwa, Kaname; and Ishiwatari, Masumi, 269,356, Cl. D18-7.000.

Cantatore, Louis; and Beltram, J. Richard, to International Edge Tool Co. Food slicer. 269,347, 6-14-83, Cl. D7-383.000.

Castro, Robert J. Archery rack or the like. 269,311, 6-14-83, Cl. D6-129.000.

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6.5 4,387,581

CLASS 70

186 4,387,582

CLASS 71

29 4,388,101
86 4,388,102
4,388,103
88 4,388,104
91 4,388,105
105 4,388,106

CLASS 72

22 4,387,583
100 4,387,584
131 4,387,585
206 4,387,586

CLASS 73

9 4,387,587
35 4,387,588
119 A 4,387,589
159 4,387,590
168 4,387,591
198 4,387,592
290 R 4,387,593
293 4,387,594
322.5 4,387,595
593 4,387,596
626 4,387,597
637 4,387,598
642 4,387,599
714 4,387,600
724 4,387,601
861.09 4,387,602
863.22 4,387,603

CLASS 74

354 4,387,604
694 4,387,605
752 E 4,387,606
781 R 4,387,607
866 4,387,608

CLASS 75

0.5 B 4,388,109
10 R 4,388,107
4,388,108
21 4,388,110
26 4,388,111
51 4,388,112
4,388,113
243 4,388,114

CLASS 81

3.36 4,387,609
5.1 R 4,387,610
57.36 4,387,611

CLASS 82

2 E 4,387,612
31 4,387,613

CLASS 83

38 4,387,614
56 4,387,615
608 4,387,616

CLASS 84

1.01 4,387,617
1.03 4,387,618
4,387,619
4,387,620
1.16 4,387,621
1.22 4,387,622

179 4,387,623

CLASS 89

41 LE 4,387,624

CLASS 91

369 B 4,387,625
376 R 4,387,626

CLASS 92

222 4,387,627

CLASS 98

58 4,387,628
78 4,387,629

CLASS 99

348 4,387,630

CLASS 100

32 4,387,631
45 4,387,632
48 4,387,633
211 4,387,634
214 4,387,635
232 4,387,636
264 4,387,637

CLASS 101

1 4,387,638
2 4,387,639
9 4,387,640
27 4,387,641
93.04 4,387,642
110 4,387,643
111 4,387,644
327 4,387,645
350 4,387,646
4,387,647
365 4,387,648

CLASS 102

215 4,387,649

CLASS 106

22 4,388,115
97 4,388,116
100 4,388,117
306 4,388,118
316 4,388,119

CLASS 108

40 4,387,650

CLASS 110

171 4,387,651
224 4,387,652
342 4,387,653
347 4,387,654
4,387,655

CLASS 111

86 4,387,656

CLASS 114

132 4,387,657
144 R 4,387,658
199 4,387,659
230 4,387,660
270 4,387,661

CLASS 118

105 4,387,662
413 4,387,663
658 4,387,664
674 4,387,665

CLASS 119

28 4,387,666

CLASS 122

4 D 4,387,667
6 A 4,387,668
235 A 4,387,669

CLASS 123

41.08 4,387,670
41.27 4,387,671
55 AA 4,387,672
90.16 4,387,673
4,387,674
90.58 4,387,675
179 H 4,387,676
179 L 4,387,677
193 H 4,387,678
198 D 4,387,679

198 F 4,387,680
325 4,387,681
339 4,387,682
387 4,387,683
416 4,387,684
439 4,387,685
446 4,387,686
493 4,387,687
502 4,387,688
525 4,387,689
549 4,387,690
557 4,387,691
4,387,692
569 4,387,693
571 4,387,694
585 4,387,695
4,387,696

CLASS 124

89 4,387,697

CLASS 125

18 4,387,698

CLASS 126

61 4,387,699
77 4,387,700
247 4,387,701
424 4,387,702
429 4,387,703
435 4,387,704

CLASS 128

1 R 4,387,705
20 4,387,706
25 A 4,387,707
55 4,387,708
87 R 4,387,709
91 R 4,387,710
207.15 4,387,711
303.13 4,387,714
352 4,387,716
419 PG 4,387,717
419 R 4,387,718
421 4,387,719
660 4,387,720
4,387,721
716 4,387,722
734 4,387,723
736 4,387,724
759 4,387,725
760 4,387,726
784 4,387,727

CLASS 131

336 4,387,728

CLASS 132

33 R 4,387,729
83 R 4,387,730

CLASS 134

15 4,388,120

CLASS 136

246 4,388,481
258 4,388,482
260 4,388,483

CLASS 137

115 4,387,731
183 4,387,732
185 4,387,733
206 4,387,734
315 4,387,735
550 4,387,736
625.21 4,387,737
801 4,387,738
884 4,387,739

CLASS 138

89 4,387,740

CLASS 139

66 R 4,387,741
92 4,387,742
110 4,387,743
429 4,387,744

CLASS 140

92.1 4,387,745
105 4,387,746

CLASS 141

1 4,387,747

57 4,387,748
68 4,387,749
331 4,387,750

CLASS 144

30 4,387,751
34 E 4,387,752
193 D 4,387,753

CLASS 148

1.5 4,388,121
12 F 4,388,122
4,388,123
404 4,388,124
428 4,388,125

CLASS 149

14 4,388,126

CLASS 152

209 R 4,387,754
4,387,755
4,387,756
4,387,757
353 R 4,387,758
4,387,759

CLASS 156

53 4,388,127
64 4,388,128
73.1 4,388,129
85 4,388,130
89 4,388,131
153 4,388,132
245 4,388,133
248 4,388,134
250 4,388,135
252 4,388,136
275.5 4,388,137
289 4,388,138
307.5 4,388,139
345 4,388,140
432 4,388,141
446 4,388,142
475 4,388,143
538 4,388,144
617 R 4,388,145
626 4,388,146
646 4,388,147

CLASS 157

1.1 Re.31,273

CLASS 160

229 R 4,387,760

CLASS 162

26 4,388,148
153 4,388,149
175 4,388,150

CLASS 164

437 4,387,761

CLASS 165

1 4,387,762
29 4,387,763
95 Re.31,274
119 4,387,764
166 4,387,765
172 4,387,766

CLASS 166

72 4,387,767
256 4,387,768
295 4,387,769
305 R 4,387,770
341 4,387,771

CLASS 172

311 4,387,772

CLASS 174

5 R 4,388,484
23 C 4,388,485
34 4,388,486
36 Re.31,277
40 R 4,388,487
92 4,388,488

CLASS 175

4.6 4,387,773
40 4,387,774
135 4,387,775

293 4,387,776

CLASS 177

43 4,387,777
207 4,387,778

CLASS 178

3 4,388,489

CLASS 179

1 B 4,388,490
1 G 4,388,494
1 GA 4,388,492
1 GD 4,388,493
1 GS 4,388,496
1 SC 4,388,491
1 SD 4,388,495
77 4,388,497
81 R 4,388,498
4,388,499
170 NC 4,388,500
175.3 R 4,388,501
179 4,388,502

CLASS 180

9.5 4,387,779
54 A 4,387,780
65 B 4,387,781
132 4,387,782
165 4,387,783

CLASS 181

131 4,387,784
142 4,387,785
150 4,387,786
155 4,387,787
171 4,387,788
224 Re.31,275

CLASS 188

1.11 4,387,789
65.3 4,387,790
77 R 4,387,791
328 4,387,792

CLASS 192

0.02 R 4,387,793
18 B 4,387,794
60 4,387,795

CLASS 198

374 4,387,796
461 4,387,797
587 4,387,798
735 4,387,799
750 4,387,800
821 4,387,801

CLASS 200

5 R 4,388,503
76 4,388,504
83 C 4,388,505
144 R 4,388,506
148 R 4,388,507
153 C 4,388,508
157 4,388,509

CLASS 201

2 4,388,151
6 4,388,152

CLASS 202

248 4,388,153

CLASS 203

35 4,388,154

CLASS 204

1 T 4,388,155
14 N 4,388,156
15 4,388,157
27 4,388,158
33 4,388,159
38 R 4,388,160
43 S 4,388,161
78 4,388,162
101 4,388,163
192 SP 4,388,164
196 4,388,168
207 4,388,169
403 4,388,166
418 4,388,165
420 4,388,167

CLASS 206

45 4,387,802
204 4,387,803
218 4,387,804
230 4,387,805
232 4,387,806
312 4,387,807
432 4,387,808
526 4,387,809

CLASS 208

8 LE 4,388,170
4,388,171
10 4,388,172
11 R 4,388,173
4,388,174
74 4,388,175
80 4,388,176
111 4,388,177
115 4,388,178
177 4,388,179

CLASS 209

5 4,388,180
12 4,388,181
17 4,388,182
139 A 4,388,183

CLASS 210

96.2 4,388,184
136 4,388,185
170 4,388,186
232 4,388,187
242.3 4,388,188
452 4,388,191
490 4,388,189
522 4,388,190
615 4,388,192
658 4,388,193
697 4,388,194
709 4,388,195
742 4,388,196
777 4,388,197

CLASS 211

49 D 4,387,810
119 4,387,811

CLASS 212

176 4,387,812
195 4,387,813
4,387,814

CLASS 215

1 C 4,387,815
4,387,816
217 4,387,817
256 4,387,818
273 4,387,819
320 4,387,820
330 4,387,821
4,387,822

CLASS 219

8.5 4,388,510
10.55 R 4,388,511
56.22 4,388,512
58 4,388,513
69 R 4,388,514
110 4,388,515
119 4,388,516
121 LJ 4,388,517
455 4,388,518
463 4,388,519
464 4,388,520
521 4,388,521
522 4,388,522
541 4,388,523

CLASS 220

4 R 4,387,823
23.4 4,387,824
234 4,387,825
243 4,387,826
269 4,387,827
284 4,387,828
374 4,387,829
456 4,387,830

CLASS 221

25 4,387,831
63 4,387,832

CLASS 222

95 4,387,833
278 4,387,834

CLASS 224

32 A 4,387,835
4,387,836
42.21 4,387,837
170 4,387,838
265 4,387,839
314 4,387,840

CLASS 226

97 4,387,841
113 4,387,842
118 4,387,843

CLASS 228

113 4,387,844
222 4,387,845

CLASS 229

54 R 4,387,846

CLASS 232

43.1 4,387,847

CLASS 235

160 4,388,524

CLASS 239

6 4,387,849
124 4,387,850
135 4,387,851
143 4,387,852
284 R 4,387,853
570 4,387,854
659 4,387,855

CLASS 241

28 4,387,856
101 B 4,387,857
152 A 4,387,858
262 4,387,859
282.1 4,387,860

CLASS 242

75.47 4,387,861
107.6 4,387,862
118.4 4,387,863
199 4,387,864

CLASS 244

3.1 4,387,865
7 C 4,387,866
12.2 4,387,867
31 4,387,868
207 4,387,869

CLASS 246

122 R 4,387,870

CLASS 248

58 4,387,871
221.3 4,387,872
226.4 4,387,873
396 4,387,874
480 4,387,875
571 4,387,876

CLASS 249

9 4,387,877

CLASS 250

211 J 4,388,525
214 R 4,388,526
4,388,527
221 4,388,528
270 4,388,529
427 4,388,531
578 4,388,532

CLASS 251

30 4,387,878
149.1 4,387,879
285 4,387,880

CLASS 252

28 4,388,198
33.6 4,388,199
34 4,388,200
49.6 4,388,201
52 A 4,388,202
70 4,388,203
90 4,388,204
135 4,388,205
148 4,388,206
174.11 4,388,207
175 4,388,208
182 4,388,209
182.1 4,388,210
356 4,388,212
392 4,388,213
4,388,214
402 4,388,215
412 4,388,216
413 4,388,217
417 4,388,218
429 B 4,388,220
429 C 4,388,219
435 4,388,221
437 4,388,222
4,388,223
455 Z 4,388,224
463 4,388,225
470 4,388,226
510 4,388,227
522 R 4,388,228
549 4,388,229
600 4,388,230
631 4,388,231

CLASS 254

89 H 4,387,881

CLASS 256

17 4,387,882

CLASS 260

112 B 4,388,232
112.5 R 4,388,233
4,388,234
4,388,236
112.5 T 4,388,235
239 BB 4,388,239
4,388,240
239 BC 4,388,237
239 E 4,388,238
397.1 4,388,241
397.2 4,388,242
4,388,243
404.5 4,388,244
453 AB 4,388,245
453 P 4,388,246
463 4,388,247
465 F 4,388,249
4,388,250
465.3 4,388,248
544 D 4,388,251
968 4,388,252

CLASS 261

88 4,388,253

CLASS 264

3 C 4,388,254
29.1 4,388,255
41 4,388,256
82 4,388,257
129 4,388,258
153 4,388,259
168 4,388,260
171 4,388,261
176 R 4,388,262
257 4,388,263
281 4,388,264
297.2 4,388,265

CLASS 266

158 4,387,883
246 4,387,884

CLASS 267

125 4,387,885

CLASS 269

71 4,387,886
100 4,387,887
324 4,387,888

CLASS 271

10 4,387,889
225 4,387,890

CLASS 272

70.3 4,387,891
76 4,387,892
118 4,387,893
130 4,387,894

CLASS 273

67 B 4,387,895
195 A 4,387,896
276 4,387,897
411 4,387,898

CLASS 277

34.3 4,387,899
101 4,387,900
165 4,387,901
203 4,387,902
212 FB 4,387,903
235 B 4,387,904

CLASS 279

1 C 4,387,905
2 A 4,387,906
4 4,387,907

CLASS 280

63 4,387,908
104 4,387,909
449 4,387,910
802 4,387,911
804 4,387,912

CLASS 282

27.5 4,387,913

CLASS 285

119 4,387,914
330 4,387,915

CLASS 290

1 R 4,388,533

CLASS 292

5 4,387,916
40 4,387,917
224 4,387,918
296 4,387,919
340 Re.31,276

CLASS 293

117 4,387,920

CLASS 294

1 CA 4,387,921
31.2 4,387,922

CLASS 296

201 4,387,923

CLASS 297

188 4,387,924
201 4,387,925
375 4,387,926
445 4,387,927

CLASS 299

33 4,387,928
39 4,387,929

CLASS 301

46 4,387,930

CLASS 303

1 4,387,931
22 A 4,387,933
24 F 4,387,932
116 4,387,934

CLASS 307

66 4,388,534
113 4,388,535
268 4,388,536
297 4,388,537
482 4,388,538
491 4,388,539
493 4,388,540
530 4,388,541

CLASS 308

10 4,387,935
4,387,936
184 R 4,387,938
217 4,387,939

CLASS 310

11 4,388,542
13 4,388,543
71 4,388,544
156 4,388,545
196 4,388,546
266 4,388,547
268 Re.31,278
365 4,388,548

CLASS 312

184 4,387,940
194 4,387,941
334 4,387,942

CLASS 313

138 4,388,549
346 R 4,388,551
414 4,388,552
4,388,553
505 4,388,554
585 4,388,550

CLASS 315

4 4,388,555
14 4,388,556
74 4,388,557
77 4,388,558
78 4,388,559
111.81 4,388,560
171 4,388,561
205 4,388,562
4,388,563
227 R 4,388,564
291 4,388,565
4,388,566
4,388,567
411 4,388,568

CLASS 318

87 4,388,569
255 4,388,570
293 4,388,571
317 4,388,572
376 4,388,573
443 4,388,574
475 4,388,575
571 4,388,576
717 4,388,577
729 4,388,578
732 4,388,579
787 4,388,580
789 4,388,581

CLASS 320

20 4,388,582
46 4,388,583
48 4,388,584

CLASS 322

47 4,388,585

CLASS 323

283 4,388,586
4,388,587

CLASS 324

72.5 4,388,588
96 4,388,589
103 P 4,388,590
158 P 4,388,591
247 4,388,592
262 4,388,593
348 4,388,594

CLASS 329

104 4,388,595

CLASS 331

1 A 4,388,596
2 4,388,597
4 4,388,598

CLASS 333

150 4,388,599
151 4,388,600
227 4,388,601

CLASS 335

212 4,388,602

CLASS 337

158 4,388,603
197 4,388,604
301 4,388,605

CLASS 338

15 4,388,606
22 SD 4,388,607

CLASS 339

59 R 4,387,943
4,387,944
4,387,945
66 M 4,387,946
90 R 4,387,947
97 R 4,387,948
125 R 4,387,949
136 M 4,387,950
193 R 4,387,951

CLASS 340

24 4,388,608
84 4,388,609
347 DA 4,388,612
347 P 4,388,613
347 SH 4,388,611
384 E 4,388,614
516 4,388,615
587 4,388,616
594 4,388,617
636 4,388,618
682 4,387,937
727 4,388,619
744 4,388,620
802 4,388,621

CLASS 343

14 4,388,622
709 4,388,623
727 4,388,624
786 4,388,625
854 4,388,626

CLASS 346

75 4,388,627
76 PH 4,388,628
81 4,388,629
140 R 4,388,630
141 4,388,631

CLASS 350

6.9 4,387,952
96.14 4,387,953
96.15 4,387,954
96.19 4,387,955
96.20 4,387,956
96.21 4,387,957
96.23 4,387,958
128 4,387,959
164 4,387,960
296 4,387,961
310 4,387,962
331 R 4,387,964
331 T 4,387,963
349 4,387,965
360 4,387,966
423 4,387,967
429 4,387,968
462 4,387,969
463 4,387,970
500 4,387,971
526 4,387,972
582 4,387,973

CLASS 351

208 B1 4,196,979
210 4,387,974

CLASS 354

25 4,387,975
33 4,387,976
60 R 4,387,977
187 4,387,978

CLASS 355

3 CH 4,387,980
3 DD 4,387,982
3 R 4,387,979
3 SH 4,387,981
8 4,387,983
12 4,387,984
71 4,387,985

75 4,387,986
133 4,387,987

CLASS 386

1 4,387,988
71 4,387,989
244 4,387,990
246 4,387,991
4,387,992
336 4,387,993
360 4,387,994

CLASS 387

15 4,388,632
17 4,388,633
34 4,388,634
38 4,388,635
49 4,388,636

CLASS 358

10 4,388,637
27 4,388,638
4,388,639
44 4,388,640
51 4,388,641
60 4,388,642
84 4,388,644
123 4,388,643
147 4,388,645
160 4,388,646
166 4,388,647
4,388,648
195.1 4,388,649
197 4,388,650
206 4,388,651
285 4,388,652
302 4,388,653
343 4,388,654

CLASS 360

19.1 4,388,655
33.1 4,388,656
72.1 4,388,657
85 4,388,658
90 4,388,659
110 4,388,660
112 4,388,661
113 4,388,662
128 4,388,663

CLASS 361

93 4,388,664
119 4,388,665
149 4,388,666
231 4,388,667
283 4,388,668
319 4,388,669
367 4,388,670
383 4,388,671
412 4,388,672

CLASS 362

183 4,388,673
186 4,388,674
225 4,388,675
260 4,388,676
276 4,388,677
293 4,388,678
306 4,388,679
368 4,388,680
374 4,388,681

CLASS 364

200 4,388,682
4,388,683
4,388,684
4,388,685
4,388,686
4,388,687
4,388,688
401 4,388,689
483 4,388,690
510 4,388,691
557 4,388,692
724 4,388,693
834 4,388,694
900 4,388,695
4,388,696
4,388,697
4,388,698

CLASS 365

8 4,388,699
11 4,388,700
77 4,388,701
104 4,388,702
105 4,388,703
154 4,388,704
210 4,388,705
226 4,388,706
230 4,388,707

CLASS 366

2 4,387,995
4 4,387,996
79 4,387,997
130 4,387,998

CLASS 367

2 4,388,708
131 4,388,709
134 4,388,710
135 4,388,711

CLASS 368

15 4,387,999
72 4,388,000
87 4,388,001
88 4,388,002

CLASS 369

10 4,388,712
50 4,388,713
173 4,388,714

CLASS 370

13 4,388,715
29 4,388,716
62 4,388,717
110.1 4,388,718

CLASS 371

27 4,388,719

CLASS 372

76 4,388,720
107 Re.31,279

CLASS 373

31 4,388,721
118 4,388,722

CLASS 374

41 4,388,003

CLASS 375

1 4,388,723
14 4,388,724
36 4,388,725
44 4,388,726
88 4,388,727

CLASS 376

164 4,388,266
247 4,388,267
272 4,388,268
442 4,388,269

CLASS 378

34 4,388,728
45 4,388,530

CLASS 382

8 4,388,610

CLASS 384

397 4,388,004

CLASS 400

144.2 4,388,005
195 4,388,006
314 4,388,007
578 4,388,008
679 4,388,009
692 4,388,010

CLASS 401

173 4,388,011

CLASS 403

142 4,388,012
277 4,388,013
369 4,388,014

CLASS 404

2 4,388,015
48 4,388,016
112 4,388,017
113 4,388,018

CLASS 405

25 4,388,019
138 4,388,020
184 4,388,021
195 4,388,022
4,388,023
198 4,388,024
212 4,388,025

CLASS 406

130 4,388,026

CLASS 409

131 4,388,027
136 4,388,028
295 4,388,029

CLASS 410

69 4,388,030

CLASS 411

43 4,388,031

CLASS 414

95 4,388,032
282 4,388,033
331 4,388,034
417 4,388,035
537 4,388,036
607 4,388,037
685 4,388,038
748 4,388,039

CLASS 415

174 4,388,040

CLASS 416

119 4,388,041
198 A 4,388,042

CLASS 417

36 4,388,043
38 4,388,044
54 4,388,045
295 4,388,046
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310 4,388,048
396 4,388,049
454 4,388,050
505 4,388,051
540 4,388,052
542 4,388,053

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180 4,388,275
187 4,388,276
211 4,388,277

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131 4,388,280
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415 P 4,388,287
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488 4,388,278
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573 R 4,388,293
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180 4,388,308
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274 4,388,320
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335 4,388,326

CLASS 425

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83.1 4,388,056
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392 4,388,061

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656 4,388,341

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54.1 4,388,345
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19 4,388,063
265 4,388,064
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CLASS 432

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CLASS 433

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CLASS 436

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CLASS 493

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410 4,388,072
444 4,388,073

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136 4,388,415
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80 4,388,442
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4.1 4,388,457
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CLASS 544

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CLASS 546

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251 4,388,461

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262 4,388,465
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CLASS 549

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CLASS 560

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CLASS 564

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CLASS 568

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HO4 4,388,478
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CLASS 585

516 4,388,480

CLASS 604

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Re.31,272
165 4,388,074
4,388,076
333 4,387,712
4,387,713
385 4,388,075

CLASSIFICATION OF DESIGNS

D2—	260	269,304		360	269,319			269,332		111	269,346		121	269,361		36	269,375
	292	269,305			269,320		114	269,333	D15—	139	269,348		150	269,362			269,376
	400	269,306		383	269,347	D11—	158	269,334		144	269,349		245	269,363		41	269,377
D3—	32	269,307		388	269,321	D12—	24	269,335	D16—	14	269,350			269,364		54	269,378
	61	269,308	D9—	318	269,322		146	269,336	D17—	20	269,351	D22—	27	269,365		64	269,379
D6—	36	269,309		424	269,323			269,337			269,352			269,366	D25—	53	269,380
	85	269,310		433	269,324		147	269,338	D18—	2	269,353	D23—	8	269,367	D27—	51	269,381
	129	269,311			269,325		318	269,339		7	269,354		97	269,368			269,382
	175	269,312			269,326		319	269,340			269,355	D24—	1.1	269,369			269,383
D7—	3	269,313		448	269,327	D13—	30	269,341			269,356		9	269,370	D30—	2	269,384
	54	269,315	D10—	15	269,328			269,342	D19—	45	269,357		10	269,371			269,385
		269,316		18	269,329	D14—	6	269,343	D21—	9	269,358		17	269,372		16	269,386
	309	269,314		64	269,330		73	269,344		59	269,359			269,373	D32—	52	269,387
	312	269,318		106	269,331		107	269,345		118	269,360		34	269,374	D34—	24	269,388
	317	269,317															

CLASSIFICATION OF PLANTS

P.—	20	5,060		79	5,061												

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PATENTS

01 :	4,387,471	4,387,828		4,388,462		4,388,344		4,387,942	19 :	4,387,473	
	4,387,637	4,387,840		4,388,471		4,388,523		4,387,947		4,387,537	
	4,387,781	4,387,843		4,388,483		4,388,532		4,387,954		4,387,837	
	4,388,521	4,387,846		4,388,490		4,388,619		4,387,959		4,387,844	
	4,388,585	4,387,852		4,388,493		4,388,711		4,387,961		4,387,845	
04 :	4,387,516	4,387,887		4,388,502		4,388,728		4,387,993		4,388,049	
	4,387,722	4,387,888		4,388,505	10 :	4,388,327		4,387,995		4,388,731	
	4,387,877	4,387,895		4,388,515		4,388,372		4,388,002	21 :	4,387,548	
	4,387,919	4,387,916		4,388,524		4,388,448		4,388,012		4,387,552	
	4,387,940	4,387,921		4,388,525	12 :	4,387,480		4,388,074		4,387,618	
	4,388,182	4,387,952		4,388,531		4,387,674		4,388,075		4,387,623	
	4,388,253	4,387,966		4,388,537		4,387,705		4,388,148		4,387,728	
	4,388,436	4,387,970		4,388,555		4,387,752		4,388,159		4,388,010	
	4,388,457	4,387,971		4,388,560		4,387,831		4,388,162		4,388,244	
	4,388,597	4,387,972		4,388,562		4,387,927		4,388,235		4,388,374	
	4,388,651	4,387,994		4,388,579		4,387,950		4,388,272		4,388,519	
	4,388,675	4,388,006		4,388,584		4,387,974		4,388,279		4,388,526	
	4,388,687	4,388,022		4,388,594		4,388,003		4,388,302	22 :	4,388,016	
05 :	4,387,786	4,388,031		4,388,598		4,388,120		4,388,308		4,388,025	
06 :	Re.31,274	4,388,035		4,388,601		4,388,185		4,388,311		4,388,446	
	Re.31,275	4,388,037		4,388,607		4,388,292		4,388,347		4,388,468	
	Re.31,276	4,388,043		4,388,620		4,388,380		4,388,378	23 :	4,387,699	
	Re.31,279	4,388,069		4,388,622		4,388,593		4,388,426	24 :	4,387,477	
	4,387,474	4,388,071		4,388,633		4,388,625		4,388,470		4,387,525	
	4,387,497	4,388,080		4,388,655		4,388,652		4,388,500		4,387,551	
	4,387,499	4,388,097		4,388,656		4,388,698		4,388,551		4,387,809	
	4,387,507	4,388,104		4,388,659	13 :	4,387,475		4,388,559		4,387,827	
	4,387,513	4,388,131		4,388,662		4,387,863		4,388,639		4,387,869	
	4,387,520	4,388,132		4,388,667		4,388,029		4,388,642		4,387,891	
	4,387,527	4,388,134		4,388,668		4,388,139		4,388,645		4,387,935	
	4,387,553	4,388,168		4,388,673		4,388,160	18 :	4,387,529		4,388,070	
	4,387,572	4,388,171		4,388,677		4,388,318		4,387,541		4,388,118	
	4,387,573	4,388,179		4,388,678		4,388,533		4,387,578		4,388,126	
	4,387,576	4,388,180		4,388,694	16 :	4,387,492		4,387,626		4,388,463	
	4,387,600	4,388,181		4,388,699		4,387,776		4,387,628		4,388,582	
	4,387,602	4,388,221		4,388,700		4,388,101		4,387,636		4,388,588	
	4,387,609	4,388,222		4,388,709	17 :	4,387,479		4,387,714		4,388,689	
	4,387,622	4,388,224	08 :	4,387,770		4,387,512		4,387,777	25 :	4,387,506	
	4,387,654	4,388,229		4,388,045		4,387,523		4,387,787		4,387,526	
	4,387,660	4,388,230		4,388,060		4,387,567		4,387,791		4,387,530	
	4,387,692	4,388,233		4,388,187		4,387,589		4,387,804		4,387,555	
	4,387,702	4,388,249		4,388,495		4,387,632		4,387,850		4,387,613	
	4,387,707	4,388,263	09 :	4,387,560		4,387,684		4,387,901		4,387,633	
	4,387,708	4,388,273		4,387,561		4,387,731		4,387,920		4,387,658	
	4,387,709	4,388,283		4,387,585		4,387,738		4,387,923		4,387,662	
	4,387,734	4,388,286		4,387,651		4,387,764		4,388,026		4,387,690	
	4,387,735	4,388,289		4,387,665		4,387,779		4,388,064		4,387,691	
	4,387,736	4,388,346		4,387,667		4,387,811		4,388,191		4,387,720	
	4,387,771	4,388,367		4,387,668		4,387,836		4,388,316		4,387,762	
	4,387,774	4,388,388		4,387,817		4,387,842		4,388,422		4,387,865	
	4,387,784	4,388,389		4,387,839		4,387,873		4,388,581		4,387,955	
	4,387,819	4,388,412		4,388,048		4,387,878		4,388,602		4,387,973	
	4,387,822	4,388,441		4,388,270		4,387,896		4,388,654		4,387,978	

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June 21, 1983 Volume 1031 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Dec. 3, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,900,886, Re. S.N. 404,772, Filed July 28, 1982, Cl. 358/82, SONIC COLOR SYSTEM, Jan R. Coyle, et al., Owner of Record: *Atari, Inc., Sunnyvale, Calif.*, Attorney or Agent: Newton H. Lee, Jr., Ex. Gp.: 233

3,960,927, Re. S.N. 458,116, Filed Jan. 14, 1983, Cl. 560/38, OLEFINIC DERIVATIVES OF AMINO ACIDS, Brian W. Metcalf, et al., Owner of Record: *Merrell Toraude et Compagnie, Strasbourg, France,* Attorney or Agent: William J. Stein, et al., Ex. Gp.: 126

4,002,769, Re. S.N. 367,010, Filed Apr. 9, 1982, Cl. 424/339, INSECT MATURATION INHIBITOR, Meyer Schwarz, et al., Owner of Record: *United States Government, as Represented by the Secretary of Agriculture, Washington, D.C.*, Attorney or Agent: Gregory J. Maier, Ex. Gp.: 125

4,002,769, Re. S.N. 367,011, Filed Apr. 9, 1982, Cl. 424/339, INSECT MATURATION INHIBITOR, Meyer Schwarz, et al., Owner of Record: *United States Government, as Represented by the Secretary of Agriculture, Washington, D.C.*, Attorney or Agent: Gregory J. Maier, Ex. Gp.: 125

4,262,369, Re. S.N. 486,037, Filed Apr. 18, 1983, Cl. 003/1.912, ARTIFICIAL JOINTS, IN PARTICULAR COXO-FEMORAL JOINTS, Christiane Roux, Owner of Record: *Inventor,* Attorney or Agent: Vincent L. Ramik, et al., Ex. Gp.: 336

4,323,105, Re. S.N. 479,948, Filed Mar. 29, 1983, Cl. 160/309, WINDOW SHADE ROLLER ASSEMBLY, Joel Berman, et al., Owner of Record: *Inventors,* Attorney or Agent: Morton Amster, et al., Ex. Gp.: 354

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue

Department of the Treasury
United States Customs Service

19 CFR Part 133

Application for Recordation of Trade Name:

"PLAYERS & SPECTATORS A DRINKING AND GAMING ESTABLISHMENT"

Agency: U. S. Customs Service, Department of the Treasury

Action: Notice of Application for Recordation of Trade Name

Summary: Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for the recordation under Section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "PLAYERS & SPECTATORS A DRINKING AND GAMING ESTABLISHMENT," used by Players & Spectators, Inc., a corporation organized under the laws of the State of Wash., located at East 27 Augusta, Spokane, Wash. 99207.

The application states that the trade name is used in connection with a combined restaurant, tavern and amusement game services and franchise business.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Notice of the action taken on the application for recordation of this trade name will be published in the Federal Register.

Date: Comments must be received on or before July 18, 1983.

Address: Written comments should be addressed to the Commissioner of Customs, Attention: Entry, Licensing and Restricted Merchandise Branch, 1301 Constitution Ave., NW., Room 2417, Washington, D.C. 20229.

For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765).

A. PIAZZA,
May 12, 1983. *Acting Director, Entry Procedures and Penalties Division.*

Department Of Commerce
Patent and Trademark Office

37 CFR Part 2

(Docket No. 30428-69)

Trademark Applications and Examination Proceedings; Trademark Interference, Concurrent Use, Opposition and Cancellation Proceedings; Trademark Post-Registration Proceedings

Agency: Patent and Trademark Office, Commerce.

Action: Final rule.

Summary: The Patent and Trademark Office is amending the rules of practice in trademark cases to clarify and revise procedures for the examination of applications; appeals from final refusals of registration; the institution and/or conduct of trademark interference, concurrent use, opposition and cancellation proceedings; the examination of affidavits or declarations under section 8 of the Trademark Act of 1946; amendments to registrations under section 7 (d) of the Trademark Act; and petitions to the Commissioner. The procedures revise or codify existing practices, or simplify procedures, or establish periods of time, to assist the orderly and prompt resolution of issues.

Effective Date: June 22, 1983.

For Further Information Contact: Miss Janet E. Rice by telephone at (703) 557-3551 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Janet E. Rice, Crystal Square 5, Suite 1008, Washington, D.C. 20231.

Supplementary Information: Amendments to §§2.20, 2.27, 2.63, 2.64, 2.65, 2.72, 2.81, 2.96, 2.98, 2.99, 2.101, 2.102, 2.103, 2.104, 2.105, 2.106, 2.107, 2.111, 2.112, 2.113, 2.115, 2.116, 2.117, 2.120, 2.121, 2.122, 2.123, 2.124, 2.125, 2.127, 2.128, 2.129, 2.131, 2.132, 2.134, 2.135, 2.142, 2.146, 2.165, 2.173, 2.184, and 2.186 and the removal of §§2.88, 2.94, 2.95, 2.97, 2.126, 2.147, and 2.148 were proposed in a rulemaking notice published in the **Federal Register** on June 29, 1982, at 47 FR 28324, the Patent and Trademark Office *Official Gazette* of July 27, 1982, at 1020 O.G. 25, and Vol. 24 of *BNA's Patent, Trademark & Copyright Journal* (July 1, 1982) at p. 236. The purpose of these proposed amendments was to revise and codify existing practices. One of the proposed amendments (subsequently not adopted) was to interchange §§2.101 and 2.102. Interested parties were requested to submit written comments on or before Oct. 4, 1982. An oral hearing was held on the same date. Written comments were submitted by four organizations and four individuals. Three persons testified at the oral hearing. Two of the individuals testified in behalf of organizations which also submitted written comments. Each of the two testified that the organization which he represented approved of the proposed amendments except as indicated in the organization's written comments. The third individual testified concerning the history and purpose of the proposed amendments and expressed his approval of them.

However, further changes to several of these proposed rules, as well as amendments to other trademark rules, were required in order to implement certain trademark provisions of intervening Pub. L. 97-247 enacted Aug. 27, 1982. The text of the law is published in the Patent and Trademark Office *Official Gazette* of Oct. 26, 1982, at 1023 O.G. 31.

Provisions of Pub. L. 97-247 relating to trademark fees were implemented by trademark fee rule changes which were published in the **Federal Register** on July 30, 1982 at 47 FR 33086 and which took effect on Oct. 1, 1982. That final rule document was based alternatively on the law in effect at that time, Pub. L. 96-517, and on H.R. 6260, which was then pending but is now Pub. L. 97-247. As a result of the fee rule changes, which were based on Pub. L. 97-247 and subsequently confirmed in a document published in the **Federal Register** on Sept. 17, 1982 at 47 FR 41282, further changes to §2.101 [identified in the June 29, 1982 notice as §2.102] were required.

Additional changes to §2.101 [identified in the June 29, 1982 notice as §2.102] and §2.111, the removal of §2.103, and changes to §§2.161 and 2.162 were required in order to implement the provisions of Sections 8 and 9 of Pub. L.97-247. Section 8 of the new law amends Section 8 of the Trademark Act of 1946 (15 U.S.C. 1058) to require that an affidavit or declaration filed under Section 8 show use of the mark in commerce. Section 9(a) amends Section 13 of the Trademark Act (15 U.S.C. 1063) to eliminate the requirement for verification of oppositions (thus permitting a party's attorney to sign an opposition before the Trademark Trial and Appeal Board), and to require that additional requests for extension of time to oppose be filed prior to the expiration of the extension. Section 9(b) amends Section 14 of the Trademark Act (15 U.S.C. 1064) to eliminate the requirement for verification of petitions to cancel (thus permitting a party's attorney to sign petitions to cancel before the Trademark Trial and Appeal Board). The provisions of Sections 8 and 9 of the new law became effective Feb. 27, 1983.

The additional proposed changes to §1.101 (identified in the June 29, 1982 notice as §2.102) and §2.111, the changes to §§2.161 and 2.162, and the proposed removal of §2.103, all required as a result of the enactment of Pub. L. 97-247, were published in the **Federal Register** on Nov. 24, 1982 at 47 FR 53054. In that notice, as in the June 29, 1982 notice, §§2.101 and 2.102 were interchanged, and it was indicated in the notice that although §2.102 [identified in the notice as §2.101] and §2.112, as proposed in the June 29, 1982 notice, already included the necessary changes called for by Pub. L. 97-247 and thus were not being republished, further comments on the two proposed rules would be entertained. Interested parties were requested to submit written comments on or before Jan. 7, 1983. Comments were received from one organization.

In a notice of final rulemaking published in the **Federal Register** on Jan. 28, 1983 at 48 FR 3972, and in the *Official Gazette* of Feb. 22, 1983 at 1027 O.G. 129, §2.103 was removed, and §§2.101, 2.102, 2.111, 2.112, 2.161, and 2.162 were amended, to incorporate changes adoped both as a result of the notice of proposed rulemaking of June 29, 1982 (to revise and codify existing practices) and as a result of the notice of proposed rulemaking of Nov. 24, 1982 (to implement the provisions of Sections 8 and 9 of Pub. L. 97-247). All of the comments relating to §§2.101, 2.102, 2.103, 2.111, 2.112, 2.161, and 2.162 which were received in response to the two notices of proposed rulemaking were discussed in that final rule notice and the rule changes adopted therein became effective on Feb. 27, 1983.

Accordingly, this final rule notice does not include a discussion of the comments relating to §§2.101, 2.102, 2.103, 2.111, and 2.112 which were received in response to the June 29, 1982 notice of proposed rulemaking.

Discussion of Specific Sections Changed:

The rules which are being amended are discussed below. (The designation § is used in The Code of Federal Regulations to denominate a rule. If internal division of a section is necessary, it is divided into paragraphs designated as follows: "a", "b", etc. at the first level; "1", "2", etc. at the second level; "i", "ii", etc. at the third level; "A", "B", etc. at the fourth level; "*1*", "*2*", etc. at the fifth level; and "*i*", "*ii*", etc. at the sixth level.)

In this preamble to the rulemaking, "Patent and Trademark Office" is abbreviated as "PTO" and "Trademark Trial and Appeal Board" is abbreviated as "TTAB".

Section 2.20 was proposed to be amended by the addition of a new paragraph (b) to codify the practice whereby a nonofficer of a corporation or association who is authorized to sign a notice of opposition or petition for cancellation may verify the pleading by a declaration in lieu of an oath or affirmation. Inasmuch as the requirement for verification has been eliminated (See Pub. L. 97-247, enacted Aug. 27, 1982 and the final rule notice published in the **Federal Register** on Jan. 28, 1983 at 48 FR 3972), this proposal is withdrawn as moot.

Section 2.27(e) is added to permit the PTO to retain in confidence, not available for public inspection, anything filed under seal pursuant to a protective order [see amended §§2.120(f) and 2.125(e)]. Conforming amendments are made in paragraphs (b) and (d) of §2.27.

Section 2.63 is clarified and designated as paragraph (a).

Section 2.63(b) is added to codify the practice of allowing an applicant to petition to the Commissioner for relief from either an examiner's repeated but nonfinal formal requirement which is appropriate for petition to the Commissioner or a final action which is limited to subject matter which is appropriate for petition to the Commissioner. The paragraph also requires that a petition be timely and sets a time limit for action after denial of a petition. See amended §2.146(b) for a description of nonpetitionable subject matter and amended §2.146(d) for the time limit (sixty days) for a petition. The final text includes a phrase that was not included in the proposed paragraph, namely, the phrase "and the subject matter of the requirement is appropriate for petition to the Commissioner" which now appears in the clause "(1) the requirement is repeated, but the examiner's action is not made final, and the subject matter of the requirement is appropriate for petition to the Commissioner;". The phrase has been added in order to further clarify the intent of the paragraph and is not considered to result in a material alteration thereof.

Section 2.64 is designated as paragraph (a) and revised to agree with the provision in §2.63(b) permitting petitions to the Commissioner concerning some requirements which have been made final.

Section 2.64(b) is added to clarify the existing practice of replying to requests for reconsideration after final action, and to permit entry of amendments accompanying such requests if they comply with the Act of 1946 and the rules of practice in trademark cases.

Section 2.65 is designated as paragraph (a) and amended by the addition of a sentence to provide that a timely and proper petition under §2.63(b) avoids the abandonment of an application. A new paragraph (b) permits the examiner to allow an applicant additional time to explain and supply an inadvertent omission which would otherwise have resulted in the application being held abandoned. The final text of (b) includes a phrase that was not included in the paragraph as proposed, namely, the phrase "filed within the six-month response period" which now appears in the clause beginning "When action by the applicant filed within the six-month response period is a bona fide attempt to advance the examination of the application * * *." The phrase has been added in order to further clarify the intent of the paragraph and is not considered to result in a material alteration thereof.

Section 2.72 is revised so that the standard for amendment of a mark in an application now is the same in terms as the standard for amendment of a registered mark set forth in section 7(d) of the Act of 1946.

Section 2.72 was proposed to be further revised to allow non-material changes in the drawing to be supported by specimens which were not necessarily in use at the time the original application was filed. However, upon further consideration, it appears that the proposed revision might result in so many amendments to marks as to constitute a burden on the Patent and Trademark Office. Accordingly, this part of the proposal is withdrawn.

Section 2.81 is revised to clarify the language of the section. Proposed §2.81 has been slightly reworded herein so as to further improve the clarity of the section.

Section 2.88 is deleted because requests to consolidate applications are very rare and the procedure is unworkable. See Official Gazette notice of July 29, 1981, 1009 TMOG 17.

Section 2.94 is deleted because interferences are declared only upon petition [see §2.91], which assumes proper review before an interference is declared, and existing §2.94 is unnecessary.

Section 2.95 is deleted because the deletion of §2.94 makes §2.95 unnecessary.

Section 2.96 is amended to codify existing practice on the issues determinable in an interference and the order of the parties and burden of proof. The amended rule states who is the junior party if two applications have the same filing date but different dates of execution. The third and fourth sentences of proposed §2.96 have been reworded herein so as to improve the clarity of the section.

Section 2.97 is deleted because it is unnecessary in view of the codification in §2.96.

Section 2.98 is amended to make the rule consistent with existing §2.91.

Section 2.99 is reorganized and amended to describe the concurrent use application procedure in greater detail. Paragraph (a) of the amended rule provides that an application for a concurrent use registration will be examined in the same manner as other applications for registration.

Paragraphs (b) and (c) and paragraph (d)(1) of §2.99 describe the procedure to be used to institute a concurrent use proceeding.

Paragraphs (d)(2) and (3) of §2.99 codify existing practice on who must file an answer to a notice of institution of a concurrent use proceeding and the effect of not filing an answer.

Section 2.99(e) codifies existing practice on the order of the parties and the burden of proof and states who is the junior party if two applications have the same filing date but different dates of execution. A person specified as an excepted user but who has not filed an application is stated to be a senior party to every party that has an application involved in the proceeding because a party without an application is seeking no relief and therefore has no burden of proving entitlement to relief.

Section 2.99(f) provides for the issuance of a concurrent use registration upon the basis for a court's determination of the rights of the parties to use their marks in commerce, without the institution of a proceeding by the TTAB, when all of the conditions specified in the rule are fulfilled. The first clause in paragraph (f), which, as proposed, read "when a concurrent use registration is sought on the basis of a court's determination of the rights of the parties to use the marks in commerce, * * *", has been modified herein to read "When a concurrent use registration is sought on the basis that a court of competent jurisdiction has finally determined that the parties are entitled to use the same or similar marks in commerce, * * *." The modified clause closely follows the language of that portion of section 2(d) of the Act of 1946 upon which the rule is based. The modification has been made in order to clarify the subsection and is not considered to result in a material alteration thereof.

Section 2.99(g) codifies existing law that registrations and applications to register on the Supplemental Register and registrations under the Act of 1920 are not subject to concurrent use registration proceedings and implements section 26 of the Act of 1946, which provides, inter alia, that applications for and registrations on the Supplemental Register shall not be subject to section 17 of the Act, which is the statutory authority for a concurrent use registration proceeding (cf. existing §2.91(b)).

Section 2.104 is amended to clarify existing §2.104.

Section 2.105 is amended to clarify existing §2.105 and codify the practice thereunder.

Section 2.106(c) is amended to codify the practice under existing §2.106(c) that, after an answer is filed, an opposition may be withdrawn without prejudice only with the written consent of the applicant.

Section 2.107 is amended to codify the practice under existing §2.107 whereby any pleading, including the answer, may be amended.

Section 2.113 is amended to clarify existing §2.113, which described the procedure for notifying a registrant of the filing of a proper petition for cancellation of his registration. The amended section includes cross-references to §§2.111 and 2.112 (amended effective Feb. 27, 1983), which pertain to the "filing" of and proper form for a petition for cancellation, and to §2.118, which pertains to undelivered Office notices.

Section 2.115 is amended to codify the practice under existing §2.115 whereby any pleading, including the answer, may be amended.

Section 2.116(b) is amended to clarify the language and intent of existing §2.116(b).

Section 2.116(c) is amended to clarify existing §2.116(c). Any complaint filed by a party in an interference or concurrent use proceeding would be a petition for cancellation, and the position of the parties in the consolidated proceeding will be set by the TTAB as required.

Section 2.117 is amended by designating the present section as paragraph (a) and adding two new paragraphs, (b) and (c). Section 2.117 as proposed contained four subsections. Proposed paragraph (b) is withdrawn and proposed paragraphs (c) and (d) are redesignated (b) and (c).

Section 2.117(b) codifies existing practice as to determination of a potentially dispositive motion when the question of suspension of proceedings is raised.

Section 2.117(c) permits a party to move, or parties to stipulate, for suspension, which usually occurs when negotiations for settlement are undertaken and the parties want proceedings suspended for that purpose.

Section 2.120 is amended in several respects, commencing with a reorganization of the rule to state how discovery may be taken, then how discovery may be compelled, then how admissions may be requested and the sufficiency of admissions or objections to requests therefor may be tested, and then how the results of discovery may be used in a proceeding.

Section 2.120(a) clarifies the language of the introductory paragraph of existing §2.120.

Section 2.120(b) clarifies existing §2.120(a)(1) and codifies the practice thereunder, and is made applicable to domestic parties.

Section 2.120(c)(1) restates in modified form the provisions of existing §2.120(a)(2), and in addition, permits oral discovery depositions in foreign countries on motion for good cause or by stipulation of the parties.

Section 2.120(c)(2) provides for oral discovery depositions within the United States of foreign parties or their officers, etc. if they will be in the United States during a discovery period.

Section 2.120(d) makes specific provision for requests for production and codifies the practice for this kind of discovery.

Section 2.120(e) clarifies existing §2.120(c)(1) and codifies the practice on motions to compel discovery.

Section 2.120(f) adds provisions pertaining to protective orders during discovery.

Section 2.120(g) clarifies existing §2.120(c)(2) and further codifies the practice on sanctions for failing to obey orders pertaining to discovery.

Section 2.120(h) adds to the discovery rules provisions pertaining to requests for admissions and codifies the practice pertaining to requests for admissions.

Section 2.120(i) codifies the practice on the use of telephone and pre-trial conferences to resolve disputes.

Section 2.120(j) clarifies existing §2.120(a)(3) relating to the use of discovery depositions, and codifies and revises the practice on the filing with the TTAB of matter obtained during discovery and the use thereof at trial.

Section 2.121 clarifies existing §2.121 and codifies the practice thereunder.

Section 2.122 consolidates in one section the rules governing the introduction and admission of certain types of evidence in inter partes proceedings before the TTAB.

Section 2.122(a) identifies the sources of the law of evidence to be applied in inter partes proceedings.

Section 2.122(b)(1) clarifies the language and codifies the practice under existing §2.122(a).

Paragraph (b)(2) and paragraph (c) of §2.122 clarify existing §2.126 and codify the practice under that section.

Section 2.122(d)(1) incorporates all of the substance of existing §2.122(b) relating to the introduction in evidence of a plaintiff's pleaded registration with the complaint, except that the provision permitting the submission of an order for status and title copies of a pleaded registration with the complaint has been eliminated.

Section 2.122(d)(2) provides for the introduction in evidence of a registration owned by a party to a proceeding during the taking of testimony or by the filing of a notice of reliance on the registration, together with status and title copies thereof, during that party's testimony period.

Section 2.122(e) [identified in the notice of proposed rulemaking as §2.122(c)(1)] clarifies and adds to the provisions of existing §2.122(c) relating to printed publications and official records. Section 2.122(e) requires that an official record or copy thereof offered under the rule be an authentic record or copy pursuant to the Federal Rules of Evidence and also requires that, when a copy of a relevant portion of a printed publication is offered, the copy include the title page and any other page needed to show the place and date of publication, the name and address of the publisher, and the name of the author or the editor, which information is intended to enable the party against whom the evidence is offered to identify what it is. In the proposed and final rules, a new phrase, namely, "among members of the public or that segment of the public which is relevant under an issue in a proceeding", has been added to the opening clause of existing §2.122(c), so that that clause now reads "Printed publications, such as books and periodicals, available to the general public in libraries or of general circulation among members of the public or that segment of the public which is relevant under an issue in a proceeding". The phrase was added so that it would be clear that a trade journal, for example, is a printed publication of the type contemplated by the rule notwithstanding the fact that it may be circulated only among members of the trade rather than among members of the general public; the addition is not to be construed as an indication that an individual company's promotional literature, product booklets, annual reports, etc., are admissible under this section. Cf. Glamorene Products Corporation v. Earl Grissmer Company, Inc., 203 USPQ 1090 (TTAB 1979); Litton Industries, Inc. v. Litronix, Inc., 188 USPQ 407 (TTAB 1975); and Minnesota Mining and Manufacturing Company v. Stryker Corporation, 179 USPQ 433 (TTAB 1973).

Section 2.122(f) clarifies existing §2.122(d) and codifies the practice thereunder.

Section 2.123 is amended by revising paragraphs (a), (e)(3), (j), and (k) thereof.

Section 2.123(a)(1) provides that testimony may be taken by depositions upon oral questions or upon written questions and further provides that if a party serves a notice of taking a testimonial deposition upon written questions, any adverse party may move to have the deposition taken upon oral questions if the witness, even though he may be a foreign party or a person who usually resides in a foreign country, is, or at the time of the deposition will be, in the United States or any territory under the control and jurisdiction of the United States.

Section 2.123(a)(2) provides that testimony in a foreign country is ordinarily to be taken by a deposition upon written questions but that the party against whom a testimonial deposition will be taken may move for good cause shown to have it taken by oral questions in a foreign country, and further provides that the parties may stipulate to have testimony taken by an oral deposition in a foreign country.

Section 2.123(e)(3) codifies the practice that a party who did not receive a proper notice of the taking of a deposition with respect to any witness may cross-examine that witness under protest while preserving his right to move to strike the whole of the testimony of that witness.

Section 2.123(j) is revised to provide that Rule 32(d)(1), (2), and (3) (A) and (B) of the Federal Rules of

Civil Procedure shall apply to errors and irregularities in depositions; that notice will not be taken of merely formal or technical objections which shall not appear to have wrought a substantial injury to the party raising them; and that in case of such injury it must be made to appear that the objection was raised at the time specified in the aforesaid rule.

Section 2.123(k) is revised to provide that objections to the competency of a witness or to the competency, relevancy, or materiality of testimony must be raised at the time required by Rule 32(d)(3)(A) of the Federal Rules of Civil Procedure, and that such objections will not be considered until final hearing.

Section 2.124 sets out the procedure to be followed in taking a discovery deposition or a testimonial deposition upon written questions.

Section 2.124(a) provides that a deposition upon written questions may be taken before any of the persons described in Rule 28 of the Federal Rules of Civil Procedure.

Section 2.124(b)(1) provides for the kind of notice which must be served by a party desiring to take a testimonial deposition upon written questions and further provides that a copy of the notice, without the questions, must be filed with the TTAB.

Section 2.124(b)(2) provides for the kind of notice which must be served by a party desiring to take a discovery deposition upon written questions and further provides that a copy of the notice, without the questions, must be filed with the TTAB. This paragraph also provides that, if the name of the person to be deposed is not known to the party who will take the deposition, a general description sufficient to identify the class or group to whom the prospective witness belongs shall be stated in the notice and the party to be deposed shall designate one or more discovery witnesses.

Section 2.124(c) requires that every notice of deposition upon written questions name or describe by title the officer before whom the deposition will be taken.

Section 2.124(d)(1) specifies the procedure and timetable for serving the questions, objections, and substitute questions for a deposition upon written questions.

Section 2.124(d)(2) provides that the TTAB may reset the times specified in §2.124(d)(1) and, when a testimonial deposition is to be taken upon written questions, shall suspend or reschedule other proceedings in the matter to allow for the completion of the deposition.

Section 2.124(e) provides the procedure for sending the notice and questions to the officer designated in the notice, the taking of the deposition, and the certification and mailing of the transcript to the party who took the deposition.

Section 2.124(f) provides for the service of copies of the transcript and exhibits, states that the party who took the deposition is responsible for the correctness of the transcript, permits the use of a discovery deposition as provided by §2.120(j), and provides for the filing with the TTAB of a testimonial deposition, a copy thereof, and the exhibits.

Section 2.124(g) states that objections to questions and answers may be considered at final hearing.

Section 2.125(a) provides for the service of a transcript of an oral testimonial deposition and the exhibits, and, in respect of that requirement, continues the rule of existing §2.125(a).

Section 2.125(b) makes the party who took a deposition responsible for its correctness and for serving the adverse party with a corrected transcript or corrected pages.

Section 2.125(c) continues the requirement of existing §2.125(a) that a certified transcript and the exhibits be filed promptly with the TTAB and further provides that notice of filing be served on the adverse party and that a copy of the notice be filed with the TTAB. The requirement for the filing of a copy of the transcript (in addition to the certified transcript), which appeared both in existing §2.125(a) and in proposed §2.125(c), has not been retained in the final rule since the TTAB does not really need the copy and the printing of it is an unnecessary expense for parties involved in proceedings before the TTAB.

Section 2.125(d) continues the requirements of existing §2.125(b).

Section 2.125(e) provides that the TTAB, on motion, may order that any part of a deposition transcript or exhibits that directly disclose a trade secret or other confidential research, development, or commercial information may be filed under seal and kept confidential and provides for sanctions for failure to comply with the order.

Section 2.126 is deleted because the substance of the existing section has been shifted to §2.122(b)(2) and (c).

Paragraphs (a), (b), and (c) of §2.127 c'arify, and codify the practice under, existing paragraphs (a), (b), and (c) of that section.

Section 2.127(d) codifies the practice with respect to suspending all matters in a case not germane to a potentially dispositive motion until the determination thereof.

Section 2.128(a)(1) clarifies existing §2.128(a) except that the rule requiring copies of a brief is shifted to final §2.128(b).

Section 2.128(a)(2) codifies the practice of having the TTAB set the briefing schedule by order when proceedings are consolidated, or when there is a counterclaim, or when more than two parties are involved.

Section 2.128(a)(3) contains a new provision enabling the TTAB to enter judgment against a plaintiff who fails to file a brief at final hearing and also fails to respond to an order to show cause why such judgment should not be entered against him or files a response indicating that he has lost interest in the case.

Section 2.128(b) clarifies and codifies the practice under the last sentence of existing §2.128(a) and existing §2.128(b).

Section 2.129(a) clarifies and codifies the practice under existing §2.128(c) and existing §2.129(a).

Section 2.129(b) clarifies existing §2.129(b).

Section 2.129(c) clarifies existing §2.129(c), from which the language referring to a decision on a motion which is finally dispositive of a case has been deleted because any requests for reconsideration or modification of a decision issued on a motion would be made under final §2.127(b).

Section 2.131 clarifies and codifies the practice under existing §2.131. The effect is to eliminate the dichotomy between inter partes and ex partes issues and to provide for the determination by the TTAB of all issues that have been expressly pleaded by the parties or tried by their express or implied consent and to reserve for remand to the examiner for reexamination only issues neither pleaded nor tried but which appear to make the mark of an applicant unregistrable.

Section 2.132(a) changes the practice under existing §2.132(a) by eliminating the step of having the TTAB issue an order to the plaintiff to show cause why judgment should not be entered against him. Under amended §2.132(a), the plaintiff will have fifteen days from the date of service of the defendant's motion for dismissal within which to show cause why judgment should not be rendered against the plaintiff.

Section 2.132(b) clarifies existing §2.132(b).

Section 2.134(a) codifies the practice under existing §2.134 that the written consent of the adverse party is required to avoid judgment against a cancellation respondent who applies to cancel his registration under section 7(d) of the Act of 1946 while the registration is involved in a proceeding.

Section 2.134(b) provides that, after the commencement of a cancellation proceeding, if it comes to the attention of the TTAB that a respondent (registrant) has permitted his registration to be cancelled under section 8 of the Act of 1946 or has failed to renew his registration under section 9 of the Act, an order may be issued allowing respondent until a set time in which to show cause why the resulting demise of the registration should not be deemed to be the equivalent of a cancellation of the registration by request of the repondent without the written consent of the adverse party and should

not result in entry of judgment against the respondent; and that, in the absence of a showing of good and sufficient cause, judgment may be entered against respondent. Section 2.134(b) is added to avoid situations where a respondent in a cancellation proceeding may moot the case and avoid judgment because of the fortuitous circumstance that his registration happens to reach its sixth anniversary or twentieth anniversary while a proceeding is pending and the respondent exploits this situation by simply failing to file an affidavit under section 8 of the Act or a renewal application under section 9 of the Act.

Section 2.135 codifies the practice under existing §2.135, which is parallel to the practice under existing §2.134 and final §2.134(a), that the written consent of the adverse party is required to avoid judgment against an applicant who abandons his application or mark while the application is involved in an opposition, concurrent use or interference proceeding. It should be noted that existing §2.135 begins, "If, in a proceeding, an applicant * * *", but that the section as proposed referred only to "an opposition proceeding". The narrowing of the application of the rule in the section as proposed was an inadvertent error. In order to correct the error, the proposal to revise the section to include only a reference to an opposition proceeding is withdrawn. The wording of the beginning of final §2.135, namely, "After commencement of an opposition, concurrent use, or interference proceeding, if the applicant * * *", is legally equivalent to the beginning of existing §2.135.

Section 2.142(a) clarifies existing §2.142(a).

Section 2.142(b) requires the examiner to file with the TTAB a brief answering the appellant's brief and requires the examiner to file the brief within sixty days after appellant's brief is sent to the examiner by the TTAB. Section 2.142(b) as proposed required that the examiner's brief (referred to therein as a "statement") answer "every point in" the appellant's brief, whereas existing §2.142(b) requires only that the examiner furnish a written statement "In answer to" appellant's brief. Upon further consideration, the proposal to modify §2.142(b) to require that the examiner's brief answer "every point in" the appellant's brief is withdrawn since it is likely to result in briefs which are unduly lengthy. An appellant's brief may contain points which are so insignificant, immaterial, etc. as to require no response.

Section 2.142(c) codifies the practice that all requirements made by the examiner and not the subject of appeal shall be complied with prior to the filing of an appeal.

Section 2.142(d) provides that the record in the application should be complete prior to the filing of an appeal, states that the TTAB will ordinarily not consider additional evidence filed with the TTAB by the appellant or by the examiner after an appeal is filed, and provides that either the appellant or the examiner may request the TTAB to suspend the appeal and remand the application for further examination if the appellant or the examiner desires to introduce additional evidence.

Section 2.142(e)(1) amends existing §2.142(c), and codifies the practice under the existing rule, by changing the due date for a request for an oral hearing on an appeal from the date when the appellant's brief is filed to a date ten days after the due date for a reply brief.

Section 2.142(e)(2) requires the examiner to present an oral argument if an oral argument is requested by the appellant.

Section 2.142(e)(3) allots twenty minutes to the appellant for oral argument and ten minutes to the examiner for oral argument.

Section 2.142(f) provides for situations where, during an appeal, it appears to the TTAB that an issue not previously raised may render the mark of the appellant unregistrable, that is, when something on the face of the record on appeal indicates that a question concerning the registrability of the mark may exist but has not been considered. The paragraph provides the procedure to be followed by the TTAB, the Examiner, and the appellant when the TTAB suspends an appeal and remands an application on the TTAB's own initiative. The paragraph as amended includes certain words, namely, "to be completed", appearing in the phrase "and remand the application to the examiner for further examination to be completed within thirty days", which were not included in the paragraph as proposed. The words have been added in order to further clarify the intent of the paragraph and are not considered to result in a material alteration thereof. Further, for the reason indicated in connection with §2.142(b), the words "every point in" have been omitted from §2.142(f)(4).

Section 2.146 collects in one section the rules on petitions to the Commissioner in existing §§2.146, 2.147, and part of §2.148. For this reason existing §2.147 is removed. In the notice of proposed rulemaking, it was also proposed that existing §2.148 be deleted. The reason for the proposal was a belief that the entire substance of §2.148 was incorporated in proposed §2.146(a)(5), which provides that petition may be taken to the Commissioner in any extraordinary situation, when justice requires and no other party is injured thereby, to request a suspension or waiver of any requirement of the rules not being a requirement of the Act of 1946. However, existing §2.148 provides that in an extraordinary situation, when justice requires and no other party is injured thereby, any requirement of the rules not being a requirement of the statute may be suspended or waived by the Commissioner. That rule is not limited to waiver petition but rather also encompasses waiver upon the Commissioner's own initiative. Inasmuch as the entire substance of existing §2.148 is not incorporated in proposed and final §2.146(a)(5), the proposal to remove §2.148 is withdrawn.

Section 2.146(a) reflects the change in §2.63(b) permitting petitions concerning some requirements which have been made final.

Section 2.146(b) delineates classes of questions which are not considered to be appropriate subject matter for petitions to the Commissioner. These questions are substantive issues of registrability of marks and are considered to be appropriate for appeal to the TTAB. Section 2.146(b) as proposed read "Questions arising under Sections 2, 3, 4, 5, 6 and 23 of the Trademark Act during the ex parte prosecution of applications are not considered to be appropriate subject matter for petitions to the Commissioner", whereas paragraph (b) as adopted herein reads "Questions of substance arising during the ex parte prosecution applications, including, but not limited to, questions arising of under Sections 2, 3, 4, 5, 6 and 23 of the Act of 1946, are not considered to be appropriate subject matter for petitions to the Commissioner." The wording of the paragraph has been modified for purposes of clarification, and such modification is not considered to result in a material alteration of the paragraph.

Section 2.146(c) specifies the contents of a petition of the Commissioner, and in this respect clarifies requirements previously included in §2.146(b).

Section 2.146(d) specifies the time limit for filing a petition on any matter not otherwise specifically provided for. In proposed §2.146(d), an attempt was made to list the matters otherwise specifically provided for. However, several matters were inadvertently omitted. In order to ensure that the rule is correct, the list has been omitted from the final rule.

Section 2.146(e) provides time limits and specifies the procedure for a petition to the Commissioner from the denial of a request for an extension of time to file an opposition or from an interlocutory order of the TTAB. Section 2.146(e)(1) contains a new requirement that a petition from the denial of a request for an extension of time to oppose must be served on the applicant or his attorney and provides for a response by the applicant to the petition.

Section 2.146(f) clarifies a provision previously included in §2.146(c).

Section 2.146(g) clarifies and codifies the practice previously under §2.146(d) and, in addition, makes §2.146 consistent with §§2.63(b) and 2.65, as adopted herein.

Section 2.146(h) codifies the practice previously under

§2.146(e) whereby authority to act on classes of petitions, in addition to any particular petition, may be delegated.

Paragraphs (a), (b), and (c) of §2.165 specify the procedure when the affidavit or declaration filed under section 8 of the Act of 1946 is refused. The steps to be taken by the registrant to request reconsideration and to petition to the Commissioner and the time limits for such requests and petitions are stated.

Section 2.165(d) states that a petition to the Commissioner for review of the action refusing the affidavit or declaration under section 8 of the Act of 1946 shall be a condition precedent to an appeal to or action for review by any court. This implements section 21 (a)(1) and (b)(1) of the Act, which provides, inter alia, that a registrant who has filed an affidavit under section 8 of the Act who is dissatisfied with the decision of the Commissioner may appeal to the U.S. Court of Appeals for the Federal Circuit or may have remedy by a civil action.

Section 2.173(b) clarifies the circumstances in which an amendment of the identification of goods or services of a registration is permitted. The rule states that an identification of goods or services can be restricted or can be otherwise changed in ways that would not require republication of the mark.

Paragraphs (a), (b), and (c) of §2.184 specify procedures and time limits for relief when an application for renewal of the registration under section 9 of the Act of 1946 is refused, in parallel with final §2.165.

Section 2.184(d) is parallel to final §2.165(d) and has the same statutory basis.

Section 2.186 clarifies and codifies the practice under existing §2.186 that action with respect to an assigned application or registration may be taken by the assignee provided that the assignment has been recorded.

Response to Comments on the Rules

The written comments and oral testimony offered in response to the notice of proposed rulemaking published in the **Federal Register** on June 29, 1982 have been given careful consideration, and a substantial number of the suggested modifications have been adopted. The comments and responses (except those pertaining to §§2.101, 2.102, 2.103, 2.111, and 2.112, which were included in the final rule notice published in the **Federal Register** on Jan. 28, 1983 at 48 FR 3972) appear below:

Comment: In response to the proposal to amend §2.20 by adding a new paragraph (b) to codify a particular practice relating to the verification of oppositions and petitions for cancellation, one organization noted that the question of verification of oppositions and petitions for cancellation appeared to be moot in view of Pub. L. 97-247; indicated its belief, with respect to the phrase "person who is authorized to sign" in proposed §2.20(b), that the rules pertaining to oppositions and petitions for cancellation should be amended to require that when an opposition or petition for cancellation is signed on behalf of a corporation or an association by a person who is authorized to sign the document but who is not an officer, the person must represent that he has such authority; and submitted its proposal for a substitute §2.20 (modeled on the corresponding patent rule, §1.68) which is broader in scope than present §2.20.

Response: Inasmuch as Pub. L. 97-247 has amended the Trademark Act of 1946 so as to eliminate the requirement for verification of oppositions and petitions for cancellation, the proposal to amend §2.20 by adding a new paragraph (b) relating to verification of oppositions and petitions for cancellation has been withdrawn. The other two suggestions involve substantive rule changes which are outside the scope of the proposed rule changes as published and hence cannot be adopted without affording members of the public an opportunity to comment thereon. However, these suggestions will be considered in connection with any future proposals to amend the rules in question. In this regard, it should be noted that when an opposition or petition for cancellation is signed by a person whose authority to sign is not apparent, it is the practice of the Trademark Trial and Appeal Board to inquire as to that person's authority to sign.

Comment: One organization suggested that the word "Anything" be substituted in proposed §2.27(e) for the phrase "Any documents, tangible things, answer to interrogatories, or all or any part of any discovery or testimonial deposition transcripts" because the attempt to list all of the types of things subjected to the rule might invite disputes as to whether particular items are covered. The same organization suggested that the following sentence be added to paragraph (e): "When possible, only confidential portions of filings with the Board shall be filed under seal."

Response: The paragraph has been modified as suggested.

Comment: One organization and three members of another organization suggested that proposed §2.64(b), which concerns requests for reconsideration after final action by the examiner, be modified to require that any request for reconsideration filed within three months of the final action be responded to by the examining attorney before the time for appeal.

Response: The six-month period for appealing from a final refusal of registration, or for complying with a requirement which has been made final, or for petitioning the Commissioner [if permitted by §2.63(b)] with respect to such a requirement, is statutory, and the Patent and Trademark Office cannot guarantee that any request for reconsideration filed within three months of the final action will be responded to by the examining attorney before the time for appeal. However, the paragraph has been modified to provide that normally the examiner will reply to a request for reconsideration before the end of the six-month period if the request is filed within three months after the date of the final action.

Comment: Two organizations expressed disapproval of the final sentence of proposed §2.64(b), which reads: "Amendments accompanying requests for reconsideration after final action will be entered if they place the application in condition for publication or in better form for appeal." The organizations criticized this provision as being unduly restrictive and vague, and suggested that the subsection be modified to permit any amendment that complies to the Trademark Act of 1946 and the Rules of Practice in Trademark Cases.

Response: The paragraph has been modified as suggested.

Comment: One organization suggested that proposed §2.65(a), which includes a reference to proposed §2.63(b), be modified to include also a reference to proposed §2.146, for the asserted reason that if reference is made to other sections of the rules, the reference should include all the most pertinent rules.

Response: The Paragraph has been modified as suggested.

Comment: Two organizations urged with respect to proposed §2.65(b) (which concerns the filing of an incomplete response to an examiner's action), that the word "may" in the clause "opportunity to explain and supply the omission may be given before the question of abandonment is considered" be changed to "shall".

Response: The suggestion has not been adopted. A requirement that an opportunity to explain and supply an omission be given in every case would result in a significant increase in the work load of the Trademark Examining Operation and hence an undue burden upon the Patent and Trademark Office. Accordingly, the word "may" has been retained in the final paragraph so as to leave the Trademark Examining Attorney with the descretion to determine whether such an opportunity should be given, depending upon the nature of the omission. The final paragraph parallels corresponding patent §1.135(c).

Comment: One member of one of the organizations commented that as a result of the proposed revision of §2.72 (which would allow non-material changes in the drawing of a mark to be supported by specimens which were not necessarily in use at the time the original application was filed), an applicant might amend its mark

sought to be registered in order to overcome a reference under section 2(d) of the Trademark Act of 1946.

Response: The proposed revision might well have the result suggested in the comment, and an amendment for such a purpose would not be wrong, in and of itself. However, upon further consideration it appears that the proposed revision might result in so many amendments to marks as to constitute a burden upon the Patent and Trademark Office. Accordingly, the proposal to revise §2.72 in the manner described above is withdrawn. A second proposal to change the last sentence of §2.72 from "Amendments may not be made if the nature of the mark is changed thereby." to "Amendments may not be made if the character of the mark is materially altered.", so that the standard for amendment will be the same as the standard for amendment of registered marks (see section 7(d) of the Act of 1946), is adopted.

Comment: One organization commented, with respect to proposed §2.81, that there is a typographical error in the first line of the section, namely, that "with" should be "within." Another organization noted certain errors in the corrections to proposed §2.121(b)(1) and (c) published in the **Federal Register** at 47 FR 32955.

Response: The noted errors were made in printing. They do not appear in the original text of the notice of proposed rulemaking which was prepared and retained by the Patent and Trademark Office.

Comment: One individual, one organization, and one member of another organization expressed their belief that the second sentence in proposed §2.99(a) (which states, "The examiner may require an applicant for registration as a concurrent user to make a prima facie showing that the applicant is entitled to a concurrent use registration") is too vague to be of help in drafting a concurrent use application, and suggested that this portion of the paragraph either be deleted or made more specific.

Response: Upon further consideration, it appears that the subject matter of this portion of the subsection should be developed either through decisional law or in the Trademark Manual of Examining Procedure. Accordingly, the sentence has been deleted.

Comment: Proposed §2.99(f) lists the conditions which must be met when an applicant seeks to obtain a concurrent use registration under the provisions of section 2(d) of the Act of 1946 based on a court decree, without the necessity of a concurrent use proceeding in the Patent and Trademark Office. One organization urged that the fifth condition (which states: "the excepted use specified in the concurrent use application does not involve a registration") be deleted for the reason that it is vague and, in any event, inappropriate where the registration involved was otherwise before the court.

Response: When the excepted use specified in a concurrent use application based on a court decree involves an unrestricted registration, a concurrent use registration proceeding must be instituted in order that the Trademark Trial and Appeal Board may restrict the registration in accordance with the court decree. In such cases, the concurrent use registration proceeding does not go forward to trial but rather is terminated on the basis of the court decree immediately after institution of the proceeding. However, if the registration has been restricted by the Commissioner in accordance with the court decree, and the other conditions listed in paragraph (f) have been met, there is ordinarily no need for a concurrent use registration proceeding. Accordingly, paragraph (f) has been modified to read: "the excepted use specified in the concurrent use application does not involve a registration, or any involved registration has been restricted by the Commissioner in accordance with the court decree."

Comment: One organization noted that in §§2.104 and 2.105, as proposed, the term "opposition", when used to refer to the complaint in an opposition proceeding, has been changed to "notice of opposition". The organization expressed its belief that there is no reason for reverting to the phrase "notice of opposition" except tradition, and that that phrase is confusingly similar to the phrase "notification of opposition".

Response: The proposal to change "opposition" to "notice of opposition" in certain instances has not been adopted.

Comment: One organization commented that proposed §2.113 should be modified to indicate that the effective filing date of a petition for cancellation will be the date that the statutory requirements, including payment of the required fee(s), are satisfied. The organization indicated that it was concerned here and elsewhere (see comment and response pertaining to §2.111 in the final rule notice published in the **Federal Register** on Jan. 28, 1983 at 48 FR 3972) about cases in which an incomplete filing is made within five years of the date of registration and not perfected until the five-year period of section 14(a) of the Act of 1946 has passed. The organization also suggested that the section be modified to include a cross-reference to existing §2.118, which pertains to undelivered notifications.

Response: The section has been modified to include a cross-reference to §2.118. Additionally, the first clause in the section, which as proposed read "When a petition for cancellation has been filed in proper form and the correct fee(s) have been submitted,", has been modified by the inclusion of a cross-reference to §§2.111 and 2.112 and by the deletion of the words "and the correct fee(s) have been submitted,", so that the modified clause reads "When a petition for cancellation has been filed in proper form (see §§2.111 and 2.112),". Section 2.111, as amended effective Feb. 27, 1983 (see the final rule notice published in the **Federal Register** on Jan. 28, 1983 at 47 FR 3972) provides in effect that the filing date of a petition for cancellation with respect to each named party petitioner and each class sought to be cancelled is the date of receipt in the Patent and Trademark Office of the petition together with the required fee for that party petitioner and class, and that is those cases where the five-year limitation of sections 14 (a) and (b) of the Acts of 1946 is applicable, the petition and required fee(s) must be filed prior to the expiration of the five-year period. Section 2.112, as amended effective Feb. 27, 1983, pertains to the proper form for a petition for cancellation.

Comment: One organization stated, with respect to proposed §2.117(b), that it failed to appreciate the necessity for requiring that issue be joined in both the civil action and the proceeding in the Patent and Trademark Office before the Trademark Trial and Appeal Board will consider suspension of the Board proceeding pending the outcome of the civil action. The organization also noted that the retained paragraph of §2.117 needs a paragraph reference, i.e., "(a)".

Response: The retained paragraph of §2.117 has designated been "a". Insofar as proposed paragraph (b) is concerned, it is not in fact the practice of the Board to require that issue be joined in the civil action before suspension of the Board proceeding will be considered [see Tokaido v. Honda Associates, Inc., 179 USPQ (TTAB 1973)]. Moreover, while it may not be possible in some cases to determine whether a civil action is likely to be determinative of a proceeding before the Board until an answer has been filed in one or both proceedings, in other cases it is feasible and advantageous to suspend prior to answer. Accordingly, proposed §2.117(b) has been withdrawn, and proposed paragraphs (c) and (d) have been redesignated (b) and (c).

Comment: One organization suggested that suspension be considered automatic upon the showing of the institution of a civil action between the parties provided that the party in the position of plaintiff in the Board proceeding has neither commenced taking testimony nor filed any evidence in such proceeding.

Response: It is the normal practice of the Board to suspend under the circumstances outlined in the comment if it appears that the civil action may be dispositive of the proceeding before the Board. However, even under these circumstances there are times when it may be desirable to go forward with the Board proceeding, as, for example, when the civil court has a large backlog or

suspends its own action pending the final determination of the Board proceeding. Accordingly, it is believed that the matter of suspension should be left to the discretion of the Board, and the suggested amendment has not been adopted.

Comment: With respect to §2.117(b) [identified in the notice of proposed rulemaking as §2.117(c)], which as proposed reads "Whenever there is pending, at the time when the question of the suspension of proceedings is raised, a motion which is potentially dispositive of the case, the motion will be decided before the question of suspension will be considered.", one organization and two members of another organization suggested that the phrase "the motion will be decided" be changed to "the motion may be decided", so that the Board will have the discretion to either suspend or rule in such a case, and will not be compelled to determine the motion before it if, for example, a similar motion is pending in the civil action.

Response: The paragraph has been modified in accordance with this suggestion.

Comment: Four members of one organization objected to proposed §2.120(c)(2) (which provides in effect that whenever a foreign party or its officers, etc., is or will be in the United States during a discovery period, such party may be deposed in the United States by oral examination upon notice by the party seeking discovery.) The reason given for the objection was that the foreign officer could be seriously inconvenienced because of the proposed rule, which invites abuse.

Response: While it is true that a foreign officer who is traveling in the United States on other business might find it inconvenient to have his oral discovery deposition taken, it is equally true that there are instances in which it is inconvenient for a domestic officer to have his oral deposition taken. Further, there can be no doubt that the oral deposition is a far better discovery device than the deposition upon written questions. It is believed that the advantages offered by the oral deposition outweigh the disadvantage of possible inconvenience. Accordingly, proposed §2.120(c)(2) is being adopted herein as a final rule.

Comment: With respect to proposed §2.120(d), which provides for the production of documents, in response to a request for production of documents, at the place where the documents are usually kept, or where the parties agree, or where and in the manner which the Trademark Trial and Appeal Board, upon motion, orders, one individual suggested that the paragraph be modified to require that the party upon which the request is served respond to the request by sending copies of all documents requested to the party making the request.

Response: The purpose of §2.120(d) is to permit the Board, upon motion, to order that a party produce requested documents by photocopying and mailing them to the requesting party at the latter's expense. However, inasmuch as there are cases in which some other manner of production is more appropriate or feasible, the manner of production is a matter which is better left to the discretion of the Board. Accordingly, the suggestion has not been adopted.

Comment: One individual suggested that proposed §2.120(e), which concerns motions to compel discovery, be modified to provide that if counsel for the parties reach an agreement relating to a disputed discovery matter, a motion may be brought to enforce the agreement.

Response: Inasmuch as it is not the function of the Board to enforce agreements between parties, this suggestion has not been adopted. However, a party may always argue the existence of such an agreement as a factor bearing on the merits of a motion to compel discovery.

Comment: With respect to proposed §2.120(i) (which provides, in essence, that the Board may at its discretion request that the parties come to its offices for a pre-trial conference when pre-trial questions or issues have been so complex that their resolution by correspondence or telephone conference is not practical), one individual, noting that the paragraph provides for a pre-trial conference at the Board's option and discretion, suggested that the paragraph be modified to indicate that such a conference may also be requested by a party to a proceeding but that the Board be left with the discretion to grant the request. The same individual also suggested that the paragraph, which as proposed contains only a passing reference to a "telephone conference", be broken into two parts, the first being devoted to the telphone conference (with provision therefor at the option of the Board or at the request of a party to a proceeding, but again leaving the Board with discretion to grant the request), and the second being devoted to the pre-trial conference. The individual expressed his belief that attorneys should be made aware of the telephone conference procedure since it can be very useful to them as well as to the Board.

Response: The paragraph has been modified as suggested to include two paragraphs and to provide that the Board may utilize the telephone and pre-trial conference procedures either upon its own initiative or upon request made by one or both of the parties. Although neither of the new paragraphs contains the words "at its discretion," both contain the words "the Board may," which clearly indicate that the utilization of these procedures is a matter which is left to the discretion of the Board.

Comment: A number of comments were received with respect to proposed §2.120(j), which pertains to the use of discovery depositions, admissions, or answers to interrogatories. Two organizations noted that proposed §2.120(j)(2) (which incorporates the "fairness exception" of Rule 32(a)(4) of the Federal Rules of Civil Procedure ("F.R.C.P.") apparently limits the use of discovery depositions only to the inquiring party, while Rule 32(a)(4) F.R.C.P. allows the use of the deposition for any purpose by either party once the adverse party has relied upon any part of it. These organizations recommended that the paragraph be modified to follow Rule 32(a)(4) F.R.C.P. One organization objected to proposed §2.120(j)(3) (which permits the introduction into evidence on motion of the discovery deposition of a non-party under certain circumstances provided that the motion is filed promptly after the circumstances claimed to justify use of the deposition become known) on the ground that the timing requirement for the motion is unnecessary and unduly restrictive and that the better practice would be to let the motion be filed at the time of the purported offer of the deposition into evidence. Another organization recommended that consideration be given to permitting much greater use of non-party discovery depositions than permitted by proposed §2.120(j)(3), or at least that the burden imposed by the last of the listed instances in which such depositions may be introduced into evidence, namely, "upon a showing of extraordinary circumstances and necessity in the interest of justice", should be lessened. Three members of one organization commented that any party, not just the deposing party, should be able to make a discovery deposition of record if its use at trial is permitted by Rule 32 F.R.C.P. Finally, one individual noted that proposed §2.120(j), which permits only the inquiring party to introduce a discovery deposition into evidence (unless the "fairness exception" applies), conflicts with Rule 32(a)(2) F.R.C.P., which provides that a deposition of a party "may be used by an adverse party for any purpose", and with Rule 32(a)(3) F.R.C.P., which provides that the deposition of "a witness, whether or not a party, may be used by any party for any purpose" in the limited circumstances corresponding to those set forth in proposed §2.120(j)(3) (except for the 100-mile exception, which is not applicable to proceedings before the Trademark Trial and Appeal Board). This individual submitted a suggested alternative text for §2.120(j) which conforms to Rule 32(a) F.R.C.P. by (a) eliminating the restriction in proposed §2.120(j)(1) and (2) that only the inquiring party may offer a discovery deposition in evidence, and (b) broadening proposed §2.120(j)(2) to cover any "witness, whether or not a party". In the suggested text, paragraphs (1)-(3) of proposed §2.120(j) are also reorganzied and rearranged for clarity.

Response: The text suggested by the individual has been adopted with certain modifications in order to resolve the conflicts and objections noted by this individual and others, as outlined above. In the final paragraph, the text of §2.120(j)(1) follows the text of Rule 32(a)(2) F.R.C.P. The text of the discovery deposition "fairness exception", which appears in final §2.120(j)(4), is essentially the same as the text of Rule 32(a)(4) F.R.C.P. The provision relating to the introduction into evidence, by order of the Board upon motion, of the discovery deposition of a non-party under certain circumstances [which appears in final §2.120(j)(2)] has been broadened to permit the introduction, by order of the Board upon motion, of the discovery deposition of a witness, whether or not a party, by any party under the stated circumstances. The final such circumstance, which in the proposed paragraph read "upon a showing of extraordinary circumstances and necessity in the interest of justice", has been modified to read "upon a showing that such exceptional circumstances exist as to make it desirable, in the interest of justice, to allow the deposition to be used," which closely follows the wording of Rule 32(a)(3) F.R.C.P. The timing requirement for a motion filed under the paragraph has been changed from "filed promptly after the circumstances claimed to justify use of the deposition became known" to "filed at the time of the purported offer of the deposition in evidence" for all such motions except those based upon a claim of exceptional circumstances. In the latter instance, the proposed timing requirement, namely, "filed promptly after the circumstances claimed to justify use of the deposition became known", has been retained in the final rule for two reasons; first, to provide an adverse party with the best possible opportunity to investigate the claim of exceptional circumstances, and second, so that in those cases where the circumstances become known prior to the taking of the deposition, the motion will be filed, and hence can be determined, before the deposition is taken. Finally, in order to make it clear that once a discovery deposition, or a part thereof, or an answer to an interrogatory, or an admission, has been properly made of record by one party, it may be referred to by any party for any purpose permitted by the Federal Rules of Evidence, a provision to that effect, identified as paragraph (j)(7), has been included in the final paragraph.

Comment: With respect to proposed §2.122(c)(2) (which provides that a registration owned by a party to a proceeding may be made of record by that party by filing a notice of reliance accompanied by a certified copy of the registration showing current status and title), two organizations and three members of another organization objected to the requirement for certification of the status and title copies as being unnecessary, expensive, and unduly harsh. One of these organizations, noting that proposed §2.122 is modified to eliminate the practice set forth in existing §2.122(b) (which provides that a registration of an opposer or petitioner pleaded in an opposition or petition to cancel will be received in evidence and made part of the record if two copies showing status and title of the registration or an order for such copies accompany the opposition or petition), expressed its belief that, accepting the Patent and Trademark Office's position that the practice set forth in existing §2.122(b) has caused delays and problems for the Office, still there is no reason for requiring that the status and title copies of the registration be certified when made of record, pursuant to proposed §2.120(c)(2), by the filing of a notice of reliance during the testimony period of the party filing the notice.

Response: The proposal to require that status and title copies of registrations also be certified has not been adopted herein. Further, since the only part of existing §2.122(b) which caused trouble was the provision involving the submission of an *order* for status and title copies with the complaint, the proposal to modify existing §2.122 by eliminating that provision is adopted herein, but the proposal to eliminate the provision involving the submission of actual status and title copies with the complaint is withdrawn. Hence, final §2.122 provides, in paragraph (d)(1), that a registration of the opposer or petitioner pleaded in an opposition or petition to cancel will be received in evidence and made part of the record if the opposition or petition is accompanied by two copies of the registration prepared and issued by the Patent and Trademark Office showing both the current status of and current title to the registration.

Comment: One organization suggested that the word "competent" should be inserted before the word "evidence" in two (unspecified) places in proposed §2.122(b)(2) and in one place in proposed §2.122(b)(3), and that the first clause in proposed §2.122(c)(2) be changed from "A registration owned by any party to a proceeding may be made of record in the proceeding by that party by filing a notice of reliance," to "A registration owned by any party to a proceeding may be made of record in the proceeding by that party by appropriate identification and introduction during the proper testimony period or by filing a notice of reliance,". The same organization also submitted a suggested plan for reorganizing proposed §2.122 and for giving each paragraph therein a heading. Three members of another organization expressed their agreement with these suggestions.

Response: The suggested plan for reorganization and for headings has been adopted herein with certain minor modifications necessitated by the response to the foregoing comment (e.g., the comment concerning the introduction of registrations in evidence).

The word "competent" has been inserted before the word "evidence" only once in final §2.122(b)(2) and not at all in final §2.122(c) [identified in the notice of proposed rulemaking as §2.122(b)(3)]. The clauses in these paragraphs were the word "competent" might have been, but was not, inserted before the word "evidence" read "The allegation in an application for registration, or in a registration, of a date of use is not evidence on behalf of the applicant or registrant;"; "Specimens in the file of an application for registration, or in the file of a registrant, are not evidence on behalf of the applicant or registrant * * *"; and "An exhibit attached to a pleading is not evidence on behalf of the party to whose pleading the exhibit is attached * * *" The reason why the word "competent" was not inserted in these instances is that in each one the matter in question is not evidence *on behalf of the named party* at all (although specimens, or the allegation of a date of use, for example, may be used as evidence against an applicant or registrant, e.g., as an admission against interest).

Finally, the first clause in proposed §2.122(c)(2) [identified herein as §2.122(d)(2)] has been modified to read "A registration owned by any party to a proceeding may be made of record in the proceeding by that party by appropriate identification and introduction during the taking of testimony or by filing a notice of reliance."There is a slight difference between the clause as adopted and the clause as suggested by the organization (the organization's suggested wording "during the proper testimony period" has been changed to "during the taking of testimony"). The change in the wording was made so that it would be clear that this portion refers to identification and introduction during the taking of testimony as distinguished from identification and introduction by notice of reliance. This change is not to be construed as an indication that such identification and introduction does not have to be made "during the proper testimony period"; with the deception of status and title copies of a plaintiff's pleaded registration submitted with the complaint, any evidence which a party offers on the case must be offered during the proper testimony period.

Comment: With respect to proposed §2.123(a)(1) (which provides, inter alia, that if a party serves notice of the taking of a testimonial deposition upon written questions of a witness within the United States, any adverse party may, within fifteen days from the date of service of the notice, file a motion with the Trademark

Trial and Appeal Board, for good cause, for an order that the deposition be taken by oral examination), one individual, noting that the procedure for taking testimony by written questions is unsatisfactory and often frustrating, suggested that the paragraph be changed to require that a party seeking to utilize this procedure (in lieu of an oral examination) file a motion requesting, for good cause shown, permission to by-pass the oral examination of its witness, that is, that the burden of filing a motion and showing good cause be shifted to the party who wants to take testimony upon written questions.

Response: If the burden of filing the motion were shifted in the manner suggested, the Trademark Trial and Appeal Board would have to rule on a motion in every case where a party desires to take testimony by written questions. Under the rule as proposed, the Board would have to rule on a motion only in those cases where one party desires to take testimony by written questions and the adverse party objects to the use of this procedure in lieu of an oral depositon. Often, the adverse party does not object. Moreover, Rule 31 F.R.C.P., which provides for the use of depositions upon written questions in federal district courts, does not require that a party who wishes to use this procedure file a motion requesting permission to do so. Accordingly, this suggestion has not been adopted.

Comment: Two organizations commented that proposed paragraphs (j) and (k) of §2.123, which relate to the raising of objections to testimony depositions taken in inter partes proceedings, appear to be inconsistent and unclear as to the timing of objections. Both organizations suggested that the paragraphs be modified to rely upon the pertinent portion of the Federal Rules of Civil Procedure, namely, Rule 32(d)(3). Similarly, one individual commented that proposed paragraph (k) is ambiguous as to the timing of an objection to testimony based upon lack of competency of the witness.

Response: In order to improve their consistency and clarity, the paragraphs have been modified as suggested. It should be noted that the result of the modification of paragraph (j) is that if a party fails to attend the taking of a deposition, he thereby waives any objection which under Rule 32(d)(3)(A) and (B) F.R.C.P. is deemed to be waived if not made at the taking of the deposition. This is a significant change from existing §2.123(j), which permits the raising of formal or technical objections as soon as a party becomes aware of them, e.g., in the case of a party who did not attend the taking of a deposition, at the time when such party receives a copy of a transcript of the deposition.

Comment: With respect to the same paragraphs, one individual suggested that the Trademark Trial and Appeal Board entertain and determine, prior to the briefing period, motions to strike testimony, so that parties to a proceeding before the Board will know exactly what is in the record when they write their briefs.

Response: The adoption of this suggestion would put an intolerable burden on the Board because the Board would have to read testimony depositions both at the time of determination of a motion to strike them and again at final hearing. It is the longstanding policy of the Board not to read trial testimony taken in a proceeding before it, or to examine other evidence offered by the parties in support of their respective cases, until final hearing. See, for example: *Curtice-Burns, Inc.* v. *Northwest Sanitation Products, Inc.*, 182 USPQ 572 (Comr. 1974), and *Clairol Inc.* v. *Holland Hall Products, Inc.*, 161 USPQ 616 (TTAB 1969). Accordingly, the suggestion has not been adopted.

Comment: With respect to proposed §2.124(d)(2) (which provides in part that when one or more testimonial depositions are to be taken upon written questions, the Trademark Trial and Appeal Board may suspend or reschedule other proceedings in the matter to allow for the orderly completion of the depositions upon written questions), one individual expressed his belief that when the Board receives notice that a deposition is to be taken upon written questions, it should immediately suspend proceedings for a sixty-day period to allow for the completion of the deposition, thereby avoiding unnecessary motions to extend the trial periods.

Response: The paragraph has been modified to provide that in such situations the Board "shall" suspend or reschedule other proceedings in the matter to allow for the orderly completion of the deposition. The length of the suspension has been left to the discretion of the Board since the time required to complete the taking of a deposition upon written questions varies according to the place where the witness is located.

Comment: One organization, noting that the words "the letter" in proposed §2.124(e) have no antecedent and hence create an unnecessary ambiguity, suggested that the words "the notice and of all of the questions mailed" be substituted therefor. With respect to the statement in proposed §2.124(f) that it is the responsibility of the party who takes a deposition upon written questions to assure that the transcript is correct, the same organization suggested that the paragraph be modified to include a cross-reference to proposed §2.125(b), which specifies procedures for correcting transcripts.

Response: The paragraphs have been modified as suggested.

Comment: With respect to proposed §§2.27(e), 2.120(f), and 2.125(e), which relate to the provision, in inter partes proceedings before the Trademark Trial and Appeal Board, of certain types of discovery information, and the submission of certain types of trial evidence, under protective order, one individual commented that the proposed rules would appear to permit parties to keep virtually all relevant information confidential from the public at large.

Response: Under the rules as proposed and adopted, only trade secrets and confidential information are held under seal and kept confidential by the Board. Very little of the evidence offered in inter partes proceedings before the Trademark Trial and Appeal Board is of this nature.

Comment: Two organizations objected to proposed §2.128(a)(3) (which provides in essence that when a party fails to file a brief on the case, the Trademark Trial and Appeal Board may treat such failure as a concession of the case) on the grounds that the proposed rule is unduly harsh; that it constitutes an abrogation of the Board's responsibility to decide cases on the record before it, regardless of the absence of briefs; that the granting or denial of a registration with its evidentiary presumptions is too important an issue to be decided on the basis of a presumed concession; and that a party who fails to file a brief should at least be given an opportunity to show cause why judgment should not be entered against him for such failure. Similarly, one member of another organization believes that the proposed rule would encourage the filing of spurious oppositions in cases where the opposer feels that the applicant may not be in a position to afford the legal fees required for preparing a brief.

Response: For the reasons indicated in the comments, proposed §2.128(a)(3) has been modified to refer only to the party in the position of plaintiff, and proposed §2.128(a)(1) has been modified to make it clear that the filing of a brief on the case is not mandatory for the party in the position of defendant. Further, the primary purpose of proposed §2.128(a)(3) was to save the Board the burden of determining cases of the merits in instances where the parties have settled, but have failed to inform the Board thereof, or where one party, particularly the plaintiff, has lost interest in the case. It is not the intention of the Board to enter judgment against a plaintiff for failure to file a brief on the case if the plaintiff still desires to obtain a determination of the case on the merits. Accordingly, proposed §2.128(a)(3) has been modified herein to provide an opportunity for the plaintiff who fails to file a main brief on the case to show cause why such failure should not be treated as a concession of the case. Additionally, the paragraph has been modified to indicate that judgment may be entered against a plaintiff for failure to file a main brief only if plaintiff fails to file a response to the order to show cause or files a response indicating that he has lost interest in the case.

Comment: One organization, noting that proposed §2.128(b) permits briefs to be filed on legal or letter size paper, suggested that since the federal courts now permit only the use of letter size paper, consideration should be given to requiring that briefs and all other formal papers filed in the Patent and Trademark Office by on letter size paper only. With respect to the same paragraph, one individual recommended, because of the different paper sizes permitted under the rule, that the rule be modified to specify the number of words that a brief can contain or, alternatively, to specify separately the number of pages permitted for briefs written on each size of paper. The same individual suggested that it should be made clear that the permitted number of pages in a brief does not include pages containing the index and the alphabetical list of cases.

Response: The paragraph has been modified to require that briefs be submitted on letter size paper. As to what is included within the specified page limitations, the paragraph as proposed and adopted states in part that "no brief shall contain more that fifty pages *of argument* and, in the case of a reply brief, *the entire brief* shall not exceed twenty-five pages" (emphasis added). It is believed that the paragraph as written clearly indicates that the fifty-page limitation for a main brief applies only to the length of the argument and does not include the index and case list pages, but that the twenty-five page limitation for a reply brief applies to the entire brief, e.g., argument, index, case list, and all. Accordingly, no further modification has been made.

Comment: With respect to proposed §2.134(b) (which provides that if the respondent in a cancellation proceeding permits his involved registration to be cancelled under section 8 of the Act of 1946 or fails to renew the registration under section 9 of the Act of 1946, such cancellation or failure to renew shall be deemed to be the equivalent of a cancellation by request of respondent without the consent of the adverse party and shall result in entry of judgment against respondent), two organizations commented that the judgment entered against a respondent under the proposed paragraph would have a res judicata effect; that the entry of such a judgment would be unduly harsh where the cancellation or expiration was the result of an inadvertence or mistake; and that, at a minimum, a respondent should be allowed to "show cause" why such a judgment should be entered. Similarly one individual commented that in such situations, a respondent whose use of its registered mark has in fact been discontinued should be put in a position whereby it can terminate the dispute with prejudice only as to the ground of abandonment.

Response: The paragraph has been modified to provide an opportunity for the respondent in such situation to "show cause" why judgment should not be entered against it. If respondent submits a showing that the cancellation or expiration was the result of an inadvertence or mistake, judgment will not be entered against it. If respondent submits a showing that the cancellation or expiration was occasioned by the fact that its registered mark had been abondoned and that such abandonment was not made for purposes of avoiding the proceeding but rather was the result, for example, of a two-year period of nonuse which commenced well before respondent learned of the existence of the proceeding, judgment will be entered against it only and specifically on the ground of abandonment.

Comment: Apparently with respect to proposed §2.135 (which provides that after the commencement of an opposition proceeding, if applicant files a written abandonment of the application or of the mark without the written consent of every adverse party, judgment shall be entered against the applicant), one individual expressed his belief that if an applicant involved in an opposition were allowed to abandon its mark or application without the consent of the opposer without incurring entry of judgment against itself, more applicants would abandon, thus saving money for the Patent and Trademark Office.

Response: The purpose of §2.135 is to prevent an applicant involved in an opposition from abandoning its opposed application and then refiling, thus putting opposer (and the Patent and Trademark Office) to the expense of multiple proceedings. A rule to the contrary would be inequitable. Accordingly, §2.135 has not been modified in the manner suggested by this comment.

Comment: One individual questioned the necessity for the requirement in proposed §2.142(e)(2) that if the appellant in an ex parte proceeding requests an oral argument, the examiner who issued a refusal of registration or a requirement from which an appeal is taken, or in lieu thereof another examiner from the same examining division as designated by the supervisory attorney thereof, shall present an oral argument.

Response: The purpose of the requirement is to ensure that the examining attorney will be present at the oral hearing to respond to any new arguments raised by appellant and to answer any questions which the members of the panel assigned to hear the case may have. The examining attorney's oral argument need not be lengthy; if he (she) has nothing to add to what he (she) has already said in his (her) appeal brief, he (she) may simply say so.

Comment: With respect to the last sentence of proposed §2.165(a) (which states in essence that the certificate of mailing procedure provided by §1.8 does not apply to affidavits or declarations filed under section 8 (a) or (b) of the Act), one organization expressed its belief that the sentence should be deleted in light of H.R. 6260.

Response: H.R. 6260, which was enacted on Aug. 27, 1982 as Pub. L.97-247, amended 35 U.S.C. 21 to include a provision that the Commissioner may by rule prescribe that any paper or fee required to be filed in the Patent and Trademark Office will be considered filed in the Office on the date on which it was deposited with the United States Postal Service or would have been deposited with the United States Postal Service but for postal service interruptions or emergencies designated by the Commissioner. As a result thereof, a new section, §1.10, effective Feb. 27, 1983, has been added, by final rule notice published in the **Federal Register** on Jan. 20, 1983 at 48 FR 2696, to Part I of Title 37 CFR. The new section provides a procedure for assigning the date on which any paper or fee is deposited as "Express Mail" with the United States Postal Service as the filing date of the paper or fee in the Patent and Trademark Office. Inasmuch as this new section applies to "any paper or fee", it applies to affidavits or declarations filed under section 8 (a) or (b) of the Act of 1946. However, the §1.8 certificate of mailing procedure has not been eliminated, and that section still specifically provides that the procedure outlined therein does not apply to affidavits filed under section 8 (a) or (b) of the Act. In view thereof, the last sentence of §2.165(a) has been amended by the addition of a final clause, namely, "but the certificate of mailing by 'Express Mail' procedure provided by §1.10 does apply thereto."

Comment: One organization has submitted suggestions for changes to rules not involved herein.

Response: The suggested changes cannot be adopted without affording members of the public an opportunity to comment thereon. However, these suggestions will be considered in connection with any future proposals to amend the rules in question.

Environmental, energy and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. '96-354). The rule change includes no additional or increased fees. Substantive rights to use valuable trademarks are not adversely affected.

The rule change does not impose a record keeping or reporting burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. No additional informa-

tion is required from the public. No additional records are required to be maintained by the Patent and Trademark Office because there are no additional fees or proceedings to monitor.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increases in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant, adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States based enterprises to compete with foreign based enterprises in domestic or export markets.

List of Subjects in 37 CFR Part 2

Administrative practice and procedures, Courts, Lawyers, Trademarks

Amendments of Regulations

After consideration of the comments received and pursuant to the authority contained in 15 U.S.C. 1123, Part 2 of Title 37 of the Code of Federal Regulations is amended as set forth below.

PART 2–RULES OF PRACTICE IN TRADEMARK CASES

1. Section 2.27 is amended by revising paragraphs (b) and (d) and adding paragraph (e) to read as follows:

§2.27 Pending trademark application index; access to applications.

* * * * *

(b) Except as provided in paragraph (e) of this section, access to the file of a particular pending application will be permitted prior to publication under §2.60 upon written request.

* * * * *

(d) Except as provided in paragraph (e) of this section, after a mark has been registered, or published for opposition, the file of the application and all proceedings relating thereto are available for public inspection and copies of the papers may be furnished upon paying the fee therefor.

(e) Anything ordered to be filed under seal pursuant to a protective order issued or made by any court or by the Trademark Trial and Appeal Board in any proceeding involving an application or a registration shall be kept confidential and shall not be made available for public inspection or copying unless otherwise ordered by the court or the Board, or unless the party protected by the order voluntarily discloses the matter subject thereto. When possible, only confidential portions of filing with the Board shall be filed under seal.

2. Section 2.63 is revised to read as follows:

§2.63 Reexamination.

(a) After response by the applicant, the application will be reexamined or reconsidered. If registration is again refused or any formal requirement(s) is repeated, but the examiner's action is not stated to be final, the applicant may respond again.

(b) After reexamination the applicant may respond by filing a timely petition to the Commissioner for relief from a formal requirement if: (1) The requirement is repeated, but the examiner's action is not made final, and the subject matter of the requirement is appropriate for petition to the Commissioner (see §2.146(b)); or (2) the examiner's action is made final and such action is limited to subject matter appropriate for petition to the Commissioner. If the petition is denied, the applicant shall have until six months from the date of the Office action which repeated the requirement or made it final or thirty days from the date of the decision on the petition, whichever date is later, to comply with the requirement. A formal requirement which is the subject of a petition decided by the Commissioner may not subsequently be the subject of an appeal to the Trademark Trial and Appeal Board.

3. Section 2.64 is revised to read as follows:

§2.64 Final Action.

(a) On the first or any subsequent reexamination or reconsideration the refusal of the registration or the insistence upon a requirement may be stated to be final, whereupon applicant's response is limited to an appeal, or to a compliance with any requirement, or to a petition to the Commissioner if permitted by §2.63(b).

(b) During the period between a final action and expiration of the time for filing an appeal, the applicant may request the examiner to reconsider the final action. The filing of a request for reconsideration will not extend the time for filing an appeal or petitioning the Commissioner, but normally the examiner will reply to a request for reconsideration before the end of the six-month period if the request is filed within three months after the date of the final action. Amendments accompanying requests for reconsideration after final action will be entered if they comply with the rules of practice in trademark cases and the Act of 1946.

4. Section 2.65 is revised to read as follows:

§2.65 Abandonment.

(a) If an applicant fails to respond, or to respond completely, within six months after the date an action is mailed, the application shall be deemed to have been abandoned. A timely petition to the Commissioner pursuant to §§2.63(b) and 2.146 is a response which avoids abandonment of an application.

(b) When action by the applicant filed within the six-month response period is a bona fide attempt to advance the examination of the application and is substantially a complete response to the examiner's action, but consideration of some matter or compliance with some requirement has been inadvertently omitted, opportunity to explain and supply the omission may be given before the question of abandonment is considered.

5. Section 2.72 is revised to read as follows:

§2.72 Amendments to description or drawing of the mark.

Amendments to the description or drawing of the mark may be permitted only if warranted by the specimens (or facsimilies) as originally filed, or supported by additional specimens (or facsimilies) and a supplemental affidavit or declaration in accordance with §2.20 alleging that the mark shown in the amended drawing was in actual use prior to the filing date of the application. Amendments may not be made if the character of the mark is materially altered.

6. Section 2.81 is revised to read as follows:

§2.81 Allowance of application.

If no opposition is filed within the time permitted or all oppositions filed are dismissed, and if no interference is declared and no concurrent use proceeding is instituted, the application will be prepared for issuance of the certificate of registration as provided in §2.151.

§2.88 [Removed]

7. Section 2.88 is removed.

§2.94 [Removed]

8. Section 2.94 is removed.

§2.95 [Removed]

9. Section 2.95 is removed.

10. Section 2.96 is revised to read as follows:

§2.96 Issue; burden of proof.

The issue in an interference between applications is normally priority of use, but the rights of the parties to registration may also be determined. The party whose application involved in the interference has the latest filing date is the junior party and has the burden of proof. When there are more than two parties to an interference, a party shall be a junior to and shall have the burden of proof as against every other party whose application involved in the interference has an earlier filing date. If the involved applications of any parties have the same filing date, the application with the latest date of execution will be deemed to have the latest filing date and that applicant will be the junior party. The issue in an interference between an application and a registration shall be the same, but in the event the final decision is adverse to the registrant, a registration to the applicant will not be authorized so long as the interfering registration remains on the register.

§2.97 [Removed]

11. Section 2.97 is removed.

12. Section 2.98 is revised to read as follows:

§2.98 Adding party to interference.

A party may be added to an interference only upon petition to the Commissioner by that party. If an application which is or might be the subject of a petition for addition to an interference is not added, the examiner may suspend action on the application pending termination of the interference proceeding.

13. Section 2.99 is revised to read as follows:

§2.99 Application to register as concurrent user.

(a) An application for registration as a lawful concurrent user will be examined in the same manner as other applications for registration.

(b) When it is determined that the mark is ready for publication, the applicant may be required to furnish as many copies of this application, specimens and drawing as may be necessary for the preparation of notices for each applicant, registrant or user specified as a concurrent user in the application for registration.

(c) Upon receipt of the copies required by paragraph (b) of this section, the examiner shall forward the application for concurrent use registration for publication in the Official Gazette as provided by §2.80. If no opposition is filed, or if all oppositions that are filed are dismissed or withdrawn, the Trademark Trial and Appeal Board shall prepare a notice for the applicant for concurrent use registration and for each applicant, registrant or user specified as a concurrent user in the application. The notices for the specified parties shall state the name and address of the applicant and of the applicant's attorney or other authorized representative, if any, together with the serial number and filing date of the application.

(d)(1) The notices shall be sent to each applicant, in care of his attorney or other authorized representative, if any, to each user, and to each registrant. A copy of the application shall be forwarded with the notice to each party specified in the application.

(2) An answer to the notice is not required in the case of an applicant or registrant whose application or registration is specified as a concurrent user in the application, but a statement, if desired, may be filed within forty days after the mailing of the notice; in the case of any other party specified as a concurrent user in the application, and answer must be filed within forty days after the mailing of the notice.

(3) If an answer, when required, is not filed, judgment will be entered precluding the specified user from claiming any right more extensive than that acknowledged in the application(s) for concurrent use registration, but the applicant(s) will remain with the burden of proving entitlement to registration(s).

(e) The applicant for a concurrent use registration has the burden of proving entitlement thereto. If there are two or more applications for concurrent use registration involved in a proceeding, the party whose application has the latest filing date is the junior party. A party whose application has a filing date between the filing dates of the earliest involved application and the latest involved application is a junior party to every party whose involved application has an earlier filing date. If any applications have the same filing date, the application with the latest date of execution will be deemed to have the latest filing date and that applicant will be the junior party. A person specified as an excepted user in a concurrent use application but who has not filed an application shall be considered a party senior to every party that has an application involved in the proceeding.

(f) When a concurrent use registration is sought on the basis that a court of competent jurisdiction has finally determined that the parties are entitled to use the same or similar marks in commerce, a concurrent use registration proceeding will not be instituted if all of the following conditions are fulfilled:

(1) The applicant is entitled to registration subject only to the concurrent lawful use of a party to the court proceeding; and

(2) The court decree specifies the rights of the parties; and

(3) A true copy of the court decree is submitted to the examiner; and

(4) The concurrent use application complies fully and exactly with the court decree; and

(5) The excepted use specified in the concurrent use application does not involve a registration, or any involved registration has been restricted by the Commissioner in accordance with the court decree.

If any of the conditions specified in this paragraph is not satisfied, a concurrent use registration proceeding shall be prepared and instituted as provided in paragraphs (a) throught (e) of this section.

(g) Registrations and applications to register on the Supplemental Register and registrations under the Act of 1920 are not subject to concurrent use registration proceedings.

14. Section 2.104 is revised to read as follows:

§2.104 Contents of opposition.

The opposition must set forth a short and plain statement showing how the opposer would be damaged by the registration of the opposed mark and state the grounds for opposition. A duplicate copy of the opposition, including exhibits, shall be filed with the opposition.

15. Section 2.105 is revised to read as follows:

§2.105 Notification of opposition proceeding(s).

When an opposition in proper form has been filed and the correct fee(s) have been submitted, a notification shall be prepared by the Trademark Trial and Appeal Board, which shall identify the title and number of the proceeding and the application involved and shall designate a time, not less than thirty days from the mailing date of the notification, within which an answer must be filed. A copy of the notification shall be forwarded to the attorney or other authorized representative of the opposer, if any, or to the opposer. The duplicate copy of the opposition and exhibits shall be forwarded with a copy of the notification to the attorney or other authorized representative of the applicant, if any, or to the applicant.

16. Section 2.106 is amended by revising paragraph (c) to read as follows:

§2.106 Answer.

* * * * *

(c) The opposition may be withdrawn without prejudice before the answer is filed. After the answer is filed, the opposition may not be withdrawn without prejudice except with the written consent of the applicant.

17. Section 2.107 is revised to read as follows:

§2.107 Amendment of pleadings in an opposition proceeding.

Pleadings in an opposition proceeding may be amended in the same manner and to the same extent as

in a civil action in a United States district court.

18. Section 2.113 is revised to read as follows:

§2.113 Notification of cancellation proceeding.

(a) When a petition for cancellation has been filed in proper form (see §§2.111 and 2.112), a notification shall be prepared by the Trademark Trial and Appeal Board, which shall identify the title and number of the proceeding and the registration or registrations involved and shall designate a time, not less than thirty days from the mailing date of the notification, within which an answer must be filed. A copy of the notification shall be forwarded to the attorney or other authorized representative of the petitioner, if any, or to the petitioner. The duplicate copy of the petition for cancellation and exhibits shall be forwarded with a copy of the notification to the respondent (see §2.118). If the petition is found to be defective as to form, the party filing the petition shall be so advised and allowed a reasonable time for correcting the informality.

19. Section 2.115 is revised to read as follows:

§2.115 Amendment of pleadings in a cancellation proceeding.

Pleadings in a cancellation proceeding may be amended in the same manner and to the same extent as in a civil action in a United States district court.

20. Section 2.116 is amended by revising paragraphs (b) and (c) to read as follows:

§2.116 Rules of Procedure.

* * * * *

(b) The opposer in an opposition proceeding or the petitioner in a cancellation proceeding shall be in the position of plaintiff, and the applicant in an opposition proceeding or the respondent in a cancellation proceeding shall be in the position of defendant. A party that is a junior party in an interference proceeding or in a concurrent use registration proceeding shall be in the position of plaintiff against every party that is senior, and the party that is a senior party in an interference proceeding or in a concurrent use registration proceeding shall be defendant against every party that is junior.

(c) The opposition or the petition for cancellation and the answer correspond to the complaint and answer in a court proceeding.

21. Section 2.117 is revised to read as follows:

§2.117 Suspension of proceedings.

(a) Whenever it shall come to the attention of the Trademark Trial and Appeal Board that parties to a pending case are engaged in a civil action which may be dispositive of the case, proceedings before the Board may be suspended until termination of the civil action.

(b) Whenever there is pending, at the time when the question of the suspension of proceedings is raised, a motion which is potentially dispositive of the case, the motion may be decided before the question of suspension is considered.

(c) Proceedings may also be suspended, for good cause, upon motion or a stipulation of the parties approved by the Board.

22. Section 2.120 is revised to read as follows:

§2.120 Discovery.

(a) *In general.* The provisions of the Federal Rules of Civil Procedure relating to discovery shall apply in opposition, cancellation, interference and concurrent use registration proceedings except as otherwise provided in this section. The Trademark Trial and Appeal Board will specify the closing date for the taking of discovery.

(b) *Discovery deposition within the United States.* The deposition of a natural person shall be taken in the Federal judicial district where the person resides or is regularly employed or at any place on which the parties agree by stipulation. The responsibility rests wholly with the party taking discovery to secure the attendance of a proposed deponent other than a party or anyone who, at the time set for the taking of the deposition, is an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or Rule 31(a) of the Federal Rules of Civil Procedure. See 35 U.S.C. 24.

(c) *Discovery deposition in foreign countries.* (1) The discovery deposition of a natural person residing in a foreign country who is a party or who, at the time set for the taking of the deposition, is an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or Rule 31(a) of the Federal Rules of Civil Procedure, shall, if taken in a foreign country, be taken in the manner prescribed by §2.124 unless the Trademark Trial and Appeal Board, upon motion for good cause, orders or the parties stipulate, that the deposition be taken by oral examination.

(2) Whenever a foreign party is or will be, during a time set for discovery, present within the United States or any territory which is under the control and jurisdiction of the United States, such party may be deposed by oral examination upon notice by the party seeking discovery. Whenever a foreign party has or will have, during a time set for discovery, an officer, director, managing agent, or other person who consents to testify on its behalf, present within the United States or any territory which is under the control and jurisdiction of the United States, such officer, director, managing agent, or other person who consents to testify in its behalf may be deposed by oral examination upon notice by the party seeking discovery. The party seeking discovery may have one or more officers, directors, managing agents, or other persons who consent to testify on behalf of the adverse party, designated under Rule 30(b)(6) of the Federal Rules of Civil Procedure. The deposition of a person under this paragraph shall be taken in the Federal judicial district where the witness resides or is regularly employed, or, if the witness neither resides nor is regularly employed in a Federal judicial district, where the witness is at the time of the deposition. This paragraph does not preclude the taking of a discovery deposition of a foreign party by any other procedure provided by paragraph (c)(1) of this section.

(d) *Request for production.* The production of documents and things under the provisions of Rule 34 of the Federal Rules of Civil Procedure will be made at the place where the documents and things are usually kept, or where the parties agree, or where and in the manner which the Trademark Trial and Appeal Board, upon motion, orders.

(e) *Motion for an order to compel discovery.* If a party fails to designate a person pursuant to Rule 30(b)(6) or Rule 31(a) of the Federal Rules of Civil Procedure, or if a party, or such designated person, or an officer, director or managing agent of a party fails to attend a deposition or fails to answer any question propounded in a discovery deposition, or any interrogatory, or fails to produce and permit the inspection and copying of any document or thing, the party seeking discovery may file a motion before the Trademark Trial and Appeal Board for an order to compel a designation, or attendance at a deposition, or an answer, or production and an opportunity to inspect and copy. The motion shall include a copy of the request for designation or of the relevant portion of the discovery deposition; or a copy of the interrogatory with any answer or objection that was made; or a copy of the request for production, any proffer of production or objection to production in response to the request, and a list and brief description of the documents or things that were not produced for inspection and copying. The motion must be supported by a written statement from the moving party that such party or the attorney therefor has made a good faith effort, by conference or correspondence, to resolve with the other party or the attorney therefor the issues presented in the motion and has been unable to reach agreement. If issues raised in the motion are subsequently resolved by agreement of the parties, the moving party should inform the Board in writing of the issues in the motion which no longer require adjudication.

(f) *Motion for a protective order.* Upon motion by a party from whom discovery is sought, and for good cause, the Trademark Trial and Appeal Board may make any order which justice requires to protect a party from annoyance, embarrassment, oppression, or undue burden or expense, including one or more of the types of orders provided by clauses (1) through (8), inclusive, of Rule 26(c) of the Federal Rules of Civil Procedure. If the motion for a protective order is denied in whole or in part, the Board may, on such conditions (other than an award of expenses to the party prevailing on the motion) as are just, order that any party provide or permit discovery.

(g) *Failure to comply with order.* If a party fails to comply with an order of the Trademark Trial and Appeal Board relating to discovery, including a protective order, the Board may make any appropriate order, including any of the orders provided in Rule 37(b)(2) of the Federal Rules of Civil Procedure, except that the Board does not have authority to hold any person in contempt or to award any expenses to any party. The Board may impose against a party any of the sanctions provided by this subsection in the event that said party or any attorney, agent, or designated witness of that party fails to comply with a protective order made pursuant to Rule 26(c) of the Federal Rules of Civil Procedure.

(h) *Request for admissions.* Requests for admissions shall be governed by Rule 36 of the Federal Rules of Civil Procedure except that the Trademark Trial and Appeal Board does not have authority to award any expenses to any party. A motion by a party to determine the sufficiency of an answer or objection to a request made by that party for an admission shall include a copy of the request for admission and any exhibits thereto and of the answer or objection. The motion must be supported by a written statement from the moving party that such party or the attorney therefor has made a good faith effort, by conference or correspondence, to resolve with the other party or the attorney therefor the issues presented in the motion and has been unable to reach agreement. If issues raised in the motion are subsequently resolved by agreement of the parties, the moving party should inform the Board in writing of the issues in the motion which no longer require adjudication.

(i) *Telephone and pre-trial conferences.* (1) Whenever it appears to the Trademark Trial and Appeal Board that a motion filed in an inter partes proceeding is of such nature that its resolution by correspondence is not practical, the Board may, upon its own initiative or upon request made by one or both of the parties, resolve the motion by telephone conference.

(2) Whenever it appears to the Trademark Trial and Appeal Board that questions or issues arising during the interlocutory phase of an inter partes proceeding have become so complex that their resolution by correspondence or telephone conference is not practical and that resolution would be likely to be facilitated by a conference in person of the parties or their attorneys with a Member or Attorney-Examiner of the Board, the Board may, upon its own initiative or upon motion made by one or both of the parties, request that the parties or their attorneys, under circumstances which will not result in undue hardship for any party, meet with the Board at its offices for a pre-trial conference.

(j) *Use of discovery deposition, admission, or answer to interrogatory.* (1) The discovery deposition of a party or of anyone who at the time of taking the deposition was on officer, director or managing agent of a party, or a person designated by a party pursuant to Rule 30(b)(6) or Rule 31(a) of the Federal Rules of Civil Procedure, may be offered in evidence by an adverse party.

(2) Except as provided in paragraph (j)(1) of this section, the discovery deposition of a witness, whether or not a party, shall not be offered in evidence unless the person whose deposition was taken is, during the testimony period of the party offering the deposition, dead; or out of the United States (unless it appears that the absence of the witness was procured by the party offering the deposition); or unable to testify because of age, illness, infirmity, or imprisonment; or cannot be served with a subpoena to compel attendance at a testimonial deposition; or there is a stipulation by the parties; or upon a showing that such exceptional circumstances exist as to make it desirable, in the interest of justice, to allow the deposition to be used. The use of a discovery deposition by any party under this paragraph will be allowed only by stipulation of the parties approved by the Trademark Trial and Appeal Board, or by order of the Board on motion, which shall be filed at the time of the purported offer of the deposition in evidence, unless the motion is based upon a claim that such exceptional circumstances exist as to make it desirable, in the interest of justice, to allow the deposition to be used, in which case the motion shall be filed promptly after the circumstances claimed to justify use of the deposition became known.

(3) A discovery deposition, an answer to an interrogatory, or an admission to a request for admisssion, which may be offered in evidence under the provisions of paragraph (j) of this section may be made of record in the case by filing the deposition or any part thereof with any exhibit to the part that is filed, or a copy of the interrogatory and answer thereto with any exhibit made part of the answer, or a copy of the request for admission and any exhibit thereto and the admission (or a statement that the party from whom an admission was requested failed to respond thereto), together with a notice of reliance. The notice of reliance and the material submitted thereunder should be filed during the testimony period of the party who files the notice of reliance. An objection made at a discovery deposition by a party answering a question subject to the objection will be considered at final hearing.

(4) If only part of a discovery deposition is submitted and made part of the record by a party, an adverse party may introduce under a notice of reliance any other part of the deposition which should in fairness be considered so as to make not misleading what was offered by the submitting party.

(5) An answer to an interrogatory, or an admission to a request for admission, may be submitted and made part of the record by only the inquiring party except that, if fewer than all of the answers to interrogatories, or fewer than all of the admissions, are offered in evidence by the inquiring party, the responding party may introduce under a notice of reliance any other answers to interrogatories, or any other admissions, which should in fairness be considered so as to make not misleading what was offered by the inquiring party.

(6) Paragraph (j) of this section will not be interpreted to preclude the reading or the use of a discovery deposition, or answer to an interrogatory, or admission as part of the examination or cross-examination of any witness during the testimony period of any party.

(7) When a discovery deposition, or a part thereof, or an answer to an interrogatory, or an admission, has been made of record by one party in accordance with the provisions of paragraph (j)(3) of this section, it may be referred to by any party for purpose permitted by the Federal Rules of Evidence.

(8) Interrogatories, requests for production, requests for admissions, and materials or depositions obtained during the discovery period should not be filed with the Board except when submitted with a motion to compel discovery, or in support of or response to a motion for summary judgment, or under a notice of reliance during a party's testimony period.

23. Section 2.121 is revised to read as follow:

§2.121 Assignment of times for taking testimony.

(a)(1) The Trademark Trial and Appeal Board will issue a trial order assigning to each party the time for taking testimony. No testimony shall be taken except during the times assigned, unless by stipulation of the

parties approved by the Board, or, upon motion, by order of the Board. Testimony periods may be rescheduled by stipulation of the parties approved by the Board, or upon motion granted by the Board, or by order of the Board. The resetting of the closing date for discovery will result in the rescheduling of the testimony periods without action by any party.

(2) The initial trial order will be mailed by the Board after issue is joined.

(b)(1) The Trademark Trial and Appeal Board will schedule a testimony period for the plaintiff to present its case in chief, a testimony period for the defendant to present its case and to meet the case of the plaintiff, and a testimony period for the plaintiff to present evidence in rebuttal.

(2) When there is a counterclaim, or when proceedings have been consolidated and one party is in the position of plaintiff in one of the involved proceedings and in the position of defendant in another of the involved proceedings, or when there is an interference or a concurrent use registration proceeding involving more than two parties, the Board will schedule testimony periods so that each party in the position of plaintiff will have a period for presenting its case in chief against each party in the position of defendant, each party in the position of defendant will have a period for presenting its case and meeting the case of each plaintiff, and each party in the position of plaintiff will have a period for presenting evidence in rebuttal.

(c) A testimony period which is solely for rebuttal will be set for fifteen days. All other testimony periods will be set for thirty days. The periods may be extended by stipulation of the parties approved by the Trademark Trial and Appeal Board, or upon motion granted by the Board, or by order of the Board.

(d) When parties stipulate to the rescheduling of testimony periods or to the rescheduling of the closing date for discovery and the rescheduling of testimony periods, a stipulation presented in the form used in a trial order, signed by the parties, or a motion in said form signed by one party and including a statement that every other party has agreed thereto, and submitted in one original plus as many photocopies as there are parties, will, if approved, be so stamped, signed, and dated, and the copies will be promptly returned to the parties.

24. Section 2.122 is revised to read as follows:

§2.122 Matters in evidence.

(a) *Rules of evidence.* The rules of evidence for proceedings before the Trademark Trial and Appeal Board are the Federal Rules of Evidence, the relevant provisions of the Federal Rules of Civil Procedure, the relevant provisions of Title 28 of the United States Code, and the provisions of this Part of Title 37 of the Code of Federal Regulations.

(b) *Application files.* (1) The file of each application or registration specified in a declaration of interference, of each application or registration specified in the notice of a concurrent use registration proceeding, of the application against which a notice of opposition is filed, or of each registration against which a petition or counterclaim for cancellation is filed forms part of the record of the proceeding without any action by the parties and reference may be made to the file for any relevant and competent purpose.

(2) The allegation in an application for registration, or in a registration, of a date of use is not evidence on behalf of the applicant or registrant; a date of use of a mark must be established by competent evidence. Specimens in the file of an application for registration, or in the file of a registration, are not evidence on behalf of the applicant or registrant unless identified and introduced in evidence as exhibits during the period for the taking of testimony.

(c) *Exhibits to pleadings.* Except as provided in paragraph (d)(1) of this section, an exhibit attached to a pleading is not evidence on behalf of the party to whose pleading the exhibit is attached unless identified and introduced in evidence as an exhibit during the period for the taking of testimony.

(d) *Registrations.* (1) A registration of the opposer or petitioner pleaded in an opposition or petition to cancel will be received in evidence and made part of the record if the opposition or petition is accompanied by two copies of the registration prepared and issued by the Patent and Trademark Office showing both the current status of and current title to the registration. For the cost of a copy of a registration showing status and title, see §2.6(n).

(2) A registration owned by any party to a proceeding may be made of record in the proceeding by that party by appropriate identification and introduction during the taking of testimony or by filing a notice of reliance, which shall be accompanied by a copy of the registration prepared and issued by the Patent and Trademark Office showing both the current status of and current title to the registration. The notice of reliance shall be filed during the testimony period of the party that files the notice.

(e) *Printed publications and official records.* Printed publications, such as books and periodicals, available to the general public in libraries or of general circulation among members of the public or that segment of the public which is relevant under an issue in a proceeding, and official records, if the publication or official record is competent evidence and relevant to an issue, may be introduced in evidence by filing a notice of reliance on the material being offered, which notice shall specify the printed publication or the official record and the pages to be read, indicate generally the relevance of the material being offered, and be accompanied by the official record or a copy thereof whose authenticity is established under the Federal Rules of Evidence, or by the printed publication or a copy of the relevant portion thereof, including the title page and any other page needed to show the place and date of publication, the name and address of the publisher, and the name of the author or the editor. A copy of an official record of the Patent and Trademark Office need not be certified to be offered in evidence. The notice of reliance shall be filed during the testimony period of the party that files the notice.

(f) *Testimony from other proceedings.* By order of the Trademark Trial and Appeal Board, on motion, testimony taken in another proceeding, or testimony taken in a suit or action in a court, between the same parties or those in privity may be used in a proceeding, so far as relevant and material, subject, however, to the right of any adverse party to recall or demand the recall for examination or cross-examination of any witness whose prior testimony has been offered and to rebut the testimony.

25. Section 2.123 is amended by revising paragraphs (a), (e)(3), (j) and (k) to read as follows:

§2.123 Trial testimony in inter partes cases.

(a)(1) The testimony of witnesses in inter partes cases may be taken by depositions upon oral examination as provided by this section or by depositions upon written questions as provided by §2.124. If a party serves notice of the taking of a testimonial deposition upon written questions of a witness who is, or will be at the time of the deposition, present within the United States or any territory which is under the control and jurisdiction of the United States, any adverse party may, within fifteen days from the date of service of the notice, file a motion with the Trademark Trial and Appeal Board, for good cause, for an order that the deposition be taken by oral examination.

(2) A testimonial deposition taken in a foreign country shall be taken by deposition upon written questions as provided by §2.124, unless the Board, upon motion for good cause, orders that the deposition be taken by oral examination, or the parties so stipulate.

* * * * *

(e) *Examination of witnesses.* * * *

(3) Every adverse party shall have full opportunity to cross-examine each witness. If the notice of examination of witnesses which is served pursuant to paragraph (c) of this section is improper or inadequate with respect to any witness, an adverse party may cross-examine that witness under protest while reserving the right to object to the receipt of the testimony in evidence. Promptly after the testimony is completed, the adverse party, if he wishes to preserve the objection, shall move to strike the testimony from the record, which motion will be decided on the basis of all of the relevant circumstances. A motion to strike the testimony of a witness for lack of proper or adequate notice of examination must request the exclusion of the entire testimony of that witness and not only a part of that testimony.

* * * * *

(j) *Effect of errors and irregularities in depositions:* Rule 32(d) (1), (2), and (3) (A) and (B) of the Federal Rules of Civil Procedure shall apply to errors and irregularities in depositions. Notice will not be taken of merely formal or technical objections which shall not appear to have wrought a substantial injury to the party raising them; and in case of such injury it must be made to appear that the objection was raised at the time specified in said rule.

(k) *Objections to admissibility.* Subject to the provisions of paragraph (j) of this section, objection may be made to receiving in evidence any deposition, or part thereof, or any other evidence, for any reason which would require the exclusion of the evidence from consideration. Objections to the competency of a witness or to the competency, relevancy, or materiality of testimony must be raised at the time specified in Rule 32(d)(3)(A) of the Federal Rules of Civil Procedure. Such objections will not be considered until final hearing.

26. Section 2.124 is revised to read as follows:

§2.124 Depositions upon written questions.

(a) A deposition upon written questions may be taken before any person before whom depositions may be taken as provided by Rule 28 of the Federal Rules of Civil Procedure.

(b)(1) A party desiring to take a testimonial deposition upon written questions shall serve notice thereof upon each adverse party within ten days from the opening date of the testimony period of the party who serves the notice. The notice shall state the name and address of the witness. A copy of the notice, but not copies of the questions, shall be filed with the Trademark Trial and Appeal Board.

(2) A party desiring to take a discovery deposition upon written questions shall serve notice thereof upon each adverse party and shall file a copy of the notice, but not copies of the questions, with the Board. The notice shall state the name and address, if known, of the person whose deposition is to be taken. If the name of the person is not known, a general description sufficient to identify him or the particular class or group to which he belongs shall be stated in the notice, and the party from whom the discovery deposition is to be taken shall designate one or more persons to be deposed in the same manner as is provided by Rule 30(b)(6) of the Federal Rules of Civil Procedure.

(c) Every notice given under the provisions of paragraph (b) of this section shall be accompanied by the name or descriptive title of the officer before whom the deposition is to be taken.

(d)(1) Every notice served on any adverse party under the provisions of paragraph (b) of this section shall be accompanied by the written questions to be propounded on behalf of the party who proposes to take the deposition. Within twenty days from the date of service of the notice, any adverse party may serve cross questions upon the party who proposes to take the deposition; any party who serves cross questions shall also serve every other adverse party. Within ten days from the date of service of the cross questions, the party who proposes to take the deposition may serve redirect questions on every adverse party. Within ten days from the date of service of the redirect questions, any party who served cross questions may serve recross questions upon the party who proposes to take the deposition; any party who serves recross questions shall also serve every other adverse party. Written objections to questions may be served on a party propounding questions; any party who objects shall serve a copy of the objections on every other adverse party. In response to objections, substitute questions may be served on the objecting party within ten days of the date of service of the objections; substitute questions shall be served on every other adverse party.

(2) Upon motion for good cause by any party, or upon its own initiative, the Trademark Trial and Appeal Board may extend any of the time periods provided by paragraph (d)(1) of this section. Upon receipt of written notice that one or more testimonial depositions are to be taken upon written questions, the Trademark Trial and Appeal Board shall suspend or reschedule other proceedings in the matter to allow for the orderly completion of the depositions upon written questions.

(e) Within ten days after the last date when questions, objections, or substitute questions may be served, the party who proposes to take the deposition shall mail a copy of the notice and copies of all the questions to the officer designated in the notice; a copy of the notice and of all the questions mailed to the officer shall be served on every adverse party. The officer designated in the notice shall take the testimony of the witness in response to the questions and shall record each answer immediately after the corresponding question. The officer shall then certify the transcript and mail the transcript and exhibits to the party who took the deposition.

(f) The party who took the deposition shall promptly serve a copy of the transcript, copies of documentary exhibits, and duplicates or photographs of physical exhibits on every adverse party. It is the responsibility of the party who takes the deposition to assure that the transcript is correct (see §2.125(b)). If the deposition is a discovery deposition, it may be made of record as provided by §2.120(j). If the deposition is a testimonial deposition, the original, together with copies of documentary exhibits and duplicates or photographs of physical exhibits, shall be filed promptly with the Trademark Trial and Appeal Board.

(g) Objections to questions and answers in depositions upon written questions may be considered at final hearing.

27. Section 2.125 is revised to read as follows:

§2.125 Filing and service of testimony.

(a) One copy of the transcript of testimony taken in accordance with §2.123, together with copies of documentary exhibits and duplicates or photographs of physical exhibits, shall be served on each adverse party within thirty days after completion of the taking of that testimony.

(b) The party who takes testimony is responsible for having all typographical errors in the transcript and all errors of arrangement, indexing and form of the transcript corrected, on notice to each adverse party, prior to the filing of one certified transcript with the Trademark Trial and Appeal Board. The party who takes testimony is responsible for serving on each adverse party one copy of the corrected transcript or, if reasonably feasible, corrected pages to be inserted into the transcript previously served.

(c) One certified transcript and exhibits shall be filed promptly with the Trademark Trial and Appeal Board. Notice of such filing shall be served on each adverse party and a copy of each notice shall be filed with the Board.

(d) Each transcript shall comply with §2.123(g) with respect to arrangement, indexing and form.

(e) Upon motion by any party, for good cause, the Trademark Trial and Appeal Board may order that any part of a deposition transcript or any exhibits that directly disclose any trade secret or other confidential research, development, or commercial information may be filed under seal and kept confidential under the provisions of §2.27(e). If any party or any attorney or agent of a party fails to comply with an order made under this paragraph, the Board may impose any of the sanctions authorized by §2.120(g).

§2.126 [Removed]

28. Section 2.126 is removed.

29. Section 2.127 is revised to read as follows:

§2.127 Motions

(a) Every motion shall be made in writing, shall contain a full statement of the grounds, and shall embody or be accompanied by a brief. A brief in response to a motion shall be filed within fifteen days from the date of service of the motion unless another time is specified by the Trademark Trial and Appeal Board or the time is extended by order of the Board on motion for good cause. When a party fails to file a brief in response to a motion, the Board may treat the motion as conceded. An oral hearing will not be held on a motion except on order by the Board.

(b) Any request for reconsideration or modification of an order or decision issued on a motion must be filed within thirty days from the date thereof. A brief in response must be filed within fifteen days from the date of service of the request.

(c) Interlocutory motions, requests, and other matters not actually or potentially dispositive of a proceeding may be acted upon by a single Member of the Trademark Trial and Appeal Board or by an Attorney-Examiner of the Board to whom authority so to act has been delegated.

(d) When any party files a motion to dismiss, or a motion for judgment on the pleadings, or a motion for summary judgment, or any other motion which is potentially dispositive of a proceeding, the case will be suspended by the Trademark Trial and Appeal Board with respect to all matters not germane to the motion and no party should file any paper which is not germane to the motion. If the case is not disposed of as a result of the motion, proceedings will be resumed pursuant to an order of the Board when the motion is decided.

30. Section 2.128 is revised to read as follows:

§2.128 Briefs at final hearing.

(a)(1) The brief of the party in the position of plaintiff shall be due not later than sixty days after the date set for the close of rebuttal testimony. The brief of the party in the position of defendant, if filed, shall be not later than thirty days after the due date of the first brief. A reply brief by the party in the position of plaintiff, if filed, shall be due not later than fifteen days after the due date of the defendant's brief.

(2) When there is a counterclaim, or when proceedings have been consolidated and one party is in the position of plaintiff in one of the involved proceedings and in the position of defendant in another of the involved proceedings, or when there is an interference or a concurrent use registration proceeding involving more than two parties, the Trademark Trial and Appeal Board will set the due dates for the filing of the main brief, and the answering brief, and the rebuttal brief by the parties.

(3) When a party in the position of plaintiff fails to file a main brief, an order may be issued allowing plaintiff until a set time, not less than fifteen days, in which to show cause why the Board should not treat such failure as a concession of the case. If plaintiff fails to file a response to the order, or files a response indicating that he has lost interest in the case, judgment may be entered against plaintiff.

(b) Briefs shall be submitted in typewritten or printed form, double spaced, on letter size paper. Without leave of the Trademark Trial and Appeal Board, no brief shall contain more than fifty pages of argument and, in the case of a reply brief, the entire brief shall not exceed twenty-five pages. Each brief shall contain an alphabetical index of cases cited therein. One original and two legible copies, on good quality paper, of each brief shall be filed.

31. Section 2.129 is revised to read as follows:

§2.129 Oral argument; reconsideration.

(a) If a party desires to have an oral argument at final hearing, the party shall request such argument by a separate notice filed not later than ten days after the due date for the filing of the last reply brief in the proceeding. Oral arguments will be heard by three Members of the Trademark Trial and Appeal Board at the time specified in the notice of hearing. If any party appears at the specified time, that party will be heard. If the Board is prevented from hearing the case at the specified time, a new hearing date will be set. Unless otherwise permitted, oral arguments in an inter partes case will be limited to thirty minutes for each party. A party in the position of plaintiff may reserve part of the time allowed for oral argument to present a rebuttal argument.

(b) The date or time of a hearing may be reset, so far as is convenient and proper, to meet the wishes of the parties and their attorneys or other authorized representatives.

(c) Any request for rehearing or reconsideration or modification of a decision issued after final hearing must be filed within thirty days from the date of the decision. A brief in response must be filed within fifteen days from the date of service of the request. The times specified may be extended by order of the Trademark Trial and Appeal Board on motion for good cause.

32. Section 2.131 is revised to read as follows:

§2.131 Remand after decision in inter partes proceeding.

If, during an inter partes proceeding, facts are disclosed which appear to render the mark of an applicant unregistrable, but such matter has not been tried under the pleadings as filed by the parties or as they might be deemed to be amended under Rule 15(b) of the Federal Rules of Civil Procedure to conform to the evidence, the Trademark Trial and Appeal Board, in lieu of determining the matter in the decision on the proceeding, may refer the application to the examiner for reexamination in the event the applicant ultimately prevails in the inter partes proceeding. Upon receiving the application, the examiner shall withhold registration pending reexamination of the application in the light of the reference by the Board. If, upon reexamination, the examiner finally refuses registration to the applicant, an appeal may be taken as provided by §§2.141 and 2.142.

33. Section 2.132 is revised to read as follows:

§2.132 Involuntary dismissal for failure to take testimony.

(a) If the time for taking testimony by any party in the position of plaintiff has expired and that party has not taken testimony or offered any other evidence, any party in the position of defendant may, without waiving the right to offer evidence in the event the motion is denied, move for dismissal on the ground of the failure of the plaintiff to prosecute. The party in the position of plaintiff shall have fifteen days from the date of service of the motion to show cause why judgment should not be rendered against him. In the absence of a showing of good and sufficient cause, judgment may be rendered against the party in the position of plaintiff. If the motion is denied, testimony periods will be reset for the party in the position of defendant and for rebuttal.

(b) If no evidence other than a copy or copies of Patent and Trademark Office records is offered by any party in the position of plaintiff, any party in the position of defendant may, without waiving the right to offer evidence in the event the motion is denied, move for dismissal on the ground that upon the law and the facts the party in the position of plaintiff has shown no right to relief. The party in the position of plaintiff shall have fifteen days from the date of service of the motion to file a brief in response to the motion. The Trademark Trial and Appeal Board may render judgment against the party in the position of plaintiff, or the Board may decline to render judgment until all of the evidence is in the record. If judgment is not rendered, testimony periods will be reset for the party in the position of defendant and for rebuttal.

(c) Any motion filed under paragraph (a) or (b) of this section must be filed before the opening of the testimony period of the moving party.

34. Section 2.134 is revised to read as follows:

§2.134 Surrender or voluntary cancellation of registration.

(a) After the commencement of a cancellation proceeding, if the respondent applies for cancellation of the involved registration under section 7(d) of the Act of 1946 without the written consent of every adverse party, judgment shall be entered against the respondent.

(b) After the commencement of a cancellation proceeding, if it comes to the attention of the Trademark Trial and Appeal Board that the respondent has permitted his involved registration to be cancelled under section 8 of the Act of 1946 or has failed to renew his involved registration under section 9 of the Act of 1946, an order may be issued allowing respondent until a set time, not less than fifteen days, in which to show cause why such cancellation or failure to renew should not be deemed to be the equivalent of a cancellation by request of respondent without the consent of the adverse party and should not result in entry of judgment against respondent as provided by paragraph (a) of this section. In the absence of a showing of good and sufficient cause, judgment may be entered against respondent as provided by paragraph (a) of this section.

35. Section 2.135 is revised to read as follows:

§2.135 Abandonment of application or mark.

After the commencement of an opposition, concurrent use, or interference proceeding, if the applicant files a written abandonment of the application or of the mark without the written consent of every adverse party, judgment shall be entered against the applicant.

36. Section 2.142 is proposed to be revised to read as follows:

§2.142 Time and manner of ex parte appeals.

(a) Any appeal filed under the provisions of §2.141 must be filed within six months from the date of final refusal or the date of the action from which the appeal is taken. An appeal is taken by filing a notice of appeal and paying the appeal fee.

(b) The brief of appellant shall be filed within sixty days from the date of appeal. If the brief is not filed within the time allowed, the appeal may be dismissed. The examiner shall, within sixty days after the brief of appellant is sent to the examiner, file with the Trademark Trial and Appeal Board a written brief answering the brief of appellant and shall mail a copy of the brief to the appellant. The appellant may file a reply brief within twenty days from the date of mailing of the brief of the examiner.

(c) All requirements made by the examiner and not the subject of appeal shall be complied with prior to the filing of an appeal.

(d) The record in the application should be complete prior to the filing of an appeal. The Trademark Trial and Appeal Board will ordinarily not consider additional evidence filed with the Board by the appellant or by the examiner after the appeal is filed. After an appeal is filed, if the appellant or the examiner desires to introduce additional evidence, the appellant or the examiner may request the Board to suspend the appeal and to remand the application for further examination.

(e)(1) If the appellant desires an oral hearing, a request therefor should be made by a separate notice filed not later than ten days after the due date for a reply brief. Oral argument will be heard by three Members of the Trademark Trial and Appeal Board at the time specified in the notice of hearing, which may be reset if the Board is prevented from hearing the argument at the specified time or, so far as is convenient and proper, to meet the wish of the appellant or his attorney or other authorized representative.

(2) If the appellant requests an oral argument, the examiner who issued the refusal of registration or the requirement from which the appeal is taken, or in lieu thereof another examiner from the same examining division as designated by the supervisory attorney thereof, shall present an oral argument. If no request for an oral hearing is made by the appellant, the appeal will be decided on the record and briefs.

(3) Oral argument will be limited to twenty minutes by the appellant and ten minutes by the examiner. The appellant may reserve part of the time allowed for oral argument to present a rebuttal argument.

(f)(1) If, during an appeal from a refusal of registration, it appears to the Trademark Trial and Appeal Board that an issue not previously raised may render the mark of the appellant unregistrable, the Board may suspend the appeal and remand the application to the examiner for further examination to be completed within thirty days.

(2) If the further examination does not result in an additional ground for refusal of registration, the examiner shall promptly return the application to the Board, for resumption of the appeal, with a written statement that further examination did not result in an additional ground for refusal of registration.

(3) If the further examination does result in an additional ground for refusal of registration, the examiner and appellant shall proceed as provided by §§2.61, 2.62, 2.63 and 2.64. If the ground for refusal is made final, the examiner shall return the application to the Board, which shall thereupon issue an order allowing the appellant sixty days from the date of the order to file a supplemental brief limited to the additional ground for the refusal of registration. If the supplemental brief is not filed by the appellant within the time allowed, the appeal may be dismissed.

(4) If the supplemental brief of the appellant is filed, the examiner shall, within sixty days after the supplemental brief of the appellant is sent to the examiner, file with the Board a written brief answering the supplemental brief of appellant and shall mail a copy of the brief to the appellant. The appellant may file a reply brief within twenty days from the date of mailing of the brief of the examiner.

(5) If an oral hearing on the appeal had been requested prior to the remand of the application but not yet held, an oral hearing will be set and heard as provided in paragraph (e) of this section. If an oral hearing had been held prior to the remand or had not been previously requested by the appellant, an oral hearing may be requested by the appellant by a separate notice filed not later than ten days after the due date for a reply brief on the additional ground for refusal of registration. If the appellant files a request for an oral hearing, one will be set and heard as provided in paragraph (e) of this section.

(g) An application which has been considered and decided on appeal will not be reopened except for the entry of a disclaimer under section 6 of the Act of 1946 or upon order of the Commissioner, but a petition to the Commissioner to reopen an application will be considered only upon a showing of sufficient cause for consideration of any matter not already adjudicated.

37. Section 2.146 is revised to read as follows:

§2.146 Petitions to the Commissioner.

(a) Petition may be taken to the Commissioner: (1) From any repeated or final formal requirement of the examiner in the ex parte prosecution of an application if permitted by §2.63(b); (2) in any case for which the Act of 1946, or Title 35 of the United States Code, or this Part of Title 37 of the Code of Federal Regulations specifies that the matter is to be determined directly or reviewed by the Commissioner; (3) to invoke the supervisory authority of the Commissioner in appropriate circumstances; (4) in any case not specifically defined and provided for by this part of Title 37 of the Code of Federal Regulations; (5) in an extraordinary situation, when justice requires and no other party is injured thereby, to request a suspension or waiver of any requirement of the rules not being a requirement of the Act of 1946.

(b) Questions of substance arising during the ex parte prosecution of applications, including, but not limited to, questions arising under sections 2, 3, 4, 5, 6 and 23 of the Act of 1946, are not considered to be appropriate subject matter for petitions to the Commissioner.

(c) Every petition to the Commissioner shall include a statement of the facts relevant to the petition, the points to be reviewed, the action or relief that is requested, and the requisite fee (see §2.6). Any brief in support of the petition shall be embodied in or accompany the petition. When facts are to be proved in ex parte cases (as in a petition to revive an abandoned application), the proof in the form of affidavits or declarations in accordance with §2.20, and any exhibits, shall accompany the petition.

(d) A petition on any matter not otherwise specifically provided for shall be filed within sixty days from the date of mailing of the action from which relief is requested.

(e)(1) A petition from the denial of a request for an extension of time to file a notice opposition shall be filed within fifteen days from the date of mailing of the denial of the request and shall be served on the attorney or other authorized representative of the applicant, if any, or on the applicant. Proof of service of the petition shall be made as provided by §2.119(a). The applicant may file a response within fifteen days from the date of service of the petition and shall serve a copy of the response on the petitioner, with proof of service as provided by §2.119(a). No further paper relating to the petition shall be filed.

(2) A petition from an interlocutory order of the Trademark Trial and Appeal Board shall be filed within thirty days after the date of mailing of the order from which relief is requested. Any brief in response to the petition shall be filed, with any supporting exhibits, within fifteen days from the date of service of the petition. Petitions and responses to petitions, and any papers accompanying a petition or response, under this subsection shall be served on every adverse party pursuant to §2.119(a).

(f) An oral hearing will not be held on a petition except when considered necessary by the Commissioner.

(g) The mere filing of a petition to the Commissioner will not act as a stay in any appeal or inter partes proceeding that is pending before the Trademark Trial and Appeal Board nor stay the period for replying to an Office action in an application except when a stay is specifically requested and is granted or when §§2.63(b) and 2.65 are applicable to an ex parte application.

(h) Authority to act on petitions, or on any petition, may be delegated by the Commissioner.

§2.147 [Removed]

38. Section 2.147 is removed.

39. Section 2.165 is revised to read as follows:

§2.165 Reconsideration of affidavit or declaration.

(a)(1) If the affidavit or declaration filed pursuant to §2.162 is insufficient or defective, the affidavit or declaration will be refused and the registrant will be notified of the reason. Reconsideration of the refusal may be requested within six months from the date of the mailing of the action. The request for reconsideration must state the grounds for the request. A supplemental or substitute affidavit or declaration required by section 8 of the Act of 1946 cannot be considered unless it is filed before the expiration of six years from the date of the registration or from the date of publication under section 12(c) of the Act. The certificate of mailing procedure provided by §1.8 does not apply to affidavits or declarations or to supplemental or substitute affidavits or declarations filed under section 8 (a) or (b) of the Act, but the certificate of mailing by "Express Mail" procedure provided by §1.10 does apply thereto.

(2) A request for reconsideration shall be a condition precedent to a petition to the Commissioner to review the refusal of the affidavit or declaration unless the first action refusing the affidavit or declaration directs the registrant to petition the Commissioner for relief, in which event the petition must be filed within six months from the date of mailing of the action.

(b) If the refusal of the affidavit or declaration is adhered to, the registrant may petition the Commissioner to review the action under §2.146(a)(2). The petition to the Commissioner requesting review of the action adhering to the refusal of the affidavit or declaration must be filed within six months from the date of mailing of the action which denied reconsideration.

(c) The decision of the Commissioner on the petition will constitute the final action of the Patent and Trademark Office. If there is no petition to the Commissioner, the Commissioner will notify the registrant of the refusal of the affidavit or declaration after the expiration of six years from the date of registration or from the date of publication under section 12(c) of the Act of 1946, and such notice will constitute the final action of the Office.

(d) A petition to the Commissioner for review of the action shall be a condition precedent to an appeal to or action for review by any court.

40. Section 2.173 is amended by revising paragraph (b) to read as follows:

§2.173 Amendment; disclaimer in part.

* * * * *

(b) No amendment in the identification of goods or services in a registration will be permitted except to restrict the identification or otherwise to change it in ways that would not require republication of the mark. No amendment seeking the elimination of a disclaimer will be permitted.

* * * * *

41. Section 2.184 is revised to read as follows:

§2.184 Refusal of renewal.

(a) If the application for renewal is incomplete or defective, the renewal will be refused. The application may be completed or amended in response to a refusal, subject to the provisions of §2.183. If a response to a refusal of renewal is not filed within six months from the date of mailing of the action, the application for renewal will be considered abandoned. A request to reconsider a refusal of renewal shall be a condition precedent to a petition to the Commissioner to review the refusal of renewal.

(b) If the refusal of renewal is adhered to, the registrant may petition the Commissioner to review the action under §2.146(a)(2). The petition to the Commissioner requesting review of the action adhering to the refusal of the renewal must be filed within six months from the date of mailing of the action which adhered to the refusal. If a timely petition to the Commissioner is not filed, the application for renewal will be considered abandoned.

(c) The decision of the Commissioner on the petition will constitute the final action of the Patent and Trademark Office.

(d) A petition to the Commissioner for review of the action shall be a condition precedent to an appeal to or action for review by any court.

42. Section 2.186 is revised to read as follows:

§2.186 Action may be taken by assignee of record.

Any action with respect to an assigned application or registration which may or must be taken by a registrant or applicant may be taken by the assignee provided that the assignment has been recorded.

DONALD J. QUIGG,
Apr. 28, 1983. *Deputy Commissioner of Patents and Trademarks.*

[FR Doc. 83-13500 Filed 5-20-83; 8:45 am]

BILLING CODE 3510-6—M

Department of Commerce
Patent and Trademark Office

37 CFR Parts 1 and 5
[Docket No. 30422-64]
Revision of Foreign Filing License Procedure

Agency: Patent and Trademark Office, Commerce.

Action: Notice of proposed rulemaking.

Summary: The Patent and Trademark Office proposes to revise the rules of practice in patent cases to establish a streamlined procedure for granting a license for foreign filing. The term "transmitting" as used in the proposed rules would include transmittal of technical data to a foreign country for purposes of filing a patent application. The proposed rules also specify the content of a petition for retroactive license. The proposed changes would simplify the obtaining of foreign filing licenses for amendments, modifications, and supplements and would result in reduced work for both patent applicants and the Patent and Trademark Office. At the same time, national security protections would be strengthened.

Dates: Comments must be submitted on or before July 20, 1983; a public hearing will be held July 20, 1983; requests to present oral testimony should be received prior to July 13, 1983.

Addresses: Address written comments and requests to present oral testimony to the Commissioner of Patents and Trademarks; Attention: Kenneth L. Cage, Special Laws Administration, Group 220, Room 4-10D17, Washington, D.C. 20231. The hearing will be held in Room 3-11C24 of Building 3, Crystal Plaza, located at 2021 Jefferson Davis Highway, Arlington, VA. Written comments and transcripts of the public hearing will be available for public inspection in Room 3-11A13 of Building 3, Crystal Plaza.

For Further Information Contact: Kenneth L. Cage by telephone at (703) 557-2877 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Supplementary Information: Under the present procedures, all licenses for foreign filing of a patent application have the same scope, as set forth in current §5.15. The scope of these licenses, as held by the Court in *In re Gaertner*, 202 USPQ 714 (C.C.P.A. 1979), does not include amendments and modifications of an application which contain additional subject matter.

Under the proposed rules, there would be two types of licenses of differing scope for foreign filing. The first type under §5.15(a), the grant of which would be indicated on the filing receipt in accordance with §5.12(a) published at 48 FR 2696, would permit the transmittal for filing of the application and of any amendments or modifications to the application in a foreign country, even if "additional subject matter" were introduced into the foreign application provided the subject matter did not change the general nature of the subject matter disclosed and did not pertain to certain categories of potentially sensitive material which are set forth in proposed §5.15(a) (1)-(5). This scope of license under §5.15(a) would also be granted under §5.12(b) pursuant to §5.13 petition, if the §5.15(a) scope of license is indicated on the license grant.

The second type of license under §5.15(b) would be limited in scope to the original subject matter disclosed at the time the license was granted and would not cover "additional subject matter" as the phrase is currently interpreted (*In re Gaertner*, 202 USPQ 714 (C.C.P.A. 1979)). The licenses under §§5.12(b), 5.13, and 5.14 would be of the same scope as those granted under present practice unless a §5.15(a) license is indicated on the license grant. If a petition for a license under §5.12(b) is granted prior to the grant of the §5.12(a) filing receipt licenses, the former would merge into the latter and would be considered a §5.12(a) license for the purpose of proposed §5.15.

A new §5.20 is proposed which would set forth in the regulations the requirements to be met for the granting of a retroactive license. The proposed requirements include (1) a list of the foreign countries which received the information; (2) the date(s) of transmittal; (3) an oath or declaration which avers to (i) the non-sensitive nature of the material, (ii) a showing of diligence in attempting to obtain the license upon discovery of the error, and (iii) a showing of facts which support a conclusion of inadvertence; and (4) the required fee. The section as proposed also provides in paragraph (b) for review from a denial of a petition for a retroactive license.

A revised §5.11(a) is proposed which would set forth in the regulations a requirement that a license from the Commissioner of Patents and Trademarks is required before transmitting an application to a foreign country, if the United States application has not been on file for six months, or no application has been filed in the United States. This proposed rule change would more accurately reflect the intent of the statutes and make the rules more closely conform with the regulations of other agencies which deal with the export of technical data to a foreign country. The proposed change requiring a license before transmitting an application to a foreign country is not intended to interpret the language in 35 U.S.C. 184 "file or cause or authorize to be filed" as necessarily requiring a license before an application is transmitted to a foreign country. Further, the proposed change is not intended to imply that every transmission within six months of U.S. filing without a license is prohibited under the existing regulations, such as where an application has been transmitted to a foreign agent without an authorization to file a foreign application. The proposed regulations are intended to change existing practice by requiring a license in all situations to transmit an application abroad. This change is proposed under the authority of 35 U.S.C. 6 to assure adequate protection of sensitive material under title 35 and to provide for consistency with the Arms Control Act and the Export Administration Act and their implementing regulations.

A revised §5.11(b) is proposed which would state that applications under secrecy order under §5.2 cannot be transmitted or filed in a foreign country except in accordance with §5.5.

A revised §5.11(c) is proposed which would state that a license pursuant to paragraph (a) is not required where the invention is not made in the United States, or the U.S. application was on file for six months without a secrecy order being issued.

A new §5.11(d) is proposed which would state that a license for foreign filing may be revoked at any time upon written notice.

Sections 5.1, 5.12(b), 5.13, 5.14, 5.15 and 5.17, as proposed are revised to conform to the §5.11 requirement of a license for transmittal of an application to a foreign country.

Finally, §§5.12(b), 5.13, 5.14, 5.15, and 1.17, as proposed, also would refer to the new fees for these services.

Discussion of Specific Sections Proposed To Be Changed

Section 1.17(h) is proposed to be amended to include a specific reference to §5.20 petitions for retroactive licenses for which the petition fee is charged, rather than having the present retroactive license fee under §1.182 petitions. The fee for §5.12(b) licenses is new and is for special handling of these license request.

Section 5.1, as proposed, would reflect the proposed §5.11 license requirement for transmittal to a foreign country.

Section 5.11, as proposed, would require a license for transmitting an application to a foreign country for filing if the U.S. application has not been on file for at least six months prior to the date of transmittal, or no application has been filed in the United States. This will enable the Patent and Trademark Office to better exercise the export control functions set forth in §§5.18 and 5.19 established in accordance with 35 U.S.C. 184, the Arms Control Act of 1977 and the Export Administration Act of 1979, respectively.

Under these Acts, the export of technical data is the activity to be controlled. Proposed §5.11(a) controls export activity by requiring a license for transmittal of technical data in connection with foreign filing of an application and to that extent implements the Arms Control Act and the Export Administration Act. If a license as required by proposed §5.11 is obtained under §§5.12, 5.13 or 5.14, no license for the export of technical data to a foreign country in connection with a patent application is required under the Export Administration Act of 1979 or the Arms Control Act of 1977. It is emphasized that the scope of the license for transmittal of technical data is limited to transmitting an application for foreign filing and does not include selling or using the technical data in a foreign country. These latter acts continue to require separate licenses under the Export Administration Act and the Arms Control Act.

Also, the transmittal of technical data in any form to a foreign country for purposes other than filing or supporting the filing of a patent application or consideration whether a patent application should be filed is not controlled by title 35 United States Code or the exiting or proposed regulations in Part 5. The transmittal of data to a foreign country in such cases would be subject to other laws and regulations such as the export and arms control regulations.

Section 5.11(b), as proposed, states that an application cannot be transmitted to a foreign country when the corresponding United States application is under secrecy order except under §5.5.

Section 5.11(c), as proposed, states that no license is required if the invention was not made in the United States, or the application was on file in the United States at least six months and is not under a secrecy order issued under §5.2.

Section 5.11(d), as proposed, states that any license for foreign filing may be revoked at any time by written notification.

Section 5.12(b), as proposed, would refer to the license fee under proposed §1.17(h).

Section 5.13, as proposed, would refer to the fee under proposed §1.17(h) for a petition for license where no corresponding national or international application has been filed in the United States.

Section 5.14(a), as proposed, would indicate that petitions under this section require a fee as set forth in proposed §1.17(h).

The other changes make grammatical corrections and would not alter the intent of the section.

Section 5.14(c), as proposed, would reflect the proposed §5.11 license requirement for transmittal to a foreign country.

Section 5.15, as proposed, would change the scope of licenses granted under §5.12(a). Paragraph (a) of §5.15 defines the scope of licenses to be granted under §5.12(a), the granting of which is indicated on the filing receipt. This license permits transmitting corresponding subject matter in the application to any foreign country for filing and any amendments, modifications, and supplements, including divisions, changes or supporting matter consisting of the illustration, exemplification or explanation of subject matter disclosed in the application. This includes new matter which does not change the general nature of subject matter disclosed and does not pertain to certain prohibited subjects or areas listed on various export restriction lists. These lists are established by the Department of State, the Department of Commerce, the Department of Energy, and various executive orders and statutes.

These changes also permit an applicant to take action in the prosecution of the foreign or international application and submit supporting data such as affidavits, test data or the like as long as it directly relates to the application and does not pertain to the prohibited subjects or areas enumerated in §5.15(a).

New paragraph (b) of §5.15, as proposed, would define the scope of a license granted under §5.12(b) to be the same as a license granted under the provisions of present §5.15. The existing prohibition against the filing of "subject matter additional to that covered by the license" is being continued. Accordingly, court interpretations of this language would still apply. Only the scope of a §5.12(a) license would be different from foreign filing licenses which have been granted in the past. Subject matter listed in §5.15(a)(1)–(a)(5) would require an additional license, regardless of which provision authorized the original license grant.

New paragraph (c) of §5.15, as proposed, would define the scope of a license granted pursuant of §5.13 to be of the same scope as a paragraph (a) license, if it is indicated on the license grant.

New paragraph (d) of §5.15, as proposed, would provide for a reorganization of paragraphs with no significant change in substance.

New paragraph (e) of §5.15, as proposed, would recite the situations in which a license would be required to file any amendment or other papers abroad. Amendments to applications under both types of licenses are covered. Any amendment to an application licensed under proposed §512(a) requires a separate license only if it pertains to specifically identified areas or subjects. Any amendment to an application licensed under §5.12(b) requires a separate license if the amendment discloses additional subject matter.

Paragraph (f) of §5.15, as proposed, would set forth the licensing requirements for combining or dividing applications. If any of the applications have not been licensed under §5.12(a), then any additional subject matter must be separately licensed. If all of the applications have been licensed under §512(a), then only subject matter listed in paragraph 5.15(a)(1)–(a)(5) need be separately licensed.

Paragraph (g) of §5.15, as proposed, would include a reference to the section dealing with the requirements for a petition for a retroactive license.

Section 5.17, as proposed, would include the transmittal requirement of proposed §5.11 in the use of a license.

Section 5.20, as proposed, is new and would set forth the requirements for seeking a retroactive license.

New §5.20(a) requires identification of the subject matter which is to be licensed as in §§5.13 or 5.14. New §5.20 (a)(1) and (a)(2) identify the specific proscribed transmittal for filing for which the license is made retroactive. New §5.20(a)(3) provides for the specific showing of inadvertence. New §5.20(a)(4) refers to the required fee. New §5.20(b) provides for time periods to renew petitions that have been denied, and procedures to be followed after denial of a renewed petition.

Section 5.23, as proposed, would reflect the new organizational title.

Environmental, energy, and other considerations: The proposed rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The proposed rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354) for several reasons. Under this proposed rulemaking, small entities would be able to obtain licenses without filing separate requests therefor. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.

The Patent and Trademark Office has determined that this proposed rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increases in cost or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This proposed rule change would not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3401 *et seq.*, since no additional recordkeeping or reporting requirements are placed on the public.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of information, Inventions and patents, Lawyers, Small businesses.

37 CFR Part 5

Classified information, Foreign relations, Inventions and patents.

Proposed Amendment of Regulations

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations as set forth below.

It is proposed to amend 37 CFR, Parts 1 and 5 as follows, with deletions indicated by brackets and additions by arrows:

PART 1–[AMENDED]

1. Section 1.17 is proposed to be amended by revising paragraph (h) to read as follows:

§1.17 Patent application processing fees.

* * * * *

(h) For filing a petition to the Commissioner under a section of ►Part 1 or 5◄ [this part] listed below which refers to this paragraph, $120.00.

- — §1.47 –for filing by other than all the inventors or a person not the inventor
- — §1.48 –for correction of inventorship
- — §1.182–for decision on questions not specifically provided for
- — §1.183–to suspend the rules
- — §1.268–for late filing of interference settlement agreement
- ►— §5.13 and 5.14–for special handling of foreign filing license
- — §5.20–for retroactive license◄

PART 5–[AMENDED]

2. Section 5.1 is proposed to be amended by revising paragraph (a) to read as follows:

§5.1 Defense inspection of certain applications.

(a) The provisions of this part shall apply to both national and international applications filed in the Patent and Trademark Office and, with respect to inventions made in the United States, to applications filed in any foreign country or any international authority other than the United States Receiving Office. The

(1) ►transmittal for◄ filing of a national or an international application in a foreign country or with an international authority other than the United States Receiving Office, or

(2) transmittal of an international application to a foreign agency or an international authority other than the United States Receiving Office is considered to be a foreign filing within the meaning of Chapter 17 of Title 35, United States Code.

* * * * *

3. The center heading preceding §5.11 and §5.11 are proposed to be amended by revising the center heading and paragraphs (a), (b), and (c), and adding new paragraph (d) to read as follows:

Licenses for Foreign ►Transmittal or◄ Filing

§5.11 License for ►transmitting◄ [filing] application ►on an invention made in the United States to a◄ [in] foreign country [or for transmitting international applications].

(a) [When no secrecy order has been issued under §5.2, a] ►A◄ license from the Commissioner of Patents and Trademarks [under 35 U.S.C. 184] is required before [filing] any application for patent or for the registration of a utility model, industrial design, or model [, in a foreign country, or transmitting an international application to any foreign patent agency or any international agency other than the United States Receiving Office, or causing or authorizing such filing or transmittal, with respect to] ►on◄ an invention made in the United States ►can be transmitted to a foreign country (including an international agency in a foreign country) for filing if:

(1) An application on the invention has been on file in the United States less than six months prior to the date on which the application is to be transmitted, or

(2) No application on the invention has been filed in the United States.

The license from the Commissioner of Patents and Trademarks referred to in this paragraph would be issued pursuant to, and meet the requirements of, 35 U.S.C. 184 and §§5.18 and 5.19 of this part.◄

[, if:

(1) The foreign application is to be filed or its filing caused or authorized before a national or international application for patent is filed in the United States, or

(2) The foreign application is to be filed, or its filing caused or authorized, or the transmittal of the international application is caused or authorized, prior to the expiration of six months from the filing of the application in the United States.]

(b) ►If a secrecy order has been issued under §5.2, an application cannot be transmitted to, or filed in, a foreign country (including an international agency in a foreign country), except in accordance with §5.5.◄ [When there is no secrecy order in effect, a license under 35 U.S.C. 184 is not required if:

(1) The invention was not made in the United States, or

(2) The foreign application is to be filed or the international application is to be transmitted, or its filing or transmittal caused or authorized, after the expiration of six months from the filing of the national application in the United States.]

(c) ►No license pursuant to paragraph (a) of this section is required if:

(1) the invention was not made in the United States, or

(2) the United States application is not subject to a secrecy order under §5.2, and was filed at least six months prior to the date on which the application is transmitted to a foreign country.◄ [When a secrecy order has been issued under §5.2, an application cannot be filed in a foreign country, nor can an international application be transmitted to any agency other than the United States Receiving Office except in accordance with §5.5.]

►(d) A license pursuant to paragraph (a) of this section can be revoked at any time upon written notification by the Patent and Trademark Office.◄

4. Section 5.12 is proposed to be amended by revising paragraph (b) to read as follows:

§5.12 Petition for license.

* * * * *

(b) Petitions for license under 35 U.S.C. 184 should be presented in letter form and [should] ►must◄ include ►any required fee,◄ petitioner's address, and full instructions for delivery of the requested license when it is to be delivered to other than the petitioner.

5. Section 5.13 is proposed to be revised to read as follows:

§5.13 Petition for license; no corresponding application.

►If◄ [Where there is] no corresponding national or international application ►has been filed in the United States◄, the petition for license ► under §5.12(b) ◄ must be accompanied by ►any required fee (§1.17(h)) and◄ a legible copy of the material upon which ►a ◄ license is desired. This copy will be retained as a measure of the license granted. For assistance in the identification of the subject matter of each license so issued, it is suggested that the petition or requesting letter be submitted in duplicate and provide a title and other description of the material. The duplicate copy of the petition will be returned with the license or other action on the petition. [Where an international application is being filed in the United States Receiving Office, the petition may accompany the international application.]

6. Section 5.14 is proposed to be amended by revising paragraphs (a) and (c) to read as follows:

§5.14 Petition for license; corresponding U.S. application.

(a) Where there is a corresponding United States application on file ►a◄ [the] petition for license ►under §5.12(b) must include any required fee (§1.17(h)) and ◄ must identify this application by serial number, filing date, inventor, and title, ►but◄ [and] a copy of the material upon which the license is desired is not required. The subject matter licensed will be measured by the disclosure of the United States application. Where the title is not descriptive, and the subject matter is clearly of no interest from a security standpoint, time may be saved by a short statement in the petition as to the nature of the invention.

* * * * *

(c) where the application to be [filed or] transmitted abroad ►for filing◄ contains matter not disclosed in the United States application or applications, including the case where the combining of two or more United States applications introduces subject matter not disclosed in any of them, a copy of the application as it is to be ► transmitted for filing◄ [filed] in the foreign country or international application ►as it◄ [which] is to be transmitted to a foreign international or national agency [as it is to be filed] ►for filing◄ in the Receiving Office must be furnished with the petition. If, however, all new matter in the foreign or international application to be ► transmitted◄ [filed] is readily identifiable, the new matter may be submitted in detail and the remainder by reference to the pertinent United States application or applications.

7. Section 5.15 is proposed to be amended by revising paragraph (a), redesignating paragraphs (b), and (c) as paragraphs (f) and (g) and revising new paragraphs (f) and (g) and adding new paragraphs (b), (c), (d), and (e) to read as follows:

§5.15 Scope of license.

(a) [A]►Grant of a◄ license ►under §5.12 (a) authorizes the transmittal of ◄ [to file] an application ► to◄ [in] a foreign country or [transmit] ►the transmittal of◄ an international application to any foreign ►patent agency◄ or international ►patent◄ agency [other than the United States Receiving Office, when granted,] ►where the subject matter of the foreign or international application corresponds to that of the domestic application. Further, this license◄ includes authority to forward all duplicate and formal papers to the foreign country or international agencies and to make amendments ►, modifications and supplements, including new matter which does not change the general nature of the subject matter disclosed, at the time of transmittal, or later,◄ and ►to ◄ take any action in the prosecution of the foreign or international application [,] ►unless the paper, modification, amendment, supplement of action involves subject matter pertaining to:

(1) Defense services or articles designated in the United States Munitions List applicable at the time of filing, the unlicensed exportation of which is prohibited pursuant to the Arms Export Control Act of 1977;

(2) Restricted Data, sensitive nuclear technology or technology useful in the production or utilization of special nuclear material or atomic energy, the dissemination of which is subject to restrictions of the Atomic Energy Act of 1954, as amended, and the Nuclear Non-Proliferation Act of 1978, as implemented by the Regulations for unclassified Activities in Foreign Atomic Energy Programs;

(3) Articles, materials and supplies, the export of which is prohibited or restricted pursuant to the Export Administration Act of 1979, as implemented by the Export Administration Regulations:

(4) Information subject to classification in accordance with executive orders protecting national security information from disclosure; or

(5) Information, the dissemination, disclosure or exportation of which is restricted by a statute, regulation or executive order which amends or supersedes any of paragraphs (a)(1)–(4) of this section. ◄ [Provided subject matter additional to that covered by the license is not involved. In those cases in which no license is required to file the foreign application or transmit the international application, no license is required to file papers in connection with the prosecution of the foreign or international application not involving the disclosure of additional subject matter. Any paper filed abroad or with an international agency following the filing of a foreign or international application which involves the disclosure of additional subject matter must be separately licensed in the same manner as a foreign or international application.]

►(b) Grant of a license under §5.12(b) authorizes the transmittal of an application to a foreign country or the transmittal of an international application to any foreign patent agency or international patent agency. Further, this license includes authority to forward all duplicate and formal papers to the foreign patent agency or international patent agency and to make amendments, modifications or supplements to and take any action in the prosecution of the foreign or international application, provided subject matter additional to that covered by the license is not involved.

(c) Grant of a license under §5.12(b) pursuant to §5.13 shall have the same scope of a license granted in paragraph (a) of this section, if it is so specified in the license.

(d) In those cases in which no license is required to transmit the foreign application or the international application, no license is required to transmit papers in connection with the prosecution of the foreign or international application not involving the disclosure of additional subject matter.

(e) Any paper transmitted abroad or to an international patent agency following the transmittal of a foreign or international application which involves the disclosure of subject matter listed in paragraphs (a)(1)–(a)(5) of this section must be separately licensed in the same manner as a foreign or international application. Further, if no license has been granted under §5.12(a) on filing the corresponding United States application, any paper filed abroad or with an international patent agency which involves the disclosure of additional subject matter must be licensed in the same manner as a foreign or international application.◄

►(f)◄ [(b)] Licenses separately granted in connection with two or more United States applications may be exercised by combining or dividing the disclosures, as desired, provided◄:

(1) Subject matter listed in paragraph (a)(1)–(a)(5) of this section is not introduced and,

(2) In the case where at least one of the licenses was obtained under §5.12(b), ◄ additional subject matter is not introduced.

►◄ [(c)] A license does not apply to acts done before the license was granted unless the petition specifically requests and describes the particular acts and the license is worded to apply to such acts. ►See §5.20.◄

8. Section 5.17 is proposed to be revised to read as follows:

§5.17 Who may use license.

Licenses may be used by anyone interested in the ►transmitting for◄ foreign filing or international transmittal for or on behalf of the inventor or the inventor's assigns.

9. A new §5.20 is proposed to be added to read as follows:

►§5.20 Petition for retroactive license.

(a) A petition for retroactive license under 35 U.S.C. 184 shall be presented in accordance with §5.13 or §5.14, and shall include:

(1) A listing of the foreign countries to which the patent application material was transmitted,

(2) The dates on which the material was transmitted,

(3) A verified statement containing:

(i) An averment that the subject matter in question was not under a secrecy order at the time it was transmitted and filed abroad, and that is not currently under a secrecy order,

(ii) A showing that the license has been diligently sought after discovery of the proscribed transmittal and foreign filing, and

(iii) An explanation of why the material was inadvertently transmitted and filed broad without the required license under §5.11 first having been obtained, and

(4) The required fee (§1.17(h)).

The above explanation must include a showing of facts from which a conclusion of inadvertence may be drawn rather than a mere allegation of inadvertence. The showing of facts should include statements by those persons having personal knowledge of the acts regarding transmitting and filing in a foreign country and should be accompanied by copies of any necessary supporting documents such as letters of transmittal or instructions for filing. The acts which are alleged to constitute inadvertence should cover the period from the time of transmission until actual filing of the petition under this section.

(b) If a petition for a retroactive license is denied, a time period of not less than thirty days shall be set, during which the petition may be renewed. Failure to renew the petition within the set time period will result in a final denial of the petition. If a renewed petition is denied, the denial is final unless recourse be had under §1.181 within two months of the date of the denial. If the petition for a retroactive license is denied with respect to the invention of a pending application and no petition under §1.181 has been filed, a final rejection of the application under 35 U.S.C. 185 will be made.◄

10. Section 5.23 is proposed to be revised to read as follows:

§5.23 Correspondence.

All correspondence in connection with this part, including petitions, should be addressed to "Commissioner of Patents and Trademarks (Attention ►Licensing and Review◄ [Patent Security Division]), Washington, D.C. 20231."

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

May 18, 1983.

[FR Doc. 83-13810 Filed 5-20-83; 8:45 am]
BILLING CODE 3510-16

Department of Commerce
Revision of Foreign Filing License Procedure

[Docket No. 30422-64]
37 CFR Parts 1 and 5

Agency: Patent and Trademark Office,Commerce

Action: Proposed rule; correction

Summary: This document corrects an inadvertent omission of the time 9:00 a.m., for the hearing scheduled for July 20, 1983, in the notice of proposed rulemaking published in 48 FR 23144 on Monday, May 23, 1983, relating to foreign filing license procedure. The paragraph captioned **Dates** is corrected to read as follows:

Comments must be submitted on or before July 20, 1983; a public hearing will be held July 20, 1983, beginning at 9:00 a.m.; requests to present oral testimony should be received prior to July 13, 1983.

For Further Information Contact: Kenneth L. Cage by telephone at (703) 557-2877 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

June 2, 1983.

PATENT NOTICES

Certificates of Correction for the Week of June 21, 1983

D. 251,425	4,344,888	4,368,862	4,377,291
D. 259,723	4,349,787	4,369,248	4,377,424
D. 267,541	4,350,563	4,369,455	4,377,590
D. 268,292	4,350,793	4,369,459	4,377,753
3,717,638	4,352,325	4,369,840	4,377,995
4,094,831	4,352,875	4,371,154	4,378,049
4,102,635	4,354,404	4,371,726	4,378,362
4,216,896	4,356,584	4,372,078	4,378,643
4,249,610	4,356,640	4,372,891	4,378,753
4,290,085	4,362,448	4,373,060	4,378,860
4,297,443	4,362,924	4,373,232	4,378,987
4,297,650	4,364,217	4,373,436	4,379,178
4,300,231	4,364,905	4,374,383	4,379,481
4,308,172	4,364,947	4,374,816	4,379,853
4,317,946	4,365,319	4,374,879	4,380,051
4,318,916	4,365,478	4,375,227	4,380,200
4,321,414	4,365,497	4,375,596	4,380,567
4,327,664	4,366,813	4,375,764	4,380,585
4,338,172	4,366,845	4,376,332	4,381,033
4,338,538	4,366,928	4,376,383	4,381,876
4,340,647	4,367,440	4,376,681	4,382,222
4,340,929	4,367,644	4,376,728	
4,344,137	4,367,799	4,377,205	

Disclaimers

3,715,334.—*Bruce D. Karstedt,* Scotia, N.Y. PLATINUM-VINYLSILOXANES. Patent dated Feb. 6, 1973. Disclaimer filed Apr. 19, 1983, by the assignee, *General Electric Co.*

Hereby enters this disclaimer to claims 1 through 6 of said patent.

3,814,730.—*Bruce D. Karstedt,* Charlotte, N.C. PLATINUM COMPLEXES OF UNSATURATED SILOXANES AND PLATINUM CONTAINING ORGANOPOLYSILOXANES. Patent dated June 4, 1974. Disclaimer filed Apr. 19, 1983, by the assignee, *General Electric Co.*

Hereby enters this disclaimer to claims 1 through 8 of said patent.

3,870,909.—*William Walrath Pangburn,* Pattersonville, N.Y. MOUNTING MEANS FOR STANDARDIZED DYNAMOELECTRIC MACHINES. Patent dated Mar. 11, 1975. Disclaimer filed Mar. 31, 1983, by the assignee, *General Electric Co.*

Hereby enters this disclaimer to claims 1-4 of said patent.

4,297,616.—*Stephen C. Corona,* Rochester, N.Y. FLUORESCENT LAMP WITH INCANDESCENT BALLASTING SYSTEMS. Patent dated Oct. 27, 1981. Disclaimer filed Mar. 4, 1983, by the assignee, *Xerox Corp.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,322,037.—*Dieter Heeb; Gunter Bechmann; Uwe Bergemann; Volker Bollert;* and *Claus-Dieter Frenzel,* Hamburg, Fed. Rep. of Germany. AERSOL CAN, HAVING A SUPER-FINE ATOMIZATION VALVE, WITH A FILLING WHICH CONTAINS A PROPELLANT, PROCESS FOR ITS MANUFACTURE, AND ITS USE. Patent dated Mar. 30, 1982. Disclaimer filed Apr. 20, 1983, by the assignee, *Hans Schwarzkopf, GmbH.*

Hereby enters this disclaimer to all claims of said patent.

4,337,701.—*James G. Janson,* China Lake, Calif. ELECTROMECHANICAL WARHEAD SAFETY-ARMING DEVICE. Patent dated July 6, 1982. Disclaimer filed Apr. 22, 1983, by the assignee, *The United States of America as Represented By The Secretary Of The Navy.*

Hereby enters this disclaimer to claims 1, 2, 3 and 4 of said patent.

Dedications

3,367,917.—*Nicholas August Granito,* Wallingford, Conn. MELAMINE-FORMALDEHYDE-BENZO-GUANA-MINE RESIN AND PROCESS FOR PREPARING THE SAME. Patent dated Feb. 6, 1968. Dedication filed Mar. 4, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates the remaining term of said patent to the Public.

4,370,675.—*William E. Cohn,* Skokie, Ill. DOORBELL ACTUATED TELEVISION SECURITY SYSTEM. Patent dated Jan. 25, 1983. Dedication filed Apr. 25, 1983, by the assignee, *Zenith Radio Corp.*

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimer and Dedication

4,342,797.—*Alfred E. Kober,* Bridgewater; and *Mark O. Kestner,* Mendham, N.J. WET FLOW CHARACTERISTIC OF COAL AND OTHER WATER-INSOLUBLE SOLID PARTICLES. Patent dated Aug. 3, 1982. Disclaimer and Dedication filed Mar. 10, 1983, by the assignee, *Economics Laboratory, Inc.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels, Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,243,822 to 3,248,737, inclusive

Plant Patents ..... Numbers 2,616 to 2,627 inclusive

REEXAMINATIONS

JUNE 21, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,082,484 (97th)

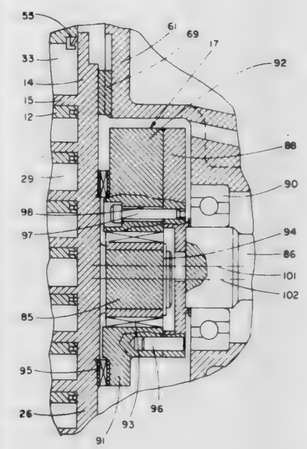
SCROLL-TYPE APPARATUS WITH FIXED THROW CRANK DRIVE MECHANISM

John E. McCullough, Carlisle, Mass., assignor to Arthur Little, Inc., Cambridge, Mass.

Reexamination Request No. 90/000,194, Apr. 30, 1982.

Reexamination Certificate for Patent No. 4,082,484, issued Apr. 4, 1978, Ser. No. 761,889, Jan. 24, 1977.

U.S. Cl. 418/55 **Int. Cl.³ F04C** *17/02; 29/10*



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **2** were previously disclaimed.

Claims **3, 5,** and **7–11,** having been finally determined to be unpatentable, are cancelled.

Claims **4, 6, 12,** and **15** are determined to be patentable as amended:

Claims **13, 14,** and **16–19,** dependent on amended claims, are determined claims, are determined to be patentable.

New claim **20** is added and determined to be patentable.

20. In a positive fluid displacement apparatus into which fluid is introduced through an inlet port for circulation through said apparatus and subsequently withdrawn through a discharge port, and comprising a stationary scroll member having an end plate and an involute wrap and an orbiting scroll member having an end plate and an involute wrap, driving means for orbiting said orbiting scroll member with respect to said stationary scroll member whereby the side flanks along with said end plates of said involute wraps define at least one moving pocket of variable volume and zones of different fluid pressure, coupling means to maintain said scroll members in fixed angular relationship, the improvement comprising said driving means being arranged to effect the orbiting of said orbiting scroll member such that a small clearance is maintained between said side flanks of said wraps thereby to essentially eliminate wear of said side flanks over extended periods of operation while retaining the essential integrity of said zones of different fluid pressure, said driving means comprising a drive shaft rotatable on a machine axis and connected to the orbiting scroll member through an adjustable fixed-throw crank drive mechanism having means to selectively permit relative angular adjustment between the positions of the crank drive mechanism and the orbiting scroll member, said angular adjustment effecting variation of said clearance, said crank drive mechanism comprising a crank plate assembly affixed to the drive shaft, the crank plate assembly including at least two pieces; a pivot means disposed at an offset location from the machine axis connecting the two pieces together so that the two pieces may be angularly rotated relative to each other about a pivot axis offset from but parallel to said machine axis for effecting said relative angular adjustment; and fastener means for releasably securing said two pieces in fixed angular relationship.

B1 3,863,006 (98th)

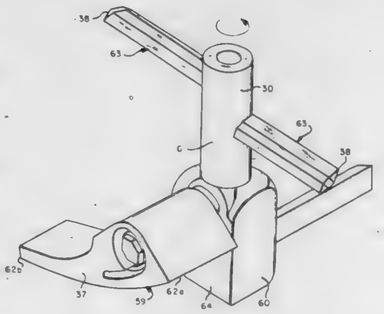
METHOD FOR DESENSITIZING TEETH

Milton Hodosh, 145 Whitemarsh St., Providence, R.I. 02906

Reexamination Request No. 90/000,265, Sep. 29, 1982.

Reexamination Certificate for Patent No. 3,863,006, issued Jan. 28, 1975, Ser. No. 327,758, Jan. 29, 1973.

U.S. Cl. 424/49 **Int. Cl. A61K** *7/16*



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–6** is confirmed.

1. The method of desensitizing hypersensitive dentin and cementum by applying thereto an agent, the essential ingredient of which is a nitrate of one of the following alkali metals: potassium, lithium or sodium said nitrate comprising between 1 percent and 20 percent by weight of said agent.

B1 4,219,318 (99th)
APPARATUS FOR PRESERVING FRESH FARINACEOUS PASTES
Alfredo Cavalli, 9 via Galileo Galilei, Pessano con Bornago, Milan, Italy
Continuation-in-part of Ser. No. 798,144, May 18, 1977, abandoned.
Reexamination Request No. 90/000,230, Jul. 21, 1982.
Reexamination Certificate for Patent No. 4,219,318, issued Aug. 26, 1980, Ser. No. 10,089, Feb. 7, 1979.
Claims priority, application Italy, May 19, 1976, 23392A/76.
U.S. Cl. 425/190 **Int. Cl.³ B29B *1/06***

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** having been finally determined to be unpatentable, is cancelled.

Claims **2, 4–6, 11, 17, 19,** and **20** are patentable as amended:

Claims **3, 7–10, 12–16, 18,** and **21–23** dependent on amended claims, are determined to be patentable.

New claims **24–27** are added and determined to be patentable.

5. [An apparatus according to claim **1**] *In an apparatus for preparing fresh food paste from paste forming contents of the type including a vessel having a bottom and forming a mixing and kneading chamber for said paste forming contents, said vessel having a closed side wall of circular cross section which is symmetrical about a vertical axis passing centrally through said chamber, a rotatable member mounted within said chamber for rotation about said vertical axis, drive means for rotating said member in a given direction, blade means located in said mixing and kneading chamber and means operatively connecting said blade means to said rotatable member in a position extending away from said vertical axis, wherein the improvement comprises said blade means including a kneading blade extending into close confronting spaced relation with said side wall of said vessel and having a lower surface with leading and trailing edges defined by said rotation in a given direction, said trailing edge having a normal position adjacent said bottom and being moveable away from said bottom and said leading edge being positioned at a substantially greater distance from said bottom than said normal position of said trailing edge; and means for biasing said trailing edge towards said bottom for causing said kneading blade to exert downward pressure on paste forming contents between said lower surface of said kneading blade and said bottom during the rotation of said rotatable member to effect the kneading of said contents,* [wherein] said blade means [includes] *including* a scraper blade extending substantially radially of said vertical axis and in close proximity to said bottom of said vessel for dislodging paste from said bottom during rotation of said rotatable member.

11. [An apparatus according to claim **1**] *In an apparatus for preparing fresh food paste from paste forming contents of the type including a vessel having a bottom and forming a mixing and kneading chamber for said paste forming contents, said vessel having a closed side wall of circular cross section which is symmetrical about a vertical axis passing centrally through said chamber, a rotatable member mounted within said chamber for rotation about said vertical axis, drive means for rotating said member in a given direction, blade means located in said mixing and kneading chamber and means operatively connecting said blade means to said rotatable member in a position extending away from said vertical axis, wherein the improvement comprises said blade means including a kneading blade extending into close confronting spaced relation with said side wall of said vessel and having a lower surface with leading and trailing edges defined by said rotation in a given direction, said trailing edge having a normal position adjacent said bottom and being moveable away from said bottom and said leading edge being positioned at a substantially greater distance from said bottom than said normal position of said trailing edge; and means for biasing said trailing edge towards said bottom for causing said kneading blade to exert downward pressure on paste forming contents between said lower surface of said kneading blade and said bottom during the rotation of said rotatable member to affect the kneading of said contents, said apparatus* further comprising means forming an extrusion chamber beneath said bottom of said vessel, said bottom having a discharge port located therein off of said vertical axis for allowing said kneading blade to push paste forming contents from said mixing and kneading chamber into said extrusion chamber.

Errata

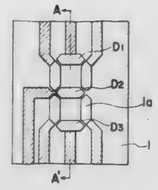
The Official Gazette Notice for Reexamination Certificate B1 4,144,212, issued Apr. 5, 1983, erroneously included a Claim 9. This claim was proposed and rejected during reexamination. All claims for the patent were determined to be unpatentable and were cancelled.

REISSUES

JUNE 21, 1983

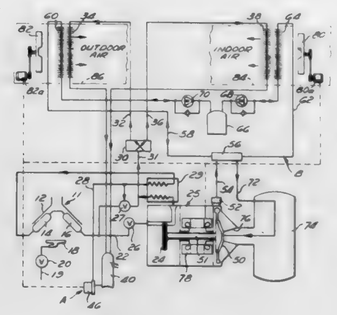
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,280
ELECTROCHROMIC DISPLAY DEVICE MANUFACTURE METHOD
Kozo Yano, Yamatokoriyama; Yasuhiko Inami, Nishinomiya; Hiroshi Hamada, Nara, and Hisashi Uede, Wakayama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Original No. 4,123,841, dated Nov. 7, 1978, Ser. No. 727,448, Sep. 28, 1976. Application for reissue Oct. 14, 1981, Ser. No. 311,276
Claims priority, application Japan, Sep. 29, 1975, 50-118104
Int. Cl.³ B01J *17/00*; G02F *1/133*
U.S. Cl. 29—592 R **13 Claims**



1. An electrochromic display device [manufacture] *manufacturing* method comprising the steps of:
preparing a first substrate and a second substrate, at least one of said substrates being transparent;
applying a first electrode on said first substrate and a second electrode on said second substrate, at least one of said electrodes being transparent and being applied on a transparent said substrate and said second electrode serving as a counter electrode[;], *and*
applying a layer of transition metal oxide material on said first electrode[;], *wherein*
[initially applying] said first electrode and said transition metal oxide layer *are* successively *applied* on said first substrate over an area greater than that necessary to define a required display segment and external circuit connection pattern thereon;
forming a mask defining said required pattern on said transition metal oxide layer;
applying at least one layer of insulatory material which covers those portions of said transition metal oxide layer which are unrequired for display purposes;
successively etching said transition metal oxide layer and said first electrode through said mask *in discrete steps and with respectively discrete etchants peculiar thereto,* thereby producing said required pattern in said transition metal oxide layer and said first electrode;
positioning said first substrate assembly and said second substrate assembly in an electrode facing relationship and joining said assemblies by spacer means; and
introducing electrolyte into the space defined between said assemblies and said spacer means, said elecrolyte being retained in said space.

Re. 31,281
HEAT PUMP SYSTEM
Paul F. Swenson, Shaker Heights, Ohio, and Paul B. Moore, Fedhaven, Fla., assignors to Consolidated Natural Gas Service Company, Inc., Cleveland, Ohio
Original No. 4,055,964, dated Nov. 1, 1977, Ser. No. 737,776, Nov. 1, 1976. Application for reissue Oct. 25, 1979, Ser. No. 88,174
Int. Cl.³ F25B *13/00*
U.S. Cl. 62—160 **23 Claims**



16. *A fluid heating and cooling system comprising:*
a refrigeration circuit having a compressor with an inlet and an outlet, an indoor refrigeration circuit heat exchanger, and an outdoor refrigeration circuit heat exchanger,
a vapor power circuit having a vapor generator with an inlet and an outlet, a prime mover expander having an inlet and an outlet, means connecting said vapor generator outlet with said prime mover expander inlet, an indoor vapor power circuit heat exchanger, and an outdoor vapor power circuit heat exchanger,
first fluid moving means for conducting a first fluid across both of said indoor heat exchangers,
second fluid moving means for conducting a second fluid across both of said outdoor heat exchangers,
means for drivingly interconnecting said prime mover expander with said compressor,
first valve means movable to a cooling position for discontinuing flow of vapor from said prime mover expander outlet to said vapor power circuit indoor heat exchanger when said prime mover expander is drivingly connected to said compressor,
second valve means movable to a heating position for discontinuing flow of vapor from said prime mover expander outlet to said vapor power circuit outdoor heat exchanger when said prime mover expander is drivingly connected to said compressor,
third valve means movable to a cooling position for connecting said compressor outlet to said refrigeration circuit outdoor heat exchanger when said first valve means is in said cooling position,
fourth valve means movable to a heating position for connecting said compressor outlet to said refrigeration circuit indoor heat exchanger when said second valve means is in said heating position.

Re. 31,282

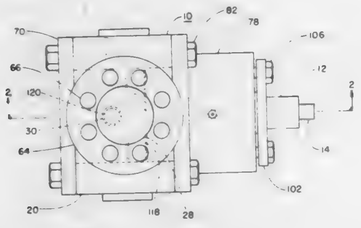
SHOT-FEEDING METERING VALVE

James R. Ware, Pasadena, Tex., assignor to National Petro Chemicals Corporation, New York, N.Y.

Original No. 4,155,488, dated May 22, 1979, Ser. No. 852,658, Nov. 18, 1977. Application for reissue Mar. 26, 1981, Ser. No. 247,651

Int. Cl.[3] **B67D** *5/54*

U.S. Cl. 222—305 **9 Claims**



1. A metering plug valve of the shot-feeding type comprising:

a. a valve body having an annular recess formed therein and located symmetrically about an axis of rotation, at least first and second sets of oppositely disposed inlet and outlet passageways extending through said valve body and communicating with said recess; and

b. a generally cylindrical valve plug rotatably mounted in said recess for rotational movement about said axis of rotation, at least two nonintersecting linear valve [ports] *bores* extending through said valve plug along straight lines in parallel spaced planes, said valve [ports] *bores* being spaced from each other along said axis of rotation and passing through said axis of rotation, each said valve [port] *bores* respectively connecting an inlet passageway with an outlet passageway upon said valve plug being in a predetermined rotational position in said valve body.

Re. 31,283

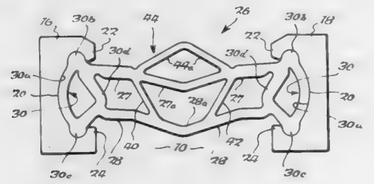
ELASTOMERIC EXPANSION SEAL

Guy S. Puccio, Snyder, N.Y., assignor to Acme Highway Products Corporation, Amherst, N.Y.

Original No. 4,179,226, dated Dec. 18, 1979, Ser. No. 947,489, Oct. 2, 1978. Application for reissue Apr. 13, 1981, Ser. No. 253,784

Int. Cl.[3] **E01C** *11/04*

U.S. Cl. 404—68 **15 Claims**



1. An expansion joint seal for bridging and sealing a gap between a pair of spaced-apart elongated edge members being respectively disposed in a pair of structural slabs to define the gap therebetween, each said edge member having in cross-section a generally C-shaped cavity with a preselected radius of curvature, each said cavity opening towards said gap defined between said edge members wherein each said cavity opening is defined between opposed projecting portions of said respective edge members spaced from each other at a distance less than the maximum dimension within said cavity taken generally parallel to said opening, said seal comprising:

a web portion spanning said gap and a mounting bead portion extending along each longitudinal edge of said web portion wherein each of said mounting bead portions is received within said cavity of a corresponding edge member, and each said mounting bead having in cross-section an outer surface portion for matching engagement with said cavity with opposed portions of said mounting bead correspondingly abutting said opposed projecting portions of said edge member whereby relative lateral movement of said mounting bead with respect to said edge member is resisted and, said web portion including upper and lower walls spaced apart from one another to span said gap and being attached along their longitudinal edges to correspondingly upper and lower portions of said mounting bead portions wherein each of said walls includes a longitudinal, downwardly extending fold located substantially along the center line of said gap, said web portion further including a pair of strut members extending between said walls in a downwardly converging relationship with respect to one another for coordinating the movement of said walls during expansion and contraction of said seal, and the upper surface of said upper wall having an inverted V-shaped crown portion joined thereto and located substantially along the center line of said gap whereby the apex of said crown portion is adapted to remain disposed below the upper surface of the structural slabs associated therewith throughout the operational range of said seal.

Re. 31,284

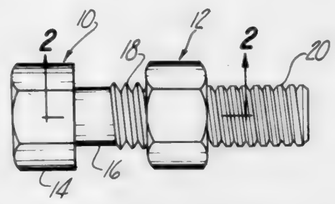
LOCKING FASTENER

Horace D. Holmes, 28576 Green Willow, Farmington Hills, Mich. 48018

Original No. 4,150,702, dated Apr. 24, 1979, Ser. No. 876,863, Feb. 10, 1978. Application for reissue Apr. 13, 1981, Ser. No. 253,464

Int. Cl.[3] **F16B** *39/30*

U.S. Cl. 411—311 **10 Claims**



1. In a prevailing-torque fastener combination;

a first element having a helical thread form with leading and trailing flanks which lie at respective first angles to the thread axis and which, before threaded engagement with another element, [intersect] *converge* to define a crest of substantially constant diameter over the working length of said element;

a second element having a helical thread form with leading and trailing flanks which lie at respective second angles relative to the thread axis and which are [truncated] *foreshortened* to define a root surface;

the first and second elements being conjugally threadable with one another;

at least a portion of the second element having a thread depth of lesser dimension than the thread depth of the first element thereby to cause firm radial engagement between the crest of the first element and the root surface when said elements are at least substantially fully threaded together;

[the threads of said elements being configured] *at least one of said second angles being greater than the corresponding one of said first angles by an angle of no greater than about 15°* to create longitudinal clearance between the flanks adjacent the engaging crest and [truncated] root sufficient to receive deformed material from said engaging crest when threaded together.

Re. 31,285

METHOD FOR MANUFACTURING A FILTER OF ELECTRICALLY CHARGED ELECTRET FIBER MATERIAL AND ELECTRET FILTERS OBTAINED ACCORDING TO SAID METHOD

Jan van Turnhout, Pijnacker, and Johannes C. Rieke, Delft, both of Netherlands, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Original No. 4,178,157, dated Dec. 11, 1979, Ser. No. 862,768, Dec. 21, 1977. Application for reissue Dec. 7, 1981, Ser. No. 328,027

Claims priority, application Netherlands, Dec. 23, 1976, 7614376

Int. Cl.[3] **B03C** *3/00;* **B29C** *24/00*

U.S. Cl. 55—155 **10 Claims**



1. A method for manufacturing a filter of electrically charged electret fiber material, consisting of a high-molecular weight, non-polar polymeric substance, comprising the steps of: continuously supplying a foil of said substance, drawing, charging and fibrillating of the foil and the processing of the thus obtained filter material into a filter, selecting the foil and/or the type of drawing to manufacture spontaneously crimpable fiber material, winding said material in uncrimped condition to a fibrous package and subsequently effecting crimping to interlock the fibers of said fibrous package.

7. An electret fibrous web comprising fibers fibrillated from a film of a high-molecular-weight nonpolar substance and which contain electric charges embedded therein so as to enhance filtration properties of the web, said fibers being crimped after fibrillation and intermeshed with one another, said fibrous web being capable of being loaded with high amounts of dust while still maintaining high filtration efficiency.

Re. 31,286

PRODUCTION OF ELECTROLYTIC BATTERY ACTIVE MANGANESE DIOXIDE

Peter K. Everett, Castlecrag, New South Wales 2068, Australia

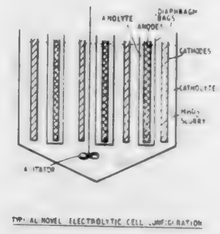
Original No. 3,951,765, dated Apr. 20, 1976, Ser. No. 531,800, Dec. 11, 1974. Application for reissue May 22, 1980, Ser. No. 152,505

Claims priority, application Australia, Dec. 20, 1973, 6071/73

Int. Cl.[3] **C25B** *1/00*

U.S. Cl. 204—96 **10 Claims**

1. A process for the production of high grade γMnO_2 from manganese dioxide ore in an electrochemical cell having one or more inert anodes, immersed in an aqueous anolyte having a solution manganese content of 20 g/l Mn to 200 g/l Mn and an acidity of up to 5N, and one or more inert cathodes, immersed in a slurry consisting of particulate manganese dioxide ore and an aqueous catholyte having a solution manganese content of 30 g/l Mn to 220 g/l Mn and a pH below 7, the anodes and cathodes disposed on opposite sides of one or more porous diaphragms, the process consisting of applying a direct current potential between the anodes and cathodes to reduce the manganese dioxide slurry to ionic manganese which diffuses through the diaphragms and is oxidised at the anodes where γMnO_2 is formed, the anode current density being 20 to 250 Amp/m^2 at a cell temperature of from [15 to 25° C.] *80° to 100° C.* or 1,000 to 4,000 Amp/m^2 at a cell temperature of



TYPICAL MOWEL ELECTROLYTIC CELL - MODIFICATION

[80° to 100° C.] *15° to 25° C.* and the cathode current density being 5 to 400 Amps/m^2.

Re. 31,287
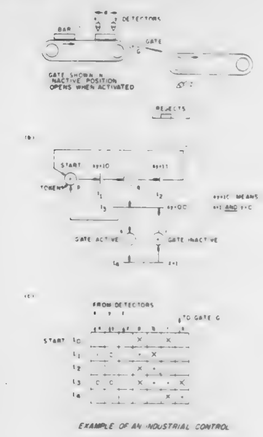
ASYNCHRONOUS LOGIC ARRAY

Suhas S. Patil, Salt Lake City, Utah, assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Original No. 4,068,214, dated Jan. 10, 1978, Ser. No. 751,519, Dec. 16, 1976. Continuation of Ser. No. 654,943, Feb. 3, 1976, abandoned. Application for reissue Jan. 10, 1980, Ser. No. 110,838

Int. Cl.[3] **H04G** *5/14*

U.S. Cl. 340—825.79 **7 Claims**



EXAMPLE OF AN INDUSTRIAL CONTROL

1. A logic array comprising a plurality of groups of column conductors and plurality of groups of row conductors arranged in a substantially orthogonal relationship, each group of column conductors being called a column, each group of row conductors being called a row, and each row and each column is connected by one of at least five types of connections which are characterized as a "dot" connection, a "cross" connection, a "1" connection, a "0" connection and a "null" connection;

each column and row being in one of two states, an "ON" state and an "OFF" state;

a row "firing" when every column connected to that row by a "dot" or a "1" connection is "ON" and every column connected to that row by a "0" connection is on "OFF";

means to change the state of the columns in response to "firings" of rows, the said means turning "OFF" columns connected to a "firing" row by a "dot" connection, and

said means changing the state of the columns connected to a "firing" row by a "cross" connection;

a plurality of arbiters,

each arbiter being connected to plurality of selected rows, the rows which are not connected to an arbiter firing independently of another where as those rows connected to an arbiter "fire" in succession and not at the same time;

means for connecting inputs to selected columns to cause the states of the selected columns to be altered in accordance with changes in the state of inputs, means for connecting selected columns to provide outputs where the state of the output is determined by the state of the selected columns.

PLANT PATENTS

GRANTED JUNE 21, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,062

CHRYSANTHEMUM NAMED BURGUNDY

Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, Parrish, Fla.

Filed Oct. 22, 1981, Ser. No. 313,934

Int. Cl.[3] **A01H** *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct dark pink decorative chrysanthemum, substantially as herein shown and described, particularly characterized by the slightly quilled formation of its ray florets which reveal the pale pink coloration of the under side, and its adaptability for five or six inch pot culture the year around under photoperiod control.

PATENTS

GRANTED JUN. 21, 1983

ERRATA

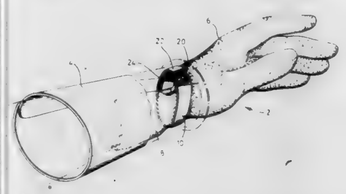
For CLASS	See PATENT NO.
162–088	4,388,745
073–428	4,388,839
604–319	4,388,922
604–352	4,388,923
339–126	4,389,021
436–002	4,389,217
427–213	4,389,330
427–213	4,389,331
419–008	4,389,362
377–020	4,389,563
382–026	4,389,633
382–011	4,389,634
365–104	4,389,705

PATENTS

GRANTED JUNE 21, 1983

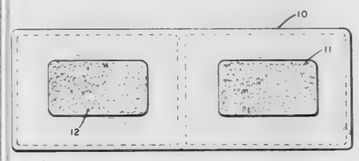
GENERAL AND MECHANICAL

4,388,733
PROTECTIVE BUTCHERS GLOVE
Maurice Anstett, 414 Wellington St. N., Kitchener, Ontario, Canada (N2H 5L2)
Filed May 29, 1981, Ser. No. 268,653
Int. Cl.³ A41D *19/00*
U.S. Cl. 2—161 R **5 Claims**



1. A protective glove for butchers, comprising a chain mesh glove portion configured to cover at least the thumb and index finger of a wearer's hand, a semi-rigid wrist guard configured to shield the area extending not substantially more than half way around a user's forearm proximate the wrist joint, the shielded area including the front of the wrist and the area beneath the base of the thumb, and a flexible wrist band which both connects the wrist guard to the glove portion in overlapping relationship and is adapted to secure the glove around the wearer's wrist.

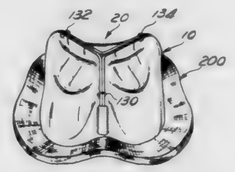
4,388,734
PERSONAL PROPERTY SECURITY SYSTEM
Reuel W. Cowden, 536 Cassville Rd., Cartersville, Ga. 30120
Filed Oct. 12, 1978, Ser. No. 343,193
Int. Cl.³ A41D *27/20*
U.S. Cl. 2—250 **7 Claims**



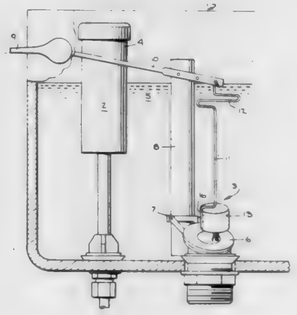
1. A planar pocket insert device including an I-shaped, thin, flexible base element having rounded extended feet sections, a narrowed central region, and rounded-tapered upper arm sections, which base element is adapted to fit snugly within a clothing pocket, and engagement means to secure an item of personal property thereto.

4,388,735
LOW PROFILE PROSTHETIC XENOGRAFT HEART VALVE
Marian I. Ionescu, Leeds, England; Jay A. Lenker, Laguna Beach, Calif.; Robert F. Rosenbluth, Laguna Niguel, Calif., and Louis Seiler, Jr., Huntington Beach, Calif., assignors to Shiley Inc., Irvine, Calif.
Filed Nov. 3, 1980, Ser. No. 203,804
Int. Cl.³ A61F *1/22*
U.S. Cl. 3—1.5 **34 Claims**

8. In a xenograft heart valve prosthesis which comprises a circumferentially annular stent having an annular base and legs extending vertically from the base toward the outflow end of the valve, a sewing ring circumferentially attached annularly to the outside of the stent, and a three-cusp tissue valve element attached to the stent, the improvement wherein the valve element comprises three tissue leaflets joined to form a generally cylindrical valve element having three truncated triangular portions extending centrally of each of the cusps respectively toward the outflow end of the valve each having a plateau centrally between the legs extending in the outflow direction of the valve beyond the ends of the legs, the valve element forming in the open position a cylinder having three truncated triangles on the outflow end thereof and in the closed position three cusps arcing inwardly between the legs, the outflow end of the leaflets touching with the three plateaus adjacent each other in the center of the outflow end of the valve.



4,388,736
TANK FLUSHING MEANS
Peter V. Roosa, 253 Fairview Ave., West Hartford, Conn. 06514, and Vernon D. Roosa, 184 Wood Pond Rd., West Hartford, Conn. 06107
Filed Jun. 4, 1981, Ser. No. 270,368
Int. Cl.³ E03D *1/14*
U.S. Cl. 4—324 **2 Claims**



1. In a flush tank having a movably mounted flush valve in the bottom which is normally moved to an open position by a handle operated means and which is kept open by the liquid in the tank and which also closes as a result of the flow of the liquid from the tank, the improvement comprising a relatively rigid coupling member operatively connecting the handle to the flush valve whereby said flush valve may also be closed by the said handle at any time during the flushing action and while the tank still contains a substantial volume of liquid, said coupling member comprising a relatively rigid rod with means for connecting opposite ends to said lever and to said flush valve and being capable of transmitting both upward opening and downward closing force to said flush valve, and said rod comprising a bendable metallic rod having a bent length adjusting

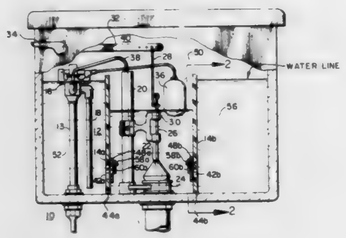
and a second bent section, and a float member mounted in said second bent section.

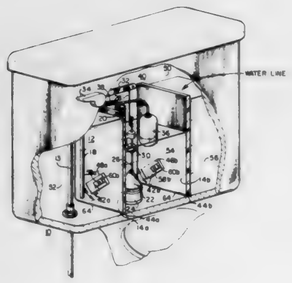
4,388,737

TOILET TANK INSERT WATER SAVER

John G. Wenzel, 422 Crotzer Ave., Folcroft, Pa. 19032

Filed Oct. 16, 1981, Ser. No. 312,085
Int. Cl.³ E03D *1/00, 1/24, 1/20, 5/00*
U.S. Cl. 4—415 **14 Claims**





1. A tank for use in conjunction with a toilet having a bottom floor, a plurality of upstanding walls and flushing apparatus comprising:

partitions dividing said tank into first, second, and third water-retaining compartments for conserving water during flushing of said toilet,

portholes predeterminedly positioned in said partitions within close proximity to the bottom floor of said tank to provide for water flow from said first and third compartments into said second compartment during flushing of said toilet,

gates pivotally mounted to said partitions to cover and uncover said portholes, and

attachment means fastened to said gates to set the degree of gate rotation required for controlling the rate of water flow into said second compartment through said portholes during flushing.

4,388,738

MATTRESS CONSTRUCTION AND MATTRESS COVER THEREIN

Robert F. Wagner, Lombard, Ill., assignor to Sealy, Incorporated, Chicago, Ill.

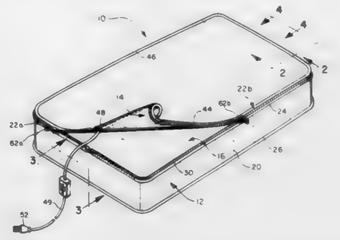
Filed Feb. 23, 1981, Ser. No. 237,389
Int. Cl.³ A47C *21/00*
U.S. Cl. 5—421 **20 Claims**

1. A mattress cover comprising:

a facing panel;

a heat panel overlying at least a portion of said facing panel, said heat panel comprising an upper section, a backing section, and means for generating heat, said heat generating means disposed between said upper and backing sections;

means for fastening said facing panel to said heat panel comprising at least one complementary pair of interlocking members comprising a first and a second locking



member, said first locking member being secured to said facing panel, and second locking member being secured to said heat panel, and said first and second locking members being adjustable between an interlocked position, bridging said facing and heat panels, and an open position; and

means for securing said facing panel to a mattress core.

4,388,739

WASHING BAG FOR CURTAINS, DRAPES AND THE LIKE

Gérard R. Martinon, 3, rue de la Terrace; Jean-Louis Dayme, 38, rue Franklin, both of Lyons (Rhone), and Roger J. Martinon, Lieu dit "Les Forets", Lachassagne (Rhone), all of France

Filed Feb. 17, 1981, Ser. No. 234,806
Claims priority, application France, Feb. 18, 1980, 80 03878; Jan. 6, 1981, 81 00357
Int. Cl.³ D06F *35/00*
U.S. Cl. 8—150 **5 Claims**



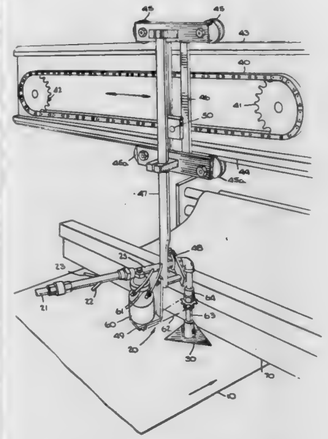
1. A washing bag for the washing of drapery fabric articles with suspension elements attached, comprising an openwork sack composed of a net fabric and formed with a mouth, a first drawstring closure extending around said mouth, a second drawstring closure spaced from said first drawstring closure for constricting a neck of said sack to define between said drawstring closures an auxiliary compartment for said elements, and means for limiting the penetration of said elements through the wall of said auxiliary compartment.

4,388,740

FOAM RANDOM DYEING SYSTEM

Larry G. Smith, North Augusta, S.C., assignor to United Merchants & Manufacturers, Inc., New York, N.Y.

Division of Ser. No. 80,062, Sep. 28, 1979, Pat. No. 4,282,729.
This application Sep. 2, 1980, Ser. No. 183,615
Int. Cl.³ D06B *1/00*
U.S. Cl. 8—151 **2 Claims**



1. A method of foam dyeing a textile fabric to impart a generally random coloring effect thereto, the method comprising the steps of:

moving the fabric to be treated along a substantially horizontal path through a foam application station;

mixing a foam composition and coloring agent into a non-homogeneous mixture having said coloring agent dispersed therein;

conducting said non-homogeneous mixture to a mixture delivery means disposed above and spaced from the substantially horizontal fabric being treated;

moving said mixture delivery means in a direction transverse to the horizontal direction of movement of the textile fabric and feeding downwardly said non-homogeneous mixture onto the textile fabric from said mixture delivery means;

directing the flow of said non-homogeneous mixture, at least partially, in a direction substantially parallel to the surface of the horizontally disposed textile fabric being treated prior to depositing said non-homogeneous mixture onto the textile fabric; and

further moving said mixture delivery means in a generally rotary direction so as to deposit said non-homogeneous mixture onto the textile fabric in a substantially random pattern thereby imparting the generally random coloring effect thereon.

4,388,741

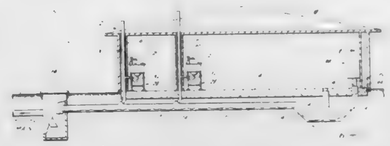
AUTOMATIC SEWER CLEANING SYSTEM

Everett C. Breon, Houston, Tex., assignor to Kamal Banani Haghighi, Houston, Tex.

Continuation-in-part of Ser. No. 71,501, Aug. 31, 1979, abandoned. This application Dec. 24, 1980, Ser. No. 219,827
Int. Cl.³ B08B *9/06*
U.S. Cl. 15—104.3 SN **7 Claims**

1. A system for cleaning the sewer line of a building, the sewer line having a plurality of plumbing fixtures connected thereto, the system comprising:

a cleaning cable permanently installed in the sewer line, said cleaning cable being permanently distorted at points along its length in alternate direction about an axis transverse to said length and being flexible along the remainder of its length such that said cable can conform to bends in the sewer line and can conform to a spiral upon rotation and such that when said cable is at rest, said cable will lie substantially flat on the bottom of the sewer line; and



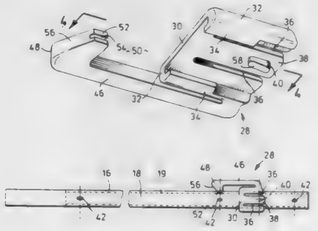
drive means for rotating said cable such that said cable cleans out such sewer line, said drive means including a drive system having a rotating output and coupling means for connecting said cable to the rotating output of said drive system.

4,388,742

RETAINER CLIP AND RETAINER CLIP BACKING MEMBER COMBINATION FOR WINDSHIELD WIPER BLADE ASSEMBLIES

Edward G. Kimber, Carlisle, and Peter C. Norris, Oakville, both of Canada, assignors to Tridon Limited, Hamilton, Canada

Filed Sep. 3, 1981, Ser. No. 299,266
Int. Cl.³ B60S *1/02*
U.S. Cl. 15—250.42 **18 Claims**



1. A retainer clip for use in association with a windshield wiper of the type comprising:

a pressure-applying superstructure having along its length a plurality of pairs of opposed mounting claws,

an elongated squeegee, and

a backing member in which the squeegee is mounted and which is in turn mounted on the superstructure by engagement of the mounting claws therewith, the backing member having an upper surface thereof and having on opposite sides thereof respective opposed parallel longitudinally-extending edges which are embraced by the claws;

the clip comprising:

a claw-pair-like clip body constituted by a top wall, two spaced parallel side walls at each side of the top wall, and two inwardly-protruding portions one at each side of each respective side wall, the clip body being adapted to embrace the backing member upper surface and side edges and being capable of sliding movement along the backing member,

the top wall having a flexible member movable towards and away from the backing member, one of the flexible member and the upper surface of the backing member having a projection for engagement in a cooperating recess in the other to retain the clip against longitudinal movement on the backing member,

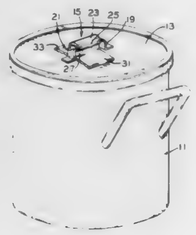
the clip body having extending longitudinally therefrom a transversely movable hook member providing between itself and the clip body a space in which a mounting claw

can be positioned to retain the clip member against longitudinal movement relative to the superstructure and thereby also retain the backing member against longitudinal movement relative to the superstructure.

4,388,743
LID HANDLE COVER

David L. Hellinger; Gordon D. Bell, both of Fort Wayne; Gregory N. Brown, Lafayette; Robert J. Kennedy, Jr., and Kendall S. Smith, II, both of West Lafayette, all of Ind., assignors to Lincoln Manufacturing Co., Inc., Fort Wayne, Ind.

Filed Oct. 22, 1980, Ser. No. 199,572
Int. Cl.³ A47J *45/10*
U.S. Cl. 16—116 A **8 Claims**



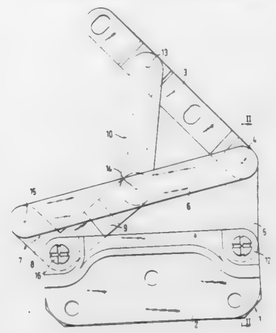
1. In combination with a cooking utensil lid having on its surface an upstanding generally centrally located handle having a central portion to be gripped by a user when removing or replacing the lid and downwardly depending legs attaching the handle to the lid, a one piece removable heat insulating cover of low thermal conductivity having a hand grip portion for substantially surrounding the lid handle central portion, a pair of closely adjacent portions depending generally vertically downwardly from the hand grip portion to lie between the legs underneath the central portion of the handle and extending toward the lid surface, the hand grip portion comprising a bight between the closely adjacent portions, and a protective portion comprising a pair of protective flaps adapted to lie closely adjacent the lid surface covering the region of that surface to prevent a user's hand from contacting the lid when grasping the hand grip portion, said protective flaps extending laterally outward of said hand grip portion, said closely adjacent portions being set inwardly of said hand grip portion so as to form a shoulder between the closely adjacent portions and the hand grip portions, said shoulder having a pair of lower internal surfaces adapted to engage an underneath surface of the handle and an external surface adapted to be gripped by the user's fingers, said hand grip portion having an internal upper surface opposite said internal lower surfaces and generally parallel thereto defining a channel for enclosing the handle central portion, the cover resiliently encircling the lid handle central portion with the internal surfaces of said shoulder being in close proximity to the handle when released by the user.

4,388,744
MOTOR VEHICLE HINGE

Reinhard Pantke, Monsheim, and Konrad Hofmann, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 18, 1980, Ser. No. 208,074
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947202
Int. Cl.³ E05D *3/04*
U.S. Cl. 16—273 **6 Claims**

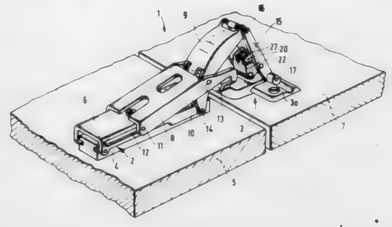
1. A motor vehicle hinge of the type used on a hood, trunk lid, or the like of a motor vehicle, comprising a plurality of rigid arms, spacer rings, at least one of which is formed of thermoplastic material, provided between the arms, and rivets extending through said rigid arms and spacer rings, said rivets being deformed in a manner holding adjacent surfaces of the arms and the at least one thermoplastic spacer ring in flush contact with one another, wherein prestressing of said thermoplastic spacer ring created by said deformation of the rivet holding said arms and thermoplastic spacer has been relieved by annealing of the hinge, whereby the arms are able to pivot while being substantially free of play.



4,388,745
SELF CLOSING MULTI PINTLE HINGE

Eberhard Schneider; Theodor Vitt, and Gerd Sturm, all of Cologne, Fed. Rep. of Germany, assignors to Prämeta Präzisionsmetall-und Kunststofferzeugnisse G. Baumann & Co., Fed. Rep. of Germany

Filed May 8, 1980, Ser. No. 147,977
Claims priority, application Fed. Rep. of Germany, May 9, 1979, 2918659
Int. Cl.³ E05D *3/06*; F05F *1/12*
U.S. Cl. 16—288 **9 Claims**

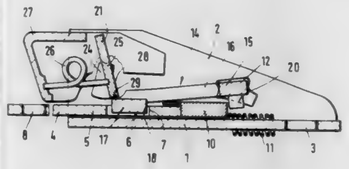


1. A wide-angle hinge assembly for use in a concealed arrangement for opening and closing a door leaf with respect to a frame, said assembly comprising:
(a) a frame hinge section and a door leaf hinge section connected to one another by a linkage arrangement,
(b) said linkage arrangement including two double-armed link members and a further link,
(c) said double-armed link members are pivotable in a scissor-like fashion with one another about a common pivot, and one of the link members pivotably engages one end of the further link which further link has its other end pivotally connected directly to the leaf hinge section,
(d) the linkage arrangement including a spring mechanism having a double-armed lever rotatable about a pivot and arranged on the further link,
(e) said lever including a cam follower, and
(f) a cam component disposed on the leaf hinge section to coact with the spring mechanism throughout the entire opening and closing of the door leaf to provide a pressure during opening and closing and to further maintain the closed position for securing the door leaf.

4,388,746
BUCKLE FOR A SAFETY BELT

Kurt Krautz, Rosengarten, and Erhard Ender, Hamburg, both of Fed. Rep. of Germany, assignors to Autoflug-Stakupress GmbH & Co., Nordestedt, Fed. Rep. of Germany

Filed Aug. 5, 1981, Ser. No. 290,371
Claims priority, application European Pat. Off., Nov. 18, 1980, 80107136.6
Int. Cl.³ A44B *19/00*
U.S. Cl. 24—230 A **9 Claims**

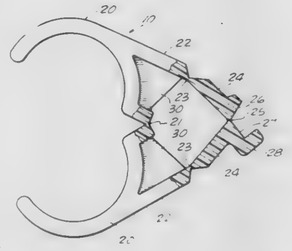


1. A buckle for a safety belt comprising a linear push-in tongue with a latching recess and a lock with a linear push-in path for the push-in tongue having an opening at a front end thereof for receiving the tongue and guide devices for guiding the tongue inwardly along the path, the lock having an ejector spring for urging the tongue outwardly along the path, a pivotal latch having a pivot axis which extends transversely to the direction of the linear push-in path and a latch nose pivotal into the push-in path to interact with the latching recess of the tongue to latch the tongue therein and so that in a pivotal latching position of the latch nose in which it latches the tongue within said path, the ejector spring urges the latch nose pivotally outwardly from the latching recess of the tongue, a pivotal securing device having a pivotal securing position for securing the pivotal latch in its pivotal latching position, and a spring with a spring force pivotally urging the securing device to its pivotal securing position, the securing device being pivotal from its securing position to allow the lock to open.

4,388,747
ONE-PIECE MOLDED TOGGLE CLAMP

Walter A. Plummer, 3546 Crown Ridge Dr., Sherman Oaks, Calif. 91403

Filed Aug. 10, 1981, Ser. No. 291,283
Int. Cl.³ A44B *21/00*
U.S. Cl. 24—255 SL **9 Claims**



1. A toggle clamp formed in one piece from plastic material suitable for use in forming a live hinge, said clamp comprising:
a pair of elongated jaws having one pair of ends lying in a bisector plane longitudinally of said clamp and interconnected by a single live hinge for pivotal movement of said jaws toward and away from one another; and
a pair of toggle members having a first pair of adjacent ends interconnected by a common live hinge and their remote ends connected to opposed ends of a respective one of said jaws by separate live hinges, said jaws being movable between a freely pivotable open position and immovable closed position as said toggle members are pivoted to shift said common live hinge from an open position remote from said single live hinge to a closed jaw-locking position between said single live hinge and a straight line through said hinges connecting said toggle members to said jaws.

4,388,748
BAND CLAMPING DEVICE

Elmer E. Riedel, Cleveland, Ohio, assignor to The Triad Metal Products Company, Cleveland, Ohio

Filed Jun. 15, 1981, Ser. No. 273,902
Int. Cl.³ B65D *63/00*; F16L *33/14*
U.S. Cl. 24—269 **2 Claims**



1. A band clamping device comprising: a frame including an elongated planar base and a pair of spaced parallel side walls extending upwardly from the sides of the base, a rotary winding shaft extending transversely across the frame and rotatably mounted in said side walls, said shaft having radially straight ratchet teeth disposed circumferentially around its circumference adjacent one end of the shaft interiorly of the spaced walls to form a ratchet wheel on said shaft, said elongated base having an extension at one end bent over upwardly partially upon itself with the free end of the bent over portion forming a resilient pawl operatively and resiliently engaging the teeth of said ratchet wheel for releasably holding the shaft from rotating, and a flexible clamping band for encircling an associated object to be clamped and secured at one end to the other end of the base, said shaft having a band insertion slot formed longitudinally in the shaft at the other end of the shaft and between said side walls for receiving the free end portion of the band therein, whereby a preselected length of the free end portion of the band may be inserted in said slot after which the shaft may be rotated to bend and lock the free end portion of the band in the device, said shaft being rotatable clockwise or counterclockwise to lock or unlock said free end portion of the band, the pawl being formed of only a portion of the free end of the bent over portion of the extension of the base to provide a resilient pawl enabling the shaft to be releasably held in selected positions of rotation in either direction.

4,388,749
U-BOLT PIPE CLAMP ASSEMBLY

Frank Sassak, Riverview, Mich., assignor to McInerney Spring & Wire Company, Grand Rapids, Mich.

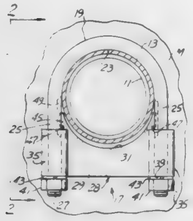
Filed Feb. 8, 1982, Ser. No. 346,734
Int. Cl.³ F16L *13/14*
U.S. Cl. 24—277 **13 Claims**

1. A clamp for securing together the annular overlap of a pair of telescoped engaging inner and outer pipes comprising of a U-bolt having a semi-circular bight portion terminating in a pair of spaced legs having threaded end portions;
a saddle plate assembly aligned with and including a saddle

plate opposed to said U-bolt and having a concave seat of semi-circular shape and having apertures to receive said legs;

a pair of upright keys on said saddle plate at the upper ends of said seat coplanar with and extending laterally outward thereof;

there being opposed spaced keyways formed in said U-bolt legs in lateral registry with said keys and outwardly thereof;



and fasteners threaded onto said end portions for operatively and compressively engaging said saddle plate assembly for tightly drawing together said U-bolt and saddle plate around said pipes in compression;

said keys guidably extending into said keyways respectively and interlocked therewith.

4,388,750

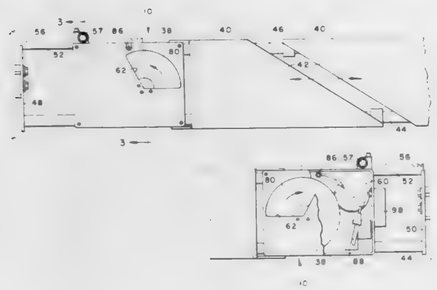
WRINKLE REMOVER FOR A WEB OF RUNNING MATERIAL

Walter Engels, Tryon, N.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 13, 1981, Ser. No. 224,753

Int. Cl.³ D06C *3/06, 27/00*

U.S. Cl. 26—75 **5 Claims**



1. A wrinkle remover for a web of running material comprising:

an elongated hollow member and a spreader box mounted on each end of said elongated hollow member, each of spreader boxes having an opening in the top thereof and a rotating brush mounted therein, means operably associated with each of said brushes urging said brushes towards said opening and means to rotate said brush mounted on said spreader box, each of said spreader boxes having a suction conduit operably associated therewith.

4,388,751

METHOD AND APPARATUS FOR MANUFACTURING SLIDE FASTENER COUPLING ELEMENTS

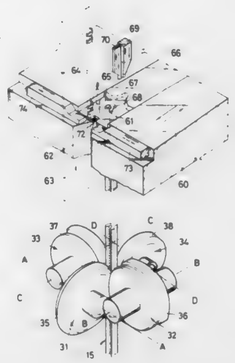
Takeo Fukuroi, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Oct. 29, 1980, Ser. No. 201,695

Claims priority, application Japan, Oct. 29, 1979, 54-139706

Int. Cl.³ B21D *53/52*

U.S. Cl. 29—410 **3 Claims**



1. A method of manufacturing slide fastener coupling elements comprising the steps of:

(a) forming a blank rod having a substantially Y-shaped cross section including a pair of V-shaped diverging legs having thickened outer end portions and having at their midportions a pair of respective confronting projecting longitudinal ribs on opposite inner surfaces thereof;

(b) intermittently feeding said blank rod in a longitudinal direction;

(c) pressing each of said longitudinal ribs at portions thereof longitudinally spaced an interval from each other to thereby leave a succession of rib increments between said pressed, longitudinally spaced portions of the rib for subsequently serving as teeth;

(d) transversely slicing said blank rod substantially centrally across each rib increment on at least one of said legs into a plurality of individual slide fastener coupling elements; and

(e) forming a coupling head on each said coupling element.

4,388,752

METHOD FOR THE SEALTIGHT JOINTING OF A FLANGED SLEEVE TO A PIPELINE, ESPECIALLY FOR REPAIRING SUBSEA PIPELINES LAID ON VERY DEEP SEA BOTTOMS

Costantino Vinciguerra, Florence, and Giampaolo Bonfiglioli, Inzago, both of Italy, assignors to Nuovo Pignone S.p.A., Florence and Snam S.p.A., Milan, both of, Italy

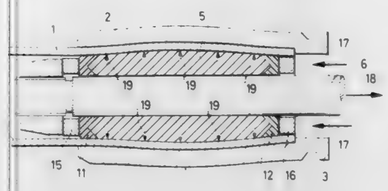
Filed May 1, 1981, Ser. No. 259,380

Claims priority, application Italy, May 6, 1980, 21811 A/80

Int. Cl.³ B23P *17/00*

U.S. Cl. 29—421 R **6 Claims**

1. A method for jointing in a sealtight manner a high tensile steel pipe to a cylindrical flanged sleeve having a constant cross-sectional area, said sleeve being mounted with a certain clearance onto the free end of said pipe and being made with a metallic material having a degree of elastic deformation greater than that of the pipe, characterized in that it comprises the sequential steps of inserting in the pipe-sleeve assembly a stiff rubber plug of annular cross-section idly mounted on a high tensile steel shaft and confined between two anti-extrusion Nylon rings also idly mounted on said shaft, in a circumferential V-shaped groove of the confronting front surfaces of said rings the respective tapered lateral ends of said plug being inserted, axially compressing said stiff rubber plug, acting upon said Nylon rings to generate a radial expansion pressure, continuing said axial compression of said plug to expand the pipe-sleeve assembly radially until exceeding the yield point of the



pipe to plastically expand same and bringing the sleeve to its limit of elastic deformation, and finally releasing the pressure of the plug to allow the elastically deformed sleeve to contract onto said plastically expanded pipe to produce an interference fit therebetween and withdrawing said plug from the pipe.

4,388,753

METHOD OF LOADING RIVETS

David J. Brookes, Sutton Coldfield, England, assignor to USM Corporation, Farmington, Conn.

Filed Apr. 17, 1981, Ser. No. 255,316

Claims priority, application United Kingdom, May 3, 1980, 8014919

Int. Cl.³ B23P *19/04;* **B21D** *9/05*

U.S. Cl. 29—433 **1 Claim**



1. The method of loading a column of hollow rivets onto a long-stemmed headed mandrel for use in blind-riveting wherein a column of rivets is provided assembled head-to-tail on a strand of resilient plastics material, comprising:

providing the mandrel with a reduced tail end portion with the remainder of the stem having a diameter substantially the same as that of the strand;

providing the strand with a hollow end portion at the end toward which the tail end of the rivet's face;

inserting the reduced tail end portion of the stem into the hollow end portion of the strand to securely grip the stem into the strand; and

sliding the rivet's tail first off the strand onto the stem of the mandrel.

4,388,754

SKID PROTECTION DEVICE FOR WHEELS

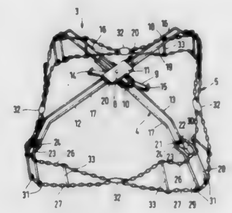
Bengt E. Ilon, Pilatusstr. 16, Meggen-Luzern, Switzerland (6045)

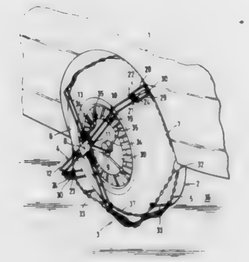
Filed Oct. 29, 1981, Ser. No. 316,392

Claims priority, application Switzerland, Oct. 29, 1980, 8007589

Int. Cl.³ B23P *11/02;* **B60C** *27/14, 27/06*

U.S. Cl. 29—446 **24 Claims**





21. A method of applying a skid protection device to a wheel having a tire mounted thereon, comprising:

positioning a resilient axial force applying device to the wheel;

arranging a skid protection device about a periphery of the tire except for a ground engaging portion of said periphery;

engaging a coupling member associated with said skid protection device with said resilient axial force applying means to hold said protection device against said wheel and about said tire and to apply an axial bias force to said coupling member whereby when said wheel rotates, said protection device automatically engages said ground engaging portion of said tire periphery.

4,388,755

STRUCTURE FOR AND METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE BY THE MASTER SLICE METHOD

Hiromu Enomoto, Kawasaki; Yasushi Yasuda, Inagi; Yoshiharu Mitono, Tokyo; Taketo Imaizumi, Fukuoka, and Hitoshi Ohmichi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 17, 1980, Ser. No. 207,737

Claims priority, application Japan, Nov. 20, 1979, 54-150307

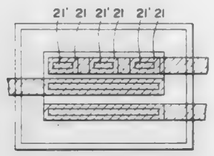
Int. Cl.³ H01L *27/04*

U.S. Cl. 29—577 C **5 Claims**

1. A master slice method for forming semiconductor devices of selectively different kinds, each such device comprising a predetermined plurality of bipolar transistors respectively having common, predetermined DC characteristics and substantially similar, desired values of emitter current densities, comprising:

providing a semiconductor substrate of predetermined area for each such semiconductor device,

employing a common master pattern to form said predetermined plurality of bipolar transistors in a predetermined portion of said area of said semiconductor substrate provided for each said semiconductor device, including forming for each said bipolar transistor in accordance with said common master pattern, a collector region, a base region,



and a predetermined plurality of emitter regions formed in said base region, and

the DC characteristics of a given such semiconductor device being determined in accordance with the number of emitter regions, out of said predetermined plurality thereof, selectively connected together to form, collectively, the active emitter region of each such bipolar transistor of each said semiconductor device.

4,388,756

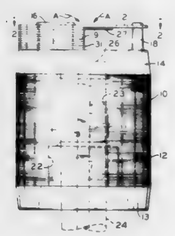
METHODS OF MAKING IMPROVED ROTOR ASSEMBLY

Richard D. Burns, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 954,663, Oct. 25, 1978, Pat. No. 4,271,368. This application Nov. 25, 1980, Ser. No. 210,309

Int. Cl.³ H02K *15/14*

U.S. Cl. 29—598 **3 Claims**



1. A method of manufacturing a rotor assembly comprising a laminated rotor body having a centrally locating bore, electrically conductive members, balance weights, and a shroud overlying the balance weights and the bore, said method comprising the steps of: fabricating a shroud by locating a central knockout plug, separating the central knockout plug from the remainder of the shroud around a major portion of the perimeter of the knockout plug and defining fracture lines along at least two tabs that interconnect the knockout plug with the remainder of the shroud, assembling at least one counterweight with the rotor body; positioning the shroud over the at least one counterweight; interconnecting the parts so assembled by fastening the shroud, at least one counterweight, and remainder of the rotor assembly with attaching means while the knockout plug is positioned in substantially collinear relationship with the bore of the rotor; mounting the rotor assembly on a shaft, and subsequently separating the knockout plug from the shroud by severing said tabs, thereby providing a hole for access to the shaft; utilizing such hole for access while pressing the rotor assembly and shaft apart by engaging an end of the shaft through such hole; and subsequently replacing said knockout plug in such hole.

4,388,757

METHOD FOR MANUFACTURING ELECTRIC SWITCHING BLOCK OF ELECTROMAGNETIC RELAY

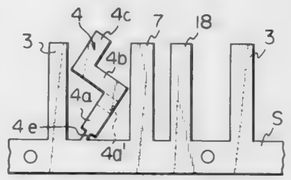
Hidetoshi Takeyama, Hisai; Siro Sakamoto; Koji Sagawa, both of Tsu; Tokio Tanishi, Mie; Hiroaki Aihoshi, Tsu, and Takao Morimoto, Mie, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan and Hans Sauer, Deisenhofen, Fed. Rep. of Germany, a part interest

Filed Dec. 24, 1980, Ser. No. 219,836

Claims priority, application Japan, Jul. 31, 1980, 55-106240

Int. Cl.³ H01H *11/04*

U.S. Cl. 29—882 **1 Claim**



1. A method of manufacturing a switching block of an electromagnetic relay of the type comprising:

an insulative base,

a plurality of switching sections carried by said base, each switching section including

a pair of fixed contact terminals embedded in said base,

a resiliently movable contactor having a movable contactor terminal embedded in said base, and

a coil terminal embedded in said base, and

an electromagnetic block having a movable armature disposed between said switching sections to move said resiliently movable contactors,

said method comprising the steps of:

(1) forming two contact parts, wherein each contact part comprises an elongate metal strip carrying said pair of fixed contact terminals, said movable contactor terminal, and said coil terminal; one of said fixed contact terminals being of zig-zag shape and inclined away from the other fixed contact terminal;

(2) arranging said two contact parts in parallel relationship;

(3) bending an intermediate portion of said zig-zag shaped fixed contact terminal so that said intermediate portion lies perpendicular with respect to the plane of said strip, the length of said intermediate portion corresponding to a predetermined distance between said pair of fixed contact terminals,

(4) straightening said zig-zag shaped fixed contact terminal by moving the latter toward the other fixed contact terminal such that an end of said zig-zag shaped terminal lies opposite an end of said other fixed contact terminal,

(5) molding said insulative base in a manner embedding at least two of said contact parts therein, such that said fixed contact terminals, said movable contact terminal, and said coil terminal of each contact part are embedded in said base intermediate their ends; and

(6) separating said strips from the remainder of said contact parts.

4,388,758

DIGITAL ELECTRICAL ANGLE-MEASURING DEVICE

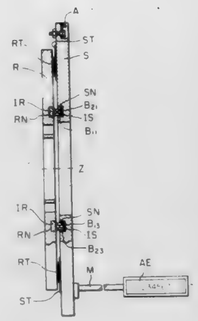
Alfons Ernst, and Hans-Rudolf Kober, both of Traunreut, Fed. Rep. of Germany, assignors to Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Feb. 26, 1981, Ser. No. 238,471

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1980, 3008396

Int. Cl.³ G01B *7/30*

U.S. Cl. 33—1 PT **11 Claims**



2. In an inductive angle measuring device comprising a stator having an electrically conductive division conductor mounted on a conductor side thereof, a rotor having an electrically conductive scanning conductor mounted on a conductor side thereof, wherein the rotor is mounted to rotate with respect to the stator about an axis and the division conductor is positioned adjacent to and separated by a gap from the scanning conductor, the improvement comprising:

a plurality of circumferentially spaced contact springs differing in length, one to another, mounted on the conductor side of the rotor and electrically connected with the scanning conductor; and

a pair of annular slip rings mounted on the conductor side of the stator, concentric with the axis opposite the contact springs such that at least one of the contact springs is in electrical contact with each of the slip rings, said slip rings being electrically connected with the evaluating circuit;

said contact springs and slip rings cooperating to transmit measuring signals developed in the scanning conductor from the rotor to the evaluating circuit.

3. In an electrical digital angle measuring device comprising a first component and a second component, each of said first and said second components defining a conductor side, wherein one of the two components is a stator having an electrically conductive measuring division conductor mounted on the conductor side thereof, and the other of the two components is a rotor having an electrically conductive scanning conductor mounted on the conductor side thereof, and wherein the rotor is mounted to move relative to the stator and the division conductor is positioned adjacent to and separated by a gap from the scanning conductor, the improvement comprising:

at least one electrically conductive contact strip mounted on the conductor side of the first component; and

a plurality of circumferentially spaced electrically conductive contact members mounted on the conductor side of the second component such that each contact member is in electrical contact with the contact strip, each of said plurality of contact members comprising a contact spring which is spring biased toward the contact strip.

4,388,759

ELECTROCARDIOGRAM CALIPER

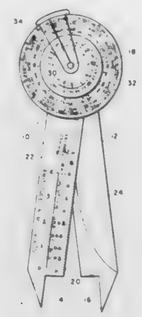
Wilmo C. Orejola, 1630 Phippine Heart Center for Asia, Quezon City, Metro Manila, Philippines

Filed Aug. 24, 1981, Ser. No. 295,603

Claims priority, application Philippines, Oct. 15, 1980, UM-4323

Int. Cl.³ G01B *5/02*

U.S. Cl. 33—1 C **2 Claims**



1. A caliper for aiding in the rapid determination of deflection amplitudes, intervals and frequencies from standard electrocardiogram tracings, said caliper comprising:

first and second caliper arms, each arm pointed at its first end and coupled together for rotation about a pivot pin at the second end, each of said arms having a wide, blade-shaped construction;

a first calibration on the first surface of said first arm, said first calibration being a linear representation of seconds of duration of a tracing deflection;

a second calibration on the first surface of said first arm, said second calibration being a linear representation of millivolt amplitude of a tracing deflection;

a first curved index line on the second surface of said second arm, said first and second calibrations being read at the intersection of the inner edge of said first arm and said first curved index line;

a third calibration on the first surface of said second arm, said third calibration representing frequency as measured between successive similar deflections and between three such similar deflections; and

a second curved index line on the second surface of said first arm, said third calibration being read at the intersection of the inner edge of said second arm and said second curved index line.

4,388,760

MARKING DEVICE

Robert M. Aspy, Stanhope, N.J., assignor to Congoleum Corporation, Kearny, N.J.

Filed Dec. 3, 1981, Ser. No. 326,970

Int. Cl.³ B43L *13/02*

U.S. Cl. 33—42 **3 Claims**

1. A wall edge marking device for marking a line along resilient floor covering for subsequent cutting comprising in combination:

a flat, horizontally planar, relatively smooth base surface capable of sliding along the surface of a resilient floor covering laid flat out on a floor;

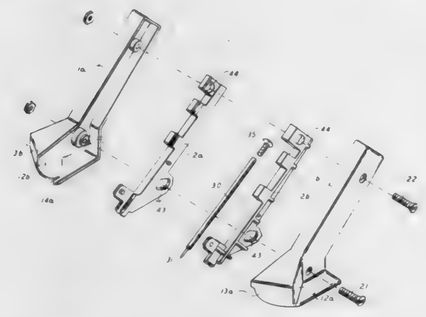
a pair of flat vertically planar, relatively smooth front faces each in planes substantially perpendicular to said flat horizontally planar relatively smooth base surface each of the faces of said pair in angular relation to the other, forming at their intersection a vertical edge, said vertical edge capable of sliding along the surface of a portion of

said resilient floor covering which is curled upwardly partly along the lower most portion of a wall abutting said floor;

said flat horizontally planar, relatively smooth base surface, and said flat vertically planar relatively smooth pair of front faces, possessing sufficient flat planar surfaces whereby said wall edge marker is capable of steady, stable, non-rocking, sliding motion along the surface of said resilient floor covering;

a relatively smooth arcuate surface in the form of a quarter cylinder connecting said flat horizontally planar, relatively smooth base surface and said pair of flat vertically planar relatively smooth front faces;

an axial marking instrument having a marking point intersecting said arcuate surface and extending from within said wall edge device to appoint beyond said arcuate surface;



a first means for adjusting the point of intersection of said marker and said arcuate surface, along said arcuate surface;

a second means for adjusting the extension of said marking instrument through said arcuate surface along the major axis of said marking instrument;

said first and second means constructed and arranged so that the straight line distance from the intersection of said arcuate surface and said flat, horizontally planar relatively smooth base surface to said lower most portion of the wall is equal to the arc distance from the intersection of said flat horizontally planar, relatively smooth base surface and said arcuate surface, to said intersection of said marking instrument and said arcuate surface, as measured along said arcuate surface; said straightline distance and said arcuate distance being equal in length to the radius of said quarter cylinder.

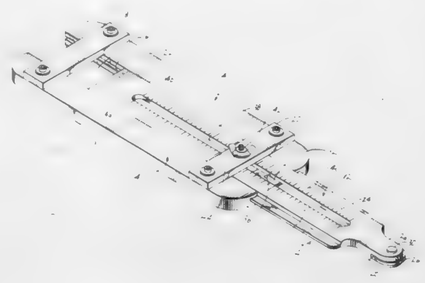
4,388,761
SCRIBER
Clifford W. Henderson, 3945 Bradford St. (Space 103), La Verne, Calif. 91750
Continuation of Ser. No. 170,883, Jul. 21, 1980, abandoned. This application Dec. 7, 1981, Ser. No. 328,378
Int. Cl.[3] B43I *13/02*
U.S. Cl. 33—42 **6 Claims**

1. A scribing device comprising:

first and second members;

means receiving the members in sliding relationship for movement of one member relative to the other member along a common axis;

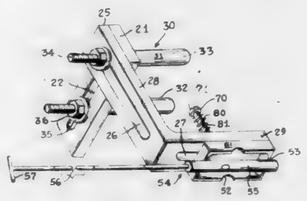
a single roller rotatably mounted on one end of the first member, the second member having both a scribe orifice and an elongated slot therethrough, the slot extending along the common axis, wherein the first member slidably engages the elongated slot and the scribe orifice is aligned with the elongated slot, and wherein the first member has an elongated slot therethrough extending along the common axis for providing that a scribe can be inserted through said elongated slot in the first member and then through the scribe orifice, the scribe orifice being sufficiently large to allow the tip of a pencil to extend therethrough, yet being small enough to hold the pencil tip relatively firmly in engagement therein, the roller and scribe orifice being about on a line along the common axis;



means for locking the two members together when the members are adjusted to provide a selected distance between the roller and scribe orifice; and

graduations on one of the members for indicating the distance from the roller to the scribe orifice along the common axis.

4,388,762
CHAIN SAW MEASURING DEVICE
John H. Debell, Jr., Carpenter Hill Rd., and David J. Allen, Vail Road Ext., both of Bennington, Vt. 05201
Int. Cl.[3] B27G *23/00*
U.S. Cl. 33—185 R **13 Claims**



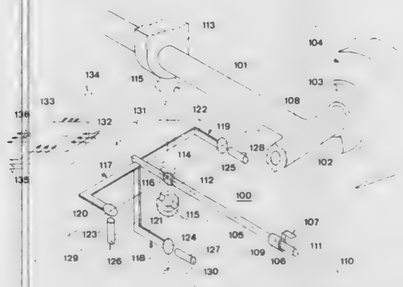
1. A measuring device for use with chain saws and adapted to cooperate with one or more threaded chain bar mounting studs on the chain saw housing, comprising;

at least one elongated adaptor element having a threaded aperture on one end dimensioned to cooperate with a threaded chain bar mounting stud,

a mounting bracket, comprising an apertured L-shaped bracket member operatively connected to said at least one adapter element, and

a measuring apparatus rotatably mounted on said L-shaped bracket member, and adapted to be shifted along a portion of said bracket, to position its axis of rotation in the same plane as the blade on the chain saw.

4,388,763
DEVICE FOR THE DETECTION OF THE DISPLACEMENT OF AT LEAST ONE POINT RELATIVE TO A REFERENTIAL, AND APPLICATION OF THE DETECTION OF THE UNDERINFLATED STATE OF TIRES AND/OR OF MASS AND CENTERING FOR AERODYNES
Jean Maselet, Paris, and Jacques Veaux, Chatillon, both of France, assignors to Messier-Hispano-Bugatti, Mongrouge, France
Filed Feb. 17, 1981, Ser. No. 234,875
Claims priority, application France, Feb. 20, 1980, 80 03701; Jun. 12, 1980, 80 13050
Int. Cl.[3] G01B *5/24*
U.S. Cl. 33—203.18 **20 Claims**



13. The device for detecting the displacement of an element relative to a referential comprising:

a recopying bar;

means connecting a first end of said bar with an element, the other end of said bar being capable of cooperating with means determining the displacement of said second end relative to said referential;

said means determining the displacement of said second end comprising at least one pickup having at least two active parts, one of said parts being situated on said recopying bar, and the other of said parts being fixed relative to said referential;

a second pickup, said two pickups being situated on two first, unmerged axes (oy,oz') converging to a point (0), said point (0) belongs to said recopying bar;

means for holding said recopying bar in such a way that said point (0) will be substantially fixed relative to said referential;

said means holding said recopying bar including a swivel surrounding said recopying bar, said swivel being fixed to said referential; and

a third pickup situated on a third axis (oy') not merged with the said two first axes (oy,oz'), but converging on the same said point (0).

18. The device according to claim 13, wherein said two pickups are situated substantially in the said plane.

4,388,764
TEMPLATE GUIDE
Glenn P. Hermes, 295 E. River, New Braunfels, Tex. 78130
Filed Dec. 7, 1981, Ser. No. 328,013
Int. Cl.[3] B43L *13/00*
U.S. Cl. 33—403 **6 Claims**

1. A template guide in combination with a drafting arm of a parallel motion protractor comprising:

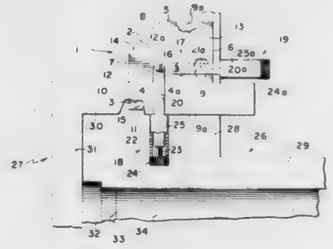
a substantially flat elongated base member having a longitudinal ridge extending substantially parallel to the edges of said base member and projecting normal to one surface of said base member, said ridge dividing said base member into first and second portions, said first portion being of a size sufficient to cradle a drafting template and allow said drafting template to be moved longitudinally along said ridge parallel to said drafting arm of said parallel motion protractor, said second portion being of a size sufficient to cradle said drafting arm of said parallel motion protractor



such that said ridge extends parallel to the edge of said drafting arm; and

means for releasably securing said base member to said drafting arm such that said ridge is maintained parallel to the edge of said drafting arm.

4,388,765
PIPEFITTERS SQUARE HOLDER
Timothy C. Dearman, P.O. Box 937, Pearland, Tex. 77581
Filed Oct. 21, 1981, Ser. No. 313,297
Int. Cl.[3] B43L *7/06*
U.S. Cl. 33—464 **14 Claims**



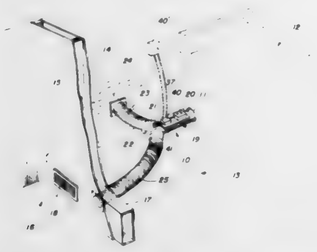
1. A holder for use with a welder's square or the like, said holder comprising a substantially flat body having a number of angularly spaced, linear side edges; means forming an abutment inwardly of each of said edges, that portion of said body extending between an abutment and the associated side edge constituting a ledge; support means carried by said body for angular movements between a first position in which it overlies one of said ledges to a second position in which it overlies another of said ledges; and clamp means carried by said support means and operable to clamp said square against an abutment when said support means is in either selected one of said positions.

4,388,766
HUMIDITY-CONTROLLED DIVERTER VALVE
L. Wayne Sanderson, 5407 Knob Rd., Nashville, Tenn. 37209
Filed Aug. 17, 1981, Ser. No. 293,495
Int. Cl.[3] F26B *11/04*
U.S. Cl. 34—54 **7 Claims**

1. A fluid flow control device for an automatic clothes dryer having an exhaust air outlet within an enclosure, a space within said enclosure, and a space outside said enclosure, comprising:

(a) a fluid conduit having an inlet and first and second outlets,

(b) said inlet being in fluid communication with the exhaust air outlet of the automatic clothes dryer,
(c) said first outlet being in fluid communication with the space outside the enclosure,
(d) said second outlet being in fluid communication with the space within the enclosure,
(e) valve means in said fluid conduit having a first operational mode opening fluid passage between said inlet and said first outlet and closing fluid passage between said inlet



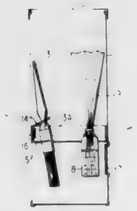
and said second outlet, and a second operational mode opening fluid passage between said inlet and said second outlet and closing passage between said inlet and said first outlet, and
(f) humidity sensitive control means operatively connected to said valve means for positioning said valve means in said first operational mode or said second operational mode in response to predetermined values of humidity sensed by said control means.

4,388,767

PROCESS AND APPARATUS FOR STORING PAINT BRUSHES AND THE LIKE

Gordon F. Dison, "Crae", Royleen Dr., Frodsham, Cheshire, and Henry B. Dison, 16, Crescent Dr., Helsby, Cheshire, both of England

Filed Mar. 16, 1981, Ser. No. 243,700
Int. Cl.³ B08B *5/00*
U.S. Cl. 34—78 **6 Claims**



1. An apparatus for the at least substantial prevention of hardening of paint brushes and related items for paints, varnishes, sealers, coatings, and the like that harden by an oxidation/polymerization mechanism, comprising
a housing for said paint brushes and related items,
means for suspending one or more of said brushes and related items or paint applying portions thereof within said housing,
a cover for said housing, and
means providing one or more antioxidants in said housing to provide a vapor system that at least substantially prevents the stated hardening of the paint by an oxidation/polymerization mechanism on said paint brushes and related items, or paint applying portions thereof when suspended within said housing.

4,388,768

STIFFENING AND NON-SLIP MATERIAL FOR THE HEEL REGION OF SHOES

Olaf Möbius, Rodenbach, Fed. Rep. of Germany, assignor to Degussa AG, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 52,306, Jun. 26, 1979, Pat. No. 4,308,763. This application Apr. 3, 1981, Ser. No. 250,722
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2828509; Jun. 29, 1978, 7819462[U]
Int. Cl.³ A43B *13/42;* **A43D** *21/00*
U.S. Cl. 36—68 **50 Claims**

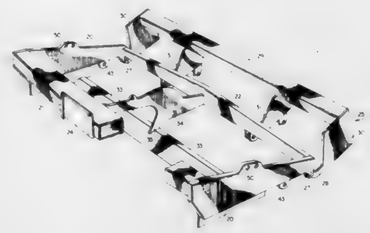
1. Stiffing and non-slip shoe inner material suitable for the heel region of a shoe which material is thermoplastic or moldable through the action of solvent and in the form of continuous sheets or blanks, said material comprising a single fiber structure loaded with at least one synthetic resin acting as a stiffening agent at a temperature up to 60° C. in an amount of 0.1 to 0.9 kg per square meter of fiber structure and wherein at least one surface of the shoe inner material is slip or skid preventive.

4,388,769

EARTH MOVING SCRAPER

Richard B. Miskin, P.O. Box 218, Ucon, Id. 83454

Filed Oct. 1, 1981, Ser. No. 307,431
Int. Cl.³ E02F *5/00*
U.S. Cl. 37—126 AC **9 Claims**



1. In an earth moving, ground leveling and land planing machine having a frame supported by at least two ground engaging wheels at the back end of the frame; a cutting blade disposed laterally between the opposite, longitudinal sides of said frame and adjacent to the bottom of said frame, with the blade positioned so that at least the forward cutting edge thereof is disposed below the bottom of said frame; a bucket having a floor and upstanding back and side walls, said bucket being disposed with the forward edge of said floor thereof adjacent to the trailing edge of said blade, an improvement in said machine comprising:
said cutting blade having a cutting width of at least about 10 feet;
a blade support member extending from the back end of said frame to the forward end thereof substantially along the longitudinal center of said frame, with said blade support member having a downwardly extending portion which is integrally attached as by welding to said blade substantially intermediate the cutting width of said blade.

4,388,770

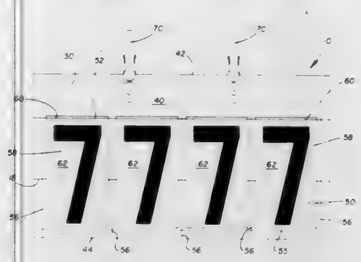
IDENTIFICATION BADGE

Sissy J. Manor, 10113 Goshen Rd., Fort Wayne, Ind. 46802

Continuation-in-part of Ser. No. 295,725, Aug. 20, 1981, abandoned. This application Sep. 30, 1981, Ser. No. 307,004
Int. Cl.³ A44C *3/00*
U.S. Cl. 40—1.6 **12 Claims**

1. An identification badge for detachable attachment to a wearer comprising:
a generally planar member having opposite surfaces, one of said surfaces faces outwardly from the wearer;

a means, secured to said member, for detachably attaching the badge to the wearer;
a transparent pocket formed in said outwardly facing surface;
an identification member removably positionable within said pocket so as to indicate the identity of the wearer;
the other of said surfaces faces inwardly toward the wearer;



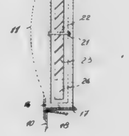
another transparent pocket formed in said inwardly facing surface; and
a second identification member positioned within said another pocket so that one identity is indicated by said outwardly facing surface and another identity is indicated by said inwardly facing surface.

4,388,771

HUB CAP DISPLAY DEVICE

Louis A. Lalonde, 3470 Stanley, Apt. 902, Montreal, Quebec, Canada

Filed Apr. 14, 1980, Ser. No. 140,145
Int. Cl.³ G09F *21/04, 11/02;* **B60B** *7/00*
U.S. Cl. 40—587 **1 Claim**



1. A display device for a hub cap of a vehicle wheel comprising:
a water-proof, permanently and imperviously sealed housing having a circular front wall, a circular back wall, and a peripheral wall joining the front and back walls together, at least the front wall being transparent, and the inner surface of the front wall being parallel to the inner surface of the back wall; means for mounting the sealed housing on a hub cap with the front wall directed outward; a circular disc within the housing, the disc having a front surface and a rear surface, and a design or the like on its front surface visible through the front wall of the housing; means for rotatably mounting the disc within the housing with its front surface parallel to the front wall of the housing and its rear surface parallel to the rear wall of the housing, the mounting means comprising a mounting depression in the center of both the front and rear walls of the housing, the depression in each wall extending inwardly into the wall, but not through, from the inner surface of the wall, and an axle fixed to the center of the disc and projecting into each depression whereby the disc is freely, rotatably mounted between the housing walls in a manner which prevents leakage into the sealed housing; and a weight in a peripheral portion of the disc between its front and rear surfaces to rotate the disc to a constant attitude when the hub cap stops rotating.

4,388,772

ADJUSTABLE SIGHT FOR FIREARMS

Michel E. Maes, Bellevue, Wash., assignor to Detonics Pistol Accessories, Ltd., Seattle, Wash.

Filed Jan. 12, 1981, Ser. No. 224,318
Int. Cl.³ F41G *1/10*
U.S. Cl. 42—1 S **5 Claims**



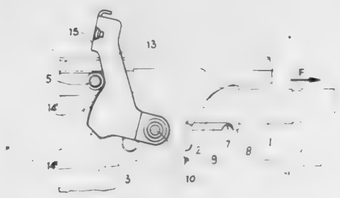
1. An adjustable sight for firearms, comprising:
a base having a slot extending transversely across an upper rear surface of said firearm; and
a sight blade releasably mounted in said slot, said blade having a notch extending downwardly at the approximate midpoint of said blade to allow said firearm to be aimed by aligning said notch with a sight bead projecting upwardly from an upper front surface of said firearm whereby the sighting characteristics of said firearm may be altered by substituting sight blades having varying heights, said sight further including a threaded bore formed in said base extending downwardly from an upper surface thereof to intersect said slot at an acute angle, an aperture formed in said blade at the point of intersection between said bore and said slot, and a blade set screw threaded into said bore, said set screw having an end which is sufficiently pointed that the lower surface of said point contacts the lower edge of said aperture, thereby urging the lower surface of said blade against the bottom of said slot.

4,388,773

LEVER-TYPE CLOSING DEVICE FOR BLOCKING AND UNBLOCKING THE BARREL OF AUTOMATIC, PORTABLE FIREARMS

Pier C. Beretta, Gardone V.T., Italy, assignor to Fabrica D'Armi Pietro Beretta S.p.A., Italy

Filed Feb. 2, 1981, Ser. No. 230,435
Claims priority, application Italy, Mar. 7, 1980, 5129-A/80
Int. Cl.³ F41C *21/22*
U.S. Cl. 42—75 B **4 Claims**



1. A lever-type closing device for the blocking and unblocking of the barrel of an automatic, portable weapon having a carriage with a holding handle protruding from a side of the weapon, said closing device comprising a blocking pin which rotates about its own axis and which has a semi-cylindrical portion defined by a notch, a maneuver lever mounted for

rotation on said pin, said pin being mounted transversely on the frame of the weapon so as to engage a semi-cylindrical seat provided at the base of the breech of the barrel for blocking and unblocking the barrel, said maneuver lever being on a side of the weapon forward of said handle of said carriage, characterized in that said maneuver lever has a cam portion which acts against said handle to maintain said carriage in a relatively rearward position when said lever is in the unblocking position of the barrel, said cam portion having a curved section that is concentric with the axis of said pin so that movement of said handle on said curved section does not cause rotation of said lever, said cam portion further including a flat section which, when subjected to a force applied thereto by said handle, tends to move said lever to a position blocking said barrel.

4,388,774
FISHING SYSTEM
Dale W. Thoemke, P.O. Box 703, Buckley, Wash. 98321
Filed Jan. 23, 1981, Ser. No. 227,750
Int. Cl.³ A01K *97/10;* **B63B** *35/14*
U.S. Cl. 43—21.2 **15 Claims**



12. A retractable fishing pole support apparatus for supporting a fishing pole within a holder to position a fishing line laterally outwardly from the side of a boat a distance greater than the length of the fishing pole, said support apparatus comprising:

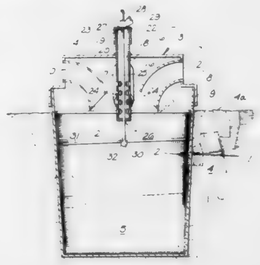
a rigid, elongate boom disposed generally transversely to the length of the boat, said boom having an inner end portion and an outer end portion on which the fishing pole holder is mounted, said boom being of a length approximating the beam width of the boat;

an antifriction support assembly fixedly mounted adjacent the gunwale of the boat and supporting said boom for rectilinear travel outwardly from one side of the boat and for retractional travel toward the opposite side of the boat;

handle/stop means mounted on the inner end portion of said boom for manually extending and retracting said boom and for limiting the extensional travel of said boom, and

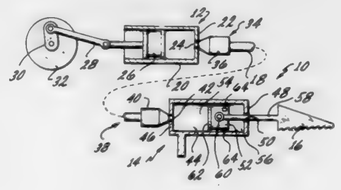
a fishing pole arranged with the handle thereof in said fishing pole holder and extending outwardly of the boom beyond the outer end of the boom.

4,388,775
TRAP FOR SMALL ANIMALS
Newton E. Wright, R.R. 3, Box 508, Abingdon, Va. 24266
Continuation-in-part of Ser. No. 108,718, Dec. 31, 1979, abandoned. This application Nov. 19, 1980, Ser. No. 208,200
Int. Cl.³ A01M *23/04*
U.S. Cl. 43—69 **14 Claims**



11. A trap for small animals such as rodents and the like comprising a vessel having an open upper end and a removable cover closing said open upper end of said vessel, said cover having a peripheral downwardly depending skirt engaging said open upper end of said vessel about its periphery, said cover having at least one opening therein, a rigid one piece rod-like support attached to said cover and extending vertically downwardly thereof and axially of said vessel, a universally tiltable platform, said platform having a central perforation, said rod-like support extending through said platform perforation with clearance, said rod-like support having an enlarged lower end below said platform configured to normally support said platform in a horizontal position and to permit universal tilting of said platform.

4,388,776
PNEUMATICALLY OPERATED TOY EMPLOYING A MOVABLE IMPLEMENT
Gorden W. Spring, Norwalk, Calif., assignor to Tomy Corporation, Carson, Calif.
Continuation-in-part of Ser. No. 159,774, Jun. 16, 1980, abandoned. This application May 5, 1981, Ser. No. 260,692
Int. Cl.³ A63H *29/16*
U.S. Cl. 46—44 **9 Claims**



1. A toy of the type including a fluid compressor means in which an improvement comprises:

said fluid compressor means including a first connecting port serving as a fluid passageway between the exterior of said fluid compressor means and the interior of said fluid compressor means, said fluid compressor means being constructed so as to provide a cycling positive and negative fluid pressure at said port;

a motor means operatively associated with said fluid compressor means and capable of causing movement of at least a portion of said fluid compressor means, said fluid compressor means providing said cycling positive and negative fluid pressure in response to said movement;

a flexible fluid line including coupling means located at its respective ends;

one of said coupling means at one of said ends of said line attaching to said first port so as to connect the interior of said fluid line to said fluid compressor means and provide cycling positive and negative fluid pressure at the other of said ends of said line;

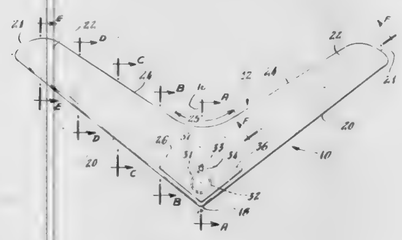
an output chamber including a second port, said second port serving as a fluid passageway between the exterior of said chamber and the interior of said chamber, the other of said coupling means connecting the other of said ends of said line to said second port and providing cycling positive and negative fluid pressure at said second port in response to said cycling pressure at said first port;

a piston movably connected to said chamber and means for moving said piston with respect to said chamber in response to fluid pressure within said chamber;

an implement operatively connected to said piston and movable in response to movement of said piston with respect to said chamber;

bypass means associated with said chamber and responsive to at least said negative pressure at said second port so as to allow fluid passage through at least a portion of said chamber without movement of said piston with respect to said chamber.

4,388,777
TOY SAILPLANE
Carl Z. Hermann, Sugar Hill Rd., Falls Village, Conn. 06031, and Timothy L. Locke, Lower River Rd., West Cornwall, Conn. 06796
Filed Aug. 25, 1981, Ser. No. 296,159
Int. Cl.³ A63H *27/00*
U.S. Cl. 46—79 **25 Claims**

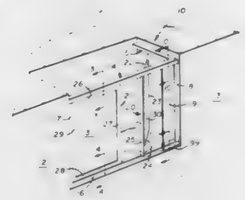


1. A toy sailplane comprising:

a single piece sweptback wing being substantially symmetrical about a central plane and having a central nose, said wing having two leading edges extending in an angular relation with respect to each other from said central nose and having a tip portion located at the respective end of each said leading edge, said wing including a trailing edge extending between said tip portions, said wing including generally continuous smooth upper and lower surfaces extending between each said leading edge and said trailing edge, said upper surface being convex in cross-sections parallel to said central plane, said lower surface being concave in cross-sections parallel to said central plane with mean chords of the wing taken at cross-sections parallel to and progressing outwardly from said central plane having average slopes that gradually increase to define upwardly directed wing tip portions, said upper surface further being concave and said lower surface further being convex in respective cross-sections generally parallel to said leading edges in the regions of said tip portions, and

means for weighting said wing suspended from the wing and located on said central plane.

4,388,778
ENCLOSURE FOR BATHTUB OR SHOWER HAVING SLIDING DOORS
Michael E. Brooke, Sharon, Wis., assignor to United States Gypsum Company, Chicago, Ill.
Filed Mar. 16, 1981, Ser. No. 244,399
Int. Cl.³ E05D *15/26*
U.S. Cl. 49—125 **7 Claims**



1. A sliding door assembly for a bathtub or shower enclosure, comprising a first support member, a second support member and a pair of sliding doors slidably supported by said support members, said first support member being arranged to support said doors at the front of said enclosure, and said second support member being arranged perpendicular to said first support member and arranged to support said doors at the side of said enclosure in storage position,

each of said support members comprising a frame having a pair of longitudinally arranged spaced-apart tracks,

each of said tracks comprising a pair of spaced-apart depending flanges having flat lips at their lower edges, the lips of each pair of flanges being directed toward each other and substantially perpendicular to said depending flanges, said depending flanges and said lips cooperating to define a track channel and a constricted slot, the track channels and constricted slots of each track of said first support member communicating with corresponding track channels and constricted slots of said second support member,

each of said doors having a pair of spaced-apart supporting means mounted at the upper edge thereof,

each of said supporting means comprising an elongate member affixed at one end to the upper edge of said door, and having a cylindrical glide member of circular cross-section affixed to the other end thereof, said glide members being slidably disposed within said track channel and supported by the lips of said track and arranged to support said doors, said elongate means extending through said constricted slot, said glide members being slidable within said track channels and being transferable from the track channels of said first supporting member to the track channels of said second supporting member, whereby said doors may be moved for opening and closing said enclosure opening when engaged in the tracks of said first supporting member, and may be transferred to the tracks of said second supporting member for storage.

4,388,779
EASY-TO-OPEN, PRESSURE-RESISTANT DOOR ASSEMBLY
Carl R. Peterson, Elm St., Boxford, Mass. 01921
Filed Feb. 9, 1981, Ser. No. 232,639
Int. Cl.³ E05D *15/28*
U.S. Cl. 49—253 **12 Claims**

1. An easy-to-open, pressure-resistant door assembly for an access opening of predetermined shape in a wall,

said wall disposed between high and low air pressure regions in a mine or the like, with the door located on the high pressure side of the opening and air pressure drop across the door serving to keep the door sealed,

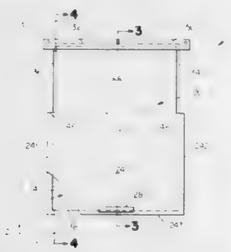
said door having a first edge corresponding to a first edge of said access opening and a door pivot axis spaced from said first door edge a substantial distance in the direction of the opposite second edge of said door,

the first part of said door that extends between said first door edge and said door pivot axis having a width slightly narrower than the corresponding part of said predetermined access opening to enable pivotal movement of said first part of said door about said door pivot axis inwardly of said access opening toward the low pressure region while the second part of said door, on the opposite side of said door pivot axis, pivots outwardly toward the high pressure region,

a pivot link means pivotally supporting said door in the region of said door pivot axis and extending to a link pivot axis parallel to the door pivot axis and located in the region of said first edge of said access opening,

a limit means adapted to limit the pivotal movement of said door about said door pivot axis to an acute angle,

and said pivot link means arranged to swing said door pivot axis and the door supported thereby outwardly about said link pivot axis to move said door pivot axis in the direction toward a line projected perpendicular to said wall from said link pivot axis,



and stop means adapted to prevent the part of said door adjacent said second edge from moving inwardly through said opening,

whereby, upon application of operator force for opening said door, as by pushing or pulling by one hand of the operator, said door can respond in successive first and second phases of opening motion,

in said first phase of opening motion said door responding by pivoting through an acute angle about said door pivot access, the exposure of the door to high air pressure resisting bodily rotation of said door and link means about said link pivot axis, while distribution of the pressure on opposite sides of said door pivot axis enables said first phase of motion about said door pivot axis to occur with relatively small operator force,

said first phase of motion enabling substantial equilibration of air pressure on both sides of said door in the region of said access opening,

and in said subsequent second phase of opening motion said link means enabling bodily swinging of said door and link means about said link pivot axis after said equilibration of air pressure to complete the movement of said door relatively easily to its open position to permit unobstructed access through said opening.

4,388,780

ELECTRIC POWERED WET STONE

Spencer C. Rees, Sugar Grove, Ill., assignor to Wen Products, Inc., Chicago, Ill.

Filed Dec. 31, 1980, Ser. No. 221,558
Int. Cl.³ B24B *3/36*
U.S. Cl. 51—128 **20 Claims**

1. An electric grinding machine comprising:

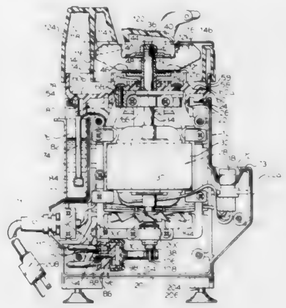
a housing enclosing an electric motor having a vertically disposed rotatable shaft extending through and above a top wall of said housing,

an annular grinding wheel removably mounted at an upper end of said shaft to be corotatable with said shaft about a vertical axis,

said grinding wheel having a flat upper surface positioned above said top wall of said housing and having a bevel at the outer circumference of said upper surface whereby an outer circumference of said wheel is greater below said bevel than at said upper surface,

a guard having vertical side walls removably mounted to said housing, above said housing and enclosing said grinding wheel,

said guard being vertically adjustable and having a low limit position where a portion of the guard is in contact with said upper surface of said grinding wheel,



said guard having at least one opening therein defining an upper edge of said side walls for providing access to said flat upper surface of said grinding wheel,

said outer circumference of said wheel, below said bevel, remaining below said upper edge of said side walls and not horizontally exposed through said guard opening when said guard is in said low position,

a receptacle for storing water carried within said housing,

a pump driven by said motor for moving said water from said receptacle and directing said water to said flat upper surface of said grinding wheel through conduits, and

means for collecting excess water from said grinding wheel and returning said water to said receptacle,

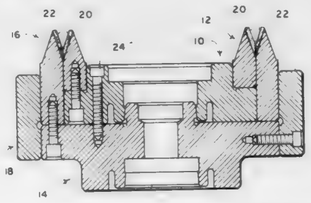
whereby water directed to said grinding wheel will be flung from said outer circumference of said wheel upon rotation of said wheel against said guard even when said upper surface is exposed above said upper edge.

4,388,781

ROTARY TOOL FOR STRADDLE GRINDING

Harry D. Dodd, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Sep. 21, 1981, Ser. No. 304,218
Int. Cl.³ B23F *21/03*
U.S. Cl. 51—206 R **6 Claims**



1. A rotary tool having two stock-removing surfaces projecting from a face thereof, said two stock-removing surfaces being arranged in side-by-side paths so that said rotary tool can be used to straddle a tooth of a gear on a workpiece to thereby form or finish said tooth, said rotary tool being characterized by an assembly of components which permits easy disassembly, renewal, and reassembly of said stock-removing surfaces, said components comprising

a first disc-shaped body for carrying an inner stock-removing surface of the tool, said first disc-shaped body having a recess formed about its outer periphery for receiving a first annular element having (a) a base portion for securement in said recess and (b) a stock-removing surface which projects outwardly from the face of said first disc-shaped body, and said first disc-shaped body having a bore through its center,

a second disc-shaped body for carrying an outer stock-removing surface of the tool, said second disc-shaped body having a diameter which is sufficiently larger than the diameter of said first disc-shaped body to provide an annular space between the outer circumference of said first disc-shaped body and a ring member which is carried around the circumference of said second disc-shaped body, said annular space being of a size and shape for receiving a second annular element having (a) a base portion for securement in said annular space and (b) a stock-removing surface which projects outwardly from the face of said first disc-shaped body, and said second disc-shaped body having a bore through its center,

said first and second disc-shaped bodies being shaped and dimensioned to be secured together in a way which provides concentric support for said inner and outer stock-removing surfaces relative to each other, including means for aligning said bores of said first and second disc-shaped bodies, and

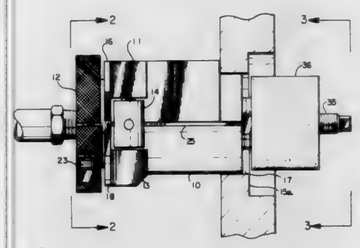
a ring member for containing said second disc-shaped body and for supporting said second annular element.

4,388,782

HANDHOLE SEAT RESURFACING TOOL FOR NAVAL PRESSURE FIRED BOILERS

David T. Rodgers, Turnersville, N.J.; Thomas P. Tursi, Horsham, and Thomas J. Bryan, Woodlyn, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 24, 1981, Ser. No. 258,068
Int. Cl.³ B24B *15/00*
U.S. Cl. 51—241 A **12 Claims**



1. An apparatus for grinding a circular sealing surface behind an oblong opening of a boiler wall or the like, the central axes of the opening and the surface being coaxial, comprising:

an expandable housing having a longitudinal split in an outer wall and shaped at one end for contiguous insertion on the central axes normal to the opening;

a tensioner coaxially extending through said housing and rotatable in said housing on the central axis;

a motor longitudinally secured within said tensioner having an output shaft rotatable on an axis displaced from the central axis for extending through the opening when said housing is inserted; and

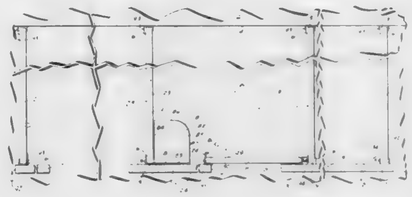
a grinding wheel mounted on said shaft for rotation therewith configured to form the desired sealing surface.

4,388,783

PREFABRICATED PARTITION ARRANGEMENT

Charles F. Logie, Spring Lake, Mich., assignor to American Store Equipment Corporation, Muskegon, Mich.

Filed Jun. 23, 1980, Ser. No. 162,096
Int. Cl.³ E04H *1/2*
U.S. Cl. 52—36 **51 Claims**



1. A prefabricated partition arrangement for fitting rooms and the like, comprising:

a pair of side panels having rearward edges thereof adapted for placement adjacent a wall; said side panels being laterally spaced apart, extending outwardly from the wall in a substantially parallel relationship, and including forward edges;

a front panel extending between the forward edges of said side panels to partition off an area between said panels and the building wall; said front panel including an opening therein to permit access to the partitioned area, and means for selectively closing said opening;

a first pair of channels extending along a major portion of the side panel forward edges and positioned between the same and said front panel; said channels having a web portion fastened to said front panel, and a pair of flanges between which said side panel forward edges are received;

a second pair of channels extending along a major portion of the side panel rearward edges and positioned between the same and the wall; said second pair of channels having a web portion shaped for fastening to the wall, and a pair of flanges between which said side panel rearward edges are received;

said flanges of said first and second pairs of channels being spaced apart a distance greater than the thickness of said panel edges received therebetween to accommodate for panel warpage and other similar deformation; said channels being asymmetrical, with an interior one of said flanges longer than an exterior one of said flanges;

means for fastening said side panels with the associated pair of channels, thereby forming a rigid, postless partition assembly; said fastening means comprising fasteners which extend through and along only the longer, interior channel flange, and drawing the associated panel edge against the same, so as to present a neat, straight edge.

4,388,784

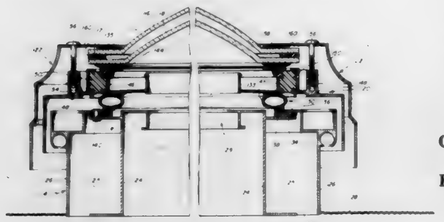
THERMAL BREAK SKYLIGHT

Arthur P. Jentoft, Kennebunkport, and Paul A. Couture, Emery Mills, both of Me., assignors to Wasco Products, Inc., Sanford, Me.

Filed Aug. 4, 1980, Ser. No. 175,305
Int. Cl.³ E04B *7/18;* **E06B** *7/14, 7/098*
U.S. Cl. 52—200 **5 Claims**

1. A skylight construction for an opening in a building comprising;

a frame means extending about the opening and including means securable about the opening,
translucent or transparent means covering the opening and extending at edges to overlie the frame means,
means for retaining the covering means on the frame means,
said frame means comprising a base frame and a support frame overlying the base frame,
and a compliant sealing means extending contiguously about and overlying the base frame and for sealing between the base frame and support frame,
said base frame having thermal break means for minimizing heat transfer through the base frame,



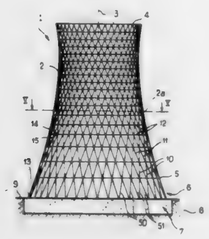
said support frame including an inner frame section, an outer frame section and second thermal break means disposed between and joining the inner and outer frame sections,
said inner frame section having an upright wall forming a means on one side for holding the second thermal break means and forming on the other side thereof, at least a part of a condensation gutter,
a gasket carried by and overlying the inner frame section,
and means defined in the inner frame section over the upright wall for retaining the gasket in place.

4,388,785

COOLING TOWERS

Corentin Queffelec, Sceaux; Rene Bordet, Courbevoie, and Marc Malinowsky, Verrieres-Le-Buisson, all of France, assignors to Electricite de France (Service National), Paris, France, by said Rene Bordet

Filed Jul. 22, 1980, Ser. No. 171,157
Claims priority, application France, Jul. 24, 1979, 79 19000
Int. Cl.³ E04B *1/32, 1/00;* **E04C** *3/26*
U.S. Cl. 52—222 **15 Claims**



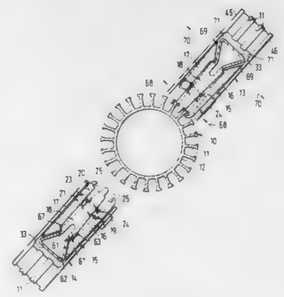
1. A tower for use as a cooling tower or a chimney comprising:
a plurality of rigid frames which are interconnected to form a trellis framework and which frames each define an internal periphery forming a mesh, an external periphery in the form of a polygon by which the frames are juxtaposed, an interior face and an exterior face, which faces are turned towards the inside and outside of the tower respectively;
means for assembling each frame of the framework to at least one adjoining frame in a position in which a part of the external periphery of the frame which corresponds to substantially the entire length of one side of the said polygon is in contact with a part of the exterior periphery of an adjoining frame, said means for assembling being situated along said parts of the adjoining frames so that connected parts of the two adjoining frames define a bar of the trellis framework; and
casing means attached to the framework for covering at least a part thereof, which casing means comprises sheeting, and means for attaching the sheeting to the frames to cover the meshes so that the position of the sheeting, in relation to the exterior face of a frame, is recessed towards the interior face by a value which is selectively adjustable between zero and the distance which separates the interior face from the exterior face inclusive, the said value being predetermined according to the degree with which it is desired to form a broken up external surface on the tower.

4,388,786

CONSTRUCTION MEANS FOR USE IN THE ASSEMBLY OF WALL AND/OR ROOF STRUCTURES

Kurt Gassler, Bühlweg 4, D-7050 Waiblingen-Neustadt, Fed. Rep. of Germany

Filed Jan. 30, 1981, Ser. No. 230,260
Int. Cl.³ A47G *29/00;* **F16B** *9/00;* **E04B** *2/78*
U.S. Cl. 52—282 **19 Claims**



1. Construction means for use in the assembly of walls and/or roof structures, comprising:
a. a body having a receptacle and including inside surfaces and an aperture therethrough;
b. stanchion gripping means, comprising:
i. a central wedge-shaped positioning element having a positioning member on one end thereof;
ii. a pair of gripping elements having opposed gripping ends on one end thereof pivotably mounted on either side of said central element;
iii. said central element and said pair of gripping elements each having a cooperating aperture therethrough; and,
iv. said gripping ends associated with said positioning member;
c. said stanchion gripping means positioned in said receptacle whereby said cooperating apertures are co-axial with said body aperture;
d. said gripping means engageable with a pair of cooperating shaped stanchions whereby said positioning member is positioned between said pair of stanchions and each of said gripping ends is associated with a stanchion outside surface adjacent each of said gripping ends; and,
e. tensioning means insertable in each of said apertures to pivot said gripping elements and cause said gripping ends to securely grasp said stanchions and to pivot each of said gripping elements other end against said receptacle inside surfaces and to thereby secure said stanchion gripping means therein.

4,388,787

POLE CONSTRUCTION

Arnold M. Milbright, Redwing, Minn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 43,729, May 30, 1979. This application Jun. 16, 1981, Ser. No. 274,299
Int. Cl.³ E04H *12/22;* **E02D** *27/42*
U.S. Cl. 52—298 **11 Claims**



1. A pole construction comprising:
a wood upper pole;
a lower pole section of tubular construction and being constructed of steel plate over its entire length, said lower pole section having one end portion adapted for insertion into the ground to a predetermined depth, said lower pole section having a continuous tubular wall with a cross section of a plurality of flat wall segments in each quadrant, each of said wall segments being oriented at obtuse angles with respect to adjoining wall segments; and
a steel plate diaphragm positioned within said lower pole section, oriented transversely to the wall of said lower pole section and adapted to engage the lower end of said upper pole for vertically supporting said upper pole by transferring the weight of said upper pole to the wall of said lower pole section, said lower pole section directly transferring said weight to the ground, said diaphragm conforming to the shape of the interior periphery of said wall and being affixed to said wall, said diaphragm cooperating with the wall of said lower pole section to provide a receiving chamber for and end portion of said upper pole, said receiving chamber being filled with a grout after said upper pole is placed in said chamber.

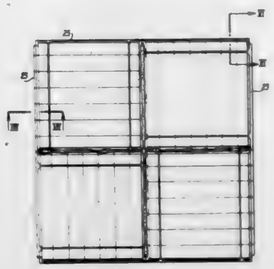
4,388,788

WOOD FLOOR PANEL

Lewis R. Bosco, East Berlin, Pa., assignor to Penn Wood Products Co., E. Berlin, Pa.

Filed Jul. 31, 1980, Ser. No. 174,141
Int. Cl.³ E04F *13/08*
U.S. Cl. 52—390 **17 Claims**

1. A wood floor panel having a top wear surface, an undersurface for mating with a substrate and four side edges comprising:
a plurality of wood panel sections each having a top wear surface, an undersurface, and side edges, each said panel section including a plurality of substantially identical solid wood strips arranged in parallel side by side relationship and interconnected by at least two wires frictionally engaged in respective channels provided in the undersurface of and extending transversely to the strips of said sections, each said panel section abutting at a side edge thereof with a side edge of an adjacent panel section and the area of abutment of adjacent panel sections including an adhesive well formed in the undersurface of said panel sections, an adhesive bead provided in each of said adhesive wells for interconnecting and holding said abutting panel sections



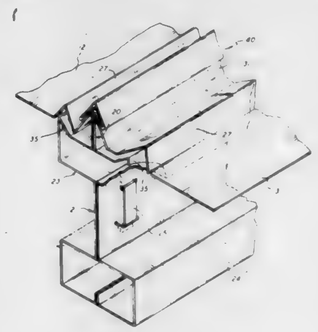
together, and tongues provided along the entire length of two side edges of said panel and complementary grooves provided along the entire length of the remaining two side edges of said panel.

4,388,789

CLOSURE APPARATUS FOR BUILDING PANELS

Wesley T. Murphy, 947 Prospect St., Auburn, N.Y. 13021

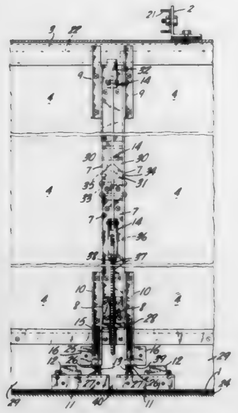
Filed Dec. 22, 1980, Ser. No. 219,263
Int. Cl.³ E04D *1/00*
U.S. Cl. 52—461 **2 Claims**



1. Apparatus for joining a pair of coplanar panels to a metal support beam to provide a weathertight joint that includes
a metal support beam having a generally horizontal support flange and a pair of back to back vertical web sections that extend upwardly from the flange and which are turned downwardly away from each other to form a pair of opposed oblique runners that are disposed along the length of the beam,
a pair of flat sheetmetal roof panels, each panel being supported upon the flange of said beam on either side of the raised web section, the adjacent ends of the panel being obliquely turned in an upward direction under one of the overlying runners to form an overlapping joint therewith,
a V-shaped spring having a pair of downwardly disposed legs, the ends of which are folded inwardly upon themselves to form a pair of locking pads, the inside surfaces of the legs being biased in contact against the outside surfaces of the two opposed runners and the pads passed beneath the joints into contact with the adjacent obliquely turned ends of the panels, and
locking means acting between the flange of the beam and each of the panels for preventing the panels from moving

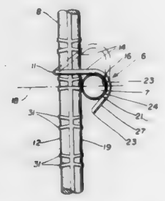
laterally towards and away from the web section whereby the panels are locked to the beam.

4,388,790
PARTITION AND PANELING SYSTEM
Michael Greco, 14 Woodlands La., White Plains, N.Y. 10607
Filed Jun. 29, 1981, Ser. No. 278,638
Int. Cl.³ F16B *5/06;* **E04C** *1/10, 1/30;* **E04H** *1/00*
U.S. Cl. 52—584 **11 Claims**



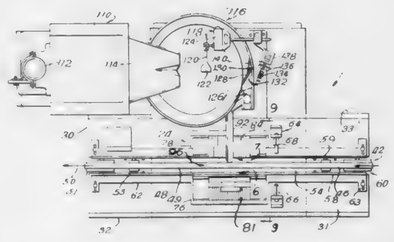
1. A partition system wherein wall panels may be secured to the ceiling support and floor and in an abutting relationship to each other to form a continuous wall comprising:
a head section coupled to the ceiling support and including top guide channels extending downwardly therefrom with a recess therebetween,
at least one joint connector angle mounted on the rear edge of adjacent wall panels
a base mounted to the floor and having bottom channel members extending upwardly therefrom, and, stop blocks extending inwardly within the channel aperture, fastening means mounted within the top guide channel at its upper end and the bottom guide channel at its lower end and having a fishtail-shaped connector mounted at an intermediate portion to engage each joint connector angle, and,
means for moving the fastening means in a direction to bring about locking engagement of the joint connector angle and the mating connector.

4,388,791
REBAR TIE
Frank H. Anderson, 1580 Grand View Dr., Berkeley, Calif. 74705
Filed Apr. 28, 1980, Ser. No. 144,556
Int. Cl.³ E04C *5/16*
U.S. Cl. 52—719 **2 Claims**



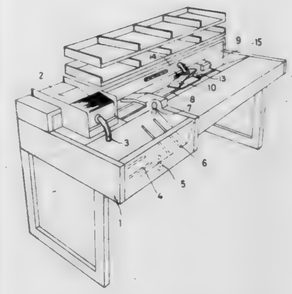
1. In reinforced concrete construction having horizontally spaced vertically extending rebars, and engaged vertically spaced horizontal rebars and tie means securing said rebars at points of intersection and temporarily supporting said horizontal rebars on said vertical rebars, the improvement comprising said tie means and being a one-handled, single-motion, snap-on clip composed of:
an elongated member formed of stiff resiliently yielding material having a curved saddle shaped mid-portion sized to seat on the posterior side of said vertical rebar away from said horizontal rebar and having a pair of parallel legs extending from said mid-portion in the plane of curvature thereof; said legs having a length dimensioned to extend across the top of said horizontal rebar and being curved in parallel planes perpendicular to said first-named plane to provide concavities sized to grip said horizontal rebar and to effect supporting engagement thereof below its horizontal center plane, whereby downward load imposed on said horizontal rebar will be translated into arcuate displacement of said legs about said mid-portion into lateral pressure of said horizontal rebar against the anterior side of said vertical rebar, said concavities having an arcuate form having an interior peripheral surface subtending more than 90° but less than 180°; and
said legs having free ends extending substantially tangentially from said concavities and being spaced from said mid-portion by a distance less than the distance between said concavities and said mid-portion and said legs being dimensioned so that said free ends in said arcuate displacement will have a locus of movement intersecting the curved anterior side of said horizontal rebar above and adjacent to its horizontal center plane thus producing a wedged opening of said concavities upon downward arcuate displacement of said legs followed by snap action gripping of said horizontal rebar, the portions of said legs between said concavities and ends comprising levers for springing open said concavities into supporting engagement of said horizontal rebar.

4,388,792
APPARATUS FOR PACKAGING MAGNETIC ARTICLES
Joseph A. Armond, River Forest; Gabriel R. Buky, and Fred Patrick, both of Chicago, all of Ill., assignors to Electro-Matic Products Co., Chicago, Ill.
Filed Jul. 31, 1980, Ser. No. 173,977
Int. Cl.³ B65B *5/10, 63/00*
U.S. Cl. 53—236 **8 Claims**



1. Apparatus for packaging magnetic articles, comprising,
a fill conveyor for conveying moxes along a path and having a fill position in the path,
means for intermittently moving the conveyor and stopping it with a box thereon in the fill position,
means for placing a quantity of the articles in the box at fill position and including a spout for conducting them in a downwardly flowing stream, and further including means for reciprocating the spout along the path through the length of the box while placing the articles in the box,
the apparatus including magnetizing/demagnetizing means for magnetizing and demagnetizing the articles in the box,
the apparatus further including demagnetizing means being operative for forming a field extending throughout the range of reciprocation of the spout and thereby effective throughout that range for demagnetizing the articles in said downwardly flowing stream in the spout,
the magnetizing/demagnetizing means being operative for magnetizing the articles in the box at the fill position to align them in predetermined position in the box, and
the magnetizing/demagnetizing means being operative for demagnetizing the articles in the box at the fill position, after they have been so magnetized.

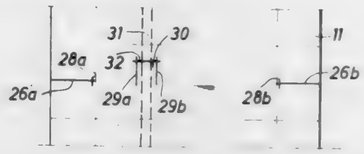
4,388,793
APPARATUS FOR EMPTYING ENVELOPES
Wolfgang Künne, Rellingen, Fed. Rep. of Germany, assignor to Stielow GmbH, Norderstedt, Fed. Rep. of Germany
Filed Mar. 9, 1981, Ser. No. 242,145
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012857
Int. Cl.³ B65B *43/30*
U.S. Cl. 53—381 R **6 Claims**



1. An apparatus for emptying the contents of envelopes having at least two adjacent opened edges comprising: a pair of suction devices positioned for facing and holding opposite sides of an envelope to be emptied, wherein one suction device for holding one envelope side is movable perpendicular to the envelope plane for separating the sides of the envelope and wherein the other suction device for holding the opposite envelope side is movable along the envelope plane for providing relative movement between the envelope and envelope contents as the suction device movable perpendicular to the envelope plane separates the sides of the envelope.

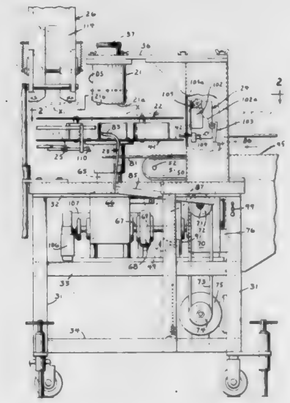
4,388,794
APPARATUS FOR CUTTING AND TRANSPORTING BLANKS FROM A WEB OF FLEXIBLE MATERIAL
Heinz H. Focke, and Kurt W. Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Pfuhl, Verden, Fed. Rep. of Germany
Division of Ser. No. 18,375, Mar. 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 700,949, Jun. 29, 1976, Pat. No. 4,151,699. This application Sep. 24, 1980, Ser. No. 190,141
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1975, 2530002
Int. Cl.³ B65B *41/12, 61/08*
U.S. Cl. 53—389 **3 Claims**

1. Apparatus for the production of packaging blanks by separation at a cutting station from a thin, highly flexible packaging material supplied in a continuous web and feeding in a blank for a package to be covered by said blank, comprising in combination:
a pair of drawing rollers for transporting said web longitudinally at a first speed;
first and second continuous longitudinally running perforated conveyor belts, said belts transporting said web longitudinally at a second speed greater than said first speed of said drawing rollers, said belts each comprising suction means for grasping lateral portions of said web to provide support for said web on said belt;
means for divergingly guiding said belts in the direction of transport of said belts; and



said belts extending through and beyond said cutting station for transporting blanks cut from said web to a folding orifice for folding a blank around an item to be packaged.

4,388,795
METHOD AND APPARATUS FOR FILLING CONTAINERS
Roger H. Stohlquist, and Leo Strombeck, both of Rockford, Ill., assignors to Anderson Bros. Mfg. Co., Rockford, Ill.
Filed Sep. 22, 1980, Ser. No. 189,625
Int. Cl.³ A21C *15/04*
U.S. Cl. 53—435 **16 Claims**



1. A method of filling open-top containers with flowable semi-solid material comprising, flowing a semi-solid material in continuous fashion through a downwardly opening nozzle, the nozzle having a lower edge portion at one side thereof defining a material shear edge for shearing the semi-solid material in the container from the semi-solid material in the nozzle, advancing an empty container along a container infeed path to a filling station below the nozzle, elevating the container at the filling station into at least partial telescoping relation on the nozzle, lowering the container on the nozzle as it is filled until the upper edge of the container is at a level spaced below the material shear edge at said one side of the nozzle, moving the filled container from a position below the nozzle along a filled container discharge path extending across the material shear edge at said one side of the nozzle, the movement of the container along said filled container discharge path producing a material void in the top of container adjacent the side of the container that leads during such movement, controlling the relative vertical position of the nozzle and container during movement of the container across the material shear edge on the nozzle to initially maintain the upper edge of the filled container spaced below at least a portion of the material shear edge on the nozzle to shear off the material at a level above the

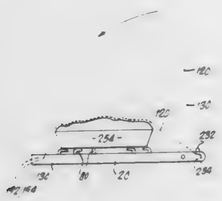
top of the container and to subsequently move the filled container and nozzle vertically toward each other sufficient to cause the trailing upper edge portion of the filled container to substantially wipe across the material shear edge at said one side of the nozzle, and pressing a cover down onto the open top of the filled container to press the material above the top of the container into the material void in the container.

4,388,796

STRETCH WRAP SYSTEM AND METHOD OF PACKAGING

Seymour Zelnick, Bridgewater, N.J., assignor to Weldotron Corporation, Piscataway, N.J.

Filed Oct. 14, 1980, Ser. No. 196,852
Int. Cl.³ B65B *11/02*
U.S. Cl. 53—441 **37 Claims**



1. A method for stretch wrapping a product comprising

loading a product onto a support surface, mounting a frame along a substantially horizontal pivot axis adjacent the product support surface, said frame having slidably movable film clamping means adapted to grasp the end of a length of stretch film,

loading stretch film into said frame by moving said film clamping means to draw said length of stretch film across said frame while said frame is being maintained at a substantially upright position, and maintaining it clamped in a sheet-like condition in said frame,

pivoting said frame downwardly from its substantially upright position to a substantially horizontal plane over a product positioned on the product support surface to stretch the film in the frame over the product,

releasing the clamped film from the frame to allow its edges to withdraw toward said product, and

tucking the edges of the film under the product as the film is being released from a clamped condition in the frame.

4,388,797

BANDING MACHINE

Walter A. Shields, 181-41 Henley Rd., Jamaica, N.Y. 11432

Filed Nov. 3, 1980, Ser. No. 203,085
Int. Cl.³ B23B *5/14*; B65B *11/18*; B65G *25/10*
U.S. Cl. 53—585 **16 Claims**

1. A machine for continuously forming and applying bands on articles, comprising:

means for arranging the articles into at least one row;

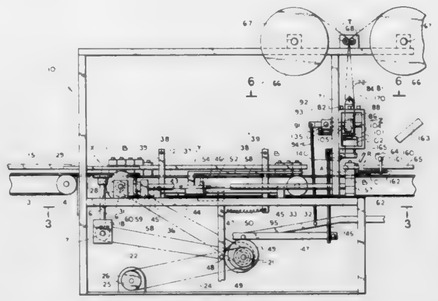
at least one means for receiving the articles from the arranging means and transferring the articles to a band receiving position;

means for supplying at least one tubular member to be fabricated into a band; and

at least one means for continuously fabricating the bands from the tubular member and positioning the bands on the articles at the band receiving position, said fabricating and positioning means including,

means for feeding the tubular member in increments corresponding to the width of the band to be fabricated, said feeding means having a substantially cylindrical member with the tubular member passing around the cylindrical member; at least one first roller outside both of the cylindrical and tubular members and rotatable by first power means; and at least one rotatable second roller on the surface of the cylindrical member opposite said first roller so that when the first roller rotates, the tubular member between the first and second rollers is impelled at a distance equivalent to the width of a band;

means for cutting the tubular member to fabricate the band, said cutting means having a hollow pulley rotatable by second power means through which the tubular member passes; a knife; means for rotatably connecting the knife and the hollow pulley; and means to shift the knife between a cutting position and a non-cutting position; and



means for retaining the tubular member as it is cut into a band, and positioning the band on an article,

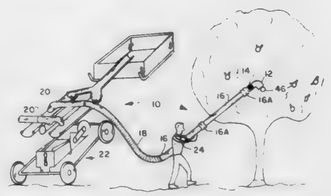
said connecting means including a movable plate; a shaft extending through the hollow pulley with an upper end connected to the movable plate and a lower end connected to the knife; a rod attached to the movable plate for shifting orientation of the movable plate; and a spring positioned between the pulley and the movable plate for urging the movable plate between cutting and non-cutting positions.

4,388,798

FRUIT HARVESTING MACHINE

Curtis E. Gerber, 4015 Bayshore Blvd. 8C, Tampa, Fla. 33611

Filed Jun. 9, 1981, Ser. No. 271,943
Int. Cl.³ A01G *19/08*
U.S. Cl. 56—334 **11 Claims**



1. A picker head for connection to a vacuum operated fruit harvesting machine, comprising in combination:

an input conduit having an internal wall;

an outlet disposed at one end of said input conduit, said outlet being in fluid tight connection with a source of partial vacuum associated with said harvesting machine;

an inlet of said input conduit, said inlet disposed remote from said outlet; and

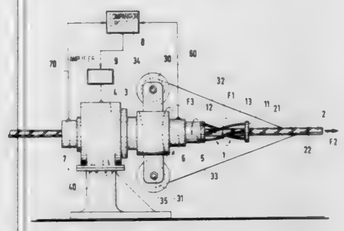
a gripping means for gripping the stem of a fruit; and means mounting said gripping means in an angular relationship relative to said internal wall of said input conduit and adjacent said inlet enabling at least a portion of said internal wall of said input conduit to function as a fulcrum when said gripping means is gripping the stem of the fruit and the fruit is at least partically disposed in said input conduit to intensify the force required to remove the fruit from the fruit stem.

4,388,799

APPARATUS FOR TRACKING THE PITCH OF HELICAL GROOVES

Jean-Patrick Vives, Calais, France, assignor to Les Cables de Lyon, Clichy Cedex, France

Filed Mar. 22, 1982, Ser. No. 360,539
Claims priority, application France, Mar. 20, 1981, 81 05593
Int. Cl.³ B65H *81/08*; D07B *5/00*
U.S. Cl. 57—6 **7 Claims**



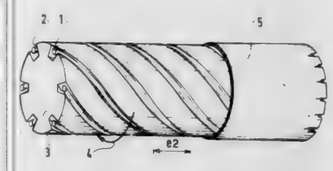
1. Apparatus for tracking the paths of helical grooves in the periphery of a longitudinal cylindrical core driven in axial translation, said apparatus comprising two disks fitted onto said core, said disks being connected together by metal wires at their ends forming springs between the disks which press on respective grooves to track their apparent rotation when said core moves in axial translation.

4,388,800

METHOD OF MANUFACTURING AN OPTICAL FIBRE CABLE

Jean-Pierre Trezeguet, and Jean-Patrick Vives, both of Calais, France, assignors to Societe Anonyme dite: Les Cables de Lyon, Clichy, France

Filed Jan. 7, 1982, Ser. No. 337,891
Claims priority, application France, Jan. 9, 1981, 81 00281
Int. Cl.³ D02G *3/36*; G02B *5/16*
U.S. Cl. 57—7 **3 Claims**



1. A method of manufacturing an optical fibre cable comprising a generally cylindrical elongate central support structure with helical grooves formed about its periphery to accommodate optical fibres, the improvement wherein said method consists in laying fibres whose cross-section is larger than the cross-section of the grooves in said grooves, providing a cover about the periphery of said central support structure to protect the fibres against radial compression forces, and in then partially untwisting the fibre-containing grooves, thereby lengthening the pitch of the grooves and hence increasing the length of the optical fibres relative to the length of the grooves to improve the mobility of the fibres in the grooves to provide an assembly which permits tractive stresses which elongate the support structure, thereby providing optical fibres whose length is sufficiently longer than the grooves than that of the support structure so that the tractive forces are not transmitted to the fibres as long as said support structure does not reach its breaking elongate limit.

4,388,801

PROCESS AND APPARATUS FOR PRODUCING A TWISTED ELASTIC THREAD

Gunter d'Alquen, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Krall & Roth, Weberei GmbH & Co., K.G., Mönchen-Gladbach, Fed. Rep. of Germany

Filed Apr. 1, 1981, Ser. No. 250,016
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012753
Int. Cl.³ D01H *13/10*, *1/26*, *1/30*
U.S. Cl. 57—12 **6 Claims**



1. A process for producing a twisted elastic thread wherein an elastomeric thread is adhesively twisted with two OE yarns, said yarns comprising yarns such as OE yarns of polyvinyl chloride, polyvinyl cyanide, polyacrylonitrile and/or wool threads produced by a process such as a rotor process, comprising the steps of:

surface-swelling said yarns under a vacuum between substantially 0.1 to 0.2 bar in superheated steam at substantially 70° C. for up to substantially ten minutes for loosening purposes, prior to twisting said yarns;

pre-tensioning said elastomeric thread with respect to said yarns such that the tension of said elastomeric thread is substantially the same as the tension of said yarns upon starting a twister; and

a predetermined time after starting said twister, pre-tensioning said elastomeric thread by substantially 2 to substantially 5 times compared with said yarns.

4,388,802

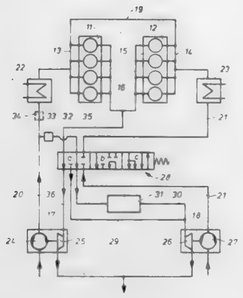
INTERNAL COMBUSTION ENGINE

Hans Dinger, Friedrichshafen, and Helmut Klotz, Tettnang, both of Fed. Rep. of Germany, assignors to MTU Motoren- und Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany

Filed Aug. 4, 1981, Ser. No. 289,837
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1980, 3046875
Int. Cl.³ F02B *37/00*
U.S. Cl. 60—606 **5 Claims**

1. An internal combustion engine comprising means for providing a supply of supercharging air for the engine, and an auxiliary combustion chamber means for improving an acceleration characteristic of the engine, characterized in that the supply means includes at least two exhaust gas turbocharger means operated in parallel, each of the turbocharger means includes a turbine means and a compressor means, means are provided for supplying an entire volume of exhaust gas from the engine only to one of the two turbocharger means during a partial load operation of the engine, means are provided for enabling the auxiliary combustion chamber means to operate at a full load during an accelerating of the engine in a low load range of operation of the engine, means are provided for sup-

plying exhaust gas from the auxiliary combustion chamber means to the turbine means of the other of the two turbocharger means, and in that means are provided for enabling the



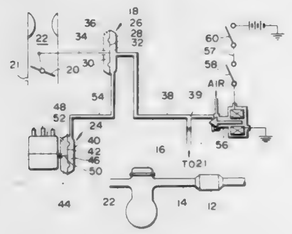
compressor means of the other of the turbocharger means to supply supercharged combustion air for the full load operation of the auxiliary combustion chamber means.

4,388,803

SYSTEM FOR RAPIDLY WARMING UP CATALYTIC CONVERTER PROVIDED TO AUTOMOTIVE INTERNAL COMBUSTION ENGINE

Katuji Furuya, Musashimurayama, and Tokuzo Yago, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 9, 1981, Ser. No. 281,875
Claims priority, application Japan, Jul. 10, 1980, 55-94178
Int. Cl.³ F02P *5/04*
U.S. Cl. 60—284 **6 Claims**



1. A system for rapidly warming up a catalytic converter provided to an exhaust passage of an internal combustion engine in an automobile to purify the exhaust gas, the engine including an intake passage with a throttle valve therein, the system comprising:

throttle opening means for increasing the opening degree of the throttle valve by a predetermined degree when a vacuum is applied to said throttle opening means;

ignition timing retarding means for retarding the ignition timing of the engine to a predetermined extent when a vacuum is applied to said ignition timing retarding means;

a vacuum passage which connects said ignition timing retarding means to the intake passage at a section downstream of the throttle valve via said throttle opening means;

an electromagnetic valve provided to said vacuum passage at a section between the intake passage and said throttle opening means such that an intake vacuum produced in the intake passage by the operation of the engine is applied through said vacuum passage to said throttle opening means and said ignition timing retarding means while said electromagnetic valve is electrically actuated;

an engine-temperature switch which is included in a circuit for actuation of said electromagnetic valve and operates when the temperature of the engine is below a predetermined temperature; and

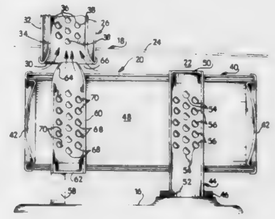
a gear-position switch which is included in said circuit and operates in response to the neutral position of a transmission of the engine, said engine-temperature switch and said gear-position switch being connected with each other such that said electromagnetic valve is actuated when both said engine-temperature switch and said gear-position switch operate.

4,388,804

EXHAUST ASSEMBLY FOR TRACTORS

Richard W. Bushmeyer, Burlington, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Aug. 17, 1981, Ser. No. 293,556
Int. Cl.³ F01N *5/04*
U.S. Cl. 60—319 **5 Claims**



1. An exhaust assembly for a tractor, said tractor having an engine, an exhaust manifold connected to said engine, and an engine hood substantially covering said engine thereby forming an engine compartment around said engine wherein said engine hood being adapted for pivotal or slidable movement to permit an operator access to said engine for repairs and the like, said exhaust assembly including:

an elongated exhaust conduit attached to said engine hood including a lower end that forms an enlarged opening for receiving exhaust gases, fresh air and fumes from said engine compartment and engine;

a tubular housing mounted in close proximity to said engine, said housing including opposed end plates closing its ends and an inlet conduit extending through the interior of said tubular housing adjacent one of its ends, said inlet conduit being closed at one end and having its opposite end connected to said exhaust manifold, the longitudinal axis of said inlet conduit being substantially perpendicular to the longitudinal axis of said tubular housing, and said inlet conduit including apertures and gas directing means along its length, the exhaust gases from said engine being forced into said inlet conduit and then directed in a horizontal swirling fashion by said apertures and gas directing means through the interior of said tubular housing thereby providing a first stage of exhaust gas cooling and muffling; and

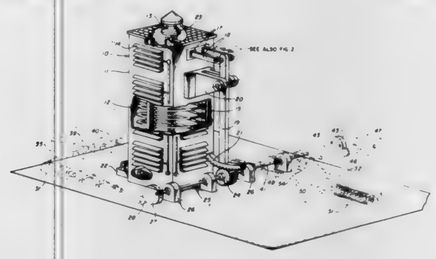
an outlet conduit extending through the interior of said tubular housing adjacent its other end, said outlet conduit being closed at one end and having an opposite conically shaped discharge end which terminates in close proximity to the lower end of said exhaust conduit, the longitudinal axis of said outlet conduit being substantially perpendicular to the longitudinal axis of said tubular housing, and said outlet conduit including apertures and gas directing means along its length, the enlarged opening formed at the lower end of said exhaust conduit being spaced from and surrounding the conical end of said outlet conduit to form an annular opening for drawing air and fumes from said engine compartment into said exhaust conduit, and the exhaust gas from said engine being forced into said outlet conduit and directed outwardly through said conical end of said outlet conduit and into said exhaust conduit for discharge thereby providing a second stage of exhaust gas cooling and muffing and permitting the introduction of air from around the engine into the exhaust gas for diluting the exhaust gas.

4,388,805

POWER PLANTS DERIVING THEIR ENERGY FROM EXPANSION AND CONTRACTION

Merle C. Rideout, Jr., 1 Roberts La., Cape Elizabeth, Me. 04107

Filed Jan. 21, 1981, Ser. No. 226,915
Int. Cl.³ F03G *7/06*
U.S. Cl. 60—527 **19 Claims**



1. A power plant including means operable to generate electricity, first means operable first to create and store energy and then to release energy to said generating means to effect operation thereof and second means operable first to create and store energy and then to release energy to said generating means to effect the operation thereof, means including a unit that expands and contracts to a predetermined extent when subjected to a temperature cycle within a predetermined range and during both expansion and contraction provides work strokes of predetermined maximum length, and means connecting said unit to said first and second storage means in a manner such that a work stroke in one direction operates said first storage means to create and store energy and said second storage means to release stored energy and a work stroke in the other direction operates said second storage means to create and store energy and said first storage means to release stored energy.

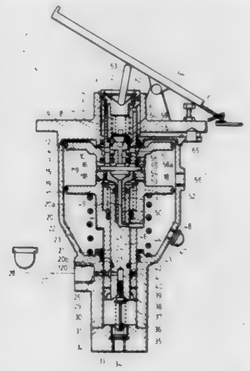
4,388,806

HYDRO-PNEUMATIC OPERATING DEVICE ACTUATED WITH A PNEUMATIC PRESSURE-MEDIUM OR SERVO-OPERATION, IN PARTICULAR FOR MOTOR-VEHICLE CLUTCHES

Istvan Szarka, and Janos Urbantsok, both of Budapest, Hungary, assignors to Autoipari Kutato es Fejleszto Vallalat, Budapest, Hungary

Filed Jun. 24, 1980, Ser. No. 162,676
Claims priority, application Hungary, Jun. 29, 1979, AU 426
Int. Cl.³ B60T *13/00*
U.S. Cl. 60—547.1 **2 Claims**

1. In a hydro-pneumatic operating device comprising a cylinder block, a hydraulic working cylinder in the cylinder block connected to a pressure-medium and having a hydraulic piston of a hydro-pneumatic piston, and a pneumatic servo-valve unit having a path-control actuated by an external operating element which cooperates with a first pneumatic servo-piston of said hydro-pneumatic piston; the improvement comprising, on the end face of a second pneumatic servo-piston (**14**) opposite to a pneumatic servo-chamber (**11**), a supporting surface (**19**) adapted to contact a surface (**118**) on said first pneumatic servo-piston (**20***a*) of the hydro-pneumatic piston (**20**); the side of the first pneumatic servo-piston (**20***a*) opposite the second pneumatic servo-piston (**14**) confining a blow-off chamber (**22**); a cylinder section (**13**) of a pneumatic working chamber (**15**) enclosed by the hydro-pneumatic piston (**20**) and the second pneumatic servo-piston (**14**) having a connection (**66**) for pressure medium; the hydro-pneumatic piston (**20**) having a duct (**46**) leading to said blow-off chamber (**22**); said blow-off chamber (**22**) having a blow-off unit (**47**) discharging to the free atmosphere; an axial bore (**51**) through said hydro-pneumatic piston (**20**) leading to said duct (**46**), a shaft (**50**) in said bore, said shaft (**50**) having a longitudinal through-channel (**49**) communicating with a blow-off chamber (**119**) of the path controlling servo-valve unit, and in which in an axial through-bore (**120**) of the hydro-pneumatic piston (**20**), there is disposed a sealed, axially displaceable piston-insert (**44**), the extreme position of which is limited by a buffer element (**53**) in the hydro-pneumatic piston (**20**), a spring (**52**) between the piston-



insert (**44**) and the hydro-pneumatic piston (**20**) which presses the piston-insert (**44**) toward the buffer element (**53**), said shaft (**50**) of the blow-off unit of the servo-valve being disposed in a slidably telescopic and sealed manner in the bore (**51**) of the piston-insert (**44**), said bore (**51**) of the piston-insert (**44**) continuously communicating through a duct (**45**) with said duct (**46**) leading into the blow-off chamber (**22**) of the second pneumatic servo-piston (**14**), a compression spring (**21**) between the hydro-pneumatic piston (**20**) and an end face of the cylinder block (**31**), the cylinder block (**31**) having a feed liquid connection which is connected to a duct (**41**) of the hydro-pneumatic piston (**20**) and to a conduit (**27**) which leads to a fluid tank (**28**), said duct (**41**) being connected to a fluid-duct (**40**) in said piston-insert (**44**), a valve seat (**38**) at the end of the feed-duct (**40**) leading to a hydraulic working chamber (**33**), and a check-valve (**35**) closing in the direction of the fluid-duct (**40**) and engageable with said valve seat (**38**).

4,388,807

GEOTHERMAL POWER EXTRACTION SYSTEM WITH ABOVE SURFACE HEATING OF WORKING FLUID

Hugh B. Matthews, Boylston, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 25, 1981, Ser. No. 247,436
Int. Cl.³ F03G *7/00*
U.S. Cl. 60—641.4 **5 Claims**

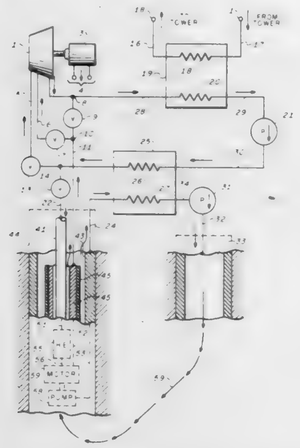
1. Geothermal deep well energy extraction apparatus of the kind in which solute-bearing water is pumped to a first station at the earth's surface from a subterranean second station by utilizing thermal energy extracted from said solute-bearing water for operating turbine-motor driven electrical generator means at said first station, said solute-bearing water being returned directly from said first station into reinjection well means, said extraction means including:

vapor generator means at said first station utilizing a first

portion of said thermal energy for supplying a working fluid for driving subterranean pump means for pumping said solute-bearing water from said second to said first station,

said vapor generator means being heated by said solute-bearing water before return to said reinjection well,

means for additionally supplying said working fluid for driving said turbine-motor driven electrical generator means by utilizing a second portion of said thermal energy,



means for condensing said working fluid exhaust vapor from the turbine motor of said turbine-motor driven electrical generator means, and

pump means for pumping said condensed working fluid exhaust in heat exchanging relation through said vapor generator means for parallel supply for driving said subterranean pump means and said turbine-motor driven electrical generator means.

4,388,808

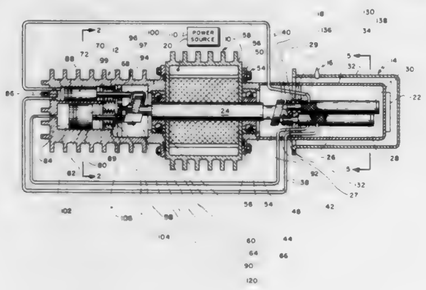
SWASH PLATE DRIVING MEANS FOR CRYOGENIC COOLERS

Peter Durenec, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 17, 1982, Ser. No. 349,494

Int. Cl.³ F25B *9/00*

U.S. Cl. 62—6 **14 Claims**



1. A swash plate driving means for cryogenic coolers, said driving means comprising:

a shaft rotating means having at least one swash plate on the shaft rotated thereby;

compressor means comprised of a plurality of piston rods interacting between said at least one swash plate and compression cylinders to produce pressure waves in a plurality of compression volumes; and

a regenerator means in a separate housing from said compressor means, said regenerator means comprised of a plurality of displacer regenerators operatively interacting with at least said pressure waves of said compressor means to provide cooling at a cold station within said regenerator means.

4,388,809

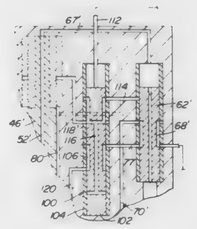
CRYOGENIC REFRIGERATOR

Domenico S. Sarcia, Carlisle, Mass., assignor to CVI Incorporated, Columbus, Ohio

Filed Apr. 19, 1982, Ser. No. 369,864

Int. Cl.³ F25B *9/00*

U.S. Cl. 62—6 **14 Claims**



1. In a cryogenic refrigerator in which a movable displacer means defines within an enclosure first and second chambers of variable volume, and in which a refrigerant fluid is circulated in a fluid flow path between said first chamber and said second chamber by the movement of said displacer means, the improvement comprising chamber means for guiding a slide connected to the displacer means, said slide having an axial passage communicating with one end of said chamber means remote from the displacer means, a motor coupled to said slide for controlling movement of the displacer means at top dead center and bottom dead center positions thereof, said passage in said slide having a restriction, a valve having a spool valve member for controlling flow the high and low pressure fluid, means including a conduit communicating one end of said spool valve member with said one end of said chamber means for introducing high fluid pressure into the conduit to shift the spool valve member when the displacer means is at one of the extremities of its movement.

4,388,810

STORAGE TANK FOR LIQUEFIED GAS SUCH AS METHANE

Michel Guilhem, Au, Switzerland, assignor to Gaz de France, Paris, France

Filed Feb. 26, 1982, Ser. No. 352,757

Claims priority, application France, Mar. 19, 1981, 81 05497

Int. Cl.³ F17C *3/00*

U.S. Cl. 62—47 **7 Claims**

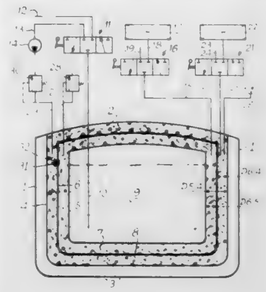
1. A tank adapted for use in storing and transporting liquefied gas comprising:

an internal vessel having a primary barrier wall defining a main space in which said liquefield gas is contained at a given pressure;

an intermediate vessel having a secondary barrier wall surrounding said internal vessel and defining a primary space between said internal vessel and said intermediate vessel;

an outer hull having a main wall surrounding said intermediate vessel and defining a secondary space between said intermediate vessel and said outer hull;

a gas located within said secondary space at a pressure at least equal to the pressure of said liquefied gas, said gas having a sublimation temperature at or above the temperature of said liquefied gas, but below the service temperature of said secondary space whereby said gas freezes by



sublimation to form a solid barrier upon leakage of liquefied gas from said main space into said primary space; and

means connected to said secondary space for selectively feeding gas under pressure to said secondary space.

4,388,811

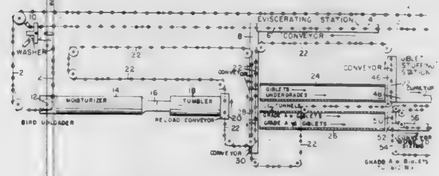
METHOD FOR PREPARING POULTRY FOR FRESH-PACK HANDLING

Ralph S. Zebarth, Gainesville, Ga., assignor to Meyn U.S.A., Inc., Baldwin, Ga.

Filed Sep. 22, 1981, Ser. No. 304,614

Int. Cl.³ F25D *13/02*

U.S. Cl. 62—63 **8 Claims**



1. A method of preparing eviscerated poultry carcasses for fresh-pack handling, having a predetermined allowable content of pick-up moisture, said method consisting of the successive steps of:

a. adding moisture in the form of water to eviscerated poultry carcasses with sufficient intimacy and thoroughness to ensure the pick-up of moisture by said carcasses well in excess of said predetermined allowable content plus the amount of moisture which may be removed from said carcasses by freeze-crusting thereof,

b. removing moisture from said carcasses to reduce the pick-up moisture content thereof to a level generally equal to said predetermined allowable content plus the amount of moisture which may be removed therefrom by freeze-crusting thereof, and

c. subjecting said carcasses to a supercold atmosphere for a time sufficient to freeze-crust the skin and surface portions thereof but not to freeze the deeper portions thereof, whereby the carcass skins shrink to expel moisture from said carcasses to reduce their pick-up moisture content to a level generally equal to said predetermined allowable amount.

4,388,812

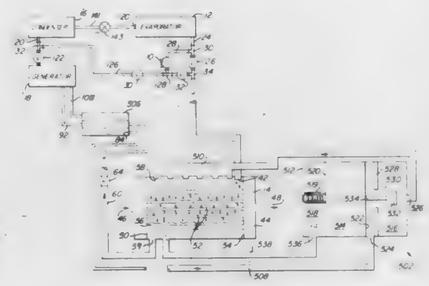
VARIABLE VALVE FOR REFRIGERATION SYSTEM

Silas W. Clark, 1000 Greens Rd., #809, Houston, Tex. 77060

Division of Ser. No. 18,647, Mar. 8, 1979, Pat. No. 4,285,211, which is a continuation-in-part of Ser. No. 887,445, Mar. 16, 1978, Pat. No. 4,171,619. This application Apr. 10, 1981, Ser. No. 252,937

Int. Cl.³ F25B *15/00*

U.S. Cl. 62—141 **9 Claims**



1. In an absorption refrigeration system having generator means, condenser means, evaporator means for cooling output, absorber means, and a compressor for compressing refrigerant vapor passing between said evaporator means and said absorber means, said absorber means comprising means for delivering solution from the generator means to the absorber means, the combination with:

variable valve means between the generator means and the absorber means for controlling fluid flow to said absorber means in response to a pressure difference between said generator means and said absorber means, so that, as absorber pressure approaches generator pressure, said fluid flow to said absorber means increases to maintain a constant cooling output, said variable valve means metering chamber having an aperture with an area for passing absorber fluid; blocking means operatively associated with said aperture for increasing and decreasing effective aperture area for fluid flow through said valve means; and pressure difference sensing means response to a difference in pressure between absorber pressure and generator pressure and operably connected to said blocking means for decreasing said fluid flow in response to an increase of said difference in pressure.

4,388,813

SERVER FOR WINE BOTTLES AND THE LIKE

James H. Gardner, and Noel H. de Nevers, both of Salt Lake City, Utah, assignors to Aurora Design Associates, Inc., Salt Lake City, Utah

Continuation of Ser. No. 171,901, Jul. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 61,655, Jul. 30, 1979, Pat. No. 4,255,944. This application Dec. 14, 1981, Ser. No. 330,556

Int. Cl.³ F25D *3/08*

U.S. Cl. 62—457 **4 Claims**

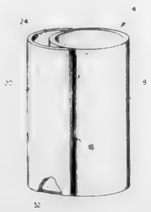
1. A server for wine bottles and the like comprising

a vertically elongate housing open at the top for receiving a bottle and having a side wall for surrounding the entire side exterior of the bottle, said side wall constructed of a heat conductive material to enable complete circumferential conduction in the side wall, and

receptacle means for holding ice in contact with a side portion of the exterior of said side wall, said receptacle including

an outer wall surrounding said side portion of the side wall to define a space therebetween for receiving ice, said outer

wall being joined to the side wall at a first generally vertical locus of points, and then looping outwardly from the first locus and about said space, and joining the side wall



at a second generally vertical locus of points spaced horizontally from the first locus, and

a bottom wall joining the bottoms of the outer wall and side wall to support ice placed in said space.

4,388,814

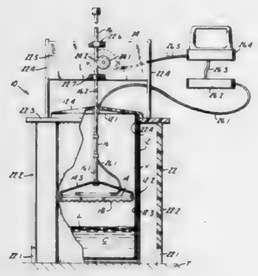
CRYOGENIC DEVICE AND METHOD

Dean W. Schilling, 5049 Diane Dr., Minnetonka, Minn. 55343

Filed Mar. 26, 1982, Ser. No. 362,486

Int. Cl.³ F25D *25/00*

U.S. Cl. 62—62 **9 Claims**



1. Method of controlling the temperature of an object comprising

(a) providing an upwardly open vessel containing a liquid cryogen, the vessel having vertically continuous inner walls of high thermal conductivity to provide a vertical temperature gradient above the level of liquid cryogen,

(b) supporting the object within the container above the liquid cryogen, and sensing a temperature relative to the temperature of the object, and

(c) varying the vertical spacing of the object above the liquid cryogen level until the desired temperature is obtained.

4,388,815

PICK-PROOF LOCK

Michael S. Lawler, 7853 Melotte St., San Diego, Calif. 92119

Filed Sep. 8, 1980, Ser. No. 185,234

Int. Cl.³ E05B *21/00, 35/04*

U.S. Cl. 70—134 **9 Claims**

1. A pick-resistant bar lock comprising:

(a) a casing;

(b) a bar slideable in said casing in a longitudinal direction and defining at least one shear plane therewith;

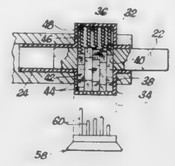
(c) a longitudinally extended slot passing laterally through said bar;

(d) a plurality of side-by-side contiguous tumblers disposed in a longitudinal row occupying the volume of said slot;

(e) a clearance cavity defined in said casing adjacent said slot and defining at least one shoulder extending to said shear plane to block said bar when said tumblers are misaligned with said shear plane;

(f) access means defined in said casing providing access to said tumblers for keying manipulation thereof;

(g) a second shear plane and second cavity defined in said casing on the opposite side of said bar from first cavity and shear plane, and each of said cavities defining two shoulders aligned with the edges of said slot when same is aligned with said cavity;



(h) said access means comprises a hole generally axially aligned with each tumbler defined in the portion of said casing defining one of said cavities;

(i) the other of said cavities houses springs biasing said tumblers toward said holes and said tumblers are operated by prongs projecting through said holes; and

(j) the portions of said casing defining said cavities are each provided with holes generally axially aligned with said tumblers and each of said cavities houses compression springs biasing said tumblers and each of said tumblers comprises at least two component tumblers to define two sets of shear surfaces to be aligned with said shear planes.

4,388,816

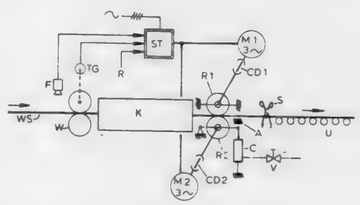
METHOD AND APPARATUS FOR ROLLING A LENGTH OF METAL BAR OR WIRE

Florimond Ferket, Oudorp, and Cornelis A. Kuenen, Heerhugowaard, both of Netherlands, assignors to Estel Hoogovens B.V., IJmuiden, Netherlands

Filed Jan. 21, 1981, Ser. No. 226,944

Int. Cl.³ B21B *37/00, 45/02*

U.S. Cl. 72—11 **5 Claims**



1. An improved method of rolling a length of metal bar or wire of the type where the metal length is passed through a roll stand and subsequently through at least one cooling device and then through an opposed pair of driven bridle rolls, and is maintained under tension in the cooling device by said bridle rolls which frictionally grip the metal length between them and which are driven, during passage of the metal length, with a power input which, if the metal length were absent, would cause the bridle rolls to rotate at a first peripheral speed of the bridle rolls higher than the rolling speed of the metal length in the roll stand, wherein the improvement comprises:

rotating the bridle rolls at a second peripheral speed higher than said first peripheral speed at the moment when the leading end of the metal length reaches the bridle rolls.

4,388,817

VEHICLE WHEEL AND METHOD OF MANUFACTURING SAME

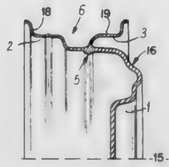
Rene R. Victor, Nogent-sur-Marne, France, assignor to Etablissements Letang & Remy, Paris, France

Filed Nov. 5, 1980, Ser. No. 204,376

Claims priority, application France, Nov. 30, 1979, 79 29540

Int. Cl.³ B21H *1/04*

U.S. Cl. 72—68 **3 Claims**



1. A method of manufacturing a vehicle hub of light weight alloy for rotation about an axis, comprising in combination the steps of:

forming a sheet of the alloy into a blank having a first portion for attachment to an axle aligned with the axis about which the hub rotates, the first portion having a sub-rim portion extending generally in the same direction as the axis of the hub, the blank further having a second portion extending radially from a juncture with the sub-rim portion;

splitting the second portion from the periphery thereof to the juncture with the sub-rim portion to form first and second circular flanges extending from the juncture with the sub-rim while thickening the juncture to form a reinforcing bead

while maintaining the thickness of the first circular flange, bending the first flange away from the sub-rim and also bending the first flange into a first rim portion for supporting one wall of an inflatable tire, and

while maintaining the thickness of the second circular flange, bending the second flange over the sub-hub and also bending the second flange into a second rim portion for supporting the other wall of the inflatable tire.

4,388,818

METHOD AND APPARATUS FOR FABRICATING PRECISION TEETH

Hans Krapfenbauer, Zurich, Switzerland, assignor to Firma Ernst Grob, Männedorf, Switzerland

Filed Sep. 4, 1981, Ser. No. 299,399

Claims priority, application Switzerland, Oct. 20, 1980, 7807/80

Int. Cl.³ B21H *5/00*

U.S. Cl. 72—81 **11 Claims**

1. A method for fabricating precision teeth with least one free tooth end at which there is first fabricated a workpiece with approximately shaped teeth, which are then finished rolled in a separate working cycle by cold working the teeth, comprising the steps of:

approximately fabricating the teeth by means of an addition of material;

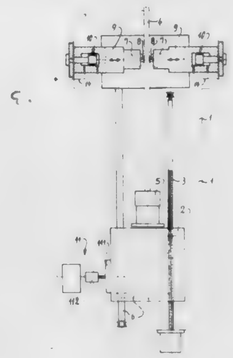
clamping said teeth for cold working thereof and performing a feed of the workpiece;

during such workpiece feed displacing the workpiece along its lengthwise axis and rotating such workpiece about said lengthwise axis;

during such movements of the workpiece machining the workpiece from the outside by means of substantially ring-shaped profiled rolling tools revolving in a substantially planetary-like manner in related rolling heads;

said machining step encompassing performing with each rolling tool in the tooth gaps in the same directional sense which predominantly extends in the teeth lengthwise direction individual rolling operations which are briefly effective in rapid sequence and accommodated to the tooth pitch-dependent workpiece feed, so that with the same rolling tool there are applied in the tooth gaps in succession successively performed individual rolling operations each located at a substantially screw-line shaped zone which is governed by the feed of the workpiece;

performing in the teeth lengthwise direction of the same



tooth gap successive individual rolling operations which overlap with respect to the application of the individual rolling operations at the workpiece; and

gradually adjusting the penetration depth of the rolling tools during the feed of the workpiece such that at each end region of the teeth adjacent to a free tooth end such penetration depth is smaller than at the remaining regions.

4,388,819

ROLLING MILLS

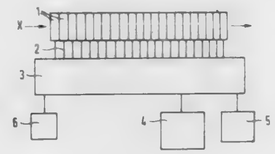
Hermann Möltner, Grevenbroich, Fed. Rep. of Germany, assignor to Kocks Technik GmbH & Company, Hilden, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,713

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028210

Int. Cl.³ B21B *39/08, 35/00*

U.S. Cl. 72—234 **4 Claims**



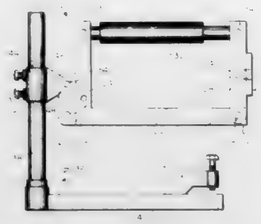
1. A rolling mill for the stretch-reducing of tubes, comprising a plurality of rolling stands which are arranged closely one after the other, a main motor and drive train drivingly connected to all of the rolls in said plurality of roll stands whereby the rolls are driven by said main motor and two auxiliary motors connected to said drive train, said drive train including planetary gear stages for combining the rotational speeds of the two auxiliary motors with that of the main motor such that a first group of rolling stands disposed at the entry end and a second group of rolling stands disposed at the delivery end are each driven by one of said auxiliary motors whose rotational speed is independently controllable and is superimposed on the rotational speed of the main motor which is common to all of the stands.

4,388,820

CAMBER CORRECTION TOOL

Kenneth W. Rickbeil, 227 Poppy, Monrovia, Calif. 91016

Filed Jan. 23, 1981, Ser. No. 227,547
Int. Cl.³ B21D *1/12*; **B21J** *13/00*
U.S. Cl. 72—458 **10 Claims**



1. Corrective adjustment tool for adjusting camber of a wheel carried on a spindle and mounting plate assembly rigidly connected to a camber controlling member such as a trailing arm or McPherson strut while attached to a vehicle, said tool comprising:

a base defining support means supporting the tool in operating position;

a rigid bar having in normal operating position,

a first terminus remote to the mounting plate,

first arm means rigidly connected to said bar first terminus at a fixed angle, and,

a second terminus adjacent to the mounting plate,

second arm means engageable with said mounting plate and pivotally connected to said bar second terminus to define a fulcrum relative to said mounting plate; and

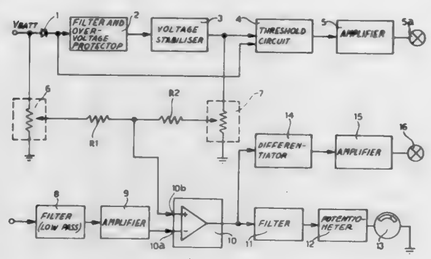
force application means engaged between said first and second arms and constructed and arranged to exert spreading or contracting force in parallel with said bar therebetween freely of pressure on said spindle to angularly vary the relative positions of said arms, whereby said mounting plate is pivoted about said fulcrum in camber controlling member bending relation against the weight of said vehicle, and camber adjusted thereby.

4,388,821

APPARATUS FOR CALIBRATING THE CARBON MONOXIDE EMISSION UNDER IDLING CONDITIONS OF AN INTERNAL COMBUSTION ENGINE PROVIDED WITH A BOSCH L-JETRONIC ELECTRONIC INJECTION APPARATUS

Pasquale Martinez, and Vittorio Di Nunzio, both of Turin, Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Mar. 4, 1981, Ser. No. 240,355
Claims priority, application Italy, Mar. 13, 1980, 67388 A/80
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—1 R **5 Claims**



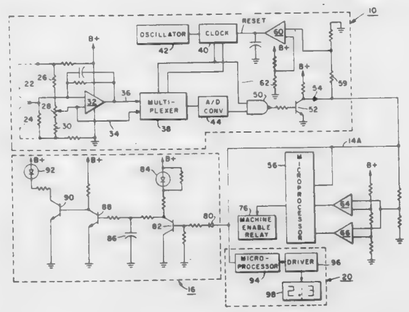
1. An apparatus for use in adjusting the fuel/air mixture strength under idling conditions of an Otto cycle internal combustion engine having a fuel injection system of the type provided with an electronic control unit including circuit means for the closed loop control of the mixture strength, a sensor responsive to the proportion of carbon monoxide in the exhaust gases located in the exhaust pipe, means for switching said sensor into and out of said circuit means and an integrator operable to generate, in dependence on signals from said sensor, a correction signal representative of the change in the mixture strength required to bring the mixture strength to the stoichiometric value, said adjustment being for the purpose of calibrating said fuel injection system to bring the carbon monoxide emission of the engine under idling conditions to within predetermined limits, said apparatus comprising means for determining the difference between the value of said correction signal when said sensor is switched into the circuit and the value of said correction signal when said sensor is switched out of the circuit including first and second resistors, a voltage stabilizer, an operational amplifier having first and second inputs, a first potentiometer having its resistive element adapted to be connected between a battery and ground and its wiper connected by said first resisfor to said second input of said operational amplifier, means connecting said first input of said operational amplifier to the output of said integrator to receive said correction signal, a second potentiometer having its resistive element connected between the output of said voltage stabilizer and ground and its wiper connected by said second resistor to said second input of said operational amplifier and visual display means operating to provide a visual display of said difference.

4,388,822

ATMOSPHERIC SAMPLING SYSTEM

Herbert Heller, Pittsburgh, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Jul. 15, 1981, Ser. No. 283,537
Int. Cl.³ G01N *27/18*
U.S. Cl. 73—23 **6 Claims**



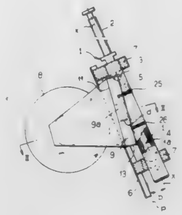
1. In an atmospheric sampling system, the combination of sensor means for producing an electrical signal indicative of a particular gas content in the atmosphere, means for producing first electrical pulses of essentially constant width, means for producing second electrical pulses whose widths vary as a function of said gas content in the atmosphere, means for comparing the widths of said first and second pulses, means for generating third pulses having a characteristic which varies as a function of the comparative widths of said first and second pulses, and indicator means actuated by said third pulses.

4,388,823

APPARATUS FOR AUTOMATICALLY MEASURING THE VISCOSITY OF LIQUIDS

Guy Garnaud, and Roger Bouhier, both of Poitiers, France, assignors to Medica-Test, Saint-Benoit, France

Filed Mar. 10, 1981, Ser. No. 242,387
Claims priority, application France, Mar. 26, 1980, 80 06658
Int. Cl.³ G01N *11/12*
U.S. Cl. 73—57 **4 Claims**



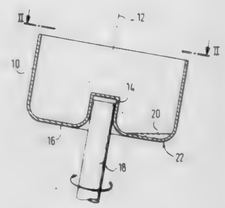
1. Apparatus for automatically measuring the viscosity of liquids, comprising in combination a viscosimetric tube (**1**), kept in an inclined position and containing a ball (**3**) made of magnetic material, means (**2**) for introducing the liquid to be tested in said tube and means for measuring the duration of fall of said ball (**3**) in the tube (**1**) containing the liquid, said means being associated with means for converting into viscosity the duration of fall of the ball (**3**) from the top of the tube, electromagnetic means for applying to said ball a magnetic field so as to maintain said ball at the top of said tube and means for suppressing the magnetic field and allowing the fall of the ball (**3**) in the tube (**1**), wherein said electromagnetic means (**8**) comprise an electromagnet having two poles with their ends (**9***a*) being disposed relative to one another and defining an air gap (**10**) which is lengthy and narrow, along which the viscosimetric tube (**1**) is placed, with the distance (d) between said tube and the ends (**9***a*) of the two poles (**9**) augmenting progressively between the top and the bottom of the tube (**1**), so as to create along the tube a magnetic field gradient directed towards the top of the tube which permits automatic rising of the ball from the bottom of the tube to the top of the tube when the electromagnet is energized.

4,388,824

PROCESS AND AN APPARATUS FOR TESTING THE COAGULATION PROPERTIES OF LIQUIDS

Herbert Krone, Niedernkamp 11, D-4933 Blomberg, Fed. Rep. of Germany

Filed Feb. 25, 1981, Ser. No. 238,095
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007722
Int. Cl.³ G01N *33/48*
U.S. Cl. 73—64.1 **16 Claims**



1. A process for testing a liquid with respect to coagulation thereof, comprising the steps of:

placing an amount of the liquid to be tested into an annular space within a sample vessel, said annular space being at a slope in relation to the horizontal and having a generatrix axis at an angle to the vertical, the amount of the liquid being sufficient to form a body within a lower part of said annular space stretching partly around said generatrix axis;

continuously rotating said vessel about said generatrix axis wherein the liquid upon coagulation is transported to a higher part of said annular space; and

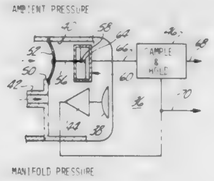
sensing the presence of said coagulated liquid at the higher part of said annular space.

4,388,825

INTEGRAL MANIFOLD ABSOLUTE PRESSURE AND AMBIENT ABSOLUTE PRESSURE SENSOR AND ASSOCIATED ELECTRONICS

Didier J. deValpillieres, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 17, 1977, Ser. No. 797,726
Int. Cl.³ G01L *23/24*
U.S. Cl. 73—115 **10 Claims**



5. A manifold absolute pressure and ambient absolute pressure sensing system for providing a MAP and AAP signal for use in controlling the operation of an internal combustion engine including an electronic control unit, the improvement comprising a manifold pressure sensor adapted to sense the absolute manifold pressure of the engine, and a differential pressure sensor subject to absolute manifold pressure and ambient pressure including means for sensing the difference between the absolute manifold and ambient pressure, switch means connected to said difference sensing means including a sensing contact and a set contact, means for setting a preselected relationship between said contacts, sensing and set means to establish a difference between absolute manifold and ambient pressure at which said sensing or set means will permit conduction or nonconduction through said switch means, said contacts opening or closing in response to said ambient pressure achieving said preselected relationship to said manifold pressure, and signal processing circuit means including a sample-and-hold circuit adapted to receive a signal indicative of the opening or closing of said contacts, means for generating a MAP signal in response to the operation of said manifold absolute pressure sensor, said sample-and-hold circuit being enabled in response to said opening or closing of said switch to provide a signal indicative of said MAP signal, and means for receiving said signal indicative of said opening or closing of said switch means and said MAP signal for generating an AAP signal in response thereto.

4,388,826

WEAPON SIMULATOR

Peter Mannhart, Hochdorf, and Bruno Ruppen, Zürich, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Filed Sep. 23, 1981, Ser. No. 304,823
Claims priority, application Switzerland, Sep. 26, 1980, 7232/80
Int. Cl.³ G01N *19/00*
U.S. Cl. 73—167 **4 Claims**

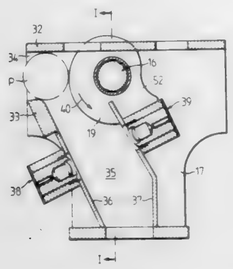
1. A weapon simulator for checking the removal of ammuni-

tion from a magazine at a cadence essentially corresponding to that with which an automatic firing weapon is fired, comprising:

a shaft arranged essentially parallel to the lengthwise axis of cartridges which are to be removed;

two cam disks secured in spaced relationship from one another upon said shaft;

said cam disks being structured such that during one revolution of the shaft together with both of the cam disks, said



cam disks conjointly cam-out of the magazine a cartridge transversely with respect to its lengthwise axis;

a drive motor for driving said shaft provided with said cam disks;

an infeed channel by means of which the cartridges are infed from the magazine to both of the cam disks; and

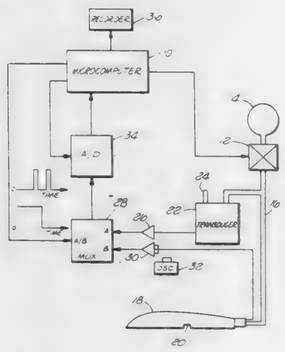
a withdrawal channel through which the cartridges are ejected by means of both cam disks at the required cadence.

4,388,827

METHOD FOR MEASURING THE DEPTH OF A LIQUID BODY

James K. Palmer, 134 Fel Mar Dr., San Luis Obispo, Calif. 93401, and Charles E. Kinzer, 8530 San Andres, Atascadero, Calif. 93422

Filed Dec. 4, 1980, Ser. No. 212,940
Int. Cl.³ G01F *23/14*
U.S. Cl. 73—302 **2 Claims**



1. A method for detecting the depth of a liquid body comprising the steps of:

(a) connecting a tube to a source of pressurized inert gas at its first end;

(b) locating the opposed end of said tube at substantially the bottom of said body of liquid;

(c) applying a plurality of pulses of pressurized gas of predetermined duration to said tube in a periodic manner by opening a valve in said tube for preselected periods of time; then

(d) measuring the pressure within said tube a predetermined time after each of said pulses to obtain a plurality of data points indicative of the pressure at the bottom of said body of water; then

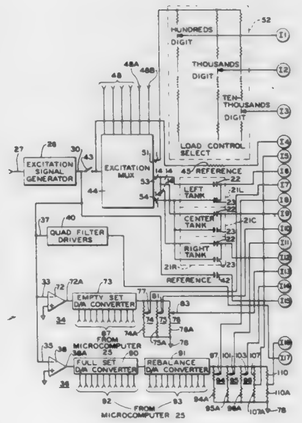
(e) converting said pressure into a corresponding measure of the depth of said body of liquid.

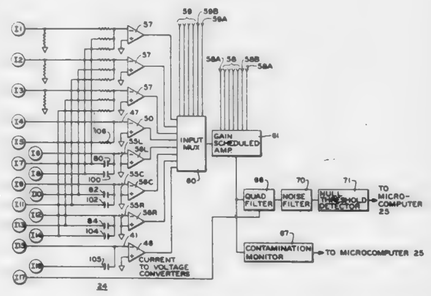
4,388,828

LIQUID GAGING SYSTEM SENSOR CALIBRATION

William R. Dougherty, St. Anthony, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 14, 1980, Ser. No. 149,796
Int. Cl.³ G01F *23/26*
U.S. Cl. 73—304 C **22 Claims**





1. In a liquid gaging system, an apparatus for measuring and storing a value related to an unwetted capacitance of a capacitive sensor, the stored value being available for use in liquid measurements, comprising:

a capacitive sensor for mounting in a tank, the sensor having an unwetted capacitance variable in dependence on manufacturing tolerances, the sensor capacitance also being related to a stray capacitance in the system;

processor means having digital-to-analog converter means for automatically determining the sensor unwetted capacitance including the sensor capacitance contributed by the stray capacitance in the system, the processor means being connected to the sensor; and

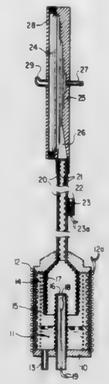
means for storing a value related to the sensor unwetted capacitance determined by the processor means, the means for storing being connected to the processor means.

4,388,829

EVAPORATION TYPE BAROMETER

Thomas M. Dauphinee, Ottawa, Canada, assignor to Canadian Patents & Development Limited, Ottawa, Canada

Filed Oct. 5, 1981, Ser. No. 308,468
Int. Cl.³ G01L *7/08*
U.S. Cl. 73—384 **9 Claims**



1. A barometer of the evaporation or hypsometer type comprising:

(a) an enclosed cylindrical bulb partially filled with a working fluid,

(b) a first temperature measuring device positioned in the bulb for measuring the temperature of the working fluid therein,

(c) a relatively thin extended tube connected to and extending from the bulb,

(d) a second temperature measuring device positioned on the tube at a position away from the bulb for measuring the temperature of the working fluid at that location,

(e) an electrical heater associated with the bulb for bringing the working fluid to the evaporation temperature,

(f) a mechanism for transmitting ambient pressure to the inside of the tube-bulb combination and preventing escape of working fluid connected to the upper end of the tube,

(g) electrical means connected to the heater for providing a heating current thereto,

(h) control means connected to the second temperature measuring device and the electrical means for controlling the level of heating current provided to the heater, and

(i) output means connected to the first temperature measuring device for providing an output voltage, said voltage being related to the ambient barometric pressure.

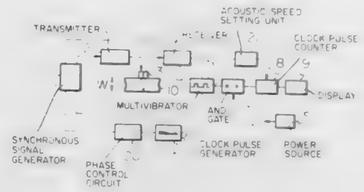
4,388,830

METHOD AND APPARATUS FOR MEASUREMENT OF THICKNESS UTILIZING ULTRASONIC PULSES

Isao Narushima, Machida, and Morio Nakano, Sagamihara, both of Japan, assignors to Teitsu Denshi Kenkyusho Co., Ltd., Kawasaki, Japan

Filed Jun. 17, 1981, Ser. No. 274,451
Claims priority, application Japan, Dec. 8, 1980, 55-172076
Int. Cl.³ G01N *29/00, 24/00;* **G01H** *5/00*
U.S. Cl. 73—597 **11 Claims**

4. An apparatus for measuring the thickness of a workpiece comprising a probe for transmitting ultrasonic pulses into a workpiece and for receiving related ultrasonic echo pulses, a synchronizing signal generator, means responsive to said synchronizing signal generator for periodically supplying electric pulses to said probe to cause it to produce said ultrasonic pulses, means for measuring the period of time elapsed from the time of transmission of each ultrasonic pulse to the time to reception of its related echo pulse, a clock pulse generator, means for counting each of said measured time periods, means for counting the number of clock pulses within said measured time periods by the clock pulses supplied from said clock pulse generator, and means for deriving from each of such counted time periods and such counted clock pulses within said measured time periods a signal representing the thickness of the workpiece, characterized in that there is provided a phase



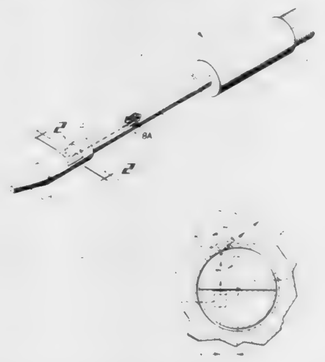
control circuit between said synchronizing signal generator and said clock pulse generator, said phase control circuit being adapted to shift the phase of said clock pulses by $2\pi/N$ radians where N is an integer not less than two in a preselected direction upon completion of each measurement of the elapsed time period during which N successive echo pulses are measured by said measuring means.

4,388,831

ULTRASONIC PROBE FOR NONDESTRUCTIVE INSPECTION

Ira N. Sherman, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Feb. 20, 1981, Ser. No. 236,086
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—623 **4 Claims**



1. An ultrasonic probe for nondestructive detection of anomalies in the region of a generally cylindrical hole comprising:

(a) an elongated shaft having a longitudinal axis;

(b) a first ultrasonic transducer which is

(i) mounted at a predetermined distance from the longitudinal axis on a lateral offset surface located on a lateral extension of the shaft, the lateral offset surface being

(A) located at an outer end section of the lateral extension,

(B) offset a distance determined by the expression

$$b = \left(\frac{D}{2}\right) - \sqrt{\left(\frac{D}{2}\right)^2 - a^2}$$

wherein:
b=offset distance
D=diameter of hole under inspection
a=the predetermined distance of (b)(i),

(ii) oriented for directing the axis of radiation of ultrasonic energy emanating therefrom opposite to the direction of offset and in a plane perpendicular to the longitudinal axis of (a),

(c) a second ultrasonic transducer which

(i) has a common focal length as the first ultrasonic transducer,

(ii) is mounted on the longitudinal axis of (a) and in a common plane with the first ultrasonic transducer, the plane being perpendicular to the longitudinal axis, and

(iii) is oriented for directing radiation radially outwardly of the longitudinal axis of (a).

4,388,832

METHOD AND APPARATUS FOR RECEIVING ULTRASONIC WAVES BY OPTICAL MEANS

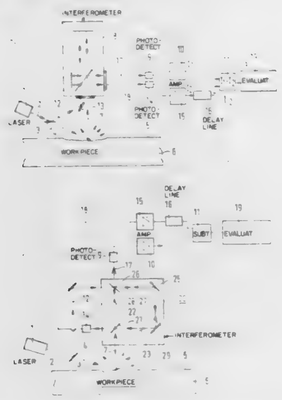
Walter Kaule, Cologne, Fed. Rep. of Germany, assignor to Krautkramer-Branson, Inc., Stratford, Conn.

Filed Jul. 1, 1981, Ser. No. 279,606

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1980, 3029776

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—655 **8 Claims**



1. The method of receiving ultrasonic waves from a workpiece by optical means wherein the ultrasonic waves are manifest as cyclic deformations occurring at a surface portion of the workpiece comprising:

providing a laser beam and causing it to be incident upon the surface portion to illuminate such portion;

transmitting the laser beam light reflected at said surface portion as a measuring beam to an optical interferometer and converting the optical signal responsive to said measuring beam after traversing said interferometer to a first electrical signal;

separating a portion from said laser beam before said beam is incident upon said workpiece surface portion;

transmitting said non-incident beam portion as a comparison beam to said optical interferometer and converting the optical signal responsive to said comparison beam after traversing said interferometer to a second electrical signal;

separately amplifying said first and said second electrical signals;

delaying said second amplified electrical signal;

subtracting said amplified and delayed second electrical signal from said amplified first electrical signal to provide a difference signal, and

evaluating said difference signal.

4,388,833

DIFFERENTIAL PRESSURE GAUGE

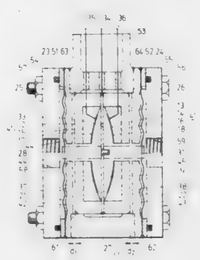
Hideki Kuwayama, Tokyo, Japan, assignor to Kabushiki Kaisha Hokushin Denki Seisakusho, Tokyo, Japan

Filed Dec. 18, 1980, Ser. No. 217,594

Claims priority, application Japan, Jan. 7, 1980, 55-336[U]

Int. Cl.³ G01L *9/12*

U.S. Cl. 73—718 **16 Claims**



1. A differential pressure gauge comprising:

a tubular body having a terminal box formed on the circumference thereof, said box being unitary with said tubular body and extending outwardly of said circumference;

a first plate-like member having a through hole therein, said first plate-like member being fixed to the tubular body to close one end of said body, said first plate-like member and said tubular body being provided with portions that abut one another in a plane perpendicular to the axis of said tubular body;

a second plate-like member fixed to the tubular body to close the other end thereof;

a displacement transducer fixedly mounted on the tubular body within a region defined by the tubular body and the first and second plate-like members, the opposing sides of said displacement transducer being disposed in facing relation respectively to surfaces of said first and second plate-like members and being spaced from said surfaces of said first and second plate-like members by intervening air gaps operative to assure that any deformation of either of said plate-like members is incapable of achieving contact between said surface of said plate-like member and the facing side of said transducer,

a first pressure receiving member mounted on the tubular body on the outside of the first plate-like member;

first pressure transmitting means for transmitting to the displacement transducer an external pressure received by the first pressure receiving member; and

first limiting means for receiving by the first plate-like member a deflection of the first pressure receiving member in excess of a predetermined value caused by an overpressure from the outside, whereby the overpressure received by the first plate-like member is supported by the tubular body.

4,388,834

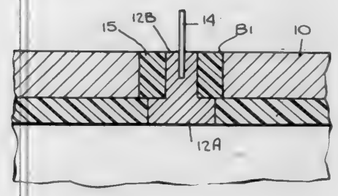
ELECTROMAGNETIC FLOWMETER HAVING A MONOLITHIC CONDUIT

Roy F. Schmoock, Yardley, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Mar. 31, 1981, Ser. No. 249,484

Int. Cl.³ G01F *1/58*

U.S. Cl. 73—861.12 **9 Claims**



1. A monolithic structure comprising at least one electrode pre-molded of flowable synthetic thermoplastic material having electrically conductive properties, said molded electrode having a periphery of predetermined shape and a layer molded about the periphery of the electrode and fused thereto, the layer being formed of a flowable synthetic thermoplastic material having an affinity for the electrode material and flowing about said periphery to be fused thereto, the layer material having electrical insulating properties.

4,388,835

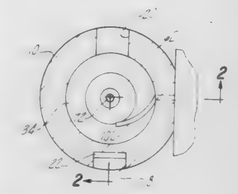
FLUID FLOW METER

Nils O. Rosaen, Clarkston, Mich., assignor to Universal Flow Monitors, Hazel Park, Mich.

Continuation-in-part of Ser. No. 67,444, Aug. 20, 1979, Pat. No. 4,282,761. This application Aug. 3, 1981, Ser. No. 289,290

Int. Cl.³ G01F *1/22*

U.S. Cl. 73—861.58 **15 Claims**



1. A fluid flow meter comprising:

a housing having a fluid inlet and a fluid outlet,

fluid passage means formed through said housing for connecting said inlet with said outlet, said fluid passage means including an elongated housing chamber and means connecting one end of the chamber to the inlet and the other end of the chamber to the outlet,

a cartridge assembly self-aligning piston having an axial bore, axially slidably mounted in said chamber and movable between a first position and a second position, and insertable in said housing without disturbing piping,

means for resiliently urging said piston towards said first position,

means for fluidly sealing one end of said piston to said housing,

a plate having an orifice and means for securing said plate to said piston so that said orifice is open to said piston bore and so that one side of said plate is open to the inlet end of the chamber and the other side of the plate is open to the outlet end of the chamber,

a rod attached to said piston assembly and extending through said housing chamber, said rod having a tapered portion positioned through said plate orifice so that the area of the opening between the rod tapered portion and orifice increases as said piston moves from said first position and towards said second position,

means for indicating the axial position of said piston exteriorly of said housing; and

wherein said rod extends through a first bore in the other end of the piston, said first bore having a cross sectional area and shape substantially the same or slightly greater than the rod so that the rod guides said other end of the piston as said piston moves between said first and second position.

4,388,836

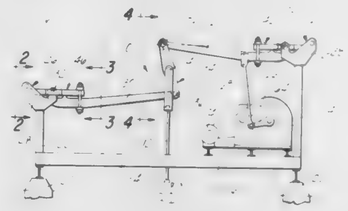
PUMPING MECHANISM

William D. Allison, 39 Randor Cir., Grosse Pointe Farms, Mich. 48236

Filed Jan. 26, 1981, Ser. No. 228,285

Int. Cl.³ F16H *21/32*

U.S. Cl. 74—41 **8 Claims**



1. A mechanism for reciprocating loads vertically comprising: a base member, a load member supported relative to said base member for vertical reciprocating movement, a pair of arms supported on said base member for vertical swinging movement in a common plane, a link member having opposite ends pivotally connected to corresponding ends, respectively of said pair of arms for vertical translational movement, said load member being pivotally connected to said link member for movement therewith, a pair of hairpin torsion springs connected to each arm and to said base member to counter-balance said load member, each of said springs comprising a U-shaped member having a pair of generally parallel torsion bar leg members and foot portions extending in opposite directions from the free ends of said leg members, one foot portion of each of said springs of a pair of springs being anchored to each arm and the other foot portion of each pair of springs being anchored to said base with said U-shaped member of each pair of springs extending in opposite directions, and power means connected to one of said arms for oscillating said pair of arms in unison to reciprocate said lift member.

4,388,837

POSITIVE ENGAGEMENT FAIL SAFE MECHANISM AND LIFT BELT CONSTRUCTION FOR LONG STROKE, WELL PUMPING UNIT

Emil A. Bender, 6625 Kane Way, Bakersfield, Calif. 93309

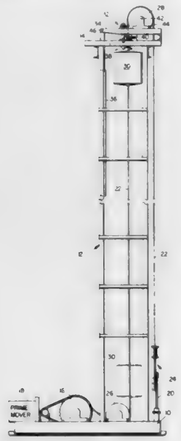
Filed Jun. 28, 1982, Ser. No. 393,102

Int. Cl.³ F16H *27/02*

U.S. Cl. 74—89.2 **10 Claims**

1. A long stroke, well pumping unit for a well pump including a conventional polish rod, rod string and sucker rod comprising: a base platform, a tower and the base platform, and a top platform surmounting the tower; rotatable drum means on the base platform and power means for rotating the drum means; a flexible lift belt attached at one end to the drum means and at its other end to the upper end of the polish rod of a well pump; a freely rotatable spool atop the top platform over which the lift belt is trained; a counterweight carried by the lift

belt; means for reversing the power means to thereby provide reciprocating movement to the lift belt and thus the polish rod, and self-energizing positive engagement fail safe means for terminating operation of the pumping unit in the event of failure by fracture of the lift belt, polish rod, rod string or sucker rod, comprising: a lever platform pivotally mounted on a generally horizontal axis on the top platform, the spool being rotatably mounted on the lever platform on an axis generally parallel to the lever platform pivotal axis, in a vertical plane located forwardly, toward the polish rod, of a vertical plane drawn through the lever platform pivotal axis, the lever platform having a second counterweight suspended therefrom at a point substantially rearwardly of both the spool axis and the lever platform pivotal axis, stationary brake means mounted on



the top platform adjacent the lift belt, on one side thereof, movable brake means pivotally suspended from the lever platform adjacent the lift belt, on a side thereof opposite the stationary brake means, and means mounted on the top platform adjacent the movable brake means for causing movement of the movable brake means towards the stationary brake means upon downward movement of the lever platform about its pivotal axis, whereupon failure by fracture of one of the well components as aforsaid or of the portion of the lift belt between the polish rod and the spool, the lever platform is caused to rotate about its pivotal axis in a direction away from the well head thus causing the movable brake means to descend, engage, and firmly trap the lift belt against the stationary brake means to thus terminate operation of the pumping unit.

4,388,838

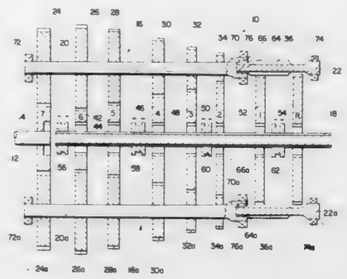
MULTIPLE COUNTERSHAFT SIMPLE TRANSMISSION

Elmer A. Richards, Kalamazoo, and Alan R. Davis, Plainwell, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 3, 1980, Ser. No. 165,833
Int. Cl.³ F16H *3/08, 3/02*
U.S. Cl. 74—331 **12 Claims**

1. An improved simple change gear transmission of the type comprising an input shaft having an input gear thereon, a mainshaft, at least two substantially identical countershaft assemblies driven by said input gear, each of said countershaft assemblies comprising a countershaft having an axis of rotation substantially parallel to the axis of rotation of said mainshaft, each of said countershafts having a plurality of countershaft gears supported thereon for rotation therewith, a plurality of mainshaft gears surrounding said mainshaft and constantly meshed with one countershaft gear on each countershaft and clutch means for selectively clutching said mainshaft gears one at a time to said mainshaft, the improvement comprising:

each of said countershafts comprising a first portion and a second portion, said first and second portions of each of said countershafts drivingly engaged by a splined connection, said spline connection comprising a plurality of external spline teeth on one of said first and second portions and an equal number internal spline teeth on the other of said first and second portions, the number of spline teeth on each of said portions being evenly divisible into the number of countershaft gear teeth carried by any countershaft gear mounted on said first portion, each spline tooth of said plurality of spline teeth on said first portion having



the same circumferential alignment with respect to the countershaft gear teeth carried by said first portion as each (the) other spline tooth of said plurality of spline teeth on said first portion, the circumferential alignment of each of said countershaft gears carried by each of said second (portion) portions relative to the (splines) spline teeth on said second portion being substantially identical to the circumferential alignment of the corresponding countershaft gear carried by the other second portion relative to the (splines) spline teeth on the other second portion.

4,388,839

DEVICE FOR THE ELABORATION, THE COMPOSITION, THE MIXING AND THE USE OF LIQUIDS, PRODUCTS OR INGREDIENTS

Julien Benisti, 49, rue Youri Gagarine, Colombes, France (92700)

PCT No. PCT/FR80/00167, § 371 Date Jul. 28, 1981, § 102(e) Date Jul. 28, 1981, PCT Pub. No. WO81/01504, PCT Pub. Date Jun. 11, 1981
PCT Filed Nov. 26, 1980, Ser. No. 287,713
Claims priority, application France, Nov. 28, 1979, 79 29281
Int. Cl.³ G01F *19/00*
U.S. Cl. 73—428 **7 Claims**



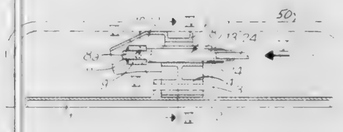
1. A portable device for receiving a liquid volume, comprising a vessel having a lateral wall, means arranged for removably retaining an interchangeable indication-bearing card against the outer surface of said vessel which is of transparent material at least in the portion thereof receiving said card, wherein said vessel wall has a circular external cross-section and a polygonal internal cross-section for constituting magnifying lenses improving accuracy in the reading of the liquid level.

4,388,840

CONTROL DEVICE FOR CONTROLLING AN OUTSIDE REARVIEW MIRROR FROM INSIDE A VEHICLE

Stephane Manzoni, 1, rue Pasteur, Saint Claude, France (39200)

Filed May 1, 1980, Ser. No. 145,702
Claims priority, application France, May 16, 1979, 79 12494
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—501 M **5 Claims**



1. A control device for controlling an outside rearview mirror from inside a vehicle, comprising:

a casing adapted to be secured to the vehicle and having a base;

a mirror supporting member;

a collar attached to the base of the casing;

a cross-piece for pivotally mounting said mirror supporting member about a first axis, said cross-piece being pivotally mounted on said collar about a second axis which is perpendicular to said first axis, said cross-piece including a bore, said collar further including parallel faces which are perpendicular to said second axis, said parallel faces including inclined grooves;

an operating member for controlling movement of said outside rearview mirror; and

a shaft mounted for rotational and axially sliding movement in said bore, one end of said shaft being attached to said operating member and the other end of said shaft including a pivotally mounted slide having two lugs adapted for movement in said inclined grooves of said parallel faces, said shaft including means cooperating with the mirror supporting member and adapted to be rotationally driven about said first axis when said shaft is rotationally moved in said bore.

4,388,841

LOAD BALANCING DEVICE

Christopher L. Gamble, 2040 E. Howe, Tempe, Ariz. 85281

Filed May 27, 1980, Ser. No. 153,166
Int. Cl.³ F16F *15/22*
U.S. Cl. 74—573 F **2 Claims**



1. A load balancing device installable on a rotating rim carried on radial spokes, said load balancing device comprising:

(a) an annular tubular body member defining an annular interior chamber;

(b) a fluid load balancing mass moveable within said chamber in response to centrifugal force to oppose unbalanced forces; and

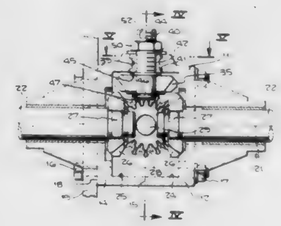
(c) universal bracket means, said bracket means including an arm portion which at least partially circles said annular tubular body and an attachment portion including a flange defining a slot engageable about selected of said spokes and closure means for securing said spoke in said slot for securing the tubular body to said rotating member.

4,388,842

LOCKING DEVICE FOR A DIFFERENTIAL MECHANISM

Gerald V. Marcell, Costa Mesa, Calif., assignor to Kawasaki Motors Corp., Santa Ana, Calif.

Filed Jul. 1, 1980, Ser. No. 165,223
Int. Cl.³ F16H *1/44*
U.S. Cl. 74—710.5 **5 Claims**



2. Locking device for a differential mechanism having a coaxial pair of sun pinion gears on a first axis meshed with a pair of side planetary gears on a second axis normal to the first axis and a driving means including a revolving gear housing enclosing said pairs of sun pinion and planetary gears, comprising, in combination therewith:

a locking gear mounted on said housing for reciprocal movement along a third axis perpendicular to the axes of said side and sun pinion gears;

said locking gear lockingly engaging said pairs of side planetary and sun pinion gears in one position to prevent differential operation thereof;

means for mounting said locking gear comprising a threaded fitting on said housing, a threaded shaft carrying said locking gear and engaged with said threaded fitting, and means for turning said shaft to engage and disengage the locking gear with said side planetary and sun pinion gears.

4,388,843

AUXILIARY TRANSMISSION NEUTRAL POSITIONING AND LOCKING CONTROL AND MECHANISM

Terry E. Teeter, Mattawan, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 21, 1980, Ser. No. 208,962
Int. Cl.³ F16H *3/08*; B60K *41/00*; G05G *9/04*
U.S. Cl. 74—745 **20 Claims**

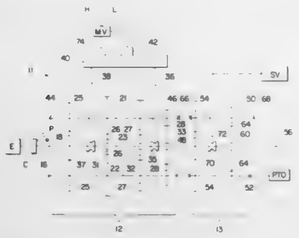
1. A compound change gear transmission comprising a change gear main transmission section connected in series with a change gear auxiliary transmission section;

said main transmission section comprising a main transmission input shaft, a main transmission output shaft and a main transmission shift control for selectively disengaging said main transmission output shaft from said main transmission input shaft and for selectively, drivingly engaging said main transmission input shaft to said main transmission output shaft through one of a plurality of selectively engageable gear ratios;

said auxiliary transmission section comprising an auxiliary transmission input driven by said main transmission output shaft, at least one auxiliary transmission countershaft constantly driven by said auxiliary transmission input, an

auxiliary transmission output shaft, a plurality of gears associated with said auxiliary countershaft and said auxiliary output shaft, an auxiliary shift control for drivingly connecting said auxiliary transmission output shaft to said auxiliary transmission input through one of a plurality of selective ratios, said auxiliary shift control comprising a shift fork shiftable to a first axial position to drivingly engage said auxiliary transmission output shaft with said auxiliary transmission input at a first selectable ratio and to a second axial position to drivingly engage said auxiliary transmission output shaft with said auxiliary transmission input at a second selectable ratio; and

an auxiliary transmission disengagement control having a first position for selectively positioning and locking said



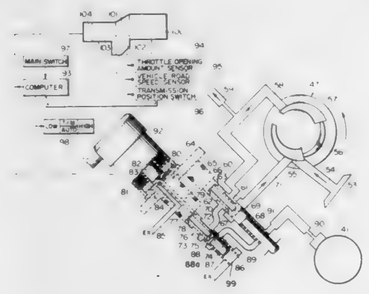
auxiliary transmission shift control shift fork in a third axial position axially interposed said first and second axial positions whereat said auxiliary transmission output shaft is drivingly disengaged from said auxiliary input, said disengagement control having a second position allowing said auxiliary transmission shift control to drivingly engage said auxiliary output shaft to said auxiliary input shaft, said disengagement control, once positioned in said first position, effective to prevent engagement of said auxiliary transmission output shaft with said auxiliary transmission input until said disengagement control is positioned in said second position simultaneously with said main transmission output shaft being disengaged from said main transmission input shaft.

4,388,844

TRANSMISSION FLUID PRESSURE CONTROL DEVICE WITH TWO STEPPED LINE PRESSURES

Hajime Arai, Aichi, and Shoji Haga, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 3, 1980, Ser. No. 193,441
Claims priority, application Japan, Nov. 5, 1979, 54-143754
Int. Cl.³ F16H 5/64; B60K 41/04
U.S. Cl. 74—752 C **5 Claims**



1. For a transmission which comprises a hydraulic fluid pump and a hydraulic actuator and which is selectively shifted between speed stages according to selective supply of hydraulic fluid pressure to said hydraulic actuator:

a hydraulic fluid pressure control system, comprising:

(a) a line pressure regulation valve, which receives a supply of hydraulic fluid pressure from said hydraulic fluid pump, and which produces a regulated line hydraulic fluid pressure; and

(b) a switching valve, comprising a pilot port, which receives a supply of said line hydraulic fluid pressure, and which selectively supplies said line hydraulic fluid pressure as an operating pressure to said hydraulic actuator according to the opening and closing of said pilot port;

(c) said operating pressure, when thus provided by said switching valve, being also supplied to said line pressure regulation valve and increasing the regulated value of said line hydraulic fluid pressure;

(d) whereby, when operating hydraulic fluid pressure is not being provided to said hydraulic actuator, the value of said line hydraulic fluid pressure is maintained at a predetermined lower level; but, when operating hydraulic fluid pressure is being provided to said hydraulic actuator, the value of said line hydraulic fluid pressure is maintained at a predetermined higher level; and thus

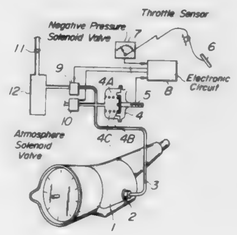
(e) whereby load on said hydraulic fluid pump, when said operating pressure is not required to be provided to said hydraulic actuator, is low.

4,388,845

LINE PRESSURE CONTROL DEVICE OF AN AUTOMATIC TRANSMISSION

Norimasa Kishi, Yokosuka, and Shigeaki Yamamuro, Zushi, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 1, 1980, Ser. No. 136,337
Claims priority, application Japan, Apr. 5, 1979, 54-41345
Int. Cl.³ B60K 41/04
U.S. Cl. 74—862 **6 Claims**



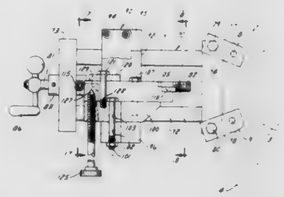
1. In an automotive vehicle having an engine and an automatic transmission coupled to said engine, said automatic transmission having a plurality of friction elements selectively actuated to effect speed changes in said transmission and hydraulic means hydraulically connected to said friction elements for applying fluid under pressure to said friction elements, an engine load sensor operatively associated with said engine for generating a signal corresponding to the load on said engine, a line pressure adjusting valve operatively associated with said hydraulic means for controlling the pressure of the fluid applied to said friction elements, a hydraulic pressure adjusting valve operatively associated with said line pressure adjusting valve and with said engine load sensor for producing a controlled pressure acting on the line pressure adjusting valve and adjusting the pressure of the fluid applied to said friction elements to a value corresponding to the engine load through the line pressure adjusting valve, the improvement comprising: circuit means connected to said engine load sensor for generating a target line pressure signal in response to and corresponding to the load signal generated by the engine load sensor, a line pressure sensor operatively associated with said hydraulic means for generating an actually measured line pressure signal corresponding to the pressure of the fluid applied to said friction elements, a converter means connected to at least one of said circuit means and said line pressure sensor for converting at least one of the target line pressure signal and the actually measured line pressure signal into an upper limit line pressure signal greater than said one of said line pressure signals by a given amount and into a lower limit line pressure signal less than said one of said line pressure signals by a given amount, and a decision circuit means connected to said converter means and to said hydraulic pressure adjusting valve for comparing the upper and lower limit line pressure signals with the other of the target line pressure signal and the actually measured line pressure signal and driving and controlling the hydraulic pressure adjusting valve in accordance with the result of the comparison.

4,388,846

FIXTURE FOR RESURFACING VEHICLE BRAKE DISCS

William L. Kopecko, P.O. Box 183; Robert L. Fuller, 309 Alban St., and Joseph O. Duchac, Rte. 6, all of Rhinelander, Wis. 54501

Continuation-in-part of Ser. No. 171,312, Jul. 23, 1980, Pat. No. 4,336,730. This application Nov. 10, 1981, Ser. No. 319,451
Int. Cl.³ B23B 5/04
U.S. Cl. 82—4 A **8 Claims**



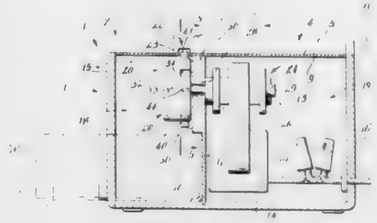
1. A resurfacing tool fixture for simultaneously resurfacing both of the opposite sides of a brake disc for a vehicle wheel without removing said disc from said vehicle but when said wheel has been removed, said vehicle having a caliper brake mount bracket adjacent said disc for removably mounting a caliper brake thereon, said fixture comprising a fixed frame having elongated guide means thereon, adjustable mounting means for rigidly and removably mounting said frame on said caliper mount bracket when said caliper brake has been removed from said bracket, said adjustable mounting means including a pair of links connected between and to said fixed frame and said caliper mount bracket for accommodating different caliper mount brackets, a shiftable tool holder frame having means for being shiftably mounted on said fixed frame guide means, adjustable positioning means connected between said fixed frame and said shiftable frame for shifting the latter relative to said fixed frame and said disc, said shiftable frame having a pair of cutting tools carried by said shiftable tool holder frame and locatable one on each side of said disc for simultaneous cutting contact with opposite sides of said disc as said shiftable frame is shifted on said fixed frame guide means by actuation of said adjustable positioning means.

4,388,847

ENVELOPE OPENER

Oscar W. Stoeckli, 2 Hughes Ave., Rye, N.Y. 10580

Filed Sep. 24, 1980, Ser. No. 190,199
Int. Cl.³ B26D 5/20
U.S. Cl. 83—356.3 **20 Claims**



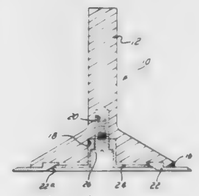
1. An envelope opener comprising means for guiding an envelope moved on the edge thereof along a path aligned with said edge into and through a cutting zone disposed across said path; an anvil member presenting in said zone a surface having an edge to support a side of the envelope border at a location spaced slightly away from said envelope edge; a rotary cutter having mounted thereon at least one knife presenting a cutting edge rotatable by said cutter across said anvil edge from the other side of said border, each said cutting edge coacting with said anvil member in a revolution of said cutter to slice off a narrow elongate segment of said border in said zone, each said cutting edge having at least one leading point with cutting edge portions extending therefrom oriented so that said leading point first pierces the border of said envelope inward of the edge thereof than one of said extending cutting edge portions being oriented to slice said border on a cut line extending across the border and another of said extending cutting edge portions being oriented to slice the border on a cut line extending along said envelope edge; and means for rotating said cutter at a speed sufficient for said cutting edge or edges to remove substantially the entire envelope edge by slicing off such segments successively as the envelope is passed through said zone.

4,388,848

CUTTER RING AND METHOD OF MAKING SAME

Eugene V. Albert, Sedgwick County, Kans., assignor to Q Corporation, Sedgwick County, Kans.

Filed May 4, 1981, Ser. No. 260,055
Int. Cl.³ B26D 1/14, 7/26
U.S. Cl. 83—666 **11 Claims**



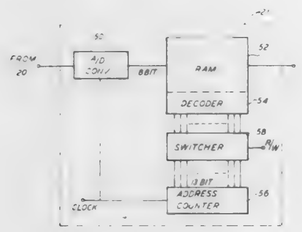
1. A cutter ring for use in trimming printed circuit board leads and adapted to be held within an arbor by a retainer, said cutter ring comprising:

a cutter member having a central hub portion surrounding an aperture,

said cutter member being characterized by being formed

from a hardened material which can only be shaped through a prolonged grinding operation; and
a molded cap formed over said hub portion to present a surface to be received within said arbor,
said molded cap being characterized by being formed from a relatively workable material which can be shaped through a machining operation,
whereby said molded cap may be machined to the configuration of said arbor.

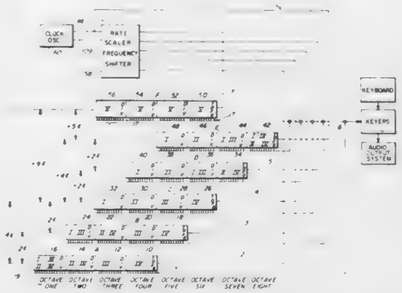
4,388,849
SIGNAL PROCESSING SYSTEM
Osamu Hamada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Feb. 8, 1980, Ser. No. 119,642
Int. Cl.³ G10H *3/06*
U.S. Cl. 84—1.18 **9 Claims**



1. A music signal processing system comprising:
an original music signal having a given frequency;
means for deriving pulse signals arranged in pulse signal groups $(S_{1\text{-}1}, S_{1\text{-}2}, \ldots S_{1\text{-}M}), (S_{2\text{-}1}, S_{2\text{-}2}, \ldots S_{2\text{-}M}), \ldots (S_{m\text{-}1}, S_{m\text{-}2}, \ldots S_{m\text{-}M})$ by selecting a given sampling period Tn for the original music signal such that an integer multiple number of the music frequency cycles occurs during each sampling period, and by sampling the signal in each sampling period Tn at every timing tm which defines a sampling frequency f where f is at least twice the given frequency of the music signal and wherein the timings tm are synchronized with the music signal sampling periods Tn, where for $S_{m\text{-}M}$, m represents one of the sampling periods Tn during which sampling is occurring and M represents one of the timings tm during one of the sampling periods Tn when sampling is occurring; and
means for obtaining a series of rearranged pulse row signal groups $P_1, P_2 \ldots P_m$ by rearranging said pulse signals obtained at every timing tm in the order of $(S_{1\text{-}1}, S_{2\text{-}1}, \ldots S_{m\text{-}1})(S_{1\text{-}2}, S_{2\text{-}2}, \ldots S_{m\text{-}2}) \ldots (S_{1\text{-}m}, S_{2\text{-}m}, \ldots S_{m\text{-}M})$ respectively corresponding to said pulse row signal groups $P_1, P_2, \ldots P_m$.

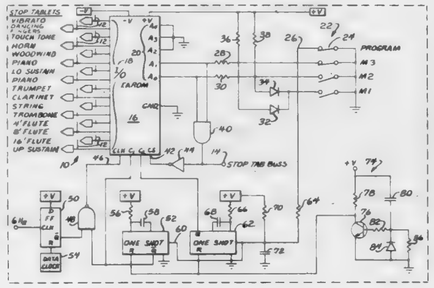
4,388,850
MULTIPLE OCTAVE GENERATOR TUNING SYSTEM
Dale M. Uetrecht, Colerain Township, Hamilton County, Ohio, assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio
Continuation of Ser. No. 832,353, Sep. 12, 1977. This application Apr. 14, 1980, Ser. No. 139,643
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.24 **4 Claims**

1. In an electronic organ having at least one keyboard and an audio output system, an improved celeste generator system comprising:
at least two locked multiple octave ensemble generator ranks which produce non-identical ranges of tone signals varying from standard musical frequencies by a substantially constant percentage across each rank;
an additional single locked multiple octave celeste generator rank tuned at least five cents higher in frequency than said ensemble generator ranks and which produces a range of tone signals over more than three octaves which vary from standard musical frequencies by a substantially constant percentage across the entire range;
a first stretched generator group comprising multiple unlocked octaves selected on an octave by octave basis only from more than one of the ensemble generator ranks and which produces tone signals having frequencies which vary from standard musical frequencies in a manner such that an overall stretched inter-octave tuning effect is created within the group;



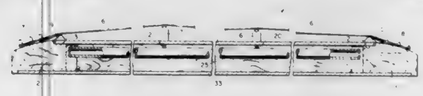
a second stretched generator group comprising multiple unlocked octaves selected on an octave by octave basis only from more than one of the ensemble generator ranks and which produces tone signals having frequencies which vary from standard musical frequencies in a manner such that an overall stretched inter-octave tuning effect is created within the group;
whereby operation of the keyboard causes selection of corresponding tone signals simultaneously from the celeste generator rank and one or more of the stretched generator groups to produce one or more celeste voices via the audio output system.

4,388,851
NON-VOLATILE MEMORY SYSTEM FOR AN ELECTRONIC MUSICAL INSTRUMENT
William R. Hoskinson, Elburn; Joseph C. Carley, Sycamore, and Anthony C. Ippolito, DeKalb, all of Ill., assignors to The Wurlitzer Company, DeKalb, Ill.
Filed Sep. 24, 1980, Ser. No. 190,215
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.24 **6 Claims**



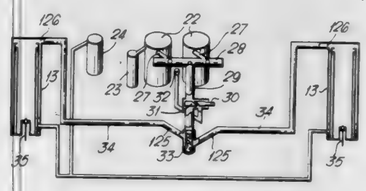
1. A memory system for an electronic musical instrument having a plurality of player actuatable instrument control means, comprising: an EAROM readable, writable memory means having a predetermined number of multibit words and including addressing input means, data input/output means, and erase/write control input means, said data input/output means being coupled with at least selected ones of said plurality of player actuatable instrument control means, for inserting manually determined combinations of said control means respectively in said memory means words, and a single manually operable means connected to said erase/write control input means for erasing only a single word from said memory means and immediately thereafter writing in a new word as a result of a single operation of said manually operable means, and player actuatable memory control means for selecting one of said multibit words of said memory means and said selected ones of said player actuatable instrument control means for erasing and rewriting with selected one of said multibit words.

4,388,852
DULCIMER CONSTRUCTION
Roderick L. Cramer, c/o The Beriyth Co., P.O. Box 330, 1035 N. Fourth St., Wytheville, Va. 24382
Filed Aug. 13, 1981, Ser. No. 292,661
Int. Cl.³ G10D *3/00*
U.S. Cl. 84—284 **3 Claims**



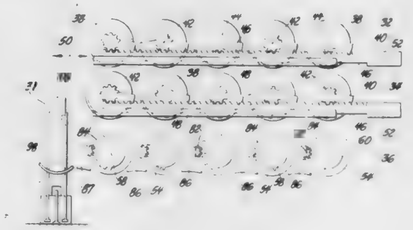
1. In a dulcimer comprising two divergent pin blocks, two side rails connecting the ends of one pin block to the corresponding ends of the other pin block, a back panel secured around its periphery to both pin blocks and both side rails, anchor pins in one pin block, turning pins in the other pin block, and tuned strings under substantial tension running from anchor pins to tuning pins, the improvement comprising a plurality of metal braces running from pin block to pin block parallel to the strings and out of contact with the back panel, an anti-rotational fastening structure at each end of each side rail whereby each pin block is held against uupward and inward rotation under influence of string tension, a floating sounding board with opposite ends supported in recesses in the upper inner edge of the pin blocks, two bridge rails over said board supporting the strings and holding the board in the recesses, two rows of bridge blocks supporting the strings atop the board and intermediate the bridge rails, and two rods, one beneath each of said rows, each with its top surface in contact with the board and carried by the braces.

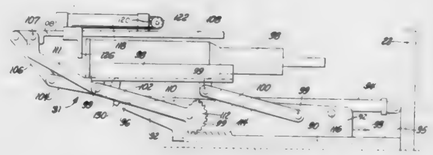
4,388,853
MISSILE LAUNCHERS
Denis Griffin, Guildford, and John F. Adie, Great Bookham, both of England, assignors to Frazer-Nash Limited, Kingston-Upon-Thames, England
Filed Jul. 24, 1980, Ser. No. 178,255
Int. Cl.³ B64D *1/02*
U.S. Cl. 89—1.5 F **25 Claims**



25. A missile launcher provided with gas-pressure-actuated fore and aft ejection rams and a choked flow gas system comprising:
breech chambers for receiving gas cartridges,
a gas manifold,
a choked flow device located between said breech chambers and said gas manifold,
a common gas flow channel and
fore and aft gas flow ducts extending from said common gas flow channel to the fore and aft rejection rams,
said common gas flow channel communicating with said manifold.

4,388,854
AMMUNITION STORAGE AND TRANSFER MECHANISM
Joseph M. Dabrowski, Oakland County; Valentine P. Daubar, Wayne County; Richard H. Fryer, Oakland County; John Geraltowski; James R. Underwood, both of Macomb County; Roger K. Waid, and Jaunutis B. Gilvydis, both of Oakland County, all of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Feb. 26, 1981, Ser. No. 238,313
Int. Cl.³ F41F *9/06*
U.S. Cl. 89—46 **7 Claims**





1. In a military tank having a turret movable in the azimuth plane, a gun mounted in the frontal area of the turret for movement in the elevational plane, and magazine means for storing ammunition within the turret in rearwardly spaced relationship to the gun; the improvement wherein said magazine means comprises two individual magazines, each arranged to support rounds of ammunition in prone attitudes generally parallel to the gun axis when said gun is at a zero elevational setting; each magazine including first means for supporting a number of rounds of ammunition in an upper row configuration, second means for supporting a number of rounds of ammunition in an intermediate row configuration, and third means for supporting a number of rounds of ammunition in a lower row configuration; the individual magazines being spaced laterally from a vertical plane coincident with the gun axis to provide an ammunition loader space between the magazines; and an ammunition loader disposed in the space between the magazines for transferring an individual round of ammunition into the gun firing chamber; the support means for the upper and intermediate rows of ammunition in each magazine comprising a series of trays normally facing upwardly to receive prone rounds from the superjacent spaces above the individual trays; each tray being rotatable around a horizontal axis generally coincident with the axis of the supported round, whereby one hun-

dred eighty degree motion of an individual tray causes a supported round of ammunition to be gravitationally discharged to the space directly below the tray.

4,388,855

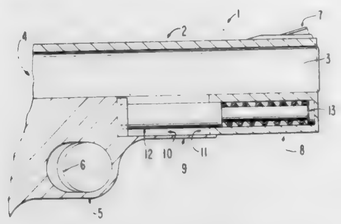
FIREARM PNEUMATIC SLIDE DECELERATOR ASSEMBLY

Paul J. Sokolovsky, 641 Torrington Dr., Sunnyvale, Calif. 94087

Filed Oct. 6, 1980, Ser. No. 194,680

Int. Cl.³ F41D *11/12*

U.S. Cl. 89—198 **5 Claims**



1. A slide decelerator assembly for a firearm having a slide which moves when said firearm is fired comprising:

a cylinder for containing compressed air;

a piston assembly including a hollow tubular member having an open end and a closed end, means forming a first air passageway in said closed end, a base member, means forming a second air passageway in said base member for communication with said first air passageway, and means for movably mounting said base member to said closed end of said hollow tubular member for adjusting the compressing of air in said cylinder in response to said slide movement.

4,388,856

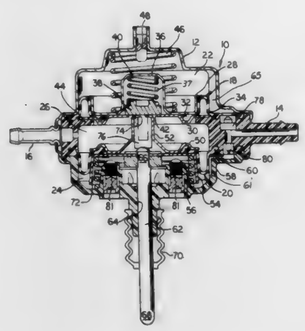
IDLE SPEED CONTROL ACTUATOR

John E. Cook, Chatham, Canada, assignor to Canadian Fram Limited, Canada

Filed Dec. 1, 1980, Ser. No. 211,617

Int. Cl.³ F15B *9/10*; **F01B** *19/00*; **F16J** *3/02*

U.S. Cl. 91—49 **14 Claims**



1. In a vacuum actuator, a plunger and an actuating assembly for actuating said plunger, said actuating assembly comprising a housing, a control diaphragm and an actuating diaphragm dividing said housing into a first chamber between the control diaphragm and one end of the housing, a second chamber between the actuating diaphragm and the other end of the housing, and a third chamber between said diaphragms, vacuum communicating means for communicating vacuum into said first and second chambers, ambient air communicating means for communicating ambient air into said third chamber, passage means for communicating said second and third chambers, air control means controlled by said control diaphragm to control communication through said passage means, said plunger extending from said housing and being positioned by said actuating assembly in an actuating range between first and second actuated positions as a function of the level of the vacuum communicated into said actuating assembly, characterized in that said actuating assembly includes means for withdrawing said plunger to a retracted position when vacuum is not available to said vacuum communicating means.

4,388,857

APPARATUS FOR THE CONTINUOUS COOKING OF WORT

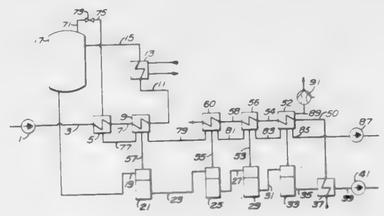
Johannes Korek, Wieslock, Fed. Rep. of Germany, assignor to Kraftanlagen A.G., Heidelberg, Fed. Rep. of Germany

Filed Mar. 25, 1981, Ser. No. 247,335

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1980, 3012591

Int. Cl.³ A23L *1/207*

U.S. Cl. 99—276 **7 Claims**



1. An apparatus for continuous boiling of wort in beer production, comprising:

a reactor vessel under elevated pressure and at elevated temperature, and having a wort inlet conduit and a wort outlet conduit, a wort preheater in said inlet conduit, a boiler heated by outside heat and placed in said inlet conduit between said wort preheater and said reactor vessel, at least one evaporator in said outlet conduit, a vacuum evaporator with at least two evaporators in said outlet conduit following said at least one evaporator, at least two wort vapor condensers respectively connected to said at least two evaporators for receiving wort vapors therefrom, means for passing brew water, to be used in said beer production, through said at least two condensers and to be heated by the wort vapor condensating in said wort vapor condensers, and a wort cooler in said outlet conduit following said at least two evaporators, for cooling the boiled wort concentrated in said at least two evaporators.

4,388,858

MACHINE FOR PITTING AND STUFFING OLIVES

John L. Margaroli, Oakland, and Frederick J. Cimperman, Castro Valley, both of Calif., assignors to Vistan Corporation, San Leandro, Calif.

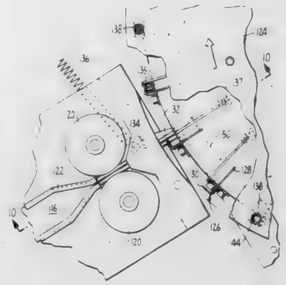
Continuation of Ser. No. 923,376, Jul. 10, 1978, Pat. No. 4,220,080. This application May 9, 1979, Ser. No. 37,916

Int. Cl.³ A23N *4/08*

U.S. Cl. 99—494 **5 Claims**

1. A machine for stuffing pitted olives comprising means to feed and fold a strip of stuffing material, means to cut stuffing pieces from said strip comprising a plate mounted for rotation, a strip cutting member fixedly carried by said plate comprising a first arm extending radially of said plate and a second arm extending tangentially of said plate terminating in a knife edge at its leading end, a pivotally and yieldingly mounted anvil

member disposed at one side of said folded strip in backup relation to the terminal end of said folded strip and in the path of movement of said strip cutting member and operable initially to support said strip to enable the cutting off of a stuffing piece by said knife edge and then to pivot out of the way of said knife edge as the latter moves by, a blade member slidably carried by said plate and movable radially with respect thereto



toward and away from said knife edge to, respectively, enclose a cut off stuffing piece as said anvil moves out of the path of said knife edge and to permit a stuffing piece to be cut off and positioned between said first and second arms and said plate, spring means to urge said blade member toward said knife edge, and means responsive to rotative movement of said plate to move said blade member away from said knife edge to permit the cutting off and pickup of a stuffing piece.

4,388,859

DEVICE FOR PICKLING PIECES OF MEAT

Hans Sommer, Ziegelhütte, Limbach-Heidersbach D6951, Fed. Rep. of Germany

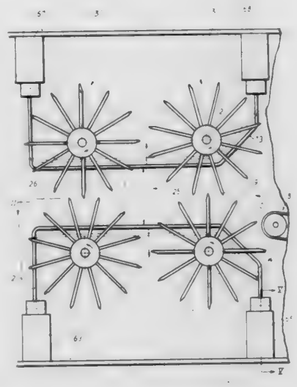
PCT No. PCT/EP80/00035, § 371 Date Feb. 5, 1981, § 102(e) Date Jan. 29, 1981, PCT Pub. No. WO80/02635, PCT Pub. Date Dec. 11, 1980

PCT Filed Jun. 4, 1980, Ser. No. 232,027

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1979, 2922714; Dec. 19, 1979, 2951033; May 22, 1980, 3019483

Int. Cl.³ A23B *4/02*. *4/14*

U.S. Cl. 99—533 **14 Claims**



1. Device for pickling or curing pieces of meat in continuous operation, comprising a feeder for passing on meat along a given path in a transport direction, a housing, at least four hollow injection needle cylinders being disposed in said given path and having radially directed holes formed therein, a plurality of needles being partially movably disposed in said holes in said cylinders for stabbing and passing on meat, said needles being axially parallel to each other and having points spaced apart one behind the other in said transport direction and longitudinal holes formed in said needles and being closed off at said cylinders, a tube having radial holes formed therein being concentrically disposed within each of said cylinders and being fixed to said housing, said cylinders being rotatable on said tube and having an inside diameter which is smaller than the outside diameter of said tube forming a space therebetween, a brine tank connected to said tube for supplying pickling brine through said radial holes to said space under pressure, said tube having an outer surface with an axially-directed flat area formed thereon, said needles extending within said space, being in contact with said outer surface of said tube and having at least one additional hole formed therein in vicinity of said cylinders extending perpendicularly to and being in contact with said longitudinal hole, said perpendicular holes being in contact with said space for receiving brine when said needles are in contact with said flat area.

4,388,860

BELT PRESS WITH ENCLOSED HYDRAULIC ACTUATOR

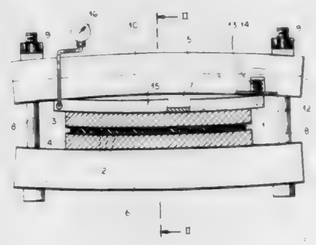
Peter Thies, Ennepetal-Voerde, Fed. Rep. of Germany, assignor to Wagener Schwelm GmbH & Co., Schwelm, Fed. Rep. of Germany

Filed Dec. 2, 1981, Ser. No. 326,892

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1980, 8032251[U]

Int. Cl.³ B30B *15/06*

U.S. Cl. 100—270 **12 Claims**



1. A belt press comprising:

at least one upper and at least one lower traverse respectively having lower and upper traverse faces, at least one of said traverses being formed of box section;

connecting means extending vertically between said upper and lower traverses and securing said lower traverse to said upper traverse;

upper and lower press platens carried on and between said traverses and having respective upper and lower platen faces respectively confronting said lower and upper traverse faces; and

hydraulic actuating means for displacing said platens toward each other and thereby pressing said platens against a belt engaged therebetween, said means being engaged between the traverse face of said one traverse and the confronting platen face and having

a U-section pressure plate having a base bearing on said confronting platen face and a pair of flanges extending toward said one traverse face,

at least one cushion forming at least one substantially closed chamber and lying between said flanges, said cushion bearing in one direction in surface contact on said pressure plate and in the opposite direction in surface contact at least indirectly on said face of said one traverse, and

means for pressurizing said chamber.

4,388,861

BANK FOR ACCOMMODATING SEVERAL PRINT HAMMER UNITS

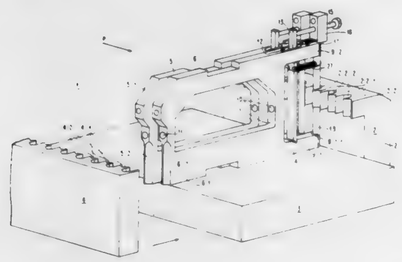
Armin Bohg, Weil im Schönbuch, and Kurt Hartmann, Calw-Heumaden, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 21, 1981, Ser. No. 265,749

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1980, 80105617[U]

Int. Cl.³ B41J *9/42*

U.S. Cl. 101—93.02 **6 Claims**



1. A print hammer bank assembly comprising a plurality of individual print actuator units and a bank support for maintaining said plurality of actuator units removably stacked in a side by side relationship;

said actuator units each including

a thin, flat, rectangular frame member having front and rear sides defining front and rear vertical mounting edges,

said frame member having a central recess for carrying an electromagnetic operating means between said front and rear sides,

said front and rear sides of said frame member having guide holes therein,

a cylindrical impactor element slidable within said guide holes,

said inpactor element being movable by said operating means in a horizontal direction perpendicular with said front and rear mounting edges,

recoil damping means carried by said frame member along said rear vertical mounting edge, said recoil damping means being resilient in the direction perpendicular with said front and rear vertical mounting edges of said frame member; and

said bank support having a substantially U-shaped cross-section comprising a horizontal base connected between a front and a rear upright support plate,

said front upright support plate having fixed locating means for removably receiving and retaining said front vertical mounting edge of said frame member at an impact operating position,

said rear upright support plate having fixed locating means engaging said recoil damping means along said rear vertical mounting edge of said frame member for damping recoil transfer to said bank support.

4,388,862

APPARATUS FOR SILK SCREEN PRINTING

Thomas A. Thomas, Jr., 4100 SW. 58th Ter., Davie, Fla. 33314

Filed Dec. 18, 1981, Ser. No. 332,254

Int. Cl.³ B41F *15/20*

U.S. Cl. 101—126 **3 Claims**

1. A screen printing device for T-shirts and the like comprising:

(a) support means including a table top;

(b) duct means extending forward from said table top and having an upper opening;

(c) flat perforated sheet means covering said duct opening;

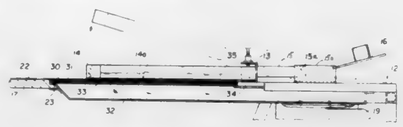
(d) vacuum means attached to said duct means;

(e) track means on the sides of said sheet means;

(f) a U-shaped shirt board slidable on said track means so as to surround three sides of the sheet means;

(g) a screen frame adapted to contain a printing screen;

(h) means to hold said screen frame in position so as to permit a printing screen to contact a T-shirt on said flat perforated sheet means; and



(i) means for controlling the time of operation of said vacuum means;

said device being so characterized that printing is done without a squeegee by timed operation of said vacuum means where an ink is used which cannot penetrate the screen openings by gravity alone.

4,388,863

SCRAPER BLADES USED WITH PRINT ROLLERS

William D. De Santis, Lititz, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Nov. 23, 1981, Ser. No. 323,941

Int. Cl.³ B41M *1/12;* **B05D** *1/40, 1/28*

U.S. Cl. 101—129 **1 Claim**



1. In a method for applying viscous materials to surfaces, and particularly for applying printing ink to the screen surface of a flatbed printer, reciprocating two spaced apart cylindrical print rollers, providing printing ink between the two rollers, providing a patterned screen below said rollers, reciprocating said rollers back and forth across the top of the screen to force printing ink through patterned areas of the screen, the improvement comprising the steps of:

(a) wiping accumulated ink from the top surface of the screen printer from the area behind the print rollers as they are moving in either direction across the screen to accumulate a supply of ink behind the trailing print roller and subsequently,

(b) using said accumulated ink as a supply of ink to the former trailing but now leading roller when the direction of travel is reversed to move in the opposite direction back across the print screen.

4,388,864

LITHOGRAPHIC DAMPENING SYSTEM

Gordon R. Warner, Goleta, Calif., assignor to Warner "Autolitho" Corporation, Goleta, Calif.

Continuation-in-part of Ser. No. 968,384, Dec. 11, 1978, abandoned. This application Feb. 6, 1981, Ser. No. 231,998

Int. Cl.³ B41L *25/12, 25/14*

U.S. Cl. 101—148 **6 Claims**

1. The method of continuously applying ink and water-concentrate to lithographic plates during a continuous printing run of a printing press having an ink fountain, comprising:

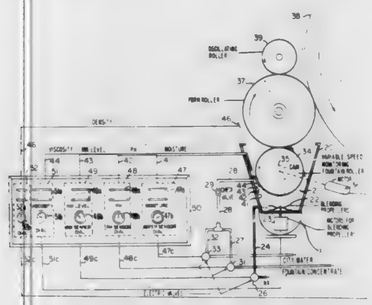
(a) continuously mixing separately supplied streams of ink, water and concentrate in a single fountain to form a finely dispersed mixture;

(b) continuously applying the mixture from the fountain to a lithographic plate through a single roller train;

(c) continuously flowing said separate streams of ink, water and concentrate to the mixture to replace that consumed by the lithographic plate;

(d) continuously sensing the mixture in the fountain for indications of mixture ratios, and

(e) continuously utilizing the sensed responses for continuously regulating the flow of each of said ink, water and



concentrate streams to the mixture in said fountain to maintain a predetermined ratio of ink, water, and concentrate and to replenish that consumed during the printing run, thereby automatically maintaining a constant mix for roller train despite the changing rates of consumption of the various components during the print run and at different locations along the length of the ink train.

4,388,865

PRINTING LAYER OF URETHANE AND ACETYL POLYMERS AND METHOD OF MAKING

Phillip R. Kellner, London, England, assignor to Crosfield Electronics Limited, London, England

Filed Mar. 10, 1981, Ser. No. 242,099

Claims priority, application United Kingdom, Mar. 11, 1980, 8008194

Int. Cl.³ B41C *1/02;* **B29C** *17/08*

U.S. Cl. 101—401.1 **21 Claims**

1. A printing member having a print surface formed of a continuous layer of a composition consisting essentially of a blend of urethane and acetal polymers.

4,388,866

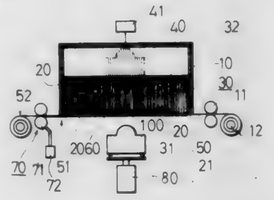
METHOD OF PRINTING

Motoyasu Nakanishi, Shimizushi, Japan, assignor to Suzuki Sogyo Kabushiki Kaisha and Kabushiki Kaisha Cubic Engineering, both of Shizuokaken, Japan

Filed Jan. 26, 1981, Ser. No. 228,702

Int. Cl.³ B44C *1/16*

U.S. Cl. 101—426 **11 Claims**



4. A method of printing a material to be printed, which comprises:

providing a deformable layer of an assemblage of straight pins arranged parallel to each other to form an impression surface at one end of said assemblage, said pins being provided in a density to exert pressure on a water-expandable film when said film is placed in contact with said impression surface of said deformable layer,

placing said water-expandable film, having a pattern printed on said film, in contact with said impression surface of said deformable layer,

applying water to said film to cause said film to absorb water and become extended over said impression surface,

removing excess water from said film, and

contacting said extended film with a surface of the said material to be printed under pressure and forcing said material to be printed into said deformable layer, to cause the pins in contact with the surface through the film to be retracted so that the film is forced to closely contact said surface.

4,388,867

CIRCUIT ARRANGEMENT FOR A COMBINED PROXIMITY AND IMPACT FUSE

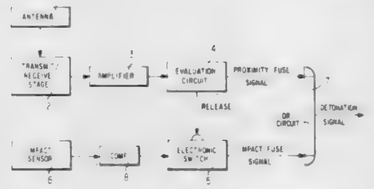
Hans Baumer, Senden, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 23, 1981, Ser. No. 246,698

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011231

Int. Cl.³ F42C *13/00*

U.S. Cl. 102—211 **8 Claims**



1. In a combined proximity and impact fuze employed in a missile, a circuit arrangement for avoiding the actuation of a detonation upon impingement of the impact fuze on a rain drop comprising means connected to said proximity fuze and responsive to the signals produced by the same for preventing the generation of a detonation signal upon impact until recognition by said proximity fuze that a given release criterion for impact detonation has been met.

4,388,868

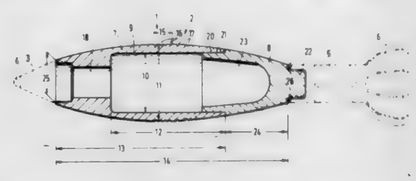
SHELL BODY FOR FIN-STABILIZED PROJECTILES

Amos Frostig, Haifa, Israel, assignor to Etablissement Salgad, Liechtenstein

Filed Nov. 10, 1980, Ser. No. 205,212

Int. Cl.³ F42B *13/02*

U.S. Cl. 102—473 **10 Claims**



1. A shell body for fin-stabilized projectiles, said body having an ogival curvature and adapted to receive a headpiece containing a fuse at the front end thereof and to receive a tail tube with fin-stabilizer unit at the rear end thereof, said shell body comprising:

(a) a front body section and a rear body section slip fit joined to each other at a point approximately one-quarter of the

body length as measured from one end thereof starting at the beginning of the tail tube,

(b) an inner cylindrical bore is located within the front body section and has a surface unrestrictedly terminating at the rear of the frong body section to form an opening for receiving a charge,

(c) the rear body section includes an extension means which is complementary to and slidingly engages the cylindrical bore surface of the front body section.

4,388,869

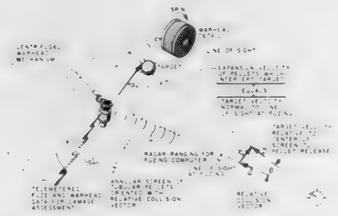
ROTATING ROD WARHEAD

Stuart K. Edleson, Dallas, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 22, 1967, Ser. No. 626,655

Int. Cl.³ F42B *13/48*

U.S. Cl. 102—494 **7 Claims**



1. A rotating rod warhead for rapidly erecting an expanding screen of pellets in a uniform pattern, comprising:

(a) two similar housing units connected together to form a substantially cylindrical shaped housing assembly,

(b) a plurality of rod-shaped pellets retained within said cylindrical housing assembly for dispersing the pellets in a uniform pattern upon release thereof, said two housing units each having a circumferential retaining means thereabout for effectively retaining said pellets in a bundle within said housing parallel to each other and to the spin axis,

(c) pellets positioned about the outer circumference of said bundle of pellets being longer than the others and in the form of rocker type restraint beams which hold the other pellets in restraint at a point midway between the ends thereof to equalize any differential forces tending to perturb the pellets during spin-up and at release, the ends of the restraint beams having their ends held by said circumferential retaining means,

(d) drive means for spinning said housing assembly about its cylinder axis at a desired rotational speed for suitably dispersing said pellets upon their release,

(e) actuator means for quickly separating said two housing units and releasing said pellets.

4,388,870

BOWED PELLET PACK WARHEAD

Stuart K. Edleson, Dallas, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 26, 1968, Ser. No. 740,843

Int. Cl.³ F42B *13/48*

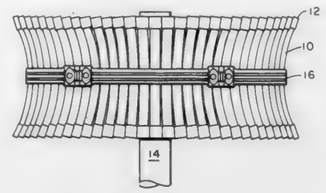
U.S. Cl. 102—494 **4 Claims**

1. A rotating warhead for rapidly dispersing a plurality of pellets in a desired pattern without coning, comprising:

(a) a shaft, operable to be rotated at a desired speed, having a hub thereon,

(b) a substantially large number of elongated rod-shaped pellets assembled in a symmetrical bundle about said shaft hub,

(c) a releasable circumferential restraining means for compressing said pellets together and about said shaft hub in a touching relationship in the central plane of said symmetrical bundle normal to said shaft hub causing all said pellets to bow toward said shaft,



(d) said circumferential restraining means retaining said bundle of pellets about said shaft hub to be rotated therewith until released for rapid dispersion.

4,388,871

SPEED CONTROL SYSTEM FOR A PIPELINE INSPECTION VEHICLE

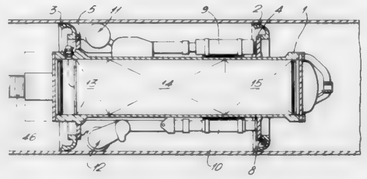
John C. Braithwaite, Ponteland, and Ian Smith, Ashington, both of England, assignors to British Gas Corporation, London, England

Division of Ser. No. 182,658, Aug. 29, 1980, which is a continuation of Ser. No. 928,408, Jul. 27, 1978, abandoned. This application Jul. 24, 1981, Ser. No. 286,533

Claims priority, application United Kingdom, Jul. 27, 1977, 3150/77

Int. Cl.³ B65G *51/20*

U.S. Cl. 104—138 G **3 Claims**



1. A method of detecting flaws in a pipeline which comprises

positioning an inspection vehicle which has flaw-detecting sensors and brake pads in said pipeline,

passing a fluid through said pipeline to cause said inspection vehicle to move therealong,

causing the brake pads of the inspection vehicle to contact the inner wall of the pipeline with a varying pressure so as to superimpose a varying continuous tractive (drag) resistance on the operationally induced tractive resistance to the vehicle and thereby maintain the total tractive resistance of the vehicle approximately constant such that the vehicle moves at a speed substantially equal to the average flow velocity of the fluid in the pipeline.

4,388,872

RAILWAY CAR BOGIE CONSTRUCTION

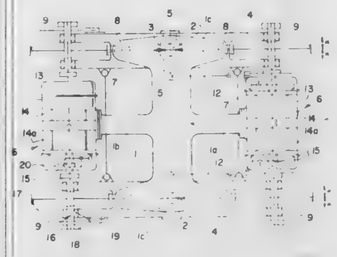
Hansjochen Girod, and Gerhard Korn, both of Mülheim, Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Aug. 19, 1980, Ser. No. 179,551

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936771

Int. Cl.³ B61C *9/44, 9/48*

U.S. Cl. 105—99 **4 Claims**



1. A bogie for rail cars, comprising:

a traverse having two spaced-apart support pins depending therefrom and formed integrally therewith;

a half bogie on each side of and below said traverse;

each half bogie having a support box into which one of said pins extends;

a pair of bolts connected to each half bogie and extending into each support box, each pair of bolts engaging one of said pins for horizontal pivotal motion and vertical pivotal motion of each of said support boxes and half bogies with respect to each of said pins and said traverse;

a tie bar interconnecting said half bogies on respective opposite sides of said traverse;

a wheel having an axle rotatably supported adjacent each end of each bogie;

spring means disposed between said traverse and each of said half bogies at spaced locations on each side of each of said pins for facilitating spring support of said traverse by said half bogies and said wheels;

said traverse having a central portion extending between said half bogies; and

a drive motor connected at each end of said central portion of said traverse for driving said wheels, each drive motor including two mutually independent runners, a slide flange mounted planetary gear arranged on each side of said drive motor and driven by said runners, a cardan shaft, said wheels each having an axle connected to one cardan shaft, each cardan shaft being pivotal to one of said half bogies and adjustable in length.

4,388,873

RAILROAD VEHICLE

John V. Carleton, Lansing, Ill., and Nick Nenadic, East Chicago, Ind., assignors to Union Tank Car, East Chicago, Ind.

Filed Apr. 30, 1981, Ser. No. 259,279

Int. Cl.³ B61D *7/12, 39/00*; B65D *45/24*

U.S. Cl. 105—377 **6 Claims**

1. A hatch for a vessel holding a commodity under pressure, comprising:

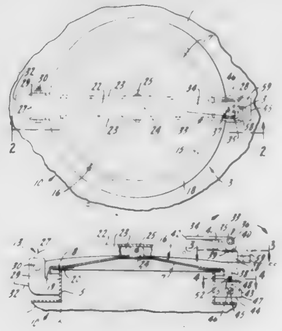
A. a ring having an upper surface surrounding an opening through said vessel, said ring extending upwardly beyond the upper surface of said vessel;

B. a hatch cover above said ring having an underside for closing said opening, gasket means sealing the underside of said cover against the upper surface of said ring;

C. an elongated handle attached to the top of said cover, opposite ends of said handle projecting beyond the periphery of said cover, hinge means connecting one end of said handle to said ring so that said cover is pivotable toward and away from said ring to close and open said hatch, there being a longitudinal slot in the other end of said handle;

D. means for latching said cover in closed position against said ring comprising a cam lever having one end pivotally attached to one end of a connecting link, means attaching the other end of said link to said ring in such a manner that said link is pivotable toward and away from said handle longitudinally of said handle and in such a manner that said link is movable transversely of said handle, said link being receivable in said slot in said handle, a cam surface on an underside of said lever for bearing against an upper surface of said handle adjacent said slot when said link is received in said slot and said lever is pivoted toward said handle, whereby said link is tensioned so as to hold said cover in closed position; and

E. means for venting pressure in said vessel and preventing



sudden opening of said cover, comprising a safety catch projecting beyond said other end of said handle, said catch being attached at one end to said handle, said catch having an upper surface spaced below an upper surface of the handle said handle at its other end so as to define a notch that extends transversely of said handle, said notch merging into said slot forming an angular configuration, said catch engaging said lever when said link is in said slot and said link and said lever are pivoted away from said handle, said lever being disengagable from said catch for pivoting of said hatch to its fully open position only after said link is moved transversely of said handle out of said notch, the upper surface of said catch is spaced vertically below said upper surface of said handle adjacent said slot, whereby when a portion of the cam surface of said lever is pivoted into engagement with said catch said cover may pivot open a slight amount and thereby vent pressure in said vessel.

4,388,874

PREFABRICATED CONCRETE VAULT

Frank K. Stone, 2227 SE. Division, Portland, Oreg. 97202

Filed Nov. 26, 1980, Ser. No. 210,823

Int. Cl.³ E05G *1/024*

U.S. Cl. 109—79 **6 Claims**

1. A concrete vault construction comprising

(a) a wall structure forming an inner protected area,

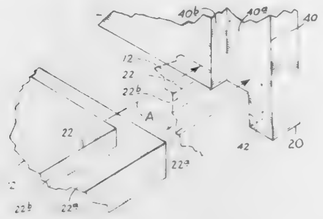
(b) said wall structure comprising roof, floor, side and end wall members having defined peripheral edges,

(c) and door means in at least one of said members,

(d) said floor, side and end wall members having jointed overlapping connections therebetween,

(e) said edges of said members, in said jointed overlapping connections with adjacent members, having joint surfaces offset from each other across the seam of the joint to

provide non-continuous burglar-proof seams which lead from the exterior of said vault to the inner protected area, with said connections which exist between said floor and end wall members being defined, in one member associated with the connection, by an end-bounded, elongated recess, and in the other member associated with the connection, by a projection complementarily fitted in said recess.

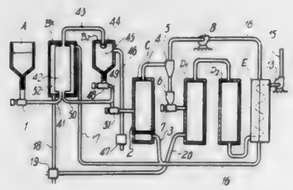


4,388,875

EVAPORATING CONCENTRATOR FOR SEWAGE SLUDGE

Yasuo Hirose, 801-88 Kanagaya, Asahi-ku, Yokohama City, Kanagawa, Japan

Filed Jun. 15, 1981, Ser. No. 273,284
Claims priority, application Japan, Mar. 28, 1981, 56-44743
Int. Cl.³ F23G *5/04*
U.S. Cl. 110—224 **5 Claims**



1. An evaporative concentrator for sewage sludge comprising a heating chamber and an evaporating chamber between a feed hopper and a drying furnace having a fluidized sand bed, the concentrator further comprising

a first compulsory supply means for delivery of sewage sludge from said hopper through a first discharge pipe to said heating chamber,

a sewage sludge pass-way provided for said heating chamber connected with said first discharge pipe,

a second discharge pipe extending from said sewage sludge pass-way to a top space in said evaporating chamber with a nozzle fitted to the end of said second discharge pipe,

an exhaust gas pipe extending from said top space in said evaporating chamber to a condenser,

a second compulsory supply means mounted on a hopper-type bottom of said evaporating chamber, a third discharge pipe from said second compulsory supply means to a transfer pipe which is adapted to carry most of the sewage sludge to be expelled from said third discharge pipe to said sewage sludge pass-way,

a distribution means connecting said third discharge pipe with said drying furnace having a fluidized sand bed,

a first supply pipe for heating gas connected with a heating gas passage in said heating chamber,

a fourth discharge pipe from said heating gas passage, extending to a drain separation means,

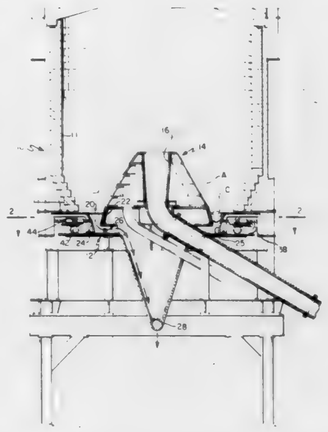
a second supply pipe extending from said drain separation means to a combustion furnace, whereby the pressure P_1 in said sewage sludge pass-way is higher than the pressure P_2 in said heating gas passage, and the pressure P_3 in said top space of said evaporating chamber is lower than the pressure P_2 in said heating gas passage.

4,388,876

ASH REMOVAL SYSTEM

John A. Burton, Vancouver, Canada, assignor to Enterprises International, Inc., Olympia, Wash.

Filed Apr. 6, 1981, Ser. No. 251,397
Int. Cl.³ F23K *3/18*
U.S. Cl. 110—275 **3 Claims**



1. An ash removal apparatus for a burner forming ash including large clinkers and having a combustion chamber, a floor, a grate on said floor, and an ash-removing passage in said floor at least partially encircling said grate, said apparatus comprising a set of opposed, downwardly converging first and second surfaces defining an ash-removing opening, at least one of said surfaces being movable solely radially toward the other surface for crushing large clinkers passing therebetween, means for moving said movable surface radially but without substantial circumferential movement, and means for discharging the ash including crushed clinkers through said ash-removing passage, said movable surface being carried on a continuous, generally cylindrical plate, means for mounting said cylindrical plate for radial, circumferentially progressive, eccentric, oscillatory motion so that the radial movement of the movable surface progresses circumferentially around said grate, said means for mounting said cylindrical plate including a roller carrier having a plurality of rollers thereon for moving in a horizontal circular path and an annular driving plate having a varying horizontal width defined by inner and outer edges whereby the radial distance from the center of the burner to the inner edge of the driving plate at any point in the burner varies upon rotation of the driving plate, and bearing means for transmitting the rotation of the driving plate inner edge to said oscillatory motion of said movable surface.

4,388,877

METHOD AND COMPOSITION FOR COMBUSTION OF FOSSIL FUELS IN FLUIDIZED BED

Benjamin Molayem, Silver Spring, and David Garrett, Fort Washington, both of Md., assignors to Benmol Corporation, Alexandria, Va.

Filed Jul. 7, 1981, Ser. No. 280,978
Int. Cl.³ F23B *7/00*
U.S. Cl. 110—342 **9 Claims**

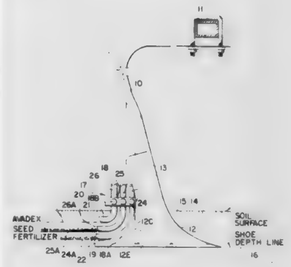
1. A method for catalytically converting unburned hydrocarbons and carbon monoxide to carbon dioxide and reducing nitrogen oxides to nitrogen in the combustion of fossil fuels in a fluidized bed while absorbing sulfur oxides, which comprises carrying out said combustion in the presence of a catalytic material for catalyzing said conversion and reduction reactions, said catalytic material being physically combined onto an adsorbent matrix selected from the group consisting of calcium aluminate, calcium aluminate cement, barium titanate, and calcium titanate.

4,388,878

MULTIPLE DEPOSITION TYPE SEEDER FOOT ASSEMBLY

Fred W. Demzin, R.R. #1, Regina, Saskatchewan, Canada

Filed Oct. 19, 1981, Ser. No. 312,631
Int. Cl.³ A01C *5/00*
U.S. Cl. 111—86 **18 Claims**



1. A seeder foot assembly attachable to a shank or the like, said feeder foot assembly comprising in combination a furrow opening body portion including a leading front end and a trailing rear side and at least two feeder tubes on the rear side, said tubes each including a substantially horizontal discharge portion one above the other in spaced apart relationship, each horizontal discharge portion including a rearwardly facing discharge end, the discharge end of the lowermost horizontal discharge portion extending rearwardly of the discharge end of the horizontal discharge portion immediately thereabove, said seeder foot assembly including means to initiate substantial closing of the furrow immediately behind said seeder foot assembly.

4,388,879

APPARATUS FOR SEQUENTIALLY FABRICATING PILLOWCASES OR LIKE PRODUCTS

Palmer B. Everall, Jr., and Jack R. Lowery, Sr., both of Lancaster, S.C., assignors to Springs Mills, Inc., Fort Mill, S.C.

Filed May 14, 1981, Ser. No. 263,686
Int. Cl.³ D05B *13/00*
U.S. Cl. 112—10 **11 Claims**

1. Apparatus for sequentially fabricating pillowcases or like product comprising:

means for supplying continuous flat tubular material;

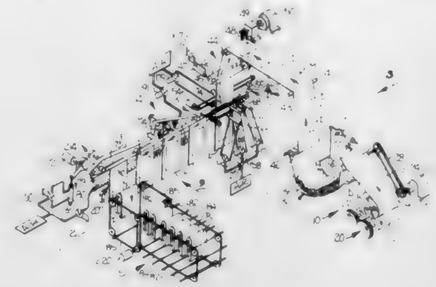
means for transversely cutting the continuous material into individual pieces;

means for feeding the continuous material from said supply means to said cutting means;

means operatively connected with and automatically controlling the operation of said cutting means and said feeding means for sequentially cutting the material into individual pieces of desired predetermined dimensions for the pillowcases;

conveying means for sequentially receiving the individual cut pieces of material, clamping one of the transverse cut ends thereof while allowing the remainder of the cut pieces of material to hang downwardly in a generally vertically-extending position, and conveying the so-positioned cut pieces sequentially in a predetermined path of travel; and

means for sequentially stitching the clamped transverse cut end of each piece of material to complete fabrication of the pillowcases while each piece of material is being conveyed by said conveyor means with the remainder of each piece of material in the generally vertically-extending position.



4,388,880

MACHINE FOR STITCHING THE UPPER BORDER OF SHOES COMMONLY CALLED MOCCASINS

Mario Ciucani, Via dell'Universita, 16, Fermo, Italy

Filed Sep. 5, 1980, Ser. No. 184,366
Claims priority, application Italy, Sep. 7, 1979, 3488 A/79; Apr. 30, 1980, 3406 A/80
Int. Cl.³ D05B *15/02, 27/08, 27/20*
U.S. Cl. 112—49 **12 Claims**



1. A machine for stitching together first and second pieces of material using stitching thread in order to form a joint and border in shoes commonly called moccasins, said machine comprising:

a fixed planar work surface defining a work surface plane on which said material is disposed for stitching;

an elongated needle disposed so that its longitudinal axis is perpendicular to said work surface plane, said needle having a hook formed in the end of said needle nearest the work surface;

first reciprocating means for longitudinally reciprocating said needle along a first line of movement corresponding to its longitudinal axis, said reciprocation causing said hook in said needle to pass back and forth through said work surface plane;

second reciprocating means for transversely reciprocating said needle along a second line of movement, said second line of movement lying along said work surface plane and intersecting said first line of movement;

looping means for forming a loop of stitching thread, said

looping means disposed on the opposite side of said work surface plane from said needle, said hook in said needle serving to engage said loop of stitching thread, and said longitudinal reciprocation of said needle serving to draw said loop of stitching thread through said material and through a previously formed loop, said transverse reciprocation in combination with said longitudinal reciprocation serving to pass said needle back through said material to form a chain stitched joint;

feeding means for moving said material along said second line of movement toward said needle;

pressing means for releasably holding previously stitched material in fixed relation to said work surface;

and

gripping means for gripping said first piece of unstitched material and for moving said first piece of material towards said needle, independently from said second piece of material.

4,388,881

HAND-HELD TUFTING MACHINES

Herbert B. Price, Hixson, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Jun. 8, 1981, Ser. No. 271,788

Int. Cl.³ D05C *15/00*

U.S. Cl. 112—80 **9 Claims**



1. In a hand-held tufting gun for use with a high pressure source of air for projecting a loop of pile yarn through a backing material, a frame including air inlet means connected to said high pressure source and air outlet means, an operator influenced member for opening and closing passage of air from said inlet means to said outlet means, a needle-carrying member carried by and mounted for reciprocation relatively to said frame and provided with a hollow needle having a pointed end for piercing the backing material, power drive means for drivingly reciprocating said needle-carrying member, yarn feed means carried by said frame for feeding a supply of yarn to said needle in timed relationship with the reciprocation of said needle, said power drive means comprising a piston including a piston rod operatively connected to said needle carrying member, a piston housing, said piston being mounted within said piston housing for reciprocating between limits defined by the extent of travel of said piston, said piston housing including first and second ports, each port opening into said piston housing outside a respective limit of piston travel, and valve means for cyclicly communicating the first port to said air outlet means and the second port to atmosphere and thereafter communicating the first port to atmosphere and the second port to said air outlet means.

4,388,882

AUTOMATIC SEWING MACHINE

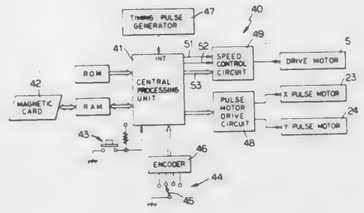
Yoshikazu Yamamoto, and Toshiaki Yanagi, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 10, 1980, Ser. No. 205,688

Claims priority, application Japan, Nov. 24, 1979, 54-152185

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—121.12 **8 Claims**



1. In an automatic sewing machine having

stitch forming instrumentalities including an endwise reciprocatory needle,

a drive motor for reciprocating the needle to produce stitches in a workpiece,

drive means operative to vary the relative position between the needle and the workpiece,

stitch instruction storage means for storing stitch instructions capable of influencing the said relative positions to form a stitch pattern,

means operative synchronously with reciprocation of the needle for extracting the stitch instructions from the stitch instruction storage means in a predetermined sequence, and

position control means responsive to the extracted stitch instructions for controlling operation of the drive means between successive stitches in the stitch pattern,

the improvement comprising:

program storage means for permanently storing a series of program instructions containing a group forming instruction for forming a temporary group of stitch instructions from the stitch instructions stored in said stitch instruction storage means, a scanning instruction for scanning said temporary group to examine variation of said relative position between successive stitches to be produced according to said temporary group, and a speed determining instruction for determining a maximum permissible speed of said drive motor depending on the result of the examination, said temporary group consisting of said extracted stitch instruction and a predetermined number of instructions to be extracted in said predetermined sequence following said extracted stitch instruction;

processing means operative synchronously with reciprocation of said needle for performing said series of program instructions and generating permissible speed data related to said maximum permissible speed; and

speed control means responsive to said permissible speed data for limiting actual speed of said drive motor to said maximum permissible speed or less during production of one stitch according to said extracted stitch instruction.

4,388,883

STITCH PATTERN SEWING MACHINE

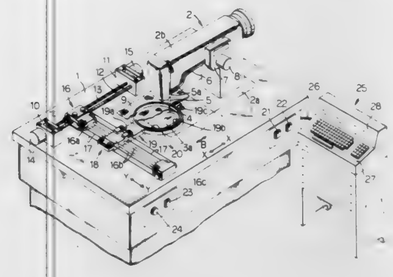
Kunio Hirota, and Masao Shimomura, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 24, 1981, Ser. No. 237,423

Claims priority, application Japan, Mar. 5, 1980, 55-28394; Mar. 19, 1980, 55-37270

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—121.12 **8 Claims**



1. An automatic sewing machine comprising:

stitch forming means including a reciprocatory needle;

a workholder for holding a workpiece during sewing operation, said workholder being movable in a coordinate plane defined by X and Y axes which are perpendicular to one another;

drive means to move said workholder along said X and Y axes for varying the relative position between said workholder and said needle to form a unit stitch pattern consisting of plural cell patterns which are each defined by a respective one of plural geometrical parts respectively of a sphere in which said unit stitch pattern is to be formed; said sphere being predeterminately divided into said geometrical parts with plural straight lines;

memory means for storing unit stitch pattern information consisting of plural blocks of cell pattern information corresponding to said plural geometrical parts and each including plural sets of X and Y coordinate data representing location of apexes of said geometrical parts respectively;

manually operable input means for setting up desired number of stitches to be formed in each of said plural cell patterns, said manually operable input means generating stitch number data corresponding to said number of stitches; and

control means for calculating position data related to actual stitch positions in said unit stitch pattern according to said coordinate data and said stitch number data, and for supplying the calculated position data to said drive means in timed relating with reciprocation of said needle.

4,388,884

STITCH PATTERN SEWING MACHINE

Kunio Hirota, and Masao Shimomura, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 24, 1981, Ser. No. 237,424

Claims priority, application Japan, Mar. 5, 1980, 55-28394; Mar. 19, 1980, 55-37266

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—121.12 **8 Claims**

1. In an automatic sewing machine including:

stitch forming means including a reciprocatory needle,

a workholder for holding a workpiece during sewing operation,

drive means for moving said workholder to vary the relative position between said workholder and said needle,

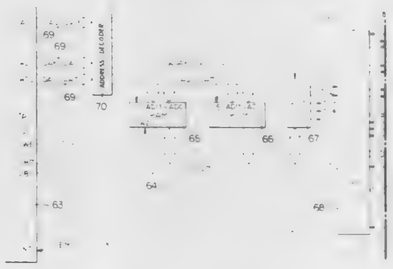
memory means for storing plural blocks of unit pattern information each of which corresponds to respective predetermined plural unit stitch patterns to be formed on said workpiece, each of said plural blocks of unit pattern information including a plurality of position data related to said relative position,

means for selecting at least two blocks of desired unit pattern information from said memory means to form at least two desired unit stitch patterns on said workpiece, and

means for extracting said position data of the selected unit pattern information, and for supplying the extracted position data to said drive means in timed relation with the reciprocation of said needle,

the improvement comprising;

manual input means for setting up a numerical limit indicative of allowed area within which said workholder is allowed to move in said sewing operation,



control means, operative prior to said sewing operation, for extracting said position data of the selected blocks of unit pattern information, for calculating numerical result indicative of the maximum movement amount of said workholder in forming the selected unit stitch patterns, for comparing said numerical result with said numerical limit set up by said manual input means, and for generating a signal when said numerical result exceeds said numerical limit, and

means, responsive to said signal generated by said control means, for warning of movement of said workholder beyond the allowed area in advance of starting said sewing operation.

4,388,885

GAP STITCH MECHANISM FOR SEWING MACHINES

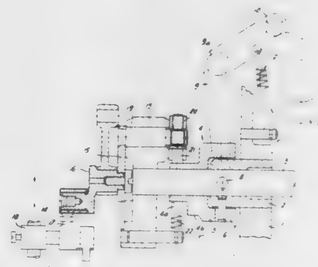
Ernst Dreier, Steckborn, Switzerland, assignor to Fritz Gegauf Aktiengesellschaft Bernina-Nähmaschinenfabrik, Steckborn, Switzerland

Filed Oct. 1, 1980, Ser. No. 192,712

Claims priority, application Switzerland, Oct. 1, 1979, 8800/79

Int. Cl.³ D05B *69/02*

U.S. Cl. 112—221 **12 Claims**



1. A gap stitch mechanism for a sewing machine containing

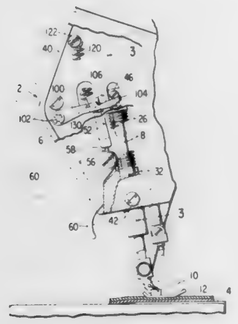
a needle shaft which is oscillatingly driven by a crank assembly, wherein the crank assembly is provided with means for reducing a crank radius at predetermined intervals during a sewing operation, thereby determining the stroke of the needle shaft and making it impossible for a loop catcher to catch a needle thread, a drive crank of the needle shaft being supported by an adjusting crank which is rotatable in a bearing bore hole of an arm shaft crank for the purpose of shortening the crank radius.

4,388,886

REDUCED LOAD PRESSER BAR

Kenneth D. Adams, Madison, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 17, 1981, Ser. No. 331,692
Int. Cl.³ D05B *29/02*
U.S. Cl. 112—237 **5 Claims**



1. A presser bar mechanism for a sewing machine having a frame and a work supporting surface, said mechanism having: a presser bar reciprocally movable in its axial direction; a presser foot attached to one end of said presser bar; means for urging said presser bar in a direction toward said work supporting surface; and counter balance means for urging said presser bar in a direction away from said work supporting surface comprising:

a. an actuating member;

b. an abutting surface attached to said presser bar for reciprocal movement therewith in a predefined path;

c. control means for positioning said actuating member into either of two positions, in the first of said two positions said actuating member is disposed within said predetermined path, in the second of said two positions said actuating member is disposed outside of said predefined path;

d. a spring arranged to bias said actuating member in a direction parallel to said predefined path so that when in said first of said two positions said actuating member engages said abutting surface thereby urging said presser bar in said direction away from said work supporting surface.

4,388,887

WINDING DEVICE FOR A SEWING MACHINE

Urs Ruch, Berlingen, and Christian Ulmer, Steckborn, both of Switzerland, assignors to Fritz Gegauf Aktiengesellschaft Bernina-Nähmaschinenfabrik, Steckborn, Switzerland

Filed Dec. 9, 1980, Ser. No. 214,474
Claims priority, application Switzerland, Dec. 19, 1979, 11240/79
Int. Cl.³ D05B *59/00*
U.S. Cl. 112—279 **3 Claims**

1. A winding device for a sewing machine including a sewing mechanism connected to a machine drive mechanism, by a coupling means which comprises,

a sewing machine housing, said winding device being adapted to swing into said sewing machine housing and be covered by a lid when not being used,

a two-armed hinge support pivotally disposed on the housing, said two-armed hinge support being connected to said lid,

one arm of said two-armed hinge support being connected by a lever mechanism with a support means, and



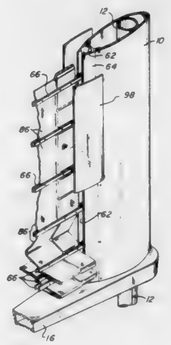
said support means being pivotally attached to the sewing machine housing for the winding device forming a toggle joint such that when the lid is opened the toggle joint is extended and the winding device is brought into its operating position and secured there while the other arm of the two-armed hinge support disengages said coupling between the machine drive mechanism and the sewing mechanism.

4,388,888

ADJUSTABLE AIRFOIL

Fred W. Gushurst, Jr., 6117 E. Otero Pl., Englewood, Colo. 80112

Filed Apr. 24, 1981, Ser. No. 257,385
Int. Cl.³ B63H *9/06, 9/08, 9/10*
U.S. Cl. 114—90 **21 Claims**



1. An adjustable airfoil comprising:

a free-standing mast which is rotatable about an axis generally perpendicular to a support surface on which said mast is to be mounted, said mast having an upper end and a lower end;

at least a first arm fixedly attached to said upper end of said mast and extending perpendicular from said mast and a second arm fixedly attached to said mast below said upper arm and relatively adjacent to said lower end of said mast and extending perpendicular from said mast;

a vane rotatably mounted on said mast between said arms, said vane having luff slot means along an aft edge of said vane;

a sail made up of a plurality of articulated panels attached together for folding in accordion fashion with means at the forward end of each panel slidably mounted in said luff slot means;

halyard means for raising and lowering said sail panels so that when in raised position, said panels form a substantially planar airfoil and when lowered, said panels are folded in accordion fashion on the deck; and

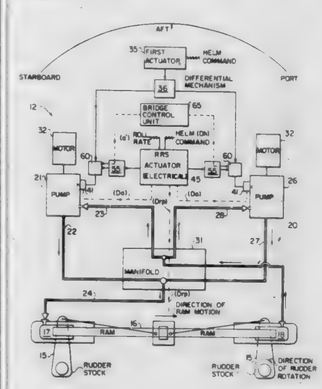
control means for selectively rotating the mast and the vane as required under different air conditions.

4,388,889

ELECTRICAL ACTUATOR FOR SHIP ROLL STABILIZATION

A. Erich Baitis, Stafford, Va.; Dennis A. Woolaver, Rockville, Md., and Richard T. Nigon, Fairfax, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 31, 1981, Ser. No. 248,389
Int. Cl.³ B63H *25/00*
U.S. Cl. 114—144 E **6 Claims**



5. In a roll reduction actuation means for a ship rudder stabilization system for controlling ship rudder to reduce wave and wind induced roll motions;

a means for generating a stabilizer command signal (Ds) for the ship rudders, said actuation means comprising a roll rate sensor for producing a ship roll rate signal (a') and a rate gain circuit for producing a roll rate gain factor (K), which is multiplied with the roll rate signal (a') to produce said stabilizer command signal (Ds).

4,388,890

DEVICE FOR LOCATING IN BUILDINGS THE EXACT POSITION OF HIDDEN OBJECTS

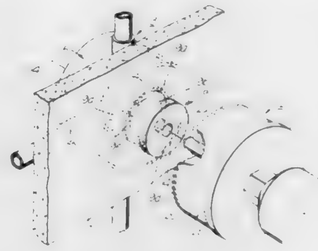
Bengt Wester, and Anders West, both of Norra Hyllievägen 103, Malmö , Sweden (S 21622)

Filed Dec. 12, 1980, Ser. No. 216,315
Claims priority, application Sweden, Dec. 20, 1979, 7910517
Int. Cl.³ H02G *15/06*
U.S. Cl. 116—204 **6 Claims**

1. A device for locating hidden objects such as electrical boxes, in buildings which objects are to be exposed by providing a hole in a covering unit, such as a plate like wall, over the object, said device comprising:

a first annular magnetic body mounted at the object to be located on one side of said covering unit, said first body having a guide hole formed therein, and having a conically tapered recess formed around said guide hold, said recess having a diameter greater than the diameter of said guide hole;

a second annular magnetic body which is movable along the other side of said covering unit for sensing the position of said first magnetic body, said second body having a guide hole formed therein, said guide holes being positioned on said bodies so as to be alignable on opposite sides of said covering unit for guiding a drill through said covering unit;



means for releasably attaching said first magnetic body to said object whereby said first magnetic body can be removed from said object after said object is located and exposed; and

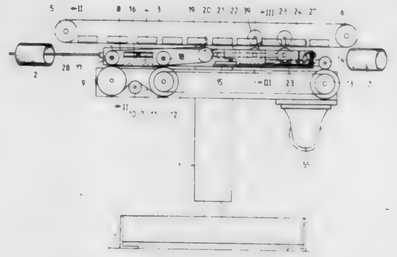
wherein one of said magnetic bodies is a permanent magnet.

4,388,891

APPARATUS FOR APPLYING A PROTECTIVE COATING TO THE WELDING OR SOLDER SEAM OF CAN BODIES

Paul Opprecht, Herrenbergstrasse 10, 8962 Bergdietikon, Switzerland

Filed Sep. 14, 1981, Ser. No. 302,207
Claims priority, application Switzerland, Oct. 7, 1980, 7479/80; Jul. 17, 1981, 4710/81
Int. Cl.³ B05C *1/02, 7/08*
U.S. Cl. 118—215 **14 Claims**



1. An apparatus for the application of a protective coating to a seam, such as a welded or soldered seam, of can bodies, comprising:

means for supplying the protective coating for application as a coating mass to the inside of the seam;

at least two driven rolls defining a first applicator roll and a second applicator roll at least partially immersible in the coating mass furnished by said supplying means;

said driven applicator rolls applying the coating mass to the inside of the seam;

said supplying means comprising a common container for the protective coating;

said two applicator rolls being arranged in tandem within said common container;

said first applicator roll being structured to be narrower than said second applicator roll and serving to cover a central region of said seam with said protective coating; and

said second applicator roll having a peripheral portion con-

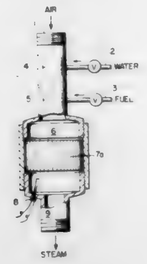
taining means which preclude application of the protective coating at the region of said seam.

4,388,892

PROCESS AND APPARATUS FOR GENERATION OF STEAM VIA CATALYTIC COMBUSTION

Marc P. N. Rody, 8718 Arlington Blvd., Fairfax, Va. 22031, and Frank W. Sudia, 4817 Linnean Ave., Washington, D.C. 20008

Filed Jan. 26, 1981, Ser. No. 228,052
Int. Cl.³ B09B *3/00*
U.S. Cl. 122—4 D **36 Claims**



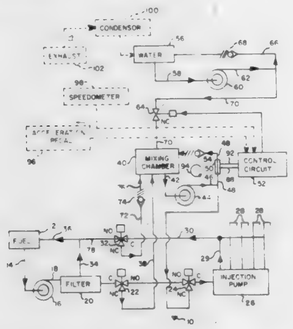
3. Apparatus for vaporizing water comprising
(a) a catalytic element,
(b) means for supplying a mixture of fuel, oxidizer and water to said element to support a combustion-vaporization reaction thereon, and
(c) means for utilizing the mixture of water vapor and combustion product gases so produced.

4,388,893

DIESEL ENGINE INCORPORATING EMULSIFIED FUEL SUPPLY SYSTEM

Richard Apfel, New York, N.Y., assignor to Cedco, Incorporated, New York, N.Y.

Filed Aug. 4, 1980, Ser. No. 174,852
Int. Cl.³ F02D *19/00*
U.S. Cl. 123—25 J **8 Claims**



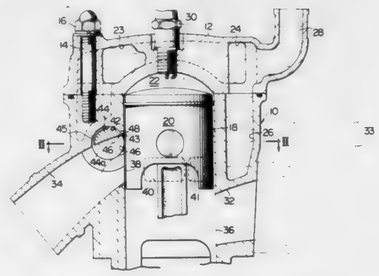
1. A system for generating an emulsified fuel, comprising:
(a) first reservoir means for containing a quantity of fuel component;
(b) second reservoir means for containing a quantity of a non-combustible emulsion component;
(c) chamber means defining an output and a mixing chamber having an input for receiving said fuel component and said non-combustible emulsion component and outputing both of said components at its output;
(d) first means for providing said non-combustible component to said chamber means;
(e) second means for providing said fuel component to said chamber means;
(f) emulsifier means for receiving at its input both of said components from the output of said chamber means, and providing an emulsion at its output;
(g) third means for providing both of said components from the output of said chamber means to the emulsifier means;
(h) fourth means for providing at least a portion of the output of said emulsifier means to a device which consumes the emulsion of said fuel component an said non-combustible component;
(i) recirculation means for receiving that portion of said emulsion not provided to said device and returning it to said chamber means, allowing said portion not provided to said device to be returned to the emulsifier means;
(j) measurement means for measuring the ratio of the amount of said fuel component to the amount of said non-combustible component in said recirculation means; and
(k) control means responsive to said measurement means to vary the flow of said components to control said ratio.

4,388,894

TWO STROKE ENGINE HAVING EXHAUST TIMING CONTROL VALVE MEANS

Shuji Tanaka, Iwata, and Toshio Nagata, Hamamatsu, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka, Japan

Filed Sep. 30, 1981, Ser. No. 307,165
Claims priority, application Japan, Sep. 30, 1980, 55/136888
Int. Cl.³ F02B *75/02;* **F02D** *9/06*
U.S. Cl. 123—65 PE **3 Claims**



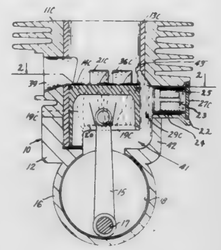
1. A two-stroke engine comprising cylinder means, piston means which is received in said cylinder means for reciprocating movement, said cylinder means having exhaust port means adapted to be closed by said piston means, exhaust port timing control rotary valve means provided in said exhaust port means at upper portion thereof, said valve means being movable between a projected position wherein it is projected into the exhaust port means to thereby cover the upper portion of the exhaust port means and a retracted position wherein it is retracted from the exhaust port means, valve actuating motor means for actuating the valve means between said projected and retracted positions, control circuit means for controlling a power supply to said motor means, main switch means having first position for connecting the control circuit means with a power source, timer switch means for maintaining a power supply from said power source to said control circuit means for a predetermined time after the main switch means is actuated to a second position where it disconnects the power source from the control circuit means so that the valve means is moved to the retracted position after the main switch means is moved to the second position.

4,388,895

FUEL PORTING FOR TWO CYCLE INTERNAL COMBUSTION ENGINE

Eyvind Boyesen, Kempton, Pa., assignor to Performance Industries, Inc., Kempton, Pa.

Continuation of Ser. No. 133,098, Mar. 24, 1980, Pat. No. 4,294,202, which is a continuation-in-part of Ser. No. 941,596, Sep. 12, 1978, Pat. No. 4,202,298, which is a continuation-in-part of Ser. No. 859,476, Dec. 12, 1977, Pat. No. 4,143,626, which is a continuation-in-part of Ser. No. 839,180, Jul. 17, 1979, Pat. No. 4,161,163, which is a continuation-in-part of Ser. No. 674,102, Apr. 6, 1976, Pat. No. 4,062,331, Ser. No. 586,138, Jun. 11, 1975, Pat. No. 4,051,820, which is a continuation-in-part of Ser. No. 375,065, Jun. 29, 1973, Pat. No. 3,905,340, which is a continuation-in-part of Ser. No. 282,734, Aug. 22, 1972, abandoned, and Ser. No. 361,407, May 18, 1973, abandoned.
This application Aug. 7, 1981, Ser. No. 290,819
Int. Cl.³ F02B *33/04*
U.S. Cl. 123—73 PP **4 Claims**



1. A two-cycle, crankcase compression internal combustion engine having a cylinder with a piston movable in the cylinder between top and bottom dead center positions, fuel intake porting in the cylinder positioned to be controlled by the piston, reed valve controlled intake passage means communicating with the intake porting, the intake porting and passage means being positioned toward one side of the cylinder, exhaust porting at the side of the cylinder opposite to the intake porting, transfer ports in the cylinder wall, a first one of said transfer ports being positioned at a first side of the cylinder between the intake porting and the exhaust porting and the second one of said transfer ports being positioned at a second side of the cylinder opposite to said first side between the intake porting and the exhaust porting, auxiliary transfer porting in the cylinder wall at a level above the intake porting and communicating with the intake passage means, and two auxiliary passages in communication with the intake passage means independently and offset from each other, one toward said first side wall of the cylinder and the other toward said second side wall of the cylinder, said two auxiliary passages being in communication with the crankcase throughout the piston stroke and even in bottom dead center position of the piston.

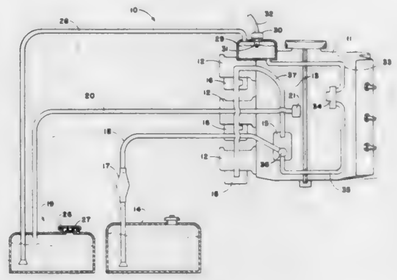
4,388,896

LUBRICATING SYSTEM FOR A TWO-CYCLE ENGINE

Stephen E. Sheridan, and James M. Hundertmark, both of Fond du Lac, Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Aug. 10, 1981, Ser. No. 291,717
Int. Cl.³ F01M *1/00*
U.S. Cl. 123—73 AD **10 Claims**

1. A lubrication system for a two-cycle, crankcase compression engine, comprising:
(A) a lubricant tank;
(B) a first conduit means connected from said lubricant tank to said engine for supplying lubricant to said engine;
(C) a second conduit means connected from the crankcase of said engine to said lubricant tank for pressurizing said tank, said lubricant being forced through said first conduit by the pressure in said tank;
(D) a lubricant reservoir mounted on said engine, and connected to said first conduit means to receive lubricant through said first conduit means; and



(E) a metering pump, said metering pump connected to receive lubricant from said reservoir and to supply metered lubricant to said engine.

4,388,897

VARIABLE CAMSHAFT ASSEMBLY

Bernard Rosa, 11 Waverly Pl., New York, N.Y. 10003

Filed Sep. 22, 1980, Ser. No. 189,108
Int. Cl.³ F01L *1/34*
U.S. Cl. 123—90.17 **5 Claims**



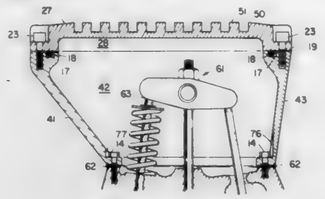
1. In an internal combustion engine employing a two part cam assembly to vary valve timing, including speed sensitive means, a double function cam-camshaft-camshaft support arrangement comprising, an axially movable camshaft acting against a camshaft return spring through the intercession of a rotatable bearing, said camshaft having a plurality of fixed cam surfaces thereon, a wormed portion alongside each fixed cam surface on said camshaft, a camshaft support positioned at or near each said wormed portion of said camshaft, a circular opening through each camshaft support of a diameter larger than that of said camshaft, independent secondary cams of substantially the same outer dimensions of said fixed cam surfaces on said camshaft, each said secondary cam possessing a circular protrusion axially alongside of such diameter and width to mate with and turn rotatably in said circular opening through said camshaft support, means to prevent axial movement of said secondary cam, a centrally positioned wormed opening through said secondary cam and associated circular protrusion of such size and configuration to mesh operably with said wormed portions on said camshaft, such a combination allowing said camshaft a certain amount of twisting axial movement, said twisting axial movement being induced by the combination of weight, rotational speed, and worming of said camshaft acting against the rotatably trapped secondary cams and said camshaft return spring, thereby permitting said cam-camshaft-camshaft support arrangement to vary valve timing while simultaneously acting operably as part of the speed sensing means.

4,388,898

OIL CONTAINMENT DEVICE

Wally M. Larson, Evansville, Ind., assignor to Ronald Luttrell and Gerald Edson, both of Terre Haute, Ind.

Filed May 29, 1981, Ser. No. 268,570
Int. Cl.³ F01M *11/00*
U.S. Cl. 123—90.38 **4 Claims**



1. An oil containment device for preventing loss of oil during valve adjustment of an internal combustion engine having rocker arm valve train assemblies and attachment means for securing a valve cover thereover, comprising,

an oil containment dam comprising a peripheral wall structure having upper and lower edges and including upstanding opposite end walls and upstanding side walls extended between said end walls,

means for attaching said peripheral wall structure to an engine with the valve cover attachment means thereof,

means for sealing the lower edge of the peripheral wall structure to the engine to prevent oil leakage therebetween,

said peripheral wall structure having a height such that the upper edge thereof is positioned above said valve train assembly upon attachment of the peripheral wall structure to the engine,

a cover being of a size and shape to cover and close the opening defined by the upper edge of the peripheral wall structure, and

means for removably securing and sealing said cover onto said peripheral wall structure,

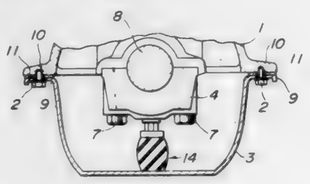
said peripheral wall structure being free of projections which extend interiorly over said valve train assemblies whereby said valve train assemblies are freely accessible without interference by such projections.

4,388,899

NOISELESS COVERS

Kiyoshi Shimada, Yokosuka, and Naoki Ogawa, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 18, 1981, Ser. No. 244,896
Claims priority, application Japan, Apr. 2, 1980, 55-44543[U]
Int. Cl.³ F02B *77/13*; F02F *7/00*
U.S. Cl. 123—198 E **5 Claims**



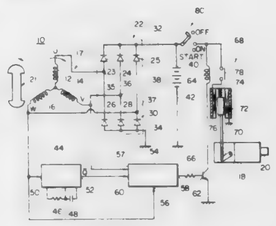
1. A noiseless cover suoh as an oil pan, front cover, cylinder head cover and the like mounted with its circumference onto an engine body, said cover comprising an elastic body fixed to part of said engine body and resiliently abutting against a mid-portion of an inner surface of said cover.

4,388,900

AUTOMATIC STOPPING DEVICE FOR DIESEL ENGINE

Yoshikazu Hoshi, Tokai, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP80/00298, § 371 Date Aug. 5, 1981, § 102(e) Date Aug. 5, 1981, PCT Pub. No. WO81/01725, PCT Pub. Date Jun. 25, 1981
PCT Filed Dec. 5, 1980, Ser. No. 293,217
Claims priority, application Japan, Dec. 7, 1979, 54/158068
Int. Cl.³ F02B *77/00*
U.S. Cl. 123—198 DB **4 Claims**



1. An automatic stopping device for diesel engines comprising: a multi-phase alternator connected to the output shaft of a diesel engine and having a plurality of output coils; a delay-type flip-flop having a data input terminal connected to the output coil of one of the phases of said multi-phase alternator and adapted to receive an input signal having forms of low and high levels, and a clock input terminal connected to the output coil of another phase of said multi-phase alternator and adapted to receive an input signal having the forms of low and high levels, said flip-flop being adapted to memorize the form of the input signal at said data input terminal when the form of input signal at said clock input terminal is changed from one to the other; and an engine stopping actuator having an input terminal connected to the output terminal of said delay-type flip-flop; the phase relation of said input signals to said data input terminal and said clock input terminal being so selected that, when said engine is operating in the forward direction, a high level signal representing the forward operation is generated at said output terminal of said delay-type flip-flop while, when said engine operates in the backward direction, a low level signal representing the backward operation is generated at said output terminal of said delay-type flip-flop, said engine stopping actuator being adapted to stop said diesel engine in response to said low level signal.

4,388,901

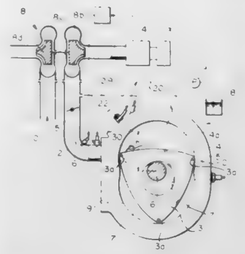
LUBRICATING OIL SUPPLY SYSTEM FOR A SUPERCHARGED ROTARY PISTON ENGINE

Hiroshi Kodama; Tooru Maeda, and Toshio Miyatani, all of Hiroshima, Japan, assignors to Toyo Kogyo Co. Ltd., Hiroshima, Japan

Filed Jul. 7, 1981, Ser. No. 284,233
Claims priority, application Japan, Jul. 7, 1980, 55-93141
Int. Cl.³ F01C *21/04*
U.S. Cl. 123—213 **7 Claims**

1. A rotary piston engine including a casing having a rotor cavity, a rotor disposed in said rotor cavity of the casing for rotation and defining working chambers in said casing, intake passage means for supplying a charge of intake gas to the working chambers, throttle valve means provided in said intake passage means for controlling flow of the intake gas passing therethrough, supercharging means provided in said intake passage means upstream of the throttle valve means, lubricant oil supply means including oil passage means opening through outlet port means to at least one of the intake passage means downstream of the throttle valve means and the rotary cavity.

said lubricant oil supply means further including air passage means having one end opening to said oil passage means and



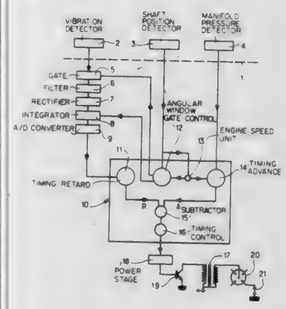
the other end opening to the intake passage means between said supercharging means and the throttle valve means.

4,388,902

IGNITION TIMING DEVICE AVOIDING PINGING DURING THE FUNCTIONING OF AN INTERNAL COMBUSTION ENGINE

Jean-Francois Latapie, Roquettes, France, assignor to Societe pour l'Equipement de Vehicules, Issy-les-Moulineaux, France

Filed Dec. 19, 1980, Ser. No. 218,309
Claims priority, application France, Dec. 20, 1979, 79 31281
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—425 **9 Claims**



1. In an ignition timing device for an internal combustion engine, supplying an ignition signal for each cylinder staggered in relation to the top dead centre of the cylinder in question in accordance with at least one parameter, the set of parameters taken into consideration including the speed of rotation of the engine, this device being connected to a pinging detector comprising at least one vibration detector fixed on the engine and an electronic circuit designed to process the data supplied by the said detector to control the ignition timing, the said circuit taking the said data into account only in the angular window corresponding to that fraction of the cycle of each cylinder during which pinging can occur, the improvement comprising

(a) means for deriving a threshold signal value on the basis of the data supplied by the said detector in the said angular window of a cycle of a cylinder,

(b) comparison means for comparing the signal supplied by the vibration detector in the angular window of a subsequent cycle of said cylinder of the engine with said derived threshold value for the same cylinder of the engine, and

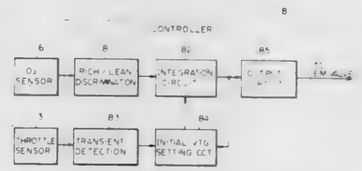
(c) means responsive to the said comparison means for controlling a modification of the ignition timing if pinging has occurred in the cylinder in question, and wherein said means for deriving a threshold value is effective to derive said value solely on the basis of the data supplied by said vibration detector during the corresponding angular window of the last preceding cycle of the same cylinder.

4,388,903

DEVICE FOR CONTROLLING AIR-FUEL RATIO FOR INTERNAL COMBUSTION ENGINES

Seietsu Yoshida; Masao Ito, both of Kariya; Yukio Kawai, Toyota, and Toshihisa Ogawa, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo K.K., Toyota, both of, Japan

Filed Apr. 6, 1981, Ser. No. 251,127
Claims priority, application Japan, Apr. 7, 1980, 55-44706
Int. Cl.³ F02B *33/00*; F02M *7/00*
U.S. Cl. 123—440 **15 Claims**



1. A device for controlling the air-fuel ratio of an air-fuel mixture supplied to an internal combustion engine, comprising:

air-fuel ratio regulating means for regulating the air-fuel ratio of the air-fuel mixture in response to a control signal;

an oxygen sensor for sensing the oxygen concentration in the exhaust gases of the engine and producing an oxygen signal indicative of the oxygen concentration;

a transient sensor for detecting a transient running state of the engine and producing a transient detection signal indicative of said transient running state, and;

an electronic controller for receiving said oxygen signal from said oxygen sensor and said transient detection signal from said transient sensor and supplying said control signal to said air-fuel ratio regulating means;

said electronic controller including an integrating means for effecting integration in response to the signal from said oxygen sensor and an initial setting means for operating, independently of said oxygen signal from said oxygen sensor, in response to said transient detection signal, changing the output signal of said integrating means quickly to a predetermined value, and causing said integrating means to commence the integration from said predetermined value.

4,388,904

AIR-FUEL RATIO CONTROL SYSTEM

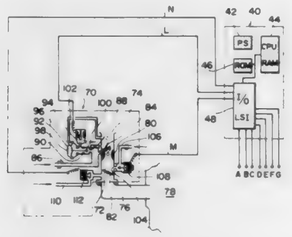
Kenji Masaki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Division of Ser. No. 82,337, Oct. 5, 1979, Pat. No. 4,292,946.
This application Apr. 10, 1981, Ser. No. 253,008
Claims priority, application Japan, Nov. 15, 1978, 53-140667; Nov. 15, 1978, 53-140668
Int. Cl.³ F02M *7/18*
U.S. Cl. 123—440 **1 Claim**

1. An air-fuel ratio control system for use with an engine carburetor including an induction passage provided therein with a fixed area venturi, a float chamber, a main fuel passage connected at one end to said float chamber and opened at another end to said fixed venturi, and an air bleed disposed in said main fuel passage, comprising:

(a) a control unit responsive to various engine operating parameters for determining the condition under which the engine is operating and providing first, second and third control signals, each corresponding to the determined engine operating condition;

(b) a main air passage opened at one end to atmospheric air and connected at another end to said air bleed;
(c) a main air flow control valve unit disposed in said main air passage, said main air flow control valve unit responsive to said first control signal and the pressure in said venturi for controlling the air flow through said main air passage, said main air flow control valve unit including a pneumatic control valve provided in said main air passage, said pneumatic control valve being responsive to the pressure in said venturi for controlling the air flow through said main air passage, and an electromagnetic valve disposed in said main air passage upstream of said pneumatic control valve, said electromagnetic valve being responsive to said first control signal for controlling the air flow through said main air passage;
(d) fuel supply means for supplying fuel;



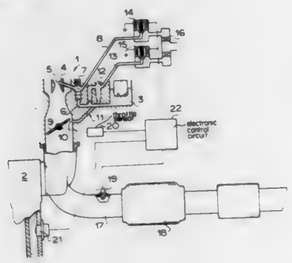
(e) an auxiliary fuel passage connected at one end to said fuel supply means and at another end to said induction passage downstream of said venturi;
(f) an auxiliary fuel flow control valve provided in said auxiliary fuel passage, said auxiliary fuel flow control valve being responsive to the second control signal for controlling the fuel flow through said auxiliary fuel passage;
(g) an auxiliary air passage opened at one end to atmospheric air and at another end into said induction passage downstream of said throttle valve; and
(h) an auxiliary air flow control valve provided in said auxiliary air passage, said auxiliary air flow control valve responsive to the third control signal for controlling air flow through said auxiliary air passage.

4,388,905

AIR-FUEL RATIO CONTROL SYSTEM

Toshiro Kurihara, Koganei, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Jul. 7, 1981, Ser. No. 280,968
Claims priority, application Japan, Jul. 16, 1980, 55-97359
Int. Cl.³ F02M *7/20*
U.S. Cl. 123—440 **15 Claims**



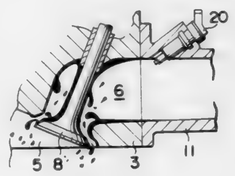
1. In a system for controlling the air-fuel ratio control for a carburetor of an internal combustion engine having an induction passage, a throttle valve, an exhaust passage, first detecting means for detecting the concentration of a constituent of exhaust gases passing through said exhaust passage and providing a detected output signal dependent thereon, air-fuel mixture supply means, and an on-off type electromagnetic valve for correcting the air-fuel ratio of the air-fuel mixture supplied by said air-fuel mixture supply means, the improvement comprising
electronic control means comprising a judging circuit means for judging the detected output signal of said first detecting means with a reference value corresponding to a stoichiometric air-fuel ratio value and for producing a first output dependent on the difference, and a first circuit means for producing a second output for driving said electromagnetic valve means operatively dependent on the first output of said judging circuit means for controlling the air-fuel ratio to a value approximately equal to the stoichiometric air-fuel ratio,
second detecting means for sensing engine load and for producing a third output dependent thereon,
third detecting means for sensing cold engine operation and for producing a fourth output dependent thereon, and
correcting circuit means adapted to be operated by said fourth output of said third detecting means for making said electronic control means non-responsive to the detected output signal from said first detecting means and for operatively connecting the third output of said second detecting means to said first circuit means.

4,388,906

FUEL INJECTED ENGINE CONTROL DEVICE AND METHOD PERFORMING WALL-ADHERED FUEL ACCOUNTING

Shinichi Sugiyama, and Takayoshi Nakatomi, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed May 5, 1982, Ser. No. 375,196
Claims priority, application Japan, Jul. 6, 1981, 56-105338
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—492 **18 Claims**



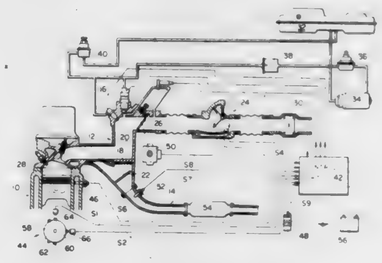
1. For an internal combustion engine with a combustion chamber system and comprising an air-fuel mixture intake system formed with walls and comprising an intake manifold, said internal combustion engine further comprising a fuel injection valve fitted to said intake manifold which is selectively opened and closed by selective supply of an actuating signal thereto and which when so opened injects liquid fuel into said intake manifold, said internal combustion engine and said fuel injection valve operating according to an operational cycle:
an engine control method, comprising the processes, repeatedly and alternatingly and/or simultaneously performed, of:
(a) sensing the current values of certain operational parameters of said internal combustion engine;
(b) based upon the current values of said sensed operational parameters of said internal combustion engine, calculating the value of a first quantity representing the desired amount of fuel to be provided to said combustion chamber system of said internal combustion engine during the time period between the next two fuel injection pulse time points, the value of a second quantity representing the proportion of fuel in one pulse of fuel injected through said fuel injection valve which will adhere to said walls of said air-fuel mixture intake system, and the value of a third quantity representing the proportion of the total amount of fuel adhering to said walls of said air-fuel mixture intake system which is sucked off therefrom to pass into said combustion chamber system of said internal combustion engine during the time interval between two successive fuel injection pulses; and
(c) at time points in said operational cycle of said internal combustion engine and said fuel injection valve which are proper fuel injection time points; performing the following processes in the specified order:
(c1) calculating, from the current value of a fourth quantity representing the total amount of fuel adhering to said walls of said air-fuel mixture intake system, and the current value of said third quantity representing the proportion of the total amount of fuel adhering to said walls of said air-fuel mixture intake system which is sucked off therefrom to pass into said combustion chamber system of said internal combustion engine during the time interval between two successive fuel injection pulses, the value of a fifth quantity representing the amount of fuel from the total amount of fuel adhering to said walls of said air-fuel mixture intake system which will be sucked off therefrom to pass into said combustion chamber system of said internal combustion engine in the time interval between the next fuel injection pulse time instant and the next fuel injection pulse time instant after it;
(c2) calculating, from the current value of said first quantity representing the desired amount of fuel to be provided to said combustion chamber system of said internal combustion engine during the time period between the next two fuel injection pulse time points, from the current value of said second quantity representing the proportion of fuel in one pulse of fuel injected through said fuel injection valve which will adhere to said walls of said air-fuel mixture intake system, and from the current value of said fifth quantity representing the amount of fuel from the total amount of fuel adhering to said walls of said air-fuel mixture intake system which will be sucked off therefrom to pass into said combustion chamber system of said internal combustion engine in the time interval between the next fuel injection pulse time instant and the next fuel injection pulse time instant after it, the value of a sixth quantity representing the actual fuel amount to be injected through said fuel injection valve in the next fuel injection pulse;
(c3) calculating, from the current value of said sixth quantity representing the actual fuel amount to be injected through said fuel injection valve in the next fuel injection pulse and the current value of said second quantity representing the proportion of fuel in one pulse of fuel injected through said fuel injection valve which will adhere to said walls of said air-fuel mixture intake system, the value of a seventh quantity representing the amount of fuel from the next fuel injection pulse that will adhere to said walls of said air-fuel mixture intake system;
(c4) updating the value of said fourth quantity representing the total amount of fuel adhering to said walls of said air-fuel mixture intake system by adding thereto the value of said seventh quantity representing the amount of fuel from the next fuel injection pulse that will adhere to said walls of said air-fuel mixture intake system and by subtracting from the result of this addition the value of said fifth quantity representing the amount of fuel from the total amount of fuel adhering to said walls of said air-fuel mixture intake system which will be sucked off therefrom to pass into said combustion chamber system of said internal combustion engine in the time interval between the next fuel injection pulse time instant and the next fuel injection pulse time instant after it;
(c5) modifying said actuating signal according to the value of said sixth quantity representing the actual fuel amount to be injected through said fuel injection valve in the next fuel injection pulse; and
(c6) supplying said modified actuating signal to said fuel injection valve in such a fashion as to cause said fuel injection valve to open for a time period which will allow an amount of fuel approximately equal to the fuel amount represented by said sixth quantity representing the actual fuel amount to be injected through said fuel injection valve in the next fuel injection pulse to pass through said fuel injection valve so as to be injected into said intake manifold;
wherein the method used in subprocess (c2) for calculating the value of said sixth quantity representing the actual fuel amount to be injected through said fuel injection valve in the next fuel injection pulse is such that the sum of the value of said sixth quantity representing the actual fuel amount to be injected through said fuel injection valve in the next fuel injection pulse and the value of said fifth quantity representing the amount of fuel from the total amount of fuel adhering to said walls of said air-fuel mixture intake system which will be sucked off therefrom to pass into said combustion chamber system of said internal combustion engine in the time interval between the next fuel injection pulse time instant and the next fuel injection pulse time instant after it less the value of said seventh quantity representing the amount of fuel from the next fuel injection pulse that will adhere to said walls of said air-fuel mixture intake system is approximately equal to the value of said first quantity representing the desired amount of fuel to be provided to said combustion chamber system of said internal combustion engine during the time period between the next two fuel injection pulse time points.

4,388,907

SINGLE POINT FUEL INJECTED INTERNAL COMBUSTION ENGINE AND METHOD OF OPERATING SAME

Yuko Sugo, and Tadahiro Yamamoto, both of Yokosuka, Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Nov. 12, 1980, Ser. No. 206,309
Claims priority, application Japan, Nov. 15, 1979, 54-158480[U]
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—494 **3 Claims**



1. In a multi-cylinder internal combustion engine having an ignition system, a crankshaft and a single fuel injector for forming the air-fuel mixture fed to the multiple cylinders of said engine, the combination of:
means for producing pulses at a first rate which pulses define a first pulse train signal;
means for producing pulses at a second rate which is lower than said first rate and which pulses define a second pulse train signal;
a fuel injection control circuit operatively connected to said single fuel injector for controlling the injections thereof; and
a circuit responsive to one of the speed of said engine and the load of said engine and which selectively supplies said first

pulse train signal to said fuel injection control circuit when said one of said engine speed and engine load is below a predetermined level and which selectively supplies said second pulse train signal to said fuel injection control circuit when said one of said engine speed and engine load are above said predetermined level and which induces said single fuel injector to inject fuel in synchronism with the pulses of the selected one of said first and second pulse train signals, said first and second pulse producing means taking the form of a disc operatively connected to said crankshaft for synchronous rotation therewith, said disc having first and second sets of markers thereon; and first and second pickups juxtaposed said disc to be respectively responsive to the movement of said first and second markers.

4,388,908

ELECTRICALLY CONTROLLED VALVE OPERATING SYSTEM, PARTICULARLY FOR FUEL INJECTION

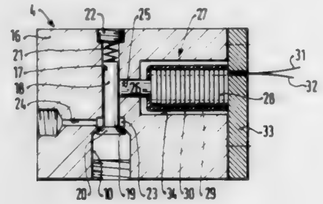
Rudolf Babitzka, Kirchberg; Walter Beck, and Walter Schlagmüller, both of Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

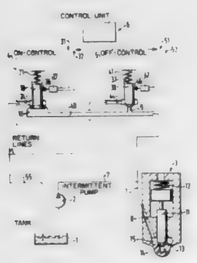
Filed Oct. 15, 1981, Ser. No. 311,676

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039967

Int. Cl.³ F02D *1/16;* **F02M** *37/04*

U.S. Cl. 123—500 **14 Claims**





1. Fuel injection system having

a pump (**2, 62**);

an injection valve (**3, 63**);

hydraulic connection means (**7, 67**) connecting the pump and the injection valve to provide fuel from the pump to the valve, and wherein the injection valve opens to emit fuel when the pressure of applied fuel in the hydraulic connection means exceeds a predetermined opening value, and the injection valve closes when the pressure drops below a predetermined closing value;

and an electrically controlled valve arrangement, hydraulically connected to said hydraulic connection means to control the pressure therein,

which comprises, in accordance with the invention,

a first valve (**4, 64**) which controls initiation of fuel injection by selective control of the pressure in the hydraulic connection means, and a second valve (**5, 65**) which controls termination of injection;

each one of the first and second valves having

a valve housing (**16, 36**) and a valve element (**18, 38; 38', 38''**) which is movable in predetermined direction within a bore **17, 37**) of the valve housing, and hydraulically connected to said hydraulic connection means, for movement by hydraulic pressure in the connection means, acting on the movable valve element;

and an electrically controlled positioning element (**27, 47; 47', 47''**) having a positioning movement which has at least one component which is transverse to the moving direction of the movable valve element and which is operable between a first clamping position in which the respective positioning element clamps the respective valve element against the wall of the respective housing, and a second, released position in which the movable element releases the clamping force applied to said movable valve element to permit movement of the valve element by hydraulic pressure.

4,388,909

FUEL INJECTION TIMING CONTROL SYSTEM FOR A DIESEL ENGINE

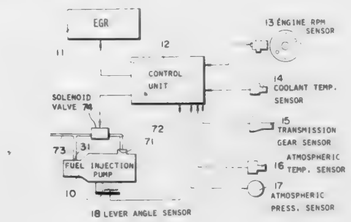
Hiroshi Ogasawara, and Miyao Takai, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 27, 1981, Ser. No. 315,507

Claims priority, application Japan, Oct. 28, 1980, 55-154020[U]

Int. Cl.³ F02M *37/08;* **F02B** *47/08*

U.S. Cl. 123—501 **8 Claims**



1. A fuel injection timing control system for a diesel engine, comprising:

(a) a fuel injection pump for supplying fuel to the engine, timed periodically according to the rotation of the engine crankshaft;

(b) a device connected to the fuel injection pump for varying the fuel injection timing in terms of crank angle;

(c) an EGR means for selectively recirculating exhaust gas through the engine; and

(d) a control unit connected to the fuel injection timing varying device and the EGR means and operable to advance the timing of the fuel injection with regard to a crank angle when the EGR means is operating to effect recirculation of exhaust gas through the engine as compared to when said recirculation is suspended.

4,388,910

INTAKE EXPANSION CHAMBER APPARATUS FOR INTERNAL COMBUSTION ENGINES

Glenn E. Birdwell, 1302 Wright Rd., Alcoa, Tenn. 37901

Filed Jun. 22, 1981, Ser. No. 276,000

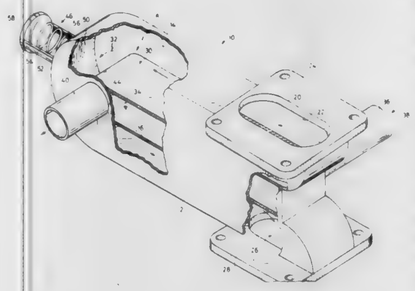
Int. Cl.³ F02M *31/00*

U.S. Cl. 123—547 **3 Claims**

1. An intake expansion chamber apparatus for internal combustion engines which preheats and expands the vaporized fuel/air mixture as said mixture flows between the carburetor and combustion chamber through a conduit such as the intake manifold, and wherein the heat is supplied to the fuel/air mixture by the exhaust system of said internal combustion engine, said apparatus comprising:

a wall defining an enclosure;

a further wall disposed at least partially within said enclosure and serving to partition said enclosure into an expansion chamber section and a heating chamber section, said expansion chamber section having a first leg which has a first end portion which communicates with said fuel/air mixture inlet and a further end portion, and a second leg which has a first end portion which communicates with said fuel/air mixture outlet and a further end portion, the further end portions of said first leg and said further leg being joined in fluid communication such that said first leg and said further leg are disposed substantially parallel with each other and substantially coextensive, said heating chamber section including an exhaust intake joined in fluid communication with said exhaust system of said internal combustion engine, and an exhaust outlet joined in fluid communication with said exhaust system of said internal combustion engine at a location downstream from said exhaust intake, whereby heated gases from said exhaust system flow through said heating chamber section and heat said further wall to form a heat transfer surface;



said expansion chamber section being interposed in the intake manifold of said internal combustion engine between said carburetor and said combustion chamber, and including a fuel/air mixture inlet connected in fluid communication with said intake manifold, and a fuel/air mixture outlet joined in fluid communication with said intake manifold at a location downstream from said fuel/air mixture inlet, said expansion chamber section serving to direct said fuel/air mixture over said heat transfer surface defined by said further wall for purposes of heating and expanding said mixture prior to its introduction into a combustion chamber of said internal combustion engine, such that vaporization is improved and hydrocarbons are more completely combusted; and

a safety valve providing selective fluid communication between said expansion chamber section and the ambient atmosphere, said safety valve disposed proximate the juncture at which said further end portion of said first leg and said further end portion of said second leg are joined in fluid communication, said safety valve serving to release pressure within said expansion chamber section when said pressure exceeds a preselected value as during an engine backfire.

4,388,911

APPARATUS FOR PRODUCING A DEFINED FUEL VAPOR-AIR MIXTURE FOR GASOLINE INTERNAL COMBUSTION ENGINES

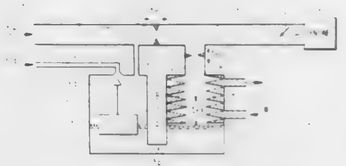
Klaus Lindenmaier, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Dec. 15, 1980, Ser. No. 216,482

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950126

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **10 Claims**



1. An apparatus for producing a defined fuel vapor-air mixture for an internal combustion engine which includes an intake manifold means for supplying intake air to the engine, the apparatus comprising a chamber means for accommodating a liquid fuel, and a vaporizer chamber having a heated means for vaporizing the liquid fuel, each of the chamber means and vaporizer chamber have a gas space and a liquid space, first means are provided for communicating the liquid spaces of the chamber means and vaporizer chamber to each other, second means are arranged in the intake manifold for restricting a flow of intake air and causing a pressure gradient, third means are provided for communicating the gas space of the vaporizer chamber with the intake means at a position downstream of the second means as viewed in a flow direction, the pressure gradient caused by the second means being effective by way of said third means to control a level of liquid fuel in the vaporizer chamber, fourth means are disposed in the third means for providing a vacuum in the gas space of the vaporizer chamber such that a vacuum pressure in the gas space of the vaporizer chamber is about 0.01–40% of a vacuum pressure ambient in the intake manifold means at a position downstream of the second means, and the heated means includes at least one vaporizer surface arranged in the vaporizer chamber in such a manner that an area of the vaporizer surface wetted by the liquid fuel increases as a level of liquid fuel in the vaporizer chamber rises.

4,388,912

EXHAUST GAS RECIRCULATION CONTROL SYSTEM FOR A DIESEL ENGINE

Yoshiyuki Kimura, Yokosuka; Masaji Shiobara, Chigasaki, and Yasutaka Yoshiba, Chiba, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 21, 1981, Ser. No. 285,544

Claims priority, application Japan, Jul. 23, 1980, 55-100898

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—569 **30 Claims**

1. An exhaust gas recirculation control system for a diesel engine, which comprises:

(a) an intake duct;

(b) an exhaust duct;

(c) an exhaust gas recirculation duct communicating between said intake duct and said exhaust duct;

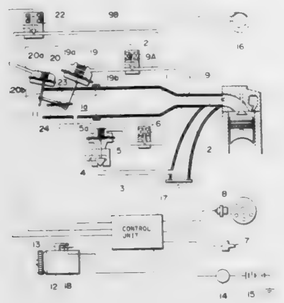
(d) a vacuum source;

(e) an exhaust gas recirculation valve disposed on said exhaust gas recirculation duct;

(f) a first vacuum actuator for actuating said exhaust gas recirculation valve, said first vacuum actuator being actuated by vacuum generated by said vacuum source;

(g) a throttle valve disposed within said intake duct;
(h) a second vacuum actuator for actuating said throttle valve, said second vacuum actuator being actuated by a vacuum generated by said vacuum source;
(i) a third vacuum actuator for actuating said throttle valve in cooperation with said second vacuum actuator and in accordance with engine operating conditions so that said throttle valve is controlled stepwise through any of its fully-open, half-open, and fully-closed positions, said third vacuum actuator being actuated by a vacuum generated by said vacuum source; and
(j) a control unit for controlling said first and second vacuum actuators in accordance with engine operating conditions including engine load.

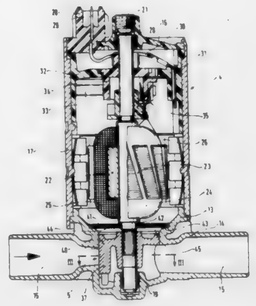
25. A method of controlling exhaust gas recirculation for a diesel engine, which comprises the following steps:
(a) detecting the load of an engine;
(b) detecting an engine operating condition;
(c) comparing a signal (S_{10}) representative of the detected engine load with a first signal (S_{21}) representative of the



detected engine operating condition on the basis of a first predetermined voltage function between the two;
(d) opening an exhaust gas recirculation valve fully when the signal (S_{10}) representative of the detected engine load is smaller than the first signal (S_{21}) representative of the detected engine operating condition and closing the exhaust gas recirculation valve fully when S_{10} is greater than S_{21};
(e) comparing the signal (S_{10}) representative of the detected engine load with a second signal (S_{22}) representative of the detected engine operating condition on the basis of a second predetermined voltage function between the two which is preset to be more sensitive to S_{10} than the first predetermined voltage function; and
(f) closing a throttle valve fully, within the range where the exhaust gas recirculation valve is fully opened, when the signal (S_{10}) representative of the detected engine load is smaller than the second signal (S_{22}) representative of the detected engine operating condition and opening the throttle valve fully when S_{10} is greater than S_{22}.

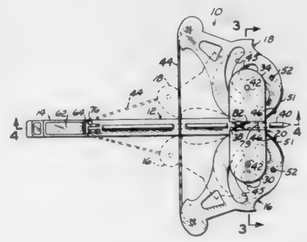
4,388,913
ADJUSTMENT DEVICE FOR ROTARY ANGLE ADJUSTMENT
Gerold Grimm, Leonberg; Klaus Rose, Mundelsheim; Ulrich Kemmner; Rainer Schillinger, both of Stuttgart, and Alois Stemmer, Vaihingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Dec. 17, 1980, Ser. No. 217,354
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1980, 3001473
Int. Cl.³ F02M *23/04*
U.S. Cl. 123—585 **3 Claims**

1. In an adjustment device for rotary angle adjustment including a housed servomotor connected via a shaft with a throttle device, said throttle device arranged to control the cross section of a bypass line bypassing a throttle valve disposed in an intake tube of an internal combustion engine, the improvement wherein said adjustment device is axially limited on one end by a cap having a bore, which is cast with a portion of said bypass line, said throttle device being embodied as a partially cylindrical rotary slide valve which passes trans-



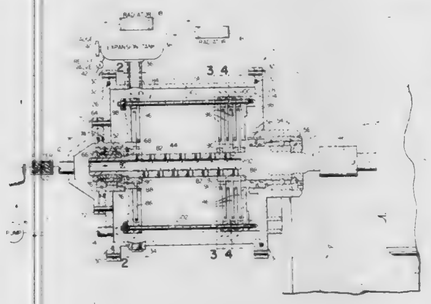
versely through said bore in said cap and into said bypass line, said servomotor including an armature portion, and an apertured, loosely guided sealing disc on said shaft disposed between said armature portion and said throttle valve means, said sealing disc further having a surface area arranged to be received by a sealing face of said cap upon a pressure drop at said sealing disc, whereby said servomotor is arranged to control a throttle valve means in said bypass line.

4,388,914
CROSSBOW WITH COIL SPRING FORCE DEVELOPING MEANS FOR PROJECTING AN ARTICLE
Louie P. Cesin, 6220 SW. 20 St., Miami, Fla. 33155
Filed Jun. 8, 1981, Ser. No. 271,346
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—27 **4 Claims**



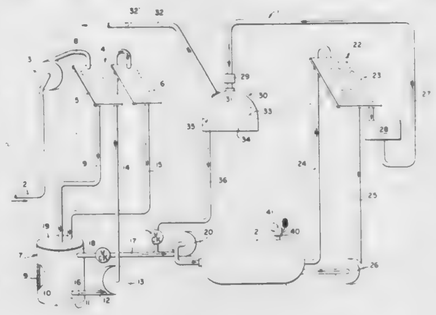
1. A crossbow, comprising:
a casing having a forward end and a rearward end;
wing mounting bracket means transversely connected to the forward end portion of said casing for pivoting mounting a pair of wing;
a pair of wings respectively connected, at one end portion, to respective end portions of said bracket means for pivoting movement of their other end portions toward and away from said casing;
said one end portion of each wing of said pair of wings having a part-circular convex surface;
a bowstring extending between and connected with said other end portions of said wings;
an elongated compression spring longitudinally disposed within said casing;
movable stop means within the forward end portion of said casing for limiting forward movement of said compression spring;
a follower longitudinally slidable within said casing and abutting the rearward end of said compression spring;
elongated flexible strand means extending longitudinally within said casing and connected with said follower,
the forward end portion of said strand means extending around a peripheral portion of the respective convex wing surface and connected with the respective wing forwardly of said bracket means for transferring a biasing force exerted by said compression spring, when the later is compressed, to said other end portion of said wings in a forward direction to pivot the wings forwardly and cause the bowstring to exert a force on a projectile and project a projectile forwardly;
a pistol grip member connected with and closing the rearward end of said casing; and,
trigger means supported by said pistol grip member to permit a member holding the cocked bowstring to flex downwardly under the force of the bowstring and release said bowstring.

4,388,915
HEAT GENERATOR FOR A CIRCULATING HEATING SYSTEM
Dimitry Shafran, 67 Russwin Rd., New Britain, Conn. 06053
Filed Sep. 11, 1980, Ser. No. 186,185
Int. Cl.³ F24C *9/00*; **F22B** *3/06*
U.S. Cl. 126—247 **12 Claims**



1. A frictional heat generator for fluid to be used in a circulating system, comprising a housing defining a substantially cylindrical closed-end chamber, a driven shaft rotatably supported on the longitudinal axis of said housing chamber in sealed relationship with the housing to prevent the flow of fluid to and from the housing chamber around said shaft, said shaft being provided with an axial bore extending from one end through a substantial part of its length within the housing and also being provided with longitudinally and circumaxially spaced transverse radial openings through its wall from the bore into the housing chamber, means supporting a longitudinally spaced series of perforated rotor discs along said shaft for rotation therewith, a cylindrical structure supported within the housing chamber in radially inward spaced relation to the housing and supporting a longitudinal series of perforated annular stator discs within the housing chamber so that a stator disc is disposed between adjacent rotor discs in spaced relationship, the cylindrical structure including a series of stator spacer rings arranged one between each pair of adjacent stator discs and secured to the housing, each stator spacer ring being provided with a plurality of circumaxially spaced radial channels for the flow of fluid outwardly into the housing chamber from the area within said cylindrical structure wherein the rotor and stator discs are located, the inner periphery of the stator discs being radially spaced outwardly from the shaft, and the outer periphery of the rotor discs being radially spaced inwardly from the said cylindrical structure, means for introducing fluid under pressure to the shaft bore during shaft rotation which then flows to the housing chamber through the radial openings in the shaft to be subjected to heat by friction caused by the relative motion of the rotor and stator discs, and conduit means connected to the housing for receiving and circulating the friction heated fluid.

4,388,916
STEAM GENERATION APPARATUS
Albert L. Murdock, P.O. Box 71, Millers Creek, N.C. 28651
Filed Oct. 1, 1981, Ser. No. 307,615
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—427 **9 Claims**



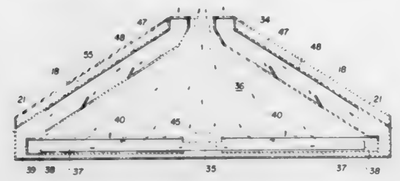
1. A steam generation apparatus including, primary water heating means including at least one solar energy collector, a supply line providing water to said primary water heating means, a hot water storage tank, first inlet and outlet lines joining said primary water heating means in series with said stofage tank, second inlet and outlet lines joining said primary water heating means to said hot water storage tank to provide recirculation of water therebetween, a high pressure-hot water tank, a line supplying hot water to said high pressure-hot water tank from said storage tank, pump means acting on said hot water in said high pressure-hot water tank to maintain water therein under pressure, supplemental water heating means including at least one solar energy collector, recirculating lines directing said hot water under pressure from said high pressure-hot water tank through said supplemental heating means and returning said hot water at a further elevated temperature to said high pressure-hot water tank, an expansion tank, a hot water delivery line from said supplemental heating means to said expansion tank, thermal valve means in said hot water deliver line adjacent said supplemental heating means operable to allow passage of hot water therethrough upon attaining a specified elevated temperature, pressure reducing valve means in said hot water delivery line adjacent said expansion tank, a steam outlet line extending from said expansion tank, and said expansion tank having a water return line adapted to receive condensation formed in said expansion tank.

4,388,917
TRIANGULAR SOLAR COLLECTOR
H. Richard Shea, Jr., 440 Walker Rd., Great Falls, Va. 22066
Filed Jan. 16, 1981, Ser. No. 225,643
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **17 Claims**

1. A solar collector comprising:
a substantially triangular-shaped housing having a base and a pair of converging side walls such that the width of said housing decreases further from said base, said housing including an outlet adjacent the top of said housing, an inlet, a central area generally beneath said outlet, and a pair of outer end areas each spaced apart generally horizontally from said central area;

absorbing means in said housing to absorb incident solar radiation;

a panel of solar transparent material, said panel being secured to the front of said housing for allowing said incident solar radiation to pass through said panel to be incident upon and absorbed by said absorbing means;



air distributor means for distributing cool air from said inlet along said base of said housing; and

barrier means inclined from the vertical and adjacent said converging side walls for creating air ducts connecting said outer end areas to said outlet to prevent stagnation of air in said outer end areas.

4,388,918

MENTAL HARMONIZATION PROCESS

Charles C. Filley, 1207 Saxony La., Houston, Tex. 77058

Filed Jun. 5, 1981, Ser. No. 270,904
Int. Cl.³ A61B *19/00*
U.S. Cl. 128—1 C **2 Claims**

1. Method of producing a state of mental relaxation in a subject, comprising, in combination, the steps of:

(a) exposing solely to one field of vision of the subject a first color determined by the subject to be pleasing to him while simultaneously exposing solely to the other field of vision of the subject the complementary color of said first color; and

(b) exposing solely to one ear of the subject a first audible tone determined by the subject to be pleasing to him while simultaneously exposing solely to the other ear of the subject a second audible tone harmonious with said first audible tone; and

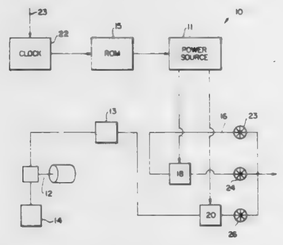
(c) said colors being viewed by the subject while simultaneously listening to said audible tones.

4,388,919

RAPID STABILIZATION OF EXTERNAL CARDIAC PULSATION

Joel M. Benjamin, Jr., Hoffman Estates, Ill., and Victor Meyer, Jr., Telford, Pa., assignors to Intermedics Cardiassist Corporation, Freeport, Tex.

Filed Nov. 17, 1980, Ser. No. 207,692
Int. Cl.³ A61H *7/00*
U.S. Cl. 128—64 **6 Claims**



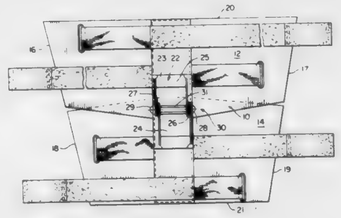
1. In a process of applying external cardiac pulsation by applying pressure pulses to the limbs of a subject in synchronization with the subject's heartbeat and wherein said pressure pulses are characterized by a cycle comprising relatively rapid pressure-rise time and a relatively long peak pressure period before a drop in the pressure at the end of each said pulse, the improvement comprising initiating said process by adjusting the synchronization of the pressure of said pressure pulses with the heartbeat of the subject over a relatively short period of time by increasing stepwise, over a period of up to about 100 heartbeats, the rate of change of the pressure during pressure-rise or pressure-drop period and gradually increasing the time of said peak pressure period.

4,388,920

VARIABLE POSITION KNEE IMMOBILIZER

Mark J. Hajost; Robert L. Crevling, and Fred B. Powell, all of Greenwood, S.C., assignors to Professional Medical Products, Inc., Greenwood, S.C.

Filed Oct. 26, 1981, Ser. No. 314,900
Int. Cl.³ A61F *3/00*
U.S. Cl. 128—80 C **5 Claims**



1. A variable position knee immobilizer comprising:

a flexible cover having upper and lower sections each in planar orientation having upper and lower edges and opposite side edges and adapted to be wrapped about and surround the thigh and calf portions of a patient's leg;

securing means connected to said upper and lower sections of said cover for fastening the cover around the patient's leg above and below the knee; and

stiffener support means comprising upper and lower elongate, interconnected generally flat plates operatively connected to corresponding upper and lower sections of the cover generally centrally of their side edges and extending from adjacent the top edge to the bottom edge of each section to be located along the back of the leg generally parallel to the length of the leg with adjacent ends of the plates being positioned directly behind the knee, and means pivotally interconnecting the adjacent ends of the plates for rotatably positioning the plates and the upper and lower sections of the cover, said pivotal interconnecting means including means for locking the plates at varying positions of the patient's knee to immobilize the leg in such positions.

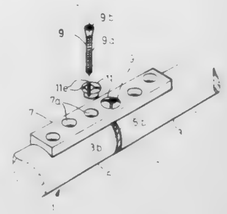
4,388,921

DEVICE COMPRISING A PLATE AND SCREWS FOR FASTENING A PLATE TO A BONE

Franz Sutter, Niederdorf, and Fritz Straumann, Waldenburg, both of Switzerland, assignors to Institut Straumann AG, Waldenburg, Switzerland

Filed May 22, 1981, Ser. No. 266,351
Claims priority, application Switzerland, May 28, 1980, 4156/80
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—92 B **15 Claims**

1. A device connectable with a bone, comprising a plate with at least two clearance holes; retaining means for retaining the plate on a bone and including sleeves each having a clamping part extending through the clearance hole and provided with slots and an inner contact surface and an outer surface, and a collar made of one piece with the clamping part and protruding beyond the outer surface of the latter so as to bear against the side of the plate facing away of the bone; and screws for fastening the plate to the bone and each having an axis, a threaded portion to be screwed into the bone, and an expander displaceable relative to the clamping part in an axial direction



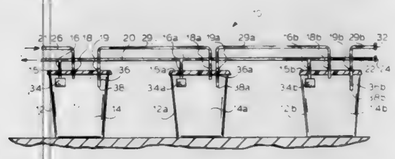
and having an outer contact surface in contact with the contact surface of the clamping part and coaxial with the screw axis in at least one position of the screw, in which position at least one of the said two contact surfaces converges in the direction of the screw axis, in such a way, that by displacing the expander, the clamping part may be clamped tight within the clearance hole.

4,388,922

SUCTION CANISTER SYSTEM FOR SERIAL COLLECTION OF FLUIDS

Anil Telang, Elizabeth, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Jul. 29, 1981, Ser. No. 287,840
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—319 **13 Claims**



1. A suction canister system for collection of patient body fluids comprising:

a plurality of canisters, each canister including a receptacle and a cover having a vacuum port therethrough communicating with the interior of the receptacle, means including a fluid inlet port to permit the flow of fluid therethrough into the receptacle, and means including a fluid outlet port to permit the flow of fluid therethrough out of the receptacle, the last of the plurality of canisters to be filled in the serial collection arrangement including means to prevent fluid from flowing thereout, the vacuum ports of said canisters being connected in parallel fluid communication with each other and having means for connection to a source of vacuum, the inlet port on the canister first in the serial line for collection of fluids having means for connection to a source of fluid outside of the canister system, the outlet port of each canister connected to the inlet port on a successive canister in a serial fluid flow arrangement whereby fluid is collected in said canisters successively.

4,388,923

EXTERNAL URINARY DRAINAGE DEVICE

Ken Heimreid, Brananvein 44B, Heistad, Norway

Filed Apr. 27, 1981, Ser. No. 257,614
Claims priority, application Norway, May 13, 1980, 801426
Int. Cl.³ A61F *5/44*
U.S. Cl. 604—352 **9 Claims**



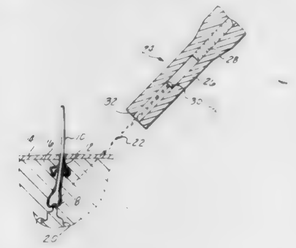
1. In an external urinary drainage device which includes a condom having an open rearward end and a forward end in sealed communication with a length of hose for transferring the urine, the condom having a length and shape such as to cover only the head (glans) of the penis, the improvement comprising a funnel shaped sheathing body means coaxial with the condom and sealing connected around the periphery of the condom adjacent the forward end thereof and so located that, when the condom surrounds the head of the penis and the foreskin has been drawn forward over the condom, the sheathing body means can be reversed to encase the condom and foreskin.

4,388,924

METHOD FOR LASER DEPILATION

Howard R. Weissman, 9216 Middlebelt, Livonia, Mich. 48150, and Joseph Mantel, 21819 Constitution, Southfield, both of Mich. 48076

Filed May 21, 1981, Ser. No. 265,878
Int. Cl.³ A61N *5/00*
U.S. Cl. 128—303.1 **7 Claims**



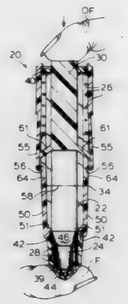
1. The method of devitalizing a hair of a human subject as part of a process of depilation, comprising: aiming a source of a narrow beam of light, the source having a substantial component of wavelength to which the skin of the patient is substantially non-absorbative and the hair root of the patient is substantially absorbative, at a point on the epidermis of the patient spaced from the exit point of the hair body and in a direction such that the extension of the beam would intersect the hair root, and applying a short, high-energy pulse of such light energy from such beam to cause sufficient heating of the hair root to destroy the blood vessels supplying the hair root.

4,388,925

AUTOMATIC RETRACTABLE LANCET ASSEMBLY

James A. Burns, Elizabeth, N.J., assignor to Becton Dickinson and Company, Paramus, N.J.

Filed Mar. 23, 1981, Ser. No. 246,523
Int. Cl.³ A61B 17/34
U.S. Cl. 128—314 9 Claims



1. An automatically retractable spring lancet assembly for piercing human skin which assembly includes automatic release of the drive spring for retraction, characterized by
(a) a housing having an aperture;
(b) a plurality of elongate openings in said housing;
(c) a lancet mounted in said housing for reciprocable movement therein;
(d) a point on said lancet positioned adjacent the interior side of said housing aperture;
(e) a depressable plunger mounted for reciprocation in said housing in the end thereof opposite said housing aperture;
(f) the outer end of said plunger extending out of said housing for engagement;
(g) a sleeve slidable on said housing and positioned to engage said lancet in the piercing forward movement thereof;
(h) a first compressed spring extending between said housing and said sleeve for the piercing forward movement of said lancet upon engagement of said plunger;
(i) a second uncompressed spring extending between said lancet and said housing for the compression thereof and automatic retraction of said lancet after the said piercing forward movement thereof;
(j) cooperating means extending between said plunger and said housing for automatically disengaging said first spring from said lancet after said lancet completes its piercing movement for allowing the automatic retraction of said lancet back through said housing aperture;
(k) a flexible skirt positioned on said housing for maintaining said sleeve in position for compressing said first spring; and
(l) a plurality of flexible arms adapted to flex outwardly upon depression of said plunger and contact said flexible skirt and cause said skirt to flex outwardly to thereby become disengaged from said sleeve thereby releasing the restraining force applied to said first spring so that said sleeve moves forward to cause the said forward piercing movement of said lancet.

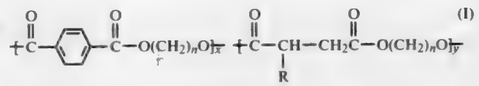
4,388,926

HIGH COMPLIANCE MONOFILAMENT SURGICAL SUTURES COMPRISING POLY[ALKYLENE TEREPHTHALATE-CO-(2-ALKENYL OR ALKYL)SUCCINATE]

Shalaby W. Shalaby, Lebanon, and Edgar Schipper, Cranford, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Dec. 22, 1980, Ser. No. 218,998
Int. Cl.³ A61L 17/00
U.S. Cl. 128—335.5 17 Claims

1. A drawn and highly oriented thermoplastic surgical filament comprising a copolymer consisting essentially of a multiplicity of recurring polyalkylene terephthalate and polyalkylene alkyl or alkenyl succinate units having the following general formula:



(I)

wherein n is 2 to 6, R is a linear or branched alkyl or alkenyl radical with a chain length of about 4 to 30 carbon atoms and x and y are integers such that the polyalkylene terephthalate units comprise 70 to 90 mole percent of the copolymer.

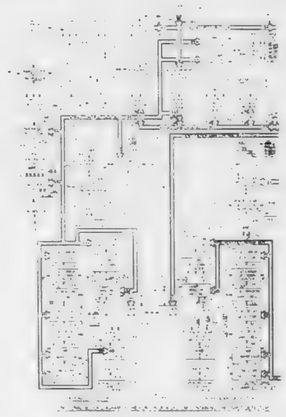
2. A filament of claim 1 having a surgical needle attached to at least one end and useful as a surgical suture.

4,388,927

PROGRAMMABLE DIGITAL CARDIAC PACER

Robert C. Schober, Huntington Beach, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Dec. 13, 1979, Ser. No. 103,401
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PG 31 Claims



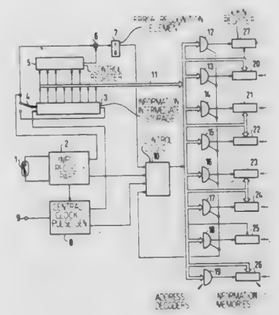
1. Implantable cardiac pacing apparatus comprising:
electrode means adapted to couple a stimulating signal to the heart and for sensing a cardiac signal;
sensing means for sensing signals on said electrode means;
selection circuit means responsive to the signals sensed by said sensing means for detecting a predetermined component of a natural cardiac cycle;
first timing circuit means having a first timing source operating at a first rate for generating timing signals representative of time periods in a cardiac cycle including a rate time out period during which said predetermined component is expected to occur;
second timing circuit means synchronized with said first timing circuit means and having a second timing source independent of said first timing source and operating at a second, faster rate for generating a rate limit enable signal defining a predetermined mimimum period relative to the commencement of a cardiac cycle and ending during a normal cardiac rate time out period; and
generator means for generating a stimulating signal on said electrode means if said selection circuit means fails to detect said predetermined component during said rate time out period and being inhibited from generating said stimulating signal until said rate limit signal is generated by said second timing circuit means.

4,388,928

SIGNAL PROCESSING MEANS PARTICULARLY FOR HEART PACEMAKERS

Christer Ekwall, Solna, and Hakan Elmqvist, Bromma, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,221
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939197
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PG 5 Claims



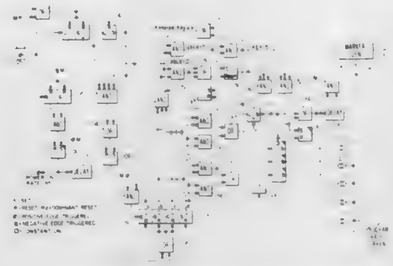
1. Signal processing means, particularly for heart pacemakers, comprising a signal reception part and a routing device connected with said signal reception part which routes specific signal information for storage,
(a) a memory bank having information memories connected with said routing device and operative for receiving respective types of signal information; and
(b) a locking register (27) allocated to the memory bank and individually controlling enablement of said information memories (20 through 26), into which locking register (27) a locking signal can be inscribed for each information memory which is specifically assigned to said information memory, and on the basis of which a change of the stored informational content is made impossible as long as an opening signal for an appertaining information memory is not input into the locking register (27) from the outside;
(c) said information memories (20 through 26) having respective information inputs connected in common with said signal reception part for receiving signal information therefrom, and each having a respective individual control input for selectively enabling a change of the informational content stored by such information memory, and each having an address decoder means as part of said routing device for determining which information memory is intended to receive signal information supplied to the information inputs from the signal reception part; and
(d) said locking register (27) being connected with and controlling the control input of each of said information memories (20 through 26) and individually controlling the enablement of said information memories (20 through 26) for locking selected individual information memories against a change of stored informational content by means of respective individual locking signals being inscribed in said locking register (27) with respect thereto, and for enabling a change of stored informational content of only a selected individual one of said information memories by means of said opening signal therefor.

4,388,929

PROGRAMMABLE PACER AND METHOD OF EXTERNAL PROGRAMMING

Alexis C. M. Renirie, Wijchen; Kornelis A. Mensink, and Frederik H. M. Wittkampf, both of Brummen, all of Netherlands, assignors to Vitafin N.V., Curacao, Netherlands Antilles

Filed Dec. 11, 1980, Ser. No. 215,559
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PG 18 Claims



1. A pacemaker having a stimulus generator for delivering stimulus signals at a given rate, the rate of said stimulus signals being programmable, having means for receiving external program signals comprising on-off type signals and means for varying said rate as a function of said received program signals, characterized by said varying means comprising
means for counting first and second sequenced series of said program signals;
decade control means for controlling said rate so that the decade component of said rate corresponds to a first count of said counting means; and
unit control means for controlling said rate so that the unit component of said rate corresponds to the other count of said counting means.

4,388,930

CARDIAC CATHETER ELECTRODES FOR PACEMAKERS PROVIDED WITH A CARDIAC RF RECEIVER FOR EMERGENCY PACING

Ferruccio De Bellis, Rome, Italy, assignor to S.B.M. Societa Brevetti per la Medicina S.R.L., Italy

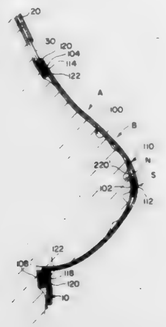
Filed Sep. 18, 1981, Ser. No. 303,596
Claims priority, application Italy, Oct. 7, 1980, 49838 A/80
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PS 5 Claims



1. A catheter electrode for pacemakers provided with a parallel RF cardiac receiver for emergency pacing at radio frequency comprising an integral length of catheter electrode including an inner conductive portion comprising a coiled wire and an outer sheath so called spaghetti, the pacemaker being located at one end and the pacing tip being located at the other end of said catheter electrode, wherein the small-sized coil unit of said RF cardiac receiver is directly connected to said length of the catheter electrode at a suitable position between said

two ends thereof and a small portion of said inner wire is exposed through removal of a corresponding area of said spaghetti.

4,388,931
BRASSIERE WITH IMPROVED SEAM
Frank G. Farino, Shaker Heights, Ohio, assignor to Leading Lady Foundations, Inc., Beachwood, Ohio
Filed Sep. 30, 1981, Ser. No. 307,104
Int. Cl.³ A41L *3/00*
U.S. Cl. 128—425 **10 Claims**



1. In a brassiere of the type having breast receiving cups, each of which is formed from an inner body engaging fabric segment with an outer periphery and an outer decorative fabric segment with an outer periphery, wherein said segments are basted at their peripheries and are each formed from two sections of fabric joined together at a common contour producing seam extending generally across said cup, the improvement comprising: said seam of each of said segments including a sewed joint between its two sections and defining inwardly folded marginal strips captured between said segments at said contour producing seam.

4,388,932
PROCESS FOR IMPROVING FILLING POWER OF EXPANDED TOBACCO
Henry B. Merritt, Richmond, and Larry M. Sykes, Midlothian, both of Va., assignors to Philip Morris, Incorporated, New York, N.Y.
Filed Dec. 31, 1980, Ser. No. 221,910
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—291 **11 Claims**

1. In a process for expanding tobacco by a method which includes the steps of contacting tobacco with an expansion agent and then heating the tobacco to produce expanded tobacco having an OV value of less than about 6%, the improvement which comprises subjecting the expanded tobacco, having said OV value, to further heating under temperature conditions lower than the maximum temperature used for expanding the tobacco so that the heated, expanded tobacco has an OV value of less than 2%.

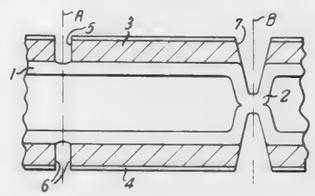
4,388,933
TOBACCO STEM TREATMENT AND EXPANDED TOBACCO PRODUCT
Norman B. Rainer, and Dean M. Siwiec, both of Richmond, Va., assignors to Philip Morris, Inc., New York, N.Y.
Filed Jun. 25, 1981, Ser. No. 277,571
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—293 **17 Claims**

1. A process for expanding rolled and cut tobacco stems which comprises the steps of:

(a) treating tobacco stems having a moisture content between about 2 and 40% with an aqueous hydrogen peroxide mixture under alkaline conditions and in the presence of at least one compound of a multivalent metal to expand and bleach said stems, and

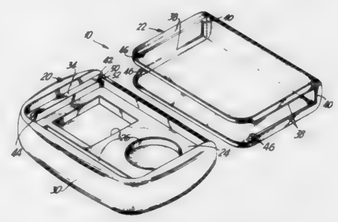
(b) drying the peroxide-treated tobacco stems to effect removal of water, and roasting the dried stems to restore a tobacco-like color thereto.

4,388,934
FILTERS
John A. Luke, Romsey, England, assignor to British-American Tobacco Company Limited, London, England
Filed Jun. 3, 1981, Ser. No. 269,702
Claims priority, application United Kingdom, Jun. 18, 1980, 8019887
Int. Cl.³ A24D *3/04*
U.S. Cl. 131—339 **8 Claims**



1. A tobacco-smoke filter comprising a smoke filtration diaphragm of tubular form forming a first filtration stage and a smoke-pervious layer of fibrous material in which the diaphragm is ensheathed and which forms a second filtration stage, the layer having a transverse cross-section impervious to the passage of tobacco-smoke, the tubular diaphragm being closed at a location spaced longitudinally from said cross-section of said cross-section of said layer so that smoke passes generally radially through said first filtration stage and generally axially through said second filtration stage.

4,388,935
HINGELESS COMPACT
Andrew N. Napolitane, 350 E. 52nd St., New York, N.Y. 10022
Filed Apr. 30, 1981, Ser. No. 259,023
Int. Cl.³ A45D *33/00*
U.S. Cl. 132—83 R **23 Claims**



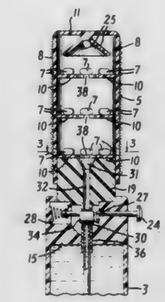
1. A hingeless compact for cosmetic articles comprising:

a generally rectangular plate member having front, rear and two opposed side edges with the upper surface of said plate member being configured to hold cosmetic articles, said plate member including a continuous flange formed integrally therewith and circumscribing said front and side edges, said flange extending above and below the plane of the upper and lower surfaces of said plate member respectively, said upper and lower surfaces each including a pair of opposed shelves extending along the length of said side edges with each said shelf being spaced

from the free end of the adjacent flange and extending perpendicular thereto; and

a generally U-shaped resilient cover member adapted to slidably encase said plate member and having a configuration complimentary thereto, with the perimeter of said flange defining the dimensions of said cover member such that in the closed condition of said compact a smooth surfaced enclosure is defined, said U-shaped resilient cover member cooperating with said plate member to frictionally maintain said compact in a closed condition and whereby when said compact is opened said cover member is slidably moved in a direction towards the rear of said plate member guided by said flange, with the side edges of said cover member slidably moving along said shelves.

4,388,936
COMBINATION APPLICATOR-DISPENSER HAIR STYLER
Shephard D. Roberts, P.O. Box 136, Brooklyn, N.Y. 11216
Filed Mar. 22, 1982, Ser. No. 360,599
Int. Cl.³ A45D *40/30*
U.S. Cl. 132—88.5 **12 Claims**



1. A hair treatment applicator-dispenser comprising, a container for containing; therein a preparation usuable for application to hair; a housing section for holding the mechanism, control and dispenser for contents of said container; a dome receptacle head to direct the dispensed contents and engage the hair curler at the lower portion; said hair curler comprising a removal tubular cover on said container closed at one end and closing said container as a cover and usuable as a hair curler having a length sufficient for wrapping hair thereareound; saidcurler including a tubular band removably mounted on said container axially over said curler cover; said band having both ends open when removed from said curler cover, a cross section open parallel to and fitting axially over said cover in use as a hair curler with hair wrapped thereareound.

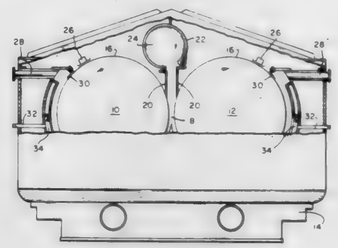
4,388,937
MACHINE FOR THE CHEMICAL FROSTING OF GLASS ARTICLES
Claude M. Moret, 51 rue Pasteur, 77120 Pommeuse, France
Filed Sep. 2, 1981, Ser. No. 298,776
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—73 **6 Claims**

1. A machine for chemically frosting articles made of glass, more particularly flasks, said machine being of the type comprising a continuous conveyor-chain passing consecutive treatment stations, from frosting to drying, and furthermore comprising holders in the form of sealing stoppers for said flasks, characterized in that the conveyor-chain is made of a material resistant to the reactants used, is equipped with hooking means co-operating with holders for the articles to be frosted, and is in the form of links hinged in pairs about an axis, said axis being



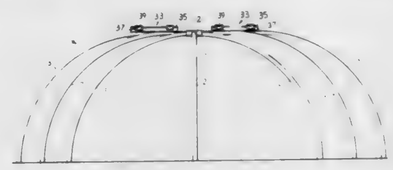
extended outwardly on at least one side of the chain to act as a hooking means for the holders of the articles.

4,388,938
FILTER CLEANING APPARATUS
John M. Dubowik, Nashua, N.H., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed May 11, 1981, Ser. No. 262,462
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—104 **3 Claims**



1. In an apparatus for removing liquid from a fibrous material suspension to form a fibrous mat: a rotatable drum provided with a circumferential filter; means for applying a differential pressure across said filter to form a fibrous mat on the filter; means for thereafter removing the fibrous mat from the filter; and cleaning means for cleaning the filter after the fibrous mat has been removed, said cleaning means having a stationary member located outside the drum and extending along the length of the drum, said stationary member having a flexible membrane in contact with the filter, said flexible membrane having openings extending therethrough; and means for flowing liquid under pressure through said openings and through the filter.

4,388,939
LAND-USE PORTABLE KNOCK-DOWN HUNTING-BLIND FRAME
Roy C. Barton, Rte. #1, Waltonville, Ill. 62894
Filed Jun. 11, 1981, Ser. No. 272,535
Int. Cl.³ A45F *1/16*
U.S. Cl. 135—3 R **7 Claims**



1. A knock-down portable frame for supporting a waterproof cover to form a hunter-concealing blind, comprising: a plurality of pairs of arcuate-ninty-degree bent pipes, each pair having pipes of the same length but having a length different

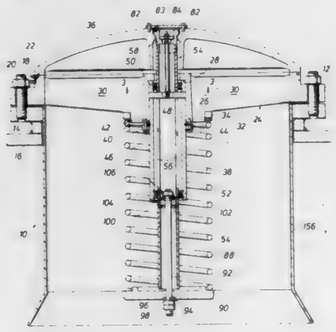
from the length of pipes of the remaining pairs of pipes of said plurality, each said pair of pipes being releasably joined endwise to an vertical pipe by telescoping elements to define a generally semi-elipsoidal space when over-ground-supported in an assembled parallelism; a pair of L-shaped pipes releasably endwise-joinable to form a flat-topped arch for transversely supporting said endwise joined ends of said pairs of arcuate pipes; and short rigid elements transversely and horizontally spacedly fixed to the top of said flat-topped arch for telescopically connecting said endwise joined ends of said pairs of arcuate pipes to each other and to said top of said flat-topped arch.

4,388,940

PRESSURE RELIEF DEVICE

Walter W. Powell, Houston, Tex., assignor to Anderson, Greenwood & Co., Bellaire, Tex.

Filed Mar. 23, 1981, Ser. No. 246,323
Int. Cl.³ F16K *13/04*
U.S. Cl. 137—70 **12 Claims**



1. A pressure relief device for a liquified gas storage vessel comprising

an annular flange having means for securing said flange around an opening in the upper portion of a storage vessel and an annular seat,

a guide tube supported within said seat,

a valve closure,

a spindle connected to and having its outer end to support the valve closure for movement to and from said seat extending through said valve closure and its inner end extending through said guide tube,

means having a preselected strength connecting said spindle to said tube to retain said valve closure against opening movement with respect to said annular seat, and

biasing means engaging the inner end of said spindle to bias said valve closure toward seated position on said seat,

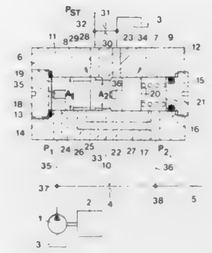
said retaining means releasing its connection when the pressure within the storage vessel creates forces on said closure exceeding the preselected strength of the retaining means and the force of said biasing means to release said valve closure to open and said biasing means returns said valve closure to said seat when pressure force on said closure is less than the force of the biasing means.

4,388,941

APPARATUS FOR PRODUCING A ROTARY SPEED-DEPENDENT CONTROL PRESSURE

Josef Riedhammer, Horb, Fed. Rep. of Germany, assignor to Danfoss A/S, Nordborg, Denmark

Filed Nov. 5, 1981, Ser. No. 318,684
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041873
Int. Cl.³ F15B *5/00*
U.S. Cl. 137—82 **4 Claims**



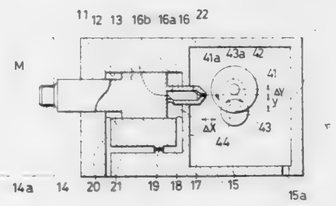
1. A device for producing a rotary speed responsive control pressure, comprising, a housing and piston means in a bore formed in said housing, said piston means having first and second faces on opposite sides thereof slidably disposed therein, a pump driveable over a range of rotary speeds, said pump having an output conduit, a measuring throttle disposed in said output conduit with upstream and downstream sides thereof having respective fluid communication with and exerting first and second pressures in end chambers defined by said faces, spring means in said second chamber biasing said piston means in a direction opposite to said first pressure, control conduit means in said housing intersecting said bore and having upstream and downstream ends relative to said bore, said upstream end of said control conduit means having fluid communication with said downstream side of said measuring throttle means, said piston means having edge means cooperable with downstream portion of said control conduit means to form variable control throttle means, discharge throttle means on the downstream side of said control conduit means, and a tapping for said control pressure in said control conduit between said variable control throttle means and said discharge throttle means.

4,388,942

NOZZLE FLAPPER VALVE

Akio Mito, Yokohama, Japan, assignor to Tokyo Keiki Co., Ltd., Japan

Filed Jan. 16, 1981, Ser. No. 225,536
Claims priority, application Japan, Jan. 22, 1980, 55-6333[U]; Jul. 22, 1980, 55-103761[U]; Aug. 7, 1980, 55-112134[U]
Int. Cl.³ G05D *16/00*
U.S. Cl. 137—85 **11 Claims**



1. A nozzle flapper valve comprising:

a cylindrical flapper (**41**) having a geometric center and a substantially cylindrical peripheral surface;

a first rotary shaft (**44**) connected to said flapper at a location eccentric to said geometric center for movement of said flapper;

rotating means connected to said first shaft for rotating said first shaft within a selected range;

a lever (**43**) connected to said first shaft, said flapper rotatably mounted to said lever about a second shaft, (**42**) connected to said lever;

a nozzle (**22**) having an axis intersecting said peripheral surface and spaced from said peripheral surface by a selected clearance (ΔX); and

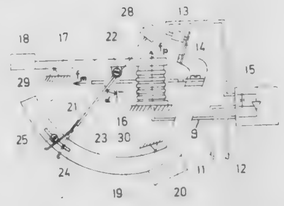
said shaft being positioned and said selected range being chosen so that said geometric center of said flapper is eccentric with said axis of said nozzle by a distance (ΔY) and said clearance (ΔX) is established between said nozzle and said peripheral surface of said flapper.

4,388,943

LINKAGE FOR MOMENT BALANCING MEASURING APPARATUS

Juhani Kukkula, Tampere, Finland, assignor to Valmet Oy, Finland

Filed May 6, 1981, Ser. No. 261,242
Claims priority, application Finland, May 21, 1980, 801651
Int. Cl.³ G05D *16/00*
U.S. Cl. 137—85 **9 Claims**



1. In a linkage for use in moment balancing measuring apparatus of the pneumatic type including first and second pivotally mounted levers, the linkage being adapted to be acted upon by a measuring force and a pneumatic force for balancing the linkage, the improvement comprising means for adjustably varying the leverage ratio of the linkage, i.e., the ratio of the pneumatic force to the measuring force, including a rod-like member having one end rotatably attached to said first lever of the linkage at an attachment point and first locking means for selectively securing said rod-like member to said second lever of the linkage in a particular position corresponding to a respective particular instance of measurement.

4,388,944

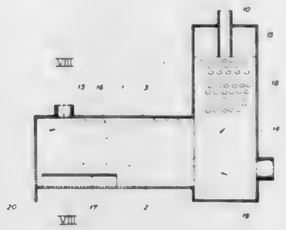
DEVICE FOR CAPTURING AIR BUBBLES FROM FLUIDS IN PIPING

Keizo Honma, No. 6, Nishi 15-chome, Minami 15 Jo, Chuo-ku, Sapporo, Japan, and Kunizo Honma, Sapporo, Japan, assignors to Keizo Honma, Sapporo, Japan

Filed Aug. 25, 1980, Ser. No. 181,192
Claims priority, application Japan, Aug. 30, 1979, 54-119453[U]; Mar. 26, 1980, 55-38337
Int. Cl.³ B01D *19/00*
U.S. Cl. 137—171 **1 Claim**

1. A device for separating air bubbles from a fluid flow and for silencing sound carried from the fluid flow into a pipe system which includes an inlet and an outlet pipe, consisting essentially of:

a hollow, substantially non-obstructed chamber having a longitudinal axis, which chamber is large in comparison with the cross-sectional measurement of the pipes in the system, said chamber having respective inlet and outlet ends and having an inlet opening at the inlet end and an outlet opening at the outlet end, the inlet pipe being connected to said inlet opening and the outlet pipe being connected to said outlet opening, said chamber further having an air capturing space protruding from the top of said chamber at a position nearer to said outlet end than to said inlet end, and a downwardly extending portion provided opposite said upwardly protruding air capturing space,



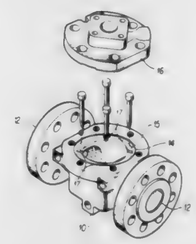
wherein said inlet opening is at the top of said chamber and directs the incoming fluid downwardly, transversely to the longitudinal axis of said chamber in an axial plane, and said chamber further includes a projection, which is substantially semi-circular in cross-section, projecting inwardly of said chamber, adjacent the wall of the chamber opposite said inlet opening, whereby incoming fluid is caused to strike against the wall of the chamber opposite said inlet opening and to swirl and flow in whirls toward said outlet end, thereby providing greater release of bubbles.

4,388,945

VALVE ASSEMBLY AND DISASSEMBLY DEVICE

David A. Johnson, Shrewsbury; Joseph B. Wright, Northboro, and Michael Pashoogian, Worcester, all of Mass., assignors to Jamesbury Corporation, Worcester, Mass.

Filed Jan. 4, 1982, Ser. No. 336,686
Int. Cl.³ F16K *43/00, 25/00*
U.S. Cl. 137—315 **8 Claims**



1. In a valve having a retractable valve seat, including a valve body having an inlet port, an outlet port and an upper opening, said upper opening including a plurality of superposed openings having different diameters with a land formed between each pair of openings, a cover for closing the upper opening, a valve member for controlling the flow of fluid between the inlet port and outlet port, said valve seat being in contact with the valve member and a central chamber between said inlet port and said outlet port for receiving said valve member, the improvement comprising:

means for retraction being formed of an elongated main section, a forward section and a rear section, said forward section including a camming surface for contacting said valve seat and having a variable diameter as well as a

constant diameter portion, said rear section being formed for receiving a force for moving the means for retraction; and

at least one of said lands having holes formed therein for receiving said means for retraction;

wherein said movement of the means for retraction causes the point of contact of said camming surface to change to a point having said constant diameter, forcing said seat to retract and remain retracted in a locked position by said constant diameter.

4,388,946

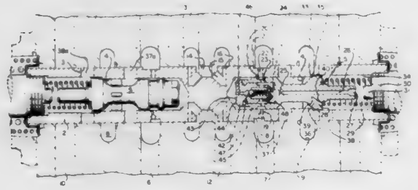
VALVES

Rudolf Richter, Hosbach, and Walter Kropp, Aschaffenburg, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Hollriegelskreuth, Fed. Rep. of Germany

Filed Apr. 20, 1981, Ser. No. 255,388

Int. Cl.³ F15B *11/04, 13/02*

U.S. Cl. 137—596.2 **6 Claims**



1. A valve structure for preventing filling deficiency problems in a pressure energy consumer such as a double acting hydraulic piston comprising an elongate housing having a longitudinal bore, an elongate cylindrical spool slidable in said bore, a pair of spaced work chambers surrounding and communicating with said bore and adapted to be connected to opposite sides of said pressure energy consumer, at least one pressure chamber intermediate the end of said bore communicating therewith delivering pressure fluid to said bore, at least two exhaust chambers, adjacent the work chambers and adapted to be connected to a reservoir, a second bore in each end of said spool, a brake piston in each said second bore, a third bore in said brake piston adjacent one end, at least one transverse passage in the wall of said brake piston communicating between the second and third bores, resilient means in each such second bore in said spool acting on said piston at the end opposite the third bore normally to urge the same toward one end of said second bore in said spool, a pair of cooperating restrictor passage means, one in said spool and one in said piston communicating from the third bore to the piston end adjacent the resilient means connecting the interior of said spool with both ends of each second bore in the spool on opposite ends of the piston, passage means in the brake piston communicating from the restrictor passages in the spool to the end of the second bore opposite the resilient means, a pair of spaced transverse passages at each end of the spool communicating with each bore in the spool and spaced to connect a work chamber and pressure fluid chamber at one end of the spool and a work chamber and exhaust chamber at the other end of the spool in a work position, an annular groove in the brake piston intermediate its ends capable of connecting said spaced passages within the bore in the spool whereby in said work position pressure fluid flows from a pressure fluid chamber through said transverse passages to a work chamber at one end of the spool, and the pressure fluid from said pressure fluid chamber through said restricting passages, at least one transverse passage in the brake piston and the passage means in the brake piston to act on the brake piston to move it against the resilient means to position the groove between the passages at the other end of the spool to regulate flow of fluid between the work chamber and exhaust chamber in accordance with the relative pressure in the pressure fluid chamber.

4,388,947

RAPID COUPLING WHICH IS OPERABLE EVEN UNDER PRESSURE

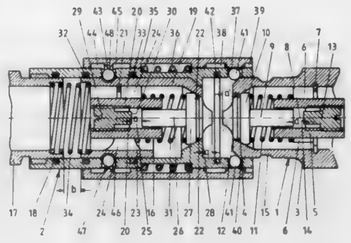
Alfred Steuerwald, Orbis, Fed. Rep. of Germany, assignor to Aeroquip GmbH, Hann Münden, Fed. Rep. of Germany

Filed Feb. 11, 1981, Ser. No. 233,659

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005490; Oct. 16, 1980, 3039072

Int. Cl.³ F16L *37/28*

U.S. Cl. 137—614.06 **14 Claims**



1. Quick coupling which is operable even under pressure, particularly for hydraulic lines, comprising: two coupling halves which can be pushed into one another; first ball-locking means for locking said coupling halves in a coupled position, said coupling halves comprising a plug and a socket valve with a respective valve body which is urged in closing direction by closing springs and in the uncoupled position of the coupling halves maintained in closed position and guided in a star mounted in a coupling body, said plug and said socket each having a respective coupling body and a respective star body; one coupling half having a fixed abutment for limiting the stroke of the respective valve body in its open position, the respective valve body of the other coupling half performing a stroke equal to double the valve stroke of the respective other valve body, a displaceable abutment at the end of the single valve stroke and having second ball-locking means actuatable from the outside for releasing the double valve stroke respectively for locking said valve body in an open position corresponding to the single valve stroke, the star body of the coupling half having the double valve stroke being axially shiftable in said coupling body at least according to the single valve stroke, sleeve means coaxial with said coupling body for mounting said star body, said abutment being located between said sleeve means and the coupling body, and outside of fluid flow cross-section of the coupling.

4,388,948

ARTICULATED LOADING ARM FOR THE TRANSFER OF FLUIDS

Jean Carminati; Thomas Ehret, both of Malay le Petit; Gerard Ovieve, Sens, and Henry-Albert Thoor, Sens, all of France, assignors to FMC Corporation, Chicago, Ill.

Filed May 19, 1980, Ser. No. 150,831

Claims priority, application France, May 28, 1979, 79 13463; Jan. 23, 1980, 80 01430

Int. Cl.³ F16L *3/00*

U.S. Cl. 137—615 **8 Claims**

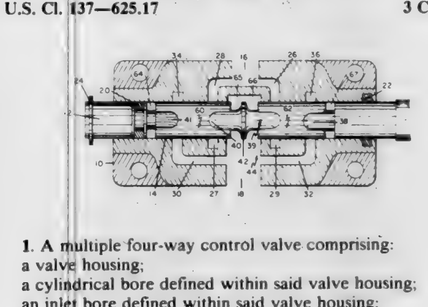
1. An articulated drop-pipe assembly for connecting first and second fluid conduits of a boom-supported offshore loading system to a marine tanker, said assembly comprising:

first and second upper pipe sections;

Cardan joint means pivotally connecting said first and second upper pipe sections to said first and second conduits, respectively, for movement of said assembly with respect to said conduits about two mutually perpendicular horizontal axes and for facilitating suspension of said assembly in a substantially vertical attitude from said first and second conduits when the loading arm is in either a horizontal or non-horizontal attitude, said Cardan joint means comprising four pipe swivel joints with the first and second joints interconnecting the first conduit and the first upper pipe section, the third and fourth joints interconnecting the second conduit and the second upper pipe section, said first and fourth joints oriented on one of said horizontal axes, and said second and third joints oriented on the other of said horizontal axes;

first and second intermediate pipe sections;

means pivotally connecting said first and second intermediate pipe sections to said first and second upper pipe sections, respectively, for movement about at least two parallel horizontal axes;



means pivotally interconnecting said intermediate pipe sections for relative movement about a horizontal axis;

first and second lower pipe sections;

means pivotally connecting said first and second lower pipe sections to said first and second intermediate pipe sections, respectively, for movement about at least two parallel horizontal axes;

Cardan joint means connected to said first and second lower pipe sections to facilitate connecting said lower pipe sections to a pair of non-coaxial fluid conduits on a marine tanker; and

means suspended from said loading arm and connected to said lower pipe sections for supporting and vertically elevating said assembly.

4,388,949

MULTIPLE FOUR-WAY CONTROL VALVE

Roland W. Bonney, R.F.D. 1, Box 65, Kennebunkport, Me. 04046

Continuation-in-part of Ser. No. 215,272, Dec. 11, 1980, Pat. No. 4,337,796. This application Dec. 4, 1981, Ser. No. 327,425

The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.

Int. Cl.³ F16K *11/07*

U.S. Cl. 137—625.17 **3 Claims**

1. A multiple four-way control valve comprising:

a valve housing;

a cylindrical bore defined within said valve housing;

an inlet bore defined within said valve housing;

first and second pressure channels defined within said valve housing communicating with said inlet port and said cylindrical bore, to allow the entrance of hydraulic fluid into said cylindrical bore;

first and second pressure grooves defined around said cylindrical bore of said valve housing communicating with said first and second pressure channels respectively;

an outlet port defined within said valve housing;

first and second relief channels defined in said valve housing, extending from said inlet port through said valve housing to said cylindrical bore;

first and second relief grooves defined around the inside of said cylindrical bore in said valve housing communicating with said first and second relief channels;

a first series of operation ports of like diameter defined in said valve housing arrayed in a first transverse plane to the axis of, and communicating with, said cylindrical bore;

a second series of operation ports of like diameter defined in said valve housing arrayed in a second transverse plane to the axis of, and communicating with, said cylindrical bore;

a spool member positioned in said cylindrical bore and being rotatably and axially movable within said cylindrical bore;

a central spool projection member extending around and projecting from said spool member with its outer periphery contacting said cylindrical bore;

first and second collar members protruding from said spool member and contacting said cylindrical bore, each spaced equidistant from said central spool projection, the inner portions of said first and second collar members extending, when said spool member is in a neutral position, to block said first and second pressure channels and said first and second pressure grooves, and the outer portions of which extend beyond said first and second relief grooves and said first and second relief channels, said first and second collar members defining a first, second, third and fourth cutaway section around said spool at their respective inner portion ends and outer portion ends, said second and third cutaway sections being separated by said central spool projection;

first and second slots defined upon said first collar member and third and fourth slots defined on said second collar member, all in axial alignment, said first slot aligned with said first relief groove when said rotary spool is in a neutral position, said second slot aligned with said first pressure groove to empty said first pressure groove into said outlet chamber, said third slot positioned on said valve aligned with said second pressure groove to empty said second pressure channel into said outlet chamber; and said fourth slot aligned with said second relief groove;

seal means adapted to seal said spool in a fluid-tight relation in said housing within said cylindrical bore;

a second series of slots defined on said collar members to equalize pressure on said spool opposite each of said operation ports, each slot opposite one of said first, second, third and fourth slots with a plurality of cavities defined in the valve housing opposite each operation port, said cavities aligned with said second series of slots on said spool;

each of said slots in said first and second series of slots having a width of the diameter of one of said operation ports with its inside rear end terminating at a point contacting said cylindrical bore and its outside end opening into its respective cut-away section around said spool; and

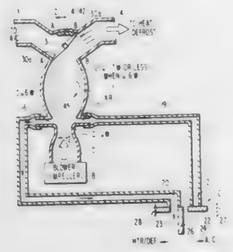
said spool when in said neutral position blocks all of said operation ports, said spool if moved into an active position closes off one of said pressure channels by a land on one of said collars while directing the pressure through said slot on the other collar to a rotationally selected operation port while relieving pressure on a corresponding selected operation port of the other series by venting it through a slot on the other collar to said relief channel and to said outlet port.

4,388,950

FLUID FLOW CONTROL ELEMENT HAVING MOVABLE VALVE AND METHOD

Ronald D. Stouffer, Silver Spring, and Joseph W. Morris, Columbia, both of Md., assignors to Bowles Fluidics Corporation, Silver Spring, Md.

Filed Dec. 9, 1980, Ser. No. 214,555
Int. Cl.³ F15C *3/00, 1/08*
U.S. Cl. 137—829 **19 Claims**



1. In a fluid flow control element including a fluid amplifier including a chamber having an interaction region, a fluid flow inlet means and at least one control passageway adjacent said fluid flow inlet, a fluid flow outlet means downstream of, and substantially aligned with said fluid flow inlet,

a pair of load passageways branching at a branch point from said fluid flow outlet means,

a valve element,

pivot means mounting said valve element for rotation, by fluid flow forces of fluid flowing through said fluid flow inlet, at said branch point to direct fluid to flow through a selected one of said load passageways, the improvement wherein said fluid flow inlet, said fluid flow outlet means and the spacing between said inlet and outlet means are such that the fluid pressure in said chamber is always above any pressure in said load passageways and fluid can only flow from said chamber through the selected one of said load passageways and said at least one control passageway, whereby said valve element is rendered relatively insensitive to load conditions at said pair of load passageways,

and a control member for blocking flow of fluid through said at least one control passageway.

4,388,951

WEAVING LOOMS HAVING ROTARY SHED FORMING DRUMS AND BEAT UP MECHANISMS THEREFOR

Cyril M. Atkinson, Rothley, and Barry C. Strong, Syston, both of England, assignors to Bentley Weaving Machinery Limited, Loughborough, Leicestershire, England

Filed Sep. 15, 1980, Ser. No. 187,622
Claims priority, application United Kingdom, Sep. 27, 1979, 7933566
Int. Cl.³ D03D *47/00*
U.S. Cl. 139—11 **12 Claims**

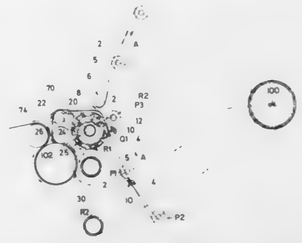
1. In a loom having a shed forming drum rotatable about a first axis, means for guiding warps around the drum to a fabric take-up mechanism, and means for inserting wefts into successive sheds as the drum rotates from a warp take-on position to a fabric take-up position, an improved beat-up mechanism including:

fixed cam means arranged on a second axis parallel to the first axis;

cage means having first annular portions extending around the second axis and second portions extending axially and interconnecting the annular portions, said cage means further have bar means pivotably mounted thereon, said bar means having beat-up elements and means for following said fixed cam means; and

means for rotating said cage means about the second axis in synchronism with the drum,

said cam means having a generally concentric portion which causes the cam following means of said cage means to extend the beat-up elements of said cage means generally radially and move wefts inserted on the drum to a fell, said cam means also having an inclined portion, the beat-up



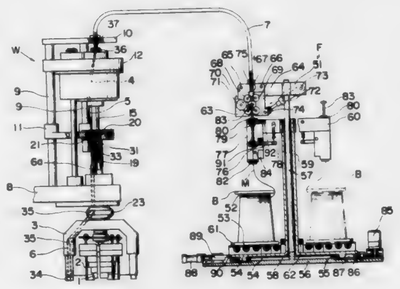
elements being pivoted radially inwardly with respect to said cage means contrary to the direction of rotary movement of said cage means when said cam following means is in contact with said cam means inclined portion to thereby move the beat-up up elements clear of the fell after beating up whilst said cage means continues to rotate.

4,388,952

COIL WINDING APPARATUS

Takuhito Hamane, Hirakata; Toshio Kinoshita, Katano, and Masafumi Kihira, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 15, 1981, Ser. No. 225,247
Int. Cl.³ H02K *15/08;* **B65H** *81/00*
U.S. Cl. 140—92.1 **8 Claims**



1. A coil winding apparatus comprising:

spool means for winding a wire therearound;

flyer means for effecting relative revolution around the spool means to wind the wire around said spool means;

continuous wire passage means for guiding the wire to the flyer means so as to feed the wire to said flyer means;

wire feeding means including a pair of rollers disposed at a starting end of said wire passage means to hold the wire in a radial direction and driving means operatively connected to said rollers for axially moving the wire through rotation of said rollers so as to drive the wire along said wire passage means;

opening and closing means for displacing said rollers approximately in the radial direction to control a state of contact therebetween with the wire;

a plurality of bobbins around which the wire is wound;

wire holding means for holding the end of the wire wound around said bobbin in such a manner to permit axial movement thereof;

detection switch means for detecting presence or absence of the wire reaching the holding means; and

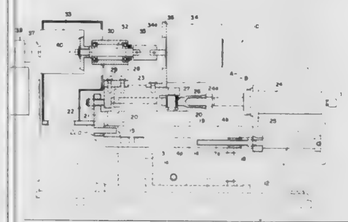
bobbin feeding means for positioning the bobbin under said wire feeding means in response to a signal from said detection switch means.

4,388,953

METHOD OF AND APPARATUS FOR TWISTING WIRE END

Akinori Hara, and Hiroshi Mochizuki, both of Akishima, Japan, assignors to Osawa Press Mdg., Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1981, Ser. No. 222,658
Claims priority, application Japan, Jul. 30, 1980, 55-104574; Jul. 30, 1980, 55-107988[U]
Int. Cl.³ B21F *7/00*
U.S. Cl. 140—149 **6 Claims**



1. Apparatus for stripping an end of an insulated wire which comprises:

(a) a horizontal base;

(b) a wire holder for holding the wire against movement;

(c) a carriage mounted on said base for horizontal movement along the axis of the insulated wire held by said wire holder;

(d) a cylindrical member mounted on said carriage for rotation about its axis, the axis of said cylindrical member lying on the axis of the wire held by said wire holder, said cylindrical member containing a wire support element and a stripper blade for cutting through the insulation of the wire end, said support element and said stripper blade being disposed on opposite sides of the axis of the wire held by said wire holder, and said support element and said stripper blade cooperating to hold the severed insulation upon movement of said carriage toward said wire holder;

(e) drive means mounted on said carriage and operatively connected to said cylindrical member for rotating it about its longitudinal axis; and

(f) actuator means mounted on said base and operatively connected to said carriage for horizontally moving it toward and away from said wire holder, whereby the wire end is stripped of the insulation and twisted as said carriage moves away from said wire holder.

4,388,954

ROTATING SINGLE OR MULTI-CHAMBER COUNTERPRESSURE FILLING MACHINES

Egon Ahlers, Neu-Bamberg, Fed. Rep. of Germany, assignor to Seitz-Werke GmbH, Bad Kreuznach, Fed. Rep. of Germany

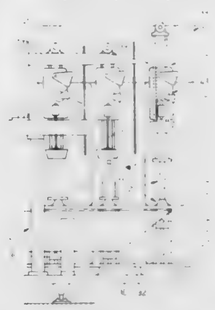
Filed May 15, 1981, Ser. No. 264,023
Claims priority, application Fed. Rep. of Germany, May 21, 1980, 3019381
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—39 **5 Claims**

1. A rotating single or multi-chamber counterpressure filling machine in combination comprising a plurality of filling elements, each of which is provided with:

a controlled pressurized gas valve arrangement having a valve unit and a control unit;

a centering device which includes a centering tulip supported by guided rods which are movable up and down, each centering device being individually controllable for holding and also for releasing operation therewith during circulation of the filling machine; and

a controllable arresting device for arresting said centering device in an upper position, and for releasing same, said arresting device effecting arresting of said centering device by engaging at least one of said rods thereof, at least one of said rods of said centering device being provided with at least one arresting recess, and in which said arresting device includes an arresting bolt which is mounted so as to be axially displaceable in said arresting device, and which is movable in and out of said at least one arresting recess in a controlled manner, said arresting device and said valve unit and control unit of said pressurized gas valve arrangement forming a structural unit, said arresting device being controllable in common with said pressurized gas valve arrangement, said valve unit and control unit of said pressurized gas valve arrangement including: a valve disc which is provided with openings and connecting conduits, and is rotatable into desired operating positions; and at least one control cam for actuating said arresting bolt.

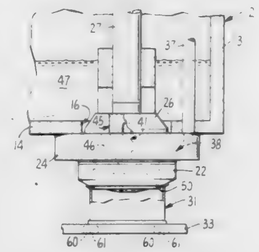


4,388,955

VACUUM FILLER

Konrad E. Meissner, Lafayette, and Grant R. Merritt, Livermore, both of Calif., assignors to Atlas Pacific Engineering, Company, Emeryville, Calif.

Filed Mar. 9, 1981, Ser. No. 241,484
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—286 **8 Claims**



1. In a vacuum filler for containers having a bowl containing filling liquid, a bottom valve attached to the underside of the bowl with a bottom valve seat including a through passage and a bottom valve plate in rotatable contact with the bottom valve seat to connect the through passage of the bottom valve seat in

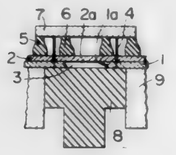
sequence selectively to a source of vacuum, to filling liquid contained in the bowl and to atmosphere, a filling head attached to the underside of the bottom valve seat having a holder carrying a container seal and a displacement disc with an aligned through passage that is in communication with the interior of the container to be filled when it is in sealing engagement with the filling head, the improvement comprising a generally convex surface on the displacement disc facing the container contents and a continuous peripheral lip on the holder radially outward from and depending below the adjacent portion of said convex surface of the disc.

4,388,956

METHOD OF PATCH MENDING A VENEER SHEET

Katsuji Hasegawa, Ohbu, Japan, assignor to Mienan Machinery Works, Inc., Ohbu, Japan

Filed Feb. 20, 1981, Ser. No. 236,578
Int. Cl.³ B27G *1/00*
U.S. Cl. 144—332 **9 Claims**



1. A method of patch mending a veneer sheet comprising the steps of

(1) laying a veneer sheet having a defective portion and a sheet of mending material one on top of the other;

(2) cutting through said veneer sheet and said sheet of mending material by a single stroke of a single annular cutting tool to cut off said defective portion from said veneer sheet and further to cut out a plug from said sheet of mending material;

(3) shifting said plug into a plane in which the veneer sheet extends while removing said cut-off defective portion from said veneer sheet; and

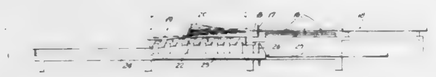
(4) removing said annular cutting tool from said sheet of mending material and said veneer sheet to leave said plug within the veneer sheet resulting in a patch mended veneer sheet.

4,388,957

MULTIPLE BLADE SPLITTING DEVICE

Walter W. Schilling, Delta, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

Filed Oct. 21, 1980, Ser. No. 199,183
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—366 **22 Claims**



1. An apparatus for splitting substantially straight grained lignocellulosic material substantially along grain lines into slabs, comprising:

means for advancing such material along a direction of travel;

a plurality of splitter blades, said blades being spaced along the direction of travel, and being laterally spaced apart in a stepped row from a first splitter blade located to commence splitting at one side of the material, to a last splitter blade located to finalize splitting at the opposite side of the material; and

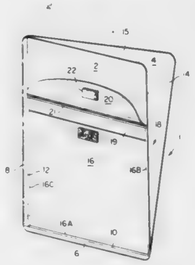
compressible support means to support the material when advancing the material in the direction of travel and past said splitter blades, said support means permitting the material to move laterally away from the splitter blades and from the slabs being split therefrom in response to lateral forces created during splitting.

4,388,958

FOLDER WITH POCKET

Lawrence W. Dworkin, 24 White Oak Dr., North Caldwell, N.J. 07006

Filed Dec. 21, 1981, Ser. No. 333,028
Int. Cl.³ B65D *27/08*
U.S. Cl. 150—7 **9 Claims**



1. A folder with pocket, comprising:

a relatively thick front sheet of a flexible material;

a relatively thick back sheet of a flexible material;

means for joining the bottom edges of the front and back sheets;

means for joining a side edge of the front sheet and a corresponding side edge of the back sheet;

the joined sheets forming a folder with an open side opposite the joined sides, an open top and a closed bottom;

a relatively thin flexible pocket member joined along its bottom and side edges to the external side of one of the front and back sheets, and extending partially along the length thereof for forming a pocket having an open top therewith; and

a relatively thin flexible closure member joined to the external side of the one of the front and back sheets relative to the pocket member for overlapping the pocket member upon closure, whereby a closable pocket is provided.

4,388,959

SOFT CONTAINER FOR JEWELRY

Binns Handy, West Henrietta, and David O. Chase, Skaneateles, both of N.Y., assignors to Lenox, Incorporated, Lawrenceville, N.J.

Filed May 28, 1981, Ser. No. 267,862
Int. Cl.³ B65B *11/48;* **B65D** *65/04*
U.S. Cl. 150—52 R **9 Claims**

1. A pouch for storing precious items, such as jewelry and the like, comprising:

a pliable fabric member having a finish which is soft to the touch;

said fabric member having a triangular shape;

means defining an intermediate portion of said fabric member and including means for stiffening said intermediate portion relative to the remaining portion of said fabric member, whereby the sides of said intermediate portion defines fold lines along which said fabric member may be folded, thereby defining three triangular flaps, the adjacent ends of two of said fold lines being displaced from one another to provide a gap space;

a first closure member being affixed to said fabric member at the region of said gap space;

the remaining flap having a cooperating closure member affixed thereto, as to be releasably joined with said first



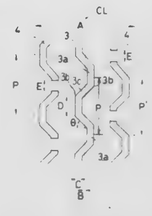
closure member when said third flap is in the closed position.

4,388,960

MOTORCYCLE TIRE

Makoto Wada; Koichi Iwasaki, and Hajime Nakata, all of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jun. 15, 1981, Ser. No. 273,421
Claims priority, application Japan, Jun. 13, 1980, 55-79725
Int. Cl.³ B60C *11/06*
U.S. Cl. 152—209 R **11 Claims**



1. A motorcycle tire having a first main groove circumferentially continuously formed in a central region of the tread portion and second main grooves formed of at least one run of unitary groove portions at each side of and with a space from said first main groove and having interrupted portions circumferentially at intervals to make the second main groove comprising unitary groove portions, said first main groove comprising a plurality of groove segments disposed circumferentially altenately at one and the other of two regions of the tread portion divided and lying close along the center line of the tread portion, said plurality of groove sections lying parallel to said center line and successively spaced in the circumferential direction of the tire, and a plurality of connecting groove segments extending across said center line and connecting together each adjacent two of said groove segments at their facing ends, the ratio of length of said interrupted portions to the pitch of repetition of said unitary groove portions being within the range of from 20 to 50%.

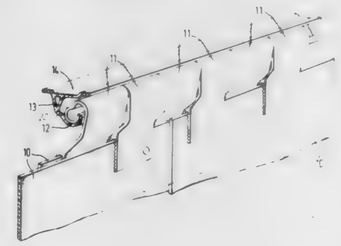
4,388,961

STRIP-TYPE DOOR

Horst Schaefer, Gomaringen-Stockach, and Hans Votteler, Reutlingen, both of Fed. Rep. of Germany, assignors to Albert Reiff KG, Reutlingen, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,409
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1980, 3039594
Int. Cl.³ A47H *1/00*
U.S. Cl. 160—332 **3 Claims**

1. A strip-type door, comprising a plurality of individual strips having faces positioned to overlap each other, said strips being formed of plastic synthetic material and having upper rims; a series of swingable supports each including a recess to receive a respective upper rim of said strips and connected therewith; and a mounting element having a mounting portion secured to a lintel over the door opening, an arcuate wall portion, a channel spaced from the lintel and in part bounded by the arcuate wall portion and a supporting bar connecting said mounting portion with said arcuate wall portion, each of said supports including an upper section formed with an inwardly curved portion terminated with an end section of a spiral shape and insertable into said channel to form with said arcuate wall portion a hinge about which the supports can swing relative to said mounting element between a plurality of positions, a bent intermediate section and a lower section, said



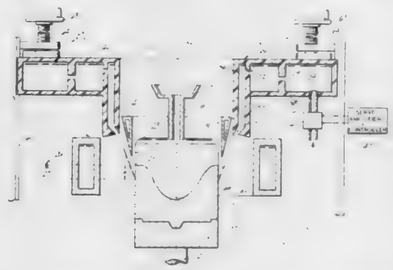
intermediate section interconnecting said upper and lower sections, said lower section being provided with said recess, said arcuate wall portion of the mounting element having an edge being spaced from said mounting portion thereof at a predetermined distance, said inwardly curved portion of each of said supports having such a shape and outer dimensions that said inwardly curved portion of each of said supports may be inserted into said channel in only one of said positions in which the outer dimension of the inwardly curved portion is at most equal to said predetermined distance whereas the remaining outer dimensions of said inwardly curved portion are greater than said predetermined distance, to thereby prevent falling of said supports out of said channel when the strips are in their working swingable positions.

4,388,962

ELECTROMAGNETIC CASTING METHOD AND APPARATUS

John C. Yarwood, Madison; Ik Y. Yun, Orange, and Derek E. Tyler, Cheshire, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 2, 1978, Ser. No. 957,420
The portion of the term of this patent subsequent to Jun. 19, 1996, has been disclaimed.
Int. Cl.³ B22D *27/02*
U.S. Cl. 164—455 **4 Claims**



1. In an apparatus for continuously or semicontinuously casting metals comprising:

means for electromagnetically forming molten metal into a desired casting and means for cooling said molten metal to form a shell of said casting by applying coolant directly to said casting; the improvement wherein, said apparatus further includes:

means for controlling the position of a solidification front at the outer surface of said casting, said means for controlling said position of said solidification front comprising means for providing a pulsed flow of coolant from said cooling means for said application directly to said casting, said means for providing said pulsed flow of coolant comprising an electrically operated valve adapted to control the flow of coolant to provide said pulsed flow and means connected to said valve for actuating said valve intermittently to provide said pulsed flow; and

said means for controlling said position of said solidification front further including means for changing the position of said means for applying coolant in order to change the position on said casting at which said coolant is applied.

3. In a process for continuously or semicontinuously casting metals comprising:

electromagnetically forming molten metal into a desired casting; and cooling said molten metal to form a shell of said casting by applying coolant with a cooling means directly to said casting; the improvement wherein, said process further includes:

controlling the position of a solidification front at the outer surface of said casting, said controlling step comprising providing a pulsed flow of coolant in said cooling step for said direct application to said casting;

said step of providing said pulsed flow of coolant comprising providing an electrically operated valve adapted to control the flow of coolant and actuating said valve intermittently to provide said pulsed flow; and

said step of controlling the position of said solidification front further including changing the position on said casting at which said coolant is applied to said casting by changing the position of said cooling means.

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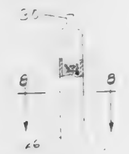
THERMAL ENERGY STORAGE DEVICE AND METHOD FOR MAKING THE SAME

Steve Campbell, Manchester, Mo., assignor to PSI Energy Systems, Inc., Fenton, Mo.

Division of Ser. No. 76,395, Sep. 17, 1979, Pat. No. 4,299,274, which is a continuation-in-part of Ser. No. 35,020, May 1, 1979, abandoned. This application Apr. 14, 1980, Ser. No. 139,847

Int. Cl.³ F28D *17/00*

U.S. Cl. 165—10 **10 Claims**



1. A method of filling and sealing a tube-like container with a phase change material to provide a thermal energy storage device which comprises taking the phase change material in liquid form and partially filling a vertically positioned open top thermo-plastic container constructed of high density polyethylene or the like sealed at a bottom end with said liquid phase change material and fusing by a pinch seal at one end of said container to seal the same, said container being constructed of high density polyethylene having a molecular weight of about 500,000 to 700,000.

4,388,964

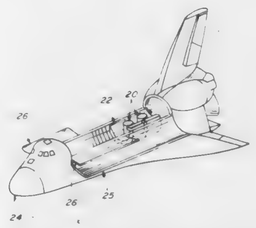
THERMAL CONTROL SYSTEM

David W. Almgren, Concord; John T. Bartoszek, Bolton; Robert M. Lucas, Melrose; Richard P. Berthiaume; Richard H. Spencer, both of Winchester, and William H. Saia, Danvers, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Oct. 11, 1979, Ser. No. 83,972

Int. Cl.³ G05D *23/00*

U.S. Cl. 165—32 **33 Claims**



1. A thermal control system associated with a payload in a space shuttle including a liquid flowing in a liquid loop and in heat exchange relationship with the payload and with a heat sink or source, the system comprising:

a variable speed pump for driving the liquid through the loop, the pump being energized in response to the temperature of the load and increased pump speed providing for increased heat transfer between the payload and the heat source or sink, the heat sink or source being a payload-mounted or pallet-mounted radiator or being thermally connected to a shuttle thermal control loop.

4,388,965

AUTOMATIC THERMAL SWITCH

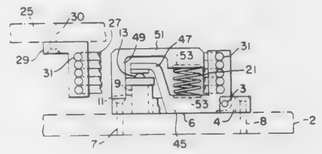
Joseph W. Cunningham, Rockville, and Lawrence D. Wing, Bowie, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 21, 1979, Ser. No. 106,192

The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.

Int. Cl.³ G05D *23/00*

U.S. Cl. 165—32 **12 Claims**



1. A thermal switch for selectively varying the heat transfer between two separate temperature environments, comprising:

first and second thermally conductive spaced members, respectively having surfaces exposed to two separate temperature environments;

a heat motor being in heat exchange relation with said first spaced member;

a thermally conductive switch saddle spatially separated from said second member and pivotally attached to said first member, said switch saddle being responsive to said heat motor so that said switch saddle is pivoted relative to said first member between first and second positions in response to the amount of heat absorbed by said heat motor from said first spaced member, said switch saddle in direct contact and providing a high thermal conductivity contact joint with only said first one of said spaced members when in said first position and said switch saddle being spaced from said first spaced member thereby opening only said high thermal conductivity contact joint when in said second position; and

flexible heat carrier means thermally coupled to said switch saddle and to said spaced member for completing a flexible, fixed conductive heat transfer path between said switch saddle and second spaced member.

4,388,966

BURIED HEAT EXCHANGER

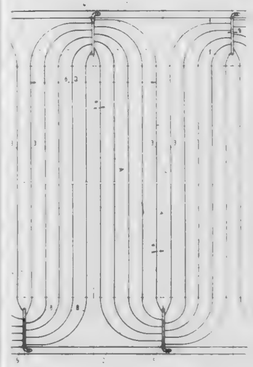
Werner Spiegel, Essen, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Fed. Rep. of Germany

Filed Dec. 11, 1981, Ser. No. 329,938

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048798

Int. Cl.³ F24J *3/02*

U.S. Cl. 165—45 **18 Claims**



1. A horizontal inground heat exchanger comprising:

an input line;

a return line;

a plurality of heat exchange pipes disposed substantially in a plane and substantially equidistantly spaced from each other, said pipes being assembled into a plurality of groups of a a plurality of pipes each;

an input manifold connected to one end of at least some of the pipes in each group; and

a return manifold connected to an opposite end of at least some of the pipes in each group;

each input manifold connected to said input line and each return manifold connected to said return line;

said input and return manifolds each having a cross sectional dimension which is small with respect to a crosswise dimension of each group in the plane;

each pipe having a curved end portion connected to a respective input and return manifold.

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SOLDERABLE MOUNTING STAKES FOR HEAT SINKS

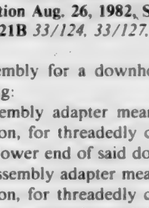
Leonard S. Breese, Duncanville, Tex., assignor to Thermalloy Incorporated, Dallas, Tex.

Filed Sep. 2, 1980, Ser. No. 183,240

Int. Cl.³ F28F *7/00, 9/00*

U.S. Cl. 165—80 B **7 Claims**

1. A solderable stake for a heat sink comprising a unitary body formed from an essentially flat rectangular metal body, said body having a pair of cuts extending from opposite edges thereof aligned substantially along a common axis and the portion of the body on one side of said axis folded to form a shank; a base portion transverse to the axis of said shank supported by said shank; a further portion of said body having further cuts extending from the edge opposite said shank along lines substantially parallel with said shank to form a plurality of parallel fingers extending from said base substantially parallel



with the axis of said shank but disposed on the opposite side of said base from said shank with said shank and said fingers extending in opposite directions from said base, at least one of said fingers being displaced from the remaining fingers to form therewith and said base a channel adapted to receive a heat sink; and a solderable coating on at least the shank portion of said unitary body.

4,388,968

DOWNHOLE TOOL SUCTION SCREEN ASSEMBLY

John T. Brandell, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 255,252, Apr. 17, 1981, Pat. No. 4,366,862, which is a continuation of Ser. No. 204,057, Nov. 4, 1980, Pat. No. 4,327,387, and Ser. No. 204,058, Nov. 4, 1980, each is a division of Ser. No. 57,093, Jul. 12, 1979, Pat. No. 4,246,964. This application Aug. 26, 1982, Ser. No. 411,727

Int. Cl.³ E21B *33/124, 33/127, 43/08, 49/08*

U.S. Cl. 166—236 **8 Claims**

1. A screen assembly for a downhole pump, said screen assembly comprising:

a top screen assembly adapter means, having an internal threaded portion, for threadedly connecting said screen assembly to a lower end of said downhole pump;

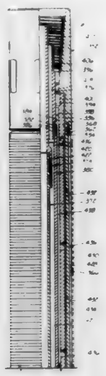
a lower screen assembly adapter means, having an external threaded portion, for threadedly connecting said screen assembly to an apparatus located therebelow;

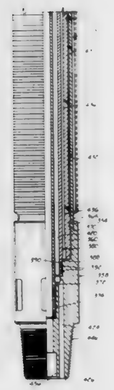
a tubular screen mandrel connected between said top and lower screen assembly adapter means;

a cylindrical pump screen disposed about an outer surface of said screen mandrel, said pump screen having upper and lower ends retained in annular grooves of said top and lower screen assembly adapter means, respectively;

a discharge passage means, disposed in said screen assembly, for communicating a discharge of said downhole pump with a lower end of said lower screen assembly adapter means; and

a suction inlet passage means, disposed in said screen assembly, for communicating said outer surface of said screen





mandrel with an intake of said downhole pump through said top screen assembly adapter means.

4,388,969

BOREHOLE PIPE SIDE ENTRY METHOD AND APPARATUS

Gailen Marshall, Houston; C. H. Myska, Sugar Land, and Kenneth E. Smith, Houston, all of Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Dec. 1, 1980, Ser. No. 211,614

Int. Cl.³ E21B *17/00*

U.S. Cl. 166—242 — **10 Claims**

1. An apparatus for facilitating entry of a small diameter tubular member from the exterior to the interior of a pipe string in a borehole, comprising

a housing arranged for coupling in said pipe string; said housing having a longitudinal bore communicating with the bore of said pipe string;

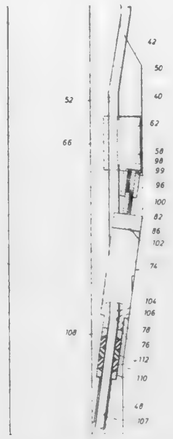
a means forming a recess in the wall of said housing;

a passage means in said recess means and communicating between the interior and exterior of said housing for passing said tubular means therethrough;

a seal means arranged in said passage means for encircling said tubular member;

a first retainer means on one side of said passage means for fixedly retaining one side of said seal means, said retainer means being movable between fixed positions;

a second retainer means on the other side of said seal means; and



an adjustable jack means positioned in said recess for moving said first retainer means between fixed positions.

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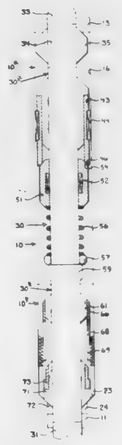
APPARATUS AND METHOD FOR CONTROLLING INJECTION FLUID FLOW IN A WELL ANNULUS

John R. Setterberg, Jr., Richardson, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Feb. 20, 1981, Ser. No. 236,144

Int. Cl.³ E21B *23/00*

U.S. Cl. 166—382 — **16 Claims**



1. Injection fluid control apparatus, for use in a producing well which includes a string of casing and a string of production tubing, comprising

a tool housing to be run into the well comprising a tubular member having a polished bore in one portion and having an internal locking profile in another portion;

a tool mandrel to be run into said casing comprising a tubular member having external, longitudinally spaced, spacer members to provide axial flow paths between said tool housing and said tool mandrel;

a tubular packing mandrel mounted on said spacer members

carrying external annular packing means for sealing engagement with said polished bore of said tool housing; said packing mandrel having means at one end thereof defining an annular valve seat;

a tubular valve closure member mounted for axial sliding movement on said tool mandrel, having means at one end thereof defining an annular valve closure for coacting sealing engagement with said valve seat; said closure member carrying internal annular packing means for sealing engagement with said tool mandrel;

and locking means mounted on said tool mandrel for coacting engagement with said locking profile, to limit axial movement of said tool mandrel relative to said tool housing.

4,388,971

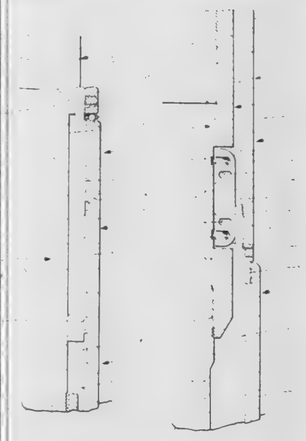
HANGER AND RUNNING TOOL APPARATUS AND METHOD

Elmer R. Peterson, Wilmington, Calif., assignor to Baker International Corporation, Orange, Calif.

Filed Oct. 2, 1981, Ser. No. 307,906

Int. Cl.³ E21B *23/06*

U.S. Cl. 166—387 — **22 Claims**



1. The method of setting a conduit gripping tool by a running tool on a threadably connected work string, insertable within a subterranean well, comprising the steps of:

1. running the conduit gripping tool to a desired position in the well on the running tool;
2. rotating the running tool and a portion of the conduit gripping tool in the same direction as the hand of the work string threaded connections, thereby releasing the conduit gripping tool for setting;
3. applying an axial force to the conduit gripping tool to set same in gripping relation to the conduit; and
4. rotating the running tool relative to the entire conduit gripping tool in the same direction as the hand of the work string threaded connections to release the running tool from the conduit gripping tool.

4,388,972

VIBRATIONLESS IMPACT TOOL

Per A. L. Gidlund, Täby, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Apr. 21, 1981, Ser. No. 256,148

Claims priority, application Sweden, Apr. 25, 1980, 8003177

Int. Cl.³ B25D *17/24*

U.S. Cl. 173—162 R — **7 Claims**

1. A vibrationless pneumatic impact tool comprising:

a housing;

a cylinder axially displaceable in said housing;

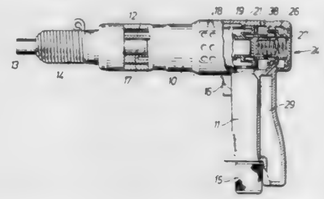
a hammer piston reciprocably driven by pressure air in said cylinder;

a recoil cushioning air volume disposed between said housing and said cylinder;

a first valve means located in a fixed disposition relative to said housing;

a second valve means located in a fixed disposition relative to said cylinder and arranged to cooperate with said first valve means;

said first valve means comprising at least one air inlet opening communicating with a pressure air source and at least one air venting port communicating with the atmosphere;



said second valve means being arranged to selectively prevent communication between said at least one inlet opening and said air volume while establishing communication between said at least one venting port and said air volume when said cylinder is in its extreme forward position relative to said housing, and to selectively establish communication between said at least one inlet opening and said air volume while preventing communication between said at least one venting port and said air volume when said cylinder is in its extreme rear position relative to said housing.

4,388,973

DIRECT DRILL BIT DRIVE

Siegfried Winkelmann, Tettnang, and Horst Schulz, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,724

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012779

Int. Cl.³ E21B *4/02*

U.S. Cl. 175—321 — **8 Claims**

1. A direct-drive drill string comprising:

an upper tubular drive section provided with a drive motor having a shaft and adapted to be traversed and driven by a flushing liquid;

a gear section below said drive section and provided with gearing driven by said shaft and formed with an output member;

a bearing section below said gear section, a plurality of radial bearings rotatably journaling said inner tube, all of said sections having a non-rotating outer tube, a rotating inner tube in at least said bearing section, and radial bearings disposed between said inner and said outer tubes, at least one of said radial bearings having inner and outer races of which one is axially elongated to accommodate axial movement of said inner tube relative to said outer tube;

a drill bit connected to said inner tube below said bearing section and rotatably entrained by said inner tube;

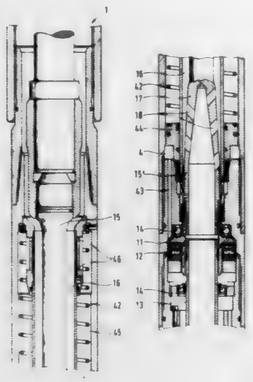
means defining an annular space between said inner and outer tubes intermediate said drive section and said gear section;

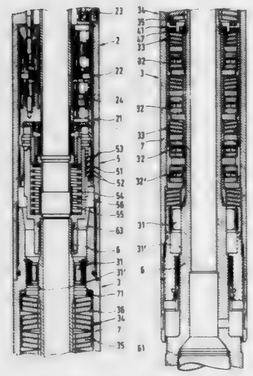
means for introducing oil into said annular space whereby said annular space serves as an oil reservoir;

at least one axial bearing in contact with oil from said reservoir for receiving axial force generated by said motor upon the operation thereof by said liquid;

means for angularly coupling the inner tube connected to said bit with said output member of said gearing so as to permit axial displacement of the inner tube carrying said bit within said outer tube;

spring means braced between said inner tube carrying said bit and said outer tube for yieldably resisting axial displacement of said inner tube carrying said bit; and





further axial bearings cooperating with said spring means and the inner tube carrying said bit for enabling rotation of said inner tube carrying said bit while spring force is applied thereto, said flushing liquid passing through said inner tube to said bit.

4,388,974

VARIABLE DIAMETER DRILL ROD STABILIZER

Emrys H. Jones, Jr., and Pramod C. Thakur, both of Morgantown, W. Va., assignors to Conoco Inc., Ponca City, Okla.

Filed Apr. 13, 1981, Ser. No. 253,462

Int. Cl.³ E21B *7/08*

U.S. Cl. 175—325 **3 Claims**



1. A variable diameter drill rod stabilizer for use in a drilling operation comprising:

(a) an outer housing adapted to attach to and become a part of a drill rod string;

(b) a piston within said housing, said piston having a flow passage therethrough, a flow passage outlet, and being capable of limited axial movement within said housing;

(c) a plurality of cam members including cam surface means axially positioned along said piston;

(d) a plurality of borehole wall engaging members contained in said housing and including cam follower surfaces associated with said cam surface means whereby said wall engaging members move from a contracted position to an expanded position beyond the outer surface of said housing in response to axial movement of said piston;

(e) bias means adapted to prevent forward movement of said piston within said housing in response to a first lower pressure drop of fluid flowing through said flow passage and to allow forward movement of said piston within said housing in response to a second higher pressure drop of fluid flowing through said flow passage; and

(f) a piston stop member including longitudinal flow passage means therethrough, said stop member being downstream from the outlet of the flow passage through said piston when said stabilizer is in the contracted position and upstream from said stop member when said stabilizer is in the expanded position.

4,388,975

COMBINATION WEIGHING DEVICE

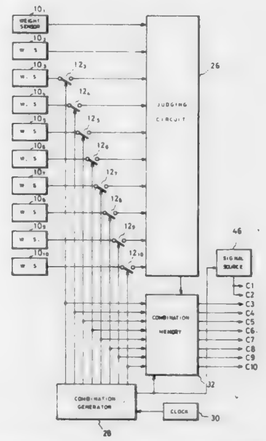
Takashi Hirano, Kobe, Japan, assignor to Yamato Scale Company, Ltd., Hyogo, Japan

Filed May 12, 1981, Ser. No. 262,927

Claims priority, application Japan, May 13, 1980, 55-63132

Int. Cl.³ G01G *19/04;* **B07C** *5/16*

U.S. Cl. 177—25 **4 Claims**



1. A combination weighing device, comprising a plurality of weighing balances for producing electric signals indicative of their measured weights, respectively; an arithmetic unit having a plurality of inputs for summing the incoming signals to produce an output when the resultant sum falls within a predetermined range; a plurality of normally-open switches coupled respectively between said weighing balances and the inputs of said arithmetic unit and having a control terminal each; switch control means having a plurality of output terminals coupled respectively to the control terminals of said normally-open switches for applying control signals thereto from the output terminals selected successively in accordance with predetermined combinations; and means coupled to said switch control means and said arithmetic unit for supplying a combination of said control signals to associated equipments of corresponding ones of said weighing balances in response to the output of said arithmetic unit; and means for always supplying the output signal or signals of at least a predetermined one or more of said weighing balances to said arithmetic unit.

4,388,976

RESILIENT MOUNTING FOR ENGINE ENCLOSURES

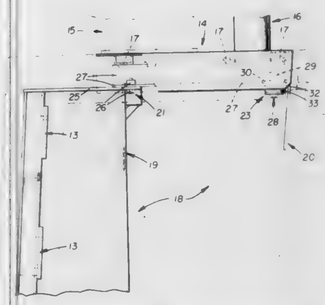
Hugh K. Williams, Davenport, Iowa, and Jerome A. Thies, Geneseo, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00883, § 371 Date Oct. 6, 1980, § 102(e) Date Oct. 6, 1980, PCT Pub. No. WO82/00275, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 14, 1980, Ser. No. 273,895

Int. Cl.³ B62D *25/12*

U.S. Cl. 180—69 R **1 Claim**



1. A construction vehicle (**10**) having a frame (**18**), an engine enclosure (**11**), a hood assembly (**14**) mounted on said engine enclosure (**11**), said engine enclosure (**11**) including a first structural member (**32**) and said hood assembly (**14**) including a second structural member (**30**) mounted in sliding contact directly on said first structural member (**32**), first mounting means (**21**) for fixedly securing a first end (**22**) of said hood assembly (**14**) on said engine enclosure (**11**) to prevent relative movement therebetween, and second mounting means (**23**) for attaching an opposite, second end (**24**) of said hood assembly (**14**) on said engine enclosure (**11**) to permit limited fore and aft and cushioned upward movements of the second end (**24**) of said hood assembly (**14**) relative to said engine enclosure (**11**), said second mounting means (**23**) including an internally threaded boss (**29**) secured on said second structural member (**30**), a bolt (**28**) extending through said first structural member (**32**) and threadably secured to said boss (**29**), and an elongated slot (**31**) formed though said first structural member (**32**), said boss (**29**) extending through said slot (**31**) to permit limited fore and aft movement of said second structural member (**30**) relative to said first structural member (**32**).

4,388,977

ELECTRIC DRIVE MECHANISM FOR VEHICLES

Christian Bader, Böblingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 24, 1981, Ser. No. 257,427

Int. Cl.³ B60K *9/04*

U.S. Cl. 180—165 **25 Claims**

1. An electrical drive mechanism for a vehicle comprising, a drive mechanism adapted to be fed with electrical energy from an electrical main supply means and including an energy storage means in the form of a flywheel, at least two electrical motors adapted to be switched from a prime mover mode of operation to a generator mode of operation and being effective as a Ward-Leonard drive during a flywheel operation, a first of said drive motors being adapted to provide about one half of a maximum drive power for the vehicle, a second of said drive motors being adapted to provide about one half of the maximum drive power for the vehicle, means for electrically connecting said first and second motors in parallel during operation of the vehicle from the electrical main supply means, first transmission means for connecting the drive shaft of said first motor with driven wheels of the vehicle, second transmission means having an input connected to the drive shaft of said second motor and an output connected to said flywheel, third transmission means interconnected between the output of said second transmission means and the drive shaft of said first motor, and selectively actuatable clutch means interposed between the output of said second transmission means and said flywheel.



4,388,978

SUSPENSION SYSTEM FOR CYCLES AND IN PARTICULAR FOR MOTORCYCLES

Claude Fior, 12, avenue de l'Adour, Nogaro 32110, France

Filed Jan. 30, 1981, Ser. No. 230,017

Int. Cl.³ B62K *25/04*

U.S. Cl. 180—219 **14 Claims**

1. A vehicle suspension system adapted for suspending the chassis of a cycle, such as a motorcycle or like vehicle, said system comprising:

(a) a support frame, said support frame being adapted to receive a front wheel axle at the lower portion thereof, said support frame being movably mounted with respect to said chassis, both in the longitudinal median plane of said cycle as a result of movement of said suspension system as well as in rotation around an axis for purposes of steering said cycle;

(b) control means for controlling the position of said support frame in the longitudinal median support plane, said control means positioned between said chassis and said support frame and being adapted to guide the displacement of said support frame in said longitudinal median support plane during movement of said suspension system, said control means being further adapted to guide said front wheel axle relative to said chassis along a trajectory having an ascending rearwardly directed portion, a substantially vertical intermediate portion, and an ascending frontwardly directed portion, said trajectory having a convexity directed rearwardly towards said chassis;

(c) shock absorber means positioned to elastically maintain said support frame with respect to said chassis in said longitudinal median plane whereby said wheel axle moves along said trajectory, said trajectory being determined by said control means as a function of the forces being exerted on said cycle; and

(d) an independent mechanical element connecting the support frame to handlebars whose orientation is controllable, said independent mechanical element being independent of said control means and being adapted to control the rotational position of the support frame around its axis without movement of said control means.

4,388,979

MOTORCYCLE POWER TRAIN ARRANGEMENT

Josef Fritzenwenger, Anzing, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

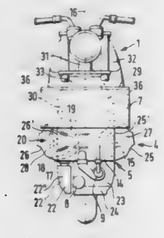
PCT No. PCT/EP80/00005, § 371 Date Oct. 1, 1980, § 102(e) Date Oct. 1, 1980, PCT Pub. No. WO80/01555, PCT Pub. Date Aug. 7, 1980

PCT Filed Jan. 28, 1980, Ser. No. 243,950

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1979, 2903742

Int. Cl.³ B62K *11/04*

U.S. Cl. 180—226 **4 Claims**



1. A motorcycle power train arrangement comprising a liquid cooled engine block and a transmission case, substantially exposed and mounted symmetrically to the longitudinal median plane of the motorcycle, largely filling the space between the front wheel and the rear wheel, and including a liquid coolant radiator mounted essentially above the engine block in substantially vertical position transversely to the direction of travel, a plurality of parallel cylinders being arranged transversely and a crankshaft longitudinally to the direction of travel, the transmission case being located adjacent the engine block, and a valve chamber cover forming to one side an outer longitudinal limit of the power train, a crank space cover forming an outer longitudinal limit of the power train on the other side; and wherein the cylinders are located on said one side of engine block in a single line; the crankshaft is located on said other side of the engine block and is spaced from and parallel to the longitudinal median plane, and in that said covers for the valve chamber and crank space form on both sides symmetrical outer longitudinal limits of the power train; a portion of an exhaust system on said one side, and of a crankcase on said other side, are below and adjacent to said covers, but less wide and substantially symmetrical.

4,388,980

OPERATOR RESTRAINT FOR A LOADER

Michael A. Vig, and Donald K. Schmidt, both of Bismarck, N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Jan. 26, 1981, Ser. No. 228,535

Int. Cl.³ B60R *21/10*

U.S. Cl. 180—271 **9 Claims**

1. A loader including:

a power operated working implement;

a control apparatus having a plurality of operative positions for supplying power to the working implement and at least one neutral position where power is not supplied to the working implement, the control apparatus capable of manipulation by the operator of the loader for placing the control apparatus in any one of the operative or neutral positions;

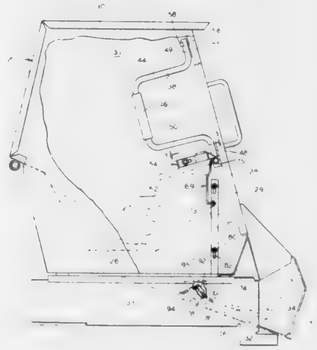
a cab portion having a front opening for operator entrance and egress;

an operator position from which the operator may manipulate the control apparatus, the operator position being located in the cab portion;

the control apparatus including at least one control linkage operating between an operator's foot pedal and a hydraulic control for supplying the power to the working implement;

an operator restraint bar having two ends, at one of its ends the restraint bar is pivotally connected to the cab portion adjacent the front opening for swinging movement between a protect position for securing the operator during rough ride conditions and a passage position spaced from the protect position where the operator can enter or leave the loader;

a locking assembly for selectively locking the control apparatus in a neutral condition, the locking assembly being in locking engagement with the control apparatus when the restraint bar is in its passage position;



the locking assembly including a locking member connected with the restraint bar, the locking member having a lower end that is moved downwardly when the restraint bar is moved from its passage position to its protect position and moved upwardly when the restraint bar is moved from its protect position to its passage position;

a crank in operative association with the locking member and movable in a downward direction in response to downward movement of the locking member and movable in an upward direction in response to upward movement of the locking member;

a crank shaft connected to the crank and rotatable in a first rotative direction in response to downward movement of the crank and rotatable in a second rotative direction in response to upward movement of the crank; and

a member mounted on the crank for rotation therewith, the member having a selectively engageable means for locking engagement with the control linkage, the locking means being in engagement with the control linkage when the restraint bar is in its passage position.

4,388,981

VARIABLE CYLINDER HYDRAULIC VIBRATOR AND CONTROL SYSTEM

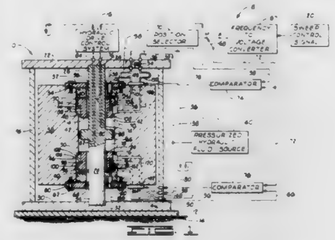
Delbert W. Fair, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

PCT No. PCT/US79/00592, § 371 Date Feb. 23, 1981, § 102(e) Date Feb. 23, 1981, PCT Pub. No. WO81/00461, PCT Pub. Date Feb. 19, 1981

PCT Filed Aug. 8, 1979, Ser. No. 289,958

Int. Cl.³ G01V *1/14*

U.S. Cl. 181—119 **6 Claims**



1. Apparatus for incremental cylinder length control in a hydraulic vibrator of the type having a vibrating reaction mass with a cylinder bore disposed therein, comprising:

first end sleeve means disposed in sealed, movable position in one end of said cylinder bore;

second end sleeve means disposed in sealed, movable position in the other end of said cylinder bore and defining a cylinder of predetermined length between said end sleeve means;

piston rod means sealed and slidably disposed through said first and second end sleeve means and including a piston disposed in said cylinder bore;

hydraulic means for selectively positioning said first and second end sleeve means to adjust said cylinder bore length incrementally;

sensor means disposed adjacent said end sleeve means to generate a sleeve position signal;

control selection means generating a reference signal;

means comparing said position and reference signal for generating an error signal for controlling said hydraulic means; and

means for hydraulically actuating said piston for reciprocation within said cylinder thereby to impart vibration to said reaction mass.

4,388,982

FOOTHOLD DEVICE

Yoshihiro Yonahara, 255-4, Oaza Iida, Omiya-Shi, Saitama, 330, Japan

PCT No. PCT/JP79/00315, § 371 Date Jul. 9, 1980, § 102(e) Date Jul. 9, 1980, PCT Pub. No. WO80/01298, PCT Pub. Date Jun. 26, 1980

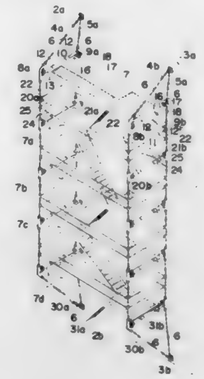
PCT Filed Dec. 12, 1979, Ser. No. 202,442

Claims priority, application Japan, Dec. 12, 1978, 53-171277

Int. Cl.³ E04G *3/10*; B63B *9/06*

U.S. Cl. 182—82 **2 Claims**

1. The scaffold for attachment to a building wall or the like having two pair of attachment fittings spaced laterally from each other, each pair of attachment fittings having an upper member and a lower member spaced vertical from each other, comprising two pair of chains, the chains of each pair being securable to the upper and lower members of an associated pair of fittings, a plurality of platforms located between the respective chains of each pair in vertically spaced intervals, means for attaching each of said platforms to each of said chains comprising a bracket located on each chain at a position corresponding to the interval of said platform, a rod extending between the corresponding brackets of each pair of chains, and hook means located along the side edges of said platform and engaging over said rods, the brackets located on the corresponding chain of each pair of chains being provided with means for adjusting the horizontal level of said rod to thereby adjust the level of said platform and means for adjusting the length of said chains



located in that portion of each of said chains above the uppermost platform and below the lower most platform whereby on securing said chains to said fitting said chains may be placed under tension forming a rigid scaffold secured to said wall.

4,388,983

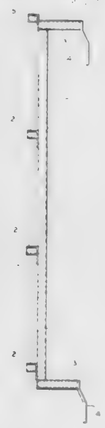
LIGHTWEIGHT LADDER

Leroy R. Bartels, Hager City, Wis., and Arnold M. Milbright, Red Wing, Minn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 25, 1982, Ser. No. 342,149

Int. Cl.³ E06C *1/36, 1/06*

U.S. Cl. 182—189 **10 Claims**



1. A ladder for use or a structure having vertically spaced apart retaining clips, said ladder comprising:

a vertical member;

a plurality of rungs on said vertical member;

a leg extending substantially horizontal to said member; and

a downwardly extending foot coupled to said leg and adapted to engage one of said retaining clips; said foot having a first portion substantially parallel to said vertical member for engaging the surface of said structure, and a second portion forming an angle with said first portion

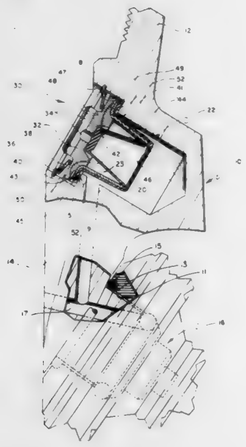
whereby when said first portion engages said structure, said second portion engages said clips.

4,388,984

TWO-STAGE PRESSURE RELIEF VALVE

Erwin S. Oelke, Cypress, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Feb. 9, 1981, Ser. No. 232,936
Int. Cl.³ E21B *9/08;* **E16C** *33/74*
U.S. Cl. 184—54 **9 Claims**



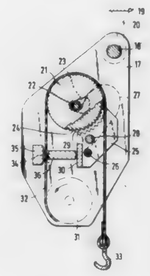
6. A sealed lubricated rotary rock bit comprising:
- a bit body having at least one leg extending downwardly therefrom, said leg having a journal pin for rotatively supporing a roller cutter, and a seal between the rolling cutter and the journal pin,
- a lubricant reservoir in the bit body communicating with a bearing area formed between the roller cutter and the journal pin,
- a radially extending annular seat formed in the bit body around the reservoir,
- a cover cap including an annular flange overlapping the annular seat,
- a pressure compensator in the lubricant reservoir comprising a resilient membrane separating the reservoir into a lubricant region within the bit body and a drilling fluid region exterior to the bit body and including a flexible flange of said resilient membrane between the annular flange of the cover cap and the annular seat formed in the bit body for sealing against the annular seat, and characterized by:
- means for relieving differential lubricant pressure around the resilient membrane to the exterior of the bit body comprising:
  - at least one cavity in the annular flange of the cover cap in communication with the exterior of the bit body, and
  - a surface on the flexible flange on the resilient membrane exposed to such a cavity, the opposite surface of the flexible flange of the resilient membrane adjacent the annular seat in said body being in communication with the lubricant region whereby a portion of the flexible flange of the resilient membrane can be diverted into such a cavity by excess differential lubricant pressure from within the reservoir, the differential pressure thus being relieved past the flexible flange and annular seat adjacent such cavity.

4,388,985

BRAKING-AND/OR BLOCKING DEVICE FOR LOAD CARRYING FLEXIBLE PULLING MEANS, FOR EXAMPLE, BELTS OR ROPES

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to REPA Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,759
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950470
Int. Cl.³ B65H *59/14*
U.S. Cl. 188—65.4 **10 Claims**



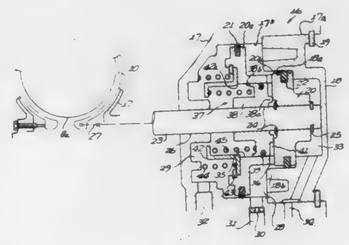
1. Device for braking or blocking of load carrying flexible pulling means, such as belts or ropes, comprising a braking roller partly wrapped by the load carrying flexible pulling means and which can move with respect to a clamping surface when said pulling means exerts a tangential force on the braking roller, a non-rotating member with said clamping surface disposed adjacent the pulling means near the braking roller, said clamping surface providing the only contact surface between the non-rotating member and the pulling means, and braking roller movement effecting clamping of the pulling means against said clamping surface, wherein braking friction between the rolling surface of said braking roller when arrested and said pulling means is such that a force moment is acting between the braking roller and the clamping surface which is sufficient to clamp the pulling means without slippage.

4,388,986

SPEED CHANGE CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION

Mitsuo Umezawa, Akikawa, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 252,767
Claims priority, application Japan, Jun. 4, 1980, 55-78612[U]
Int. Cl.³ F16F *49/12*
U.S. Cl. 188—77 R **11 Claims**



1. A speed change control system for an automatic transmission having a planetary gear mechanism, and a brake band engageable with a brake drum for altering the transmission ratio, comprising

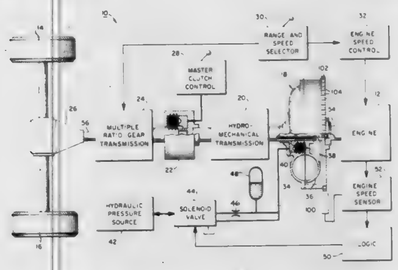
a body defining a cylindrical chamber,
- a servo-piston having an axial bore and slidably engaged in said cylindrical chamber,
- a piston rod secured to said servo-piston and to said brake band,
- an accumulator piston slidably disposed in said axial bore;
- a first spring means provided between said servo-piston and an inner wall of said cylindrical chamber of said body for returning said servo-piston in a direction, opposite to a direction of engagement of the brake band with the brake drum, for releasing said brake band,
- a second spring means operatively connected between said accumulator piston and said servo-piston for biasing said accumulator piston,
- said servo-piston in cooperation with said cylindrical chamber defining apply side and release side oil chambers respectively on opposite sides of said servo-piston,
- said accumulator piston on one side thereof in cooperation with said axial bore defining an accumulator oil chamber,
- said body is formed with ports communicating with said apply side and release side oil chambers, respectively,
- passage means for communicating said apply side oil chamber with said accumulator oil chamber, and
- means for engaging said accumulator piston with said servo-piston after the accumulator piston moves a predetermined stroke in said direction of engagement of the brake band against said second spring means, said accumulator piston in cooperation with said first and second spring means, said servo-piston and said passage means constituting means for moving said accumulator piston against said second spring means after said servo-piston moves against said first spring means when oil pressure is applied to said apply side oil chamber via one of said ports.

4,388,987

HYDROMECHANICAL TRANSMISSION EMPLOYING LOCKUP CLUTCH

Richard G. Hennessey, Oak Lawn; Richard B. Beemer, Lombard, and Harold W. Melles, Downers Grove, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Mar. 3, 1981, Ser. No. 240,040
Int. Cl.³ F16D *25/10*
U.S. Cl. 192—3.26 **14 Claims**



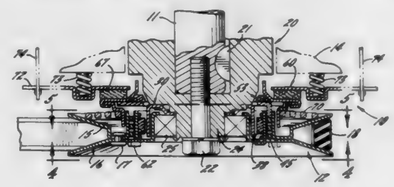
1. A rotary power transmission for transmitting to an output shaft rotary power applied to an input shaft from a source of rotary power, said system comprising:
- a fluid coupling having an impeller and an output turbine interposed between said input shaft and said output shaft and operative to transmit power therebetween;
- a master clutch interposed between said input shaft and said output shaft, said master clutch being operative to interrupt the flow of power between said input shaft and said output shaft;
- means including a lockup clutch operable to a first condition of operation to permit relative motion between said impeller and an output turbine, said lockup clutch being operative to a second condition of operation to prevent relative motion between said impeller and said output turbine; and
- means including an electronic circuit for altering the condition of operation of said lockup clutch, said altering means responsive to the master clutch being operative to interrupt said power flow, and said altering means also being responsive to the rotary speed of said rotary power source for operating said lockup clutch from said first condition of operation to said second condition of operation when the speed of said rotary power source exceeds a first predetermined level, and vice versa when the master clutch is operative to interrupt said power flow.

4,388,988

ANTI-KICKBACK CLUTCH-BRAKE UNIT

J. G. Fraser MacDonald, Detroit, Mich., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed May 11, 1981, Ser. No. 262,139
Int. Cl.³ F16D *67/02*
U.S. Cl. 192—12 BA **4 Claims**



1. A clutch-brake unit comprising input and output members supported to rotate about a common axis, an annular friction shoe movable axially relative to said input and output members, resilient means biasing said shoe axially into frictional engagement with said input member and yielding to permit said shoe to move axially out of frictional engagement with said input member, said shoe rotating with said input member when said shoe is in frictional engagement with said input member, means causing said output member to turn with said input member when said shoe is in frictional engagement with and is turned by said input member, a brake ring movable axially relative to said input and output members between clutch-engaged and clutch-disengaged positions and biased to said clutch-engaged position, said brake ring being rotatable relative to said input member and serving to hold said friction shoe out of frictional engagement with said input member when said ring is in said clutch-disengaged position, means connecting said brake ring to said output member and causing said brake ring to rotate in unison with said output member when said ring is in said clutch-disengaged position, and means frictionally coupling said brake ring to said friction shoe and causing said friction shoe to rotate with said brake ring when the latter is turned while in said clutch-disengaged position.

4,388,989

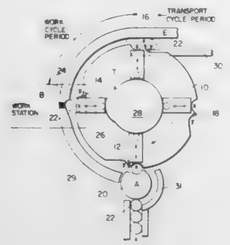
CONTINUOUS ROTARY METHOD OF TRANSPORTING ARTICLES

George W. Edmunds, Derwood, Md.; George S. McVeigh, Springfield, and Werner H. Schmitt, Falls Church, both of Va., assignors to Hoppmann Corporation, Chantilly, Va.

Filed Jul. 23, 1981, Ser. No. 286,113
Int. Cl.³ B65G *47/00*
U.S. Cl. 198—339 **6 Claims**

1. Continuous rotary method of transporting articles with respect to a stationary work station comprising:
- (A) moving an article into engagement with a pocket defined within the periphery of a rotating disc;
- (B) transporting said article within a rotary arc, defined by said rotating disc;
- (C) sequentially pushing said article radially outwardly from said pocket within rotating disc and into a stationary work station;

(D) pushing said article radially inwardly and re-engaging said article within the periphery of said rotating disc, such that said article may roll along the periphery of the disc until it reaches the next pocket; and



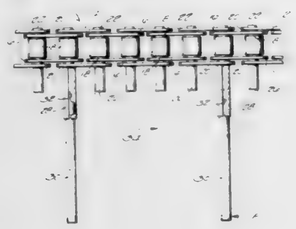
(E) tangentially disengaging said article from the periphery of said rotating disc.

4,388,990

ARTICLE CARRYING ATTACHMENT FOR CONVEYOR CHAIN

Anthony J. Michalik, Springfield, Mass., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Apr. 6, 1977, Ser. No. 785,260
Int. Cl.³ B65G *17/12, 17/32*
U.S. Cl. 198—645 **4 Claims**



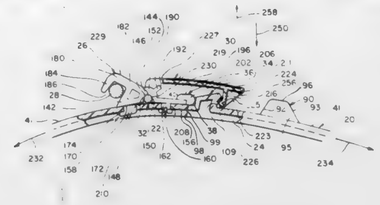
1. In a conveyor chain of the type having extended link connecting pins to which articles to be conveyed are attached an improved conveying attachment assembly comprising, cylindrical chain link connecting pins extending a short distance outwardly of the chain links, hollow cylindrical bushings for at least some of said connecting pins having lengths exceeding the lengths of the extended portions of said connecting pins, said bushings each being split longitudinally along its full length and having a bore sized to fit over the extended portion of one of said connecting pins and to be held thereon by frictional engagement, and conveying pins each having an end portion sized to fit within the bore of one of said bushings opposite the connecting pin and to be held therein by friction engagement, such that said bushing will open to release said conveying pin without damaging said conveying pin or said connecting pin, under a force imposed against the conveying pin in a direction transverse to the axis of said conveying pin should it encounter an obstruction.

4,388,991

SEALING AND STORAGE RING WITH LATCH APPARATUS

Macy J. Price, 26112 Genesee Dr., Golden, Colo. 80401

Filed Jul. 9, 1981, Ser. No. 281,588
Int. Cl.³ B65D *85/67;* **B65H** *75/00;* **G11B** *23/02;* **A47F** *7/00*
U.S. Cl. 206—53 **10 Claims**



1. Apparatus for supporting a reel device comprising:
band means, having a pair of opposite end portions with abuttable end surfaces, for mounting in a reel supporting position on the periphery of the reel device in circumjacent abutting supporting engagement therewith;
engageable and disengageable latch means and keeper means, located on said end portions of said band means and being operable between a closed latched position, whereat said abuttable end surfaces are fixedly releasably held in abutting engagement with one another and said band means is fixedly releasably held in said reel supporting position, and an open unlatched position whereat said band means is removable from the reel device;
latch mounting means attached to one of said end portions in juxtaposition to the end surface thereof for pivotally supporting said latch means for movement relative to said keeper means between said closed latched position and said open unlatched position;
said keeper means being fixedly attached to the other one of said end portions in juxtaposition to the end surface thereof for releasable engagement with said latch means; and
a single pivotal connecting means for pivotally connecting said latch means to said mounting means and providing only one pivotal axis therebetween, said single pivotal connecting means comprising: only a rigid shaft means on said latch means and only an elongated slot means on said latch mounting means having a length and width greater than the diameter of said shaft means for enabling a relatively large amount of lateral movement of said shaft means relative to the length of said slot means and a relatively small amount of lateral movement of said shaft means relative to the width of said slot means whereby said pivotal axis is movable relative to said latch mounting means.

4,388,992

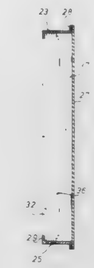
CONTAINER SUITABLE FOR HOLDING A STACK OF PHOTOGRAPHIC SHEETS

Hugo F. Deconinck, Deurne-Zuid, Belgium, assignor to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Sep. 3, 1981, Ser. No. 299,012
Claims priority, application United Kingdom, Sep. 8, 1980, 8028898
Int. Cl.³ B65D *85/30;* **G03B** *17/26*
U.S. Cl. 206—455 **9 Claims**

1. A container suitable for holding in generally flat condition a stack of photographic sheets of generally equal size, said container comprising four side walls and a bottom wall for receiving a stack of said sheets, spring means for biasing said stack of sheets away from said bottom wall, stack retaining means for retaining the stack within said side walls against the action of said spring means, said retaining means projecting inwardly from the edges of said side walls over and in contact

with only the side margins of said sheets, leaving the remainder of the sheet area accessible for photographic exposure to a light image, an opposite two of said side walls having matching portions thereof free of said stack retaining means to leave corresponding opposed sections of said sheet margins unretained, whereby the application of buckling forces to said front sheet in its own plane causes that portion of said sheet having the unretained margins to buckle upwardly from the



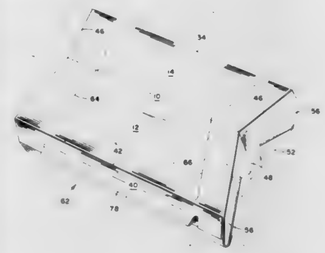
sheet plane preparatory to removal of the thus-buckled sheet from said stack, and sheet-buckle detent means projecting below the plane of said top sheet a distance at least equal to about the thickness of one of said sheets at points on said two opposite side walls spaced substantially a common distance from a common side wall, whereby said top sheet after having undergone buckling is prevented by abutment of an edge from returning to said original flat condition in the container.

4,388,993

MULTIPLE ACCESS CARTON

John J. Lavery, Chicago, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Jan. 26, 1981, Ser. No. 228,114
Int. Cl.³ B65D *5/10, 5/54*
U.S. Cl. 206—611 **7 Claims**



1. A multiple access carton comprising:
a. top, bottom and side wall members hingedly connected by fold lines to form a carton body,
b. major and minor panels on each end of said carton for nonadhesively and mechanically detachably interlocking with each other to form an end closure,
c. said panels including:
i. a generally U-shaped major end panel attached to each end of said carton body and having a locking tab integrally formed therewith, said locking tab being located at the bottom of and extending toward the open end of said U, and
ii. a projection forming said minor end panel and hingedly attached to each end of said carton body opposite the major end panel at that end for at least partially overlapping the arms of said U and extending at least partially under said locking tab for interlocking said major and minor end panels thereby forming said end closures, and
d. a tear strip formed in and extending across said top wall and of sufficient width whereby the contents of said carton may be conveniently retrieved through either of said non-adhesively and mechanically detachably interlocked end closures or through said top wall when said tear strip is removed.

4,388,994

FLAT-ARTICLE SORTING APPARATUS

Kazuyoshi Suda; Akira Fujimura, and Kiyoshi Tsuda, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1980, Ser. No. 207,038
Claims priority, application Japan, Nov. 14, 1979, 54-147404
Int. Cl.³ B07C *5/38;* **B65H** *39/02*
U.S. Cl. 209—564 **8 Claims**



1. A flat-article sorting apparatus for rearranging an order of flat articles, each of the flat articles being provided with a sort code thereon, the sort codes corresponding to the order in which the flat articles are to be rearranged, comprising:
means for advancing the flat articles sequentially one by one;
means for scanning the flat articles to read the sort codes thereon as the flat articles are sequentially advanced;
means responsive to the scanned sort codes for determining the order in which the flat articles are to be rearranged;
a plurality of primary sort storages ranked in a first priority to which said flat articles are advanced;
means responsive to said determining means for assigning said flat articles so that a substantially equal number of said flat articles are assigned to each primary sort storage;
means responsive to said assigning means for sorting the flat articles into the respective primary sort storages in such a manner that numbers of the flat articles stored in the respective primary sort storages are substantially equal;
a plurality of secondary sort storages ranked in a second priority;
means for advancing said flat articles from said primary sort storages to said plurality of secondary sort storages;
second means for sorting the flat articles from the primary sort storages into the secondary sort storages according to the order determined by the determining means; and
means for extracting the flat articles from the secondary sort storages and accumulating the flat articles in the order determined by the determining means.

4,388,995

COLLAPSIBLE CONTAINER

Min H. Ahn, 5111 Maple Rd., Richmond, British Columbia, Canada

Filed Jun. 8, 1981, Ser. No. 271,472
Int. Cl.³ B65D *6/18;* **B65J** *1/02*
U.S. Cl. 220—7 **10 Claims**

1. A container able to be moved from a raised position to a folded position and comprising:
a base;
a roof spaced apart from the base;
a plurality of first members pivotally attached to the base and extending upwardly when the container is raised;

a plurality of second members pivotally attached at one end to the roof and each pivotally attached at its other end to a first member;

upper side panels each extending between the roof and a pair of second members;

a cam pivotally mounted within each first and second member;



rods extending from each cam towards the roof and base respectively;

locking means attached to each rod and extendable to engage each pivotal joint whereby pivoting of the joint is prevented; and

rotation of the cam retracting the locking means so that they do not engage the pivotal joint whereby the joints are free to pivot.

4,388,996

SELF-RIGHTING TRAINING CUP

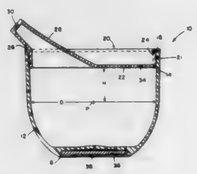
Richard L. Panicci, Hanover, Mass., assignor to Kiddie Products, Inc., Avon, Mass.

Continuation-in-part of Ser. No. 106,839, Dec. 26, 1979, Pat. No. 4,303,170. This application Nov. 25, 1981, Ser. No. 324,968

The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.

Int. Cl.³ A47G *19/22*

U.S. Cl. 220—70 **7 Claims**



1. A self-righting cup having a lower portion and an upper portion, said lower wall portion having a flat defining the bottom of said cup and a rounded sidewall extending upwardly therefrom, said upper portion having a sidewall which extends upwardly from said rounded sidewall of said lower portion, the ratio of the outer diameter of said cup at the point of intersection of said upper and lower portions to the effective height of said upper portion being at least 3 and the base of said cup having a weighting member the weight of which is effective in relation to said ratio to cause consistent self-righting of said cup when tipped.

4,388,997

VENT FOR PAINT CUPS

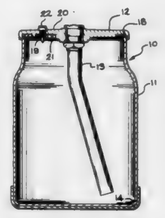
Thomas E. Grime, Temperance, Mich., assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Apr. 20, 1981, Ser. No. 255,358

Int. Cl.³ B65D *51/16*

U.S. Cl. 220—209 **7 Claims**

1. An improved paint cup for a suction feed hand held spray gun comprising a paint jar, a removable cap closing said jar, said cap having interior and exterior surfaces, a vent opening extending through said cap, and a resilient unitary molded check valve means positioned in said vent opening for allowing exterior air to flow into said jar while inhibiting paint flow from said jar through said vent opening, said check valve means comprising a hollow body extending from above said exterior surface through said vent opening to below said interior surface, a peripheral flange extending about said body immediately below said interior surface, end means extending from said body and resiliently engaging said exterior surface for urging said flange against said interior surface to form a fluid seal at said interior surface, and resilient ducks bill ends means extending from said body below said interior surface for allowing air to be drawn into said jar while inhibiting paint flow from said jar through said vent opening.



4,388,998

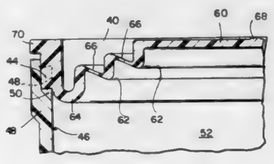
LID AND CONTAINER WITH IMPROVED FASTENING AND SEALING MEANS

J. Larry Underwood, 104 Dixie Dr., Woodstock, Ga. 30188; Stephen M. Thompson, Stone Mountain, and John S. Budde, Atlanta, both of Ga., assignors to J. Larry Underwood, Atlanta, Ga.

Filed Sep. 14, 1981, Ser. No. 302,146

Int. Cl.³ B65D *39/00*

U.S. Cl. 220—307 **22 Claims**



9. A lid for a container comprising a substantially longitudinal surface at a periphery of the lid, a series of longitudinally and radially relieved interengaging elements supported by the substantially longitudinal surface for fastening the lid to a container, a central disk constituting a major portion of the lid, and at least one intermediate ring-shaped step having at least one section which is substantially thinner than the remaining portions of the ring-shaped step for imparting flexibility between the central disk and the periphery of the lid.

4,388,999

DOUBLE-WALLED CARTON AND BLANK FOR FORMING SAME

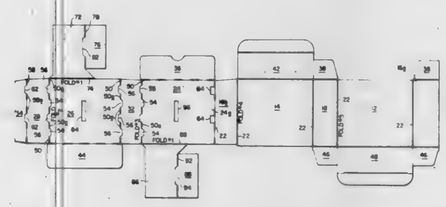
Chapman Berry, Old Lyme, and Robert A. Hackenberg, East Lyme, both of Conn., assignors to Robertson Paper Box Co., Inc., Montville, Conn.

Filed Nov. 19, 1980, Ser. No. 208,162

Int. Cl.³ B65D *5/02, 5/48*

U.S. Cl. 220—416 **17 Claims**

1. A collapsible carton of the type composed of a series of generally rectangular hinged-together panels folded spirally to form a double-walled tube having two pairs of opposite inner walls and two pairs of opposite outer walls, the innermost and outermost panels of the series constituting glue flaps adhered to first and second underlying panels respectively to maintain the integrity of the tube, the first underlying panel forming one of said inner walls, the outermost panel forming a part of one of said outer walls, spacers struck from the inner walls of the tube at the three corners thereof remote from said innermost panel for engaging the outer walls of the tube to maintain the spacing between the inner and outer walls at those corners, the improvement comprising at least one tab struck from the innermost panel adjacent its hinge line to the next outer panel in the series, means defining at least one tab-registering opening in the first underlying panel to which the innermost panel is adhered for receiving said at least one tab whereby said tab can engage the panel to which the outermost panel is hinged so as to maintain a space between the innermost panel and the panel to which the outermost panel is hinged, spacer means formed by said first underlying panel and extending from the second underlying panel to said next outer panel so as to maintain a space between said next outer and outermost panels, a divider wall extending between and generally perpendicular to one pair of opposite inner walls of the tube and extending substantially the full length of said one pair of opposite inner walls so as to divide the interior of the carton into two compartments,



each divider wall including first and second divider panels, means for hingedly connecting said divider panels at corresponding first boundaries thereof to different ones of said one pair of oppposite inner walls, said divider panels having their corresponding opposite boundaries terminating adjacent different other ones of said one pair of opposite inner walls, and means for adhering said divider panels to each other.

9. A blank for forming a collapsible double-walled carton having spacers between the inner and outer walls at all four corners of the carton comprising a series of at least nine wall panels hinged together along parallel hinge lines, panel means hinged to the upper and lower boundaries respectively of the second and fourth panels from one end of the series, each said panel means including a first panel hinged to one of said upper and lower boundaries along a hinge line perpendicular to the hinge lines between said wall panels and a divider panel hinged to a side boundary of said first panel along a hinge line parallel to the hinge lines between said wall panels, said divider panels having substantially the same width as the first and third wall panels, spacer tabs struck from the wall panels on opposite sides of at least three hinge lines between adjacent wall panels in the series so that, when said adjacent wall panels are oriented perpendicular to one another, orthogonally directed tabs are formed at each of three said hinge lines, a glue flap hinged to one of said wall panels in the series and one or more additional spacer tabs formed at the hinge line connecting said glue flap and said one panel.

4,389,000

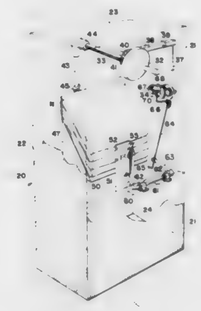
NEWSPAPER VENDING MACHINE

Fred O. Godley, and John A. Laurents, both of Charlotte, N.C., assignors to Single Vend Inc., Charlotte, N.C.

Filed Jul. 13, 1981, Ser. No. 283,071

Int. Cl.³ G07F *11/60*

U.S. Cl. 221—8 **7 Claims**



1. In a newspaper vending machine having a vertically movable inclined platform supporting a group of newspapers, a stationary dispensing wedge having an inclined upper surface, a drive shaft operatively connected to the platform, a dispensing chute and means to rotate the shaft to elevate the platform and raise successive newspapers above the dispensing wedge and dispense them by gravity through a dispensing chute, the combination of a clutch between the drive shaft and the means to rotate the shaft and normally disengaging the shaft from the rotating means, means to activate the clutch and engage the shaft with the rotating means to raise the platform and dispense a newspaper.

4,389,001

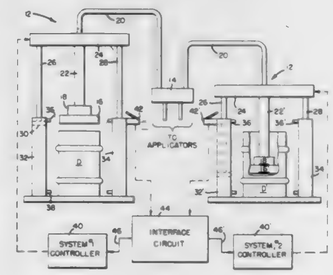
INTERFACE CONTROL CIRCUIT FOR MULTIPLE HOT MELT MATERIAL SUPPLY SYSTEMS

Jerry C. Franklin, Castroville, Calif., assignor to Lockwood Technical, Inc., Monterey, Calif.

Filed May 13, 1981, Ser. No. 263,178

Int. Cl.³ B67D *5/62*

U.S. Cl. 222—63 **4 Claims**



1. Apparatus for switching between a first system for delivering hot melt material and a second system for delivering hot melt material wherein each system includes a pump for pumping hot melt material, a motor for driving the pump, controller means for controllably energizing the motor, and a sensor for sensing when the hot melt material has been depleted, and wherein there is a manifold and means connecting the pump outputs to said manifold for affording delivery of hot melt material to said manifold, said apparatus comprising a first circuit having first means for activating said controller means

of said first system and a second circuit having second means for activating said controller means of said second system, a first locking element having a first energizer in said first circuit in shunt with said first activating means, a first normally open lock-in contact operably coupled to said first energizer and connected in said first circuit in series with said first activating means so that when said first energizer is energized said first activating means is locked in, said first locking element having a first normally closed lock-out contact in said second circuit in series with said second activating means so that when said first energizer is energized said second activating means is locked out, a second locking element having a second energizer in said second circuit in shunt with said second activating means, a second normally open lock-in contact operably coupled to said second energizer and connected in said second circuit in series with said second activating means so that when said second energizer is energized said second activating means is locked in, said second locking element having a second normally closed lock-out contact in said first circuit in series with said first activating means so that when said second energizer is energized said first activating means is locked out, a first normally closed disconnect contact in series in said first circuit and means responsive to the sensor in said first system for opening said first disconnect contact to deactivate said first system when hot melt material has been depleted therefrom, a first normally open transfer contact in shunt with said second lock-in contact of said second locking element and means responsive to the sensor in said first system for closing said first transfer contact in response to hot melt material in said first system being depleted so as to activate said second system, and a second normally closed disconnect contact in series in said second circuit and means responsive to the sensor in said second system for opening said second disconnect contact to deactivate said second system when hot melt material has been expended therefrom, a second normally open transfer contact in shunt with said first lock-in contact of said first locking element, and means responsive to the sensor in said second system for closing said second transfer contact in response to hot melt material in said second system being depleted so as to activate said first system, whereby on hot melt glue being depleted from one of said systems the other of said systems is activated to afford substantially continuous delivery of hot melt material to said manifold.

4,389,002

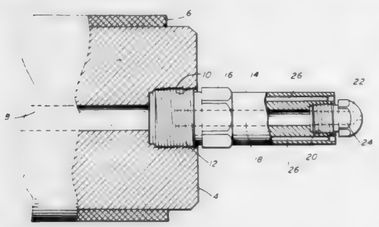
INJECTION MOLDING NOZZLE

Richard D. Devellian, Rockport, and Paul M. Swenson, Gloucester, both of Mass., assignors to Kona Corporation, Gloucester, Mass.

Filed Feb. 7, 1980, Ser. No. 119,304

Int. Cl.³ B29F *1/05*; B67D *5/62*

U.S. Cl. 222—146 HS **5 Claims**



1. The combination comprising:

(a) an extruder barrel of an injection molding machine having a bore through which molten plastic material is adapted to flow and to be ejected therefrom;

(b) means for heating said extruder barrel and the plastic material therein to a predetermined desired operating temperature at which said plastic material is maintained in its molten state;

(c) an injection nozzle separate and distinct from said extruder barrel and having a first end portion which extends for a substantial distance within and is in good thermal contact with said barrel, said nozzle having a central elongated bore, separate and distinct from the bore of said extruder barrel and adapted to receive said molten plastic material after it has been ejected from the bore of said extruder barrel and to discharge it into a mold; and

(d) a plurality of heat pipes in the body of said nozzle, distributed around said central bore, one end of each of said heat pipes extending for a substantial distance within said first end portion of said injection nozzle, the rest of each of said heat pipe continuing substantially along the entire length of said central bore;

(e) each of said heat pipes being free of any heat input except from said extruder barrel and the molten plastic material in said nozzle.

4,389,003

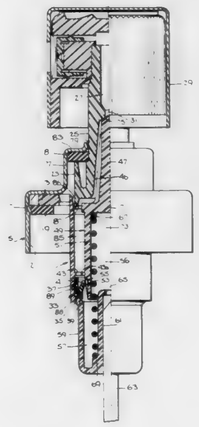
SLIDING INLET SEAL FOR AN ATOMIZING PUMP DISPENSER

Philip Meshberg, 2500 South Ocean Blvd., Palm Beach, Fla. 33480

Continuation of Ser. No. 7,943, Jan. 31, 1979, abandoned. This application Feb. 26, 1981, Ser. No. 238,368

Int. Cl.³ B05B *11/00*

U.S. Cl. 222—321 **8 Claims**



1. A dispensing pump comprising: a pump body within which there is formed, by a sidewall portion, a pump chamber having an inlet defined by a flexible annular seal made of plastic installed at the inner end of said pump chamber and abutting against said sidewall portion and forming a throat; a dispensing stem operatively coupled to said piston; a valve member, of a material of a hardness different from said seal, cooperating with and guided by said throat and operatively coupled to said piston such that when said piston is in an at rest, unoperated position, communication is established between the pump chamber and the area below said throat, and when said piston is depressed, said valve member cooperates with said annular seal in said pump chamber to prevent such communication; and means biasing said valve member, piston and stem to an unoperated, at rest position; the annular seal in said pump chamber being mounted for sliding motion therein along said sidewall portion between a first inward position where it seals against said pump body and a second outward position where it establishes a path of communication from below said throat into said chamber, a gap between the inner end of said pump body and the bottom of said flexible seal and at least one channel bridging the remainder of said seal; an annular projection formed on the inside of said sidewall of said pump chamber, spaced from the inner end of said chamber a distance greater than the dimension of said annular seal in the same direction limiting the sliding motion of said annular seal; said annular seal comprising a vertical portion of an outer diameter at least slightly less than the inner diameter of said pump chamber, a second portion extending inwardly and downwardly therefrom and a third sealing portion extending upwardly and inwardly from said inwardly and downwardly extending portion and forming a sealing edge contacting said valve member, the inner end of said pump chamber extending downwardly at the same angle as said inwardly and downwardly extending portion whereby during pump operation a seal will be made between said inwardly and downwardly extending portion and said inner end of said pump chamber.

4,389,004

SELF-CLOSING TILTING VALVE

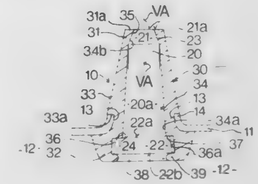
Luigi D. Bon, Feldstrasse 141, 4663 Aarburg, Switzerland

Filed Jul. 17, 1981, Ser. No. 284,221

Claims priority, application Switzerland, Aug. 5, 1980, 5911/80

Int. Cl.³ B65D *83/14*

U.S. Cl. 222—402.22 **12 Claims**



1. Self-closing tilting valve sealingly insertable in a lid for a container fillable with product under excess pressure and provided with a valve mounting, which valve comprises

an essentially rigid mandrel member having a base part and a tip part,

an enveloping nozzle member surrounding said mandrel member and having an axial product passage surrounded by an inner wall and receiving said mandrel member therein, a head part with an outlet opening for said axial passageway, a foot part having a bottom opening for said axial passageway, and an intermediate portion extending axially between said head part and said foot part,

said foot part of said nozzle member having a cavity therein opening at the underside of said foot part, said base part of said mandrel member being lodged in said cavity, and extending therein transversely to the central longitudinal axis of said mandrel member,

said passageway being obturated, in closed valve position, by sealing contact between an obturating surface of said inner wall in said cavity and a correspondingly located counterface on said base part of said mandrel member, and being further obturated by said head part of said nozzle member surrounding said tip part of said mandrel member snugly laterally when said valve is in closed position,

an upper portion of said foot part of said nozzle member up to its merging zone with said intermediate portion being insertable in the said valve mounting,

said tip part of said mandrel member and said head part of said nozzle member remaining in contact with one another in the closed as well as in any discharge position,

a radially inwardly projecting annular flange of said foot part on the underside of the latter which flange engages with upward bias the underside of the base part of said mandrel member, and urges said obturating face and said counterface into sealing engagement with one another,

which valve is characterized by the following inventive combination of features:

(a) said annular flange consists of an elastically flexible material which is deformable downwardly in axial as well as radial direction in respect of the longitudinal central axis of said mandrel member, while the upper portion of said foot part and the intermediate portion of said nozzle member are substantially rigid, and

(b) space for radial play being provided about the lateral peripheral wall of said mandrel member base part, permitting radial displacement of said base part within said cavity during tilting of the intermediate portion and the head part of said nozzle member, and corresponding tilting of said mandrel member,

said space for radial play constituting part of said passageway and being obturated in closed position by said annular flange, while being opened, by tilting pressure being applied to the portion of said nozzle member above said foot part and simultaneously to said mandrel member.

4,389,005

INFANT CARRIER

Richard B. Cable, and Willie D. Cable, both of 3063 Waterdale Dr., Loveland, Colo. 80537

Filed May 4, 1981, Ser. No. 260,064

Int. Cl.³ A47D *13/02*

U.S. Cl. 224—159 **14 Claims**



1. An infant carrier, comprising:

(a) a firm saddle for supporting an infant;

(b) a hip rest connected to one end of the saddle and having force disbursion means therein for spreading forces applied through the saddle over a broader area than the connection between the saddle and hip rest;

(c) shoulder support means for suspending the carrier from the body of a wearer; and

(d) first strap means connecting the shoulder support means to said hip rest;

(e) wherein said saddle comprises a stiff support member having a narrow end and a wide end, the narrow end being attached to said hip rest and said wide end being opposite therefrom.

4,389,006

STRUCTURE FOR SECURING A BAND TO A WATCHCASE

Hiromichi Nagata, Tanashi, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1981, Ser. No. 308,832

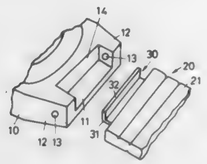
Claims priority, application Japan, Oct. 7, 1980, 55-142282[U]

Int. Cl.³ A44C *5/14*

U.S. Cl. 224—164 **5 Claims**

1. A structure for securing a band to a watch case having a pair of legs and a cover between the legs at a band-connected side, comprising a connecting member secured to an end por-

tion of said band, said connecting member comprising a horizontal plate extending from the end of said band and a vertical plate downwardly extending from the extended end of said horizontal plate, threaded holes provided in said legs, a screw



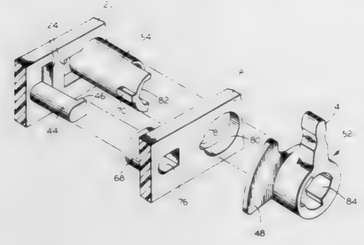
engaged in each of said threaded holes, said screw having a taper end portion which is engaged with said connecting member, whereby said connecting member is pressed against the side wall of said watch case.

4,389,007

MANUALLY ASSEMBLABLE AND DISASSEMBLABLE SHEET-FEED TRACTOR EMPLOYING IMPROVED CLAMP ASSEMBLY

Karl G. Seitz, Goshen, Conn., assignor to Data Motion Incorporated, Torrington, Conn.

Filed Sep. 23, 1981, Ser. No. 304,858
Int. Cl.³ B65H *17/38*
U.S. Cl. 226—74 **5 Claims**



1. A sheet-feed tractor adapted to be slidably mounted on spaced apart and substantially parallel extending elongated support and drive shafts comprising:

a. a first frame member having a support-shaft opening therein;

b. a second member assembled on said first frame member to form a tractor frame therewith;

c. a drive sprocket mounted on said tractor frame for rotation about the axis of said drive sprocket and having an aperture therethrough adapted to receive the drive shaft for sliding therealong and for driving thereby upon rotation of the drive shaft about its longitudinal axis;

d. an endless belt disposed about said tractor frame in engagement with said drive sprocket to be driven thereby upon driving movement of said sprocket by the drive shaft, said drive belt including sheet engagement teeth adapted to engage in the perforations of sheet material perforated against the side margins thereof for advancement thereof upon driving of said belt by said sprocket;

e. clamp means, having an aperture therethrough adapted to receive the support shaft therein, for clamping the support shaft received therein, said clamp means including a first clamp part on said second frame member and extending through said support-shaft opening in said first frame member to the side of said first frame member opposite that on which said second frame member is disposed, said first clamp part having a generally cylindrical outer surface, said clamp means also including a second clamp part disengageably mounted on said first clamp part and moveable relative thereto to clamp a support shaft received in said aperture in said clamp means, said second clamp part including a ring portion receiving the generally cylindrical exterior surface of said first clamp part therewithin, one of the interior surface of said ring portion and said generally cylindrical exterior surface of said first clamp part providing a radially extending tab and the other providing an engagement surface and an axial slot, said engagement surface engaging said tab throughout a first range of rotational positions of said second clamp part to cause said ring portion to bear against said side of said first frame member opposite that on which said second frame member is disposed to retain said first and second frame members in assembly and prevent axial removal of said second clamp part from said first clamp part, said slot being aligned with said tab in at least one second rotational position of said second clamp part to permit axial removal of said second clamp part from said first clamp part, said second clamp part also including an extension portion extending from said ring portion to provide a second engagement surface spaced from said first-mentioned engagement surface in a direction generally perpendicular to the axis of said support-shaft opening;

and

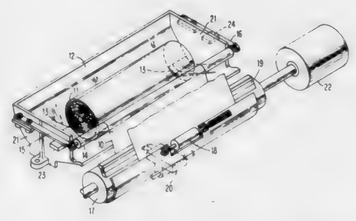
f. a post on said second frame member, said first frame member having a post aperture spaced from said support-shaft opening, said post extending from said second frame member through said post aperture in said first frame member to provide a second tab on the side of said first frame member opposite that on which said second frame member is disposed, said second tab engaging said second engagement surface throughout said first range of rotational positions of said second clamp part to cause said extension portion to bear against said side of said first frame member opposite that on which said second frame member is disposed to retain said first and second frame members in assembly and prevent axial removal of said second clamp part from said first clamp part, said second engagement surface clearing said second tab in said second rotational position of said second clamp part to permit axial removal of said second clamp part from said first clamp part, said frame members being held in assembly by said clamp parts, removal of said second clamp part from said first clamp part permitting ready disassembly of said frame members from each other.

4,389,008

WEB SUPPLY ROLL JOGGER

Robert E. Boyanowski, Montrose, Pa.; Floyd A. Gregory, Binghamton, and Stanley E. Nemier, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 21, 1981, Ser. No. 304,512
Int. Cl.³ B65H *17/26, 23/16, 27/00*
U.S. Cl. 226—123 **9 Claims**



1. Apparatus for feeding a web from a supply roll comprising:

cradle means for holding said supply roll;

feeding means operable for gripping said web to incrementally pull said web from said roll;

a dancer bar arranged transversely of said web between said roll and said feeding means about which said web is pulled; and

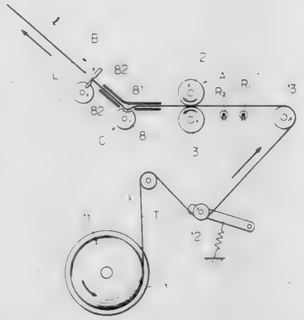
resilient support means for each end of said bar for permitting deflection of said bar when said web is pulled, each said support means having a rate of deflection versus load different than the other support means during at least part of the deflection of said bar whereby said bar deflects in response to the tension of said web and said roll is momentarily skewed in said cradle means when said feeding means is operated.

4,389,009

HIGH SPEED TAPE FEEDER

Kyoichi Yamashita, 2361 Nippa-cho, Kohoku-ku, Yokohamashi, Kanagawa 223, Japan

Filed May 29, 1981, Ser. No. 268,567
Claims priority, application Japan, May 30, 1980, 55-71441
Int. Cl.³ B65H *17/22*
U.S. Cl. 226—188 **4 Claims**



1. In a high speed tape feeding apparatus comprising a pair of cylindrical drums rotatable in tangential contact so as to pull a tape out of the roll of tape by frictionally driving the tape therebetween, said tape having a series of identical patterns and check marks printed thereon to be cut into sections, each bearing one printed pattern, the improvement comprising:

one of said pair of drums being mounted for free rotation on a first drive shaft and having a circumference slightly greater than the length of one section to be cut from the tape;

the other drum being mounted for free rotation on a second drive shaft and having a circumference slightly smaller than the length of one section to be cut from the tape;

an electromagnetic clutch between said one drum and the first drive shaft;

a unidirectional clutch between said other drum and the second drive shaft;

photoelectric means for detecting two successive check marks on the tape producing signals; and

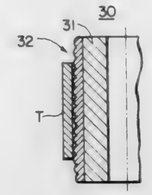
means for bringing said electromagnetic clutch into and out of transmission engagement under the control of the photoelectric means.

4,389,010

MAGNETIC TAPE GUIDE MEANS

Kengo Oishi; Masayoshi Moriwaki; Osamu Suzuki, and Kouji Kamiyama, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 10, 1981, Ser. No. 242,210
Claims priority, application Japan, Mar. 10, 1980, 55-30021
Int. Cl.³ B65H *23/04;* **G03B** *1/48*
U.S. Cl. 226—196 **6 Claims**



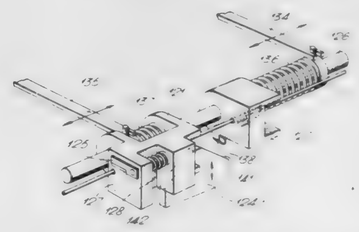
1. A magnetic tape guide means of cylindrical configuration having formed on the peripheral surface thereof for contact with a moving tape substantially hemispherical projections having diameters or major axis of from 0.5 to 5 μm and a distribution density of from 10,000 to 100,000 projections per square millimeter.

4,389,011

STITCHING MACHINE

Michael J. Lovibond, Kimpton, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1979, Ser. No. 106,198
Claims priority, application United Kingdom, Dec. 29, 1978, 50325/78
Int. Cl.³ B27F *7/21, 7/23*
U.S. Cl. 227—5 **12 Claims**



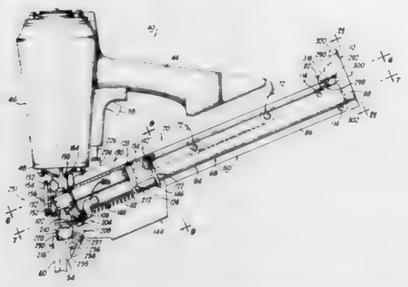
1. A wire stitcher having a movable cutter for cutting a length of wire from a supply thereof and stitcher head for forming and driving the length of cut wire for binding a set of sheets, the improvement including gripper means adapted to present the wire to the stitching head and to advance the wire by a distance dependent upon the thickness of the set, means for positioning the cutter in accordance with the thickness of the set, said movement of said gripper means and said cutter being limited by inhibitor means positioned in accordance with the set thickness, means for biasing said gripper means and said cutter towards each other, and a common drive member for driving said gripper means and said cutter.

4,389,012

FASTENER TOOL LOADING ASSEMBLY

Raimonds Grikis, Morton Grove; Bernard W. Geist, Melrose Park, and Edmund Frank, Chicago, all of Ill., assignors to Duo-Fast Corporation, Franklin Park, Ill.

Filed Apr. 22, 1981, Ser. No. 256,491
Int. Cl.³ B25C *3/00, 1/04*
U.S. Cl. 227—120 **6 Claims**



1. A loading assembly for loading uncollated fasteners from an elongated chute holding a supply of fasteners into the end of an elongated magazine of a fastener driving tool, said assembly comprising:

a feed coupling adapted to be supported on an end of the magazine and defining a loading opening;

an exit coupling adapted to be supported on an end of the chute and defining an exit opening;

feed and exit stop members movably supported respectively on the feed and exit couplings;

means resiliently biasing said stop members to block the corresponding loading and exit openings;

said feed and exit couplings being relatively movable toward one another in the longitudinal direction to a mated position wherein said loading and exit openings are aligned;

abutments defined on the feed and exit couplings engagable respectively with the exit and feed stops in said mated position for moving said stops clear of the corresponding openings;

a projection extending longitudinally from said exit coupling and defining a ramp structure; and

said feed coupling including guide structure received upon said ramp structure for guided and supported sliding movement of said feed coupling into said mated position.

4,389,013

CONTAINER HAVING A SELF-LOCKING LID

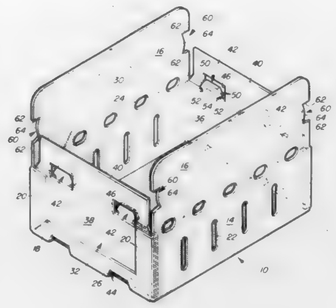
Richard A. Hall, Danville, and James R. Sorensen, San Bruno, both of Calif., assignors to Georgia-Pacific Corporation, Atlanta, Ga.

Filed Aug. 26, 1981, Ser. No. 296,531
Int. Cl.³ B65D *45/00, 5/66*
U.S. Cl. 229—45 R **5 Claims**

1. A container suitable for produce and the like having a body defining the container opening and a lid to close such opening with a multipoint friction lock for retaining the lid closed on the container body, said lock comprising:

a stacking tab projecting from the perimeter of said body opening having at least one undercut side edge forming a recess at such edge adjacent the base of said tab, and said tab further having an aperture formed on the face of said tab facing toward said opening; and

a locking notch formed on an edge of said lid located therealong for said stacking tab to engage therein when said lid is closed on said container body, said notch having at least one end thereof disposed relative to said undercut side edge of said stacking tab so as to engage in said recess of said stacking tab when said lid is closed, and said notch further having a locking portion protruding into said notch intermediate the notch ends to engage in said stacking tab aperture in the closed position of said lid, said lid is constructed of semi-rigid material and scored generally



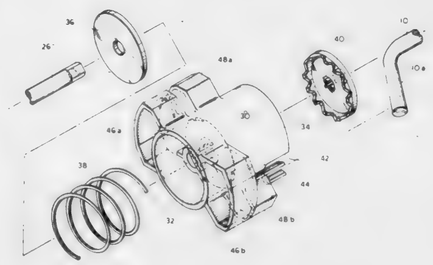
transversely to facilitate bending said lid for disengagement of said locking portion in said aperture when said lid is bent and engagement of said locking portion in said aperture when said lid is unbent.

4,389,014

VENT DAMPER WITH EMERGENCY MANUAL OVERRIDE

Ho Chow, River Edge, N.J., assignor to Melnor Industries, Inc., Moonachie, N.J.

Filed Apr. 16, 1981, Ser. No. 254,774
Int. Cl.³ F23N *3/00;* **F16K** *35/00*
U.S. Cl. 236—1 G **32 Claims**



1. A device for controlling the flow of fluid through a conduit comprising drive means, a movable damper plate situated in the conduit, clutch means for drivingly interconnecting said plate and said drive means, means for controlling said drive means in response to the position of said plate, and means for locking said plate in a given position, said clutch means comprising a slip clutch adapted to slip when said locking means is actuated to prevent movement of said plate from said given position.

4,389,015

CORRUGATION-FREE RAIL

Hans Guntermann; Gerhard Arndt, both of Essen, and Gustav Baum, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Elektro-Thermit GmbH, Fed. Rep. of Germany

Filed Jun. 16, 1980, Ser. No. 159,640
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1979, 2927890
Int. Cl.³ B22D *19/00*
U.S. Cl. 238—150 **2 Claims**

1. A corrugation-free rail for track-bound vehicles which

comprises, at least in part of the area adapted to be contacted by a wheel, a metallic material having a martensitic structure, a hardness of 40 to 60 Rockwell C, and the following composition, by weight:

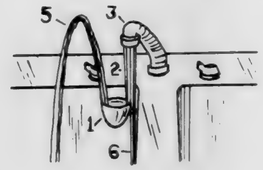
carbon	0.2 to 0.4%
chromium	13 to 18%
molybdenum	0.3 to 1.5%
manganese	0.5 to 1.5%
silicon	0.3 to 1%
remainder is iron.	

4,389,016

PARABOLOIDAL DRINKING FOUNTAIN ATTACHMENT

James T. Gibbs, P.O. Box 131-C, R.D. 3, Great Barrington, Mass. 01230

Filed Apr. 30, 1981, Ser. No. 258,960
Int. Cl.³ E03B *9/20*
U.S. Cl. 239—24 **7 Claims**



1. A drinking fountain attachment for use with water outlets comprising:

a cup having a substantially paraboloidally shaped inner surface for engaging water directed vertically downward and redirecting it into an upward mode in any direction throughout the 360 degrees of its perimeter, all of the sides of said cup slanting and converging inwardly and symmetrically toward the center point of the cup's bottom; and

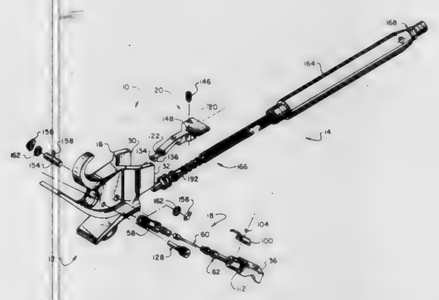
means for attaching the cup to a sink directly so that a water source can be directed into the cup any point on its perimeter.

4,389,017

SPRAY GUN

John D. Geberth, Jr., 10 Goose Cove La., Ramsey, N.J. 07446

Filed Apr. 15, 1981, Ser. No. 254,376
Int. Cl.³ B05B *1/32*
U.S. Cl. 239—455 **10 Claims**



1. A spray gun adapted for hydraulically atomizing and spraying liquids having attached thereto conduit means communicating with a source of liquid under pressure, said spray gun including:

(a) a handle portion;

(b) a spray head portion connected to said handle portion;

(c) a fluid bore in said spray head portion communicating with said source of pressurized liquid via said conduit means and terminating in a spray opening in said spray head;

(d) a valve bore in said spray head portion intersecting said fluid bore adjacent said spray opening;

(e) a retractable valve stem in said valve bore which, upon retraction, unobstructs said spray opening and the amount of such retraction defining the extent of the opening of said spray opening;

(f) means biasing said retractable valve stem to obstruct said spray opening; and

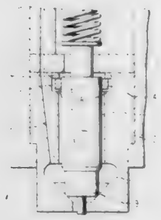
(g) trigger means for retracting said valve stem against the biasing action of said biasing means to thereby unobstruct said spray opening to permit spraying of said liquid and selectively defining the extent of valve stem retraction.

4,389,018

FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

Frank Thoma; Karlheinz Hoffmann, and Günter Seiler, all of Stuttgart, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 12, 1981, Ser. No. 243,000
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1980, 3009461
Int. Cl.³ F02M *61/16*
U.S. Cl. 239—533.3 **21 Claims**



1. A fuel injection nozzle for an internal combustion engine, the fuel injection nozzle including a nozzle body means, an injection orifice means provided in the nozzle body means, a nozzle needle means displaceably guided in the nozzle body means for controlling the injection orifice means, an annular chamber means provided in the nozzle body means on a side of the nozzle needle means opposite the injection orifice means, and a stop means provided in the annular chamber means for limiting a displacement of the nozzle needle means, characterized in that an elastic sealing means is guided on the nozzle needle means and is arranged in the annular chamber means at a distance from the wall thereof for admitting fluid pressure to press the elastic sealing means against the nozzle needle means to effect radial and axial sealing, and means is provided for supporting the elastic sealing means against the surface of the stop means.

4,389,019

METHOD OF AND APPARATUS FOR THE DRY SEPARATION OF PYRITE FROM COAL

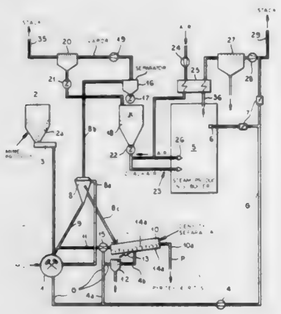
Fritz Adrian, Ratingen; Heinrich Sättler, Treis, and Werner Sauerland, Voerde, all of Fed. Rep. of Germany, assignors to Steag Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Oct. 24, 1980, Ser. No. 200,379

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1979, 2943556

Int. Cl.³ B02C *21/00*

U.S. Cl. 241—19 **5 Claims**



1. A dry method of separating pyrite from mineral coal comprising the steps of:

(a) milling and drying in a gas stream mined mineral coal product containing coal, pyrite and mineral detritus to produce a fine component consisting predominantly of coal and a gravel component comprising pyrite, mineral detritus and coal;

(b) classifying the milled product of step (a) to separate said components from each other and recycling a portion of said gravel component to step (a); and

(c) withdrawing simultaneously the remainder of the gravel component from step (b) and subjecting same to a density separation to produce a light product consisting predominantly of coal and a heavy product consisting predominantly of pyrite and mineral detritus whereby the pyrite is separated from the coal.

4,389,020

ROTARY SCREENS

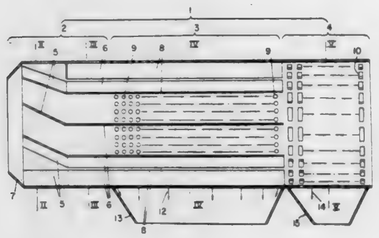
Francois H. Clin; Jean-Noel Gony, both of Orleans, and Francois O. Proust, Olivet, all of France, assignors to Bureau de Recherches Geologique et Minieres, Paris, France

Continuation of Ser. No. 48,577, Jun. 15, 1979, abandoned, which is a division of Ser. No. 865,663, Dec. 29, 1977, Pat. No. 4,176,799. This application Nov. 17, 1980, Ser. No. 207,505

Claims priority, application France, Jan. 6, 1977, 77 00262

Int. Cl.³ B02G *23/00*

U.S. Cl. 241—24 **3 Claims**



1. A process for salvaging material by means of a rotary screen rotating about a longitudinal axis, utilizing differential crushing and grading of mixed materials, said screen being provided with longitudinal vanes, comprising the steps of; cleaning and distributing the mixed materials; separating by differential crushing and grading of said mixed materials; orienting at least some articles of elongated shape among the mixture to introduce themselves in alignment with and between the longitudinal vanes; separating articles without crushing, by having articles of elongated shaped follow a longitudinal path and the screening residue follow a path substantially perpendicular to said longitudinal path; and providing a filling rate coefficient such that the depth of the products in a bottom longitudinally extending portion of the screen is always less than the width of a vane.

4,389,021

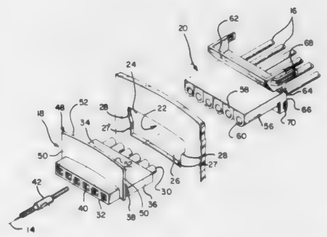
PANEL MOUNTED CONNECTOR FOR USE IN CONFINED AREAS

Daniel R. Coldren, Enola, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 16, 1981, Ser. No. 244,520

Int. Cl.³ H01R *13/447*

U.S. Cl. 339—126 R **6 Claims**



1. An electrical connector mounted in a panel member, said connector being of the type comprising an insulating housing of firm plastic material having a mating face and a wire entry face, said housing having external walls extending between said faces and having at least one contact terminal therein, a wire extending into said wire entry face and connected to said terminal, said connector and panel being characterized in that:

said panel has an opening therein, said opening having a connector retaining portion and a connector assembly portion,

said connector retaining portion having an outline which conforms to the outline of a selected transverse cross-section of said housing, said retaining portion having opposed edge portions which are spaced apart by a distance which is substantially equal to, or less than, the distance between the two oppositely directed external wall portions of said selected cross-section of said housing which correspond to said opposed edge portions,

said housing having slot means in said oppositely directed external wall portions, said slot means having a width sufficient snugly to receive opposed edge portions of said connector retaining portion of said opening,

said housing being positioned in said connector retaining portion of said opening with said opposed edge portions extending into said slot means,

said connector assembly portion of said opening being dimensioned freely to admit said housing therethrough, said housing having been assembled to said panel by passing said housing through said connector assembly portion and thereafter moving said housing laterally of its axis into said connector retaining portion, and

a closure flap integral with, and extending substantially normally from, the external wall portion of said housing which is between said oppositely directed external wall portions, said closure flap conforming to, and being in covering relationship to, said connector assembly portion of said opening.

4,389,022

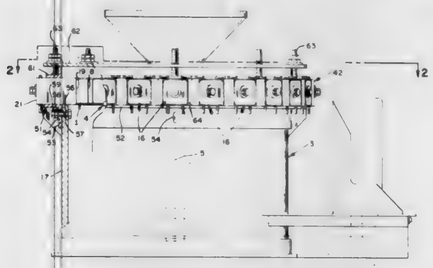
ROCK CRUSHER BREAKER BLOCKS AND ADJUSTMENT APPARATUS

John H. Burk, 712 Charlton Dr., Pleasant Hill, Calif. 94523

Filed Jun. 4, 1981, Ser. No. 270,336

Int. Cl.³ B02C *13/09*

U.S. Cl. 241—275 **6 Claims**



1. In a rock crusher having a housing (**17**) and an impeller (**4**) mounted on a vertical axis (**5**) the improvement comprising:

a. a plurality of breaker blocks (**1**) surrounding said impeller and each breaker block having a longitudinal axis (**12**), an impact portion (**6**) with a distal end (**7**) forming an impact face (**8**), a proximal portion (**9**) and side walls (**23**); said impact portion has a transverse across section which is symmetrical to said longitudinal axis and which forms an equal sided polygon and which has a constant cross sectional area throughout its length and attachment means (**11**) formed in said proximal portion;

b. a plurality of cell members (**16**) connected to said housing forming a chamber (**18**) open at its distal end (**19**) to the interior of said crusher and the proximal end (**21**) is open to the exterior of said housing;

c. each of said cell members having walls (**22**) slidably registering with said side walls (**23**) of said breaker blocks; and

d. an adjustment means releasably connected to said attachment means (**11**) in said proximal portion.

4,389,023

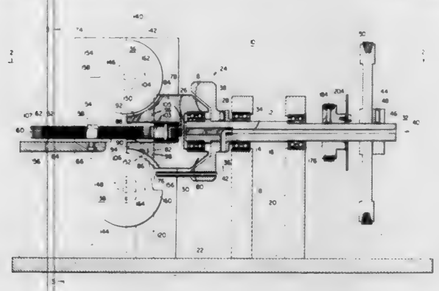
FLYER WINDER FOR EXTERNALLY SLOTTED DYNAMOELECTRIC MACHINE CORE MEMBER

Robert J. Eminger, Fort Wayne, Ind., assignor to Windamatic Systems, Inc., Fort Wayne, Ind.

Filed May 20, 1981, Ser. No. 265,657

Int. Cl.³ H02K *15/09*

U.S. Cl. 242—7.05 B **21 Claims**



14. In apparatus for winding a coil in two spaced slots which extend inwardly from the peripheral surface of a magnetic core member and which define a core porton there between around which the coil is wound, the slots communicating with spaced, parallel sides of the core member which are joined by the peripheral surface, the apparatus including a flyer rotatable about an axis and having wire dispensing means eccentric with respect to said axis, the diameter of the path of rotation of said dispensing means being greater than the spacing between the two slots, and means for supporting the core with the peripheral surface thereof in facing relationship with said path of rotation of the dispensing means, means for guiding the wire as it is being dispensed into the two slots and toward the back sides thereof comprising: a pair of elongated shroud members disposed within said path of rotation of the dispensing means and respectively extending outwardly over the opposite sides of the core portion between the two slots to outer ends, each shroud member having an outer surface which tapers to said outer ends thereof, said dispensing means initially winding wire around said shroud members; and means synchronized with said flyer for pulling wire outwardly over said outer surfaces of said shroud members and over said outer ends thereof whereby the wire is guided to enter the two slots toward the back sides thereof to form a coil wound around the core portion between the two slots.

4,389,024

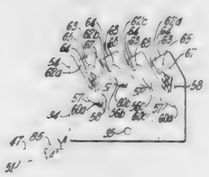
METHOD AND APPARATUS FOR PACKAGING STRANDS

James E. Sanders, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 10, 1981, Ser. No. 319,942

Int. Cl.³ B65H *54/02, 57/04, 57/16*

U.S. Cl. 242—18 G **17 Claims**



1. Apparatus for collecting a plurality of strands into a single package comprising:

a rotatable collet adapted to wind said strands thereon;

a traversing means adapted to move the strands along the length of said collet, said traversing means having an axis of movement; and

guide means located adjacent said traversing means, said guide means having a plurality of spaced apart strand accommodating notches wherein at least two of the notches are contained in a reference plane that is obliquely oriented with respect to the axis of movement of said traversing means or axis of rotation of said collet to facilitate the maintenance of the individuality of each of the strands being wound into said package.

4,389,025

APPARATUS FOR WINDING WIRE NET WITH SIMPLE TWIST

Pierre Pilboue, Charleville, France, assignor to Trefileries et Cableries Chiers-Chatillon-Gorcy, Levallois-Perret, France

Filed Dec. 15, 1980, Ser. No. 216,656

Claims priority, application France, Dec. 19, 1979, 79 31109

Int. Cl.³ B65H *17/06, 17/20*

U.S. Cl. 242—55 **5 Claims**

1. Apparatus for rolling up wire mesh of simple twist of the type in which each row of mesh is of zig-zag configuration with alternate generally V-shaped equally spaced peaks and

valleys, the peaks of one row are looped through the valleys of an adjacent row to connect the rows together, and adjacent rows of mesh can be folded back alternately toward each other, around lines of articulation formed by the looped-together peaks and valleys of adjacent rows and rolled up to form a compact roll of folded back rows having alternate V-shaped crests and depressions, said apparatus comprising, first and second means for receiving said mesh to form said roll, said means being adapted to receive mesh fed at a predetermined speed from the discharge of a mesh forming machine, each receiving means comprising a first length of a strand and a second length of a strand in opposed relation to said first



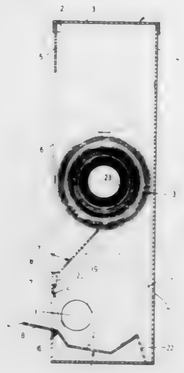
length of strand, means mounting said first receiving means with the strands thereof in a first vertical plane in the path of and parallel to the direction of feed of the mesh, means mounting said second receiving means with the strands thereof in a second vertical plane parallel to and in the path of the direction of feed of the mesh and spaced from the first plane by a distance equal to a multiple of the distance between peaks of the rows of mesh, said strands comprising means for supporting the roll by engaging the roll in said V-shaped depressions, and means for driving said strands at a linear speed less than said predetermined speed to roll up said folded back mesh into a roll.

4,389,026

DISPENSING CONTAINER FOR ROLLED PRODUCTS

Siegfried Willa, Haus Panorama, and Max Zenhäusern, Kehrstrasse 48, both of 3904 Naters, Canton of Valais, Switzerland

Filed Feb. 9, 1981, Ser. No. 232,534
Claims priority, application Switzerland, Feb. 7, 1980, 993/80
Int. Cl.³ B65H *19/04*
U.S. Cl. 242—55.3 **6 Claims**



1. A dispensing container for rolls of material, particularly for rolls of toilet tissue, of the type having sidewalls and a vertical front wall including a horizontal opening for withdrawal of said material and removal of empty said rolls, wherein said container includes:

a first horizontal pviot bar disposed adjacent to the lower edge of said opening;

a second horizontal pivot bar disposed adjacent to the upper edge of said opening,

roll-support means pivotable about said first pivot bar from a first normal dispensing position to a second roll-ejection and replacement position, and

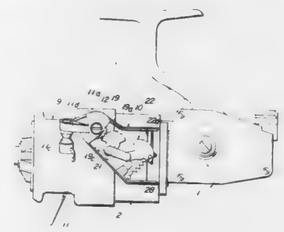
lever means pivotable about said second pivot bar from a first normal roll-retaining position to a second substantially vertical roll-release position, wherein said roll support means contacts said lever means in said second position.

4,389,027

BAIL ARM REVERSING DEVICE FISHING SPINNING REELS

Kounin Sazaki, and Takehiro Kobayashi, both of Fukuyama, Japan, assignors to Ryobi Limited, Fuchu, Japan

Filed Feb. 2, 1982, Ser. No. 344,928
Claims priority, application Japan, Feb. 11, 1981, 56-18370[U]
Int. Cl.³ A01K *89/01*
U.S. Cl. 242—84.2 G **8 Claims**



1. A bail arm reversing device of an outer spool type spinning reel comprising:

a main body of a reel;

a rotor supported by said main body and provided with a pair of arms formed on a periphery of said rotor at diametrically opposing positions;

a bail arm having opposite ends rotatably supported by said pair of arms, said bail arm being eccentrically mounted with respect to an axis of rotation of said rotor,

a tension spring for selectively biasing said bail arm toward a string take up position and a string pay out position;

a first timing gear having one end pivotally connected to a spoke of said rotor to be movable in a radial direction;

a second timing gear mounted on one of said pair of arms;

a hand operated lever mounted on said one arm and provided with a second kick gear;

a link mechanism interconnecting said bail arm with said hand operated lever, said link mechanism having a dead point which determines the direction of movement of said bail arm;

a pawl mounted on said first timing gear;

a first kick gear having a plurality of teeth and secured to said rotor;

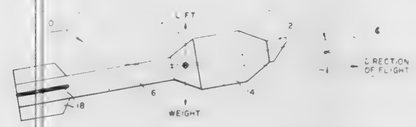
spring means for urging said pawl to engage said teeth of said first kick gear whereby said bail arm snaps to a string pay out position or a string take up position when said link mechanism passes said dead point.

4,389,028

FLAT TRAJECTORY PROJECTILE

Chris A. Kalivretenos, Hyattsville, and Michael A. Brown, Columbia, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 14, 1976, Ser. No. 649,614
Int. Cl.³ F42B *15/02*
U.S. Cl. 244—3.21 **25 Claims**



1. A projectile capable of flat trajectory flight comprising:

a payload section;

a propulsion unit;

a stabilized, aerodynamic lift-generating section rotatably mounted on the projectile to permit free, uncoupled rotation of the projectile relative to the lift-generating section, said stabilized lift generating section producing a resultant lift vertically oriented to counteract the projectile weight in order to obtain a substantially flat flight trajectory,

said lift-generating section is gyroscopically stabilized in roll by a stabilizing gyroscope, having an inner and outer gimbal, to fixedly orient the resultant lift irrespestive of projectile rotation; and

wherein said lift-generating section is fixedly attached to the outer gimbal of said stabilizing gyroscope.

14. A flight control mechanism for a self-propelled, unguided projectile comprising:

an aerodynamic lift-producing device rotatably coupled to the projectile to permit free rotation relative to the projectile,

a gyroscope stabilizing means, having an inner and outer gimbal, fixedly attached to said lift producing device to roll stabilize said device,

said lift-producing device being fixedly attached to the outer gimbal of said gyroscopic stabilizing means; and

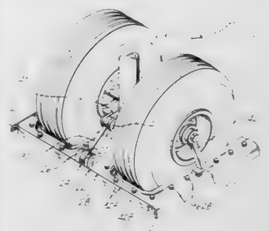
whereby the aerodynamic lift produced by said device counteracts the projectile weight in order to obtain a substantially flat flight trajectory.

4,389,029

NOSE WHEEL WATER SPRAY DEFLECTOR

Rudi K. H. Glasenapp, Bellevue, and Andrew J. McCulloch, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 101,939, Dec. 10, 1979, abandoned.
This application Oct. 28, 1981, Ser. No. 315,763
Int. Cl.³ B64C *25/32*
U.S. Cl. 244—103 R **2 Claims**



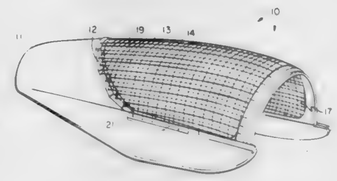
1. In combination in an aircraft having a plurality of wing mounted engines and a nose landing gear having a pair of nose wheels, a nose wheel water spray deflector for preventing nose landing gear wheel generated side spray ingestion by said wing mounted engine, said nose wheel water spray deflector having a leading edge extending forward of siad pair of nose wheels, extending across the front of said nose wheels, and further extending in a plane parallel to the runway surface when the aircraft is in a landing configuration with nose wheels on the runway surface, said nose wheel water spray deflector attached to the inner cylinder of said nose landing gear and retractable through the nose wheel doorway during flight of the aircraft, said nose wheel water spray deflector having a lateral support tube connected through a center support member to the tow fitting of said nose gear.

4,389,030

CANOPY MOSAIC THERMAL BARRIER

Anthony San Miguel, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 6, 1977, Ser. No. 830,545
Int. Cl.³ B64C *1/14;* **B32B** *7/00*
U.S. Cl. 244—129.3 **6 Claims**



1. A heat resisting canopy, comprising:

a transparent shell made from an organic material, and defining a convex outer surface and a concave inner surface;

a plurality of transparent elements made from an inorganic material and arranged upon said convex outer surface in the form of a transparent element mosaic outer layer;

a transparent adhesive material joining each of said transparent elements to said transparent shell;

a plurality of metallic ribbons arranged on said transparent shell convex outer surface to form a metallic ribbon lattice, wherein each of said transparent elements is bounded by a portion of said metallic ribbon lattice; and

a plurality of metallic wires arranged over said transparent element mosaic outer layer to form a grid, wherein said grid defines a central intersection on each of said transparent elements, each metallic wire of said plurality of metallic wires having two ends, and each end of each wire being attached to said canopy.

4,389,031

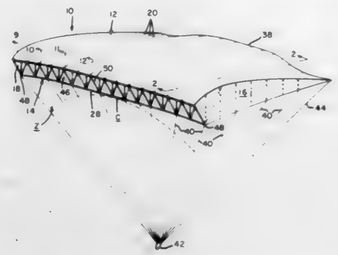
PARACHUTE

George R. Whittington, P.O. Box 44, East Berlin, Pa. 17316

Filed Aug. 5, 1981, Ser. No. 290,408
Int. Cl.³ B64D *17/02*
U.S. Cl. 244—145 **9 Claims**

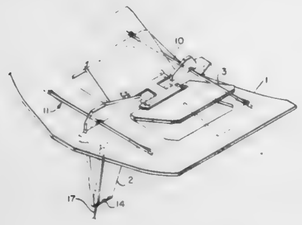
1. A ram air parachute having upper and lower skins, a mouth on the forward edge, a trailing edge, side walls, major suspension lines extending from the lower skin to a load and an inner suspension system maintaining separation between the upper and lower skins, the parachute having an airfoil shape in sections from the mouth to the trailing edge, the improvement comprising the lower skin having a U-shaped generally flat section extending along the side walls and mouth and an upwardly extending central recess located within the U-shaped section of the lower skin and including a portion of the trailing edge located above the trailing edge adjacent the side walls of

the parachute to define an exit, the lower skin at said central recess having a steep angle and the lower skin adjacent the side



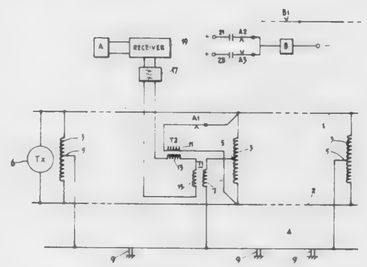
walls having a low or zero angle whereby the central recess provides stable forward drive.

4,389,032
RETRACTABLE WING KITE
Charles O. Meckley, 29520 SW. 199th Ave., Homestead, Fla. 33030
Filed Jul. 10, 1981, Ser. No. 282,175
Int. Cl.³ A63H *27/08*
U.S. Cl. 244—153 R **2 Claims**



1. A keel kite comprising:
a. an airfoil symmetrically shaped about a fore-and-aft centerline, said airfoil having a leading edge and a trailing edge,
b. a keel firmly connected to said airfoil at said centerline,
c. both said keel and said airfoil being made of substantially rigid material,
d. said airfoil having a first portion which is firmly fixed in a position substantially perpendicular to the keel; and two additional portions, one on each side of the centerline;
e. wherein said first portion of said airfoil has an aperture on each side of the centerline, each said aperture having at least one linear edge, said additional portions comprising flaps generally conforming to the shape of the apertures, means for hinging the first portions and the additional portions together, said means for hinging being attached to the linear edges of the apertures and the flaps so that the flaps can substantially close the apertures;
f. wherein said linear edges of said apertures are farther from the centerline than any other edges of said apertures;
g. resilient means holding said additional portions in the same plane as said first portion in a static condition, and moving said additional portions to an angle with respect to said first portion in response to pressure from wind when the kite is being flown whereby the area of the airfoil surface which provides lift changes in proportion to the strength of the wind;
h. wherein said resilient means is an elongated flexible band having two ends, one end of said band being secured to an intermediate point on one of said flaps, and the other end of said band being secured to a correspondingly located intermediate point on the other of said flaps, said band being stressed to hold the flap closed in a static condition, and being stretched in response to wind pressure to open the flaps when the kite is being flown.

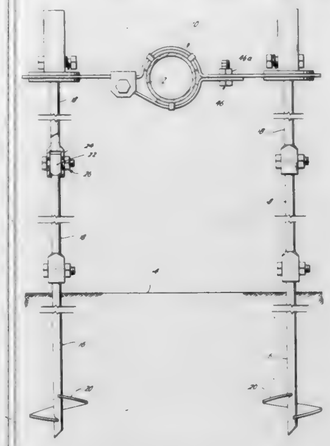
4,389,033
BROKEN RAIL/BOND DETECTORS
Arthur R. Hardman, Cheshire, England, assignor to GEC-General Signal Limited, Hertfordshire, England
Filed Apr. 8, 1981, Ser. No. 251,849
Claims priority, application United Kingdom, Apr. 8, 1980, 8011539
Int. Cl.³ B61L *21/00*; G08B *21/00*
U.S. Cl. 246—37 **7 Claims**



1. A circuit for detecting faults in a traction current return sub-system using a double rail return comprising
an impedance bond (3) connected between a pair of running rails (1,2),
first means (11,13), connected to said impedance bond, for detecting a track signal across said bond,
second means (17,19, A,A1), responsive to said first means, for operating to a distinctive condition in response to track signal detection by said first means and,
third means (5,7,15) responsive to a fault track signal in said bond for inhibiting said operation of said second means.

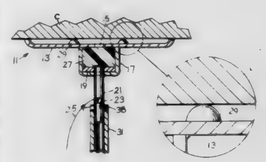
4,389,034
UNDERWATER PIPE ANCHORING DEVICE
Jefferies C. Suttles, Houston, Tex., assignor to Anchoring International, Inc., Houston, Tex.
Filed Jul. 21, 1980, Ser. No. 170,916
Int. Cl.³ F16L *1/04*
U.S. Cl. 248—49 **10 Claims**

1. Pipeline anchoring device for anchoring a pipe to underground strata, comprising:
(a) a first support section shaped to engage a first portion of the outer surface of the pipe;
(b) a second support section shaped to engage a second portion of the outer surface of the pipe;
(c) hinge means for connecting a portion of the second support section to the first support section on one side of the pipe so that the second support section can swing into and out of a position where the support sections surround the pipe and engage opposite sides of the outer surface of the pipe;
(d) means for releasably connecting a portion of the second support section on the other side of the pipe from the hinge means to the first support section so that the support sections can be connected for supporting the pipe; and
(e) one of the support sections including at least one portion projecting outwardly away from the pipe and an opening in said portion; and
(f) anchor means including at least one elongated rod adapted to be driven into and become anchored in underground strata, an upper drive head on said rod of smaller cross-sectional dimensions than said opening, a drive coupling adapted to fit over the drive head, lower bearing means larger than at least part of said opening connected to the coupling for engaging and holding the lower surface of the said portion, upper bearing means larger than



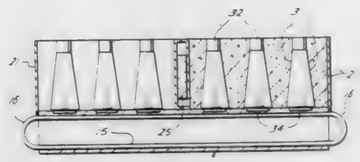
at least part of said opening and including an opening through which the drive coupling can project, and lock means for preventing the drive coupling from moving downward through the opening in said upper bearing means.

4,389,035
HANGER-TYPE CEILING-ATTACHABLE SUPPORT HAVING SELF-DISPENSING CEMENT
James D. Freeman, 11 W. Grand Ct., Springfield, Ill. 62704
Filed Nov. 6, 1980, Ser. No. 204,646
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—542 **10 Claims**



1. A ceiling-attachable hanger-type support comprising: a horizontally disposable rigid circular plate-like element having at least one aperture located medially thereof, a cup-like member underlying the medial portion of said plate-like element and defining therewith a marginally sealed chamber, a short rigid post-like hanger-part depending axially from said cup-like member, and an initially liquid quickly-setting cement in said chamber, said chamber being so volume-variably constructed that an upward force exerted against said hanger-part will cause said cement to flow through said aperture and between said plate-like element and a ceiling surface juxtaposed thereto, and said cement being sufficiently viscous initially to hold said support in desired position while said cement hardens.

4,389,036
APPARATUS AND METHOD FOR FORMING CONCRETE BLOCKS, PANELS AND THE LIKE
Youssef Abou-Ezzeddine, 5821 Lynbrook, Houston, Tex. 77057
Filed Apr. 21, 1981, Ser. No. 256,064
Int. Cl.³ B28B *7/10*; B29C *1/14*
U.S. Cl. 249—120 **11 Claims**

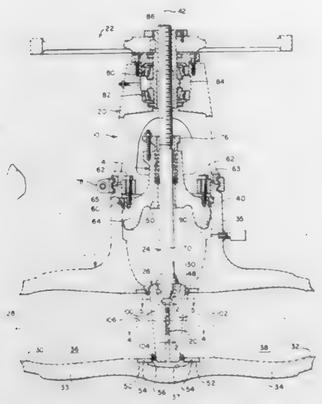


1. Apparatus for forming concrete blocks and the like, the combination comprising:
a pallet having a generally flat upper surface and having a plurality of grooves provided in said upper surface;
a generally rectangular mold frame having four integral and generally vertically upstanding sides, said frame being open on the top and bottom and dimensioned for matably mounting on said pallet, said frame having a plurality of generally vertical partition walls extending between at least two of said side walls forming a plurality of mold cavities open on the upper ends thereof for receiving aggregate therein;
at least one mold core mounted within each of said mold cavities and connected to said grooves in said pallet, each of said cores having sides tapered generally inwardly toward the top thereof whereby said cores remain supported on and connected to said pallet when said frame is separated from said pallet;
and means for separating said rectangular frame from said pallet after aggregate has been poured into said mold cavities and initial setting thereof has occurred to form blocks while said cores remain in contact with said blocks and said blocks remain in contact with and are supported on said pallet.

4,389,037
DOUBLE DISC GATE VALE WITH REPLACEABLE SPACER RING
Ronald J. Anders, Raleigh, N.C., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 605,277, Aug. 18, 1975, abandoned. This application Jun. 13, 1980, Ser. No. 159,017
Int. Cl.³ F16K *3/12*
U.S. Cl. 251—327 **12 Claims**

1. A gate valve comprising: a valve body having flow passages communicating with a central valving control chamber; valve seats in the valve body at the ends of the flow passages adjacent the control chamber; a two piece gate movable between an open position and a closed position by an external stem assembly operably connected to said gate; a seating surface formed on one side of each of said gate pieces sealingly engageable with its respective said valve seat in the closed position when opposed surfaces respectively of the other side of each of said gate pieces are spaced a predetermined distance apart; a single rigid spacer member remote from said stem assembly having end surfaces respectively engaging said opposed surfaces and having a thickness therebetween equal to said predetermined distance; projecting capturing means on each of said gate pieces bounding a peripheral wall of said spacer member and projecting from said opposed surfaces an effective combined distance less than the thickness of the spacer member; said spacer member being circular and having a circular peripheral wall which is the outer circumferential

wall of said member and is bounded by said projecting capturing means; said spacer member having a central circular opening formed therein; and guide means preventing separation of the pieces during gate movement and disengagement of the capturing means.



4,389,038

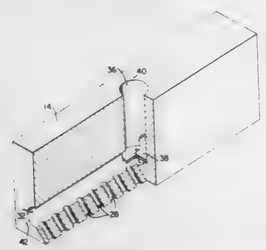
SCARFING APPARATUS

Ronald E. Fuhrhop, West Nyack, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jan. 11, 1982, Ser. No. 338,203

Int. Cl.³ B23K *7/06*

U.S. Cl. 266—51 **8 Claims**



1. Scarfing apparatus for thermochemically treating a metal surface including a desurfacing head having an output discharge means for discharging a gas into a slot-like scarfing nozzle defined by an upper and lower preheat block, output discharge means in each preheat heat block for discharging gas, and a gas distribution assembly for distributing gas evenly across at least one of said output discharge means, wherein said gas distribution assembly comprises:

a manifold discharge chamber communicating with said output discharge means;

an inlet supply chamber adapted to be connected to a supply source of fuel gas or oxygen and interconnecting said manifold discharge chamber to form a ledge; and

a flow redistribution member supported upon said ledge at the intersection between said inlet supply chamber and said manifold discharge chamber for redirecting gas flow from said inlet supply chamber into said manifold discharge chamber.

4,389,039

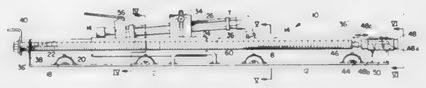
CUTTING TORCH GUIDE AND ACCESSORIES THEREFOR

Franklin W. Domres, 4117 Crescent Beach Rd., Manistee, Mich. 49660

Continuation-in-part of Ser. No. 235,524, Feb. 18, 1981, abandoned. This application Sep. 8, 1981, Ser. No. 299,879

Int. Cl.³ B23K *7/10*

U.S. Cl. 266—77 **46 Claims**



1. A stand for supporting a portable cutting torch guide comprising:

a base adapted to be abuttingly supported on a surface;

a platform connected with and supported above said base at a preselected, convenient working height; said platform being normally horizontally oriented, and shaped to abuttingly support thereon articles to be cut; and

a pedestal having one end connected with said base, and the other end including means for detachably supporting the cutting torch guide thereon, and positioning the cutting torch guide over at least a portion of said platform, at an elevation substantially level with or above the height of said platform.

4,389,040

APPARATUS FOR SEPARATING A SPONGE IRON PRODUCT PRODUCED IN A ROTARY FURNACE

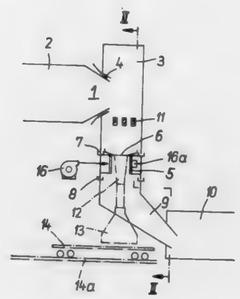
Klaus Ulrich, Heiligenhaus; Wilhelm Janssen, Mülheim, and Reinhard Herbrig, Duisburg, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,540

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123589

Int. Cl.³ F27B *7/32*

U.S. Cl. 266—137 **12 Claims**



1. Apparatus for the hot separation of sponge iron from the hot discharge material of a rotary furnace having a discharge end; comprising a discharge chamber connected to said discharge end of said rotary furnace for receiving hot discharge material from said rotary furnace; a vibratory screen being positioned at a lower end of said discharge chamber for receiving the discharge material from said discharge chamber; support means carrying said vibratory screen; means to cool said support means; sealing means for sealing said vibratory screen and said support means from the ambient environment; means for moving said support means with respect to said lower end of said discharge chamber; screen drive means operatively connected to said vibratory screen and carried by said support means; and a discharge chute carried by said support means and disposed underneath said screen for discharging the portion of the hot discharge material which passes through said screen.

4,389,041

PYROMETALLURGICAL FURNACE SYSTEM WITH READILY REMOVABLE WALL SECTIONS

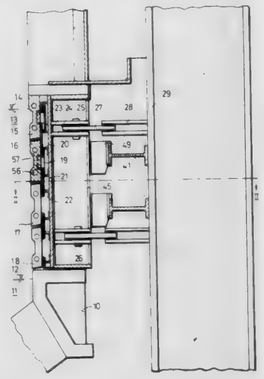
Friedrich Megerle, Cologne, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 426,619

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1981, 3139278

Int. Cl.³ C21B *7/10*

U.S. Cl. 266—194 **10 Claims**



1. In a pyrometallurgical furnace system including furnace walls in which at least the areas of such walls which come in contact with molten metal are provided with cooling elements through which a coolant circulates, the improvement which comprises:

at least one cooling element carrier,

a plurality of adjacent cooling elements each releasably secured to said cooling element carrier,

support means fixedly secured with respect to said furnace, and

pivotal means interconnecting said support means with said cooling element carrier permitting the same to be pivoted into a position providing access to the cooling elements releasably secured to said cooling element carrier.

4,389,042

VACUUM DEGASSING APPARATUS

Peter J. Wynne, Pittsburgh, Pa., assignor to Lectromelt Corporation, Pittsburgh, Pa.

Filed Jan. 4, 1982, Ser. No. 336,898

Int. Cl.³ C21B *7/10*

U.S. Cl. 266—210 **15 Claims**

1. Vacuum degassing apparatus including first and second vacuum degassing vessels,

coupling means for connecting each vessel to a vacuum system for reducing the pressure therein,

each vessel having at least one nozzle extending from its lower end whereby molten metal can be drawn into said vessel for being degassed,

supporting means,

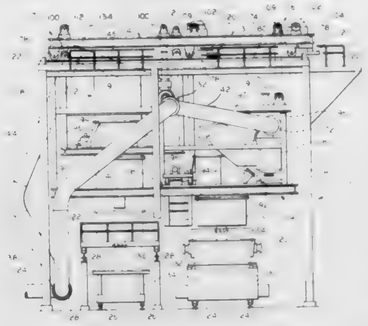
first and second transport means each including a vessel support, said first and second vessels being mounted respectively on said first and second vessel supports,

said first and second transport means being mounted respectively on said supporting means,

said first and second transport means being mounted in a side-by-side relation and each being movable in a direction generally parallel to that of the other for transporting its associated vessel between a treatment position and a service position,

means for transporting a container of metal beneath the treatment positions of each vessel,

each said first and second transport means including elevating means coupled to its vessel support so that each vessel may be elevated and lowered individually when each is in its treatment or service positions,



and connecting means connected to each of said vessels and to said coupling means for providing a vacuum connection therebetween, said connecting means being constructed and arranged to maintain said vacuum connections as said vessels are moved between their treatment and service positions and during the raising and lowering thereof.

4,389,043

METALLURGICAL MELTING AND REFINING UNIT

Ralph Weber, Sao Paulo, Brazil, and William Wells, Charlotte, N.C., assignors to Korf Industrie und Handel GmbH und Co KG, Baden-Baden, Fed. Rep. of Germany

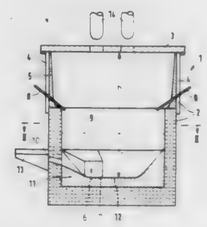
PCT No. PCT/EP80/00151, § 371 Date Jun. 16, 1981, § 102(e) Date Jun. 16, 1981, PCT Pub. No. WO81/01862, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 19, 1980, Ser. No. 276,362

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951825; Dec. 21, 1979, 2951826

Int. Cl.³ C21B *3/00*

U.S. Cl. 266—218 **14 Claims**



1. Metallurgical melting and refining unit having a furnace vessel with a bottom and sidewall, two primary tuyeres extending through said sidewall and having a horizontal axis, and discharging below the surface of the melt in the vessel, said tuyeres being disposed in benches of refractory material on the bottom of the furnace vessel, at least one secondary tuyere extending through said sidewall and discharging above the melt surface, and a tap hole for the melt in the bottom area of the furnace vessel, said furnace vessel being in the form of a round hearth furnace, with a ratio of the inside dimensions

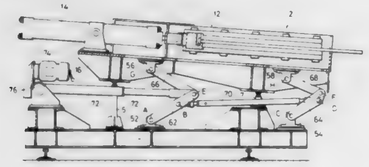
diameter (d) to height (h) of the furnace vessel between 0.8 and 2.5, said tuyere benches being located on opposite sides of the tap hole and adjacent thereto, said vessel bulging outwardly in the area of said tuyere benches, and said tuyere benches being offset outwardly in axial direction of said primary tuyeres.

4,389,044

MECHANICAL PUNCHING APPARATUS FOR COPPER SMELTING CONVERTER

Yukio Iyama; Masao Fujita, and Nobuhiro Higashiiriki, all of Oita, Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1981, Ser. No. 282,829
Claims priority, application Japan, Sep. 8, 1980, 55-123522
Int. Cl.³ C21C *5/46*
U.S. Cl. 266—271 **5 Claims**



1. A mechanical punching apparatus comprising:
a mechanical puncher with a punching rod adapted for punching a converter tuyere;
a carriage supporting said mechanical puncher, said carriage being adapted to move said mechanical puncher in a longitudinal direction of a converter;
link means arranged between said mechanical puncher and said carriage for tilting said mechanical puncher;
motion regulating means for causing, in cooperation with said link means, motion of said mechanical puncher effected by said link means to be along a predetermined locus having a center at a center of rotation of said converter,
said link means comprising: first and second levers having first ends spaced apart from each other and pivotally secured to said carriage; third and fourth levers having first ends spaced apart from each other and pivotally secured to said mechanical puncher and second ends pivotally secured to second ends of said first and second levers; a coupling rod coupled pivotally between said first and second levers; and drive means provided on said carriage for operating said link means, said drive means comprising a generally horizontally oriented piston coupled to said link means, lengths of predetermined ones of said first through fourth levers being different from one another and being such that operation of said drive means causes said mechanical puncher to be moved along said predetermined locus having as a center a center of rotation of said converter.

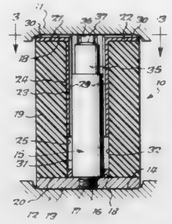
4,389,045

LIQUID ENERGY ABSORBER DEVICE

Douglas P. Taylor, North Tonawanda, N.Y., assignor to Tayco Developments, Inc., North Tonawanda, N.Y.

Continuation of Ser. No. 115,949, Jan. 28, 1980, abandoned. This application Jan. 26, 1982, Ser. No. 342,799
Int. Cl.³ B60G *13/00, 15/00;* **F16F** *9/00, 11/00*
U.S. Cl. 267—8 R **16 Claims**

1. A liquid energy absorber device comprising an elongated liquid energy absorber member having a casing and a piston movable into and out of said casing, an annular elastomeric member surrounding said casing of said liquid energy absorber member in an axial direction for substantially the entire length thereof, means at opposite end portions of said elastomeric member for receiving varying forces due to changes in external loading on said liquid energy absorber device, said casing of said liquid energy absorber member and said annular elastomeric member having a variable size space formable therebetween as a result of distortion of said elastomeric member resulting from said changes in loading thereon with said space being of increased size when said elastomeric member is distorted and being of decreased size when it is not distorted, and duct means for conducting air into said variable size space from the atmosphere in response to the increasing in size of said space upon the distortion of said elastomeric member for cooling said liquid energy absorber member and said elastomeric member and for conducting air from said variable size space in response to the decreasing in size of said space.

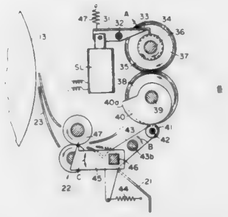


4,389,046

SHEET FEEDING MECHANISM FOR IMAGE FORMING APPARATUS

Toshirou Kasamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1980, Ser. No. 208,041
Claims priority, application Japan, Nov. 26, 1979, 54-152623
Int. Cl.³ B65H *7/02*
U.S. Cl. 271—227 **2 Claims**



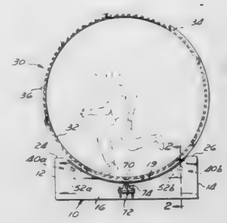
1. In an apparatus wherein an image forming process is repeated at a regular cycle for forming images of an original, an improvement including a mechanism for feeding copy sheets at regular intervals, said mechanism comprising:
first detecting means for detecting a position of an original to generate a signal to register the original and the sheet;
second detecting means for detecting the feeding of a last said sheet to be fed out;
a cam member continuously rotatable at the speed of said cycle;
a repeatedly operable timing member, responsive to said cam member, for stopping and releasing the sheets along a sheet conveying path at a predetermined position according to said cycle to feed the sheets in a timed relation; and
a control member movable between a first position wherein said cam member, in response to an initial signal produced by said first detecting means, is allowed to rotate continuously, and a second position wherein said cam member, in response to the signal produced by said second detecting means, is stopped.

4,389,047

ROTARY EXERCISE DEVICE

Lawrence W. Hall, 2411 Prospect, #307, Hermosa Beach, Calif. 90254

Filed Jan. 2, 1981, Ser. No. 222,279
Int. Cl.³ A63B *19/04*
U.S. Cl. 272—69 **8 Claims**



1. A rotary exercising device for power generation, comprising:
a cylindrical light weight mill wheel of a size sufficient to allow a normal-sized adult to run within said mill wheel to rotate said mill wheel;
support wheels for said mill wheel having axes parallel to the axis of said mill wheel, said support wheels being rotatably mounted so that said mill wheel rotates freely upon said support wheels;
a base for mounting said support wheels and said mill wheel without interfering with the rotation of said mill wheel and said support wheels;
a driveshaft rotatably mounted to said base;
a contact wheel in frictional contact with said mill wheel so that rotation of said mill wheel produces rotation of said contact wheel;
ratchet means connected between said contact wheel and said driveshaft for permitting said contact wheel to drive said driveshaft and for permitting deceleration of said mill wheel and said contact wheel relative to said driveshaft;
a generator connected to said driveshaft so that the armature of said generator turns when said driveshaft turns to generate power when said mill wheel is turned by a user running or jogging within said mill wheel; and
storage means for storing the power generated by said generator.

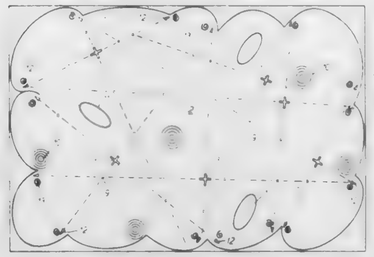
4,389,048

APPARATUS FOR PLAYING A SPECTATOR-CONTROLLED GAME

Donald M. Burgess, 7A Sidney Pl., London, England (SW7 3NL)

Continuation-in-part of Ser. No. 83,152, Oct. 5, 1979, abandoned. This application Dec. 10, 1981, Ser. No. 329,194
Claims priority, application United Kingdom, Oct. 7, 1978, 39715/78
Int. Cl.³ A63F *7/02, 9/22*
U.S. Cl. 273—121 A **12 Claims**

1. Apparatus for playing a spectator-controlled game comprising
means constituting a playfield for playing said game;
means constituting at least one object movable over the playfield under the control of at least three spectators when playing said game;
at least one controllable object-influencing means for causing or modifying movement of said object over said playfield in one of a plurality of different ways, when activated by an appropriate kind of control signal;
a plurality of control means, each being operable by a respective spectator when playing said game to select and supply a desired one of a plurality of possible output signals for controlling the operation of said object-influencing means; and
a decision-making logic system connected (a) to the respective said control means so as to receive therefrom said output signals selected by said spectators, and (b) to said object-influencing means so as to supply hereto in response to said received output signals and as said control signal a signal dependent on a predetermined majority of one sort of said received output signals over the other sorts of said received output signals, whereby to cause said object-influencing means to respond to the expressed wishes of a predetermined majority of the spectators operating the respective control means.

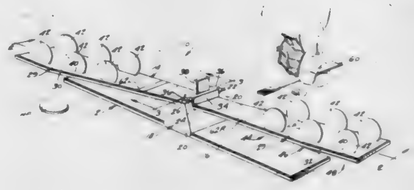


4,389,049

COMPENSATOR FOR BEAM OF BALANCE SCALE OF COUNTERFEIT COIN-IDENTIFICATION GAME

Roland H. Wiley, 2021 W. Charleston, Las Vegas, Nev. 89102

Filed Dec. 16, 1981, Ser. No. 331,202
Int. Cl.³ A63F *9/06*
U.S. Cl. 273—153 R **5 Claims**



1. A modest cost apparatus for demonstrating the classical solution to the twelve coins/three weighings problem, where one of twelve coins, a "counterfeit", is substantially but not perceptably different in weight from the individual weight of each of eleven "genuine" coins, though of the same appearance, and the object is to single-out the counterfeit coin and to determine whether it is heavier or lighter than a said genuine coin,
said apparatus comprising, in addition to a set of twelve such coins:
a balance scale including a base with a fulcrum, and a two-armed balance beam pivotally supported on the fulcrum of the base;
means on each balance beam arm designating corresponding sites for placement of six of the coins;
means marking a corresponding site on each balance beam arm for disposition of a compensator element on the balance beam; and
a compensator element of such relative weight to each of the coins as to have these characteristics:
that when there is a corresponding number from one to six of correspondingly located ones of said coins placed at

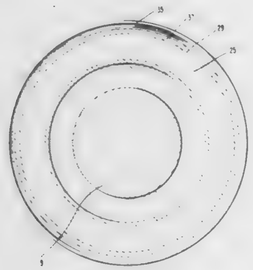
respective ones of said sites on said balance beam arms, and said balance beam has assumed a tilted disposition so as to have a high side, and said compensator element is disposed on the high side of the balance beam at said corresponding marked site, the balance beam pivots and oppositely tips down, so that what was the high side becomes the low side only when all of the coins then disposed on the balance beam are "genuine" coins, but the balance beam remains tilted so that what was the high side remains the high side only when one of the coins then disposed on the balance beam is a "counterfeit" coin.

4,389,050

MECHANICAL SEAL HAVING A SEAL INSERT MOUNTED IN A LAMINATED SHELL

Norman E. Johnson, Barrington, and Harold F. Greiner, Warwick, both of R.I., assignors to EG&G Sealol, Inc., Warwick, R.I.

Filed Jul. 16, 1982, Ser. No. 398,927
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—26 **5 Claims**



1. A mechanical face seal comprising rotatable and non-rotatable members rubbingly engageable along substantially radial faces, one of said members including a holder formed by a plurality of bands which are press fitted to one another, the outermost band being in tension and the innermost band in compression so that the stresses in the bands tend to balance one another, and an annular insert press-fitted into the holder and formed with one of said rubbingly engageable faces.

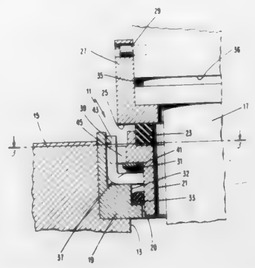
4,389,051

PRESSED IN ANTI-ROTATION LUGS FOR MECHANICAL FACE SEALS

John J. Mullaney, Warwick, R.I., assignor to EG&G Sealol, Inc., Warwick, R.I.

Filed Jul. 15, 1982, Ser. No. 398,359
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—41 **8 Claims**

1. A seal assembly comprising a stationary housing adapted to be fixed to a container at an opening, said housing having an opening aligned with the container opening and adapted to receive a rotatable shaft, a seal ring supported by said housing, a mating ring fixed to said shaft and cooperably engaging said seal ring, means preventing relative rotation between said housing and seal ring and allowing axial movement therebetween including a ring disposed in said housing opening and formed with lug means which are elastically deformed by engagement with the surface of said housing forming said opening, whereby said ring is non-rotatably secured to said housing, abutment means on said seal ring engaging said lug means to prevent rotation of said seal ring relative to said



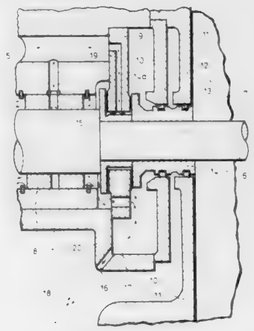
housing, said engaged lug means and abutment means allowing axial movement of said seal ring relative to said housing.

4,389,052

OIL SEAL SYSTEM FOR SHAFT OF TURBOCHARGER

Masami Shimizu, Chiba, and Junji Yasunobe, Yokohama, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1980, Ser. No. 160,961
Claims priority, application Japan, Jul. 10, 1979, 54-94989[U]
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—67 **4 Claims**



1. In an oil seal system for the shaft of a turbocharger having a turbine and impeller mounted thereon in axially-spaced relation and an oil-trapping chamber formed by components thereof, in combination:

(a) a combined turbine-impeller mounting shaft having a shoulder formed thereon inward from the impeller mounting portion thereof;

(b) a bearing casing surrounding said shoulder and portions of said shaft on either side thereof;

(c) a seal plate mounted to seal said casing and positioned between said impeller and said shoulder;

(d) an oil thrower fitted on said shaft and having a first portion within said seal plate, a second portion extending axially towards said shoulder and having an oil-throwing flange formed thereon spaced outwardly from said shoulder;

(e) a seal ring interposed between said oil thrower and said seal plate;

(f) a thrust bushing fitted on said shaft and having one end abutting said shoulder and an opposite end abutting said oil-thrower flange; and

(g) a thrust metal fixedly secured to said casing and surrounding in radially spaced relation a portion of said

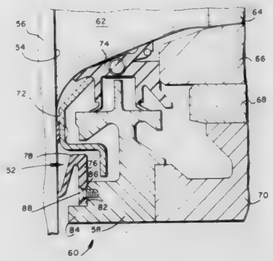
thrust bushing between said shoulder and said flange, said thrust metal having channels formed therein communicating with an oil supply enabling a flow of oil from such supply to flow on selected surfaces of said thrust bushing and said oil thrower and from such surfaces flow to a said oil trapping chamber below said oil thrower, said trapping chamber being formed by said casing, seal plate, oil thrower, seal ring, and thrust metal and having an oil discharge port extending through the bottom portion thereof with said oil-throwing flange being disposed within said chamber.

4,389,053

WATER GUARD FOR ROLLING MILL OIL FILM BEARING

Charles L. Innis, Jr., Paxton; Lowell S. Salter, Jr., Shrewsbury; Harry Boghosian, Worcester, all of Mass., and Donald H. Wilkinson, Palmyra, N.Y., assignors to Morgan Construction Company, Worcester, Mass.

Filed Mar. 26, 1982, Ser. No. 362,109
Int. Cl.³ F16J *15/32, 15/34*
U.S. Cl. 277—95 **8 Claims**



1. In a rolling mill wherein the neck of a roll is rotatably supported in an oil film bearing contained in a bearing chock, with a seal assembly located between the roll end face and the bearing chock to retain oil in the bearing and to exclude contaminants such as cooling water, mill scale, etc. from the bearing, the said seal assembly including a circular seal end plate fixed relative to the bearing chock at a location surrounding a flexible seal mounted on the roll neck for rotation therewith, the improvement comprising: a circular water guard having a radially extending mounting flange integrally joined at its inner edge to an angularly outwardly extending sealing flange, said mounting flange being adapted to be surrounded by and to be secured to the seal end plate, said mounting flange providing the sole means for supporting and maintaining said sealing flange in frictional contact with the roll end face, both of said flanges being elastically flexible with said mounting flange having a rigidity which is greater than that of said sealing flange.

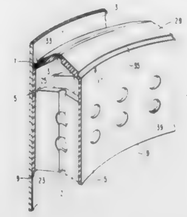
4,389,054

SHOCK ABSORBENT GAS SEAL

Yuen F. Lee, Cupertino, and Shiro Aisawa, Sunnyvale, both of Calif., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 28, 1981, Ser. No. 287,612
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—214 **7 Claims**

1. A shock absorbent seal comprising an outer arcuate pad having upper and lower arcuate margins, an inner arcuate pad having upper and lower arcuate margins, a plurality of chevron shaped struts disposed in a spaced relationship between said arcuate pads and extending upwardly from the lower margins thereof, and an arcuate chevron shaped cap integrally connected to the upper margins of the arcuate pads and disposed in a spaced relationship with respect to the chevron shaped struts.

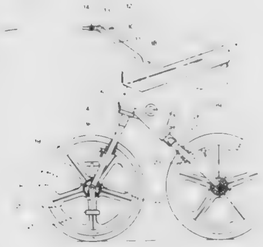


4,389,055

VELOCIPEDE

Paul A. Cockburn, 1 Caledonia St., Paddington, New South Wales 2021, Australia

Filed Nov. 7, 1980, Ser. No. 205,050
Claims priority, application Australia, Nov. 15, 1979, PE1340
Int. Cl.³ B62K *19/08*
U.S. Cl. 280—274 **5 Claims**



1. A velocipede including:

a longitudinally elongated central unitary frame having a forward portion providing a headstock and a rear portion extending rearwardly from said forward portion;

one or more bearings arranged in the headstock;

a spindle rotatably mounted on the headstock so as to be rotatably supported by said bearings for rotation about a generally vertical axis;

handle bars attached to the upper end of said spindle, front forks attached to the lower end of said spindle, a front wheel rotatably supported between said front forks and a set of pedal cranks operable on said front wheel;

a fixed non-adjustable elongated seat directly supported on said rear portion so as to extend therealong and provide a seating surface extending upwardly and rearwardly from said headstock;

a rear frame supported by said central frame and extending downwardly and rearwardly from said headstock; and

at least one rear wheel rotatably mounted on said rear frame.

4,389,056

WHEELCHAIR

David M. Tenniswood, Troy, Mich., assignor to Creative Controls, Inc., Troy, Mich.

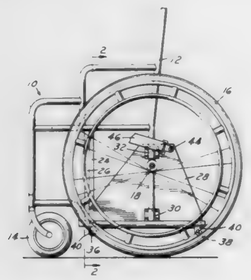
Filed Oct. 20, 1980, Ser. No. 198,728
Int. Cl.³ B62B *11/00*
U.S. Cl. 280—289 WC **8 Claims**

1. In a wheelchair of the type having a pair of light frame members, a pair of large rear wheels and small forward wheels,

one of each pair being attached to and outward of each light frame member for moving the chair, and a seat extending between said light frame members, an improvement comprising;

a pair of metal plates aligned along side the rear wheels, one of each plates on the inside of each light frame member and located below said seat;

a first portion of each of said metal plates extending rearwardly and below where said large wheels are attached to



said light frame and a second portion extending forwardly and below where said large rear wheels are attached to said light frame;

a pair of cross bars, one of said cross bars extending between said first portions and the second set of cross bars extending between said second portions, said cross bars being rigidly but releasably held by said plates; a seat belt extending between said plates and over said seat for releasably retaining an occupant in said seat and attachment means for joining said seat belt to said metal plates.

4,389,057

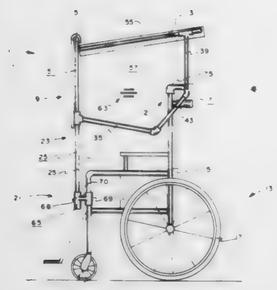
WHEELCHAIR COVER

Spence Richard, Jr., Rte. 1, Box 295, Lamar, Miss. 38642

Filed Jun. 5, 1981, Ser. No. 270,787

Int. Cl.[3] **B62J** *23/00*

U.S. Cl. 280—289 WC **9 Claims**



1. The combination with a wheelchair of a protector means for protecting the user of a wheelchair, said protector means comprising:

(a) cover means for covering at least a portion of the user of the wheelchair, said cover means including a clear front member for protecting the face of the user of the wheelchair, said front member having an upper edge;

(b) attachment means for attaching said cover means to the wheelchair, said attachment means including first and second anchor means for being secured to the front of the wheelchair; and

(c) frame means for supporting said cover means on the wheelchair, said frame means including first and second substantially vertical front post members, each of said first and second front post members having a lower end and an upper end, said lower end of said first front post member being removably attached to said first anchor means, said lower end of said second front post member being removably attached to said second anchor means, said frame means including a substantially horizontal front cross bar member, said front cross bar member having first and second ends, said first end of said front cross bar member being attached to said upper end of said first front post member, said second end of said front cross bar member being attached to said upper end of said second front post member, said upper edge of said front member of said cover means being pivotally attached to said front cross bar member.

4,389,058

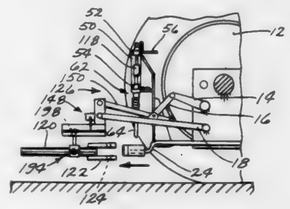
HITCH ASSEMBLY

Vyrl E. Cadwell, Rte. 2, Box 50, Manilla, Iowa 51454

Filed Apr. 15, 1981, Ser. No. 254,404

Int. Cl.[3] **B60D** *1/10*

U.S. Cl. 280—415 A **13 Claims**



1. A hitch assembly for a tractor having a three point lift comprising a pair of spaced apart lift arms and an upper lift link, said tractor further having a tractor draw bar attached thereto and extending rearwardly therefrom, said hitch assembly comprising:

a hitch frame;

a hitch draw bar connected to said frame and having a vertically disposed pin receiving hole therein;

a vertically extendible power means connected to said frame above said pin receiving hole, said power means having an extensible member movable upon actuation of said power means from a retracted elevated position to an extended lowered position;

a pin assembly connected to said extensible member and including an elongated vertically disposed coil spring and a locking pin, said coil spring having an upper end connected to said extensible member and a lower end connected to said pin and yieldably holding said pin in vertical registered alignment with said pin receiving hole;

said pin normally being fitted within said receiving hole when said power means is in said extended position and being spaced upwardly therefrom when said power means is in said retracted position; and

said coil spring being yieldably flexible intermediate its said upper and lower ends whereby said coil spring will yieldably deflect in any direction when said pin encounters a resistance of predetermined magnitude during downward movement of said extensible member of said power means.

4,389,059

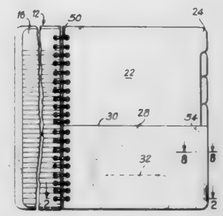
SEAT BELT WEBBING GUIDE

Robert L. Stephenson, Utica, Mich., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 10, 1980, Ser. No. 205,225

Int. Cl.[3] **A44B** *11/00;* **A62B** *35/00;* **B60R** *21/10*

U.S. Cl. 280—808 **11 Claims**



1. A seat belt web guide, comprising:

(a) load bearing flexible wire loop means having upper and lower loop portions wherein said loop means is shaped to define a loop opening large enough to receive seat belt webbing, wherein said loop means is adapted to be secured to a load supporting area of the vehicle structure;

(b) guide means for maintaining only the lower portion of said flexible wire loop means substantially straight for supporting and guiding said seat belt webbing passing through the loop means, said guide means comprising a tube element surrounding said lower loop portion for supporting seat belt webbing passing partially around the guide means and through the loop means;

(c) fastening means adapted to be secured to a vehicle structure for securing said loop means to the vehicle structure, said upper loop portion extending around said fastening means;

(d) a housing structure containing said loop means, including a recessed portion defined by two end flanges, said flanges being formed with apertures for mounting said tube element therebetween; and

(e) roller means surrounding said tube element for rollably supporting said seat belt webbing.

4,389,060

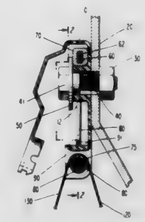
TABBED POCKET FOR USE IN RING BINDER AND WIRE BOUND BOOKS

Robert C. Cline, Washburn Rd., Saugerties, N.Y. 12477

Filed Feb. 4, 1981, Ser. No. 231,418

Int. Cl.[3] **B42B** *5/12;* **B42D** *13/00;* **B42F** *21/02*

U.S. Cl. 281—38 **1 Claim**



1. A loose-leaf book comprising front and back covers, a filler between said covers and comprising page sheets and a plurality of divider sheets interposed between successive groups of page sheets, said page sheets and said divider sheets having registering perforations on an alignment between upper and lower edges of the sheets and at marginal offset from a common binding lateral edge, and an array of wire-loop formations extending through the registering perforations and binding said filler between said covers; said divider sheets having index-tab formations extending outward from the lateral edge opposite the binding edge to an extent at least equal to the bound marginal offset of said perforations from said binding edge, and said index-tab formations being distributed along substantially the upper half of the lateral edge opposite the binding edge; front and back pocket-sheet panels enclosing substantially the lower half of each divider sheet to substantially the full extent of index-tab projection and edge binding, said pocket-sheet panels having edge-binding perforations which register with corresponding perforations of the associated divider sheet and being bound by said loop formations, a bent closure of front and back pocket-sheet panels to each other at the lower edge of the associated divider sheet, and a bent closure of said front and back pocket-sheet panels to each other at the lateral edge alignment of the index-tab formation of the associated divider sheet; whereby a page sheet removed from edge-bound relation to said book may, without folding, be insertably received in either of the pockets of each divider sheet, without interfering with the bound relation of remaining page and divider sheets of said filler.

4,389,061

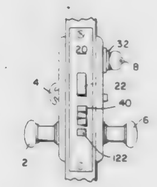
MORTISE LOCK WITH IMPROVED DEADLOCK RELEASE MECHANISM

William R. Foshee, Indianapolis, Ind., assignor to Best Lock Corporation, Indianapolis, Ind.

Filed Jan. 12, 1981, Ser. No. 224,380

Int. Cl.[3] **E05C** *1/16*

U.S. Cl. 292—169.14 **15 Claims**



1. A mortise lock, comprising

a case including a front,

a dead bolt mounted in the case for movement through the front between retracted and projected positions,

a key-operated cylinder mounted in the case and means operable thereby for projecting and retracting the dead bolt,

a latch mounted in the case for movement through the front between retracted and projected positions and biased to projected position, a tailpiece connected to the latch and having a rearward-spaced tailplate by which the latch is retracted,

a cylinder latch lever for retracting the latch in response to key operation of the cylinder,

a deadlocking lever for deadlocking the latch and means for positioning the deadlocking lever in deadlocking position when the lock is in door-closed relation with a strike,

an inner knob hub mounted for rotation in the case and having a roll-back cam thereon, and a hub lever mounted in the case and movable by such cam in a direction to retract the latch,

wherein the improvement comprises

a cam block mounted in the case for movement aginst said tailplate for retracting the latch, and having a release cam thereon,

said deadlocking lever having a blocker arm movable into the path of the latch to deadlock it against retraction, means to bias said deadlocking lever toward deadlocking position, said deadlocking lever also having a release arm with a cam ramp thereon in the path of retraction move-

ment of the cam on said cam block for actuating the dead-locking lever to non-blocking position in response to initial retraction movement of the cam block,

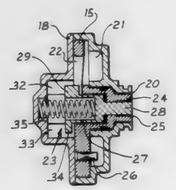
said knob hub lever and cylinder latch lever both being arranged to drive said cam block in latch-retracting movement in response, respectively, to knob actuation of the hub lever and to cylinder actuation of the cylinder latch lever.

4,389,062

ROTARY LATCH

Kenneth W. Rosenberg, St. Louis, Mo., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 15, 1980, Ser. No. 216,722
Int. Cl.³ E05C *3/04*
U.S. Cl. 292—190 **5 Claims**



1. A rotary latch for engagement with a striker loop, said latch comprising,

a housing having a journaled bore, an enlarged bore and a semi-circular groove therein,

a cover closing said enlarged bore and said semi-circular groove, said cover having at least one locking slot therein,

latching means rotatably positioned in said journaled bore and having a hooked-shaped latch extending into said enlarged bore of said housing, said latching means having a locking slot therein,

stop means on said latching means extending into said semi-circular groove,

a shaft axially slidable within said latching means and having at least one locking lug slidably positioned in said locking slot in said cover and selectively engageable with said locking slot in said latching means, and

spring means biasing said shaft whereby said locking lug on said shaft is engaged with both said locking slot on said latching means and said locking slot in said cover to prevent rotation of said latching means.

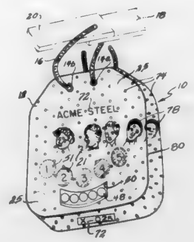
4,389,063

REUSABLE TAMPER-INDICATING SECURITY SEAL

Michael J. Ryan, Plainfield, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 23, 1981, Ser. No. 276,611
Int. Cl.³ B65D *33/34*
U.S. Cl. 292—307 R **17 Claims**

1. A seal combination for detecting unauthorized tampering or substitution of a secured item, the improvement comprising the seal combination having a transparent wall, a first indicia disposed on the inside surface of the transparent wall, a second indicia provided over virtually all of the outside surface of the transparent wall, said second indicia having a uniformity such that any variation in the uniformity can readily be detected, a third indicia also covering at least part of the outside surface of the transparent wall, said third indicia having a pattern that is readily distinguished and easily committed to memory, and a cocoon of transparent material over virtually all of the outside surface of the transparent wall and over the second and third indicia thereon, and said second and third indicia each being at least in part transparent so as to allow viewing therethrough of the underlying first indicia, whereby a parallax is established



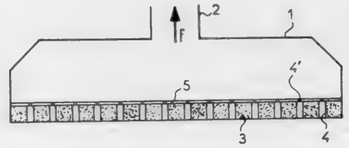
when looking at the first indicia from an angle through the second and third indicia.

4,389,064

GRIPPING DEVICE OPERATING BY SUCTION

Stanislas G. L. Laverriere, Villeneuve les Sablons, France, assignor to S.A. Joulin Sema, Etampes, France

Filed Nov. 24, 1981, Ser. No. 324,555
Claims priority, application France, Dec. 5, 1980, 80 25818
Int. Cl.³ B66C *1/02*; B32B *3/12, 3/24, 3/08*
U.S. Cl. 294—64 R **7 Claims**



1. A suction prehension device comprising, a casing having a base plate, means on said casing for connecting the casing to a source of suction, said base plate having a plurality of perforations therein for communicating suction from within the casing to an exterior face of the base plate, a layer of low density open cell foam material extending across and fixed to the exterior face of said base plate, said layer of foam material having an outside and a plurality of openings extending through the layer from the outside surface to the base plate, said openings communicating with the perforations of the base plate, said openings having internal surface, and means for limiting air flow through the internal surfaces of the openings from the open cell foam of the foam material to enable the outside surface of the foam material to assist prehension, said means comprising, an at least partially air tight covering on the internal surfaces of the openings.

4,389,065

WEED AND GRASS PULLER

Wallace E. Atkinson, Rte. 3, Box 656, Petersburg, Va. 23803

Filed Oct. 26, 1981, Ser. No. 315,042
Int. Cl.³ A01B *1/18*
U.S. Cl. 294—50.8 **5 Claims**

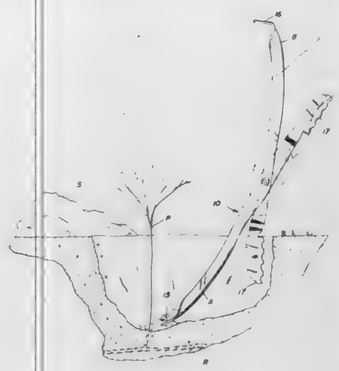
1. An implement for removing relatively deeply embedded weeds and unwanted grasses and the like comprising:

an elongated plier-type tool having elongated jaws and operatively associated molded pads of relatively soft rubber or plastic mounted on the jaw faces;

said pads having operatively associated corrugated faces whereby to inhibit slippage and to present a sinuous extent for root contact to enhance grasping of the root to be extracted without crushing, cutting or tearing and to facilitate extraction of the entire root;

the tool handles being elongated and each handle having an auxiliary tool at the free end thereof; and

one said auxiliary tool comprising a spade or trowel-like tool and the second auxiliary tool comprising a hoe or rake-like tool;



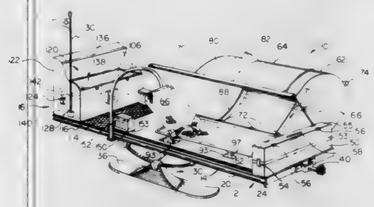
all of said tools complementing one another for the common purpose of exposing and removing in entirety the relatively deeply embedded root and to dress the ground surface after such removal.

4,389,066

RESCUE UNIT

Roy Weir, 1638 Dalton Rd., Timmins, Ontario, Canada (P4N 7C2); Larry G. Morin, and Louis D. Guenette, both of Sturgeon Falls, Canada, assignors to Roy Weir, Timmins, Canada

Filed Feb. 25, 1981, Ser. No. 237,819
Claims priority, application Canada, Nov. 7, 1980, 364324
Int. Cl.³ A61G *3/00*
U.S. Cl. 296—19 **16 Claims**



1. A rescue unit adapted to be transported by a vehicle, comprising:

(a) frame means;

(b) transport assembly means attached to said frame means for permitting transport of the unit;

(c) a patient support section carried by said frame means and including cover means for said section, said cover means being movable to permit access to said patient support section;

(d) an attendant support section carried on said frame means longitudinally spaced from said patient support section in the direction of the head of a patient carried on said patient support section,

(e) said cover means comprising a first portion and a second portion, said first portion being hingedly connected with one side of said frame means, means for limiting hinged open movement of said cover, and said second cover portion being telescopingly movable with respect to said first cover portion,

(f) said second cover portion having a transparent section for association with a portion of the patient support section in the area of the head of a patient being carried on said unit,

(g) said second cover portion carrying a transparent windscreen adjacent the transparent section and forward of the attendant support section, and

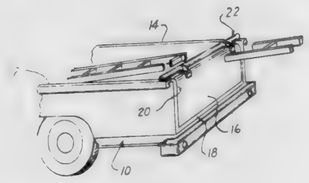
(h) said attendant section including a transverse safety bar immediately rearwardly of said patient support section.

4,389,067

TAILGATE PROTECTING DEVICE

Arthur J. Rubio, 1505 De Rose Way, #10, San Jose, Calif. 95126

Filed Jan. 12, 1981, Ser. No. 224,633
Int. Cl.³ B62D *25/00*
U.S. Cl. 296—50 **6 Claims**



1. A tailgate protecting device for pickup trucks, comprising:

an elongated horizontal support member forming a load carrying beam adapted to span the load carrying portion of a pickup truck and having a length such that each end extends over and rests upon the top of a side-wall of the truck;

a pair of vertical support members respectively affixed to said beam at predetermined distances from the ends thereof and forming load carrying legs the distal ends of which are adapted to rest upon the bed of the pickup truck; and

bracket means affixed to said beam for extending over the top of the tailgate of the truck to hold said device in position immediately adjacent thereto without transmitting any vertical load carried by said beam to said tailgate, said bracket means including a pair of L-shaped members each having one leg which is affixed to beam and extends laterally relative thereto, and another leg which extends downwardly and cooperates with one of said support members to form a slot for receiving the top edge of the truck tailgate.

4,389,068

DEVICE FOR FIXING A WINDOW MOLDING ONTO A WINDOWPANE

Ikuo Sengoku, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 3, 1981, Ser. No. 250,736
Claims priority, application Japan, Nov. 5, 1980, 55/154571
Int. Cl.³ B60J *1/02*
U.S. Cl. 296—206 **16 Claims**

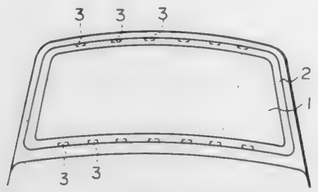
1. A windowpane assembly of a vehicle, which has a window molding and a windowpane arranged in an L-shaped cross-sectional fillister of a vehicle body, said fillister extending along an outer periphery of the windowpane and comprising a riser portion which extends inwardly from the vehicle body, and a bottom portion which extends substantially parallel to the vehicle body from an inner end of said riser portion, the windowpane being stuck onto the bottom portion by means of an adhesive material, a gap formed between the riser portion and the outer periphery of the windowpane being covered by the window molding which has a substantially C-shaped cross-section, said device having a molding clip inserted into the gap

for fixing the window molding onto the windowpane, said molding clip comprising:

a holding portion engageable with the C-shaped cross-section of said window molding;

an elastic curved base portion extending along the riser portion of the fillister and intended to resiliently abut against the outer periphery of the windowpane within the gap, said base portion having thereon grasping means to grasp the windowpane, said holding portion connected to said base portion;

a pair of latch arms comprising root portions which extend from longitudinal opposite ends of said base portion towards the outer periphery of the windowpane and have



tips, and arm portions which are spaced from said base portion and extend from the tips of said corresponding root portions so as to approach each other, said latch arms being engageable with a central portion of said base portion for maintaining said base portion in a compressed state to accumulate the elastic force of said base portion, and thereby deform said base portion from its uncompressed configuration, and;

disengaging means for disengaging said latch arms from the central portion of said base portion and causing said base portion to attempt to return to its uncompressed configuration, to thereby resiliently abut against the outer periphery of the windowpane.

4,389,069

METHOD OF AND A DEVICE FOR FIXING A WINDOW MOLDING ONTO A WINDOWPANE

Ikuo Sengoku, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 3, 1981, Ser. No. 250,916
Claims priority, application Japan, Nov. 5, 1980, 55/154569
Int. Cl.³ B60J *1/00*
U.S. Cl. 296—206 **24 Claims**



13. A windowpane assembly of a vehicle, which has a window molding and a windowpane arranged in an L-shaped cross-sectional fillister of a vehicle body, said fillister extending along an outer periphery of the windowpane and comprising a riser portion which extends inwardly from the vehicle body, and a bottom portion which extends substantially parallel to the vehicle body from an inner end of said riser portion, the windowpane being stuck onto the bottom portion by means of an adhesive material, a gap formed between the riser portion and the outer periphery of the windowpane being covered by the window molding which has a substantially C-shaped cross-section, said device having a molding clip inserted into the gap for fixing the window molding onto the windowpane, said molding clip comprising:

a holding portion engageable with the C-shaped cross-section of said window molding;

elastic wing members intended to resiliently abut against the outer periphery of the windowpane within the gap, said elastic wing members being connected to the bottom of said holding portion;

claw members each engageable with a respective one of said elastic wing members for maintaining said elastic wing members in a compressed state to accumulate the elastic force of said elastic wing members, wherein said claw members are connected to the bottom of said holding portion; and

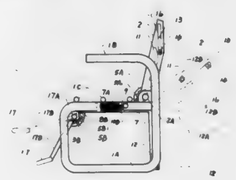
projection means extending from the bottom of said holding portion, wherein said elastic wing members, said claw members, and said projection means are attached to said holding portion so that when said molding clip is engaged with said window molding and pressed toward the windowpane, the projection means abut against a front face of the windowpane and when further pressure is applied to said molding clip, the elastic wing members are disengaged from said claw members and abut against the outer periphery of said windowpane.

4,389,070

RECLINING CHAIR WITH SUPPLEMENTAL TELESCOPING FRAME

Wu-Shinn Chien, No. 8, Yue Tsai St., Kaohsiung, Taiwan

Filed Feb. 27, 1980, Ser. No. 124,967
Int. Cl.³ A47C *1/022*
U.S. Cl. 297—365 **2 Claims**



1. In a reclining chair having a main frame, and a supplemental frame telescopingly supported therefrom for movement between a first position wherein said supplemental frame is disposed adjacent said main frame and a plurality of telescoped positions wherein said supplemental frame is spaced from said main frame, the main frame including foot and back portions each pivotably mounted thereon for movement between raised and lowered positions, the foot and back portions being pivotable about respective axes through a plurality of positions intermediate the raised and lowered positions, and being latchable in any of said raised, lowered or intermediate positions, the improvement comprising:

said back portion including arcuate slots disposed in opposing sides thereof;

said supplemental frame including

(1) a pair of horizontal legs telescopingly engaged with, and normally biased through tension means toward, said main frame, and

(2) a pair of vertical legs each telescopingly supporting pin means thereon for vertical movement relative to said vertical legs, each said vertical leg carrying a compression spring biasing said pin means away from said supplemental frame;

said pin means being engaged in said slots to cooperate therewith and interconnect said back portion with said supplemental frame during pivotal movement of said back portion relative to said main frame; and

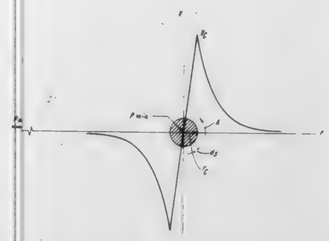
means for simultaneously unlatching said foot and back portions from any of said raised, intermediate or lowered positions.

4,389,071

ENHANCING LIQUID JET EROSION

Virgil E. Johnson, Jr., Gaithersburg, and William T. Lindenmuth, Columbia, both of Md., assignors to Hydronautics, Inc., Laurel, Md.

Filed Dec. 12, 1980, Ser. No. 215,829
Int. Cl.³ E21C *37/12*
U.S. Cl. 299—14 **17 Claims**



1. A method of eroding a solid surface utilizing at least two high velocity liquid jets supplied with liquid from a single plenum, comprising the steps of:

(a) forming at least one cavitating liquid jet containing vapor-filled cavities formed by directing a high velocity flow of said liquid through a first nozzle that reduces the local pressure surrounding the gas nuclei in said liquid below the vapor pressure of said liquid to form vapor-filled cavities therein;

(b) surrounding said cavitating liquid jet with a liquid medium contained in a chamber, wherein the solid surface comprises a portion of the boundary of said chamber;

(c) impinging said cavitating liquid jet against the solid surface at a point where substantially the maximum number of vapor-filled cavities collapse on the solid surface to thereby cause cavitational erosion of the solid surface;

(d) forming a high velocity pulsed liquid jet within said chamber by directing a high velocity flow of said liquid through a second nozzle and oscillating the velocity of the liquid jet exiting from said second nozzle at a frequency selected to provide a Strouhal number within the range of from about 0.2 to about 1.2, based on the diameter and velocity of said cavitating liquid jet; and

(e) surrounding said pulsed liquid jet with said liquid medium contained in said chamber, said pulsed liquid jet being situated sufficiently close to said cavitating liquid jet such that the oscillation of the pulsed liquid jet within said chamber induces oscillation of the velocity of said cavitating liquid jet exiting from said first nozzle within said chamber, thereby enhancing the erosion of the solid surface by said cavitating liquid jet.

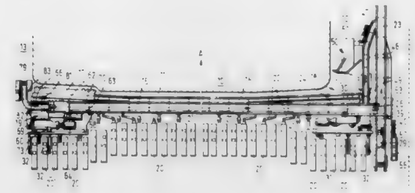
4,389,072

LONGWALL MINERAL MINING INSTALLATION

Horst Linke; Helmut Erwien, both of Lunen; Herbert Beyer, Werne; Bodo Kerklies, Lunen; Bernhard Wieklinski, Werne; Rudolph Manusch, Bergk-Oberaden; Dieter Grundken, Lunen; Bernd Kumor, Lunen; Ulrich Mohn, all of Fed. Rep. of Germany

Filed Apr. 24, 1981, Ser. No. 257,033
Claims priority, application Fed. Rep. of Germany, May 3, 1980, 3017046
Int. Cl.³ E21C *29/02*
U.S. Cl. 299—32 **36 Claims**

1. A mineral mining installation comprising a longwall conveyor, a winning machine movable to and fro along the face side of the longwall conveyor, a drive station at one end of the longwall conveyor, the drive station including a drive frame supporting drive means for driving the longwall conveyor, a support beam at the goaf side of the drive station, the support beam extending substantially parallel to the drive frame, and a floor plate extending beneath the drive frame, wherein one



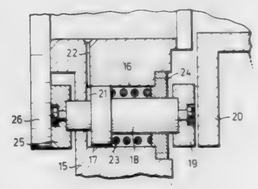
portion of the floor plate is supported on the support beam by means of a lifting device, whereby said one portion of the floor plate can be moved up and down relative to the support beam by the lifting device.

4,389,073

APPARATUS FOR USE WITH CUTTING DRUMS OF MINERAL MACHINES

Thomas Trümper, Werne, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Mar. 23, 1981, Ser. No. 246,135
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011583
Int. Cl.³ E21C *35/20*
U.S. Cl. 299—45 **9 Claims**



1. Apparatus for use in selectively coupling a rotatable blade support to an associated cutting drum of a mineral mining machine to re-position the blade in relation to the drum; said apparatus comprising hydraulic piston and cylinder units rotatable with the blade support and connected to friction means drivably engageable with the drum, wherein compression springs bias the units to maintain the friction means released from the drum and the units are operable under the action of hydraulic force to oppose the biasing force of the compression springs and urge the friction means in driving engagement with the drum to couple the blade support thereto to effect repositioning of the blade.

4,389,074

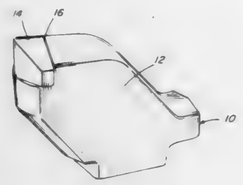
MINE TOOLS UTILIZING COPPER-MANGANESE NICKEL BRAZING ALLOYS

Mark S. Greenfield, Henderson, Ky., assignor to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 171,578, Jul. 23, 1980, abandoned. This application Nov. 18, 1981, Ser. No. 322,607
Int. Cl.³ E21B *10/00*
U.S. Cl. 299—79 **5 Claims**

1. A mine tool comprising a ferrous metal body having a

recess and a cemented carbide insert within said recess brazed to said body by a brazing alloy consisting essentially of from about 40% to about 70% by weight of copper, from about 25% to about 45% by weight of manganese and from about 5% to about 15% by weight of nickel, wherein said brazing alloy has



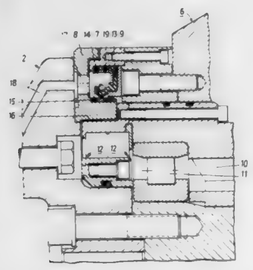
a solidus temperature of from about 850° C. to about 900° C. and a liquidus temperature of less than about 930° C., said insert and said alloy filling said recess, said mine tool being designed for operation under conditions wherein the brazed joint is subjected to conditions of high shear.

4,389,075

DEVICE FOR PREVENTING INGRESS OF DUST THROUGH THE ANNULAR GAP BETWEEN THE CUTTING ARM AND THE CUTTING HEAD OF A CUTTING MACHINE

Peter Kogler, Knittelfeld, Austria, assignor to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Dec. 5, 1980, Ser. No. 213,500
Claims priority, application Austria, Jan. 23, 1980, 360/80
Int. Cl.³ E21C *35/22*
U.S. Cl. 299—81 **7 Claims**



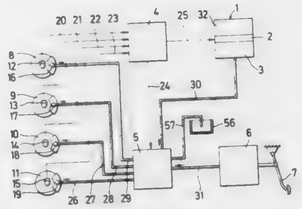
1. Device for preventing the ingress of dust through the annular gap between the cutting arm and the cutting head of a cutting machine into the interior space of the hollow cutting head within which is housed the last reduction gear stage of the cutting gear, said interior space being sealed against the annular gap by a main sealing and an additional sealing element being arranged within said annular gap outside of the main sealing, said additional sealing element being stationarily arranged on the cutting head and rotatable therewith, said device including at least one water supply conduit having a discharge nozzle carried by the cutting arm, said nozzle forming an axial or tangential jet directed against said additional sealing element.

4,389,076

ARRANGEMENT FOR THE SUPPLY OF PRESSURE TO BRAKE SLIP CONTROL APPARATUS

Fritz Ostwald, Dreieich, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 17, 1981, Ser. No. 255,123
Claims priority, application Fed. Rep. of Germany, May 21, 1980, 3019364
Int. Cl.³ B60T *8/10*
U.S. Cl. 303—92 **15 Claims**



1. An arrangement to supply pressure to a brake slip control apparatus during braking operations of automotive vehicles comprising:

a source of pressure fluid to supply necessary control pressure in wheel brake cylinders, said source of pressure fluid including

a reservoir containing a pressure fluid coupled to a control arrangement of said slip control apparatus,

a highly expansive medium disposed in said reservoir capable of acting on said pressure fluid in said reservoir, and

a device associated with a selected one of said pressure fluid and said expansive medium connected to an electronic control unit of said slip control apparatus to actuate said device at the beginning of a braking operation having locked wheels to supply said pressure fluid to said control arrangement.

4,389,077

COMPACT POSITION LOCK PARTS BIN

LaVern Schmidt, P.O. Box 234, Montezuma, Kans. 60867

Continuation-in-part of Ser. No. 72,035, Sep. 4, 1979, Pat. No. 4,266,835. This application Apr. 10, 1981, Ser. No. 253,002
Int. Cl.³ A47B *53/00, 95/02*
U.S. Cl. 312—244 **6 Claims**



1. A compact position lock parts bin, comprising, in combination, a case within which a plurality of parts holding compartments are formed; a cover lid connected to said case; first hinge means pivotally connecting said cover lid to said case; said case having a pair of side walls, said first hinges connecting said cover lid to said case at first ends of said pair of side walls, a low front wall connecting said side walls, a rear wall also connecting said side walls and spaced from said low front wall, said cover lid when in the closed position resting upon an edge of each of said pair of side walls; said case further comprising an inclined shelf means fixedly secured in said case and having a plurality of holes formed therethrough for storing

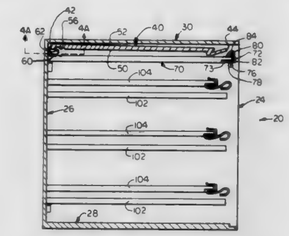
bolts and the like; and a cover means pivotally mounted to said case for movement between a first open position and a second closed position in which said second cover overlays said inclined shelf means to prevent the parts in said plurality of holes from falling out, said cover means having second hinge means pivotally connected to said case above said top edge surface of said inclined shelf means, and means on said cover means for preventing said cover means form moving to its first open position form its second closed position when said cover lid is in its closed, locked position, wherein said means for preventing on said cover means comprising a plurality of outwardly extending pegs, each said peg extending from the surface of said cover means facing said cover lid when both said covers are in their closed positions, at least some of said plurality of pegs abutting against said cover lid when both said covers are in their closed positions, wherein said case comprises a first parts compartment means at the top thereof and extending from the top of said rear wall, said second hinge means pivotally connected to said case being connected to said first compartment means, wherein said case further comprises a second parts compartment means directly below said first compartment means, said inclined shelf means being connected at its top edge surface thereof to the bottom of said second compartment means, said cover means closing off both said second compartment means and said shelf means when in said closed position; said second compartment means having an open front face by which said cover means closes off said second compartment means when in said closed position.

4,389,078

MODULAR STORAGE UNIT

Kenneth F. Streit, Mt. Prospect, Ill., assignor to Techplastics, Inc., West Chicago, Ill.

Filed Jan. 29, 1981, Ser. No. 229,650
Int. Cl.³ A47B *88/00;* **F16B** *12/00*
U.S. Cl. 312—322 **15 Claims**



1. A storage unit comprising:

a pair of opposed side walls, a rear wall, a bottom wall, and a top wall together defining a generally box-like structure having an open front;

a movable closure panel adapted to close the front of said unit, said movable closure panel having at least two side margins, a top margin, a bottom margin, and at least an interior surface adapted to face the interior of said unit when said closure panel is positioned to close the open front of said storage unit, said panel further having two protuberances, each said protuberance extending outwardly on said interior surface and downwardly at one of the side margins of the panel to overlie a portion of the panel interior surface and define a receiving notch between the portion of the panel interior surface and a facing portion of the protuberance, said notch being closed at said panel top margin and open towards said panel bottom margin;

each of the sidewalls of said unit having a closure panel support flange projecting into the interior of the storage unit, each said flange being spaced below said storage unit top wall to define a space for receiving a side margin of said closure panel whereby said panel may be stored in a horizontal position on said flanges adjacent said top wall; each said flange terminating in a front end adjacent the front of the storage unit; and

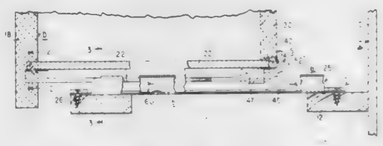
each said panel support flange having an upwardly projecting portion on the front end whereby said closure panel may be slid along the flanges of said unit from a substantially horizontal position within said unit wherein each said receiving notch is engaged by one of said flange projecting portions to pivot said panel to a substantially vertical position closing the opening at the front of said unit.

4,389,079

DRAWER SLIDE ASSEMBLY

Peter A. Cosme, R.R. 1, Box 119, Lockport, Ill. 60441

Filed Dec. 18, 1980, Ser. No. 217,802
Int. Cl.³ A47B *88/04;* **F16C** *29/00*
U.S. Cl. 312—330 R **7 Claims**



1. A drawer slide assembly for a cabinet having a cavity and a drawer slidably seated within said cavity, comprising

(a) a first channel member, comprised of a bottom web and lateral walls extending upwardly therefrom and terminating in inwardly facing flanges, said member adapted to be fixedly mounted to said cabinet,

(b) a second channel member adapted to be affixed to said drawer for nesting and sliding movement within said first channel member,

(c) a body of material having minimal frictional resistance and comprising a vertical member adapted to be affixed to the rear wall of the drawer and a horizontal member fixedly retained on the rear end of said second channel member and adjacent to said rear wall, said body including a base portion having the bottom surface thereof adapted for slidable contact with the upper surface of the web of said first channel member, and

(d) a centrally disposed sloping bridging member extending from the rearmost point of said base portion to said vertical member to facilitate the insertion of the rear end of said second channel member into the front end of said first channel member.

4,389,080

PLUG-IN CERAMIC HYBRID MODULE

Roland E. Clark; Salvatore J. DiBartolo, both of Lynchburg, Va., and Tonny L. Johansen, Stenlose, Denmark, assignors to General Electric, Lynchburg, Va.

Filed Jul. 15, 1981, Ser. No. 283,462
Int. Cl.³ H01R *13/658*
U.S. Cl. 339—14 R **5 Claims**

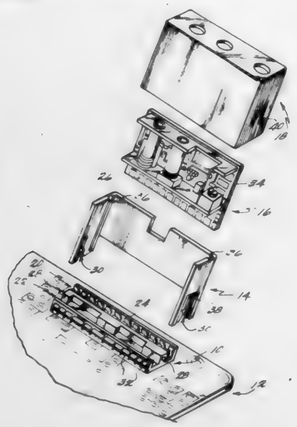
1. A hybrid circuit module for use with a printed wire board, comprising:

a circuit including a substrate and various circuit components thereon, said circuit including a plurality of contact pads formed on said substrate providing input and output connections for said circuit,

a socket, adapted for connection at a first side thereof to a printed wire board and on a second side thereof for receiving said circuit, including on said second side a plurality of metallic terminals for mechanically grasping the ceramic substrate and making electrical connection with the contact pads thereof;

a plastic retainer having a pair of grooves therein for receiv-

ing two sides of said substrate and a latch groove on a side thereof; and



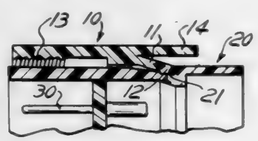
a can for surrounding and shielding said circuit, having a latch therein for mating with said latch groove, said can being electrically connected with said printed wire board through said socket.

4,389,081

ELECTRICAL CONNECTOR COUPLING RING

David O. Gallusser, Oneonta; Valentine J. Hemmer, Sidney, and Gary C. Toombs, Oneonta, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 14, 1980, Ser. No. 206,793
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—89 M **7 Claims**



1. In combination with an electrical connector of the type having: a housing having a central axis, a forward portion, a rear portion and a groove in said rear portion; at least one electrical contact mounted in said housing; and a tubular coupling member mounted to and disposed around a portion of said housing, said coupling member having a rear portion and a forward portion adapted to connect to a similar housing having at least one contact adapted to mate with said contact in said housing, the rear portion of said coupling member having: at least one inwardly and rearwardly extending finger, each finger resiliently and radially deflectable outwardly from the central axis of said housing, each finger also having an inwardly extending shoulder located in the groove in said rear portion of said housing, the improvement wherein:

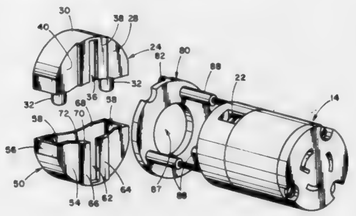
said coupling member is an integral one piece molded tubular body comprised of plastic and includes a tubular portion at the rear of the coupling member that extends over each finger whereby each finger to at least the free end thereof is protected.

4,389,082

STRAIN RELIEF CLAMP

Bhartoor Lingaraju, Allentown, Pa., assignor to Square D Company, Palatine, Ill.

Filed Oct. 23, 1980, Ser. No. 199,770
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—103 R **5 Claims**



1. An improved frictional locking non-rotatable strain-relief clamp for securing an electrical conductor which is attached to an electrical plug or socket and for relieving strain on the attachment of the conductor and plug or socket, said strain relief clamp comprising:

a first generally semi-circular clamp section having front and back walls and a curved side wall, said first clamp section also having a fastening post on each end of said first clamp section, each of said posts having a threaded aperture, said back wall having a narrow radially extending slot centered in said first semi-circular clamp section, first and second strengthening walls positioned on either side of said narrow radially extending slot for preventing breakage of said back wall, each of said front and back walls having a generally elliptical notch, said notch in said front wall having an engaging ridge for securing the conductor;

a second generally semi-circular clamp section having front and back walls and a curved side wall, said second clamp section also having a recess in each end of said second clamp section for receiving said posts of said first clamp section and a hole in each end of said second clamp section aligning with said threaded apertures in said first clamp section when said first and second clamp sections are assembled, said back wall having a radially extending narrow slot centered in said second semi-circular clamp section with first and second strengthening walls positioned on either side of said narrow radially extending slot for preventing breakage of said back wall, said front and back walls having a generally elliptical notch, said notch in said front wall having an engaging ridge for securing the conductor;

a pair of screws to be received by said holes in said second clamp section and to be threaded into said threaded apertures in said fastening posts of said first clamp section;

a ring shaped unitary adapter having two retaining T-shaped posts for slideably engaging said slots in said first and second clamp sections, said two retaining T-shaped posts being diametrically opposed on said unitary adapter, said T-shaped posts comprising substantially a rectangular support block with a center located aperture and a metal rivet extending through said aperture in said rectangular support block and through an aperture in said ring shaped unitary adapter, said head of said rivet being wider than said support block and being located on the opposite side of said support block from said ring shaped adapter, said unitary adapter also having an aperture for receiving the electrical conductor and means for fastening said adapter to an electrical plug or socket;

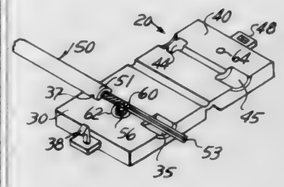
wherein the electrical conductor is first inserted through the aperture in said unitary adapter and then said first clamp section is placed on said unitary adapter with said slot in said back wall of said first clamp section being engaged by one of said retaining posts on said unitary adapter, said second clamp section is placed on said unitary adapter with said slot in said back wall of said second clamp section engaging said other retaining post on said unitary adapter, whereby said two clamp sections are moved towards one another until the electrical conductor is clamped securely between them in the notches of said first and second clamp sections and said two clamp sections are held in place by said pair of screws.

4,389,083

ELECTRICAL CONNECTOR ASSEMBLY

Richard W. Normann, Otego, and Paul D. Niles, Bainbridge, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 137,228, Apr. 4, 1980, Pat. No. 4,342,494. This application Apr. 5, 1982, Ser. No. 365,846
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—105 **9 Claims**



1. In combination, a contactless electrical connector comprising:

an insulative housing including two mateable body halves having forward and rear faces with at least one of said body halves including a conductor receiving channel therein, said channel including a first recess portion extending from the rear face forwardly, a second recess extending from the forward face rearwardly and a passage connecting the two recess portions and having an intermediate portion offset from an imaginary line passing through the recesses;

a conductor including an insulative jacket surrounding plurality of conductive wires, said conductor having the insulative jacket removed from a forward end to expose the conductive wires, the exposed wires being arranged in axial alignment, said wires having a first forward end portion extending into the channel of the housing and a second rearward portion extending into the intermediate offset portion of the passage;

means for preventing axial movement of the wires in the passage; and

means for securing the housing body halves together.

4,389,084

OBSERVING APPARATUS

Mikichi Ban, Yokohama, and Susumu Ito, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

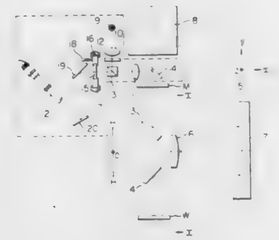
Continuation of Ser. No. 958,890, Nov. 3, 1978, abandoned. This application Apr. 14, 1980, Ser. No. 139,768
Claims priority, application Japan, Nov. 9, 1977, 52-134223
Int. Cl.³ G02B *21/06*
U.S. Cl. 350—524 **4 Claims**

4. An observing apparatus comprising:

illuminating means for emitting a predetermined polarized light to illuminate a mask for manufacture of a semiconductor circuit element;

a reflective imaging optical system for focusing an arc-shaped area image of said mask onto a wafer, said reflective imaging optical system including at least one phase mirror adapted for causing the state of polarization of light passed through said mask, then reflected by said wafer and again passed through said mask to be different from the state of polarization of said predetermined polarized light;

an observing optical system for observing said mask and wafer from the side of said illuminating means with respect to said mask; and



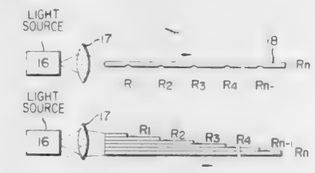
polarizing means, located in said observing optical system for differentiating a light reflected by said wafer from said predetermined polarized light.

4,389,085

LIGHTING SYSTEM UTILIZING THE SUNLIGHT

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Dec. 16, 1981, Ser. No. 216,838
Claims priority, application Japan, Feb. 22, 1978, 53-19439; Mar. 9, 1978, 53-27065; May 9, 1978, 53-54122; May 30, 1978, 53-64775; Jun. 14, 1978, 53-71844; Jul. 3, 1978, 53-80630; Aug. 19, 1978, 53-101307; Oct. 16, 1978, 53-127184
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.10 **10 Claims**



1. A solar lighting system, comprising:

at least one optical fiber light distribution means comprising (i) an optically transparent core having a lateral surface, a light receiving end and another end remote therefrom, and having a refractive index such that the light is reflected toward the surface thereof at predetermined points, (ii) an optical cladding layer substantially surrounding said core for cooperating with said core to confine light being transmitted through said fiber, to said core, and (iii) a plurality of light diffusion holes disposed at said predetermined points in said cladding intermediate said ends for permitting light to escape from said core, each of said holes being filled with a transparent optical medium having a larger refractive index than that of said core; and

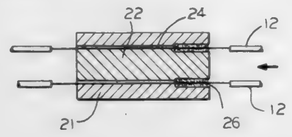
optical lens means for coupling sunlight into the light receiving end of said light distribution means.

4,389,086

FEEDTHROUGH TERMINAL COMPRISING A GUIDE MEMBER DEFINED FOR AT LEAST ONE OPTICAL FIBER CABLE BETWEEN A TUBE AND A ROD

Kahei Furusawa; Yoshihiro Ejiri; Yoshihiko Yamazaki; Tadayoshi Matsuzaki; Hiroyuki Nakashima, and Osamu Harada, all of Tokyo, Japan, assignors to Kokusai Denshin Denwa Co., Ltd. and Nippon Electric Co., Ltd., both of Tokyo, Japan

Filed May 8, 1981, Ser. No. 261,910
Claims priority, application Japan, May 12, 1980, 55-62644
Int. Cl.³ G02B *5/14;* **H01L** *33/00*
U.S. Cl. 350—96.20 **8 Claims**



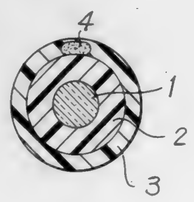
1. A feedthrough terminal for tightly supporting at least one optical fiber cable having a predetermined optical characteristic therethrough, said feedthrough terminal comprising:
- a tube of a first metal having an inside cylindrical surface defining a cylindrical hollow space, said first metal having a first thermal expansion coefficient;
- a rod of a second metal having an outside cylindrical surface and received snugly in said cylindrical hollow space with an interface provided by said inside and said outside cylindrical surfaces, said second metal having a second thermal expansion coefficient less than said first thermal expansion coefficient;
- guide means for guiding said optical fiber cable along said interface with a gap left around at least a portion of the optical fiber cable guided by said guide means; and
- a mass of solder filling said gap for fixing said tube with said rod, said solder having a third thermal expansion coefficient selected in consideration of said first thermal expansion coefficient and a fusion temperature such as not to substantially affect said predetermined optical characteristic.

4,389,087

MECHANICAL PROTECTION AND REINFORCEMENT FOR OPTICAL FIBERS

Jacques Bendayan, and Robert Jocteur, both of Lyons, France, assignors to Les Cables de Lyon S.A., Lyons, France

Continuation of Ser. No. 876,831, Feb. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 718,200, Aug. 26, 1976, abandoned. This application Sep. 21, 1979, Ser. No. 77,496
Claims priority, application France, Sep. 19, 1975, 75 28808
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.23 **3 Claims**



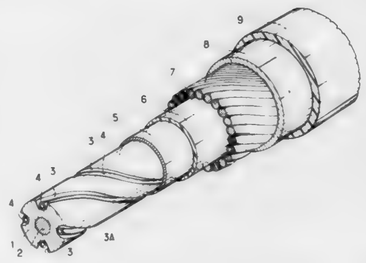
1. A reinforced optical fiber comprising: a bare optical fiber; an inner protective covering of an extrudable material of a high modulus of elasticity and in contact with said optical fiber over its whole circumference; an outer protective covering of an extrudable material of a low modulus of elasticity and concentric and in contact with said inner covering along a borderline between said inner and outer coverings over most of its circumference; at least one reinforcing supporting longitudinal cord being embedded within said outer covering and in contact with said inner covering along a portion of said borderline between said inner covering and said outer covering, said inner and outer coverings being optically inactive with respect to said optical fiber.

4,389,088

UNDERWATER OPTICAL FIBRE CABLE

Jean-Pierre Trezequet, Calais, France, assignor to Les Cables de Lyon, Lyons, France

Filed Jun. 27, 1980, Ser. No. 163,659
Claims priority, application France, Jun. 28, 1979, 79 16717
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.23 **6 Claims**



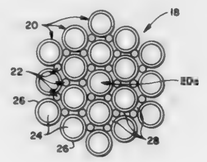
2. An underwater optical fibre cable including a central filament provided with helical grooves for receiving at least one optical fibre in each groove, the improvement wherein the groove cross-section is such that an optical fibre therein can move transversally by at least half of its transversal dimension, said central filament being made of a metal or a metal alloy, and wherein said central filament is covered successively by a first metal tube, an insulating covering, a layer of metal wires wound helically in contiguous turns, a second metal tube and a second insulating covering.

4,389,089

FLEXIBLE FIBER OPTICAL CONDUIT AND METHOD OF MAKING

Richard R. Strack, Sturbridge, Mass., assignor to Warner Lambert Technologies, Inc., Southbridge, Mass.

Filed Jul. 14, 1980, Ser. No. 168,856
Int. Cl.³ G02B *5/17;* **C03B** *23/20, 37/01*
U.S. Cl. 350—96.26 **8 Claims**



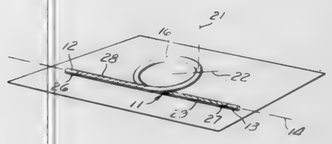
1. The method of making flexible image-conducting fiber conduit comprising:
- constructing a fiber bundle preform by juxtapositioning a plurality of glass-clad glass optical elements and interstitial rods of leachable material, the rods serving to space said elements from each other;
- heating and drawing said preform into a section of approximately the cross-sectional size desired of said conduit, said rods providing an interstitial matrix;
- cutting from said drawn section a length corresponding to the length desired of said conduit;
- covering opposite ends of said cut length of said drawn section; and
- subjecting remaining uncovered portions of said length of drawn section to a leaching medium for a time sufficient to remove said interstitial matrix.

4,389,090

FIBER OPTIC POLARIZATION CONTROLLER

Herve C. LeFevre, Los Altos, Calif., assignor to The Board of Trustees of Leland Stanford Jr. Univ., Stanford, Calif.

Filed Sep. 4, 1980, Ser. No. 183,975
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.29 **10 Claims**



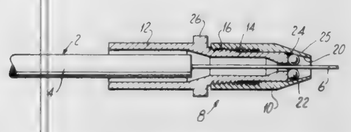
1. In a fiber optic device for controlling the state of polarization of light passing therethrough: a strand of fiber optic material having end portions and a central portion between said end portions, said central portion being bent into a generally planar coil to stress the fiber optic material to provide a birefringent medium, the end portions of the strand extending tangentially from the coil, each of the end portions being affixed in a stationary position at a predetermined point, the plane of the coil being rotated about the end portions to twist the end portions between the coil and the fixed points and to effect a change in the polarization of the light passing between the end portions of the strand.

4,389,091

METHOD AND DEVICE FOR CONNECTING OPTICAL FIBERS

Rune Lidholt, Skogsmyrsvägen 4A, 752 45 Upsala, and Ingvar Nodfelt, Hornabogatan 2, 330 30 Gnosjö, both of Sweden

Filed Feb. 11, 1980, Ser. No. 120,349
Claims priority, application Sweden, Feb. 16, 1979, 7901398
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.20 **10 Claims**



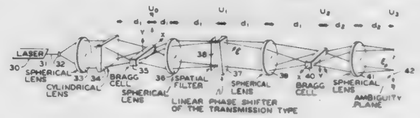
6. In a device for connecting the end portion of an optical fiber with another optical component, including a sleeve element for receiving and fixing the end portion of the optical fiber thereto, and a coupling device for receiving the sleeve element with the fiber end portion fixed therein and the other optical component with the optical fiber and the other optical component in position for optical connection with each other, wherein the sleeve element is provided with an inner surface portion which tapers toward said fiber end portion in the axial direction of the sleeve element and at least three centering elements contacting said surface portion, the centering elements constituting between themselves a central passage for clamping the fiber end portion, the improvement comprising means integral with said sleeve element for axially displacing the tapering surface portion in relation to the centering elements to displace the centering elements into clamping engagement with the surface of the fiber end portion, an outer reference surface on said sleeve element which has an exactly predetermined uniform geometric relation to said tapering surface portion of the sleeve element, so that the position of said reference surface is exactly predetermined in relation to the fiber end portion after the fiber end portion has been clamped by the centering elements, and a guiding surface on said coupling device conforming to said outer reference surface and adapted to be engaged by said reference surface when the sleeve element is received in the coupling device disposed in predetermined position in the coupling device so that said engagement between said guiding surface and said reference surface positions the end surface of the fiber end portion in correct position in relation to the other optical component.

4,389,092

HIGH SPEED AMBIGUITY FUNCTION EVALUATION BY OPTICAL PROCESSING UTILIZING A SPACE VARIANT LINEAR PHASE SHIFTER

Poohsan N. Tamura, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 29, 1980, Ser. No. 173,319
Int. Cl.³ G06G *9/00;* **G01S** *13/58*
U.S. Cl. 350—162.12 **9 Claims**



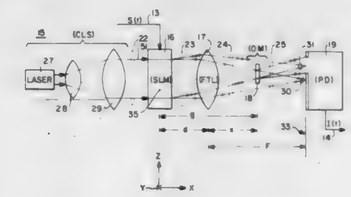
1. An optical system utilizing a beam of substantially coherent light to create the ambiguity function arising from a first signal and a second signal, said system comprising:
- a first data input means for coding said light beam with said first signal;
- a first Fourier Transform lens lying in the path of the coded light beam and a Fourier Transform Plane associated therewith;
- a linear phase shifter lying in the path of said coded light beam in said Fourier Transform plane;
- a second data input means for coding the phase shifted light beam with said second signal; and
- a final Fourier Transform lens means lying in the path of said light beam for producing the ambiguity function at an ambiguity plane.

4,389,093

METHOD AND APPARATUS FOR COHERENT DETECTION IN OPTICAL PROCESSORS

David W. Jackson, San Jose, Calif., assignor to Probe Systems, Inc., Sunnyvale, Calif.

Filed Mar. 23, 1981, Ser. No. 246,286
Int. Cl.³ G06G *9/00;* **G02B** *5/32*
U.S. Cl. 350—162.14 **26 Claims**



1. An optical processor apparatus comprising:
a light source for providing a coherent source beam,

a spatial light modulator for modulating the source beam with an input information signal to produce a modulated beam, said modulated beam diverging into spacially separated frequency components including a zero frequency component from said source beam,

reference beam generator means for forming a reference beam from said zero frequency component such that said reference beam appears to diverge from a reference point,

an optical detector having an aperture positioned for receiving said reference bean and particular ones of said spatially separated frequency components whereby said particular ones of said spatially separated frequency components are coherently detected to produce an output information signal as a function of the input information signal.

4,389,094

PROCESS FOR CASTING ON A SUPPORT THE FAITHFULL REPRODUCTION OF A MASK PIERCED WITH PERIODICALLY DISTRIBUTED SLITS

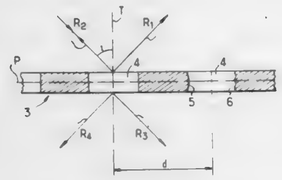
Jean-Louis A. Roumiguieres, 69 boulevard Desgranges, 92330 Sceaux, France, and Michel J. Neviere, Marseilles, France, assignors to Jean-Louis A. Roumiguieres, Sceaux, France

Filed Sep. 5, 1980, Ser. No. 184,265

Claims priority, application France, Sep. 10, 1979, 79 22554

Int. Cl.³ G02B *5/18*

U.S. Cl. 350—162.17 **3 Claims**



1. A process for obtaining a cast shadow reproduction of a mask on a support wherein the mask is pierced with fine periodically distributed parallel slits, comprising the steps of:

illuminating said mask with a plane monochromatic wave which is polarized perpendicular to its plane of incidence so that the electric field vector is parallel to said slits;

choosing the wavelength of said plane incident wave so that there exist only two diffracted orders, one for each one of two half-spaces which are situated on each side of the mean plane of the mask; and

adjusting the angle of incidence of said plane wave so that the −1 reflected order is propagated in the direction opposite to the direction of the incident wave.

4,389,095

MULTI-COLORED LIQUID CRYSTAL DISPLAY DEVICE WITH CHARACTERS NOT DISPLAYING SHIFTS IN POSITIONS EVEN UPON COLOR CHANGES

Toru Teshima, Yokohama; Kazuo Ariga, Tokyo, and Takao Kasahara, Sagamihara, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 134,121, Mar. 26, 1980, abandoned. This application Oct. 10, 1980, Ser. No. 195,868

Claims priority, application Japan, Apr. 6, 1979, 54-41573

Int. Cl.³ G02F *1/13*

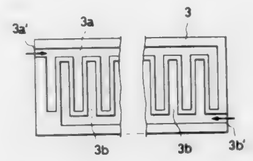
U.S. Cl. 350—334 **5 Claims**

1. A multi-colored liquid crystal display device having a viewing surface comprising:

at least one display section exhibiting a given display pattern, said at least one display section including a plurality of closely adjacent display segments, the spacing between adjacent display segments being from about 0.5 to about 0.1 mm and each display segment having a width of from about 0.05 to about 0.1 mm, each of said display segments exhibiting substantially the same said given display pattern and each said display segment including means for receiving liquid crystals therein;

said display segments of said at least one display section being adjacent each other in a direction substantially along said viewing surface and being so closely adjacent each other that, to a viewer, they appear to be in substantially the same position on said display device;

liquid crystals of respective different absorption spectra sealed in adjacent display segments of said at least one display section, each display segment of said at least one



display section containing liquid crystals of a different absorption spectrum such that said adjacent display segments provide respective different color displays when energized; and

a source of electrical power coupled to said display segments for selectively energizing respective display segments of said at least one display section to selectively produce a display of said given display pattern in different colors without substantially changing the apparent position of said given display pattern with respect to a viewer.

4,389,096

IMAGE DISPLAY APPARATUS OF LIQUID CRYSTAL VALVE PROJECTION TYPE

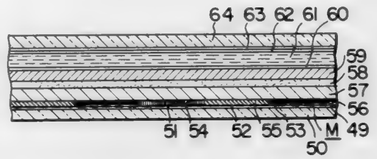
Yoshikazu Hori; Komei Asai, both of Hirakata, and Masakazu Fukai, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 561, Dec. 26, 1978, abandoned. This application Feb. 23, 1981, Ser. No. 237,471

Claims priority, application Japan, Dec. 27, 1977, 52/157632; Dec. 27, 1977, 52/157633; Dec. 27, 1977, 52/157634; Dec. 27, 1977, 52/157635; Feb. 21, 1978, 53/19430; Apr. 20, 1978, 53/47341

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—339 R **16 Claims**



1. A liquid crystal light valve projection color image display apparatus comprising:

an electro-optic element comprising a pair of substrates; a nematic liquid crystal layer interposed between said substrates and having optic anisotropy; electric field applying means for applying to said nematic liquid crystal layer a patterned electric field which has a plurality of different striped electric field patterns each associated with a respective different region of said liquid crystal layer to form a plurality of different diffraction gratings, each having a different diffraction pattern; in said regions of said liquid crystal layer, each of said different diffraction gratings having a respective fixed spatial diffraction period; means for forming from at least one applied image signal a plurality of color separated input image signals in said electro-optic element each said color separated image signal being formed in a different region of said electro-optic element containing a respective diffraction grating, said electro-optic element forming a plurality of separate diffracted color images from said applied input image by means of said plurality of different diffraction gratings;

means for applying at least one input image signal to said electro-optic element; and,

a Schlieren optical system for projecting said separate color images formed in said electro-optic element onto a projection surface.

16. A liquid crystal light valve projection image display apparatus comprising:

an electro-optic element including a pair of substrates, a nematic liquid crystal layer and a photoconductive layer arranged in series and interposed between said substrates, said nematic liquid crystal layer having a dielectric and optic anisotropy, a light blocking mask having striped openings at a fixed spatial period disposed on an input light side of said photoconductive layer, a first means including said mask and photoconductive layer for supplying a first electric field in a two-dimensional voltage pattern having a fixed striped spatial period to said liquid crystal layer to produce first areas of said layer where the molecules thereof are reoriented away from a predetermined molecular orientation by a voltage potential of said electric field and second areas of said layer not exposed to a voltage potential of said electric field where said molecules continue to have said predetermined molecular orientation, thus forming a phase diffraction grating in said liquid crystal layer, and second means for supplying said liquid crystal layer with a second electric field having a spatially distributed intensity corresponding to an electrical or optical input image signal representing a two-dimensional image;

image supply means for electrically or optically supplying said input image signal to said electro-optic element; and,

a Schlieren optical system for projecting image information formed in said liquid crystal layer as said phase diffraction grating on a screen by using light diffracted from said phase diffraction grating.

4,389,097

OCULAR OPTICAL SYSTEM

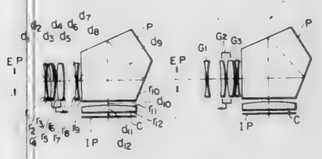
Michiro Ohishi, Hatoyama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,899

Claims priority, application Japan, Dec. 26, 1979, 54-169659

Int. Cl.³ G02B *25/04*

U.S. Cl. 350—410 **6 Claims**



1. An ocular optical system having a wide diopter adjustment range comprising, in order from the viewing side, a first lens component having a negative refracting power, a second lens component having a positive refracting power, a third lens component having a negative refracting power, a pentaprism, and a condenser lens component, wherein the second lens having the positive refracting power is movable for diopter adjustment, said optical system satisfying the following conditions:

$$F_1<0,\ 0.7F<|F_1|<F. \quad (1)$$

$$0.35F<F_{1.2}<0.55F, \text{ and} \quad (2)$$

$$1.4<(\nu_2+\nu_3)/(\nu_1+\nu_4)<1.8, \quad (3)$$

where F is the overall focal length of the optical system, $F_{1.2 \ldots i}$ is the resultant focal length up to the i-th lens group, and ν_i is the Abbe number of the i-th lens from the viewing side.

4,389,098

ZOOM LENS BARREL

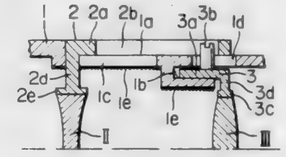
Syousuke Fukushima, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1980, Ser. No. 181,615

Claims priority, application Japan, Aug. 29, 1979, 54-117961[U]

Int. Cl.³ G02B *7/10*

U.S. Cl. 350—429 **4 Claims**



1. In a zoom lens having at least two movable lenses, the combination of a fixed barrel having at least two outwardly positioned smooth supporting surfaces, means forming an optically axial linear slot and a first cam slot oblique to the optical axis in one of said surfaces, an operating member having a second cam slot therein slidably mounted in said linear slot on one of said smooth supporting surfaces, a first lens system supported from said operating member, a driven member slidably supported on one of said smooth supporting surfaces, a second lens system supported from said driven member, and pin means mounted on said driven member and extending vertically therefrom into said first and second cam slots, whereby movement of said operating member in said linear slot causes sliding movement of said operating member and said driven member on the said outer surfaces of said barrel and axial movement of said two lens system relatively to one another.

4,389,099

PHOTOGRAPHIC LENS SYSTEM

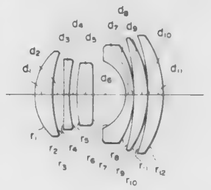
Toshihiro Imai, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 15, 1981, Ser. No. 283,459

Claims priority, application Japan, Jul. 17, 1980, 55-97781

Int. Cl.³ G02B *9/62*

U.S. Cl. 350—464 **5 Claims**



1. A photographic lens system comprising: a front lens group consisting of a first lens component of a positive meniscus lens with its convex surface on the object side, a second lens component of a biconcave lens and a third lens component of a biconvex lens; and a rear lens group consisting of a fourth lens

component of a negative meniscus lens with its convex surface on the object side, a fifth lens component of a positive meniscus lens with its convex surface on the image side and a sixth lens component of a positive meniscus lens with its convex surface on the image side, said lens system satisfying the following conditions:

$$1.2<f/f_{123}<1.8 \quad (1)$$

$$-1.3<f/f_{456}<-0.3 \quad (2)$$

$$0.16<d_6/f<0.175 \quad (3)$$

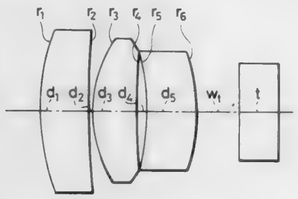
wherein the reference symbol f represents the focal length of the entire lens system, the symbol f_{123} represents the focal length of the front lens group, the symbol f_{456} represents the focal length of the rear lens group, and the symbol d_6 represents the axial air space between the front and rear lens groups, respectively.

4,389,100

OBJECTIVE SYSTEM FOR VIDEO DISC

Takahiro Sugiyama, and Yukio Hagiwara, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1982, Ser. No. 358,778
Claims priority, application Japan, Mar. 18, 1981, 56-38845
Int. Cl.³ G02B *9/12, 21/02*
U.S. Cl. 350—478 **3 Claims**



1. An objective system for a video disc, comprising: a first lens component including a positive meniscus lens convex to the light source, a second lens component including a positive meniscus lens convex to the light source, a third lens component including a positive meniscus lens concave to the light source and having a relatively long focal length, and a cover glass for said video disc, said objective system satisfying the following conditions:

$$F/0.55<F_1<F/0.25 \quad (1)$$

$$F/1.0<F_2<F/0.5 \quad (2)$$

$$F_3>F/0.15 \quad (3)$$

$$F<|r_5|<3F,\ r_5<0 \quad (4)$$

$$d_2<0.2F \quad (5)$$

$$d_4<0.3F \quad (6)$$

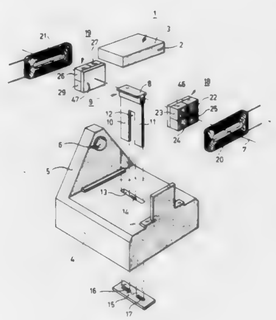
where F is the resultant focal length of the overall lens system, F_i is the focal length of the i-th lens component, r_i is the radius of curvature of the i-th surface, d_i is the thickness or air gap of the i-th lens, and N_i is the refractive index of the i-th lens.

4,389,101

DEVICE FOR PIVOTING AN OPTICAL ELEMENT UNDER ELECTRO-DYNAMIC CONTROL

Gerard E. van Rosmalen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,880
Claims priority, application Netherlands, Mar. 19, 1980, 8001617
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—486 **3 Claims**



1. A device for pivoting an optical element, such as a pivoting mirror (**1**) for an optical video disc player, under electrodynamic control, which device comprises:

a frame (**4**),

an optical element (**1**) which is supported by the frame so as to pivotable about a pivoting axis (**7**),

a pivotal bearing arrangement for pivotably supporting the optical element (**1**) on the frame (**4**) and comprising pivotable bearing means (**8**) connected to the optical element and stationary bearing means (**9**) connected to the frame,

permanent magnetic means (**22–25**; **26–29**), connected to the optical element, on at least one side of the optical element, and

control-coil means (**20**; **21**), connected to the frame, for generating an electromagnetic control field and thereby exerting a pivoting moment on the permanent magnetic means, characterized in that

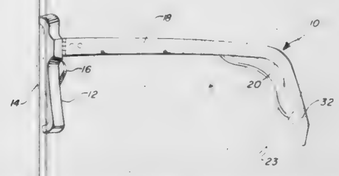
the permanent magnetic means (**22–25**; **26–29**) are situated on at least one of the axial sides of the optical element (**1**), that, on each axial side where permanent magnetic means are situated, said means comprise two zones of north polarity (N) and two zones of south polarity (S), that said magnetic zones are situated in a plane perpendicular to the pivoting axis (**7**), that the North zones (N) are situated diametrically opposite each other at equal distances from the pivoting axis (**7**) and the south zones (S) are also situated diametrically opposite each other at equal distances from the pivoting axis (**7**), that the control coil means comprise a control coil (**20**; **21**) having turns (**35**; **30**) with parallel sides (**31–34**; **36–39**) which extend over a permanent magnetic zone and having portions (**40–42**; **43–45**) connecting said parallel sides, which portions are situated outside the magnetic zones, that the pivoting axis (**7**) extends through the centre of the control coil, and that relative to the permanent magnetic means (**22–25**; **26–29**) the control coil (**20**; **21**) is oriented in such a way that each of the said parallel sides (**31–34**; **36–39**) of each winding (**35**; **30**) is parallel to an imaginary connecting line between a zone of north polarity (N) and a zone of south polarity (S).

4,389,102

EYEGLASS TEMPLE BAR RETAINING MEANS

Carl P. Piampiano, 262 Seminole Rd., Atlantic Beach, Fla. 32233

Filed Nov. 17, 1980, Ser. No. 207,384
Int. Cl.³ G02C *5/14, 1/00, 3/00*
U.S. Cl. 351—123 **11 Claims**



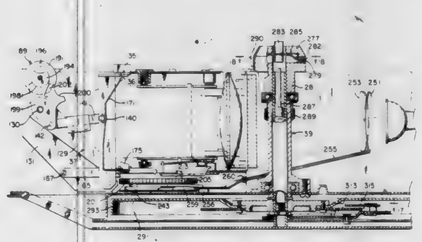
1. In an articulated eyeglass frame provided with lens windows from which there project rearwardly a pair of substantially horizontal temple bars having downardly extending curved ear hooks at their distal ends, the improvement comprising: at least one elastic cord connected at one of its ends to the juncture region between each temple bar and its curved ear hook and at its other end to the lower end of the ear hook and extending in chordal fashion across the hook to partially wrap itself at the back of a user's ear so as to yieldingly urge the temple bars rearwardly on the head of the user.

4,389,103

SLIDE PROJECTOR HAVING TWO IMAGE-PROJECTION SYSTEMS WHICH OPERATE WITH A SINGLE SLIDE TRAY

Gideon A. Kramer, Seattle, Wash., assignor to Source Technology Corporation, Mukilteo, Wash.

Filed Jul. 24, 1981, Ser. No. 286,520
Int. Cl.³ G03B *23/08, 23/12*
U.S. Cl. 353—25 **6 Claims**



1. In a slide projector which includes a single circular slide tray having a central opening therein, an apparatus for driving the slide tray, comprising:

a central hub means, on which the slide tray may be positioned;

means locking the slide tray to said central hub in a known relationship thereto;

drive disc means secured to said central hub;

powered means for rotating said drive disc, and hence said central hub;

means for sensing the amount of rotational movement of said central hub; and

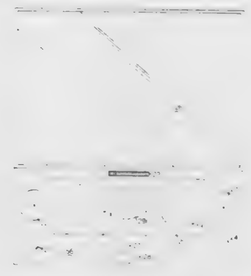
means for initially aligning a reference point of said central hub with a reference indicia of said sensing means, so that the initial position of the slide tray is known and so that thereafter the position of the slide tray may be ascertained from the amount of rotational movement of said central hub.

4,389,104

MICROFILM CASSETTE AND THE PROJECTION APPARATUS FOR THE VIEWING OF SAME

Dominique Ausseil, 16, Allee de la Teurtais, 35300 Fougeres, France

Filed Oct. 16, 1980, Ser. No. 197,574
Int. Cl.³ G03B *21/11, 21/28, 23/02*
U.S. Cl. 353—26 R **9 Claims**



1. A microfilm device comprising a cassette having an integral pair of cylindrical chambers joined in separated positions by closely spaced parallel flat surfaces for holding a film in an optical plane of a format area, whereby film may be transported from either chamber between the flat surfaces and through the format area to the other chamber, a chassis having an optical system with an optical axis for projecting an image which is in said optical plane in said format area, cradle means mounted on said chassis and configured with complementary contours for matingly and slidingly receiving said joined chambers in order to support said cassette with a transverse sliding movement of said cassette to an operating position within the cradle means at locations relative to said chassis in order to position said format area in an optical path, shafts associated with said cylindrical chambers for winding and transporting said film in either direction between said chambers while the cassette is in said cradle means, and means for transmitting driving forces to said shafts.

4,389,105

DEVICE FOR DETECTING COINCIDENT FOCUSING POINTS

Kiyoshi Kitai; Takeo Saito; Takashi Segawa, and Yoichi Seki, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,742
Claims priority, application Japan, Nov. 18, 1977, 52-138740
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—25 **7 Claims**



1. Device for detecting coincident focusing points of two different light paths, comprising: a plurality of light receiving elements forming a single array for receiving light incoming from the two different light paths to produce sets of signals $A_1 \ldots A_n$ and $B_1 \ldots B_n$, means for cutting off the first light path so that the incoming light of the second light path is received

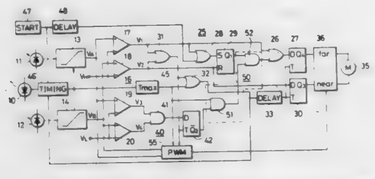
by said light receiving elements, means for forming the ratio between the output signals $A_1 \ldots A_n$ of each of the elements with respect to another of signals $A_1 \ldots A_n$ and for storing same, means for thereafter applying the incoming light in said first light path and said second light path simultaneously or the incoming light in the first light path to said light receiving elements, means for forming the ratio between the output signals $B_1, \ldots B_n$ of each of the elements with respect to another of signals $B_1 \ldots B_n$, means for comparing the ratios with the stored ratios and for producing a signal when the ratio between the similar elements are coincident with each other.

4,389,106

FOCUSING CONTROL DEVICE

Takashi Maruyama, Suwa, Japan, assignor to Chinon Kabushiki Kaisha, Nagano, Japan

Filed Jul. 10, 1981, Ser. No. 282,027
Claims priority, application Japan, Aug. 6, 1980, 55-107900
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—25 **4 Claims**



1. In a lens focusing device of the type having first and second range finding elements for generating first and second signals, first and second integrator circuits respectively receiving said first and second signals and providing outputs relative to one another according to the state of focus, the output of said first integrator circuit being larger than the output of said second integrator circuit in the case of a front focusing condition and the output of said second integrator circuit being larger than the output of said first integrator circuit in the case of a rear focusing condition, and a direction discriminating and storing means responsive to the outputs of said first and second integrator circuits for determining the direction of movement of a lens, the improvement comprising the combination of

focusing tolerance range discriminating and storing means responsive to the outputs of said first and second integrator circuits for determining whether or not focusing of said lens is within a focusing tolerance range,

timing means for starting a clocking operation when the integration of said first and second integration circuits is started and stopping said clocking operation when the output of one of said first or second integration circuits reaches a predetermined threshold value, and

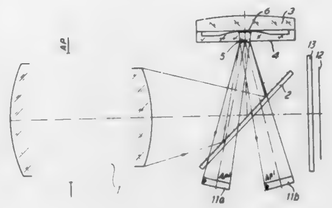
infinity focus discriminating means responsive to said direction discriminating and storing means, said focusing tolerance range discriminating and storing means and said timing means for causing said lens to move to the infinity focus position when said clocking operation has clocked a predetermined longest integration time only under the conditions that said focusing tolerance range discriminating and storing means stores the fact that focusing of said lens is out of a focusing tolerance range and said direction discriminating and storing means stores the fact that said lens is in a front focusing condition.

4,389,107

FOCUSING DEVICE FOR CAMERAS

Michael Lenk, Pirna, and Gottfried König, Dresden, both of German Democratic Rep., assignors to Veb Pentacon Dresden Kamera und Kinowerke, Dresden, German Democratic Rep.

Filed May 15, 1981, Ser. No. 264,159
Claims priority, application German Democratic Rep., May 16, 1980, 221144
Int. Cl.³ G03B *7/08*
U.S. Cl. 354—25 **1 Claim**



1. In a monocular reflex camera comprising a housing, an objective mounted on said housing, a film support plane disposed on the optical axis of the objective, and a shutter between said objective and film support plane and closely adjacent the latter, the provision of a partially light transmitting reflex mirror between said objective and said shutter and inclined to said optical axis of 45° thereto, a composite image field lens of which one portion at the light input side thereof has a convex rear surface, positioned on one side of the mirror to receive the reflected image of the object for the purpose of viewing, a pair of photoelectric cells disposed within the housing and positioned on the other side of said reflex mirror, a pair of image dividing wedges provided centrally of the image field lens at the input side thereof at a distance from said reflex mirror at the optical axis equal to the distance from said reflex mirror at the optical axis to said film support plane, said wedges extending over a mirror central portion of said image field lens, and a concave mirror formed on said convex rear surface of the first part of said image field lens and extending over an area of substantially the same size as the area covered by said wedges, said concave mirror serving to reflect the two images from the wedges back through the wedges to the photoelectric cells which provide an electrical output indicative of the sharpness of focus.

4,389,108

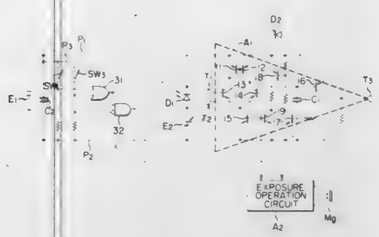
POWER SUPPLY CONTROL CIRCUIT IN A CAMERA

Yoshiaki Ohtsubo, Kawasaki; Sakuji Watanabe, Warabi, and Ryuzo Motoori, Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 268,684, Jun. 1, 1981, abandoned, which is a continuation of Ser. No. 73,422, Sep. 7, 1979, abandoned. This application Mar. 17, 1982, Ser. No. 359,031
Claims priority, application Japan, Sep. 14, 1978, 53/113015
Int. Cl.³ G03B *7/083*
U.S. Cl. 354—50 **2 Claims**

1. In a camera having a light metering circuit including a light receiving element for receiving light from the object to be photographed and a circuit for amplifying output from the light receiving element, said amplifying circuit including a differential amplifier and capacitor means for preventing oscillation of said differential amplifier; means for controlling exposure based on the output from the metering circuit; first switch means actuated at a first step of a shutter release operation to permit power to flow from a source to the metering circuit; and second switch means actuated at a second step of the shutter release operation following said first step to trigger said exposure control means; the improvement wherein said amplifying circuit further comprises:

means for connecting said capacitor means across said source; and



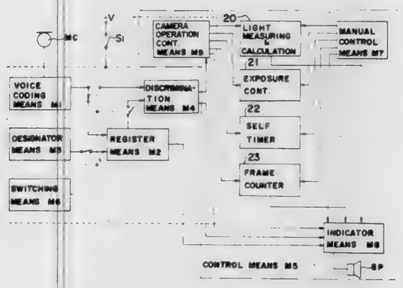
third switch means operatively associated with said first switch means for controlling operation of said differential amplifier.

4,389,109

CAMERA WITH A VOICE COMMAND RESPONSIVE SYSTEM

Nobuyuki Taniguchi, Sakai; Masaaki Nakai, Nara; Tokuji Ishida, Daito, and Isamu Uchida, Kawachinagano, all of Japan, assignors to Minolta Camera Co., Ltd., Osaka, Japan

Filed Dec. 29, 1980, Ser. No. 220,777
Claims priority, application Japan, Dec. 31, 1979, 54-171491
Int. Cl.³ G03B *17/18, 17/40;* **G10L** *1/00*
U.S. Cl. 354—60 L **50 Claims**



1. A control system for a camera which performs a plurality of operations, said system comprising:

switching means for selectively bringing the control system to one of a learning mode and a working mode;

voice coding means for coding a voice command to a recognizable pattern and for producing a voice feature signal;

register means having a plurality of sections each being capable of registering one voice feature signal during said learning mode such that a plurality of voice feature signals corresponding to said plurality of camera operations are registered in said register means;

designator means operable during said learning mode for designating said plurality of sections of said register means for registering said plurality of voice feature signals to respective designated sections;

discriminator means operable during said working mode for discriminating one of said plurality of sections carrying a voice feature signal which correlates with a newly obtained voice feature signal;

control means for controlling the camera such that the camera performs one of the operations commensurate with the section discriminated by the discriminator means, and

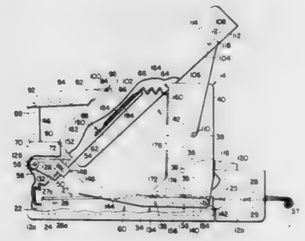
means for producing an exposure data signal and an exposure data indication means, wherein said control means further includes means for reading out an exposure data signal from said exposure data signal producing means corresponding to the discriminated section of said register means and means for actuating said exposure data indication means to indicate an exposure datum commensurate with the read-out exposure data signal.

4,389,110

FOLDING CAMERA

Donato F. Pizzuti, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 28, 1981, Ser. No. 334,979
Int. Cl.³ G03B *17/04, 15/03*
U.S. Cl. 354—126 **29 Claims**



1. A folding camera comprising:

a first housing section including means for supporting a film unit at a film plane located within said first housing section;

a second housing section mounting an objective lens, said second housing section being pivotally coupled to said first housing section, adjacent one end of said film plane, for movement between an upstanding operative erected position wherein the optic axis of the lens is set at a predetermined non-perpendicular angle with respect to said film plane and a folded inoperative storage position wherein said second housing section is folded back over said first housing section so that at least a portion of said second housing section overlies said film plane;

a mirror assembly including a mirror and means for pivotally coupling said mirror to said first housing section, adjacent the end of said film plane opposite said one end thereof, for movement between an operative erected position wherein a reflective surface of said mirror is set at a predetermined angle with respect to said film plane and said optic axis when said second housing section is at said erected position for reflecting image forming light rays transmitted by said lens onto said film plane to expose a film unit thereat and an inoperative folded storage position wherein at least a portion of said mirror overlies at least a portion of said film plane and is located between said film plane and at least a portion of said second housing section located at its said storage position; and

means for interconnecting said mirror assembly and said second housing section for coordinated movement in response to movement of said second housing section from its said storage position toward its said erected position for effecting movement of said mirror assembly from its said storage position to its said erected position and also responsive to movement of said second housing section from its erected position toward its said storage position for effecting movement of said mirror assembly from its said erected position to its said storage position.

4,389,111

CAMERA

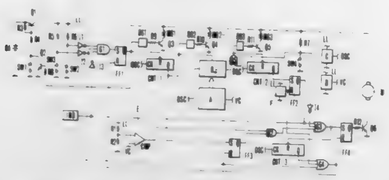
Masanori Uchidoi, Yokohama; Yoshihiro Shigeta, Tokyo; Ryoichi Yoshikawa, Yokohama; Yoichi Tosaka, Shukujii, and Shosuke Haraguchi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,361

Claims priority, application Japan, Aug. 28, 1980, 55-118621[U]

Int. Cl.³ G03B *1/18*

U.S. Cl. 354—173 **7 Claims**



3. A camera comprising:

(a) shutter means including a shutter for opening and closing a shutter opening;

(b) shutter release means for opening the shutter;

(c) a shutter timer circit for counting a shutter time and producing a signal when the shutter time lapses;

(d) electromagnetic means for closing the shutter means in response to the signal from the shutter time circuit;

(e) shutter detecting means for detecting if said shutter means has performed a closing operation;

(f) a motor for charging said shutter means in response to the detection by said shutter detection means that said shutter means has performed the closing operation; and

(g) voltage detecting means for detecting a voltage of a power source and for producing a signal when said voltage becomes less than a predetermined value;

said motor being arranged to be actuated in response to the signal of said voltage detecting means independently of the operation of said shutter detecting means.

4,389,112

TRANSFER SHEET SEPARATING/CONVEYING APPARATUS FOR USE IN ELECTROPHOTOGRAPHIC COPYING MACHINES

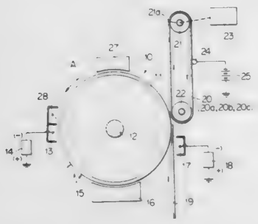
Yoshihiro Ogata, and Yoshihiro Abe, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Japan

Filed Dec. 5, 1980, Ser. No. 213,687

Claims priority, application Japan, Dec. 10, 1979, 54-160074; Dec. 29, 1979, 54-173782; Jan. 19, 1980, 55-5000; Jan. 19, 1980, 55-5001

Int. Cl.³ G03G *15/16, 15/22*

U.S. Cl. 355—3 TR **21 Claims**



1. An apparatus for separating and conveying a transfer sheet for use in an electrophotographic copying machine in which a toner is deposited on an electrostatic latent image formed on the surface of a photosensitive drum to provide a toner image which is then transferred onto a transfer sheet under application of a transfer field and the transfer sheet is subsequently separated from the drum; characterized by the provision of

a transfer sheet separating/conveying member formed of an electrically conductive material and having a conductive surface in contact with said transfer sheet and disposed downstream of a transfer station where the transfer step takes place, as viewed in the direction of the drum,

support means associated with the separating/conveying member for positioning part thereof close to or in contact with the drum surface,

drive means for causing a movement of the separating/conveying member in a direction such that it moves in the same direction as the drum surface where it is opposed to the latter, and

a power supply means for applying a voltage of the same polarity as that of the transfer sheet to the separating/conveying member.

4,389,113

IMPROVED DEVELOPING DEVICE FOR TWO-COLOR ELECTROPHOTOGRAPHIC COPYING APPARATUS

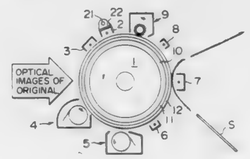
Fuyuhiko Matsumoto, Wako; Kunihiko Ikeda, Kodaira, and Shuichi Tsushima, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 8, 1981, Ser. No. 261,782

Claims priority, application Japan, May 15, 1980, 55-116426

Int. Cl.³ G03G *15/09*

U.S. Cl. 355—3 DD **13 Claims**



1. In a two-color electrophotographic copying apparatus for making two-color copies from two-color originals, by forming two latent electrostatic images with opposite polarities on a latent electrostatic image bearing member and developing the two latent electrostatic images successively by developers charged to opposite polarities which developers are respectively held in a first magnetic development apparatus and in a second magnetic development apparatus, the improvement wherein at least said first development apparatus comprises:

a magnetic roller comprising a non-magnetic sleeve with an inner magnet, which non-magnetic sleeve is rotatable relative to said inner magnet, and attracts developer to the peripheral surface thereof through the magnetic force of said magnet disposed inside said non-magnetic sleeve, and transports the attracted developer to a development section between the gap between said non-magnetic sleeve and the surface of said latent electrostatic image bearing member, said non-magnetic sleeve having ridges and grooves capable of retaining said développer therein on the surface thereof during development, the height of said ridges from the bottom of said grooves being in the range of 0.5 mm to 2.5 mm.

4,389,114

ROLL FIXING APPARATUS FOR A COPYING MACHINE

Theodore N. Westerman, Easton, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 25, 1982, Ser. No. 342,562

Int. Cl.³ G03G *15/00, 15/20*

U.S. Cl. 355—3 FU **5 Claims**

1. In an electrophotographic copying machine having instru-

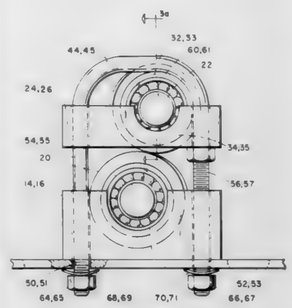
mentalities for producing a toner image on a copy sheet, a device for fixing the toner image onto the copy sheet, said device comprising:

A. a support means,

B. a pair of spaced apart lower end blocks resting on said support means,

C. a lower pressure roller extending between said spaced apart lower end blocks,

D. lower bearing means mounted on said lower pressure roller supported by said pair of lower end blocks for rotatably supporting said lower pressure roller,



E. an upper pressure roller resting on said lower pressure roller,

F. upper bearing means mounted on said upper pressure roller for rotatably supporting said upper pressure roller, and

G. clamping means engaging said upper bearing means, said lower end blocks and said support means for pressing said upper and lower pressure rollers together under substantially high pressure and for mounting said device on said support means.

4,389,115

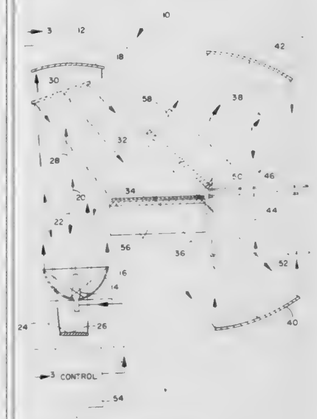
OPTICAL SYSTEM

Thomas A. Richter, 711 15th St., Hermosa Beach, Calif. 90254

Filed Aug. 6, 1981, Ser. No. 290,435

Int. Cl.³ G03B *27/32, 27/52*

U.S. Cl. 355—26 **14 Claims**



1. An optical system comprising:

a light source, a reflector positioned with respect to said light source to direct a substantial amount of light from said light source along a beam path;

a plurality of optical elements positioned along said beam path, said optical elements comprising an integrator mirror having a plurality of facets and at least two curved mirrors, said beam path terminating at a focal plane, said optical elements being configured so that light arriving at said focal plane from said lamp is substantially collimated and is substantially uniformly distributed over said focal plane.

4,389,116

METHOD AND APPARATUS FOR MANUFACTURING SEAMLESS PRINTING ROLL

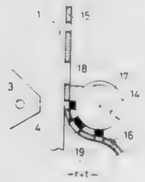
Bruno Vogel, Hubeweg, Fed. Rep. of Germany, assignor to N.V. APR Europe S.A., Brussels, Belgium

Division of Ser. No. 108,096, Dec. 28, 1979, Pat. No. 4,298,680. This application Jun. 17, 1981, Ser. No. 274,600

Claims priority, application Japan, Feb. 14, 1979, 54-15824

Int. Cl.³ G03B *27/04*

U.S. Cl. 355—85 **11 Claims**



1. Apparatus for manufacturing a seamless printing roll comprising: a rigid plate which is transparent to an actinic light; an actinic light source provided on one side of said rigid plate; means for supporting a process cylinder, said means being provided on the side of said rigid plate opposite said light source, means for adjusting the space between said rigid plate and said process cylinder, means for delivering a photo-sensitive material into said space during relative movement of said rigid plate with respect to the rotary shaft of said process cylinder to form a photo-sensitive layer on said process cylinder, and means for effectuating said relative movement wherein said photo-sensitive layer is formed to a predetermined thickness on said process cylinder and is simultaneously exposed with an image.

4,389,117

MICROFICHE SEPARATOR AND TRANSPORT APPARATUS

Thomas D. Floyd, Morris Township, Morris County, N.J.; Roland D. Nelson, and Ronald L. Bonagura, both of San Jose, Calif., assignors to Consolidated Micrographics, Inc., Laguna Niguel, Calif.

Filed May 21, 1981, Ser. No. 266,111

Int. Cl.³ G03B *27/20*

U.S. Cl. 355—87 **14 Claims**

1. An apparatus for separating and transporting a fiche master in a fiche duplicating machine, comprising:

a magazine for holding a stack of fiche masters;

a platen movable between a home position and a copying station of the duplicating machine;

carriage means movable between a first and a second position;

first vacuum means on the carriage means operable between an initial position and a final position against the stack;

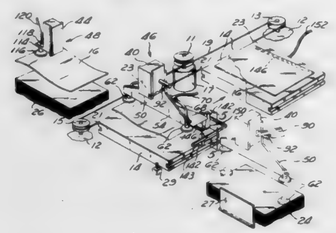
first actuator means for operating the first vacuum means from the initial to the final position;

first biasing means for operating the first vacuum means from the final to the initial position to effect lifting of a second fiche from the top of the stack;

second vacuum means on the carriage means operable between an initial position and a final position against a first fiche master on the platen;

second actuator means for operating the second vacuum means from the initial to the final position in timed relation with the operation of the first vacuum means;

second biasing means for operating the second vacuum means from the final to the initial position to effect lifting of the first fiche master from the platen;



drive means for moving the carriage means from the first to the second position to transport the first fiche master from the platen to an exit hopper and to transport the second fiche master from the stack to the platen; and

means for moving the platen from the home position to the copying station to perform a copying operation and return to the home position following the copying operation.

4,389,118

COLOR METER

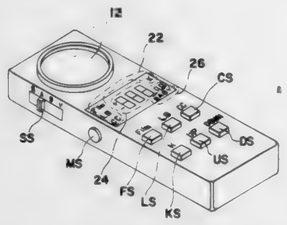
Yoshio Yuasa, Kawachinagano; Norio Ishikawa, Osaka, and Izumi Horie, Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Azuchi, Japan

Filed Nov. 25, 1980, Ser. No. 210,398

Claims priority, application Japan, Nov. 28, 1979, 54-154753

Int. Cl.³ G01J *3/50*

U.S. Cl. 356—404 **16 Claims**



1. A color meter for use with a color image recording apparatus comprising a first light measuring circuit for outputting a signal corresponding to the intensity of the incident light of a red region from among the incident light rays, a second light measuring circuit for outputting a signal corresponding to the intensity of the incident light of a green region, a third light measuring circuit for outputting a signal corresponding to the intensity of the incident light of a blue region, a setting apparatus for outputting a signal corresponding to a color temperature parameter of an image capturing member to be used, a processing circuit which can produce a light balancing factor and/or a color compensation factor in response to a necessary signal from the signals from said first, second and third light measuring circuit and the signal from said setting apparatus, and a display apparatus which can display the light balancing factor and/or the color compensating factor according to the signal of the processing circuit.

4,389,119

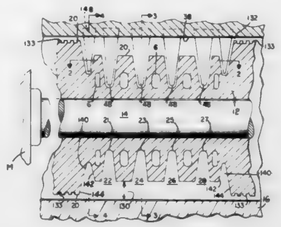
ROTARY PROCESSORS

Lefteris N. Valsamis, West Haven, Conn., and Zehev Tadmor, Haifa, Israel, assignors to USM Corporation, Farmington, Conn.

Filed Jan. 4, 1982, Ser. No. 336,936

Int. Cl.³ B01F *7/02, 7/10;* **B29B** *1/06*

U.S. Cl. 366—99 **19 Claims**



1. In a rotary processor comprising a rotatable element carrying a plurality of processing channels extending inwardly from the rotor surface and a stationary element having a coaxial closure surface operationally arranged with said channels to provide a plurality of enclosed processing passages and where each processing passage includes inlet and outlet means and a material blocking end wall surface providing member associated with the stationary element and arranged so that material fed to the passage through the inlet can be blocked at the end wall surface for processing and/or discharge from the passage through the outlet,

the improvement where the rotor surface carrying the processing channels is spaced apart from the closure surface by a relatively wide clearance adapted to permit interchange of substantial material from passage to passage about substantially the entire circumference of each passage and where a collection channel including opposed walls carried by the surface rotor and extending inwardly from the rotor surface is arranged adjacent an end processing channel to collect material passing through the clearance between the closure surface and the rotor surface separating the collection channel and the adjacent end processing channel and outlet means and a blocking member providing a material blocking end wall surface associated with the stationary element and arranged with the collection channel so that material collected in the collection channel can be blocked for discharge from the collection channel.

4,389,120

ROTARY VIBRATOR WITH RESILIENT SHOCK MOUNT TO PROVIDE LINEAR MOVEMENT

Theodore S. Wadensten, P.O. Box 8, Stilson Rd., Wyoming, R.I. 02898

Continuation-in-part of Ser. No. 142,469, Apr. 21, 1980, abandoned. This application Jun. 5, 1980, Ser. No. 156,792

Int. Cl.³ B01F *11/00*

U.S. Cl. 366—126 **6 Claims**

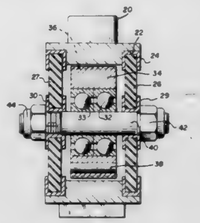
1. A unidirectional vibrator apparatus which is adapted to provide a force for moving a housing secured to an exterior member such as a screen, conveyor, sieve and the like, said vibrator apparatus including:

(a) a housing within which the vibrator apparatus is carried, said housing having a central bore and mounting means for securing the housing to said exterior member;

(b) a shaft carried within said central bore and disposed to retain the vibration apparatus in a precise configuration;

(c) at least one eccentric weight carried by said shaft and within said bore and rotatable at a prescribed speed around the axis of said shaft, said moved weight producing the desired forces producing amplitude and rate of vibration;

(d) at least one resilient shock absorbing means formed as a substantially flat washer and disposed at one end of the central bore of the housing, said resilient shock absorbing washer affixed to an outer ring secured to said housing and disposed to remain in said secured condition and an inner ring means secured to said resilient shock absorbing washer, said inner ring also affixed to said resilient shock



absorbing washer so as to remain in this secured condition and position during vibrational actuation, this inner ring carrying said shaft so that said shock absorbing washer prevents transmission of the vibrational forces directly to the housing of the vibration apparatus, and

(e) means for securing said housing to an exterior member to be vibrated and with the securing of said vibrator apparatus the vibration forces produced are transferred through the resilient shock absorbing means and the rotating of the eccentric weight produces a unidirectional force.

4,389,121

SPEECH SYNTHESIZER TIMEPIECE WITH ALARM FUNCTION

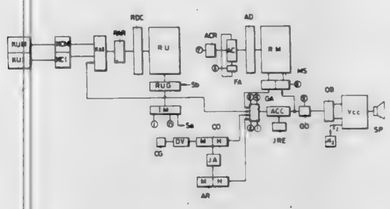
Shintaro Hashimoto, Ikoma; Akitaka Morita, Nara, and Hiroshi Tsuda, Uji, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 13, 1981, Ser. No. 234,862

Claims priority, application Japan, Feb. 15, 1980, 55-18298; Feb. 22, 1980, 55-21804

Int. Cl.³ G04B *21/08, 23/02*

U.S. Cl. 368—63 **4 Claims**



1. A timepiece capable of delivering an alarm sound or message when an alarm time setting is reached, said timepiece comprising:

an output mode selector for selecting one of at least three modes of output for said timepiece;

means for periodically delivering audible announcements of time when said timepiece is in a first of said at least three modes;

alarm time announcement means responsive to said output mode selector for delivering an audible indication of an alarm time setting in the form of synthesized voices when said timepiece is in a second of said at least three modes; and

means for delivering a visual display of the alarm time setting when said timepiece is in a third of said at least three modes.

4,389,122

CLOCK WITH ELECTRIC OSCILLATOR-CONTROLLED MOTOR

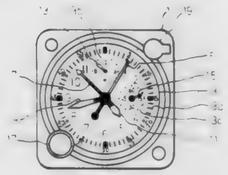
Gerald Dubois, Le Lieu, and Kaspar Kenel, Niederdorf, both of Switzerland, assignors to Revue Thommen AG, Switzerland

Filed Jan. 26, 1981, Ser. No. 228,389

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1980, 8027665[U]

Int. Cl.³ G04F *8/00, 10/00*

U.S. Cl. 368—110 **15 Claims**



1. A clock comprising: an electric motor which is controllable by an electric oscillator for the output of a timed movement; wheelwork means connected to and driven by said electric motor; a plurality of hands connected to said wheelwork means for movement to indicate by their respective positions, increments of time; a manually operable actuator connected to said wheelwork means; at least one of said plurality of hands comprising at least one stoppable hand for showing by its position an elapsed time; said wheelwork means including coupling means engageable and disengageable by said actuator to and from said motor and said at least one stoppable hand for respectively starting and stopping movement of said at least one stoppable hand; and mechanical resetting means connected to said actuator and engageable with said stoppable hand to reset the position of said stoppable hand to an initial position; said actuator being so cooperable with said coupling means and said resetting means that said at least one stoppable hand can be started, stopped and reset by purely mechanical force transmitted to said stoppable hand exclusively from said actuator by way of said coupling means, said coupling means comprising a lever connected to and movable by said actuator, a shaft rotatably mounted on said lever, a first toothed wheel connected to said shaft, a second toothed wheel connected to said at least one stoppable hand, said shaft connected to said motor for rotation; said actuator movable to engage said first toothed wheel with said second toothed wheel to start movement of said stoppable hand and to disengage said first toothed wheel from said second toothed wheel to stop movement of said stoppable hand.

4,389,123

ELECTRONIC ALARM WATCH

Ichiro Horikoshi; Fumikazu Murakami; Yoshiaki Hara; Susumu Fujita, and Osamu Ide, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Oct. 10, 1980, Ser. No. 195,931

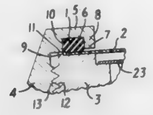
Claims priority, application Japan, Oct. 18, 1979, 54/144279[U]

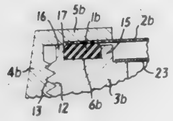
Int. Cl.³ G04C *21/00*

U.S. Cl. 368—250 **15 Claims**

1. In an electronic alarm watch having a resonant plate which is vibrationally driven during use of the watch for emitting an alarm sound: a supporting frame for directly or indirectly supporting a peripheral portion of the resonant plate so as to enable the plate to undergo vibration; a watch case; a gasket which contacts the resonant plate; the watch case having a portion which overhangs the gasket and which directly

or indirectly axially compresses the gasket against the resonant plate; a recess defined by adjacent portions of the watch case and the supporting frame, the gasket being disposed in said recess and the recess being further defined by an annular outer





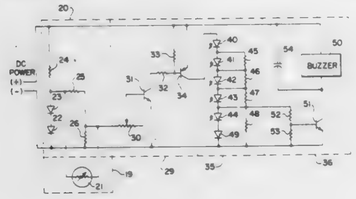
sidewall in contact with the supporting frame and an annular inner sidewall which is spaced from and makes no contact with the resonant plate; and securing means for securing together the supporting frame and the watch case.

4,389,124

DEVICE FOR MONITORING SELECTED OPERATING CONDITIONS OF COMBUSTION WITHIN A SOLID FOSSIL FUEL BURNING FURNACE

Bruce A. Longenecker, 7826 Hartman Rd., Wadsworth, Ohio 44281

Filed May 18, 1981, Ser. No. 264,277
Int. Cl.³ G01K *7/20, 7/22*
U.S. Cl. 374—147 **5 Claims**



1. A device for monitoring a solid fossil fuel burning furnace having a discharge flue, comprising:

means for monitoring and providing a signal proportional to the temperature in the discharge flue;

said means for monitoring including transducer means monitoring the temperature in the discharge flue and having a resistance proportional thereto;

said means for monitoring also including circuit means providing a signal whose voltage is proportional to said resistance and detecting whether said voltage at least equals a preselected magnitude;

said circuit means including adjustable base resistor means for selecting said predetermined magnitude, a first transistor detecting whether said voltage signal at least equals said preselected magnitude and thereupon providing an output signal proportional to said resistance, and a second transistor receiving and amplifying the output signal from said first transistor and providing a signal proportional to the temperature in the discharge flue; and,

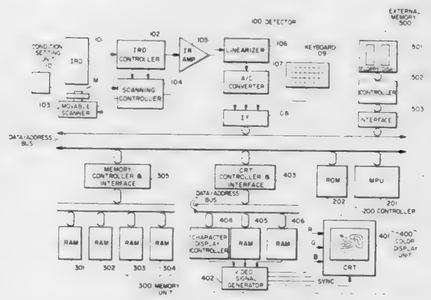
a plurality of light means for receiving said signal from said second transistor to provide a visual indication of selected operating conditions of combustion within the furnace, the number of said plurality of light means emitting illumination at a given time being indicative of the selected operating conditions of combustion within the furnace at that time.

4,389,125

METHOD FOR MEASURING SURFACE TEMPERATURE DISTRIBUTION AND SYSTEM

Ikuro Kobayashi, Machida, and Kyozo Shimizu, Tokyo, both of Japan, assignors to VLSI Technology Research Association, Tokyo, Japan

Filed Sep. 22, 1980, Ser. No. 189,635
Int. Cl.³ G01K *7/01, 25/18;* **H05B** *1/02*
U.S. Cl. 374—164 **20 Claims**



1. A method for measuring a surface temperature distribution of a sample, comprising the steps of:

(a) keeping a sample, comprising a plurality of coexisting materials with different radiation coefficients of radiated rays at the same temperature and divided into a narrowly subdivided plurality of surface regions, at a first known temperature and measuring an amount or rays radiated respectively from each of the narrowly subdivided plurality of regions on the surface of said sample;

(b) keeping said sample at a second known temperature and measuring an amount of ray radiated respectively from each of said narrowly subdivided plurality of surface regions;

(c) keeping said sample at an unknown temperature and measuring an amount of ray radiated respectively from each of said narrowly subdivided plurality of surface regions; and

(d) obtaining the temperatures of respective ones of said narrowly subdivided plurality of surface regions from said amount of radiated rays measured at said first and second known temperatures, and said amount of radiated rays measured at said unknown temperature.

4,389,126

SERIAL IMPACT PRINTER HAVING TWO PRINTING MODES

Yoshikiyo Honma; Jun Shimogawara; Muneyoshi Nagata; Yukihiko Oka; Yukiaki Koyanagi; Yukiyoshi Hosoya, and Takashi Hada, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1981, Ser. No. 278,033

Claims priority, application Japan, Jun. 27, 1980, 55-87427; Jun. 27, 1980, 55-87428; Jun. 27, 1980, 55-87429; Jun. 27, 1980, 55-87430; Jun. 27, 1980, 55-87431; Jun. 27, 1980, 55-87432; Jun. 27, 1980, 55-87433; Jun. 27, 1980, 55-87434; Jun. 27, 1980, 55-87435

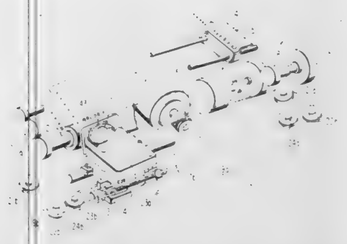
Int. Cl.³ B41J *3/54, 1/50, 3/50*
U.S. Cl. 400—82 **9 Claims**

1. A serial impact printer for serially printing on a print receiving member comprising:

a carriage for sliding along said print receiving member;

a character carrying member rotatably mounted to said carriage and having a plurality of fingers, at least one formed-character being disposed on each of said fingers;

a plurality of wires mounted on said carriage and behind said character carrying member with respect to said print receiving member; and



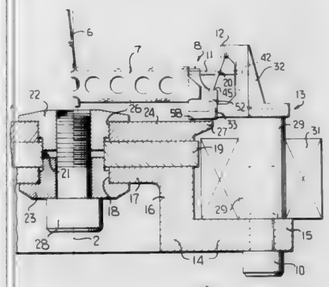
means for actuating said plurality of wires, a formed-character printing being achieved by impacting a selected character on said character carrying member by means of at least one of said plurality of wires and a dot-matrix printing being achieved by directly impacting said print receiving member by means of selected ones of said plurality of wires.

4,389,127

HIGH SPEED DOT MATRIX IMPACT PRINTER

James E. Bellinger, Melbourne, Fla., assignor to Florida Data Corporation, Melbourne, Fla.

Continuation of Ser. No. 101,811, Dec. 10, 1979, abandoned. This application Jun. 12, 1981, Ser. No. 273,123
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **27 Claims**



1. A module for a multi-module dot matrix printer head comprising:

a selectively actuatable electromagnet,

a pole piece for said electromagnet,

a permanent magnet,

a pole piece for said permanent magnet,

a magnetic circuit including said electromagnet and permanent magnet and said pole pieces,

said pieces having faces lying generally perpendicular to and in close proximity to one another,

an armature having two adjacent perpendicular surfaces lying parallel, respectively, to said faces of said pole pieces with one of said surfaces contacting one of said faces when said electromagnet is not actuated,

a pair of crossed flexures providing a pivotal axis for said armature, said pivotal axis lying in the plane of the face of said one of said pole pieces and remote from both of said pole pieces such that when the electromagnet is not actuated each surface of the armature is attracted toward the respective pole piece face to which each such surface is parallel when the electromagnet is not actuated, and

wherein actuation of the electromagnet (a) produces a bucking magnetic field which at least partially cancels the magnetic field of the permanent magnet and (b) results in (i) the release of prestressed flexures in response to reduction in magnetic forces and torques on the flexures and (ii) the armature rotating about the pivotal axis thereof responsive to the release of the flexures, each surface of the armature thereby moving away from the respective pole piece face to which each such surface is parallel when the electromagnet is not actuated.

4,389,128

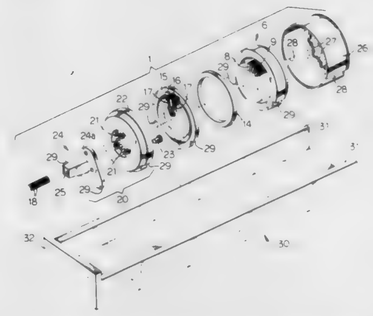
PRINT HEAD FOR A DOT MATRIX PRINTER

Kiyomitsu Asano, Musashino; Toshikatsu Kondo, and Atsuo Sakaida, both of Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi and Nippon Telecommunication Engineering Company, Tokyo, both of, Japan

Filed Aug. 5, 1981, Ser. No. 290,299

Claims priority, application Japan, Aug. 14, 1980, 55-115284[U]

Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **7 Claims**



1. A print head for a dot-matrix printer comprising:

a plurality of print wires;

a guide member with a nose portion for guiding said print wires;

a plurality of armatures corresponding to said print wires respectively;

an armature support member for supporting said armatures at one end thereof;

an electromagnetic armature drive device having, for selectively driving said armatures, a permanent magnet and a magnetic member;

a pair of positioning shoulders formed in the external periphery of each of said guide member, said armature support member and said magnetic member, said positioning shoulders of all of said members being brought into alignment with one another to establish relative positional alignment of said members when they are assembled together; and

a connecting member fitting on said guide member, said armature support member, said magnetic member to connect them in that order with the aid of said positioning shoulders, one axial end of said connecting member being secured to the external periphery of said guide member, and the other axial end of said connecting member being provided with a plurality of resilient tongues engaging said magnetic member for biasing said magnetic member and said armature support member toward said guide member.

6. A print head for a dot-matrix printer comprising:

a plurality of print wires;

a print wire drive device including a plurality of armatures connected to said print wires respectively, and an electromagnetic armature drive unit having a magnetic member for selectively actuating said armatures;

a guide member having a nose portion for guiding said print wires and a cover portion for covering one side of said print wire drive device; and

a hollow cylindrical connecting member fitted on said guide member and said magnetic member and connecting said two members, one axial end of said cylindrical connecting member being secured to the external periphery of said guide member and the other axial end thereof having a plurality of circumferentially spaced resilient tongues which extend radially inwardly of said cylindrical connecting member, said resilient tongues engaging one end face of said magnetic member on the other side of said print wire drive device thereby biasing said magnetic member toward said guide member for firm connection of said two members.

4,389,129

TYPE WHEEL PRINTER

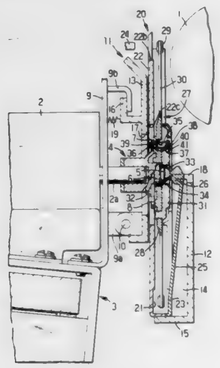
Toshiaki Sugiura, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 18, 1981, Ser. No. 275,013

Claims priority, application Japan, Jun. 30, 1980, 55-89346; Jun. 30, 1980, 55-89347

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—144.2 **13 Claims**



1. In combination, a type wheel printer having a carriage, a motor supported by the carriage, rotatable shaft means driven by the motor;

a type wheel having a hub, a plurality of spokes extending from said hub with a type supported at the free end of each of said plurality of spokes, said hub having a central opening engageable with said shaft means, said hub further having axial latch means for latching said type wheel to said shaft means when the end of said shaft means is inserted into said central opening in an axial direction, said type wheel being susceptible to rotate with said shaft through frictional contact of said type wheel with said shaft means in a rotationally unlatched condition of said shaft means with respect to said type wheel;

rotational latch means for establishing a rotationally latched state wherein said type wheel is latched to said shaft means in the rotational direction of said shaft means;

control means to operate said motor so as to rotate said shaft means a predetermined amount more than one turn upon the closing operation of at least one electric switch; and

detent means for preventing said type wheel from rotating more than a predetermined angular amount due to said frictional contact so as to thereafter cause said rotational latch means to establish said rotationally latched state while said shaft means to which said type wheel is axially latched by said axial latch means is rotated in said not rotationally latched state in response to actuation of said control means.

4,389,130

DEVICE FOR COUPLING AND RELEASING A DAISY WHEEL TYPE MEMBER

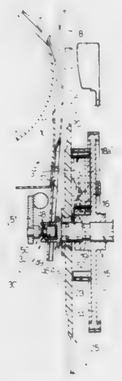
Nicolo Giolitti, Ivrea, Italy, assignor to Remington Ind. E Com. De Sistemas Para Escritoria S.A., Rio de Janeiro, Brazil

Filed Apr. 8, 1982, Ser. No. 366,563

Claims priority, application Italy, Apr. 30, 1981, 67588 A/81

Int. Cl.³ B41J *1/24*

U.S. Cl. 400—144.2 **10 Claims**



1. A typewriter having a daisy wheel type member (**1**) having an axial hole, and a drive unit (**2**) which drives the said daisy wheel (**1**) to rotate about its axis and which serves as a support element for the said daisy wheel (**1**), and a device for coupling the said daisy wheel (**1**) with respect to the drive unit (**2**), said coupling device (**30**) comprising:

a spindle (**15**) projecting axially from the said drive unit (**2**) and engageable in said axial through hole (**4**) of the daisy wheel (**1**);

means for creating a first thrust tending to separate said daisy wheel (**1**) from said drive unit (**2**), said means for creating a first thrust comprising first resilient means (**34***a*,**34***b*) engaging said daisy wheel and being carried by said drive unit (**2**) on the side of said drive unit facing said daisy wheel (**1**);

means for creating a second thrust acting on said daisy wheel, said second thrust having a greater magnitude and opposite direction from said first thrust, said means for creating a second thrust comprising a second resilient means (**57**) which engages said daisy wheel on the side opposite that facing said drive unit (**2**); and

manual control means for selectively disengaging said second resilient means from said daisy wheel, thus eliminating said second thrust and permitting said first thrust to disengage said daisy wheel from said spindle.

4,389,131

PRINTER WITH ELECTROMAGNETIC DRIVE YOKES

Hirontsu Kondo, Zushi; Toshiaki Ozawa, Higashi, and Hideaki Miyakawa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1980, Ser. No. 174,000

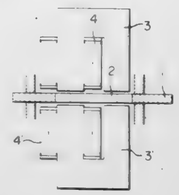
Claims priority, application Japan, Aug. 2, 1979, 54-98956

Int. Cl.³ B41W *9/30*

U.S. Cl. 400—157.2 **9 Claims**

1. An electromagnetic driving mechanism, comprising:

a rectilinearly reciprocal member having a magnetic portion having poles, the poles of said magnetic portion being aligned substantially in parallel with a line in the direction of reciprocation of said member and being separated by a line of polarization;



a plurality of yokes disposed substantially at right angles to said line of reciprocation and opposed to said magnetic portion, such that said polarization line opposes the surfaces of said yokes; and

coils wound on said yokes for controlling the reciprocation of said member.

4,389,132

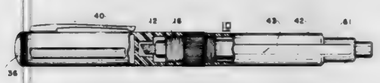
EYEGLASS PEN CLEANER

Alfonso L. Valadez, P.O. Box 4688, San Ysidro, Calif. 92073

Filed Dec. 7, 1977, Ser. No. 858,259

Int. Cl.³ B43K *29/12*

U.S. Cl. 401—195 **4 Claims**



1. An eyeglass lens cleaner formed in the general shape of a pen comprising a cap member and a tubular member, said cap member containing a chamber housing a dispenser of wiping material and having an elongated slot for withdrawing said material therefrom; said tubular member having fixed at a first end thereof a porous tip; said tubular member holding therein a cleaning solution and conveying means intermediate said tip and said container for bringing cleaning solution to said tip, in which

said cap member is shaped at a first end with a blind recess, the outer wall of which blind recess is of a shape to matingly detachably fit about alternatively either the first end or the second end of the tubular member such that when the said cap member is fitted about the first end of the tubular member, the porous tip of the tubular member is completely enclosed, such that an end wall bordering said blind recess serves to seal the interior of the blind recess from communication with the chamber housing the wiping materials, wherein

the said dispenser consists of a spool rotatably mounted in said chamber of said cap member, with absorbent sheet material rolled on said spool.

4,389,133

PLASTIC CONNECTORS FOR CORRUGATED MATERIAL

Steven M. Oberst, Willard, Ohio, assignor to Acorn Corrugated Box Co., Bedford Park, Ill.

Filed Mar. 9, 1981, Ser. No. 241,661

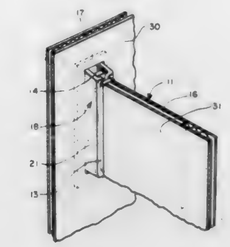
Int. Cl.³ B25G *3/00;* **F16B** *7/08, 9/00;* **F16L** *41/00*

U.S. Cl. 403—230 **8 Claims**

1. A female connector for use with a corrugated material, comprising:

a back portion having a thickness dimension suitable for insertion in the corrugated material; and

a generally U-shaped receiving portion, extending outwardly from said back portion and defining a receiving slot therein, which receiving slot is open at the top and closed at the bottom, and the U-shaped receiving portion is uninterrupted except for the receiving slot, top and back portion.



4,389,134

COUPLING OF A TUBE TO A RING MEMBER

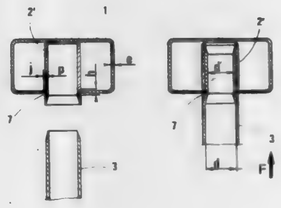
Francois Colas, Bourg la Reine, France, assignor to Cegedur Societe de Transformation de l'Aluminium Pechiney, Paris, France

Filed Feb. 3, 1981, Ser. No. 231,175

Claims priority, application France, Mar. 17, 1980, 80 06185

Int. Cl.³ B25G *3/00;* **F16B** *9/00;* **F16L** *41/00*

U.S. Cl. 403—263 **4 Claims**



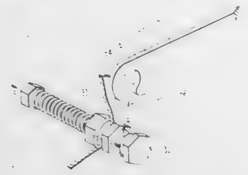
1. A coupling for a male tube member and a ring member comprising a pair of tube elements formed of aluminum or the like, said tubes having walls which are relatively thin with respect to tube diameter, one tube being the male element of the connection, the other tube being a female element, said male tube having a beveled end face, said female tube having a conically bored end face for cooperative engagement with said male end face, said female tube located within the ring member having a small thickness, the inside diameter of said ring member being just slightly larger than said female tube to permit a small clearance therebetween, said male tube when forcibly inserted into said female tube, expanding the same into tight engagement with said ring member.

4,389,135

RELEASABLE LOCKING DEVICE

Jack Peters, 5 Pinehurst, Wildwood Estates, Prescott, Ariz. 86301

Filed Jun. 30, 1981, Ser. No. 278,927
Int. Cl.³ B25G *3/18*; F16B *21/00*; F16D *1/00*
U.S. Cl. 403—327 **12 Claims**



1. A releasable self-contained locking device for pivotally locking first and second members, and comprising:

a hollow support assembly extending through an opening formed in a first of said members, said hollow support assembly including an enlarged head portion disposed on a first side of said first member with an internal bore extending completely through said hollow support assembly;

a locking member including a stud and an enlarged locking portion, said stud extending completely through said internal bore and said enlarged locking portion adjacently disposed to said enlarged head portion of said hollow support assembly;

said second member including an opening having an inlet portion extending inwardly from an edge of said second member adjoining an interior portion of enlarged diameter, said inlet defining a gap sufficiently large to allow passage of said stud portion therethrough and sufficiently small to block passage of said enlarged locking portion and said interior portion defining an opening sufficiently large to enclose said enlarged locking portion;

resilient biasing means abutting said locking member and said support assembly for biasing said locking member through said interior portion of said opening and into said internal bore; and

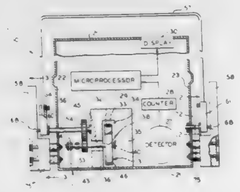
guidance means for automatically aligning said interior portion of said opening with enlarged head portion, allowing said enlarged head portion to extend through said opening and lock said to second member into pivoted engagement with said first member.

4,389,136

METHOD OF DETERMINING DENSITY

Robert J. Fehrenbach, Wauwatosa, Wis., assignor to Seaman Nuclear Corporation, Milwaukee, Wis.

Filed Jan. 23, 1981, Ser. No. 227,913
Int. Cl.³ E01C *7/18, 23/00*
U.S. Cl. 404—75 **4 Claims**



3. A method of determining the density of a top layer of asphaltic paving material which is compacted by a roller, said top layer being disposed on a base layer of a second material comprising the steps of:

determining the density D_b of the base layer prior to the application of the top layer,

determining the composite density D_g of the top layer and base layer after the application of the top layer,

determining the density D_t of the top layer from the expression

$$D_t = D_b + \frac{D_g - D_b}{1 - e^{-t/k}}$$

where t is the thickness of the top layer; and k is an instrument constant,

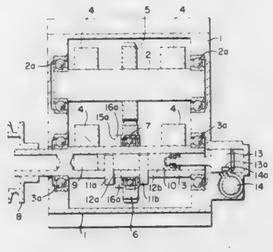
said density D_t indicating the need for further rolling.

4,389,137

OSCILLATOR FOR SOIL OR ROAD TAMPERS

Franz Riedl, Munich, Fed. Rep. of Germany, assignor to Wacker-Werke GmbH & Co. KG, Munich, Fed. Rep. of Germany

Filed Nov. 20, 1981, Ser. No. 323,184
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1980, 3043719
Int. Cl.³ E01C *19/38*
U.S. Cl. 404—113 **6 Claims**



1. An oscillator, for soil or road tampers, comprising:

a housing;

two unbalanced shafts which are rotatably journalled in said housing and are parallel to each other;

centrifugal weights respectively rigidly connected to said unbalanced shafts;

a first gear rigidly connected with one of said unbalanced shafts;

a second gear rotatably arranged on the other of said unbalanced shafts in such a way that it can also be shifted in the direction of rotation, said first and second gears being adapted to mesh to drive said unbalanced shafts in opposite directions;

stop faces respectively provided on both sides of said second gear, said stop faces extending nearly radially as well as axially, and pointing in the same rotational direction;

a slide piece arranged in, and axially shiftable in, said unbalanced shaft of said second gear; and

two shift pins respectively anchored in said slide piece, one on each side of said second gear, for effecting said shifting of said second gear in the direction of rotation, one end of each of said shift pins projecting out of said unbalanced shaft of said second gear through associated longitudinal slots in said last-mentioned unbalanced shaft, said shift pins being axially spaced from one another in said slide piece by such a distance that one of said shift pins is always located just out of alignment with said stop face located on the same side of said second gear when the other of said shift pins, on the other side of said second gear, is in complete alignment with said stop face associated therewith.

4,389,138

DRAIN PIPE

Gert W. Söderström, 62 Hammarbyvägen, Uplands Väsby S.194-00, Sweden

PCT No. PCT/SE79/00245, § 371 Date Jul. 25, 1980, § 102(e) Date Jul. 25, 1980, PCT Pub. No. WO80/01180, PCT Pub. Date Jun. 12, 1980
PCT Filed Dec. 3, 1979, Ser. No. 199,725
Claims priority, application Sweden, Dec. 4, 1978, 7812472; Jul. 16, 1979, 7906140
Int. Cl.³ E02B *13/00*
U.S. Cl. 405—43 **6 Claims**



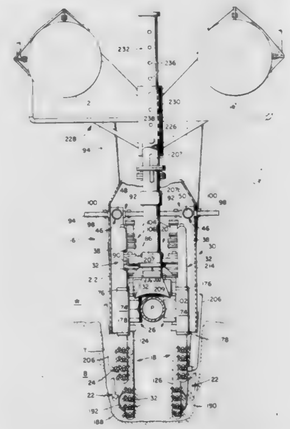
1. A drain pipe, comprising an outer pipe casing, at least one longitudinal opening in a lower surface of the pipe casing, a wall extending upwardly from each longitudinal edge of the at least one opening to form between the walls a water riser space for drain water, a plurality of openings at an upper edge of each of the walls, the walls being connected to an upper inside surface of the pipe casing whereby water can flow into channels formed between the walls and the pipe casing.

4,389,139

OSCILLATING JET HEAD UNDERWATER TRENCHING APPARATUS

Robert M. Norman, 128 Nickelson Pkwy., Lafayette, La.

Filed Sep. 19, 1980, Ser. No. 188,923
Int. Cl.³ E02F *5/02*
U.S. Cl. 405—163 **65 Claims**



1. An underwater trenching apparatus for burying pipeline and the like comprising:

a frame for positioning about the pipeline to be buried,

said frame including frame members positioned on each side of said pipeline,

roller means connected to at least one of said frame members for engagement with said pipeline, and

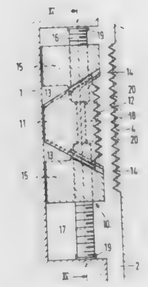
cutting means secured to said apparatus for cutting a trench in a formation and having oscillating means connected thereto for oscillating the cutting means along a stationary vertical axis positioned on the pipeline side of the frame and in accordance with a preselected period and sweep.

4,389,140

LOCKING DEVICE FOR A PILE-SHAPED ELEMENT

Cornelis Bordes, Hardinxveld-Giessendam, Netherlands, assignor to Marine Structure Consultants (MSC) BV, Hardinxveld-Giessendam, Netherlands

Filed Jun. 8, 1981, Ser. No. 271,110
Claims priority, application Netherlands, Jun. 13, 1980, 8003462
Int. Cl.³ E02B *17/08*; E02D *21/00*; B66F *1/00*
U.S. Cl. 405—195 **6 Claims**



1. A locking device for an elongated pile-shaped element of the type slideably received in the longitudinal direction in a body having buoyancy, said locking device comprising:

at least one toothed rack having a plurality of teeth associated with at least a portion of said pile-shaped element in the longitudinal direction;

at least one locking means associated with said body for lockably engaging a predetermined portion of a said toothed rack, said locking means defining a substantially isosceles trapezoidal structure having gear teeth disposed along the large base of said structure in opposing relationship to said toothed rack and having first and second opposing substantially smooth surfaces each gradiently disposed between the small base of said trapezoidal structure and said large base, said locking means being movable between a first position wherein said gear teeth are in a non-engaging relationship with said toothed rack and a second position wherein said gear teeth are in an engaging relationship with said toothed rack;

guide means for moving said locking means relative to said toothed rack including first guide block means defining a first bearing surface in constant contacting relationship with said first smooth surface during movement of said at least one locking means between said first and second positions, and second guide block means defining a second bearing surface in constant contacting relationship with said second smooth surface during movement of said at least one locking means between said first and second positions; and

displacing means for jointly or separately displacing each of said first and/or second guide block means vertically and at predetermined rates of speed relative to one another, and for controllably and responsively displacing said locking means horizontally and/or vertically relative to said toothed rack by virtue of the constant contacting relationship of said first and second bearing surfaces with said first and second smooth surfaces, respectively, whereby

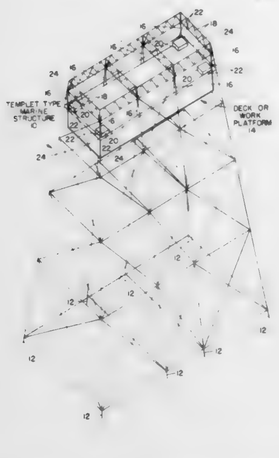
said gear teeth of said locking means are controllably directed in horizontal and/or vertical directions relative said pile-shaped element to effect locking relationship thereof with said toothed rack.

4,389,141

MARINE STRUCTURE HAVING A DECK OR WORK PLATFORM SUPPORTED BY ABSORBING MECHANISMS

Norman E. Cumings, Parker, Colo., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,716
Int. Cl.³ E02B *17/00;* **E04H** *9/02*
U.S. Cl. 405—211 **4 Claims**



1. A marine offshore structure for compensating for seismic shocks comprising:

(a) an exterior truss structure having its base anchored to the subsurface floor;

(b) a marine deck or work platform within said truss structure;

(c) a plurality of vertical structural members interconnecting said truss structure and said deck or working platform for suspending said deck or work platform from said truss structure, said vertical structural members being flexible along their respective length to permit horizontal movement of said truss structure relative to said deck or work platform;

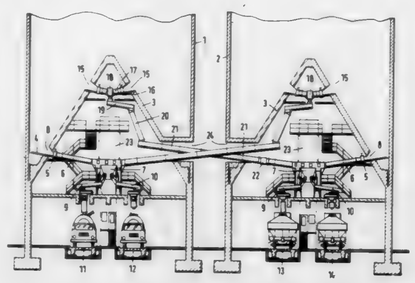
(d) means for mitigating the effects of seismic shocks on said deck or work platform, including at least one first nonlinear shock absorber means coupled laterally in a first horizontal direction between said deck or work platform and said truss structure for damping horizontal seismic forces in said first direction between said deck or work platform and said truss structure, said first nonlinear shock absorber means being substantially rigid to provide stiff damping of relatively low amplitude seismic forces and providing substantially less rigid damping during relatively high amplitude seismic forces; and at least one second nonlinear shock absorber means coupled laterally in a second horizontal direction, substantially orthogonal to said first direction, between said deck or work platform and said truss structure for damping horizontal seismic forces in said second direction between said deck or work platform and said truss structure, said second nonlinear shock absorber means being substantially rigid to provide stiff damping of relatively low amplitude seismic shocks and providing substantially less damping during relatively high amplitude seismic forces, whereby said deck or work platform is able to move relatively freely in horizontal directios when it is subjected to relatively severe seismic shocks.

4,389,142

SILO SYSTEM FOR FLOURY LOOSE MATERIALS, PARTICULARLY CEMENT

Heinrich Klein-Albenhausen, Hamburg, Fed. Rep. of Germany, assignor to Ibau Hamburg Ingenieurgesellschaft Industriebau mbH, Hamburg, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,408
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007113
Int. Cl.³ B65G *53/26*
U.S. Cl. 406—120 **5 Claims**



1. Apparatus for storing loose materials, such as cement, comprising:

at least two storage silos;

each silo having a base portion, a central storage tank, conveying means, and a conical cover portion over the base portion, wherein the conical cover portion of each silo has discharge openings in the lower area thereof connected to the central storage tank of the same silo by the conveying means and discharge openings in the upper area thereof for connection to the central storage tank of the other silo;

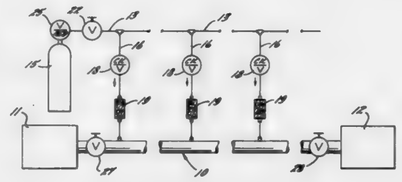
and transverse air conveying means interconnecting respectively the discharge opening in the upper area of each silo conical cover portion to the central storage tank of the other silo for transferring loose material between the silos.

4,389,143

METHOD OF UNPLUGGING DENSE CONVEYING SYSTEM

Robert P. Nadin, Wharton, N.J., and Jannan G. Lee, Houston, Tex., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 16, 1981, Ser. No. 244,528
Int. Cl.³ B65G *53/16*
U.S. Cl. 406—197 **8 Claims**



1. In a method of conveying fluidized powder or granular solids, while suspended in a fluidizing gas stream, through an elongated transfer conduit from a high pressure zone to a relatively lower pressure zone, and wherein disruptions occasionally cause said solids to de-fluidize and thereby form a flow-obstructing relatively compact solids plug in a substantial portion of said conduit,

the method of unplugging said transfer conduit which comprises:

(a) closing off said transfer conduit near the high pressure zone and near the lower pressure zone,

(b) introducing an inert (non-deleterious) gas into said transfer conduit at relatively widely spaced points along said transfer conduit, at a pressure from about several psi to a few atmospheres pressure above the pressure of the relatively lower pressure zone,

(c) maintaining said inert gas introduction at said pressure for a substantial time, sufficient for said pressure to substantially equalize along said conduit, and

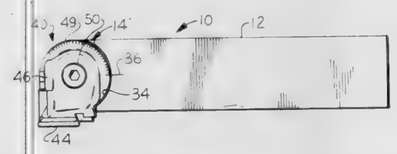
(d) thereafter opening said conduit into the lower pressure zone to permit said conduit-plugging compacted solids to re-fluidize and then flow into said relatively lower pressure zone.

4,389,144

LATHE UNIVERSAL TOOL ASSEMBLY

Sandor Sipos, 281 Fillmore Ave., Rialto, Calif. 92376

Filed Dec. 29, 1980, Ser. No. 220,452
Int. Cl.³ B23B *27/02, 27/08, 27/16*
U.S. Cl. 407—82 **11 Claims**



1. A cutting tool which comprises:

a. an elongated body member having a generally rectangular eross-section;

b. said elongated body member having a head end having a step shaped upper surface thereon;

c. said step shaped upper surface being of generally circular configuration and containing a plurality of generally radially extending ribs disposed at equal angular increments thereabout;

d. said radially extending ribs on said step shaped upper surface extending through an arc of 360 degrees;

e. said head end containing a first circular recess adjacent and below said step shaped upper surface and a second circular recess of smaller diameter extending below the first circular recess;

f. said head end further containing a central bore extending through the head portion and axially aligned with both said first circular recess and said second circular recess;

g. said head end further containing a third recess extending around the lower extremity of said central bore;

h. said elongated body member having an arcuate recess adjacent said step shaped upper surface;

i. a first head assembly having a lower extremity including a lower surface of generally circular configuration having a plurality of generally radially extending ribs disposed at equal angular increments thereabout;

j. said radially extending ribs on the lower surface of said first head member extending through an arc of 360 degrees;

k. said ribs of said first head assembly and said ribs of said body portion having the same circular spacing therebetween;

l. said first head assembly having an upper extremity including a step member and a retaining plate member which is disposed above and separated from the step member;

m. said upper portion of said first head assembly accommodating a cutting member in the space between said step member and said retaining plate;

n. said cutting member being secured within said first head assembly by means of a set screw extending through said retaining plate to tighten it against said cutting member and said step member;

o. said first head assembly further having a circular boss extending from the inner area of its lower surface;

p. said first head assembly further having a threaded stud extending from the central area of its lower surface; and

q. said first head assembly being retained on the head end of said elongated body member such that said ribs of said first head assembly are interengaged with said ribs of said body portion, said boss is accommodated within said first circular recess, said first head assembly is accommodated within said arcuate recess of said body member at one portion and disposed such that said cutting member extends outwardly away from said body portion, and said first head assembly is retained within said head portion by extending said threaded stud through said first and said second recess and said central bore and tightening said first head assembly by means of a nut threaded onto said stud and thightened so as to be accommodated within said third recess;

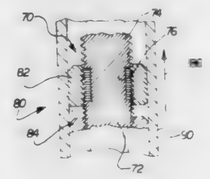
r. whereby the entire first head assembly may be rotated to any desired degree relative to the body member by loosening said nut, disengaging said two sets of ribs, rotating the first head assembly by the desired amount, re-engaging said two sets of ribs, and then retightening said nut, and further said cutting member may be adjusted or replaced without moving said first head assembly by loosing said set screw to loosen said retaining plate, adjusting or replacing said cutting member, and then tightening said set screw to force said retaining plate against said cutting member.

4,389,145

METHOD OF TAPPING DUAL THREAD FASTENERS

Terry D. Capuano, Hinckley, Ohio, assignor to Russell, Burdsall & Ward Corporation, Mentor, Ohio

Filed Aug. 31, 1981, Ser. No. 297,777
Int. Cl.³ B23G *1/16, 5/06;* **B21D** *53/24*
U.S. Cl. 408—1 R **14 Claims**



1. A method of forming an internally threaded fastener having coincident coarse and fine thread convolutions with intermingled turns, said method comprising the steps of providing a body having an axially extending opening, providing a single tap having a first section for forming a thread convolution with a first pitch and a second section axially aligned with the first section for forming a thread convolution with a second pitch which is different than the first pitch, tapping in the side wall of the opening with the first section of the tap a first internal thread convolution having the first pitch by effecting axial movement between the tap and the body, and thereafter tapping in the side wall of the opening a second internal thread convolution of the second pitch coincident with the first thread convolution and having turns intermingled with turns of the first thread convolution, said step of tapping a second thread convolution being performed with the second section of the single tap by continuing the axial movement between the tap and the body.

4,389,146

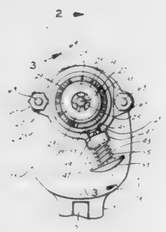
AUTOMATICALLY-DRIVEN CHUCK ACCESSORY FOR HAND DRILL

James D. Coder, 701 W. Lincoln St., Belleville, Ill. 62223

Continuation of Ser. No. 14,847, Feb. 26, 1979, abandoned. This application Nov. 10, 1980, Ser. No. 205,523

Int. Cl.³ B23B *31/06, 45/02*

U.S. Cl. 408—240 2 Claims



1. An accessory for use with a drill-type tool having a housing and a chuck extending outwardly from said housing for facilitating chuck engagement and disengagement of a drill bit shank or the like, said chuck being rotatingly drivable in selectively reversible directions by said tool and having a sleeve including a recess therein, said sleeve being rotatable axially about said chuck for tightening and loosening of said chuck, said accessory comprising a collar having flanges on opposite sides, said flanges having apertures for receiving means structurally retaining said housing upon said tool for securing said collar to said housing in chuck-surrounding relationship, said collar carrying a locking pin carrying a manipulating button, said pin being in chuck confronting orientation in alignment with said chuck sleeve recess for radial shifting movement toward and away from said chuck sleeve recess perpendicular to the axis of rotation of said chuck, said collar having a bore, said pin being set within said bore, a spring interengaging said collar and said button for resiliently biasing said pin radially outward from said chuck toward a first position disengaged from said chuck, means for retaining said pin in said bore of said collar, said button being carried by said pin and manipulatively engageable for shifting said pin radially inwardly toward said chuck toward a second position of engagement with said chuck sleeve recess for locking said sleeve relative to said collar to prevent rotation of said sleeve with respect to said housing, said pin extending radially outwardly from said collar in downward angular offset relationship to said housing wherein said pin has a longitudinal axis along which said pin is radially shiftable, said tool having a handle including a squeezable trigger switch extending downwardly from said housing, said plane of lateral symmetry transecting said handle, the longitudinal axis of said pin forming an angle with said plane of lateral symmetry, and thereby with said handle, of about 25°, for presenting said button for manipulative engagement and radially inward shifting by pinching action of one hand of the user upon tactile interengagement of said button and collar by the user's fingers in opposed relationship while the other hand of the user grasps said handle, whereby said pinching action is carried out by the user while simultaneously grasping said handle and squeezing said trigger, physiologically natural grasping orientation of the user's hands and fingers, operation of said tool upon simultaneous pinching action and squeezing of said trigger switch providing rotation of said chuck in one direction or the reversed direction for respective tightening or loosening of said chuck.

4,389,147

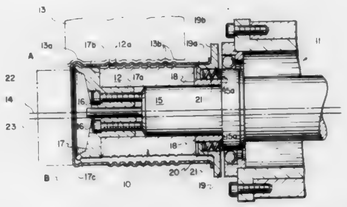
CAN SUPPORT SYSTEM

Earl R. Van Alsburg, Barrington, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Dec. 8, 1980, Ser. No. 213,925

Int. Cl.³ B21D *51/26*

U.S. Cl. 413—69 8 Claims



1. A method for holding a hollow generally cylindrical tubular body over a mandrel in a prescribed axial relationship to said mandrel during a forming operation in which the side wall of said body is beaded including the following steps:

inserting said tubular body over a mandrel by coaxially aligning said body and said mandrel and camming said body on to said mandrel,

engaging the innermost end of said body opposite to the camming end and urging same outwardly relative to said mandrel for locating at a prescribed distance the cammed body end with respect to the outward end of said mandrel adjacent said camming device, and

radially reforming the side wall of said body to include a series of annular convolutions including a chime-like one positioned near the cammed end of said body said chime-like convolution being a preset distance from the bottom of said body.

4,389,148

APPARATUS FOR BUNDLING ELONGATED WORKPIECES

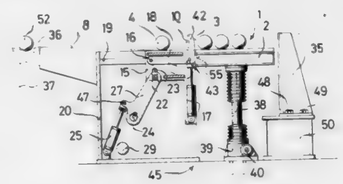
Horst Lorenz, Solingen, Fed. Rep. of Germany, assignor to Th. Kieserling & Albrecht, GmbH & Co. KG, Solingen, Fed. Rep. of Germany

Continuation of Ser. No. 895,358, Apr. 11, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,974

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1977, 2716215

Int. Cl.³ B65G *57/10*

U.S. Cl. 414—85 8 Claims



5. Apparatus for bundling elongated metallic workpieces such as metal rods and bars comprising: a generally U-shaped trough having a vertically movable bottom wall for adjusting the depth of such trough, a movable pusher for transversely feeding workpieces toward such trough for positioning a plurality of workpieces in side-by-side relationship to form a row, a slope structure downwardly inclined toward such pusher, horizontally movable support rails selectively movable between a position extending across said trough spaced above said movable bottom wherein a new row of workpieces is positionable on said rails in a position displaced from said trough and beneath said slope structure for stacking the new row of workpieces onto the row of workpieces for resting on said movable bottom wall, a movable stop adjacent the lower end of said slope structure movable between a stopping position for engaging individual workpieces one at a time moving down the slope towards such trough and a retracted position allowing movement of workpieces therebeyond into said trough by means of said pusher; wherein said pusher and stop are defined by a common member having one side forming said stop for engaging the workpiece along its axis of elongation opposite to the direction of movement of the workpieces on the slope structure and an opposite side of the common member forming said pusher for engaging and moving the workpiece about its axis of elongation in the same direction as the workpiece moves on the slope structure and a side wall surface for said trough and movably mounted for being raised and lowered into and out of the path of the workpiece adjacent to the terminal end of the inclined slope structure; and movable means effective to establish relative movement between said rails and said common member.

4,389,149

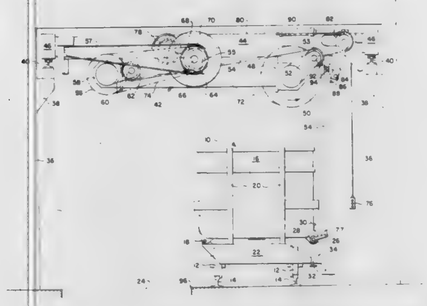
APPARATUS FOR DUMPING A TOP-DUMPING MINE CAR

Tibor Dancs, Aurora, Colo., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jul. 27, 1981, Ser. No. 287,079

Int. Cl.³ B65G *67/30, 67/42*

U.S. Cl. 414—382 7 Claims



3. In apparatus for unloading a top-unloading, pivotally mounted mine car, the improvement comprising:

(1) a hoist chain having means at one end for connection to the mine car;

(2) a positioning crank arm having a positioning pulley connected to one end thereof spaced from the axis of rotation of the crank arm whereby the positioning pulley moves laterally on rotation of the positioning crank arm;

(3) a drive crank arm having a drive pulley mounted on one end thereof remote from the axis of rotation of the drive crank arm, said hoist chain extending from the mine car connection means over the positioning pulley and onto the pulley on the drive crank arm and then to a point of attachment that limits movement of the hoist chain; and

(4) driving means connected to the crank arms constructed and arranged to rotate the drive crank arm at twice the angular velocity of the positioning crank arm whereby movement of the pulley on the drive crank arm varies the effective length of the hoist chain and movement of the positioning pulley on rotation of the positioning crank arm maintains the point of support of the hoist chain ahead of the connection of the hoist chain to the mine car as the hoist chain lifts the connection to the mine car.

4,389,150

APPARATUS FOR MOVABLY SPREADING MATERIAL ON A RAILROAD EMBANKMENT

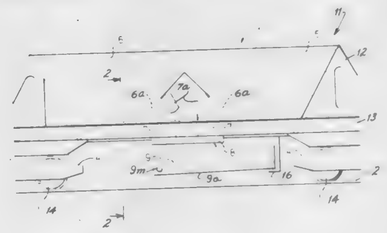
Rune Stenlund, Askersund, Sweden, assignor to AB Vretstorp-Verken, Vretstorp, Sweden

Continuation-in-part of Ser. No. 870,366, Jan. 18, 1978, abandoned. This application Apr. 29, 1980, Ser. No. 144,821

Claims priority, application Sweden, Jan. 25, 1977, 77007700

Int. Cl.³ B60P *1/36, 1/58*

U.S. Cl. 414—505 8 Claims



1. A railway vehicle for discharging a strand of material while moving on railroad tracks, comprising:

(a) first and second funnel troughs for retaining the material;

(b) housing and support means for supporting the first and second troughs on the railroad tracks;

(c) dispensing means for controlling the flow of and dispensing said material in a strand spaced apart from said railroad tracks;

(d) said dispensing means comprising an endless belt conveyor attached to said housing and support means for conveying the material to a discharge opening;

(e) said dispensing means further comprising vibratory feeding means operated at a pre-determined vibratory frequency and located below each of said first and second funnel troughs and connected to said housing and support means, said troughs each having an aperture therein for supplying the material to said vibratory feeding means;

(f) a central funnel attached to said housing and support means, said central funnel located between each of the vibratory feeding means corresponding to the apertures in the first and second troughs and the conveyor means for supplying the material from said first and second troughs via said vibratory feeding means to said conveyor; and

(g) a means to adjust the rate of discharge of the material for a selected control setting by changing the speed of the conveyor and the vibratory frequency of the vibratory feeding means in accordance with the velocity of the railway vehicle on the railroad tracks, thereby spreading the material uniformly, despite changes in the velocity of the railway vehicle, whereby

said conveyor belt cooperates with said vibratory feeding means to control the discharge of said materials.

4,389,151

CONTROL LEVER ARRANGEMENT

David J. Brown, Manchester, England, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

PCT No. PCT/GB80/00225, § 371 Date Sep. 8, 1981, § 102(e) Date Sep. 8, 1981, PCT Pub. No. WO81/02209, PCT Pub. Date Aug. 6, 1981

PCT Filed Dec. 29, 1980, Ser. No. 302,482

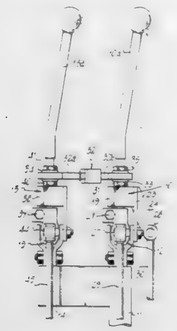
Claims priority, application United Kingdom, Jan. 26, 1980, 8002724; May 27, 1980, 8017209

Int. Cl.³ G05G *13/00*

U.S. Cl. 414—685 10 Claims

1. A twin control lever arrangement for the control of three functions characterised by comprising a first control lever (10) mounted on a first mounting means (12) for pivoting about first (A) and second (B) perpendicular axes to operate first and

second functions respectively, a second control lever (**13**) mounted on a second mounting means (**15**) for pivoting about a third axis (C) aligned with said first axis (A) and a fourth axis (D) parallel to said second axis (B), pivoting of said second lever (**13**) about said third axis (C) operating said third function, and a link member (**32**) extending generally perpendicularly to the two control levers (**10, 13**) to operatively connect said levers by way of pivotal connections (**33, 34**) at both ends of the link member, whereby the two levers pivot together



about said second (B) and fourth (D) axes to allow either lever to operate said second function but said first lever (**10**) can pivot about said first axis (A) to operate said first function without causing sufficient movement of said second lever (**13**) about said third axis (C) to operate said third function and said second lever (**13**) can pivot about said third axis (C) to operate said third function without causing sufficient movement of the said first lever (**10**) about said first axis (A) to operate said first function.

4,389,152

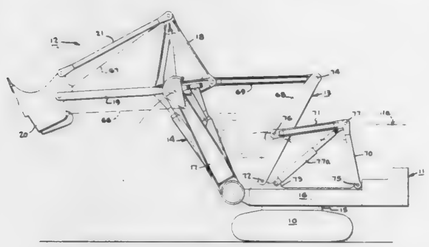
STIFFLEG CONSTRUCTION FOR POWER SHOVELS

Michael M. Palm, Marion, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 186,850, Sep. 15, 1980, abandoned, which is a continuation of Ser. No. 950,006, Oct. 5, 1978, abandoned. This application Aug. 31, 1981, Ser. No. 297,989

Int. Cl.[3] **B66C** *23/00;* **E02** *3/62*

U.S. Cl. 414—694 **7 Claims**



1. In a power shovel comprising a support unit, a stiffleg pivotally connected to said support unit, a dipper handle pivotally connected to the stiffleg, a dipper mounted on the dipper handle and means for, respectively, crowding, retracting and hoisting the dipper, an improved stiffleg construction requiring no resilient joints, but substantially eliminating the transmission of torsional loads to said support unit, and without the use of a plurality of cross-pieces, comprising:

a pair of transversely spaced, longitudinally disposed side beams, each having an I-shaped cross-sectional configuration including upper and lower flange portions and an interconnecting web portion,

a unitary web section interconnecting the web portions of said side beams,

a cross-piece section interconnecting said side beam sections at ends thereof adjacent the point at which said stiffleg is pivotally connected to said support unit to thereby form said stiffleg into a U-shaped member,

bracket means connected to said cross-piece section for pivotally connecting said stiffleg to said support unit and means for pivotally connecting said dipper handle to said stiffleg.

4,389,153

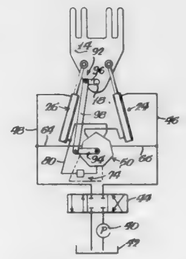
BACKHOE SWING MECHANISM

Carl O. Pedersen, and Herman J. Maurer, both of Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Dec. 10, 1981, Ser. No. 329,348

Int. Cl.[3] **E02F** *3/32;* **F15B** *15/04*

U.S. Cl. 414—695.5 **17 Claims**



1. In an implement having a frame attached to a tractor having a hydraulic system, and a swing tower pivotally connected to said frame about a vertical pivot axis and supporting a boom, an arrangement for pivoting said swing tower and said boom about said vertical axis through an arc of travel, comprising:

(a) two hydraulic motors pivotally interconnected between the frame and the swing tower, each of said motors having a cylinder end and a piston rod end, the extension and contraction of said motors pivoting said swing tower about its vertical pivot axis on the frame, each of said motors being fully extended when its respective centerline intersects said vertical axis;

(b) a hydraulic circuit connected to each motor by conduit means;

(c) directional flow control means, operatively connected to said conduit means, for selectively directing fluid under pressure from said hydraulic system to said two hydraulic motors;

(d) restricting means in said hydraulic circuit for restricting fluid flow from both of said motors during movement of said swing tower and said boom through end portions of their arc of travel prior to reaching the end of the arc, including rotary sequencing valve means hydraulically joined to said motors, said flow control means, and said restricting means,

said sequencing valve means being operatively associated with the pivotal position of said swing tower whereby when said flow control means direct fluid to pressurize the piston rod end of one of said motors in pivoting said swing tower through said arc, said sequencing valve means sequentially provides fluid communication between:

said one piston rod end and both the cylinder ends across said restricting means;

said one piston rod end and the cylinder end of the other motor, and between the cylinder end of the one motor and the piston rod end of the other motor; and both the cylinder ends and the piston rod end of the other motor across said restricting means.

4,389,154

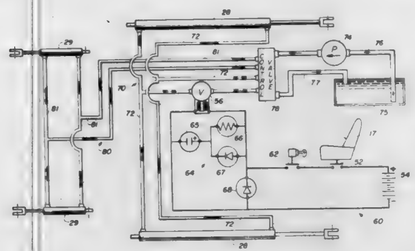
TIME DELAY FOR A SEAT SWITCH ACTIVATED LOADER BOOM LOCK

Ray C. Minor, Leola; James W. Treichler, Lancaster, and Carl E. Bohman, New Holland, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed May 13, 1981, Ser. No. 263,327

Int. Cl.[3] **B60K** *27/08*

U.S. Cl. 414—699 **6 Claims**



1. In a loader having a mobile frame including upwardly extending, laterally spaced side members; a boom structure pivotally mounted on said frame and moveable in a generally vertical path direction, said boom structure including a pair of boom arms generally vertically moveable along a path adjacent said sidewalls; first power means operatively associated with said boom structure for moving said arms along said path of movement; and an operator's compartment positioned between said sidewalls, the improvement comprising:

power interruption means operatively associated with said power means to selectively render said power means inoperative to vertically move said boom structure;

control means operatively connected to said power interruption means for selectively controlling the operation thereof to render said power means inoperative to vertically move said boom structure, said control means including an electrical circuit having a first switch manually moveable between an on position and an off position and a second switch operatively positioned to sense the presence of an operator within said operator's compartment, said second switch being positioned in an on position when an operator is sensed within said operator's compartment and in an off position when an operator is not sensed within said operator's compartment, said electrical circuit being connected to an energy source to provide energy to control said power interruption means, said power interruption means rendering said power means inoperative when either of said first and second switches are positioned in the off position; and

time delay means operatively associated with said control means to prevent said power interruption means from rendering said power means inoperative for a predetermined period of time after said second switch becomes positioned in said off position, said time delay means including a capacitor connected to said electrical circuit in parallel with said energy source, a first diode connected to said electrical circuit in series with said capacitor and in parallel with a resistor, said capacitor providing a temporary source of electrical current to said power interruption means after said second switch has been moved to said off position, said first diode permitting the flow of current from said energy source to charge said capacitor and requiring the flow of current from said capacitor to flow to said power interruption means through said resistor.

4,389,155

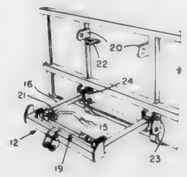
TRACTOR SCOOP MECHANISM

Charles A. Absher, Rte. 1, Box 210-B, Traphill, N.C. 28695

Filed May 11, 1981, Ser. No. 262,125

Int. Cl.[3] **E02F** *3/82*

U.S. Cl. 414—723 **7 Claims**



1. A tractor scoop mechanism comprising: a frame member for pivotable attachment to a scoop device, a pin assembly for engagement with and disengagement from said scoop device, said pin assembly mounted on said frame member, a handle means, said handle means affixed to said pin assembly, said pin assembly having a telescoping portion having inner and outer sections, said outer section containing a resilient member, said inner section and said outer section each having a pin member whereby said telescoping portion is in a collapsed configuration when said pin assembly is in a disengaged position.

4,389,156

DEVICE FOR LIFTING, GRIPPING AND TRANSPORTING PRINTING PLATES

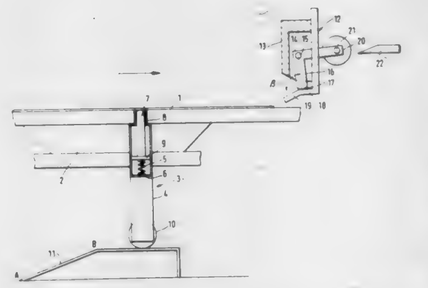
Werner Dennhardt, Taunusstein, and Hans Heist, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 1, 1981, Ser. No. 298,286

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1980, 3033706

Int. Cl.[3] **G03G** *21/00;* **B65H** *5/04*

U.S. Cl. 414—753 **9 Claims**



1. A device for lifting, gripping and transporting printing plates in a processing apparatus of the type in which the printing plates are fixed by suction on a processing table during processing at individual stations of the apparatus, said device comprising:

means, positioned below the processing table, for lifting a printing plate positioned on the table, said lifting means being movable in the longitudinal direction of the apparatus and comprising a lifting member having a height (h), and means, including a spring member having a compressive force insufficient to lift off of the processing table a printing plate fixed by suction but sufficient to lift the printing plate when the suction is released, for shortening said lifting member to a height less than (h) under compression of said spring member in response to movement

of said lifting means in the direction of transport of the printing plate; and

a gripping member positioned above the processing table for gripping a printing plate lifted off of the processing table by said lifting means.

4,389,157

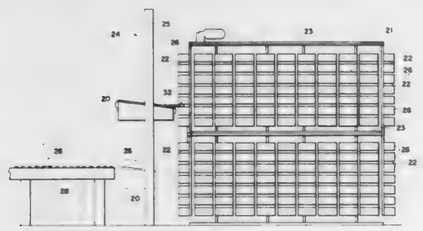
RETRIEVAL AND STORAGE MECHANISM FOR USE WITH AN AUTOMATED ROTATING STORAGE UNIT

Clay Bernard, II, Point Richmond, Calif.; William F. Matheny, III, Tulsa, Okla.; Charles M. Faith, Broken Arrow, Okla.; Richard L. Goswick, Tulsa, Okla., and Jerry L. Hauth, Broken Arrow, Okla., assignors to SPS Technologies, Inc., Jenkintown, Pa.

Filed Jul. 9, 1981, Ser. No. 281,841

Int. Cl.³ B65G *1/06*

U.S. Cl. 414—787 **11 Claims**



1. In combination with automatic storage and retrieval system having a continuous track and a continuous rotating storage unit supported from said track and movable therearound in a horizontal direction, wherein said rotating storage unit includes a plurality of horizontally spaced shelves arranged vertically into columns, each shelf being adapted to accommodate a storage bin thereon, a coveyor system mounted adjacent said rotating storage unit for moving storage bins towards and away from said rotating storage unit, and an elevator mounted in a fixed position between said rotating storage unit and said conveyor system; the improvement which comprises a platform mounted in said elevator for vertical movement up and down adjacent said rotating storage unit, an extraction and insertion arm assembly slidably mounted on said platform, said arm assembly including a pair of longitudinally disposed extractor arms having forward ends extending towards said rotating storage unit, a driving means for moving said arm assembly in a horizontal direction towards and away from said rotating storage unit for bin placement in and withdrawal from a preselected shelf, a spring loaded bin engaging means mounted on the forward end of each arm for removing a bin from a preselected shelf during an extraction operation, a seating means mounted on the upper portion of each said arm for pushing a bin onto a preselected shelf during an insertion operation, a conveyor belt assembly mounted on said platform in longitudinal alignment therewith between the extractor arms for aiding the movement of a bin into or withdrawal from a preselected shelf, and a retaining means for securing a bin on said platform.

4,389,158

TURBO COMPRESSOR HAVING A SURGE SUPPRESSING ARRANGEMENT

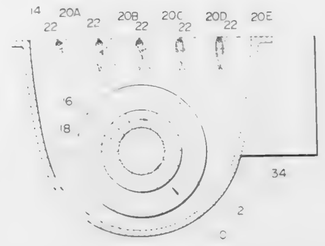
Keiichi Nakanishi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 20, 1981, Ser. No. 265,329

Claims priority, application Japan, Jun. 6, 1980, 55-75440

Int. Cl.³ F01B *25/02, 25/04, 25/06*

U.S. Cl. 415—148 **8 Claims**



1. In a turbo compressor having a compressor wheel disposed in an induction housing and an induction port which lies in an essentially flat plane non-intersecting with the axis of rotation of said compressor wheel, the combination of:

a plurality of spaced normally parallel vanes disposed across said induction port; and

a control mechanism which moves each of said vanes through an angle different from the other, said mechanism being activated in response to said compressor tending to surge so that the air is swirled in said induction housing upstream of said compressor wheel and impinges on said compressor wheel with a uniform and reduced angle of incidence.

4,389,159

CENTRIFUGAL PUMP

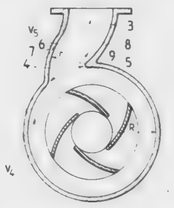
Hannu Sarvanne, Vantaa, Finland, assignor to Oy E. Sarlin AB, Helsinki, Finland

Filed Nov. 25, 1980, Ser. No. 210,361

Claims priority, application Finland, Nov. 29, 1979, 793738

Int. Cl.³ F04D *17/08, 29/46*

U.S. Cl. 415—219 A **2 Claims**



1. A centrifugal pump with a housing which has circular shape in the direction of the circumference and which has on its circumference an exit tube commencing at an exit port substantially tangential with reference to the flow, where the length of the exit port in the direction of the housing circumference is about $\pi/4$ times the inner radius of said housing and where the outer wall of the exit tube constitutes a diverging bulge on outward transition from the circumference, and wherein the outer wall of the exit tube, projecting under an angle about 45 degrees from the circumference of the housing, consists of an arc having the centre of its radius approximately at the juncture of the opposite wall of the exit tube and the housing circumference.

4,389,160

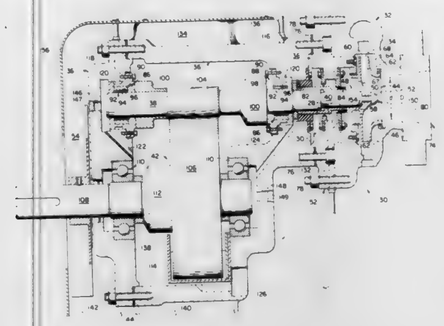
HIGH SPEED CENTRIFUGAL PUMP AND METHOD FOR OPERATING SAME AT REDUCED NOISE LEVELS

Hasan F. Onal, Denver, Colo., assignor to Edison International, Inc., Rolling Meadows, Ill.

Division of Ser. No. 9,472, Feb. 2, 1979, abandoned. This application Sep. 25, 1980, Ser. No. 190,754

Int. Cl.³ F01D *5/08, 5/02*

U.S. Cl. 415—206 **2 Claims**



1. A single stage, single suction, high speed centrifugal pump comprising:

(a) a pump housing, said housing including a double volute portion,

(b) a bearing housing,

(c) a shaft mounted for rotation within said bearing housing with a portion of said shaft extending into said pump housing,

(d) means for rotating said shaft about an axis, said rotating means including a single-step helical gear arrangement,

(e) a closed Francis-vane impeller mounted on said portion of the shaft extending into said pump housing for rotation therewith about the rotational axis of the shaft, said impeller having:

(i) an inlet eye having an inlet diameter,

(ii) a longitudinally extending hub portion and a radially extending vane support portion having an outer discharge diameter,

(iii) a plurality of vanes fixed to said vane support portion, said vanes spiraling outwardly to the outer periphery of said vane support portion and having leading and trailing edges and lead and trail angles,

(iv) an annular shroud fixed to said vanes,

(v) the lead angle of each leading edge of said vanes being about 6°40′ at said shroud and varying continuously to about 8° at said vane support portion,

(vi) the trail angle of each vane being about 16° to the trailing edge thereof,

(vii) each of said vanes having an angular extent of approximately 210° about the rotational axis of the impeller, and

(viii) each of said vanes being equally spaced peripherally about said impeller

(f) said double volute portion of said pump housing being mounted about said impeller to receive the discharge therefrom and having an inlet flow passage means with a portion thereof axially aligned and in fluid communication with the eye of the impeller,

(g) the ratio of the outer discharge diameter of said vane support portion to the inlet diameter of said impeller eye being at least approximately two, and

(h) means for controlling axial thrust along said shaft, said controlling means including:

(i) a pair of wear rings of predetermined diameter relative to each other formed between the pump housing and said impeller for separating the inlet pressure from the discharge pressure, and

(ii) at least one opening formed through said impeller, wherein said bearing housing includes a plurality of fins mounted thereon and extending outwardly of said bearing housing.

4,389,161

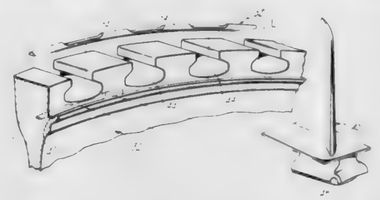
LOCKING OF ROTOR BLADES ON A ROTOR DISK

Claudio Brumen, Denver, Colo., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 19, 1980, Ser. No. 218,241

Int. Cl.³ F01D *5/32*

U.S. Cl. 416—220 R **3 Claims**



2. In an axial flow rotary machine of the type having a rotor assembly which includes a disk having slots extending in a generally axial direction, each slot adapting the disk to receive a corresponding rotor blade, the improvement which comprises:

a rotor disk having a groove extending in a generally circumferential direction and facing in a generally outward direction;

at least two rotor blades each having a root, each root having a groove extending in a generally circumferential direction, facing and in axial and radial alignment with the groove in the disk;

at least one scalloped lock pin for engaging both the rotor disk and at least two rotor blades, each lock pin extending circumferentially in the disk groove to engage the disk and having radial lugs, each lug extending radially into the corresponding groove in the root of a corresponding blade to trap the rotor blade against fore and aft movement with respect to the disk, at least one pair of adjacent lugs being spaced one from the other a sufficient distance apart to permit passage of the blades therethrough.

4,389,162

ROTOR BLADE COMPRISING A PLURALITY OF INDIVIDUAL SECTIONS

Rolf Doellinger, Fischbachau; Rudolf Schindler, Ottobrunn, and Dieter Franz, Jettenbach, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed May 13, 1980, Ser. No. 149,523

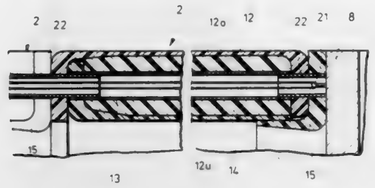
Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921152

Int. Cl.³ F03D *1/06*

U.S. Cl. 416—225 **13 Claims**

1. A large scale rotor blade having a longitudinal, radially extending axis, comprising a plurality of individual blade sections (**2**) forming pressure bodies extending in the longitudinal, radial direction of the rotor blade axis, each blade section having an end surface which forms an interface with an end surface of the adjacent blade section in an end to end fitting relationship, tensioning means (**16**) extending longitudinally relative to said individual sections for providing a pulling force which holds the individual sections together, anchoring means (**20, 21**) securing both ends of said tensioning means, said anchoring means and adjacent blade sections providing an exclusively form-fit connection between adjacent blade sections (**2**),

adjustment means (17, 18) operatively connected to one end of said tensioning means for adjusting said pulling force applied by said tensioning means to operatively hold all individual sections of the rotor blade together, whereby said individual sections may be assembled to form large blades, said rotor



blade further comprising a plurality of bushings (22) extending through each interface to form locking means (22) which together prevent any rotation of said blade sections (2) relative to one another about said rotor blade axis, and wherein said tensioning means (16) extend through said bushings (22) at a small, acute angle relative to the longitudinal rotor blade axis.

4,389,163

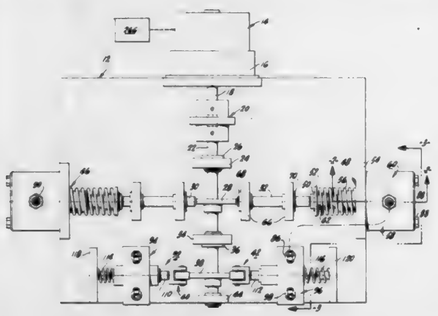
PRESSURE BOOSTER SYSTEM FOR FLUIDS

Haakon T. Magnussen, Jr., Pinole, and Stephen J. Ruskewicz, Kensington, both of Calif., assignors to Altex Scientific, Inc., Berkeley, Calif.

Continuation of Ser. No. 425, Jan. 2, 1979, abandoned. This application Jun. 19, 1981, Ser. No. 275,556

Int. Cl.³ F04B *41/02, 49/06, 49/00, 3/00*

U.S. Cl. 417—2 **17 Claims**



1. A pressure booster system for fluids comprising:

a. injector means for delivering a selected relatively low pressure output flow of fluid;

b. means for accumulating fluid mass from said relatively low pressure injector means, said accumulating means having an output flow;

c. means for detecting a fluid mass in said fluid mass accumulating means relative to a selected value of fluid mass capable of being confined therein, said detecting means producing a signal representative of said fluid mass in said fluid mass accumulating means;

d. high pressure pump means for receiving as its input the outlet flow of fluid from said accumulating means and for producing a high pressure output flow of fluid; and

e. control means for regulating the flow rate of said relatively high pressure pump means according to said fluid mass signal received from said detecting means, said control means comparing said detecting means signal to a reference signal proportionate to said selected value of fluid mass.

4,389,164

AUTOMATIC LIQUID LEVEL CONTROLLER

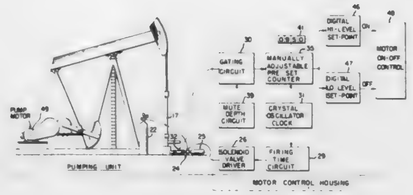
John K. Godbey, Dallas, and Billy G. Ballard, Garland, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 822,506, Aug. 8, 1977, Pat. No. 4,318,674, which is a continuation-in-part of Ser. No. 749,940, Dec. 13, 1976, abandoned, which is a continuation of Ser. No. 563,249, Mar. 28, 1975, abandoned. This application Jun. 24, 1981, Ser. No. 278,437

The portion of the term of this patent subsequent to Mar. 9, 1999, has been disclaimed.

Int. Cl.³ F04B *49/06*

U.S. Cl. 417—36 **3 Claims**



1. Apparatus for controlling a pump suspended in a well comprising:

a source of periodic acoustic pulses continuously coupled to said well;

a transducer coupled to said well producing an output in response to the occurrence of acoustic pulses in said well and in response to the detection of the acoustic pulse reflected from the liquid surface in said well;

a clock pulse source;

digital counting means;

gating means responsive to the output of said transducer for starting the counting of clock pulses by said digital counting means upon the occurrence of an acoustic pulse in said well and for stopping said counting upon detection of the acoustic pulse reflected from the liquid surface in said well; and

a digital controller responsive to said digital counting means for controlling said pump, said digital controller including:

a high level set-point circuit including a manually settable digital register calibrated in units of depth;

a low level set-point circuit including a manually settable digital register calibrated in units of depth; and

a comparator, said digital registers and said counting means being connected to said comparator, said comparator being connected to turn said pump on in response to counting clock pulses between said periodic acoustic pulses and said detection of the acoustic pulse reflected from the liquid surface when the liquid in said well exceeds the high set-point level and to turn said pump off in response to counting clock pulses between said periodic acoustic pulses and said detection of the acoustic pulse reflected from the liquid surface when the liquid in said well falls below the low set-point level.

4,389,165

ION PUMP FOR PRODUCING AN ULTRAHIGH DEGREE OF VACUUM

Shoichi Ono, and Kuniyoshi Yokoo, both of Sendai, Japan, assignors to Tohoku University, Sendai, Japan

Filed Sep. 26, 1980, Ser. No. 190,913

Claims priority, application Japan, Sep. 29, 1979, 54-124716

Int. Cl.³ F04B *37/02*

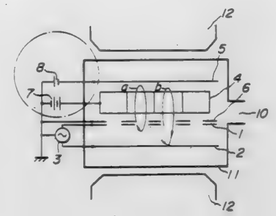
U.S. Cl. 417—49 **7 Claims**

1. An ion pump for producing an ultrahigh degree of vacuum comprising:

an evacuating chamber disposed in a magnetic field,

a first perforated multipactor electrode and a second multipactor electrode opposed to each other to form a multipactor space therebetween in said chamber, said electrodes having a desired secondary electron emission ratio,

a high frequency electric source connected between said first and second electrodes for generating a high frequency alternating current electric field therebetween so as to accelerate electrons produced by one of said first and second multipactor electrodes and to cause said electrons thus accelerated to collide with the other electrode to emit secondary electrons whereby a secondary electron resonance multiplication phenomenon is obtained,



an ionization space disposed adjacent to said multipactor space, said ionization space being defined by a first perforated getter electrode adapted to receive a first direct current potential and a second getter electrode adapted to receive a second direct current potential for repelling ions, said ionization space being disposed adjacent said first perforated multipactor electrode, and including therein an accelerating grid electrode for accelerating ions from said first to said second getter electrodes whereby said ionization space is operative to take in a portion of moving electrons produced in said multipactor space and to cause moving electrons to collide with and ionize gas molecules thereby to evacuate the chamber.

4,389,166

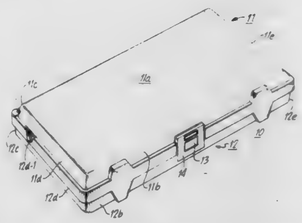
SELF-CONTAINED PORTABLE AIR COMPRESSOR

Gerald J. Harvey, Woodmere, and Elliot Huff, Jr., St. James, both of N.Y., assignors to Harvey-Westbury Corp., Westbury, N.Y.

Filed Oct. 22, 1979, Ser. No. 87,009

Int. Cl.³ F04B *35/04*

U.S. Cl. 417—234 **11 Claims**



1. A portable unitary air compressor unit comprising:

a compressor;

a motor;

a common bracket;

gear means for coupling the output of said motor to said compressor;

said motor, said compressor and said gear means being secured to said common bracket;

a power cord for coupling said motor to a power source;

an air hose for coupling said compressor to an inflatable object;

substantially impact proof housing means for enclosing said motor, common bracket, compressor, air hose and power cord, said housing means comprising a lid hingedly connected to a tray movable between an open and a closed position;

said tray including a molded sheet having a first cavity for receiving and supporting said motor, said common bracket and said compressor and a second cavity for storing said air hose and said power cord when not in use;

first and second guideways in said molded sheet for respectively receiving and guiding a portion of said power cord and a portion of said air hose for enabling coupling of said air hose to an inflatable object and coupling of said power cord to a power source when said lid is closed upon said tray whereby said housing completely encloses said compressor, said motor and said gear means when the motor and compressor are in operation to prevent said motor and compressor from being damaged and to facilitate safe movement and handling of said motor and compressor even when energized.

4,389,167

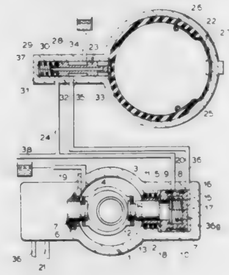
PUMP HAVING MEMBRANE ACTUATED CONTROL VALVE TO UNLOAD SLAVE ACTUATED INLET VALVE

Glyn P. R. Farr, Warwickshire, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Nov. 6, 1980, Ser. No. 204,584

Int. Cl.³ F04B *49/02, 49/08;* **F16D** *31/02*

U.S. Cl. 417—289 **9 Claims**



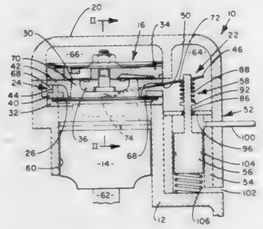
1. An hydraulic system comprising an hydraulic pump having an inlet for connection to a tank for fluid, an hydraulic accumulator, a supply-line between said pump and said accumulator, and an unloader valve disposed in said supply line to limit the pressure which can be stored in said accumulator, said unloader valve incorporating a control valve, and a pressure-respondive slave operated by fluid pressure under control of said control valve, said pressure-resporisive slave having a pressure-responsive face and being provided with means defining a flow-path between said pump and said accumulator, said control valve comprising a valve member movable between a first position in which said accumulator is isolated from said pressure-responsive face of said slave, and a second position in which fluid pressure from said accumulator acts on said pressure-responsive face of said slave to render said slave operative to unload said pump, and said accumulator incorporating a container, and a membrane in said container to trap a volume of gas under pressure in said container and separate said gas from fluid from said pump, said membrane itself also co-operating with said valve member to provide a force for controlling movement of said valve member between said first and second positions in accordance with said pressure in said accumulator.

4,389,168

APPARATUS FOR MODULATING THE CAPACITY OF A RECIPROCATING COMPRESSOR

Donald Yannascoli, Fayetteville, and Bruce A. Fraser, Manlius, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 27, 1981, Ser. No. 248,388
Int. Cl.³ F04B *49/00;* **F25B** *1/00*
U.S. Cl. 417—298 **4 Claims**



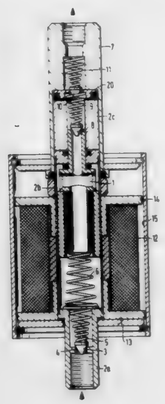
1. Apparatus for modulating the capacity of a reciprocating compressor having a cylinder chamber and a valve assembly extending over the cylinder chamber, the valve assembly defining fluid inlet and outlet paths and including a suction valve having an annular plate for regulating fluid flow through the inlet path, the capacity modulating apparatus comprising:
a lever extending through the fluid inlet path and above the suction valve, and including
a shoulder extending radially outside the valve assembly and having a first end located outside the valve assembly, and
a second end engaging the suction valve and having first and second, spaced arms extending from the shoulder and engaging opposed, top sides of the annular plate,
a fulcrum engaging the shoulder of the lever; and
control means engaging the shoulder of the lever for applying a variable force thereto, wherein the lever transmits the force to the suction valve to urge the suction valve to an open position.

4,389,169

PUMP FOR FLUIDS

Manlio M. De Dionigi, Olgiate Olona, Italy, assignor to Alessandro Nicoletti, Milan, Italy

Filed Mar. 6, 1981, Ser. No. 241,238
Claims priority, application Italy, Mar. 10, 1980, 20461 A/80
Int. Cl.³ F04B *17/04*
U.S. Cl. 417—417 **1 Claim**



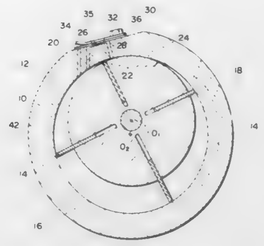
1. A reciprocating electromagnetic pump comprising a trunk piston of magnetic material, reciprocable in a cylinder connected at its ends with suction and delivery ducts and enclosed in a coil energized during the piston suction stroke, wherein the piston comprises a set of cylindrical liners overlapping on one another, said cylinder comprising a suction portion, a central portion which receives said sliding piston, and a delivery portion, said central portion being fabricated from a magnetic material, the delivery portion of the cylinder comprising two parts, one of said parts being fabricated from graphite and the other of brass, with an O-ring arranged between them, said O-ring slightly protruding inside the cylinder bore portion which receives the sliding piston stem.

4,389,170

ROTARY VANE PUMP WITH PASSAGE TO THE ROTOR AND HOUSING INTERFACE

Kazuo Hayashi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 14, 1980, Ser. No. 206,931
Claims priority, application Japan, Nov. 17, 1979, 54-159666[U]
Int. Cl.³ F01C *1/00, 21/04;* **F04C** *29/02*
U.S. Cl. 418—15 **5 Claims**



1. A rotary vane pump comprising:
a rotor disposed in a housing;
vanes slidably received in said rotor for contacting the inner surface of said housing;
an arcuate contact surface formed in said housing, said contact surface having a radius equal to the radius of said rotor, said rotor being mounted within said housing so as to contact said arcuate contact surface to define an interface between said housing and said rotor which separates a high pressure discharge zone on one side thereof from an induction pressure zone on the other side thereof;
a discharge passage leading from said high pressure discharge zone through the wall of the said housing;
a valve mounting site formed on said housing;
a discrete lubricant passage leading from said high pressure zone to said interface, said lubricant passage having an open channel section formed in said site;
a valve mounted on said site, said valve having an element for closing said channel; and
a projection on said valve which extends into said lubricant passage for throttling the same in dependence on the pressure of the fluid discharged through said discharge passage.

4,389,171

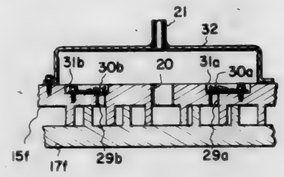
GAS COMPRESSOR OF THE SCROLL TYPE HAVING REDUCED STARTING TORQUE

David H. Eber, and John R. Sauls, both of La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Jan. 15, 1981, Ser. No. 225,211
Int. Cl.³ F04C *18/02, 29/08*
U.S. Cl. 418—15 **8 Claims**

1. A gas compressor of the positive displacement scroll type comprising

a. a first wrap element defining inner and outer flank surfaces of generally spiroidal configuration about a first axis and extending between first and second axial tip portions;
b. a second wrap element defining inner and outer flank surfaces of generally spiroidal configuration about a second axis and extending between first and second axial tip portions, said first and second wrap elements being disposed in intermeshing, angularly offset relationship with their respective axes generally parallel;
c. end plate means comprising a first end plate sealingly affixed to the first axial tip portion of said first wrap element and a second end plate sealingly affixed to the first axial tip portion of said second wrap element, the second axial tip portions of said first and second wrap elements extending to a point in substantial sealing relationship to said second and first end plates respectively; further comprising means for maintaining said second wrap element and end plate in a fixed position;
d. drive means operative to drive said first wrap element and end plate in an orbital path with respect to said second wrap element and end plate such that moving line coaction between the inner facing flank surface of said first wrap element and the outer facing flank surface of said second wrap element, and between the outer facing flank surface of said first wrap element and the inner facing flank surface of said second wrap element, defines between said end plate means first and second moving volumes originating at a radially outer portion of said wrap elements and progressing radially inwardly to a radially inner portion thereof, said volumes being bounded initially by a single, leading moving line of coaction so as to define a suction volume; then by both leading and trailing lines of coaction so as to define a closed moving volume which is progressively reduced in volume as it moves radially inwardly; and finally by a single trailing line of coaction so as to define a discharge volume;
e. port means for admitting a working gas at a suction pressure to said suction volumes and for discharging compressed gas from said discharge volume, said discharge port means extending through said second end plate;
f. a discharge manifold disposed in generally overlying, sealed relationship with respect to said second end plate and in communication with said discharge port means, whereby said discharge manifold is normally at discharge pressure during operation of said compressor; and
g. means for reducing the degree of compression of said gas compressor as it starts from a standing start in order to reduce the initial starting torque required comprising
i. passage means comprising a first passage extending through said second end plate from a location in communication with said first closed moving volume as it progresses radially inwardly, to said discharge manifold; and a second passage extending through said second end plate from a location in communication with said second closed moving volume as it progresses radially inwardly, to said discharge manifold; each of said first and second passages having a dimension in the radial direction which is less than or equal to the thickness of said wrap elements and extending through said second end plate at a location immediately adjacent one of the flank surfaces of said second wrap element;
ii. pressure responsive valve means for permitting flow through said first and second passages when the pressure within said respective first and second moving volumes exceeds that within said discharge manifold as said compressor starts from a standing start, and for blocking flow therethrough during normal operation of said compressor, said valve means comprising first and second valve elements disposed in said respective first and second passages, said first and second valve elements having a first surface exposed to the pressure in said respective first and second closed moving volumes and a second surface exposed to the pressure within said discharge manifold; said valve elements being movable to positions permitting flow through said passages in response to a pressure within said closed moving volumes greater than that within said discharge manifold, and to positions blocking flow through said passages in response to a pressure within said discharge manifold greater than that within said closed moving volumes.

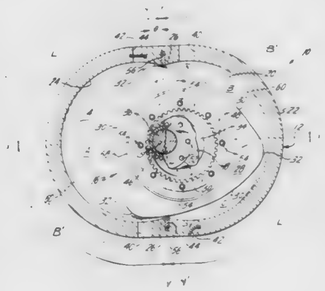


4,389,172

ROTARY COMPRESSOR OR EXPANSION ENGINE OF HYPOTROCHOIDAL CONFIGURATION AND ANGULARLY DISPLACED GEAR MEANS

Michael J. Griffith, Rutherford, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Oct. 20, 1980, Ser. No. 198,583
Int. Cl.³ F01C *1/22, 19/00;* **F04C** *18/22, 27/00*
U.S. Cl. 418—61 A **2 Claims**



1. A rotary compressor or expansion engine comprising
(a) a housing with axially spaced end walls and a peripheral wall interconnecting the end walls to form a housing cavity therebetween;
(b) a shaft having an eccentric portion supported for rotation in said housing cavity;
(c) a rotor mounted on said eccentric portion for planetative rotary movement within said housing cavity relative to said housing;
(d) said rotor having three flank surfaces intersecting each other to form a profile of hypotrochoidal configuration with rounded apex portions;
(e) said housing cavity having a peripheral surface which is substantially the outer envelope traced by the apexes of the rotor upon rotative movement of the rotor and thereby forming two juxtaposed lobe junctures dividing the housing cavity into a two lobe cavity;
(f) the rotor being sized so that the rotor and its rounded apex portions are in close running-fit with the housing to form a plurality of working chambers which expand and contract in volumetric size as the rotor rotates relative to the housing;
(g) inlet and outlet port means in said housing on opposite sides of each of the lobe junctures for passage of low and high pressure fluid into and from the working chambers

and so that in each housing cavity lobe there is a location of greatest differential fluid pressure between next adjacent working chambers;

(h) a first gear means fixedly mounted on said housing; and

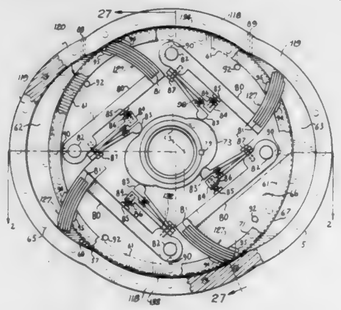
(i) a second gear means mounted on said rotor for conjoined rotation with said rotor and in meshing relationship with said first gear means to provide a rotor path of substantially the same profile as the housing cavity peripheral surface but angularly displaced to provide a closer running-fit of the apex portion in each housing cavity lobe at the location of greatest differential pressure between next adjacent working chambers.

4,389,173

ARCUATE PISTON ROTARY ENGINE

William C. Kite, Kelseyville, Calif., assignor to Earl J. Lee, El Cajon, Calif.

Filed Apr. 1, 1982, Ser. No. 364,286
Int. Cl.³ F01C *1/00, 19/00;* **F02B** *53/00*
U.S. Cl. 418—146 **1 Claim**



1. A rotary internal combustion engine comprising:

(a) a casing;

(b) a rotor mounted in said casing;

(c) said casing having a pair of spaced parallel endwalls perpendicular to the rotor axis and a sidewall at all points parallel to the rotor axis;

(d) said casing being oblate with end lobes defining first and second internal crescent-shaped chamber sections beyond the perimeter of said rotor, and intermediate narrow corridor-defining sectors passing close by the perimeter of said rotor and effecting communication between said chamber sectors;

(e) a plurality of circumferentially spaced outwardly biased blade pistons generally radially extended from said rotor to wipe said sidewall and defining successive sealed variable-volume gas zones therebetween;

(f) each of said zones operating through successive approximately 90° portions of its cycle to expand by drawing in gas during Phase **1** of its cycle, compressing gas during Phase **2**, effecting ignition and combustion during Phase **3**, and expelling exhaust gas during Phase **4** as said zones move through successive ones of said sectors;

(h) said blade pistons being arcuate and swinging on pivot arms and each being pivoted at the center of curvature of the respective piston blade;

(i) a dual cam substantially corresponding in shape to said sidewall;

(j) a cam follower extending from each of said piston pivot arms and riding on said cam;

(k) each of said cam followers having an auxiliary arm and extending from the respective piston pivot arm between the respective cam follower and pivot arm and including an adjustable bolt extending from the respective auxiliary arm to bear against the respective pivot arm, and an auxiliary spring captured between each respective auxiliary arm and cam follower such that the respective bolt bears against the respective pivot arm;

(l) said blade pistons having three bearing sides and each of same being channeled to define a composite U-shaped channel, and including a U-shaped seal seated in said channel; and

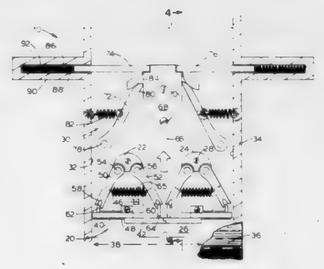
(m) said rotor comprising a pair of spaced circular plates with indexed slots cut into the edges thereof to slideably receive said blade pistons and said plates defining peripheral grooves on the outside thereof slideably seating bearing sealing strips therein to slide along the endwalls of said casing.

4,389,174

ROTARY POWER PLANT RUNNER/SHUTTER MECHANISM

Ching-Ho Tseng, 7307 Caracas Dr., Houston, Tex. 77083

Filed Jan. 5, 1981, Ser. No. 222,386
Int. Cl.³ F01C *1/324;* **F03C** *2/00*
U.S. Cl. 418—222 **8 Claims**



1. In a rotary engine having: an axis, a housing with first and second sidewalls joined by a cylindrical outer wall concentric with said axis: a shaft, a rotor on the shaft with the rotor periphery fitting between the first and second sidewalls, in spaced relation with said cylindrical wall forming a generally annular chamber; runner structure on the rotor, means on the housing reciprocable for forming periodically in the annular chamber an expansion chamber in coaction with the runner structure, and means causing gas expansion in said expansion chamber for urging said runner structure to move the rotor in a forward rotational direction, the improvement comprising: a gate including the reciprocable means comprising first and second abutments slidable respectively in the first and second sidwalls and having respective inboard ends in opposed relation across said annular chamber, means permitting the runner structure to pass through the gate including means for retracting the first and second abutments into respective slots in the first and second sidewalls on approach of the runner structure, the runner structure including shutter structure; means causing the gate to seal across the annular chamber after passage of the runner structure through the gate, means causing the runner structure to seal across the annular chamber after the passage of the runner structure through the gate; the means for retracting including: first and second gate arms with pivotal attachment to the housing, first means engaging the first gate arm with the first abutment, second means engaging the second gate arm with the second abutment, means on the runner structure for pivoting said first and second gate arms, a gate block on the housing between the first and second abutments, provision on the gate block for supporting said inboard ends of the first and second abutments, the runner structure including a first runner located for passing on a first side of the gate block and a second runner located for passing on a second side of the gate block, and the means for pivoting the first and second gate

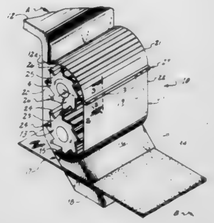
arms including a respective rounded front portion on each of said runners.

4,389,175

APPARATUS FOR DISTRIBUTING DRY FIBERS ONTO A FORMING WIRE

Helmut W. Sakschek, Neenah, Wis., assignor to James River-Dixie/Northern, Inc., Greenwich, Conn.

Filed May 15, 1981, Ser. No. 263,908
Int. Cl.³ B29J *5/00;* **D04H** *17/00*
U.S. Cl. 425—82.1 **19 Claims**



1. An apparatus for depositing a uniform web of dry fibers on a forming wire, comprising:

a fiber distributor housing having an inlet opening for introducing therein a gaseous dispersion of dry fibers, and a perforate outlet opening for discharging said fibers onto said forming wire;

at least a pair of rotors mounted to rotate in said housing, one rotor disposed above the other rotor, said rotors being cooperatively disposed upon rotation thereof to move said fibers about in said housing between said openings whereby to spread said fibers as they are introduced and to uniformly distribute said fibers over said perforate outlet opening for discharge therethrough onto said forming wire;

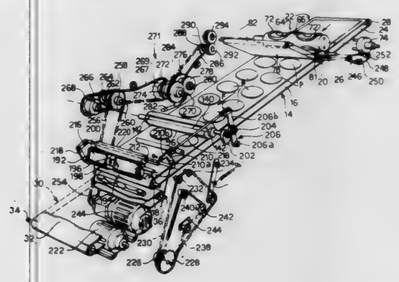
and means defining a breaker bar in said housing, adjacent one of said rotors, and being so shaped and disposed as to be impacted by clumps of fibers moved by said rotors and break them up by impaction into fibers within said housing, in accomodation of passage of said fibers through said perforate outlet opening.

4,389,176

MACHINE FOR THE PRODUCTION OF TUBULAR CASINGS OF ALIMENTARY DOUGH

Claudio Nenci, Via Carlo Poma 4, Cerese di Virgilio (Mantova), Italy

Filed Dec. 23, 1981, Ser. No. 334,048
Claims priority, application Italy, Mar. 20, 1981, 67386 A/81
Int. Cl.³ A01J *00/00*
U.S. Cl. 425—101 **18 Claims**



1. A machine for the production of tubular casings of alimentary dough by rolling up pieces of sheet dough around a cylindrical support core, said machine comprising:

a support structure;

a continuous belt conveyor mounted on the support structure and having a receiving end and a discharge end,

feed means for feeding a continuous sheet of dough to the receiving end of said conveyor;

a punching device disposed above said conveyor downstream of the feed means and provided with shaped punches arranged to cut said continuous sheet of dough in synchronism with the advance of said conveyor so as to cut out successively from the said continuous sheet a series of spaced-apart pieces or groups of adjacent pieces of dough,

recovery means disposed along said conveyor downstream of said punching device and arranged to take up from the conveyor that part of the dough sheet remaining after the cutting of the said pieces;

a dispensing unit arranged above said conveyor downstream of the said recovery means and comprising a receptacle for containing cylindrical support cores, and a withdrawal member for taking out support cores from the receptacle and depositing them on said conveyor such that each said core is disposed transversely between two successive said pieces or groups of pieces of dough,

a rolling-up unit disposed transversely adjacent the discharge end of said conveyor and comprising an endless web extending upwardly with respect to the conveyor, the said endless web being supported adjacent its upper end from said support structure for back and forth movement and having a rolling-up pass which, in use, has a direction of advance from its lower end towards its upper end away from said conveyor, and actuator means for effecting in synchronism with the operation of said withdrawal member of the dispensing unit, back and forth movement of the said endless web between a substantially-vertical rolling-up position and an inclined discharge position, said endless web being operative when in its rolling-up position to entrain in rotation a said support core fed thereto by said conveyor and to cause the rolling-up thereon of a respective piece or group of pieces of dough, and

collecting means for receiving the said support cores with respective pieces or groups of pieces of dough rolled up thereon from the discharge end of said conveyor when the said endless web of the rolling-up unit is moved into its discharge position.

4,389,177

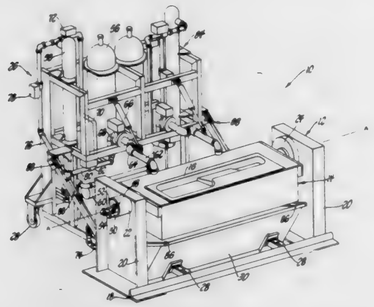
MODULAR SLUSH MOLDING MACHINE

Daniel E. Colby, Somersworth, N.H., assignor to McCord Corporation, Detroit, Mich.

Division of Ser. No. 56,866, Jul. 12, 1979, Pat. No. 4,331,626, which is a division of Ser. No. 832,640, Sep. 12, 1977, Pat. No. 4,217,325, which is a continuation-in-part of Ser. No. 789,410, Apr. 21, 1977, abandoned. This application May 15, 1981, Ser. No. 264,014
Int. Cl.³ B29C *5/04, 1/00, 5/12*
U.S. Cl. 425—144 **2 Claims**

1. An assembly for molding an article of heat-fusing material comprising; a mold presenting a mold surface, a first group of liquid passages disposed adjacent the mold surface over a first area thereof for controlling the temperature over said first area of the mold surface, a second group of liquid passages disposed adjacent the mold surface over a second area thereof for controlling the temperature over said second area of the mold surface, and control means for sequentially supplying liquid to said first and second groups of passages, a mold support means supporting said mold, first manifold means supported by said mold support means for distributing liquid to and collecting liquid from said first group of passages, and second manifold means supported by said mold support means for distributing liquid to and collecting liquid from said second group of pas-

sages, pedestal means for rotatably supporting said mold support means for rotation about an axis for emptying said mold of liquid heat-fusing material, a first supply line in communication with said first manifold means and a second supply line in communication with said second manifold means, a first swivel means disposed on said axis for allowing said first supply line to rotate with said mold support means and second swivel means disposed on said axis in axially spaced relationship to said first swivel means for allowing said second supply line to rotate with said support means, a heat-fusing material supply and retrieval module for supplying liquid heat-fusing material to said mold surface and for retrieving liquid heat-fusing material emptied from said mold, said module including conveyance means for facilitating movement thereof away from said pedestal means and said mold support means, said module including a dump tank for positioning below said mold support means for



receiving and retrieving liquid heat-fusing material emptied from said mold, said module including a frame structure supporting a heat-fusing material storage tank, a heat-fusing material heat exchanger for heating the heat-fusing material, supply conduit means for supplying heat-fusing material to said mold, return conduit means for returning heat-fusing material from said dump tank to said storage tank, pump means for circulating the heat-fusing material, and valve means for controlling the circulation of heat-fusing material through said storage tank, said heat exchanger and said conduit means, said control means including a hot liquid circuit having control valves, a pump and first heat exchange means for sequentially supplying liquid to said first and second supply lines and a cold liquid circuit having control valves, a pump and second heat exchange means for sequentially supplying liquid to said first and second supply lines.

4,389,178

RAM-TYPE FEEDER FOR BRIQUETTING PRESS

Karl R. Komarek, Chicago, Ill., assignor to K. R. Komarek, Inc., Elk Grove Village, Ill.

Filed Jul. 31, 1981, Ser. No. 288,799

Int. Cl.³ B29C *3/02, 3/04*

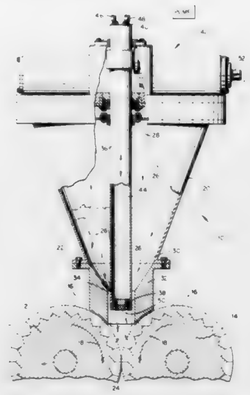
U.S. Cl. 425—237 **8 Claims**

1. A feeder for a briquetting press in which particulate material is compressed in complementary cavities spaced about the peripheries of a pair of cooperating, rotating rolls, said feeder comprising:

a. a funnel for directing said particulate material toward the nip of said rolls;

b. elongated ram means coaxially disposed in said funnel for compressing said particulate material into the nip of said rolls;

c. drive means for reciprocating said ram means in an axial stroke, the rate of reciprocation and the length of stroke being selectively adjustable; and



d. means interconnecting said ram means and said drive means for adjustably controlling the pressure exerted by said ram means on said particulate material.

4,389,179

APPARATUS FOR FORMING PLASTIC SHEET

Robert F. Westcott, Norwalk, and John R. Delamater, Berlin Heights, both of Ohio, assignors to American Hoechst Corporation, Somerville, N.J.

Division of Ser. No. 135,848, Mar. 31, 1980, Pat. No. 4,329,307.

This application Nov. 30, 1981, Ser. No. 325,956

Int. Cl.³ B29C *7/14*

U.S. Cl. 425—302.1 **4 Claims**



1. An apparatus for continuously forming plastic sheet to a desired cross-section comprising: means for continuously feeding a sheet of plastic to a machine table; means for advancing said sheet along said machine table; a first heating means positioned relative to said machine table and adapted to heat a predetermined first edge portion of said sheet to its softening point; a first forming means having a first transition guide; said first forming means being positioned generally in line with said first heating means; said first transition guide positioned relative to said machine table so as to slidably engage said first heated edge portion and to cause said first heated edge portion to rotate through a plane transverse to said machine table; a first cooling means positioned relative to said machine table so as to reduce the temperature of said heated first edge portion below its softening point; a second heating means positioned relative to said table for heating a predetermined second edge portion of said sheet to its softening point; said second heating means being positioned on the opposite side of said machine table relative to said first heating means; a second forming means having a second transition guide positioned generally in line with said second heating means; said second transition guide being positioned relative to said machine table so as to engage said heated second edge portion as it advances along said machine table and adapted to cause said second edge portion to rotate through a plane transverse to the surface of said machine table; a second cooling means positioned relative to said second forming means whereby said advancing second edge portion engages said second cooling means to reduce said heated second edge portion to a temperature below its softening point and cutting means positioned relative to said machine table and adapted to cut said sheet to a desired length.

4,389,180

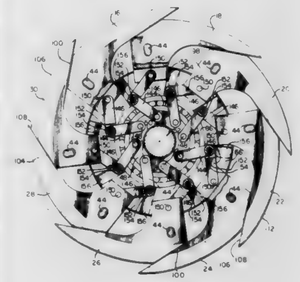
MANDREL WITH IDENTICAL EXPANDING SEGMENTS

John H. Gordon, 855 Brandywine Rd., Downingtown, Pa. 19335

Filed Jun. 25, 1981, Ser. No. 277,279

Int. Cl.³ B29C *17/00;* **B29D** *23/00*

U.S. Cl. 425—403 **5 Claims**



1. A machine for providing a bell with an annular groove in an end of a plastic pipe comprising

nose means and body means shaped to form the configuration of the bell,

said nose means and said body means being non-rotative,

said nose means and said body means defining an operating opening therebetween;

a plurality of identical segment means circularly arranged in the said opening to impress an annular groove in the bell,

said segment means each being equally radially reciprocal between respective retracted positions and respective expanded positions;

an axially aligned shaft through the nose means the body means and the circle defined by the segment means, the shaft being adapted for rotative reciprocation relative to the nose means and the body means;

link means pivotally connected to at least some of said segment means to reciprocate the segment means radially outward of the shaft,

the link means comprising pairs of interconnected inner links and outer links, each outer link being pivotally connected to one of the segment means,

the pairs of links being interconnected by actuating pivot pins, the said pins extending both forwardly and rearwardly of the interconnected links to provide forward and rearward pin extensions, and

followers secured to the actuating pivot pins at the said forward and rearward pin extensions; and

actuating plate means rotatively reciprocated by the shaft, said activating plate means being adapted to pivot the link means radially to reciprocate simultaneously the segment means upon rotative reciprocation of the shaft,

the activating plate means comprising forward and rearward shaped slots, the said followers being positioned within the slots to pivotally move the pairs of links upon circular reciprocation of the actuating plate means.

4,389,181

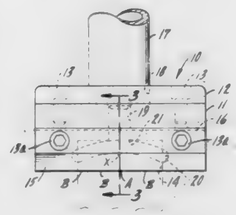
WIDE BAND EXTRUDER NOZZLE

Richard H. Frick, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sep. 24, 1981, Ser. No. 305,046

Int. Cl.³ B29F *3/04*

U.S. Cl. 425—461 **4 Claims**



1. An extruder nozzle for producing a relatively wide flat ribbon of extruded fluid comprising in combination, a fluid supply inlet, a main body portion forming a first side boundary of an elongated channel of constant and generally rectangular cross-section terminating in an orifice, said main body portion having a groove therein, the mean cross sectional area of the groove being substantially greater than the cross-sectional area of the supply line, said groove communicating with said inlet and being substantially arcuate in shape and positioned in said main body portion so that the ends of said groove are closer to the orifice than is the center of said groove, said groove being dimensioned so as to cause a fluid to flow generally uniformly through the entire length of the orifice so as to cause the orifice to fill essentially completely with fluid, a front cover plate for providing a second side boundary of the channel opposite the first side channel boundary formed by said main body portion, and a shim means positioned between said main body portion and said front cover plate to establish the cross sectional area of the channel from which the fluid is extruded, said shim means forming two opposed end boundaries of said channel and dimensioned so that said arcuate groove in said main body portion is terminated at both its ends by said shim means thereby establishing a reservoir of fluid at each end of said arcuate groove to facilitate extruding a ribbon of relatively even thickness from said nozzle.

4,389,182

CONTINUOUSLY OPERABLE CHIPBOARD PRESS

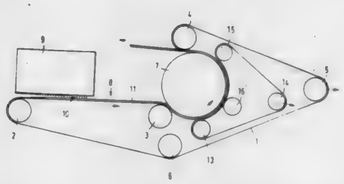
Rolf Gersbeck, Ronnenberg, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Jan. 27, 1982, Ser. No. 343,307

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1981, 3103050

Int. Cl.³ B28B *21/00*

U.S. Cl. 425—505 **4 Claims**



1. A continuously operable chipboard press comprising:

(a) a heated press drum, and means for heating the same;

(b) a first endless steel belt adapted to be pressed on one face

thereof against the inner surface of said drum in a pressing section around said drum;

(c) a plurality of direction-changing rolls around which said first belt passes, and means for tensioning said first belt around said drum in said pressing section, certain of said rolls being arranged substantially horizontal so as to permit said first belt to receive, in advance of said drum, a chip cake of wood chips and adhesive to be formed into such chipboard;

(d) at least one of said direction-changing rolls bearing against the opposite face of said first belt and serving as a pressure roll;

(e) a second endless steel pressing belt overlying said first belt in the pressing section, and

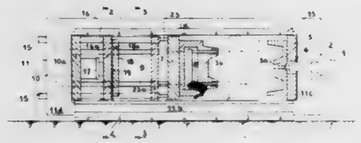
(f) an additional set of direction-changing rolls around which said second belt passes and is tensioned, at least certain of said additional rolls pressing said second belt against the opposite face of said first belt over the entire or part of said pressing section, whereby the high pressure in said pressing section results in a cured and hardened wood chip mixture.

4,389,183

EXTERNAL FRAME INJECTION MOLDING APPARATUS

Jean Laurent, Oyonnax; Bernard Monnet, Billignat, and Philippe Pertuis, Oyonnax, all of France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed Oct. 3, 1980, Ser. No. 193,692
Claims priority, application France, Oct. 9, 1979, 79 25523
Int. Cl.³ B29C *1/16*; B29F *1/00*
U.S. Cl. 425—589 **9 Claims**



1. A device for the injection molding of plastic articles or the like, said device having a generally horizontal axis and comprising a fixed first plate and a movable second plate respectively bearing the two halves of a mold, a fixed third plate or bed, and means for moving the movable second plate and for urging the two halves of the mold together, characterized by: the fixed first plate (**5**) and the bed (**10**) being mounted within at least two hollow rectangular frames (**11**) disposed parallel to each other, said frames being independently suspendedly supported by the fixed plate (**5**) and the bed (**10**) with no rigid connections between ones of said frames.

4,389,184

COMBUSTION CONTROL APPARATUS

Toshio Tanaka, Toride; Sumio Nakagawa, Matudo, and Kenzi Toudo, Yanai, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

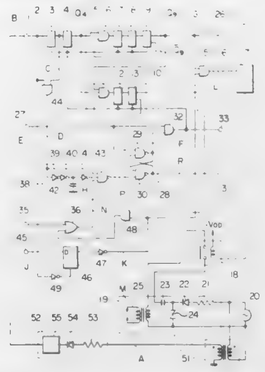
PCT No. PCT/JP80/00008, § 371 Date Sep. 23, 1980, § 102(e) Date Sep. 23, 1980, PCT Pub. No. WO80/01604, PCT Pub. Date Aug. 7, 1980
PCT Filed Jan. 24, 1980, Ser. No. 224,289
Claims priority, application Japan, Jan. 24, 1979, 54/6158
Int. Cl.³ F23N *5/24*
U.S. Cl. 431—15 **14 Claims**

1. A combustion control apparatus comprising:

timer means including a reference clock pulse generator and a counter for producing first and second timing signals upon counting predetermined first and second numbers of reference clock pulses, respectively, said second number being larger than said first number;

means including an OR gate for producing an output signal in response to either one of a first malfunction signal which is produced when a flame signal indicative of ignition of fuel is not produced before generation of said second timing signal and a second malfunction signal indicative of an abnormality of one or more external devices associated with the apparatus;

means including an R-S flip-flop for producing, when it is rendered operative, a set signal in response to said output signal of said OR gate;



detection means for producing a detecting signal in response to a second clock pulse produced at the timing corresponding to a selected one of the leading and trailing edges of the reference clock pulse;

means for rendering said R-S flip-flop operative under the AND condition of said detecting signal and said output signal of said OR gate; and

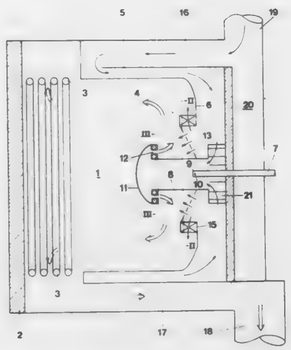
control means for producing output signals for controlling operation of the external devices, said output signals being produced at the timing corresponding to the other of the leading and trailing edges of the reference clock pulse.

4,389,185

COMBUSTOR FOR BURNING A VOLATILE FUEL WITH AIR

Jan A. Alpkvist, Spindelgatan 2, SE-582 58 Linköping, Sweden

Filed Oct. 31, 1980, Ser. No. 202,473
Int. Cl.³ F23D *11/44*
U.S. Cl. 431—164 **3 Claims**



1. An improved combustor for burning a volatile fuel with preheated air and of the type comprising a generally cylindrical vaporizer extending into a combustion cham directly heated by the combustion gases, a fuel s

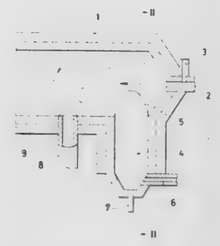
extending coaxially into said vaporizer and terminating therein through radially directed fuel exit openings, said vaporizer having a part extending outside said combustion chamber being provided with inlet openings for receiving primary combustion air and for rendering to the primary air a rotary movement coaxially with said vaporizer, the vaporizer terminating within said combustion chamber and the vaporized fuel-air flowing through an outlet directed towards inlet openings for secondary combustion air supplied directly to said combustion chamber, said secondary air inlet openings being positioned adjacent the vaporizer, the improvement comprising duct means for preheating both the primary and secondary air supply, and said vaporizer being a substantially rotationally symmetrical unit including means connected to said duct means, for channeling said preheated primary and secondary air.

4,389,186

COMBUSTION APPARATUS

Yoshiio Kawamura, Yatabemachi, Japan, assignor to Agency for Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 240,194
Int. Cl.³ F23G *5/32*
U.S. Cl. 431—173 **3 Claims**



1. A combustion apparatus comprising a main combustion chamber, a secondary fuel supply means for supplying into the main combustion chamber 10 to 40% of all the fuel to be supplied, an auxiliary combustion chamber disposed in the lateral wall of the main combustion chamber to permit combustion gas to flow to the position at which the fuel for the main combustion chamber is supplied, a first fuel supply means for supplying 60 to 90% of all the fuel to be supplied into the auxiliary combustion chamber, a first air supply means for supplying air in an amount equal to the amount theoretically required for combustion of the fuel supplied into the auxiliary combustion chamber, and a second air supply means disposed on the lateral wall of the main combustion chamber at a position downstream of the position at which the combustion gas from the auxiliary combustion chamber is supplied.

4,389,187

EXTENDED HOLDER FOR A LIGHTER

Michael H. Sims, 4102 Aquaverde, Austin, Tex. 78746

Filed Mar. 16, 1981, Ser. No. 244,216
Int. Cl.³ F23Q *1/02*
U.S. Cl. 431—277 **16 Claims**

1. A holder for a conventional lighter having a flint and a striking wheel which ignites the lighter fuel upon rotation, the holder comprising:

(a) an elongated frame having an open receptacle at a first end, the receptacle configured to securely retain such a lighter during use; and



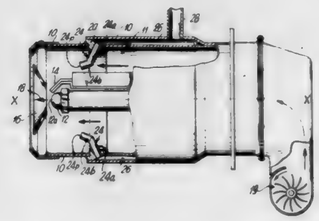
(b) an elongated striker means movably secured to the frame for frictionally engaging and rotating the striking wheel of such a lighter when driven longitudinally during use.

4,389,188

GAS BURNER INJECTOR HEAD

Bola R. Kamath, Ridge, N.Y., assignor to ABC Sunray Corporation, Commack, N.Y.

Filed Nov. 12, 1980, Ser. No. 205,906
Int. Cl.³ F23Q *9/00*
U.S. Cl. 431—284 **9 Claims**



1. A gas burner injector head comprising:

a housing having an annular chamber positioned around a tubular chamber,

said annular chamber having a back end adapted to communicate with a source of gas, said annular chamber having a front end with a plurality of openings therethrough,

said tubular chamber having a back end adapted to communicate with a source of air,

a set of nozzles, one each extending from respective ones of said openings of said annular chamber, each of said nozzles having a forward port, the forward port of each of said nozzles being positioned within whatever stream is caused to flow along said tubular chamber,

a first subset of said nozzle ports being deployed approximately equal distance from one another around a substantially circular locus, and

a second subset of said nozzle ports deployed along an arc of said locus that constitutes a relatively small fraction of the circumference of said circular locus.

4,389,189

REFRACTORY COMPONENTS FOR FURNACES

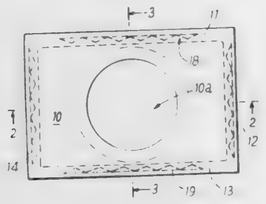
Barrie J. Harvey, Tyldsley, and Robert C. Willson, Addlestone, both of England, assignors to M. H. Detrick Co., Ltd., London, England

Filed Jul. 29, 1981, Ser. No. 288,201

Claims priority, application United Kingdom, Jul. 29, 1980, 8024816

Int. Cl.³ F27D *1/00;* **F04B** *5/04*

U.S. Cl. 432—247 **13 Claims**



1. A refractory component vacuum formed from ceramic fiber to be mounted on an exterior structure which defines the general outline of a furnace chamber, said component forming part of a refractory wall of the furnace chamber and having embedded therein during the vacuum forming process one or more reinforcing members of stiff open-mesh form disposed in that region of the component which will eventually be placed nearest to said structure and from which region the component is to be anchored to the structure, the reinforcing member being made of heat resisting metal alloy, refractory clay or re-crystallized alumina and at least part of said open mesh being arranged to extend generally parallel to the local portion of the wall of the chamber.

4,389,190

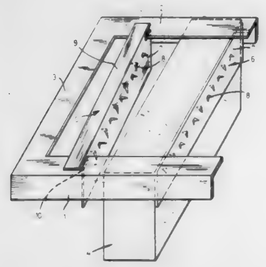
SUPPORT OF SUSPENSION OF INSULATING MATERIAL

Theodor J. Sevink, Schaepmanstraat 54, 3762 SV Soest, Netherlands

Filed Aug. 18, 1981, Ser. No. 293,792

Int. Cl.³ F27D *1/00*

U.S. Cl. 432—247 **5 Claims**



1. An arrangement for mounting insulatory lining blanket strips within a high temperature furnace, comprising:

(a) a strip of insulatory furnace lining blanket formed of a refractory synthetic material such as felt, said strip having a generally solid rectangular shape,

(b) a support frame including a pair of elongated stainless steel angle irons fixedly disposed parallel to each other and spaced apart a distance approximately equal to the length of said strip,

(c) an elongated stainless steel anchor plate having projections thereon extending into said lining blanket strip across the length thereof and along an edge intended to face outwardly from the interior of the furnace, and

(d) means defining slidable slot and rail connections between opposite ends of said anchor plate and said respective angle irons, whereby a plurality of lining blanket strips may be slidably mounted on said angle irons in stacked abutment to define an overall furnace lining.

4,389,191

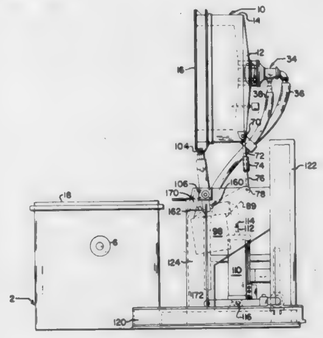
APPARATUS FOR MOVING A VESSEL HEATER COVER

Richard L. Lowe, 1906 Shaler Dr., Glenshaw, Pa. 15116

Filed Sep. 1, 1981, Ser. No. 298,502

Int. Cl.³ F27D *1/18;* **F27B** *14/00*

U.S. Cl. 432—250 **24 Claims**



1. Apparatus for moving a vessel heater cover comprising a vessel heater cover,

generally horizontally oriented upper linkage means secured to said cover, at a first elevation,

generally horizontally oriented lower linkage means secured to said cover, at a second elevation,

said first elevation being higher than said second elevation,

bell crank means pivotally secured to said upper linkage means and said lower linkage means,

said lower linkage means including first pivot means connecting said lower linkage means with said cover and second pivot means connecting said lower linkage means with said bell crank means, and

power means for effecting rotation of said bell crank means about said second pivot means, whereby said cover may be rotated into and out of vessel heating position.

4,389,192

DENTAL REDUCING TOOL

Siegmund A. Neuwirth, 30 St. George's Rd., Golders Green, London NW11 OLR, England

Continuation-in-part of Ser. No. 67,794, Aug. 20, 1979, Pat. No. 4,264,307. This application Apr. 27, 1981, Ser. No. 257,916

Int. Cl.³ A61C *3/02*

U.S. Cl. 433—166 **5 Claims**

1. A tool for removing tooth structure comprising:

a shaft adaptable to be carried by rotating means at one end thereof, a shank extending axially from the other end of said shaft, the surface of said shank being helically grooved to define a reducing element with the crest thereof lying on a helix centered on the axis of said shank,

and the working surface of said reducing element being coated with a suitable abrasive material, the periphery of



said reducing element tapering outwardy in the direction away from said shaft.

4,389,193

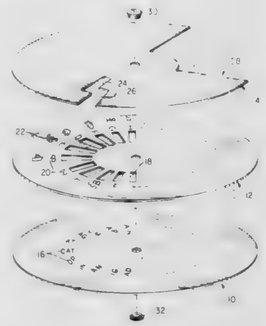
EDUCATIONAL DEVICE

Morton Phillips, 67-70 Yellowstone Blvd., Forest Hills, N.Y. 11375

Filed Dec. 28, 1981, Ser. No. 335,234

Int. Cl.³ G09B *1/22*

U.S. Cl. 434—174 **9 Claims**



1. An educational device, comprising:

a first member having a surface containing a series of word families,

a second member movable with respect to said first member and including a series of word family windows through any of which any of said word families can be viewed, said second member further having an initial sound printed adjacent each of said word family windows, and

a third member movable with respect to said second member and including a word window through which an entire one of said complete words can be viewed and an initial sound window through which one of said initial sounds can be viewed.

4,389,194

ELECTRONIC APPARATUS FOR TEACHING MATHEMATICS

Alexander R. Toll, 1348 Pennwood Rd., Philadelphia, Pa. 19151, and Roland R. Gibboni, 660 Meadow Brook Ave., Ambler, Pa. 19002

Filed Jan. 21, 1982, Ser. No. 341,444

Int. Cl.³ G09B *19/02*

U.S. Cl. 434—201 **10 Claims**

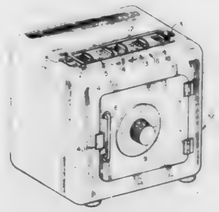
1. An apparatus aid in the teaching of mathematics which comprises:

a case;

access means connected to said case for permitting access to the interior thereof;

latch means operably connected to said case and to said access means, said latch means having a locked mode and an unlocked mode, said latch normally being in the locked mode;

numerical input means arranged in a manner to simulate an algebraic expression; and



operation means for accomplishing mathematical operations, operationally connected to said numerical input means which serves as input therefore, said operation means being adapted to generate an output being operationally connected to said latching means causing it to shift from its locked mode to its unlocked mode thereby permitting the student to have access to the interior of said case when the algebraic equation is mathematically correct.

4,389,195

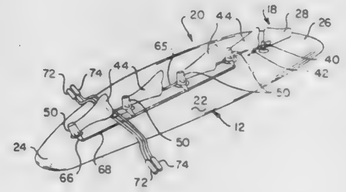
STEERABLE SURFBOARD

Iraj Sohaei, P.O. Box 1475, El Toro, Calif. 92630

Filed Feb. 17, 1981, Ser. No. 234,946

Int. Cl.³ B63H *1/36*

U.S. Cl. 440—15 **1 Claim**



1. A steerable, self-propellable surfboard, comprising, in combination:

(A) a buoyant member forming a means for bearing weight on a liquid, the buoyant member being a substantially planar member configured for riding on a liquid in which the member is disposed, the member having a direction of travel relative to the liquid surface; and

(B) steering means mounted on the buoyant member and actuatable by a rider of the buoyant member for permitting the buoyant member to be maneuvered through a liquid in which the buoyant member is disposed, the steering means including, in combination:

I. rudder means mounted on the buoyant member and actuatable by hands of a rider on the member for causing the buoyant member to change a direction of travel of the member relative to the liquid surface; and

II. fin means mounted on the buoyant member and actuatable by hands of a rider on the member for causing the member to fishtail through a liquid in which the member is disposed for propelling the member through the liquid, the buoyant member having a forward end and a rear end

spaced from one another and defining a normal direction of travel of the member, the rudder means being arranged on the member adjacent the rear end of the member, and the fin means being arranged on the member between the rudder means and the forward end of the member, the rudder means comprising, in combination:

(a) a rudder in the form of a substantially planar piece mounted on the buoyant member for pivoting movement about an axis substantially perpendicular to the plane of the member; and

(b) control means mounted on the member and attached to the rudder for permitting positioning of the rudder from a point spaced from the rear end of the member, the fin means comprising, in combination:

(c) at least one blade mounted on the buoyant member for pivoting movement relative to the member; and

(d) actuating means mounted on the member and attached to the blade for permitting pivoting of the blade from a point on the member spaced from the rear end of the member, the control means including a crank provided on the rudder, a connector element pivotally attached to the crank and arranged for manipulating the rudder, and a lever pivotally mounted on the buoyant member and connected to the connector element for permitting a rider of the member to steer the member by selectively turning the rudder, the actuating means including a further crank provided on the blade at the fin means, a further connector element pivotally attached to the further crank, and a further lever pivotally mounted on the member, the further connector element being pivotally attached to the further lever, the further lever being arranged for manipulating the blade and permitting a rider on the member to propel the member through the liquid in which the member is disposed, there being a plurality of blades forming the fin means, with the rudder and blades having substantially parallel pivot axis which are substantially perpendicular to the plane of the buoyant member, the member having a pair of substantially parallel, planar, oppositely directed faces, one of the faces forming a surface receiving a rider of the member, the other of the faces forming a surface receiving the rudder, blades, and levers, the latter extending longitudinally substantially transverse of a forward to rear end extent of the member and terminating outboard of the member in handles arranged for being gripped by a rider on the member, a bracket extending from a pivot point of the further lever, the lever being pivotally mounted on the bracket extending from a pivot point of the further lever and the connector element being a wire and sleeve arrangement, with the wire being connected to the crank and to the lever and the sleeve being affixed to the member and the further lever.

4,389,196

WATERCRAFT WITH SWIVEL FIN DRIVE

Franz Gander, Feldweg 4, 6370 Stans-Oberdorf, Switzerland

Continuation of Ser. No. 53,904, Jul. 2, 1979, Pat. No. 4,304,555.
This application Aug. 28, 1981, Ser. No. 297,218
Claims priority, application Switzerland, Jul. 5, 1978, 7321/78
The portion of the term of this patent subsequent to Dec. 8, 1998, has been disclaimed.
Int. Cl.³ B63H *1/36*
U.S. Cl. 440—15 **15 Claims**

1. A watercraft comprising:

watercraft body means including means for defining a prolongation thereof;

said watercraft body means having a longitudinal direction of extent and a stern;

a propulsion fin provided for said body means;

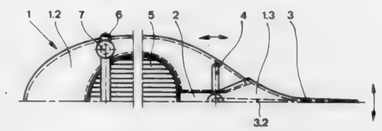
said propulsion fin having an impact surface;

means including a substantially vertical swivel axle for mounting said propulsion fin to be laterally swivellable;

drive means for laterally swivelling said propulsion fin;

said propulsion fin extending from said substantially vertical swivel axle substantially parallel to said longitudinal direction of extent of said watercraft body means and in alignment with said longitudinal direction of extent;

said propulsion fin being arranged at the stern in the prolongation of the watercraft body means;



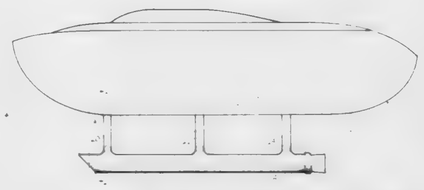
said watercraft body means defining a pneumatic hose boat having a boat skin which at the stern thereof contains said prolongation which encloses in a watertight fashion the impact surface of said swivellable propulsion fin over its entire height; and said pneumatic hose boat including an inflatable torus having at the stern thereof two spaced ends between which the substantially vertical swivel axle of the propulsion fin is disposed.

4,389,197

WATER-GOING VESSEL

James S. Ballantine, 121 N. Shore Rd., Absecon, N.J. 08201

Filed Sep. 10, 1980, Ser. No. 185,940
Int. Cl.³ B63H *5/12, 11/02*
U.S. Cl. 440—38 **41 Claims**



1. A water-going vessel having a plurality of water intake turbines each of which is mounted on elevator means extending from the underside of the vessel, with each of said turbines additionally vertically pivotally mounted to said elevator means near the longitudinal midpoint of each turbine and having means for independent pivotal control, and further with the elevator means having failsafe pantographic connection means to each of said turbines for simultaneous extension and retraction of said turbines in unison.

41. An alternating current variable frequency submersible electric motor comprising a stator and a rotor, said rotor having a central collar and having a plurality of blades each attached to the central collar and the rotor, and said stator having disposed therein heat exchange means to cool said stator, and further wherein a flywheel is attached to the rotor and wherein the outer circumference of said flywheel extends beyond the stator, said flywheel having a plurality of blades projecting from its circumferential surface.

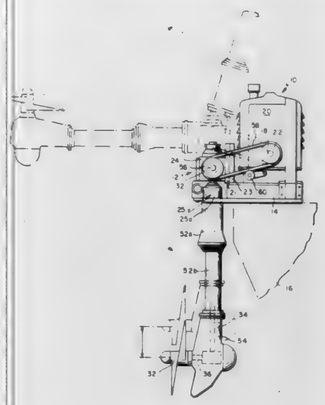
4,389,198

OUTBOARD MOTOR SYSTEM

Ronald C. Henderson, Cohasset, Mass., assignor to Harbormaster, Division of Mathewson Corp., Quincy, Mass.

Filed Sep. 15, 1980, Ser. No. 186,904
Int. Cl.³ B63H *5/12*
U.S. Cl. 440—60 **4 Claims**

1. An outboard motor assembly comprising a power plant, an outboard propeller assembly including a propeller, a common support mounted to the stern of the vessel, means stationarily mounting the power plant on the common support with its drive shaft athwartship, a pulley fixed to the drive shaft, a first mounting plate fixed to the common support, a second mounting plate fixed to the propeller assembly, said mounting plates having interengaged tongue and groove means by means of which the propeller assembly can be moved vertically relative to the power plant and which enables dismounting the entire outboard propeller assembly from the vessel, a pair of spaced, parallel bearing blocks mounted to the second mounting plate, a pair of bearing members fixed to the outboard assembly rotatably received and retained in said bearing blocks, supporting the outboard assembly for rotation about a horizontal axis parallel to the axis of the drive shaft, at least one of said bearing blocks containing a bearing opening parallel to the axis of the drive shaft, an input shaft journaled in said bearing opening, a pulley fixed to the said input shaft and a belt entrained about said pulleys, said outboard propeller assembly including a first gear housing, a pair of bevel gears mounted in said gear housing, one of which is fixed to said input shaft for turning about a horizontal axis and the other of which is mounted in the gear housing in mesh with the one gear for rotation about a vertical axis, a transmission shaft journaled in the gear housing with its axis at right angles to the input shaft, said transmission shaft extending through said other gear and



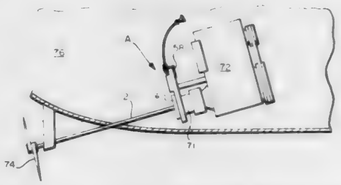
being keyed thereto, a transmission housing mounted to said first gear housing, a second gear housing attached to the lower end of the transmission housing, a propeller shaft journaled in said second gear housing for rotation about a horizontal axis, a pair of meshing gears in said second gear housing, one of which is fixed to the propeller shaft, said transmission shaft extending downwardly through the transmission housing and being keyed to the other of said meshing gears such that rotation of the transmission shaft is transmitted through said second gear housing to the propeller shaft, said transmission housing being rotatably mounted to the first gear housing to enable turning the propeller about the vertical axis of the transmission shaft, a worm wheel fixed to the transmission housing in concentric relation to the transmission shaft, a worm supported in mesh with the worm wheel, a motor connected to the worm shaft to effect rotation of the transmission housing about the axis of the transmission shaft to enable rotating the propeller for steering and pneumatic cylinders mounted on the common support beneath the bearing blocks operable to raise and lower the outboard assembly relative to the common support, said bearing members supporting the outboard assembly for rotation of the propeller assembly from a position in which the transmission shaft extends downwardly from the common support for normal operation through an angle exceeding 180° to a position extending upwardly from the common support and inboard of the axis of rotation of the input shaft to an at rest stable position.

4,389,199

SHAFT LOCK FOR PROPELLERS FOR SAILING BOATS

Richard D. Badzinski, Oak Creek, and George G. Nigel, St. Francis, both of Wis., assignors to Shaft Lok Inc., New Berlin, Wis.

Filed Sep. 4, 1981, Ser. No. 299,397
Int. Cl.³ B63H *5/06*
U.S. Cl. 440—74 **16 Claims**



1. An auxiliary engine propeller shaft locking device for sailboats and the like comprising:

(a) a base having an upper lock housing and a lower shaft housing

(b) said housings being integral

(c) said shaft housing inclining an aperture therethrough

(d) said housings having front and back surfaces

(e) a shaft disc rotatable on an axis and said disc mounted in said aperture

(f) said lock housing front surface extending beyond said shaft housing front surface

(g) said lock housing surface extending beyond said disc's outer surface and said disc's inner surface being adjacent the plane of said shaft housings front surface to provide rotating clearance for said disc

(h) said shaft disk having a width less than the width of said shaft housing to provide rotating clearance for said disc

(i) said lock housing including a locking pin and a shot pin for said locking pin, said locking pin positioned transverse of said axis

(j) said disc including locking pin engaging means

(k) said locking pin having means for receiving said shot pin including first disc lock position means and said second disc release position means, and

(l) means for moving said locking pin from lock position to said release position and from said release position to said lock position.

4,389,200

WATER SKI BINDING

Herbert J. O'Brien, 2832 West Lake Sammamish Northeast, Redmond, Wash. 98052

Filed Apr. 3, 1981, Ser. No. 250,602
Int. Cl.³ A63C *5/00*
U.S. Cl. 441—70 **16 Claims**

1. A water ski binding comprising:

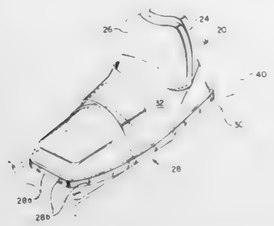
(a) a substantially rigid, unhinged sole plate having top and bottom generally planar surfaces and an edge comprising a surface generally perpendicular to said top and bottom surfaces around a toe, a back, and two sides;

(b) an initially flat elastomeric tongue bent about and attached to the edge of the plate on the toe and two sides;

(c) an initially flat elastomeric heel bent about and attached to the edge of the plate on the back and two sides; and

(d) means for fastening the tongue and heel to the plate so that each projects substantially vertically at the point of contact with the plate, the means for fastening being

adapted to retain the greatest flexibility for the elastomeric material of the tongue and heel and being adapted to allow



substantially unrestricted lateral expansion of the elastomeric tongue and heel around the edges of the plate.

4,389,201

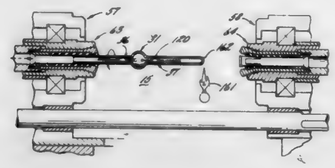
METHOD OF MANUFACTURING A LAMP

Richard L. Hansler, Pepper Pike, and Elmer G. Fridrich, Chardon, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 19,647, Mar. 12, 1979, abandoned. This application Feb. 5, 1981, Ser. No. 231,655

Int. Cl.³ H01J *9/40. 9/46*

U.S. Cl. 445—26 **16 Claims**



1. A method of manufacturing a lamp, said method comprising the steps of providing a lamp body having a hollow bulbous midportion with tubular neck portions projecting in opposite directions therefrom, inserting a first electrode tip last completely through one and into the other neck portion so that it remains supported solely by said other neck portion, inserting a second electrode tip first into said one neck portion so that it remains supported solely by said one neck portion at a predetermined spacing from the first electrode, and then sealing said electrodes into their respective neck portions.

4,389,202

SHEARING PIN MOMENT OF ROTATION LIMITING ARRANGEMENT FOR TWO CONSTRUCTIONAL UNITS THAT ARE ROTATABLE RELATIVE TO ONE ANOTHER

Johann Hochreuter, Brauhausstrasse 6, 8800 Ansbach, Fed. Rep. of Germany

Filed May 8, 1981, Ser. No. 261,747

Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017722

Int. Cl.³ F16D *3/56, 9/00*

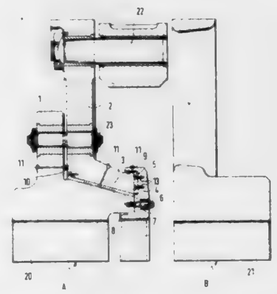
U.S. Cl. 464—33 **2 Claims**

1. In a torsionally elastic shaft coupling arrangement having a shearing pin moment of rotation limiting arrangement for two constructional units rotatable relative to one another on a common cone bearing surface, over the circumference of which are arranged in spaced apart relationship several mutually engaging shearing pins and which are movable in slight measure axially toward one another as well as being prestressed for a full-surface contacting of the common cone bearing surface and being characterized in that:

(a) said shaft coupling arrangement comprises first and second approximately coaxial coupling halves disposed in stationary arrangement with each being on an associated shaft journal;

(b) the first coupling half being divided into first and second constructional units that are rotatable relative to each other and wherein one is held stationary on the shaft journal associated to said first coupling half and with said second constructional unit being in torsionally elastic engagement with said second coupling half, the arrangement being such that the common cone bearing surface extends taperingly into the intermediate space between said two coupling halves;

(c) said constructional units each having a tapered end with an annular frontal surface being formed on each tapered end, and with said tapered ends being generally oriented along a common axial plane;



(d) an axial locking ring with flanged portions extending therefrom enclosing the annular frontal surfaces of said constructional units, said axial locking ring being secured to said first constructional unit and slightly spaced from both of said annular frontal surfaces to provide a clearance between said ring and said annular frontal surfaces;

(e) an annular running surface being secured to said locking ring and in mating running engagement with the annular frontal surface of said second constructional unit; and

(f) a plurality of resilient attachment elements distributed about the circumference of said first constructional unit and applying an axial biasing force against said ring so as to cause said annular running surface to lie against the annular frontal surface of said second constructional unit.

4,389,203

OVERLOAD CLUTCH BETWEEN A ROPE DRUM BODY AND A ROPE DRUM SHAFT

Wilhelm Düntzen, Gladbeck, Fed. Rep. of Germany, assignor to Industrietechnik Kalenborn GmbH, Kalenborn bei Linz/-Rhein, Fed. Rep. of Germany

Filed Nov. 3, 1980, Ser. No. 203,416

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947290

Int. Cl.³ F16D *7/02*

U.S. Cl. 464—34 **7 Claims**

1. An overload clutch for use between a rope drum and a rope drum power axle, comprising:

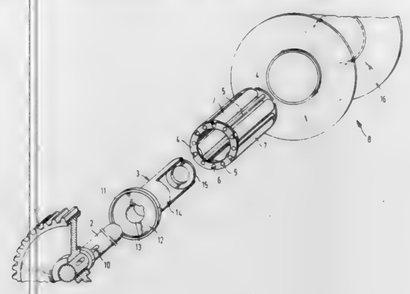
an ancillary compensation member shaped in the form of a drum shaft and mounted on said power axle,

a roller cage provided with a plurality of roller axles and spacer rods and mounted on the ancillary compensation member, and

a plurality of rollers made of an elastic material and mounted on said roller cage, each of the plurality of rollers being fixed to one of said plurality of roller axles, respectively,

said spacer rods spacing and separating the rollers in the cage one from another,

said roller cage including said plurality of rollers being disposed between said rope drum and the ancillary com-



pensation member so as to offer rolling and compression resistance therebetween.

4,389,204

RESILIENT SHAFT COUPLING, MORE PARTICULARLY AN INTERPOSED CARDAN SHAFT COUPLING

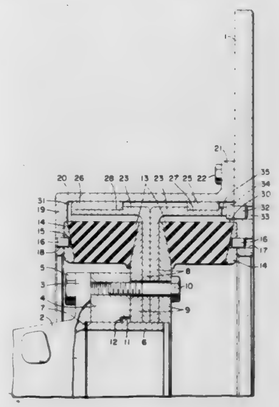
Jürgen Walter, Haltern, Fed. Rep. of Germany, assignor to Hackforth GmbH & Co. KG, Herne, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 248,029

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 3012411

Int. Cl.³ F16D *3/78*

U.S. Cl. 464—91 **4 Claims**



1. A resilient rotatable shaft coupling having an axis of rotation for operatively interconnecting two coupling parts including inner and outer coupling parts therewith in such a way that they are radially braced against one another yet have limited freedom of axial movement, said coupling comprising:

an outer flange provided on the outer coupling part;

a cylindrical jacket secured at one end thereof to said outer flange, said jacket having an inner wall and being concentric with the axis of rotation of said coupling, the other end of said jacket being provided with a radially inwardly projecting flange which is perpendicular to said axis of rotation;

a fitting flange provided on the inner coupling part;

bearing rings rigidly secured to said fitting flange and located between said outer flange and inwardly projecting flange of said jacket, said bearing ring being provided with an outwardly directed collar which is coaxial with said axis of rotation and is separated from said inner wall of said jacket by a narrow annular gap;

at least one bearing bushing disposed in said annular gap and resting against said outer collar and said jacket;

two resilient annular members disposed radially inwardly of said collar near the radially inner surface thereof, said resilient annular members comprising an elastomeric material and being provided with axial end faces, rigid securing rings provided on said axial end faces of said annular members including therewith securing rings which face one another and those securing rings located on axially outer end faces of said annular members, said resilient annular members being non-rotatably secured to said securing ring which is secured to said fitting flange and to said outer flange for effecting their interconnection, and two bearing rings, each having a collar and a bearing bushing, said bearing rings and said annular members being disposed back to back on said fitting flange and in mirror image relationship relative to a central plane which is transverse to said axis of rotation, that resilient annular member located remote from said outer flange being non-rotatably secured to said inwardly projecting flange of said jacket, those securing rings located on those axial end faces of said resilient annular members which face one another being located between said annular members and an associated bearing ring, and extending radially inwardly beyond the thickness of said annular member, and bolts for connecting these last mentioned securing rings located on those axial end faces of said resilient annular members which face one another, together with said bearing rings, to said fitting flange.

4,389,205

AUTOMATIC MACHINE FOR FORMING PACKAGING CASES

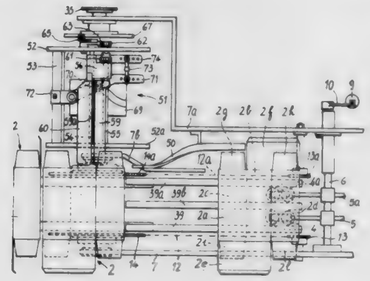
Bruno Righi, Bologna, Italy, assignor to Centro Automazioni Moderne S.p.A., Rastignano, Italy

Filed Oct. 20, 1980, Ser. No. 198,735

Claims priority, application Italy, Oct. 25, 1979, 3517 A/79

Int. Cl.³ B31B *1/76*

U.S. Cl. 493—315 **4 Claims**



1. An automatic machine for opening packaging cases having an erected parallelepipedal configuration comprising a magazine containing a stack of said cases in a tubular flattened condition, means for picking up individual cases from said stack, a transferring conveyor whereon said picked up cases are deposited and engaged for advance by entraining means arranged on said conveyor, a rotary body provided with at least a peripherical sucker operable to hold a flattened case transferred thereon by said conveyor transversally with respect to the direction of rotation of said body, said machine further comprising a pair of disks interconnected by crossmembers and coaxially connected to said body, guiding rods extending between said disks and parallel to the axis of rotation thereof, a carriage mounted to slide on said rods, a blade ele-

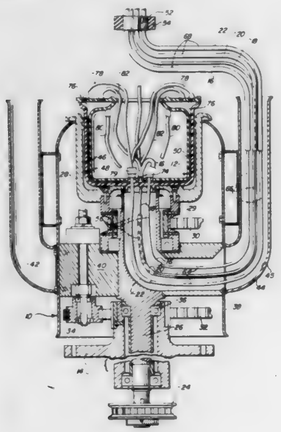
ment pivotally mounted on said carriage for rotation about an axis parallel to said rods and in alignment with said flattened case held on said sucker, means for moving said carriage back and forth along said rods so as to reciprocate said blade between a first position external to said case and a second position in the inside thereof, means being also provided for rotating said blade element within said case thus causing said case to open.

4,389,206

CENTRIFUGAL PROCESSING APPARATUS AND ROTATABLE PROCESSING BOWL APPARATUS

David V. Bacehowski, Wildwood, and Michael J. Brown, Libertyville, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 195,445, Oct. 9, 1980, abandoned. This application Mar. 16, 1981, Ser. No. 243,981
Int. Cl.³ B04B *11/00*
U.S. Cl. 494—42 **32 Claims**



23. An umbilical tubing system adapted to communicate with a rotatable processing bowl of a centrifuge and comprising

oppositely spaced segments, one of which is positioned generally adjacent to the processing bowl and the other of which is positioned generally adjacent the opposite end of said tubing system, said spaced segments being generally resilient to the forces of twisting encountered during centrifugation, and

a middle segment positioned between said spaced segments and having a shear modulus which exceeds the shear modulus of either of said spaced segments for greater stiffness to inhibit tube fatigue and collapse during centrifugation.

4,389,207

ROTATABLE BOWL ASSEMBLY FOR CENTRIFUGAL PROCESSING APPARATUS HAVING A BONDED AND PREWOUND UMBILICAL SYSTEM

David V. Bacehowski, Wildwood, and Ronald Bucheger, Arlington Heights, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

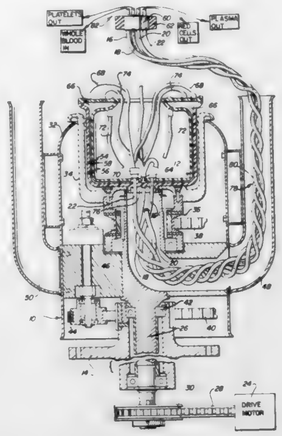
Filed Mar. 16, 1981, Ser. No. 244,398
Int. Cl.³ B04B *11/02*
U.S. Cl. 494—42 **3 Claims**

1. A rotatable processing bowl assembly adapted for mounting in a centrifuge and comprising

a rotatable processing bowl, and

an umbilical tubing system including

a plurality of individual flexible tubes each having a maximum outer diameter of approximately 0.25 inches, each of said flexible tubes communicating with said bowl and having an exterior wall and including a first portion extending adjacently from said bowl and a second portion integral with and spaced from said first portion,



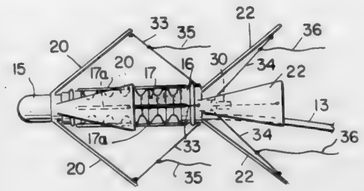
said exterior walls of said tubes being bonded together in a helically wound relationship along said respective first portions thereof, said helically wound relationship comprising between approximately two and eight helical loops for each foot of wound length.

4,389,208

CATHETER ADVANCER

Robert F. LeVeen, 312 Lombard St., Philadelphia, Pa. 19147, and Eric G. LeVeen, 3-3 Woodlike Rd., Albany, N.Y. 12203

Filed Nov. 6, 1980, Ser. No. 204,630
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—95 **3 Claims**



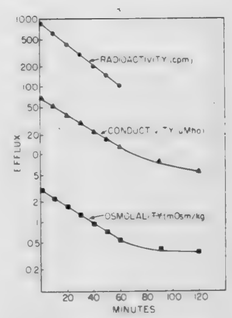
1. A device movable along and within a tubular passageway having a body comprising a head portion, a rear, tail portion and fluid extensible means extensible along a line interconnecting said head portion and said tail portion, said extensible means being connected intermediate said head portion and said tail portion for causing movement of one said portion toward the other said portion in the absence of fluid at a pressure in said means sufficient to extend said means and for causing movement of said one portion away from said other portion when fluid under pressure sufficient to extend said means is supplied thereto, said device further including fluid conduit means extending at least from said tail portion to said extensible means, a plurality of flexible, first legs on said head portion and extending outwardly thereof for engagement with the inner wall of said passageway, said first legs being secured at their head ends to said head portion in circumferentially different positions and having their opposite tail ends disposed rearwardly of their head ends, and a plurality of flexible, second legs on said tail portion and extending outwardly thereof for engagement with the inner wall of said passageway, said second legs being secured at their head ends to said tail portion in circumferentially different positions and having their opposite tail ends disposed rearwardly of their head ends, the tail ends of the legs on said head portion being connected to said body adjacent one end of said extensible means by flexible members, second fluid extensible means extensible in the same direction as said first-mentioned extensible means connected intermediate the head ends of said legs and the points of connection of said flexible members with said body, and second fluid conduit means extending from said second extensible means to at least said tail portion whereby the supply of fluid to said second extensible means through said second fluid conduit means causes the tail ends of said legs to move toward said body and the removal of fluid from said second extensible means causes the tail ends of said legs to move away from said body.

4,389,209

METHOD OF PROVIDING SYSTEMIC PROTECTION FROM BLOODSUCKING INSECTS AND OTHER PARASITES USING ENCAPSULATED ADDITIVES IN RESEALED ERYTHROCYTES

John R. DeLoach; Robert L. Harris; Mayery Richard T., all of Bryan, and Garret M. Ihler, College Station, all of Tex., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 160,753, Jun. 18, 1980, Pat. No. 4,327,710. This application Dec. 21, 1981, Ser. No. 332,905
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—53 **1 Claim**



1. A method of treating animals to provide systemic protection against blood sucking parasites comprising:

(a) withdrawing whole blood from a live animal;

(b) preparing washed packed erythrocytes from said whole blood;

(c) encapsulating within said erythrocytes an effective amount of a blood sucking parasite controlling material;

(d) recovering the erythrocytes containing said material;

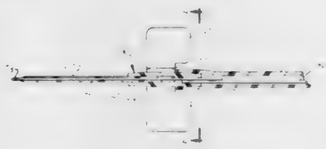
(e) injecting said live animals with the recovered erythrocytes.

4,389,210

CATHETER PLACEMENT ASSEMBLY HAVING AXIAL AND ROTATIONAL ALIGNMENT MEANS

Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation of Ser. No. 93,093, Nov. 9, 1979, abandoned, which is a continuation of Ser. No. 935,442, Aug. 21, 1978, Pat. No. 4,192,306. This application Oct. 2, 1981, Ser. No. 307,978
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—177 **1 Claim**



1. An intravenous catheter assembly comprising:

(a) a flexible plastic catheter having a distally tapered distal end;

(b) a winged catheter insertion means having a tubular portion centrally disposed therethrough, the proximal end of said catheter being fixedly attached to, extending from and in fluid communication with said tubular portion of said catheter insertion means via its distal end;

(c) a pair of flexible wing members extending from said winged catheter insertion means, said flexible wing members each having a weakened portion adjacent said tubular portion of said winged catheter insertion means effective to facilitate the folding upward and pinching together of said flexible wing members and, thereby, the performance of venipuncture upon the patient;

(d) each of said flexible wing members also having a reduced width portion proximate the connection between said flexible wing members and said tubular portion, constructed and arranged to facilitate said folding upward of said wing members,

(e) each of said flexible wing members further having, in conjunction with said reduced width portion, a cut out portion proximate the proximal end of said catheter hub, constructed and arranged to provide an open area adjacent to said proximal end of said catheter hub, so as to facilitate connection of said catheter hub to flexible tubing extending from said catheter assembly; and

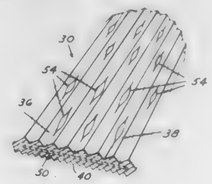
(f) a needle slidably disposed in and inserted through said catheter and said tubular portion of said winged catheter insertion means, said needle having a sharpened distal end extending beyond said distal end of said catheter and a proximal end attached to a needle hub.

4,389,211

CATAMENIAL BANDAGE

Arlene R. Lenaghan, 674 Rudgate, Bloomfield Hills, Mich. 48013

Filed Jun. 1, 1981, Ser. No. 269,361
Int. Cl.³ A61F *13/16*
U.S. Cl. 604—383 **4 Claims**



1. A catamenial bandage pad comprising:

(a) an elongate, relatively flat shell of resilient, form retaining material having a top and bottom surface corrugated in a longitudinal direction, the top surface having spaced openings in the valleys of the corrugations, and

(b) an elongate, relatively thin, compressed sheet of hydrophillic material encapsulated in a filler gauze and relatively coextensive with and encased in said shell, said hydrophillic material being expansible in the presence of fluid to have a sponge-like attraction for fluid entering the shell.

4,389,212

DIAPER WITH POTENTIALLY ELASTIC TAPE FASTENER

Ludwig Tritsch, Wilmette, Ill., assignor to Personal Products Company, Milltown, N.J.

Filed Dec. 2, 1981, Ser. No. 326,726

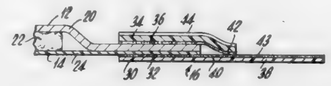
Int. Cl.[3] **A41B** *13/02*

U.S. Cl. 604—389 **6 Claims**

1. A disposable diaper having a facing sheet defining a diaper inside surface for direction toward the wearer, a moisture-impervious backing sheet substantially co-extensive with said facing sheet and defining a diaper outside surface, an absorbent panel positioned between said facing sheet and said backing sheet, and adhesive tape tab fastening means which comprises:

(a) a first anchoring portion secured to the diaper outside surface at a marginal portion thereof;

(b) a second anchoring portion secured to the diaper inside surface at a marginal portion thereof, said second anchoring portion being made from elastic web material;



(c) an attachment portion temporarily attached to the first anchoring portion and adhesively secured to said second anchoring portion, said temporary attachment being such that it is broken before the attachment portion can be detached from said second anchoring portion; and

(d) said attachment portion having a free working end provided with a layer of pressure-sensitive adhesive on one face thereof.

4,389,213

USE OF ESTERIFIED OXALKYLATES AS FORMULATION AGENTS FOR DYESTUFFS AND CORRESPONDING DYESTUFF PREPARATIONS

Manfred Schneider, Eppstein; Hubert Kruse, Kelkheim, and Konrad Opitz, Liederbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

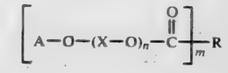
Filed Apr. 23, 1982, Ser. No. 371,231

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1981, 3116581

Int. Cl.[3] **C09B** *67/46;* **D06P** *67/02*

U.S. Cl. 8—524 **10 Claims**

1. A method of using a water-soluble compound of the formula I



(I)

in which A represents an aliphatic radical having 10 to 24 C atoms, X represents identical or different groups of the formula

$$-CH_2-CH_2- \text{ and } -CH_2-CH(CH_3)-.$$

R represents radicals of a carboxylic acid $R(COOH)_m$ having up to 22 C atoms, m is 1 or 2 and n denotes identical or different numbers from 8 to 100, as a preparation agent for dyestuffs.

4,389,214

PROPYLENE OXIDE REACTION PRODUCTS, PROCESS FOR THEIR MANUFACTURE AND THEIR USE

Paul Schäfer, Riehen; Heinz Abel, Reinach, both of Switzerland, and Fritz Mayer, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 52,363, Jun. 27, 1979, abandoned, which is a division of Ser. No. 814,376, Jul. 8, 1977, abandoned, which is a division of Ser. No. 671,874, Mar. 29, 1976, Pat. No. 4,055,393.

This application Dec. 22, 1980, Ser. No. 219,164

Claims priority, application Switzerland, Apr. 4, 1975, 4293/75

Int. Cl.[3] **D06P** *67/00;* **C09B** *67/00*

U.S. Cl. 8—527 **5 Claims**

1. A process for dyeing or printing a synthetic fibrous material or mixture thereof with a natural fibrous material comprising the step of dyeing or printing in the presence of at least one propylene oxide reaction product or a salt thereof obtained by reacting an adduct of

(a) an at least trihydric aliphatic alcohol containing 3 to 10 carbon atoms, and

(b) 1,2-propylene oxide, with

(c) an aliphatic dicarboxylic acid containing 2 to 10 carbon atoms, an aromatic dicarboxylic acid containing 8 to 12 carbon atoms, or an anhydride thereof,

and at least one of the following components:

(d) an aliphatic diol with a molecular weight of at most 2000,

(e) a fatty alcohol containing 12 to 22 carbon atoms,

(f) a fatty acid containing 12 to 22 carbon atoms,

(g) an aliphatic monoamine or diamine containing 2 to 12 carbon atoms,

of which component (g) is used only at the conclusion and only if component (c) is ethylenically unsaturated and of which component (f) is used only when at least one of components (d), (e) or (g) is used.

4,389,215

ANTHRAQUINONE-AZOMETHINE COMPOUNDS, PROCESSES FOR THEIR PREPARATION AND PROCESSES FOR DYEING SYNTHETIC FIBRE MATERIALS AND FOR PIGMENTING ORGANIC MACROMOLECULAR SUBSTANCES

Rütger Neeff; Meinhard Rolf, and Walter Müller, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 170,449, Jul. 21, 1980, Pat. No. 4,319,025.

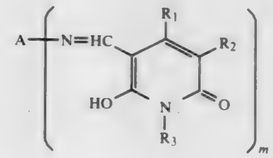
This application Sep. 24, 1981, Ser. No. 305,568

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931710

Int. Cl.[3] **C09B** *55/00, 1/20*

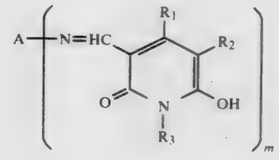
U.S. Cl. 8—637 **6 Claims**

1. A process for pigmenting an organic macromolecular substance which comprises adding thereto an anthraquinone-azomethine compound of the formula



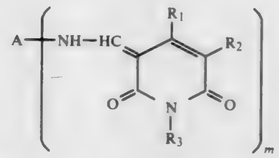
(I)

or of the tautomeric formula



(Ia)

or of the tautomeric formula



(Ib)

in which

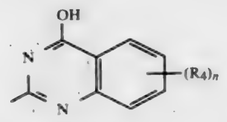
A denotes an anthraquinone radical which is free from sulphonic acid groups and optionally further substituted,

R_1 denotes hydrogen, C_1–C_4-alkyl, hydroxy-C_1–C_4-alkyl, phenyl, phenyl substituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl, cyano, carbamoyl, carbamoyl substituted by C_1–C_4 alkyl, phenyl, substituted phenyl with a substituent of C_1–C_4 alkyl, C_1–C_4 alkoxy, fluorine, chlorine, bromine or nitro or benzyl, sulfamoyl, sulfamoyl substituted by C_1–C_4 alkyl, phenyl which in turn is optionally further substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, fluorine, chlorine, bromine or nitro or benzyl, acylamino, or arylamino, carboxyl, carboxylic acid, C_1–C_4 alkyl ester or hydroxyl,

R_2 denotes hydrogen, halogen, nitro, cyano, carbamoyl, or sulfamoyl, substituted carbamoyl or substituted sulfamoyl where the substituent is C_1 to C_4 alkyl, phenyl which in turn can be itself substituted by C_1 to C_4 alkyl, C_1 to C_4 alkoxy, fluorine, chlorine, bromine or nitro or benzyl, sulfonic acid C_1–C_4 alkyl ester, sulphonic acid aryl ester, C_1–C_4 alkylcarbonyl, C_1–C_4-alkoxycarbonyl, benzoyl,

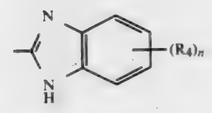
benzoyl substituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl, cyano, carbamoyl, sulfamoyl carbamoyl or sulfamoyl substituted by C_1–C_4 alkyl, phenyl which in turn can be substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, fluorine, chlorine, or bromine or nitro, or benzyl, acylamino or arylamino, alkyl or phenyl sulphone, or phenyl sulphone substituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl, cyano, carbamoyl, sulfamoyl, acylamino, arylamino, substituted carbamoyl or substituted sulfamoyl where the substituent is C_1–C_4 alkyl, alkyl which in turn can be substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, fluorine, chlorine, bromine or nitro or benzyl, or a hetero-aromatic radical of the formula

(II)



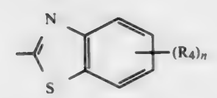
or of the formula

(III)



or of the formula

(IV)



R_3 denotes aryl, aryl substituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl, cyano, carbamoyl, sulfamoyl, acylamino, arylamino, substituted carbamoyl or substituted sulfamoyl where the substituent is C_1 to C_4 alkyl, phenyl which in turn can be substituted by C_1 to C_4 alkyl, C_1 to C_4 alkoxy, fluorine, chlorine, bromine or nitro or benzyl or heteroaryl where the aryl radical of the heteroaryl moiety can be substituted in the same manner as said substituted aryl, cycloalkyl or C_1–C_{12} alkyl, it being possible for the alkyl chain to be interrupted by oxygen or sulfur and/or substituted by hydroxyl, $N(R_5)_2$— or —$N(R_5)_3{}^{\oplus}X^{\ominus}$ groups,

R_4 denotes halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl, cyano, carboxamide, sulphonamide, acylamino, or arylamino,

R_5 denotes hydrogen, C_1–C_4 alkyl, cycloalkyl, aryl or substituted aryl substituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl, cyano, carbamoyl, sulfamoyl, acylamino, arylamino, substituted carbamoyl or substituted sulfamoyl where the substituent is C_1–C_4 alkyl, phenyl which in turn can be substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, fluorine, chlorine, bromine, or nitro, or benzyl,

X denotes an anion,

m denotes 1, 2, 3, or 4 and

n denotes 0, 1, 2, 3, or 4.

4,389,216

NAVY DYE MIXTURES

Udo Bergmann, Darmstadt; Helmut Degen, Frankenthal; Guenter Hansen, Ludwigshafen; Reinhold Krallmann, Weisenheim, and Wolf-Dieter Kermer, Fussgoenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 5, 1982, Ser. No. 355,309

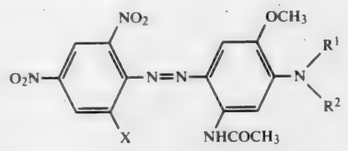
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112427

Int. Cl.[3] **C09B** *29/08;* **D06P** *3/52*

U.S. Cl. 8—639 **1 Claim**

1. A dye mixture which contains, as essential components, compounds of the formula I

I



in the following amounts, based on the total weight of the mixture:

X = Br	$R^1 = C_2H_4CN$	$R^2 = CH_2CH{=}CH_2$	39–49%,
X = Br	$R^1 = C_2H_4CN$	$R^2 = H$	1–10%,
X = Br	$R^1 = H$	$R^2 = CH_2CH{=}CH_2$	4–16%,
X = Cl	$R^1 = C_2H_4CN$	$R^2 = H$	15–25%,
X = Cl	$R^1 = C_2H_4CN$	$R^2 = CH_2CH{=}CH_2$	4–9%,

and

X = Cl	$R^1 = CH_2{-}CH(OH){-}CH_2{-}O{-}C_4H_{9(n)}$	$R^2 = H$	4–10%.

4,389,217

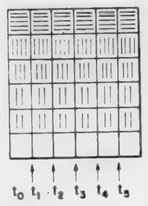
INTEGRATED TIME-TEMPERATURE OR RADIATION-DOSAGE HISTORY RECORDING DEVICE

Ray H. Baughman; Gordhanbhai N. Patel, both of Morris Plains, and Granville G. Miller, Morristown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 38,041, May 11, 1979, abandoned, which is a continuation-in-part of Ser. No. 839,542, Oct. 5, 1977, abandoned. This application Nov. 24, 1980, Ser. No. 209,931

Int. Cl.[3] **G01K** *11/12;* **G01N** *31/00;* **G01T** *1/02, 1/08*

U.S. Cl. 436—2 **15 Claims**



1. A device comprising a substrate having deposited thereon at least two indicating units, each unit comprised of an acetylenic compound, or simple mixture thereof, each acetylenic compound containing at least one —C≡C—C≡C group, capable of reacting by 1,4-addition polymerization, thereby forming an end-point color after an irreversible, progressive color change upon thermal annealing or exposure to radiation selected from visible, ultraviolet, gamma ray, x-ray, alpha ray, beta ray, electron beam and laser beam radiation, said end-point color representing an integrated time-temperature history of thermal annealing or radiation-dosage history of exposure to said radiation, wherein one indicating unit is unreacted and representing zero time of exposure and the other said indicating unit being pre-reacted at 20°–300° C. by thermal annealing or exposure to said radiation to known extent and color, whereby the time required by such pre-reacted unit to form the end-point color by thermal annealing at a given temperature or for a known thermal history or exposure to said radiation at a given average radiation dosage rate is pre-determined and known.

15. A process for measuring the integrated time-temperature or radiation-dosage history of an article comprising the steps of (a) applying to an article the device of claim 1 and (b) observing the developing color changes in the device.

4,389,218

PRODUCTION OF SOLID FUEL SHAPES FROM COAL FINES

John C. Pike, Federal Way, Wash., assignor to Blackfire Coal Products, Federal Way, Wash.

Filed Sep. 16, 1981, Ser. No. 302,827

Int. Cl.[3] **C10L** *5/20, 5/32*

U.S. Cl. 44—6 **11 Claims**

1. A method of manufacturing solid fuel shapes in the nature of a log or brick, from coal particles, comprising:

mixing substantially dry coal particles with ammonium lignium sulphonate, in a quantity and concentration sufficient to produce a mixture in which the ratio of coal particles to lignium solids is between 13:1 and 20:1 by weight;

controlling the moisture in the mixture to an amount sufficient to cause the coal particles to merely be surface wetted;

providing a mold cavity having first and second open ends;

providing a closure over the first open end;

introducing some of said mixture into the second open end;

moving a piston into said second open end to compress the mixture into the shape of the mold cavity;

removing the closure from the first end of the cavity;

moving a piston through the cavity to move the shape outfrom the first end of the cavity;

heating the shape in a kiln to no more than about 200° F. until hardened; and

providing the shape with a protective cover to prevent moisture absorption in the shape.

4,389,219

STABILIZED COAL-OIL MIXTURE

Akihiro Naka, Joyo, and Shuichi Honjo, Kyoto, both of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Feb. 23, 1982, Ser. No. 351,388

Claims priority, application Japan, Apr. 3, 1981, 56-50715

Int. Cl.[3] **C10L** *1/18*

U.S. Cl. 44—51 **17 Claims**

1. A coal-oil mixture composition comprising a fuel oil, 20 to 70% by weight of pulverized coal and an effective amount of, as a stabilizing agent, a polyether-type adduct of a molecular weight from 6,000 to 600,000 of a lower alkylene oxide with a starting compound selected from the group consisting of:

(a) a poly(lower alkyleneimine) having 7 to 200 nitrogen atoms;

(b) an adduct of a lower alkyleneimine having 7 to 200 nitrogen atoms with a compound having at least one active hydrogen atom selected from the group consisting of an alcohol, a phenol, an amine and a carboxylic acid; and

(c) a reaction product of said compound (a) or (b) with a compound selected from the group consisting of an aldehyde, a ketone, an alkyl halide, an isocyanate, a thiocyanate, a compound having active double bond, an epoxy compound, an epihalohydrin, a cyanamide, a guanidine, urea, a carboxylic acid, an acid anhydride, and an acyl halide.

4,389,220

METHOD OF CONDITIONING DIESEL ENGINES

John J. Kracklauer, Longmont, Colo., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jun. 4, 1980, Ser. No. 156,301

Int. Cl.[3] **C10L** *1/08*

U.S. Cl. 44—57 **6 Claims**

1. A method of conditioning a diesel engine comprising the steps of:

operating a diesel engine on a diesel fuel containing about 10 to 16 milligram moles, based on the dicyclopentadienyl iron moiety, per 100 kilograms of the diesel fuel, of a diesel fuel soluble organometallo compound selected from the group consisting of dicyclopentadienyl iron; mono- and di-lower alkyl dicyclopentadienyl iron derivatives; mono- and di-lower alkanoyl dicyclopentadienyl iron derivatives; dimer and polymer reaction products of dicyclopentadienyl iron or lower mono- and di-alkyl substituted derivatives thereof; said lower alkyl or lower alkanoyl moieties each having 1 to 8 carbon atoms therein; and mixtures thereof for a period of time sufficient to remove carbon deposits present on the combustion surfaces of the diesel engine and to deposit a layer of catalytically active iron oxide on the combustion surfaces of the diesel engine effective to prevent further formation of carbon deposits, and

thereafter operating the diesel engine for an extended period of time on a diesel fuel containing a reduced amount of a diesel fuel soluble organometallo compound selected from the aforementioned group, said reduced amount of diesel fuel soluble organometallo compound being sufficient to maintain an effective amount of a catalytically active iron oxide layer on the combustion surfaces of the diesel engine to prevent formation of carbon deposits thereon but insufficient to decrease timing delay in the diesel engine.

4,389,221

GASOLINE COMPOSITION AND METHOD FOR REDUCING FUEL CONSUMPTION

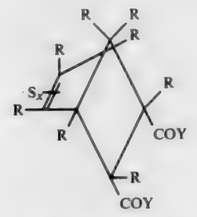
Leonard B. Graiff, Houston, Tex.; Rudolf F. Heideweg, and Corrie M. J. Leenaars, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 23, 1982, Ser. No. 401,192

Int. Cl.[3] **C10L** *1/24*

U.S. Cl. 44—66 **10 Claims**

1. An improved motor fuel composition comprising a major amount of a liquid petroleum motor fuel boiling in the gasoline range and a minor and effective amount of at least one sulfurized dioleyl ester of norbornene sufficient to reduce fuel consumption of an internal combustion engine employing said motor fuel, said sulfurized dioleyl ester having the general formula:



wherein each R is independently selected from the group consisting of hydrogen and lower alkyl, with the provision that no more than two R's per molecule are lower alkyl, X is an integer from 1 to 8 and each Y contains up to about twenty-

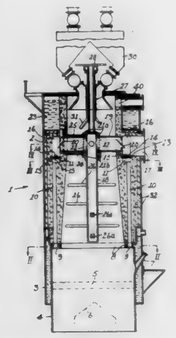
two carbon atoms and is independently selected from the group consisting of hydrocarbon-based oxy radicals and the oxy-residue of a polyhydric alcohol.

4,389,222

GAS PRODUCERS APPARATUS

Gerald S. V. Livemore, 121 Holt St., Parkmore, Transvaal, South Africa

Filed Jul. 31, 1980, Ser. No. 174,286
Int. Cl.³ C10J *3/28*
U.S. Cl. 48—76 **8 Claims**



1. A substantially vertical cylindrical gas producer including a plurality of vertical circumferentially spaced flues in the wall of the producer, each of the said flues being open at its lower end for conveying product gas upwardly; and means for dividing the flues into approximately eight groups and providing each group with a sub-collecting chamber which is further provided with a discharge aperture through which gas may be discharged from the sub-collecting chamber to a common collecting conduit for the groups of flues, the means for dividing, subcollecting chambers, discharge apertures and common collecting conduit being located in the wall of the producer and wherein each sub-collecting chamber is provided with a thermocouple for determining the gas temperature within the associated sub-collecting chamber and wherein the discharge aperture of the sub-collecting chamber is provided with an adjustable damper which is arranged to balance gas flow through the discharge aperture.

4,389,223

SURFACE CHARACTERISTICS OF BORON RICH CUBIC BORON NITRIDE

Francis R. Corrigan, Westerville, Ohio, assignor to General Electric Company, Worthington, Ohio

Filed Feb. 9, 1981, Ser. No. 232,597
Int. Cl.³ B24D *3/28*
U.S. Cl. 51—307 **3 Claims**



1. An improved boron rich cubic boron nitride having a substantial absence of any surface electrically conducting phase which would interfere with electroplating and which specifically does not interfere with the electroplating of nickel in the manufacture of nickel plated objects containing cubic boron nitride.

4,389,224

METHOD AND APPARATUS FOR ACCRETING FIBROUS FILTER CARTRIDGES OR OTHER TUBULAR ARTICLES

Clarence Sicard, 31 Bradford Dr., Cheshire, Conn. 06410

Filed Jul. 15, 1981, Ser. No. 283,423
Int. Cl.³ B01D *27/02*
U.S. Cl. 55—55 **26 Claims**



1. A method of forming an acreted fibrous batt comprising the steps of passing a porous mandrel in a continual sequence through a unitary tubular housing defining first zone containing a slurry of fibrous material, an intermediate zone and a second zone each free of slurry, applying a vacuum under constant conditions to each of said first and second zones independently of each other to felt said fibers on said mandrel in said first zone and dewater said felted member in said second zone, and regulating the flow of vacuum from said first and second zones into said intermediate zone to separate the water removed from said felted member into its liquid and air phases.

4,389,225

ELECTROSTATIC PRECIPITATOR HAVING HIGH STRENGTH DISCHARGE ELECTRODE

Howard P. Willett, Darien, and Even Bakke, Stamford, both of Conn., assignors to Peabody Process Systems, Inc., Stamford, Conn.

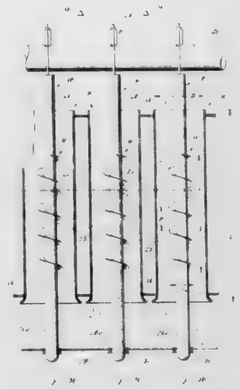
Continuation-in-part of Ser. No. 85,470, Oct. 11, 1979, abandoned. This application Mar. 26, 1981, Ser. No. 247,797
Int. Cl.³ B03C *3/74*
U.S. Cl. 55—118 **5 Claims**

1. An electrostatic precipitator for the collection of particulate matter comprising:

A. a plurality of cylindrical collector tubes,
  1. said tubes being substantially circular in cross section and having an inside diameter (D) and a length (L);
  2. said collector tubes being electrically connected to form particle collection electrodes;

B. a plurality of discharge electrodes each comprising
  1. an electrode mast coaxially positioned in each collector tube and having a diameter of from 0.25 to 0.4D, and
  2. a helical discharge electrode in the form of a helical screw flight on each of said electrode masts,
    a. said helical discharge electrodes having a substantially symmetrically curved outer edge,
    b. with the outer diameter (d) of the screw flight and mast being from 0.33 to 0.67 D,

c. a pitch of from D-d/2 to D-d,
d. the overall length (l) of the helical screw flight being from one screw revolution to one-half L, and the helix of the discharge electrode being spaced at a distance greater than D-d/2 from each end of the collector tubes;



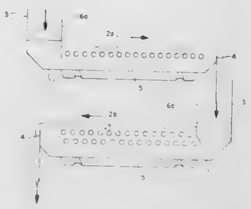
whereby a substantially symmetrical, high field strength and current density between the discharge electrode and the collector tube is created when high voltage is applied to said discharge electrode.

4,389,226

OPEN HEATED BOX TRAYS HAVING FLOW-PROMOTING DEVICES

Eckhard Möller; Horst-Dieter Bures; Karl-Heinz Magosch, all of Marl; Bernt Kesper, Dorsten; Edgar Muschelknautz, and Roland Vogelsgesang, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Oct. 30, 1981, Ser. No. 316,646
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1980, 3041632
Int. Cl.³ B01D *19/02*; B01J *12/00*; B01B *1/02*
U.S. Cl. 55—208 **3 Claims**



1. An apparatus for heating a viscous or highly viscous liquid the apparatus comprising a heated box tray, inlet means and outlet means in the heated box tray for enabling the liquid to flow therethrough, a heating tube register located in the heated box tray so as to be completely covered by the liquid, and a flow promoting means arranged in the heated box tray for promoting the flow of liquid therethrough, said heated box tray including a bottom plate and being open at a top end thereof, said tube register comprising a plurality of heating tubes spaced from each other and arranged in at least one tube layer, said flow promoting means comprising:

a bottom heating unit arranged below the bottom plate of the box tray, the bottom heating unit being positioned outside and along a bottom surface of said box tray;

a siphon plate mounted on said box tray at the inlet means at a position spaced from a front of the tube register, said siphon plate having a bottom end extending to an underside of the tube register; and

a weir spaced from the tube register and positioned at the outlet means of the box tray, said weir having a top edge extending at least to a top side of the tube register, the spacing between said weir and the tube register being larger than the spacing between the siphon plate at the inlet means and the tube register.

4,389,227

GAS TURBINE ENGINE AIR INTAKE

John R. Hobbs, Amersham, England, assignor to Rolls-Royce Limited, London, England

Filed Jan. 14, 1981, Ser. No. 225,109
Claims priority, application United Kingdom, Feb. 9, 1980, 8004402
Int. Cl.³ B01D *39/00*
U.S. Cl. 55—306 **7 Claims**



1. An air intake structure for a gas turbine engine comprising:

a duct having an upstream air inlet for the gas turbine engine, said duct being of circular cross-section;

a center body being circular in cross-section and coaxial with said duct, said center body having a first stem portion extending from within said duct through said air intake and a mushroom-shaped second portion positioned upstream of said air inlet of said duct, said second portion having an upstream facing surface against which liquid impacts and flows across, and said second portion having a maximum diameter greater than a diameter of said air inlet, said maximum diameter of said second portion being spaced upstream from said air inlet;

liquid coalescing means provided on said second portion at said maximum diameter, said liquid coalescing means being arranged to coalesce any liquid impacting and subsequently flowing across said upstream facing surface into large liquid droplets; and

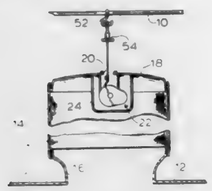
liquid droplet launching means positioned immediately downstream of said liquid coalescing means and upstream of said air inlet means for launching the formed liquid droplets into the air stream passing over said center body, said liquid coalescing means being arranged to form the liquid droplets into a mass, when the same are launched by said liquid droplet launching means, to follow an outward and downstream trajectory sufficient to avoid the air inlet of said duct.

4,389,228

CONSTANT TENSIONING DEVICE

Carl V. Leunig, Glenmont, N.Y., assignor to Albany International Corp., Menands, N.Y.

Filed Aug. 26, 1981, Ser. No. 296,332
Int. Cl.³ B01D *46/02*
U.S. Cl. 55—379 **18 Claims**



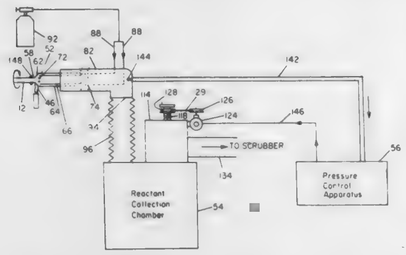
1. A filter bag assembly comprising:
a filter bag;
means connected to said filter bag for maintaining it under substantially constant tension, said means including a rotatably mounted cam having an axis of rotation, a cable at least partially trained around a surface of said can, and spring means urging said cam to rotate in a first direction; said spring means exerting a varying spring force dependent upon the rotational position of the cam, said cable arranged with respect to said cam so that when the cam is in a first rotational position where the spring force is relatively high, the cable is tangent to the surface of said cam at a first distance from the axis of rotation of said cam, and when the cam is in a second rotational position where the spring force is relatively low, the cable is tangent to the surface of said cam at a second distance from the axis of rotation of said cam which is smaller than said first distance.

4,389,229

METHODS AND APPARATUS FOR FABRICATING A LIGHTGUIDE PREFORM

Sei-Joo Jang, Lawrence Township, Mercer County; Knut D. Pohl, Raritan Township, Hunterdon County, and Mansoor A. Saifi, East Windsor Township, Mercer County, all of N.J., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Oct. 1, 1981, Ser. No. 307,455
Int. Cl.³ C03B *19/00*
U.S. Cl. 65—3.12 **10 Claims**



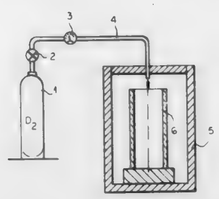
1. A method of fabricating a lightguide preform wherein reactants entrained in a carrier gas are directed into the upstream end of a preform tube for chemical reaction to form a glassy soot for deposition therein, a portion of the soot not depositing in said tube and exiting from the downstream end of said tube, the method comprising the steps of:
directing the undeposited soot into a soot exhaust system communicating with the downstream end of said tube, said system having a variable size outlet port;
measuring pressure within the system; and
varying the size of the output port in accordance with the measured pressure to maintain a substantially constant pressure within the soot exhaust system.

4,389,230

PROCESS FOR IMPROVING THE TRANSMISSION CHARACTERISTICS OF OPTICAL FIBERS DRAWN FROM PREFORMS MADE BY THE MCVD TECHNIQUE

Eros Modone, Turin, and Giacomo Roba, Cogoleto, both of Italy, assignors to Cselt Centro Studi E Laboratori Telecomunicazioni S.P.A., Turin, Italy

Filed Jun. 15, 1981, Ser. No. 273,423
Claims priority, application Italy, Jun. 16, 1980, 67934 A/80
Int. Cl.³ C03B *37/075*
U.S. Cl. 65—3.12 **5 Claims**



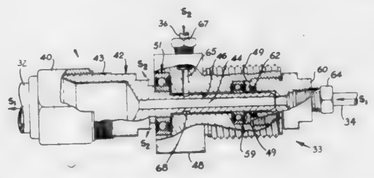
1. A process for improving the transmission characteristics of optical fibers drawn from preforms which are produced by vapor deposition of silica on an inner wall surface of a supporting tube of silica glass,
comprising the step of subjecting at least said inner wall surface of the supporting tube to a pretreatment with deuterium at elevated temperatures and for a period sufficient to isotopically replace a significant number of hydrogen atoms in the tube material close to said inner wall surface with deuterium atoms, said inner wall surface being maintained in contact with gaseous deuterium at a relatively low elevated temperature for inducing deuterium adsorption by the tube wall in a first treatment stage followed by a sharp temperature increase in a second treatment stage for promoting the substitution of hydrogen by deuterium in the tube material.

4,389,231

METHOD FOR SUPPLYING FLUID TO A ROTATING TUBE

Fred P. Partus, Marietta, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jun. 1, 1981, Ser. No. 268,611
Int. Cl.³ C03B *37/07*
U.S. Cl. 65—3.12 **3 Claims**



1. A method of introducing a vapor stream into a rotating optical fiber preform tube, comprising the steps of:
(a) flowing a vapor stream comprised of a vaporized glass forming precursor entrained in an oxidizing carrier gas into the rotating optical fiber preform tube through an at least partially sealed rotary joint that has a tubular housing supporting a ball bearing through which a tubular extension of the preform tube is journalled; and
(b) flowing a stream of the oxidizing carrier gas into the rotary joint housing, about the rotating preform tube extension and through the ball bearing to ambient air at a pressure greater than the pressure of the vapor stream as it flows through the rotary joint whereby ambient air is prevented from entering the vapor stream and any portion of the vapor stream from contaminating the ball bearing and escaping into ambient air should a leak occur in the sealed rotary joint.

4,389,232

APPARATUS FOR MAKING FIBERS FROM THERMOPLASTIC MATERIALS

Rene Fournier, 310 Villa des Sapins, 60290 Vaux Sous Cambronne, Rantigny, and Daniel Sainte-Foi, St. Germer, 56 rue Maurice Duchemin, 60600 Clermont, both of France

Filed Feb. 5, 1982, Ser. No. 346,279
Int. Cl.³ C03D *37/04*
U.S. Cl. 65—16 **11 Claims**



6. Equipment for use in fiberizing attenuable material comprising a blast generator having a gas flow passage and a discharge orifice with surrounding lips, one of which has an external convexly curved surface one edge of which extends transversely of the flow passage, jet generating means for delivering a jet in a path extending in tangent relation to a portion of said external convexly curved surface in a region spaced from the blast orifice with resultant Coanda deflection of the jet transversely into the blast, and means for delivering a stream of attenuable material in attenuable condition into the jet to be carried thereby into the blast.

4,389,233

PROCESS FOR THE PRODUCTION OF AN OPTICAL GLASS ARTICLE

Shiro Kurosaki, and Minoru Watanabe, both of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 11, 1981, Ser. No. 301,895
Claims priority, application Japan, Sep. 17, 1980, 55-129817; Sep. 17, 1980, 55-129818
Int. Cl.³ C03C *15/02*
U.S. Cl. 65—31 **37 Claims**

1. A process for producing an optical glass article, which comprises
preparing at least two solutions having a pH of 10 to 15 and an SiO_2 content of about 1 to 12 mols/l and containing at least one silicate selected from the group consisting of lithium polysilicate, sodium silicate, potassium silicate, rubidium silicate, cesium silicate, thallium silicate, quaternary ammonium silicate and colloidal silica,
combining these solutions to form a mixed solution,
reacting the mixed solution with at least one organic compound selected from the group consisting of formaldehyde, paraformaldehyde, formamide, glyoxal, methyl formate, ethyl formate, methyl acetate and ethyl acetate at a temperature from the freezing point to the boiling point of the reaction solution in a time sufficient to polymerize silica and form a porous gelled body,
leaching the porous gelled body with a leaching solution selected from the group consisting of water, an aqueous solution of an inorganic acid and an aqueous solution of an organic material, capable of dissolving residues in the porous gelled body, until the leaching reaches the central part of the porous gelled body, to form a porous glass body having micropores therein,
stuffing the porous glass body with a solution containing at least one compound capable of being converted into an oxide dopant for changing the refractive index of the porous glass body, selected from the group consisting of $CsNO_3$, $RbNO_3$ and $TlNO_3$,
unstuffing the porous glass body with a solvent or solution having a suitable composition at a suitable temperature to leach the compound out of the porous glass body so as to give a predetermined concentration distribution of the compound in the micropores,
precipitating the compound in the micropores,
drying the glass body in a predetermined atmosphere to decompose the compound,
further heating the glass body at a higher temperature, and
firing the glass body at a temperature sufficiently high to completely decompose the compound and to completely burn any organic materials in the glass body, but lower than the melting point of silica.

4,389,234

GLASS COATING HOOD AND METHOD OF SPRAY COATING GLASSWARE

Georg H. Lindner, Vlissingen, Netherlands, assignor to M&T Chemicals Inc., Woodbridge, N.J.

Filed Mar. 18, 1982, Ser. No. 359,441
Int. Cl.³ C03C *17/00*
U.S. Cl. 65—60.1 **22 Claims**



1. A coating hood adapted to apply uniform protective coatings to glass containers, said hood comprising:
(a) a pair of spaced side walls,
(b) a top extending between said side walls to form a tunnel to permit glass containers to pass therethrough,
(c) a plurality of jet forming means defined in said side walls,
(d) a plurality of receivers defined in said side walls,
(e) said receivers being situated in substantial lateral alignment with said jet forming means but in the side wall opposite thereto for receiving the output from said jet forming means,
(f) at least one feedpoint for introducing a coating compound into the hood,
(g) blower means and conduit means connected thereto for delivering a carrier gas at high velocity to said jet forming means with the coating compound entrained therein,
(h) said jet forming means being spaced longitudinally apart

a sufficient distance to issue a plurality of jets, half of them in one direction and the other half in opposite direction across the lateral dimension of the hood,

(i) whereby unreacted coating compound can be transferred from jet to jet along the longitudinal extent of said hood,

(j) said jet forming means and said receiver are divided into an inner loop and an outer loop,

(k) each loop comprising a pair of adjacent jet forming means,

(l) a pair of receivers disposed in alignment therewith,

(m) and conduit means connecting said jet forming means to said receivers so that at least two continuous loops are formed for recirculating the carrier gas with coating compound entrained therein.

18. A method for operating a coating hood to apply uniform protective coatings to heated glass containers, said spray hood comprising an entrance, an exit, and a tunnel region, a plurality of spaced carrier gas and entrained coating compound delivery means and receiving means in opposite sides of said tunnel, at least one feed point for introducing coating compound into said tunnel, said method comprising the steps of:

(a) passing glass containers through the tunnel,

(b) forming a circulating inner loop including a pair of jet forming means and suction slots, delivering

(c) coating compound to an inner circulating loop of carrier gas from which the unreacted compound is transferred to an outer loop of carrier gas,

(d) coating the container passing thereby.

4,389,235

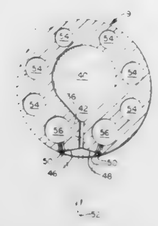
BURNER FOR MANUFACTURE OF FUSED QUARTZ OR FUSED SILICA INGOTS

Lothar Jung, 1355 Plymouth Rd., Bridgewater, N.J. 08807

Filed Feb. 5, 1982, Ser. No. 346,111

Int. Cl.³ C03B *19/04*

U.S. Cl. 65—302 **13 Claims**



1. A burner for producing an ingot from a particulate ingot-forming material by depositing and melting the particulate material on a rotating forming surface, said burner comprising:

an elongated, generally cylindrical body member having a hollow interior or bore for receiving the particulate material;

fuel supply means within said cylindrical body member;

orifice means for receiving fuel from said fuel supply means and establishing a line of flame along a length of said elongated body member; and

discharge means extending the length of said body member for distributing and discharging the particulate material simultaneously along a path generally coextensive with said orifice means, said discharge means being arranged with respect to said orifice means in a manner whereby the discharged particulate material passes through the flame and onto the rotating forming surface.

4,389,236

HERBICIDAL 3-PHENOXYMETHYLENE-ANILINES

Dieter Dürr, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

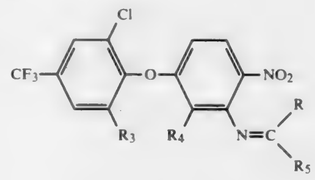
Filed Aug. 3, 1981, Ser. No. 289,582

Claims priority, application Switzerland, Aug. 15, 1980, 6198/80

Int. Cl.³ A01N *43/84, 43/40, 37/52;* **C07C** *123/00, 119/18;* **C07D** *295/18*

U.S. Cl. 71—88 **14 Claims**

1. A compound of the formula



wherein

R is



or C_1–C_4 alkoxy,

one of R_3 and R_4 is hydrogen and the other is chlorine or hydrogen,

R_5 is hydrogen or C_1–C_4 alkyl,

R_6 is hydrogen, C_1–C_4 alkyl, C_2–C_4 alkenyl or C_2–C_4 alkynyl, and

R_7 is hydrogen or C_1–C_4 alkyl,

or R_6 and R_7 together with the nitrogen atom to which they are attached, can form a pyrrolidine, pyrroline, imidazolidine, pyrazolidine, piperidine, piperazine, morpholine, pyrazoline, imidazole, pyrrole or imidazoline ring.

11. A herbicidal composition which comprises (1) a herbicidally effective amount of a compound according to claim **1** and (2) a carrier.

12. A method of selectively controlling weeds in crops of useful plants, which comprises applying to said crops a herbicidally effective amount of a compound according to claim **1**.

4,389,237

THIOLCARBAMATE SULFOXIDES PROTECTED AGAINST DRY SOIL DEACTIVATION

Gilbert G. Patchett, Richmond; Reed A. Gray, Saratoga, both of Calif., and Daniel L. Hyzak, Austin, Tex., assignors to Stauffer Chemical Company, Westport, Conn.

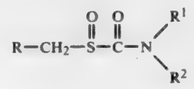
Filed Sep. 23, 1981, Ser. No. 304,539

Int. Cl.³ A01N *41/00*

U.S. Cl. 71—103 **15 Claims**

1. A herbicidal composition comprising combining

(a) about 10 to about 90 percent by weight of a thiolcarbamate sulfoxide of the formula



in which

R is alkyl C_1–C_7, haloalkyl C_1–C_5, alkoxy C_1–C_5 and phenyl;

R^1 and R^2 independently are alkyl C_1–C_6, cycloalkyl C_3–C_8, alkenyl C_2–C_6 and alkynyl C_2–C_4; or

R^1 and R^2 together form an alkylene ring having 4 to 7 carbon atoms optionally substituted with one or two C_1–C_4 alkyl groups and preferably R^1 and R^2 together with the nitrogen atom to which they are attached form piperidino, hexamethyleneimino, decahydroquinolyl, 2,5-dimethylpiperidino and 5-ethyl-2-methylpiperidino; and

(b) about 90 to about 10 percent by weight of neohexanoic acid, phosphoric acid, benzoic acid, lactic acid or their sodium or potassium salts.

4,389,238

FLOWABLE HERBICIDE AND PESTICIDE FORMULATION

Harold A. Kaufman, Piscataway, N.J., assignor to J. T. Baker Chemical Company, Phillipsburg, N.J.

Continuation of Ser. No. 143,368, Apr. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 925,194, Jul. 18, 1978, abandoned. This application Nov. 9, 1981, Ser. No. 319,558

Int. Cl.³ A01N *37/10, 37/38*

U.S. Cl. 71—115 **10 Claims**

1. A flowable toxicant composition comprising (a) an effective amount of a water-insoluble active pesticide in its free acid form having a herbicide size of from about 2 to about 5 microns average particle diameter and (b) from about 5 to about 30% by weight unreactive aluminum hydroxide gel containing about 2 to 20% by weight aluminum hydroxide which has been rendered unreactive by heating at an elevated temperature with mixing for sufficient time to effect its conversion to unreactive gel without loss of its suspending properties.

4,389,239

METHOD AND PRESSURE CONTAINER FOR PRODUCING HYDROGEN-STORAGE METAL GRANULATES

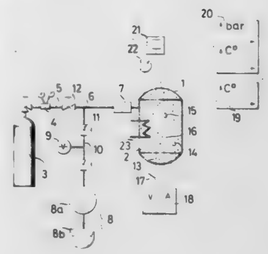
Karl-Heinz Klatt, Jülich; Siegfried Pietz, Dortmund, and Helmut Wenzl, Jülich, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Filed Jun. 9, 1981, Ser. No. 272,055

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1980, 3022708

Int. Cl.³ B22F *9/00*

U.S. Cl. 75—0.5 R **11 Claims**



1. A method of activating a metal granulate of a kind suitable for storage of hydrogen in a pressure vessel, comprising the steps of:

admixing a minor amount of an easily activatable hydrogen-storing metal granulate to a mass of a metal granulate selected for its hydrogen storage capability rather than for its ease of activation;

evacuating the resulting mixture of said granulates in a pressure vessel, and

introducing hydrogen into said pressure vessel at a temperature at which said easily activatable metal granulate is capable of activation until the pressure in said vessel reaches a pressure of the order of magnitude of 50 bar,

whereby the heat developed by activation of said easily activatable granulate builds up and initiates activation of all the granulate material of said mixture.

4,389,240

ALLOYING METHOD

Donald L. Erich, Warwick; Alfred J. Varall, Jr., Middletown, and Stephen J. Donachie, New Windsor, all of N.Y., assignors to Novamet, Inc., Wyckoff, N.J.

Filed Jul. 9, 1982, Ser. No. 396,892

Int. Cl.³ C22C *1/04, 21/20*

U.S. Cl. 75—0.5 B **4 Claims**

1. A process for producing a readily powderable, agglomerated metallurgical composition comprising contacting a mass of flowable powder of a metal or alloy having a melting point of at least about 500° C. with a lesser mass of alkali metal at a temperature above the melting point of said alkali metal and below the melting point of said metal or alloy while under a protective gaseous atmosphere and while kneading said contacting metals for a time sufficient to thereby form agglomerates of substantially uniform composition of said contacting metals.

4,389,241

PROCESS FOR PRODUCING LITHIUM-METAL MASTER ALLOY

Robert D. Schelleng, Suffern, N.Y., assignor to Novamet, Inc., Wyckoff, N.J.

Filed Aug. 30, 1982, Ser. No. 412,546

Int. Cl.³ C22C *1/04, 21/20*

U.S. Cl. 75—0.5 R **6 Claims**

1. In the process of sorbing a molten alkali metal in and onto a powder of a secondary metal, the improvement comprising employing as said powder of said secondary metal a powder which has been subjected to mechanical milling so as to have achieved in said powder substantial saturation hardness and a stable microfine grain size.

4,389,242

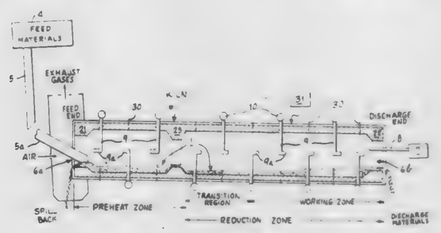
INTERIOR ARRANGEMENT FOR DIRECT REDUCTION ROTARY KILNS AND METHOD

Alan C. Baker, Harriman, Tenn.; Geoffrey N. Boulter, New York, N.Y., and Daniel H. Wilbert, Knoxville, Tenn., assignors to The Direct Reduction Corporation, New York, N.Y.

Filed Mar. 18, 1982, Ser. No. 359,439

Int. Cl.³ C21B *13/08;* **F27B** *7/30*

U.S. Cl. 75—20 R **10 Claims**



1. In an inclined rotary kiln of the type for directly reducing metal oxides using a solid carbonaceous material as the source of fuel and reductant, and having an opening at the higher end for receiving the metal oxides materials as a charge along with a portion of the solid carbonaceous materials, and an opening at the lower end for receiving the remainder of the solid carbonaceous materials and for discharging the reduced materials therefrom and wherein the kiln interior wall defines a process operating zone bounded by a feed end dam located at the higher end of the kiln and a discharge end dam located at the

lower end through which zone the bed of charge materials moves, the improvement comprising:

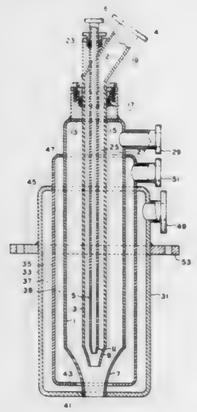
intermediate dam means, disposed within the kiln between the feed end and discharge end dams at a location about one-third the distance along the length of the kiln from the feed end dam, for dividing the operating zone into a preheat zone between said dam means and the feed end dam and a reduction zone between said dam means and the discharge end dam, said dam means being dimensioned to provide volume filling and residence time of the bed materials in said preheat zone sufficient to permit the transfer of adequate heat thereto at the available rate of heat transfer through the surface of the bed in said preheat zone to raise the temperature of the materials to a level approaching the reduction temperatures of the metal oxides by the time the materials reach the end of said preheat zone in their movement through the kiln.

4,389,243

METHOD FOR THE FLASH OXIDATION OF METAL CONCENTRATES

Louis H. Jaquay, Pittsburgh, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Division of Ser. No. 38,322, May 11, 1979, Pat. No. 4,249,722.
This application Oct. 17, 1980, Ser. No. 197,967
Int. Cl.³ C22B *5/12*
U.S. Cl. 75—23 **2 Claims**



1. A method of operating a burner for use in the flash oxidation of metal concentrates having three concentrically mounted tubes each with a venturi nozzle on the discharge end thereof, said method comprising the steps of:

introducing an oxidizing gas into the annular space between the intermediate tube and the outer tube such that the velocity of this gas is increased as it is ejected by the nozzle on the discharge end of the outer tube;

introducing particles of metal concentrates into the annular space between the inner tube and the intermediate tube with the nozzle at the end of said intermediate tube partially extending axially into the nozzle on the end of the outer tube, such that the metal concentrates are intensely mixed with the oxidizing gas by the outer tube nozzle; and

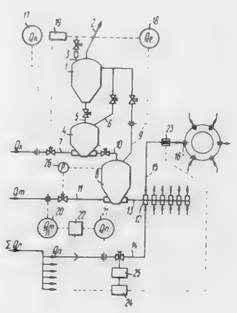
introducing an additional oxidizing gas into the inner tube with the nozzle at the end thereof extending partially into the nozzle at the end of the intermediate tube, said additional oxidizing gas being introduced at a pressure sufficiently above that at which the oxidizing gas is introduced into the outer tube such that the particles of metal concentrate are accelerated by said additional oxidizing gas to substantially the velocity of the oxidizing gas introduced into the outer tube at the nozzle on the discharge end of the outer tube.

4,389,244

METHOD OF SUPPLYING PULVERIZED FUEL MIXTURE TO BLAST FURNACE TUYERES

Stanislav L. Yaroshevsky, ulitsa Schorsa, 25, kv. 6; Leonid F. Lukyanchenko, ulitsa 50-letia SSSR, 108, kv. 172; Grigory N. Sidorenko, ulitsa Artekovskaya, 9; Evgeny N. Skladanovsky, ulitsa 50-letia SSSR, 108, kv. 40; Mikhail A. Zalevsky, ulitsa Kuibysheva, 61, kv. 17; Viktor I. Machikin, ulitsa Kuibysheva, 2, kv. 87, all of Donetsk; Jury G. Bannikov, ulitsa Lenina, 64, kv. 47, Kharkov; Anatoly I. Ryabenko, ulitsa Prozhektornaya, 18, kv. 30, Donetsk; Shamil T. Okazov, ulitsa Schorsa, 6, kv. 25, Donetsk; Vasily V. Stepanov, bulvar Shevchenko, 6, kv. 24, Donetsk; Evgeny A. Danilin, ulitsa Petrozavodskaya, 95, kv. 10, Kharkov; Anatoly A. Yarmal, bulvar Shkolny, 18, kv. 61, Donetsk; Grigory E. Nekhaev, ulitsa Zhabeleva, 26, Donetsk; Jury I. Bat, prospekt Vatutina, 43, kv. 44, Donetsk; Nikolai N. Popov, ulitsa Krymskaya, 7, Donetsk; Alexei M. Kamardin, bulvar Pushkina, 95, kv. 25, Donetsk; Valdimir P. Tereschenko, bulvar Shevchenko, 10, kv. 55, Donetsk, and Romualda S. Stankevich, ulitsa Bogomoltsa, 7/14, kv. 156, Kiev, all of U.S.S.R.

PCT No. PCT/SU80/00218, § 371 Date Jan. 11, 1982, § 102(e) Date Jan. 11, 1982, PCT Pub. No. WO81/03341, PCT Pub. Date Nov. 26, 1981
PCT Filed Dec. 25, 1980, Ser. No. 342,004
Int. Cl.³ C21B *5/00*
U.S. Cl. 75—42 **4 Claims**



1. A process for supplying a pulverized fuel mixture to a plurality of blast furnace tuyeres, comprising the steps of:

batch loading the pulverized fuel mixture into a discharge chamber;

maintaining substantially gauge pressure within said discharge chamber;

discharging said fuel mixture from said discharge chamber into a main carrier gas flowing toward said tuyeres to provide a flow of fluidized pulverized fuel mixture;

dividing said flow into a corresponding plurality of main carrier gas streams, one of said streams flowing to each of said tuyeres; and

providing a corresponding plurality of supplementary carrier gas streams; and

introducing each of said supplementary carrier gas streams into a corresponding one of said main carrier gas streams to form a corresponding plurality of combined gas streams, the total flow rate of all of said supplementary carrier gas streams being 3 to 10 times the total flow rate of said main carrier gas; and

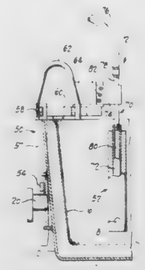
maintaining the product of the total flow rate of each of said combined streams by the concentration of pulverized fuel mixture therein, the same for all of said combined streams.

4,389,245

LANCE LADLING

Matthew J. Blair, Niles; Thomas A. Wiktorowski, Parma Heights, and W. Dale Wogan, Warren, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Continuation of Ser. No. 165,709, Jul. 3, 1980. This application Oct. 14, 1981, Ser. No. 311,175
Int. Cl.³ C21C *7/02*
U.S. Cl. 75—58 **16 Claims**



1. In a process of injecting ladle additives into molten steel, the steps comprising:

transferring molten steel into a vessel;

entraining a particulate additive in a gas flow;

supporting on the vessel a refractory-protected conduit of constant length having an unobstructed opening positioned at a fixed location within the vessel,

introducing the gas flow and additive below the surface of the steel at a constant level within the vessel through said conduit while the molten steel is being transferred into the vessel; and

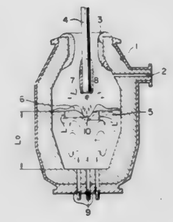
continuing the introduction of gas flow and additive into the vessel at said level until a predetermined quantity of additives has been introduced.

4,389,246

GASIFICATION PROCESS OF SOLID CARBONACEOUS MATERIAL

Shozo Okamura, Asomachi; Hidemasa Nakajima; Katsukiyo Marukawa, both of Ibaraki; Shoji Anezaki, Ibaraki, and Takeyuki Hirata, Ibaraki, all of Japan, assignors to Sumitomo Metal Industries, Osaka, Japan

Filed Aug. 6, 1981, Ser. No. 290,587
Claims priority, application Japan, Dec. 2, 1980, 55-170170
Int. Cl.³ C21C *5/32*
U.S. Cl. 75—60 **19 Claims**



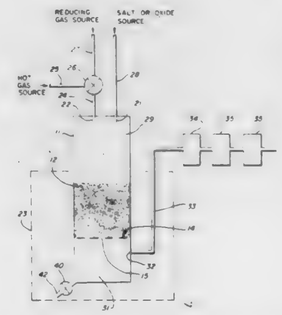
1. A process for gasification of solid carbonaceous material in which pulverized solid carbonaceous material is top-blown onto a molten iron bath stored in a furnace through a non-submerged lance toward a hot spot formed by means of a jet of a gasifying agent comprising at least oxygen, the gasifying agent is top-blown through a non-submerged lance, the solid carbonaceous material being blown by means of a carrier gas, thereby the solid carbonaceous material being gasified, wherein the improvement comprises that the ratio L/L_0 of the depression depth L of the molten iron bath to the molten iron bath depth L_0 is maintained from 0.05 to 0.15, and the blowing velocity of the solid carbonaceous material is maintained from 50 to 300 m/sec so as to suppress the forming of an adhered mass in the furnace, and a stirring gas is blown through at least one nozzle which opens below the level of the molten iron bath to stir the molten iron bath.

4,389,247

METAL RECOVERY PROCESS

Sungkuk Won, and Jerry E. Dobson, both of Tucson, Ariz., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 29, 1982, Ser. No. 362,956
Int. Cl.³ C22B *15/00*
U.S. Cl. 75—72 **20 Claims**



1. A process for recovering a metal in its elemental state by reducing an oxide or salt of the metal with a reducing gas, comprising:

providing a reaction vessel containing a packed bed of a packing material which is substantially chemically inert under the conditions in the reaction vessel and whose melting point is higher than the temperature at which the packed bed is maintained, the packing material being packed so as to provide void spaces in the bed through which fluid flow of the oxide or salt, reducing gas and any elemental metal formed through the bed and in intimate contact with each other and with the packing material is permitted;

maintaining the temperature of the packed bed above the melting point of the metal in its elemental state and at a level at which substantial reduction of the metal in its oxide or salt occurs by reaction of the oxide or salt with the reducing gas;

introducing the metal oxide or salt and the reducing gas into the reaction vessel wherein the metal oxide or salt and reducing gas react to form the metal in its elemental state and passing a reaction mixture comprising the elemental metal formed, any gaseous product formed, any unreacted reducing gas and any unreacted fluid metal oxide or salt downward through the void spaces within the packed bed so as to effect intimate contact between the unreacted fluid metal oxide or salt, the unreacted reducing gas and the packed bed to thereby promote heat transfer therebetween and reaction of the unreacted fluid metal oxide or salt with the unreacted reducing gas, and so as to effect intimate contact of the elemental metal formed and the packed bed to thereby promote coalescence within the packed bed of the elemental metal formed;

permitting the reaction mixture to remain within the packed bed sufficiently long that reaction between the metal oxide or salt and the reducing gas and coalescence of the elemental metal formed are substantially complete by the

time the reaction mixture passes out of the packed bed; and

collecting within the reaction vessel and below the packed bed any coalesced elemental metal passing out of the packed bed.

4,389,248

METHOD OF RECOVERING GOLD FROM ANODE SLIMES

Toshimasa Iio, and Toyokazu Ohkubo, both of Niihama, Japan, assignors to Sumitomo Metal Mining Company Limited, Tokyo, Japan

Filed Nov. 2, 1981, Ser. No. 317,640

Claims priority, application Japan, Nov. 18, 1980, 55/162153

Int. Cl.³ C22B *11/00*

U.S. Cl. 75—99 **18 Claims**

1. A method of recovering gold from anode slimes generated during electrolytic copper refining, said method comprising the steps of

(1) removing copper and selenium from said anode slimes;

(2) adding exclusively water to the anode slimes from which the copper and selenium have been removed in step (1) in order to form an aqueous slurry;

(3) blowing exclusively chlorine gas into said aqueous slurry of step (2) to dissolve the gold; and

(4) separating said dissolved gold from the residue.

17. A method as set forth in claim **1**, further including treating said dissolved gold obtained in step (4) with a reducing agent to obtain high purity gold as a precipitate.

4,389,249

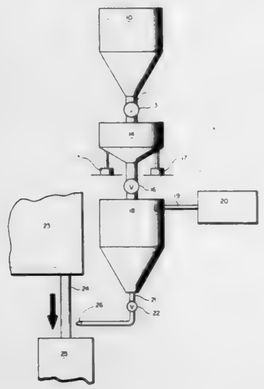
METHOD FOR ADDING INGREDIENT TO STEEL AS SHOT

Michael O. Holowaty, Crown Point; Ian F. Hughes, Munster, and John Lude, Portage, all of Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed Apr. 22, 1982, Ser. No. 370,908

Int. Cl.³ C22C *37/00*

U.S. Cl. 75—129 **11 Claims**



1. In a process wherein alloying ingredients are added as shot to molten steel which is flowed from a ladle to a casting mold, a method for enhancing the recovery and uniformity of distribution in said steel of said alloying ingredients, said method comprising:

employing a shot size within the range 0.5–2.0 mm, (0.019–0.078 in.) with no more than about 1 wt.% outside said size range;

and feeding said shot into said molten steel without mechanical hurling.

4,389,250

MEMORY ALLOYS BASED ON COPPER OR NICKEL SOLID SOLUTION ALLOYS HAVING OXIDE INCLUSIONS

Keith Melton, Busslingen; Olivier Mercier, Ennetbaden, and Helmut Riegger, Busslingen, all of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Mar. 2, 1981, Ser. No. 239,646

Claims priority, application European Pat. Off., Mar. 3, 1980, 80200185.9

Int. Cl.³ F16G *1/26*

U.S. Cl. 75—232 **8 Claims**

1. A memory alloy prepared by powder metal technology consisting essentially of aluminum and at least one metal selected from the group consisting of copper, nickel, or copper and nickel having the β-phase solid solution structure which forms a matrix having a fine grained texture with a crystallite diameter of at most 100 μm, the Cu/Al or Cu/Al/Ni alloy containing Al in the range of 10.6–15.0 percent, and Ni in the range of 0–6 percent, the balance being copper, and the Ni/Al alloy containing Al in the range of 17–26%, the balance being Ni, and, dispersed in said matrix, 0.5 to 2.0 percent of finely divided inclusions of at least one metal oxide having a particle size of 1.0 nm to 1.0 micron.

4,389,251

POWDER MIXTURE FOR THERMAL SPRAYING

Wolfgang Simm, Lausanne; Hans-Theo Steine, Chavannes, and Daniel Audemars, Echandens, all of Switzerland, assignors to Castolin S.A., Saint-Sulpice, Switzerland

Filed Jan. 14, 1981, Ser. No. 225,047

Claims priority, application Switzerland, Jan. 17, 1980, 386/80

Int. Cl.³ B22F *1/00*

U.S. Cl. 75—255 **36 Claims**

1. A spraying powder for producing, by thermal spraying on a substrate, a heterogenous layer characterized by a lamellar structure comprising juxtaposed lamellae formed from at least two different alloy powders, said spraying powder comprising a mechanical mixture of said at least two different alloy powders, said at least two different alloy powders being selected from the group consisting of a boron-free nickel and/or a cobalt and/or an iron-base alloy, wherein the hardness of each of said alloys is compared in similar as-cast form, or a similar sprayed-on coating form, and wherein each has a different hardness ranging from 200 to 650 Hv and a different static coefficient of friction in the range from 0.01 to 0.3 μ_S, said hardness difference between the selected alloys being at least 30 Hv.

20. A spraying powder for producing, by thermal spraying on a substrate, a heterogeneous layer characterized by a lamellar structure comprising juxtaposed lamellae formed from at least two different alloy powders, said spraying powder comprising a mechanical mixture of said at least two different alloy powders, said at least two different alloy powders being selected from the group consisting of a boron-free nickel and/or a cobalt and/or an iron-base alloy, the hardness of a first alloy in an as-cast form, or a sprayed-on coating form, of the said alloy powder mixture being within the range of 200 to 450 Hv, and the hardness of a second alloy in similar as-cast form, or a similar sprayed-on coating form, of the said alloy powder mixture being within the range of 350 to 650 Hv, the difference in hardness between the said first and second alloys being at least 30 Hv, and at least one of said first and second alloys being selected from alloys which undergo a modification in structure during the spraying operation.

4,389,252

PLANT FOR MANUFACTURING CEMENT CLINKER

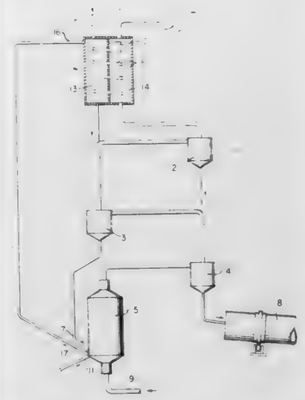
Rolf D. Houd, and Hans B. Knudsen, both of Copenhagen, Denmark, assignors to F. L. Smidth & Co., Cresskill, N.J.

Filed Dec. 3, 1980, Ser. No. 212,401

Claims priority, application United Kingdom, Dec. 12, 1979, 7942891

Int. Cl.³ C04B *7/02*

U.S. Cl. 106—100 **9 Claims**



1. An apparatus for use with a kiln for manufacturing cement clinker comprising at least one multi-stage preheater for passage of cement raw material therethrough, the raw material having volatile, combustible components, said at least one multi-stage preheater having at least one cyclone stage heated by exit gases, means provided in at least one preheater stage for separating the cement raw material from said exit gases, and means for transferring heat indirectly from said exit gases to the cement raw material in such a manner that the volatile, combustible components are expelled from the cement raw material without explosion of said volatile, combustible components.

4,389,253

PROCESS FOR REMOVING CRUD FROM ION EXCHANGE RESIN

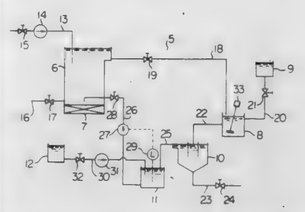
Shigeoki Nishimura, Katsuta; Toshio Ogawa, Takahagi; Katsuya Ebara, Mito, and Sankichi Takahashi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 28, 1981, Ser. No. 315,736

Claims priority, application Japan, Oct. 30, 1980, 55-153358; Dec. 8, 1980, 55-172036

Int. Cl.³ B08B *3/12*

U.S. Cl. 134—1 **16 Claims**



1. A process for removing crud adsorbed on ion exchange resin and separating the ion exchange resin from the crud comprising:

providing a slurry comprising ion exchange resin having crud adsorbed thereon;

supersonically irradiating the slurry to excoriate and remove the crud from the surface of the ion exchange resin and to float the excoriated crud to the surface of the slurry;

reacting a dispersing agent with the excoriated crud to form a dispersed and stabilized colloid by charging the surface of the crud either positively or negatively to prevent the crud from readsorbing on the ion exchange resin due to static attraction; and

separating a slurry containing the dispersed and stabilized colloid from the ion exchange resin from which the crud has been removed.

4,389,254

CONTINUOUS TREATMENT OF STEEL SHEET

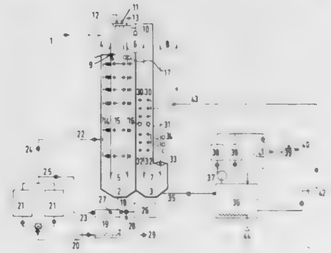
Vittorino Tusset, Oupeye; Jules Hancart, Jupille, and Philippe Paulus, Liege, all of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie, Brussels, Belgium

Continuation of Ser. No. 87,639, Oct. 23, 1979, abandoned. This application Apr. 28, 1981, Ser. No. 258,480

Claims priority, application Belgium, Oct. 27, 1978, 871631

Int. Cl.³ C23G *1/08*

U.S. Cl. 134—3 **10 Claims**



1. A process for the continuous treatment of steel sheet, comprising the sequential steps of:

thermally treating the steel sheet to form an oxide layer on its surface;

pickling the sheet having the oxide layer by bringing the sheet into contact with a solution of formic acid, the solution having an iron content of at least 50 mg/l, while

maintaining the pH of the solution between 1.5 and 4, and maintaining the temperature of the solution both above 40° C. and above a minimum value T_m in C.° given by the equation

$$T_m = 20 + (\text{pH of solution} - 1.5)32;$$

and

adding hydrogen peroxide oxidizing agent to the solution, while maintaining the concentration of the oxidizing agent in the solution between a minimum value equal to the value necessary to oxidize at least 80% of the ferrous ions in solution to ferric ions and a maximum value of up to ten times the minimum value wherein, the formic acid pickling solution is self-regenerating by the sequential steps of,

reacting the formic acid with the ferrous oxide coating of the sheet to yield ferrous formiate and water,

reacting the ferrous formiate, the hydrogen peroxide oxidizing agent which is added, and the formic acid together to form ferric formiate and water, and

producing a hydrolysis reaction between the ferric formiate and the water to regenerate the formic acid and produce a ferric hydroxide precipitate;

removing the ferric hydroxide precipitate from the pickling solution, and

recycling the regenerated formic acid.

4,389,255

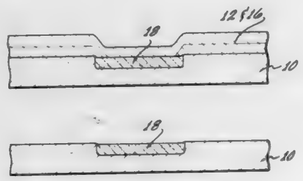
METHOD OF FORMING BURIED COLLECTOR FOR BIPOLAR TRANSISTOR IN A SEMICONDUCTOR BY SELECTIVE IMPLANTATION OF POLY-SI FOLLOWED BY OXIDATION AND ETCH-OFF

Chau-Shiong Chen, and Anant O. Dixit, both of San Diego, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 111,683, Jan. 14, 1980, abandoned, which is a continuation of Ser. No. 3,652, Jan. 15, 1979, abandoned. This application Nov. 13, 1980, Ser. No. 206,350

Int. Cl.³ H01L *21/265, 21/225*

U.S. Cl. 148—1.5 **1 Claim**



1. A process for producing a buried collector for a bipolar transistor in a semiconductor body comprising:

applying a dopant impermeable oxide masking layer onto the surface of said semiconductor body, said masking layer having a window therein which exposes the surface of said substrate where said collector is to be fabricated;

applying a polysilicon layer uniformly over said masking layer and said exposed surface of said substrate;

implanting dopant ions into said polysilicon layer and thereafter diffusing said implanted dopant ions from said polysilicon layer through said window into a relatively deep region of said semiconductor body under said window;

oxidizing said polysilicon layer and a relatively shallow surface portion of said deep region into which said dopant ions diffused so as to form a single integrated oxide layer out of said masking layer and said polysilicon layer and said surface portion of said deep region; and

removing said single integrated oxide layer in a single step while retaining the remaining portion of said deep region into which said dopant atoms diffused as said buried collector.

4,389,256

METHOD OF MANUFACTURING PN JUNCTION IN GROUP II-VI COMPOUND SEMICONDUCTOR

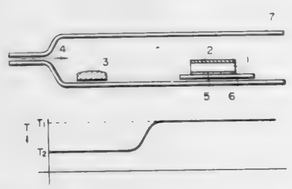
Jun-ichi Nishizawa, No. 6-16, Komegafukuro 1-chome, Sendai-shi, Miyagi-ken, and Kazuomi Ito, Ashikaga, both of Japan, assignors to Jun-ichi Nishizawa, Sendai, Japan

Filed Jun. 5, 1981, Ser. No. 270,816

Claims priority, application Japan, Jun. 16, 1980, 55-81212

Int. Cl.³ H01L *21/324*

U.S. Cl. 148—1.5 **14 Claims**



1. A method of manufacturing a pn junction with a II-VI compound semiconductor selected from ZnSe, CdS and ZnS, said method comprising:

controlling the vapor pressure of that component element of the compound semiconductor having a higher vapor pressure than the other component element, to a predetermined level during crystal growth by the temperature difference liquid crystal growth method, thereby producing a II-VI compound semiconductor mono-crystal; and

doping an acceptor impurity under controlled temperature conditions such that the stoichiometry of the mono-crystal remains substantially constant and the density of the donor level is not greater than the density of the acceptor impurity added.

4,389,257

FABRICATION METHOD FOR HIGH CONDUCTIVITY, VOID-FREE POLYSILICON-SILICIDE INTEGRATED CIRCUIT ELECTRODES

Henry J. Geipel, Jr., Essex Junction, Vt.; Ning Hsieh, San Jose, Calif.; Charles W. Koburger, III, Underhill, and Larry A. Nesbit, Williston, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 30, 1981, Ser. No. 288,608

Int. Cl.³ H01L *21/285*

U.S. Cl. 148—1.5 **15 Claims**

1. The method of providing self-passivated composite silicon-silicide conductive electrodes for field effect devices including the steps of:

providing a semiconductor substrate of a first conductivity type;

providing a gate dielectric layer on said substrate;

providing a conductive first silicon layer on said gate dielectric layer;

sequentially depositing over said first silicon layer a layer comprising a silicide-forming metal and a second silicon layer, and

exposing said layered structure to a thermally oxidizing atmosphere to grow a predetermined thickness of silicon dioxide on said structure;

the improvement characterized in that the step of depositing said silicide-forming metal includes the simultaneous co-deposition of silicon and said silicide-forming metal in a substantially stoichiometric ratio to form an intermetallic metal compound silicide and that the thickness of said second silicon layer provides between 30 and 100 percent of the silicon required to grow said predetermined thickness of silicon dioxide during said oxidation step, the balance of the silicon required to grow said predetermined thickness being provided by said first silicon layer.

4,389,258

METHOD FOR HOMOGENIZING THE STRUCTURE OF RAPIDLY SOLIDIFIED MICROCRYSTALLINE METAL POWDERS

James Dickson, Stirling; Kenji Okazaki, Rockaway Township, Morris County, both of N.J., and Thomas H. Sanders, Lafayette, Ind., assignors to Allied Corporation, Morris Township, N.J.

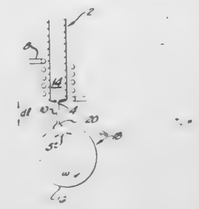
Filed Dec. 28, 1981, Ser. No. 334,624

Int. Cl.³ B22F *9/08, 9/04*

U.S. Cl. 148—3 **8 Claims**

1. An improved method for producing rapidly solidified aluminum alloy powder from material which has been quenched on a chill surface, the material having regions with coarse microstructure and regions with fine microstructure, the improvement comprising:

grinding said material to develop a fractured powder having a coarse powder component with said coarse microstructure and a fine powder component with said fine microstructure; and



screening said powder to remove said coarse powder component.

4,389,259

ASYMMETRICAL DIESTERS OF ORTHOPHOSPHORIC ACID USEFUL AS CORROSION INHIBITORS

Bernard Danner, Riedisheim, France; Hartmut Mau, Istein, Fed. Rep. of Germany, and Hans Stettler, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

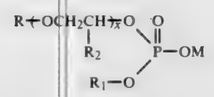
Filed Apr. 24, 1981, Ser. No. 257,379

Claims priority, application Switzerland, Apr. 30, 1980, 3345/80; Jun. 20, 1980, 4756/80; Jan. 9, 1981, 126/81

Int. Cl.³ B05D *7/14;* **C23F** *11/16*

U.S. Cl. 148—6.15 R **15 Claims**

1. A process for the inhibition of oxidative corrosion of metals in the presence of weakly acidic to weakly basic electrolytes comprising the step of contacting the metal with an effective amount of a compound of formula I:



I

in which

R is C_{8-18}alkyl,

R_1 is C_{2-4}alkyl,

R_2 is hydrogen or methyl,

x is 1–15, and

M is hydrogen, an alkali metal ion or an equivalent of an alkaline earth metal or zinc ion.

4,389,260

COMPOSITION AND PROCESS FOR THE PHOSPHATIZING OF METALS

Dieter Hauffe, Frankfurt am Main; Gerhard Muller, Hanau am Main; Werner Rausch, Oberursel; Josef Rothkegel, Maintal, and Gudrun Volling, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Occidental Chemical Corporation, Warren, Mich.

Filed Jan. 8, 1982, Ser. No. 337,916

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 3101866

Int. Cl.³ C23F *7/08*

U.S. Cl. 148—6.15 Z **10 Claims**

1. A composition for the phosphatising of metals which comprises an aqueous acidic chlorate-containing zinc phosphate solutions which contains:

from 0.5 to 1.5 g/liter Zn

from 0.4 to 1.3 g/liter Ni

from 10 to 26 g/liter P_2O_5

from 0.8 to 5 g/liter ClO_3

and is free of nitrite and in which the weight ratio of Zn to Ni is adjusted to a value of 1:0.5 to 1.5, that of Zn to P_2O_5 to a value of 1:8 to 85 and that of free P_2O_5 to total P_2O_5 to a value of 0.005 (at about 30 degrees C.) to 0.06 (at about 60 degrees C.):1.

4,389,261

PROCESS FOR CUTTING METAL MEMBERS BY MEANS OF JETS OF GAS WHICH ISSUE AT THE PERIPHERY OF A ROTARY DISC

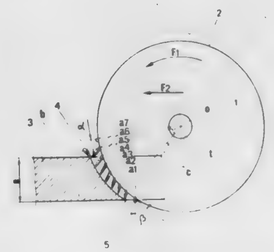
Michel Donze, Liverdun, and Severino Rugi, Moyeuvre Grande, both of France, assignors to Etablissements Somalor-Ferrari 'Somafer', Uckange, France

Filed Jul. 1, 1982, Ser. No. 394,172

Claims priority, application France, Jul. 10, 1981, 81 14041

Int. Cl.³ B23K *7/02*

U.S. Cl. 148—9 R **2 Claims**



1. A process for cutting metal members by means of jets of gas such as oxygen emitted at the periphery of a distributor disc rotating about its axis of revolution, the jets being directed in the plane of symmetry of the disc each being at an angle of less than 90° to the tangent to the disc, which is drawn from the intersection of the axis of the jet with the periphery of the disc, characterized in that the disc is rotated in the opposite direction to the tangential component of the jets.

4,389,262

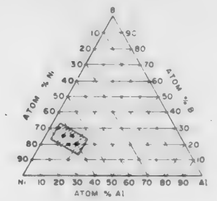
AMORPHOUS ALLOYS OF NICKEL, ALUMINUM AND BORON

Lee E. Tanner, Berkeley, Calif., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 31, 1980, Ser. No. 221,941

Int. Cl.³ C22C *19/03*

U.S. Cl. 148—403 **3 Claims**



1. An amorphous nickel-base alloy containing aluminum and boron and having an ultimate tensile strength in excess of 3×10^9 Pa, the alloy consisting essentially of a composition which, when plotted on a ternary phase diagram in atomic percent Ni, atomic percent Al and atomic percent B, is represented by a quadrilateral region having at its corners the points defined by:

(1) Ni-62, B-33, Al-5;

(2) Ni-73, B-22, Al-5;

(3) Ni-62, B-13, Al-25; and

(4) Ni-52, B-23, Al-25.

4,389,263

BONDING AGENT FOR NITRAMINES IN ROCKET PROPELLANTS

Henry C. Allen, Decatur, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 9, 1981, Ser. No. 310,173
Int. Cl.³ C06B *45/22*
U.S. Cl. 149—11 **17 Claims**

1. In a propellant composition comprised of about 41 weight percent binder selected from a first binder consisting of mixed polyesters, nitrocellulose, and a diisocyanate curing agent plasticized with 70/30 weight percent blend of nitroglycerine and butanetrioltrinitrate, or a second binder consisting of polymers of ethylene oxide and polymers of caprolactone, cellulose acetate butyrate crosslinker, and a polyfunctional isocyanate curing agent plasticized with mixed nitrate esters consisting of about equal amounts of butanetrioltrinate, triethyleneglycoldinitrate, and trimethylolpropanetrinitrate; and including the additional propellant ingredients employed with said binder system selected of about 3 weight percent of fine particle solids which function as stabilizers, ballistic modifiers, and opacifiers, and about 56 weight percent of a nitramine oxidizer powder selected from the nitramine oxidizers consisting of cyclotetramethylenetetranitramine and cyclotrimethylenetrinitramine, said nitramine oxidizer powder consisting of particle sizes ranging from about 3 micrometers and larger, said larger nitramine oxidizer powder being coated, the improvement to propellant properties achieved by employing a prior coating process to effect a coating on said larger nitramine oxidizer powder of a collagen protein derived from animal source prior to incorporating said selected nitramine oxidizer powder into said propellant composition, said coated nitramine oxidizer powder having a collagen protein coating from about 0.25 weight percent to about 1.25 weight percent which functions as a bonding agent to enhance the bond strength between the propellant binders and nitramine particles to thereby result in substantial enhancement of desirable propellant properties including tensile strength, and initial tangent modulus.

4,389,264

PROCESS FOR THE MANUFACTURE OF INSULATED PROPELLANT SETS AND OF PROPELLING SETS PROVIDED WITH AN INSULATING ENVELOPE

Wolfgang H. R. Klöhn, Pfinztal; Dieter H. Müller, Karlsruhe, and Hiltmar A. O. Schubert, Walzbachtal, all of Fed. Rep. of Germany, assignors to s.a. PRB, societe anonyme, Belgium

Filed Feb. 17, 1981, Ser. No. 234,604
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006418
Int. Cl.³ C06B *45/12*
U.S. Cl. 149—14 **10 Claims**

1. Process for the manufacture of insulated propellant sets for base-bleed gas generators comprising introducing a propellant containing one or more solid substances, at least one of which is an oxidant, and a binder comprising a thermoplastically deformable elastomer, into an insulating envelope, which contains a thermoplastically deformable elastomer, and forcing said propellant into the envelope at elevated temperature.

4,389,265

BREAKDOWN OF SOLID PROPELLANTS AND EXPLOSIVES, RECOVERY OF NITRAMINES

Albert S. Tompa, Indian Head, Md.; David M. French, Alexandria, Va., and Billy R. White, Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 16, 1981, Ser. No. 283,709
Int. Cl.³ C06B *45/10*
U.S. Cl. 149—109.6 **8 Claims**

1. A process for reclaiming a nitramine in high yield from a pyrotechnic material having a chemically crosslinked binder component selected from the group consisting of polyurethanes, polyamides, polyesters, and polyacrylates, which comprises the steps of:

(1) placing the pyrotechnic material into a solution consisting essentially of from about 2.0 N to about 6.0 N of an acid selected from the group consisting of HCl, H_2SO_4, and H_3PO_4 in an acetone-water solvent mixture, said solvent mixture consisting essentially of 40 to 60 volume percent acetone and water mixture;

(2) maintaining the mixture resulting from step (1) at a temperature of from about 15° C. to about 80° C. until the binder has been broken down; and

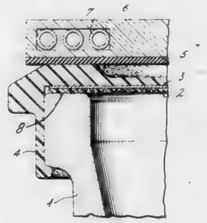
(3) isolating the nitramine.

4,389,266

PREPARATION OF GLASS CONTAINER FOR THERMOPLASTIC CLOSURE

Michael T. Dembicki, and William J. Poad, both of Brockport, Pa., assignors to Brockway Glass Co., Inc., Brockway, Pa.

Continuation-in-part of Ser. No. 233,056, Feb. 10, 1981, Pat. No. 4,324,601, which is a continuation-in-part of Ser. No. 86,398, Sep. 19, 1979, Pat. No. 4,260,438. This application Jan. 15, 1982, Ser. No. 339,340
The portion of the term of this patent subsequent to Apr. 13, 1999, has been disclaimed.
Int. Cl.³ B67B *3/00*; B32B *17/10*; C03C *15/00, 21/00*
U.S. Cl. 156—69 **32 Claims**



20. A method for sealing an opening in a glass container having side walls comprising:

providing a rim-like sealing surface around said opening;

treating said sealing surface at a high temperature with a chemical agent comprising a metal oxide precursor selected from the group consisting of tin oxide and titanium oxide precursors and mixtures thereof which decomposes to form tin oxide, titanium oxide and mixtures thereof, respectively, at the container temperature, which renders said surface adherable to a thermoplastic membrane;

coating the exterior surface of said container including said side walls with a lubricity enhancing agent;

removing said lubricity enhancing agent from only said sealing surface by briefly exposing said surface to an intense heat source and heating it to below flame polishing temperature while avoiding destruction by heat of the effect of the lubricity enhancing treatment on the side walls,

thereafter coating the finish surface with a chromium (III) organic metallic complex, and

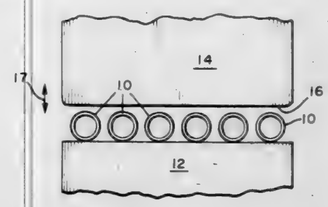
pressing a membrane comprising a thermoplastic material against said sealing surface at a temperature above the softening point but below the melting point of said thermoplastic.

4,389,267

METHOD OF FABRICATING A FLEXIBLE COVER BY ULTRASONIC VIBRATIONS

Clark A. Denslow, Wilton, Conn., assignor to Branson Ultrasonics Corporation, Newtown, Conn.

Filed May 24, 1982, Ser. No. 381,066
Int. Cl.³ B29C *27/08*
U.S. Cl. 156—73.2 **6 Claims**



1. The method of fabricating a flexible cover, such as a blind or shade, from tubular or rod thermoplastic members comprising:

providing a support;

disposing on said support a plurality of such members juxtaposed in spaced substantially parallel alignment with one another;

engaging the exposed side of said aligned members with an ultrasonically vibrating resonator at axially spaced locations of said members and exerting such engagement pressure between said resonator and members as to cause said members at such spaced locations to become flattened against said support and produce a relatively thin web of flowed thermoplastic material;

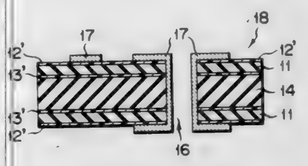
such web joining each set of two juxtaposed members and providing responsive to the cessation of ultrasonic vibrations and solidification of the flowed thermoplastic material a flexible joint between a pair of adjacent members.

4,389,268

PRODUCTION OF LAMINATE FOR RECEIVING CHEMICAL PLATING

Renzo Oshima, Hachioji; Yoshiyuki Kyojima, Kawasaki; Takara Fujii, and Shoji Kato, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki and Toshiba Chemical Products Company, Tokyo, both of, Japan

Filed Jul. 23, 1981, Ser. No. 285,981
Claims priority, application Japan, Aug. 6, 1980, 55-107945; Aug. 6, 1980, 55-107947
Int. Cl.³ C25D *5/34*; B32B *31/00*; B29C *17/08*
U.S. Cl. 156—150 **24 Claims**



1. A method of producing a laminate to the surface of which a chemical plating is to be applied, comprising the steps of:

(a) forming a thermosetting adhesive layer containing a butadiene-based rubber on at least one surface of a peel-resistant insulating sheet;

(b) curing the adhesive layer substantially completely;

(c) coarsening the surface of the cured adhesive layer;

(d) laminating the adhesive-bearing sheet on a base material such that the cured adhesive layer is bonded to the base material layer; and

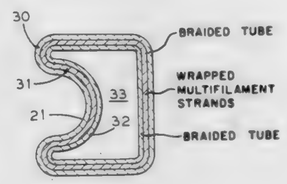
(e) coarsening the outermost surface of the laminate on the side of the insulating sheet.

4,389,269

SPORTS RACKET

Adrianus A. G. Cooper, and Phillip M. Leopold, both of Alliance, Ohio, assignors to Pepsico, Inc., Purchase, N.Y.

Division of Ser. No. 879,312, Feb. 21, 1978, Pat. No. 4,221,382.
This application Jul. 17, 1980, Ser. No. 169,839
Int. Cl.³ A63B *49/10*
U.S. Cl. 156—172 **4 Claims**



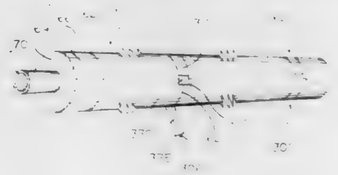
1. A method of manufacturing a composite sports racket frame of the type having a handle portion and an open-faced head portion with a plurality of stringholes to accommodate passage of stringing strung across the face of the head portion, which is resistant to and retards crack initiation and propagation in the area of the stringholes, comprising the steps of pulling an inner tubular layer of braided resin impregnated tow over a rod, spirally winding an intermediate layer of resin impregnated tow in the form of a multifilament strand over the outside perimeter of the inner braided tube in the head portion of the racket frame, pulling an outer tubular layer of braided resin impregnated tow over the intermediate spirally wound layer, removing the rod from within the inner tubular layer, inserting inflatable means within the inner tubular layer, placing the assembly consisting of the inner and outer tubular layers and the intermediate spirally wound layer in a mold, inflating the inflatable means so as to internally pressurize the assembly, and heat curing the assembly to the mold to form an integral plastic composite sports racket frame.

4,389,270

METHOD FOR APPLICATION OF COMPOSITE PRESSURE SENSITIVE ADHESIVE

Jack M. McClintock, Stow, Ohio, assignor to Morgan Adhesives Company, Stow, Ohio

Continuation-in-part of Ser. No. 38,679, May 14, 1979, Pat. No. 4,264,388, which is a continuation-in-part of Ser. No. 837,828, Sep. 29, 1977, Pat. No. 4,157,410. This application Dec. 19, 1980, Ser. No. 218,273
The portion of the term of this patent subsequent to Jun. 5, 1996, has been disclaimed.
Int. Cl.³ B32B *31/00*; A61F *13/02*; E04F *13/20*; B32B *7/02*
U.S. Cl. 156—218 **3 Claims**



1. A method to seal contiguous items, comprising:

(a) peeling a second external release liner releasably attached to a second pressure sensitive adhesive layer on a side of a sealant strip having two termini;
(b) attaching said second pressure sensitive adhesive layer to a substantial portion of the intersection of the contiguous items;
(c) peeling a first external release liner extending only over a frictional portion of said sealant layer and located adjacent to one of said sealant layer termini and releasably attached to a first pressure sensitive adhesive layer on the opposite side of said sealant strip; and
(d) cohesively attaching the remaining portion of the second pressure sensitive adhesive layer to said fractional portion of said first pressure sensitive adhesive layer.

2. A composite pressure sensitive adhesive construction, comprising:
a butt sealant strip, said butt sealant strip comprising
(a) an exterior release liner having a contact side;
(b) a pressure sensitive adhesive layer;
(c) a sealant layer having two opposing sides and two termini;
(d) a second pressure sensitive adhesive layer; and
(e) a second exterior release liner having a contact side;
one side of said sealant layer attached to said first pressure sensitive adhesive layer and the remaining side of said sealant layer attached to said second pressure sensitive adhesive layer; said contact side of said first exterior release liner releasably attached to said first pressure sensitive adhesive layer and said contact side of said second exterior release liner releasably attached to said second pressure sensitive adhesive layer, said first pressure sensitive adhesive layer extending only over a fractional portion of said butt strip and located adjacent to one of said sealant layer termini.

4,389,271

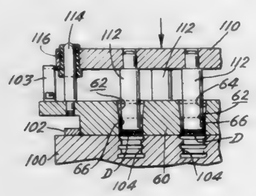
METHOD FOR MAKING MOLDED ARTICLES

Walter V. Shandy, Chester, and Jospeh M. Voytilla, Pottstown, both of Pa., assignors to The West Company, Phoenixville, Pa.

Continuation of Ser. No. 155,671, Jun. 5, 1980, abandoned, which is a continuation of Ser. No. 969,237, Dec. 13, 1978, abandoned, which is a continuation of Ser. No. 753,785, Dec. 23, 1976, abandoned. This application Mar. 2, 1982, Ser. No. 354,059

Int. Cl.[3] **B29C** *7/00;* **B29H** *3/00;* **B32B** *25/00*

U.S. Cl. 156—242 **2 Claims**



1. A method for making molded articles including a disc from a laminated sheet comprising a layer of elastomeric material and a layer of inert material consisting of the steps of partially cutting at least one disc from the sheet material, positioning the sheet over a transfer plate with the partially cut disc in registry with an opening in the transfer plate, positioning the transfer plate over a mold having at least one cavity therein with the openings of the transfer plate in registry with the cavities, completely severing the disc from the sheet material and transferring the severed disc through the opening in the transfer plate to the bottom of the mold cavity, charging the mold cavity with additional quantities of elastomeric material and curing the elastomeric materials.

4,389,272

PROCESS AND FEEDING DEVICE TO PROVIDE CONSECUTIVE SERIES OF SMALL OBJECTS ON A SINGLE PLANE

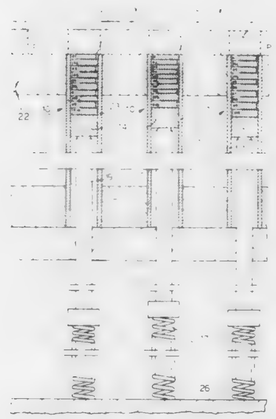
Beniamino Ferri, Monza, and Giovanni Caimi, Saronno, both of Italy, assignors to Ferco S.p.A., Misinto, Italy

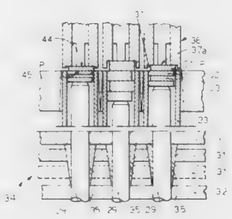
Filed Jul. 21, 1981, Ser. No. 285,558

Claims priority, application Italy, Jul. 22, 1980, 23593 A/80

Int. Cl.[3] **B65G** *59/02;* **H05K** *13/02*

U.S. Cl. 156—297 **2 Claims**





1. A process for use with an apparatus having a plurality of magazines containing stacks of objects, the objects in a given stack having varying thicknesses, the magazines having open top ends and bottom ends closed by movable stoppers, said process comprising:
passing a pusher for each magazine through friction means comprising a conical bushing provided with a longitudinal slot, said friction means opposing movement of the pusher, an upper end of each pusher extending into a bottom end of a respective one of said magazines;
moving at least one of said conical bushings with respect to its associated pusher to thereby adjust the force exerted on said associated pusher by said friction means to thereby independently control the stroke of said associated pusher;
moving an operating plate so as to exert an upward force on the pushers whereby the pushers move the stoppers in an upward direction, the adjustment of the friction means controlling the amount of movement of the stoppers; and
positioning a stop device at the open top ends of the magazines to close the open top ends and to mechanically resist upward movement of the objects by upward movement of the stoppers so as to create a common plane for like surfaces of the objects.

4,389,273

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

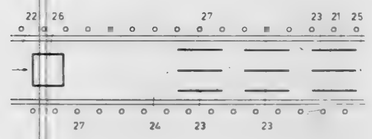
Jan Bloem, and Cornelis H. J. van den Brekel, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 97,022, Nov. 23, 1979, abandoned. This application Jul. 15, 1981, Ser. No. 283,397

Claims priority, application Netherlands, Dec. 21, 1978, 7812388

Int. Cl.[3] **C30B** *25/10*

U.S. Cl. 156—605 **16 Claims**



1. A method of manufacturing a semiconductor device in which monocrystalline material is epitaxially grown on disc-shaped monocrystalline substrates in an elongate reactor from a gas flow in the longitudinal direction of the reactor, wich comprises:
establishing a temperature gradient in the gas flow within the reactor during the epitaxial growth in the direction of gas flow between a first upstream cross-section which is at a first temperature extreme and a second downstream cross-section which is at a second temperature extreme, both of said temperature extremes being above about 900° C.;
locating said substrates in the reactor between said upstream and downstream cross-sections so that the substrates are positioned between said first and second temperature extremes and the epitaxial growth process occurs at different temperatures;
providing the gas flow with the reaction components of the growth process in a composition which is in equilibrium with the material to be grown at said first temperature extreme upstream of the gas flow; and
selecting said second temperature extreme with respect to said first temperature extreme such that the gas flow becomes supersaturated with respect to the material to be grown upon traversing said temperature gradient between said first and second temperature extremes, so that said growth process is substantially determined by diffusion and yet said monocrystalline material is epitaxially grown on said substrate in a substantially homogeneous manner.

4,389,274

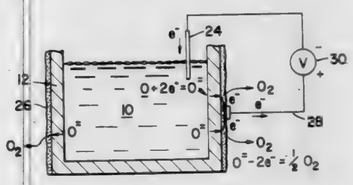
ELECTROCHEMICAL DEOXYGENATION FOR LIQUID PHASE EPITAXIAL GROWTH

David A. Stevenson, Los Altos Hills, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 23, 1981, Ser. No. 246,529

Int. Cl.[3] **C30B** *19/00*

U.S. Cl. 156—624 **11 Claims**



1. In a liquid phase epitaxial growth process of the type wherein a compound semiconductor material to be epitaxially deposited is dissolved in a solvent for said semiconductor material prior to the epitaxial growth of a semiconductor crystal, the improvement being a method for removing residual oxygen from a charge of said semiconductor material and said solvent, said improvement comprising the steps of:
(a) disposing said charge in a containment vessel of a solid-oxide electrolyte material under an inert protective atmosphere;
(b) heating said charge to at least the temperature where said compound semiconductor material is dissolved in said solvent and maintaining said temperature to form a liquid charge in said containment vessel;
(c) placing an electrode of an inert conducting solid in physical contact with said liquid charge; and
(d) applying an electric potential between said electrode and said containment vessel, the electrical contact to said containment vessel being made through a porous metallic coating on the outside surface of said containment vessel in the region where said liquid charge is contiguous to the outside surface of said containment vessel, said porous coating being relatively positive and said electrode being relatively negative, whereby said residual oxygen will be transported from the more negative potential to the more positive potential until a minimum value is obtained at the more negative electrode, the oxygen passing through the wall of the containment vessel and the porous coating.

4,389,275

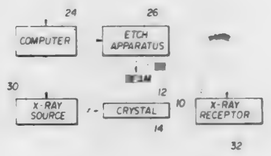
QUARTZ RESONATOR ANGLE CORRECTION

Arthur Ballato, Long Branch, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 25, 1982, Ser. No. 361,657

Int. Cl.[3] **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—626 **29 Claims**



1. The method of correcting the angle of cut of a quartz crystal resonator blank or plate which substantially eliminates the need for producing a mesa and subsequent machine lapping thereof to provide an inclined corrected angle surface on said blank, comprising the steps of:
(a) locating an uncorrected resonator blank in etching apparatus;
(b) generating an etching beam; and
(c) scanning at least one major face of said resonator blank with said etching beam and effecting an etching gradient pattern of a predetermined type across the surface thereof wherein surface erosion occurs by an increasing amount thereacross which thereby changes said angle of cut of said resonator blank.

4,389,276

METHOD OF MANUFACTURING AN ELECTRIC DISCHARGE DEVICE COMPRISING A GLASS SUBSTRATE HAVING A PATTERN OF ELECTRODES

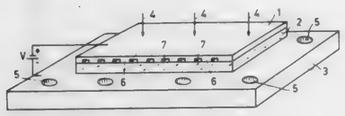
Gerhard H. F. deVries, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 4, 1981, Ser. No. 270,678

Claims priority, application Netherlands, Jun. 26, 1980, 8003696

Int. Cl.[3] **C23F** *1/02*

U.S. Cl. 156—630 **10 Claims**



1. A method of manufacturing an electric discharge device comprising the steps of

forming a metal foil with a relief pattern having a plurality of thick portions joined by thin portions,

placing said metal foil on a glass plate with said relief pattern in contact with said glass plate,

heating the assembly of metal foil and glass plate to a temperature T_1 lower than the melting point of the metal foil and wherein said glass plate has a viscosity of 10^7 to 10^{13} Pa. sec.,

pressing said relief pattern of said metal foil into said glass plate until said thin portions at least bear on said glass plate,

bonding said metal foil to said glass plate by anodic bonding, and

removing at least said thin portions of said metal foil to form a pattern of electrodes of said thick portions in said glass plate.

4,389,277

METHOD OF MANUFACTURING AN ELECTRIC DISCHARGE DEVICE

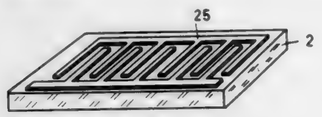
Gerhard H. F. deVries, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 4, 1981, Ser. No. 270,679

Claims priority, application Netherlands, Jun. 26, 1980, 8003697

Int. Cl.[3] **C23F** *1/02*

U.S. Cl. 156—630 **9 Claims**



1. A method of manufacturing an electric discharge device having an electrode pattern comprising the steps of

providing a metal foil on a glass substrate,

heating the assembly of said metal foil and glass substrate to a temperature T_1 lower than the melting point of said metal foil and where the viscosity of said glass substrate has a value in the range of 10^7 to 10^{13} Pa.-sec.,

uniformly pressing said metal foil against said glass substrate for a predetermined time period sufficient to obtain uniform contact between said metal foil and said glass substrate,

bonding said metal foil to said glass substrate by an anodic bonding process, and

forming a predetermined pattern of electrodes by selective local removal of portions of said metal foil.

4,389,278

METHOD FOR MANUFACTURING CIRCUIT BOARD WITH THROUGH HOLE

Kazuo Kai, 3-28-1, Kuwazu, Higashi Sumiyoshi-ku, Osaka, Japan

Filed Jul. 2, 1982, Ser. No. 394,620

Claims priority, application Japan, Jul. 25, 1981, 56/116566

Int. Cl.[3] **C25D** *5/02;* **B05D** *5/12;* **C23F** *1/02;* **B44C** *1/22*

U.S. Cl. 156—630 **5 Claims**



1. A method for manufacturing a circuit board with through hole comprising the steps of:

forming a wiring pattern by selective etching on a two-side copper-clad laminated board;

providing a pierced hole to be used as through hole at a specified location;

masking the surface of said board except said pierced hole portion with conductive film and pH-resistant film;

forming a conductive plate film over the surface of said pierced hole portion by electroless plating;

forming a metal foil over said conductive plate film, through electroplating, by using said conductive film layer as an electrode at one end; and

removing said conductive film as well as pH-resistant film.

4,389,279

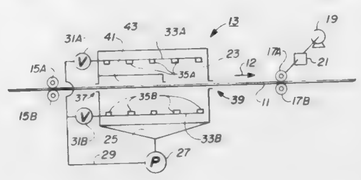
METHOD OF ETCHING APERTURES INTO A CONTINUOUS MOVING METALLIC STRIP

Donald M. Weber, and Raymond A. Alleman, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 23, 1982, Ser. No. 391,418

Int. Cl.[3] **C23F** *1/02;* **B44F** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—640 **10 Claims**



1. In a method of etching a continuous etchable metallic strip from both major surfaces thereof to produce a multiplicity of apertures therethrough, said strip having a first acid-resistant stencil on one major surface thereof and a second acid-resistant stencil on the other major surface thereof, said first and second stencils having openings therein that are registered one with the other, said method including the steps of:

(a) moving said strip through an etching chamber,

(b) spraying liquid etchant in said chamber toward both of said major surfaces and

(c) shielding one of said major surfaces from exposure to said sprayed liquid etchant during the initial portion of said spraying step,

the improvement wherein said shielding is achieved by interposing a stationary wall opposite and spaced from said shielded surface and providing continuous side seals between said stationary wall and the edge portions of said moving strip, said strip and said wall defining a shielding chamber for said strip.

4,389,280

METHOD OF MANUFACTURING VERY THIN SEMICONDUCTOR CHIPS

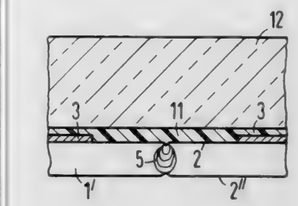
Jan-Erik Müeller, Ottobrunn; Dietrich Ristow, Neubiberg, and Hermann Kniepkamp, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 27, 1981, Ser. No. 325,316

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 3044947

Int. Cl.[3] **H01L** *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—645 **7 Claims**



1. In a process for producing components from a substrate body composed of a semiconductor material having at least one privileged cleavage direction whereby individual components are produced by separation from a larger substrate body, to which end said substrate body is superficially notched in a select pattern on a front surface of said body and thereafter provided with a protective covering on said front surface, and said body is subjected to an etching proceeding from a rear surface of said body in such a manner that the etchant penetrates into the semiconductor material of the substrate body in which there is inhomogeneity of semiconductor material impressed by the notching extending from the front surface of the substrate body, so that a separation into individual components then occurs, wherein the improvement comprises:

for the manufacture of semiconductor chips (**31**) having a thickness of only less than 50 μm as said components, said etching occurs surface-wide up to a prescribed thickness value of less than 50 μm; and

said protective covering on the front surface (**2**) of said substrate body (**1**) is selected and dimensioned as a carrier (**12**) for further support of the individual thin chips (**31**) which arise as a result of the separation (**30**).

4,389,281

METHOD OF PLANARIZING SILICON DIOXIDE IN SEMICONDUCTOR DEVICES

Narasipur G. Anantha, Hopewell Junction; Harsaran S. Bhatia; John S. Lechaton, both of Wappingers Falls, and James L. Walsh, Hyde Park, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1980, Ser. No. 217,077

Int. Cl.[3] **H01L** *21/306;* **C03C** *15/00*

U.S. Cl. 156—646 **6 Claims**

1. A method for planarizing a non-level silicon dioxide layer which comprises at least one area (a) where a relatively high amount of silicon dioxide is to be removed and at least one area (b) where a relatively low amount of silicon dioxide is to be removed, said at least one area (a) and said at least one area (b) being non-level with respect to each other, said method comprising:

forming a first layer of a patterned HF permeable positive photoresist and a second layer of a negative HF permeable photoresist on said silicon dioxide, said combination of HF permeable photoresists providing a relatively rapid etch rate at said at least one area (a) and a relatively slow etch rate at said at least one area (b); and

exposing said layers of said HF permeable photoresists and



said silicon dioxide layer to HF gas at a pressure in the range of from about 2 to about 18 torr and at a temperature in the range of from about 150° C. to about 200° C., thereby etching and planarizing said silicon dioxide layer as said HF gas penetrates said HF permeable photoresists to relatively rapidly etch said at least one area (a) and relatively slowly etch said at least one area (b), said exposing to said HF gas and said etching continuing until said at least one area (b) and said at least one area (b) have both been etched so as to be substantially planar with respect to each other, wherein etching is completed prior to photoresist removal.

4,389,282

CERAMIC FIBER BOARD

Celeste Yonushonis, Paoli, Pa., and Thomas E. Walters, Johnson City, Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 6, 1982, Ser. No. 405,971

Int. Cl.[3] **D21H** *5/18*

U.S. Cl. 162—145 **2 Claims**

1. A method of forming a uniformly flexible ceramic fiber board comprising the steps of:

a. forming a slurry of:

1. 74.5–96.8 weight percent of ceramic fibers,
2. 0.1–5 weight percent of a cationic acrylamide base copolymer,
3. 3–20 weight percent of an acrylic latex, and
4. 1–15 weight percent of aluminum sulfate; whereby said acrylic latex is deposited homogeneously on said fibers.

b. vacuum forming a shape of said latex coated fibers from said slurry, and

c. drying said shape dielectrically to form said board.

4,389,283

METHOD FOR MAKING COKE VIA INDUCTION HEATING

Albert Calderon, 1065 Melrose Dr., Bowling Green, Ohio 43402

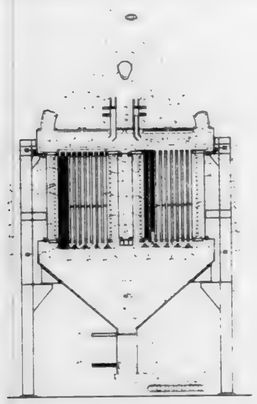
Continuation-in-part of Ser. No. 201,699, Oct. 29, 1980, abandoned. This application Jan. 29, 1981, Ser. No. 229,317

Int. Cl.[3] **C10B** *51/00, 57/00, 57/18*

U.S. Cl. 201—19 **35 Claims**

1. A method of making coke comprising the steps of charging coal into a plurality of compartments whose walls comprise a material which is adaptable to being heated by induction and wherein said plurality of compartments commonly share an induction coil means which surrounds said plurality of compartments and said induction coil means does not individually surround any of said compartments, heating said walls of

said plurality of compartments by said induction coil means to cause the devolatilization of the coal contained within each



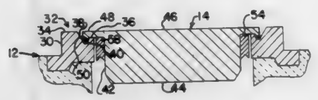
compartment of said plurality of compartments to convert said coal to coke, and discharging said coke from said plurality of compartments.

4,389,284

CHARGING HOLE COVER SEAL

George R. Cain, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Dec. 28, 1981, Ser. No. 334,966
Int. Cl.³ C10B *25/20, 25/24*
U.S. Cl. 202—247 **7 Claims**



1. A structure for sealing a charging hole on a coke oven battery top comprising:

(a) an annulus-shaped frame section projecting upwardly from the battery top and peripherally surrounding the charging hole and having a generally vertical inner side adjacent the charging hole, and a generally vertical outer side remote from the charging hole and a generally horizontal top end, said top end being positioned between said inner and outer sides and, itself, having integral, concentric inner and outer planar surfaces between which there is interposed a concentric circular groove containing a particulate material;

(b) a disc-shaped cover section superimposed over said charging hole and having a lower end surface disposed toward the charging hole, a peripheral lateral surface inwardly spaced from and concentrically arranged with respect to the inner side of the frame section, and an upper end surface having a lateral lip extension vertically abutting the inner planar surface of the frame section top end, said lip extension having a terminal, peripheral and downwardly projecting tongue engaging said groove of the frame section top end, such that a primary, inward continuous gas seal is formed between said lip extension and said inner planar surface of the frame section top end, and a secondary, outward continuous gas seal is formed between said tongue and said groove;

(c) at least two lugs projecting radially outwardly from the lateral surface of the cover section; and

(d) at least two ledges projecting radially inwardly from the inner side of the frame section such that the cover section may be elevated so as to allow fluid communication between the charging hole and ambient air by superimposing each of said lugs on one of said ledges.

4,389,285

PROCESS INHIBITOR FOR READILY POLYMERIZABLE ETHYLENICALLY UNSATURATED AROMATIC COMPOUNDS

Ted L. Douglas; Ambrose J. Clonce, Jr., and Glenn C. Jones, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,489
Int. Cl.³ C07C *7/20;* **B01D** *3/34*
U.S. Cl. 203—9 **7 Claims**

1. In processes for the preparation of readily polymerizable ethylenically unsaturated aromatic compounds, the improvement which comprises employing 3,5-dinitrosalicylic acid as a process inhibitor.

4,389,286

ALKALINE PLATING BATHS AND ELECTROPLATING PROCESS

Ewald H. McCoy, Brookfield, Wis., assignor to Electrochemical Products, Inc., New Berlin, Wis.

Continuation-in-part of Ser. No. 169,752, Jul. 17, 1980, Pat. No. 4,356,067, and a continuation-in-part of Ser. No. 48,265, Jun. 13, 1979, abandoned. This application Sep. 28, 1982, Ser. No. 426,067
Int. Cl.³ C25D *3/32, 3/36, 3/58*
U.S. Cl. 204—44 **8 Claims**

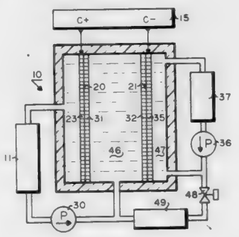
1. A cyanide-free plating bath for the electrodeposition of copper containing alloys consists of an aqueous solution containing copper ions and ions selected from tin and lead ions, a chelating agent selected from glucoheptonic acid and salts thereof, and sufficient caustic to have a pH of about 10 to about 13.5.

4,389,287

WITHDRAWAL OF MOLTEN ALKALI HYDROXIDE THROUGH AN ELECTRODE FOR DEPLETION OF WATER DISSOLVED THEREIN

Stephen F. Skala, 3839 S. Wenonah Ave., Berwyn, Ill. 60402

Continuation-in-part of Ser. No. 117,240, Jan. 31, 1980, Pat. No. 4,276,145, and a continuation-in-part of Ser. No. 221,552, Dec. 31, 1980, abandoned. This application Jan. 4, 1982, Ser. No. 336,614
Int. Cl.³ C25B *15/08;* **C25C** *3/02*
U.S. Cl. 204—68 **6 Claims**



1. A process for depleting water which forms in molten alkali hydroxide during electrolysis thereof, comprising the steps of:

operating an electrolysis cell by applying a voltage to electrodes therein whereby hydroxide ions are reduced on an anode and form the water which is incorporated into molten alkali hydroxide anolyte in an anolyte portion of the electrolysis cell,

withdrawing the anolyte with the water incorporated therein through withdrawal openings in the anode thereby removing said anolyte from operating portions of the electrolysis cell,

depleting the incorporated water from said removed anolyte in a means for dehydrating the anolyte which is separate from the operating portions of the cell to produce a dehydrated anolyte, and

returning the dehydrated anolyte to the anolyte portion of the electrolysis cell for further electrolysis.

4,389,288

CATALYZED ELECTROCHEMICAL GASIFICATION OF CARBONACEOUS MATERIALS AT ANODE AND PRODUCTION OF HYDROGEN AT CATHODE

Ronald J. Vaughan, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 28, 1981, Ser. No. 305,876
Int. Cl.³ C25B *1/00, 1/04*
U.S. Cl. 204—101 **9 Claims**

1. In the method of electrochemical gasification of carbonaceous materials in an aqueous acidic electrolyte by anodic oxidation to produce oxides of carbon at the anode and hydrogen at the cathode of an electrolysis cell, the improvement which comprises:

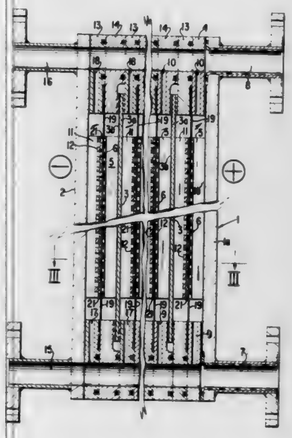
adding an amount of iron in its elemental, +2 or +3 valence state or mixtures thereof to the electrolyte containing the carbonaceous material sufficient to increase the rate of oxidation of the carbonaceous material at the anode.

4,389,289

BIPOLAR ELECTROLYZER

Oronzio deNora, Milan, Italy, assignor to Oronzio deNora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Jan. 14, 1981, Ser. No. 224,906
Claims priority, application Italy, Jan. 16, 1980, 19225 A/80
Int. Cl.³ C25B *1/26, 1/46, 11/00, 9/04*
U.S. Cl. 204—128 **14 Claims**



1. A bipolar electrolysis cell of the diaphragm type comprising a frame made of an electrically inert material provided with means to introduce and remove anolyte and catholyte, and anodic endplate, a cathodic endplate and at least one polar element comprised of abutting cathodic plate and anodic plate having secured thereto the cathode structure and the anode structure respectively, the said plates of the bipolar element being held in electrical contact with each other by means of pressure applied by a resilient mat coextensive with the cell area which is compressed upon assembly of the electrolyzer.

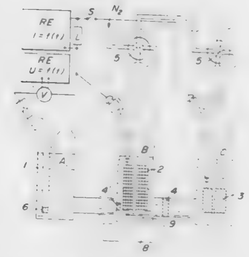
7. A method of electrolyzing an aqueous alkali metal halide solution comprising feeding an aqueous alkali metal halide solution to an electrolyzer of claim 1 while impressing an electrolysis current thereon and recovering the halogen.

4,389,290

USE OF ELECTROCATALYTIC ANODES IN PHOTOLYSIS

Michael Gratzel, Vaud, and Michael Neumann-Spallart, Lausanne, both of Switzerland, assignors to Engelhard Corporation, Iselin, N.J.

Filed Jul. 2, 1981, Ser. No. 279,908
Claims priority, application United Kingdom, Jul. 8, 1980, 8022342
Int. Cl.³ C25B *1/04, 1/26, 11/08, 11/10*
U.S. Cl. 204—128 **32 Claims**



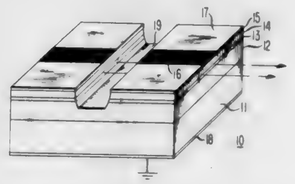
1. A photolytic sysem for the production of oxidation and reduction products which comprises: (1) a darkenable halfcell containing an anode and an oxidizable substrate; (2) an illuminatable halfcell containing a composition which under the action of visible light exhibits an enhanced ability to donate electrons, a cathode, an electron relay which accepts electrons, a catalyst for mediating an oxidation-reduction process and an oxidizable or reducible substrate; and (3) means for transporting electrons and ions between said illuminatable halfcell and darkenable halfcell; wherein the anode is an anodic catalyst and is selected from the group consising of: (a) ruthenium oxide, (b) iridium oxide, (c) ruthenate salts, (d) indate salts, and mixtures of two or more thereof.

4,389,291

PHOTOELECTROCHEMICAL PROCESSING OF INP-TYPE DEVICES

Paul A. Kohl; Frederick W. Ostermayer, Jr., and Catherine Wolowodiuk, all of Chatham, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 19, 1981, Ser. No. 275,245
Int. Cl.³ C25F *3/12*
U.S. Cl. 204—129.3 **16 Claims**



1. A process for fabricating devices comprising at least one

n-type III-V compound semiconductor in which the Group III part of the compound semiconductor comprises at least 50 weight percent indium and the process comprises at least one step in which the n-type semiconductor compound is photoelectrochemically etched by an oxidation-reduction reaction in an electrolytic solution characterized in that

a. the oxidation is carried out by irradiating the n-type III-V compound semiconductor with radiation comprising photon energy at least as great as the bandgap of the compound semiconductor so as to produce holes that permit oxidation of the compound semiconductor,

b. the electrolytic solution comprises oxidizing agent with reduction potential in the electrolytic solution between the potential of the conduction band minimum and the potential of the valence band maximum so that the elements in the n-type III-V compound semiconductor are all oxidized to form oxidation products that are soluble in the electrolytic solution, and

c. the oxidizing agent is reduced on a metallic or p-type surface electrically connected to the III-V compound semiconductor.

4,389,292

ZIRCONIUM ISOTOPE SEPARATION

D. Colin Phillips, Monroeville, and Steven H. Peterson, Murrysville Boro., both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 4, 1981, Ser. No. 270,457
Int. Cl.³ B01D *59/00*
U.S. Cl. 204—158 R **11 Claims**

3. A method of separating zirconium into a portion having a higher concentration of the ^{91}Zr isotope and portion having a lower concentration of the ^{91}Zr isotope comprising:

(A) preparing a composition which comprises:

(1) a zirconium chelate ligand;

(2) a solvent for said zirconium chelate ligand; and

(3) a scavenger which reacts with an excited state of said zirconium chelate ligand but not with its ground state;

(B) exciting said zirconium chelate ligand to said excited state;

(C) permitting about 25 to about 75% of said zirconium chelate ligand to react with said scavenger; and

(D) separating said zirconium chelate ligand from the reaction product of said zirconium chelate ligand with said scavenger.

4,389,293

PROCESS FOR THE RECOVERY OF ANHYDROUS HYDROGEN FLUORIDE FROM AQUEOUS SOLUTIONS OF FLUOSILICIC ACID AND HYDROGEN FLUORIDE

Krishnamurthy N. Mani, Denville, and Frederick P. Chlanda, Rockaway, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 4, 1982, Ser. No. 336,734
Int. Cl.³ B01D *57/02*
U.S. Cl. 204—180 P **15 Claims**

1. A process for recovering anhydrous hydrogen fluoride from a dilute solution comprising hydrogen fluoride, fluosilicic acid and water, wherein the percentage composition of said solution is such that anhydrous hydrogen fluoride cannot be recovered therefrom by distillation, said process comprising the steps of:

(a) introducing said dilute solution into a dilute compartment of at least one unit cell of an electrodialysis assembly comprising one or more unit cells positioned between an anolyte compartment containing an anode immersed in an anolyte, and a catholyte compartment containing a cathode immersed in a catholyte, each of said unit cells comprising a concentrate compartment and a dilute compartment separated by an anion permeable membrane, and each bounded by a face of a cation permeable membrane;

(b) introducing into said concentrate compartment an aqueous solution of hydrogen fluoride and fluosilicic acid wherein the concentration of fluosilicic acid in said solution is greater than about 5 weight percent, and wherein the total acids concentration in said solution is such that hydrogen fluoride cannot be obtained therefrom by distillation;

(c) passing direct current through said electrodialysis assembly for a time sufficient to increase the concentration of hydrogen fluoride in said concentrate compartment forming a product solution in which the total acids concentration is such that anhydrous hydrogen fluoride can be recovered therefrom by distillation;

(d) withdrawing said product solution from said concentrate compartment; and

(e) recovering anhydrous hydrogen fluoride from said solution of step (d) by distillation.

4,389,294

METHOD FOR AVOIDING RESIDUE ON A VERTICAL WALLED MESA

Narasipur G. Anantha, Hopewell Junction; Harsaran S. Bhatia, Wappingers Falls, both of N.Y.; John L. Mauer, IV, South Kent, Conn., and Homi G. Sarkary, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1981, Ser. No. 279,129
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 E **7 Claims**

1. A method for avoiding residue on a vertical walled dielectric mesa of a layer to be deposited on said mesa and to be removed by reactive ion etching comprising the steps of

providing a silicon substrate having said dielectric mesa on a surface thereof, and reshaping a wall of said dielectric mesa so as to be sloping at an angle equal to or greater than 30° relative to a line vertical to said surface of said substrate.

4,389,295

THIN FILM PHOSPHOR SPUTTERING PROCESS

Ernest Davey, Peabody; Lawrence L. Hope, Stow, and Charles E. Deschenes, Marblehead, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 6, 1982, Ser. No. 375,626
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 P **24 Claims**

1. A process for forming a thin film phosphor layer comprised of a heat substance doped with an activator, said phosphor layer being formed on a substrate in the making of an electroluminescent display device, comprising the steps of:

providing a phosphor chamber having targets of respective host substance and activator, applying heat to said substrate to elevate the temperature thereof while maintaining a vacuum in the chamber, supporting and rotating or translating the substrate in the chamber, initiating sputtering within the chamber by causing a sputtering gas to flow therein while concurrently exciting said targets to form a plasma in said chamber, and maintaining the sputtering for a period of time.

4,389,296

EDGE CONTACTING PLATING ELECTRODE

Michael Seyffert, Santa Cruz, and Steven W. Taatjes, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

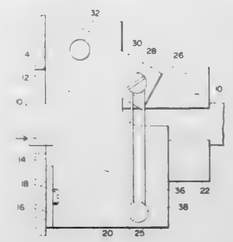
Filed Mar. 22, 1982, Ser. No. 360,743
Int. Cl.³ C25D *17/00*
U.S. Cl. 204—206 **7 Claims**

1. In apparatus to electroplate material onto a movable web of conductive material, an electrode adapted to provide electrical contact with the web comprising in combination:

support bracket means adapted to be mountable proximate the path of said movable web;

a first contact mounted on said support bracket means, having a groove operable to accept one edge of the web for sliding contact therein;

a second contact pivotally mounted on said support bracket means, having a groove operable to accept the other edge of the web for sliding contact therein, said grooves being generally straight and extending along the edge of the web for a length sufficient to provide smooth sliding contact



with said web and generous contact area, and having V-shaped sides that slant towards each other, as said sides extend deeper into the grooves, so as to center the web in the groove under the action of said urging means and enhance contact with the corners of the web; and

means urging said first and second contacts toward each other and into sliding contact with the edges of said web.

4,389,297

PERMIONIC MEMBRANE ELECTROLYTIC CELL

Malcolm Korach, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 195,570, Oct. 9, 1980, Pat. No. 4,299,675. This application May 13, 1981, Ser. No. 263,329
Int. Cl.³ C25B *9/00, 11/04, 13/08*
U.S. Cl. 204—252 **26 Claims**

1. In an electrolytic cell having an anode, a cathode, and a cation selective permionic membrane therebetween, the improvement wherein said cathode removably bears upon the permionic membrane and comprises an electroconductive substrate, electrocatalyst bonded to the substrate and facing the permionic membrane, and a layer of hydrophilic resin bonded to the electrocatalyst (and) said layer of hydrophilic resin interposed between the permionic membrane and the electrocatalyst and removably bearing upon the permionic membrane.

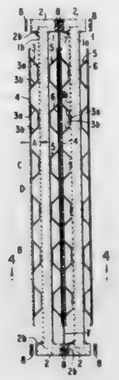
4,389,298

NOVEL BIPOLAR ELECTRODE ELEMENT

Alberto Pellegri, Luino, Italy, assignor to Oronzio deNora Impianti Elettrochimici S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 128,972, Mar. 10, 1980, Pat. No. 4,279,731. This application May 26, 1981, Ser. No. 266,653
Claims priority, application Italy, Nov. 29, 1979, 27690 A/79
Int. Cl.³ C25B *11/02, 11/10*
U.S. Cl. 204—288 **2 Claims**

1. A bipolar element for bipolar diaphragm electrolyzers equipped with vertical electrodes comprising a vertical steel plate on the cathode side clad with a valve metal on the anode side, a rectangular frame around the perimeter of said plate, baffles made of valve metal on the anode side and steel on the cathode side distributed along the entire width of both surfaces of the bipolar element, a valve metal screen anode structure positioned on the edges of said valve metal baffles and provided with a non-passivatable coating, a cathode screen structure of a cathodically resistant metal positioned on the edges of said steel baffles, the said baffles being alternately inclined one way and the opposite way with respect to a vertical plane normal to the bipolar plate thereby forming a series of vertical flow channels extending for a substantial portion of the height of the bipolar plate, the ratio between the electrode surface intercepted by the edges of two adjacent baffles and the flow section of the channel thereby defined being different from the same ratio corresponding to the adjacent flow channel in the



series, the said valve metal baffles being positioned over a groove in the steel plate in which resides a bimetal strip with a valve metal side and a side of highly conductive metal resistant to hydrogen migration.

4,389,299

SPUTTERING DEVICE

Ryuichi Adachi, Toyonaka; Isao Yamada, Uji, and Kazuhiro Takeshita, Osaka, all of Japan, assignors to Osaka Vacuum Chemical Co., Ltd., Osaka, Japan

Filed Jun. 22, 1981, Ser. No. 275,784
Claims priority, application Japan, Jun. 23, 1980, 55-85398
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **2 Claims**

1. A sputtering device comprising:

a target electrode having a target and a flat magnet disposed under said target said magnet comprised of an annular magnetic pole having one polarity and a magnetic pole having the other polarity located inside said annular magnetic pole;

a substrate disposed oppositely to said target;

an electric field ring electrode disposed between said substrate and said target for generating an electric field between said target electrode and said electric field ring electrode, said electric field being incident on said magnet in a direction substantially perpendicular thereto;

an electron beam emitting filament disposed adjacent said target; and

an anode electrode for guiding an electron beam from said filament between said target and said electric field ring electrode.

4,389,300

SOLVENT EXTRACTION METHOD

David S. Mitchell, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

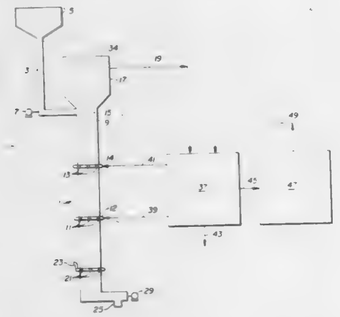
Filed Sep. 26, 1979, Ser. No. 79,300
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE **8 Claims**

1. A method for extracting an extractable component from a mixture including said extractable component and subdivided solids, comprising:

(a) maintaining a vertically extending packed bed comprising said solids in a vertically extending extraction zone and introducing said mixture into an upper portion of said bed;

(b) providing a substantially continuous gaseous phase in contact with a lower portion of said bed;

(c) maintaining a substantially continuous liquid phase comprising a vaporizable primary liquid solvent and at least one secondary liquid solvent in contact with at least a lower part of said upper portion of said bed above said gaseous phase, said liquid phase and said gaseous phase having an interface at a vertically intermediate level of said bed;
(d) introducing said primary liquid solvent into an intermediate liquid level in said liquid phase spaced from the top of said liquid phase;



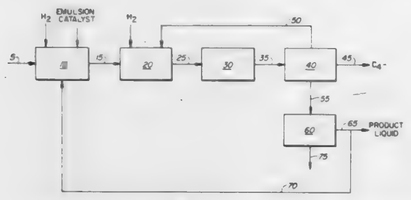
(e) introducing at least one secondary liquid solvent into said liquid phase above said intermediate liquid level;
(f) extracting said extractable component from said mixture into said liquid phase, and removing said extractable component and said solvents from said extraction zone;
(g) preventing said liquid phase from flowing downwardly through said lower portion of said bed by maintaining said gaseous phase at a pressure sufficient to support said liquid phase thereon and vaporizing said primary solvent adhering to solids in said lower portion of said bed; and
(h) removing solids from said lower portion of said bed.

4,389,301

TWO-STEP HYDROPROCESSING OF HEAVY HYDROCARBONACEOUS OILS

Arthur J. Dahlberg, Rodeo; John H. Shinn, Richmond; Joel W. Rosenthal, El Cerrito, and Tim T. Chu, Oakland, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 22, 1981, Ser. No. 314,141
Int. Cl.³ C10G *47/06, 49/12*
U.S. Cl. 208—59 **16 Claims**



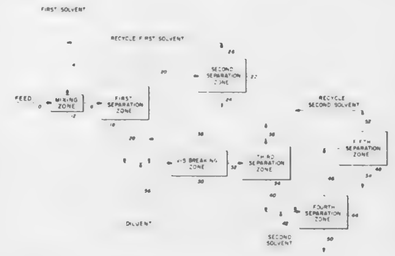
1. A process for hydroprocessing a heavy hydrocarbonaceous oil feed to convert at least a portion of feed components boiling above 350° C. to components boiling below 350° C. comprising:
(a) contacting said oil with added hydrogen in a first reaction zone under hydroprocessing conditions, including a hydrogen partial pressure of above 35 atmospheres in the presence of (1) added dispersed hydrogenation catalyst suspended in said oil and containing at least one catalytic hydrogenation component selected from transition metal elements or compounds thereof, and (2) added porous contact particles to produce a first effluent having a normally liquid portion; and
(b) contacting at least a portion of the normally liquid portion of said first effluent in a second reaction zone with hydrogen under hydrogenation conditions in the presence of a bed of particulate hydrogenation catalyst, to produce a second effluent.

4,389,302

PROCESS FOR VIS-BREAKING ASPHALTENES

Leo Garwin, Oklahoma City, and Roger A. Baldwin, Warr Acres, both of Okla., assignors to Kerr-McGee Refining Corporation, Oklahoma City, Okla.

Filed May 15, 1981, Ser. No. 263,977
Int. Cl.³ C10G *55/04, 9/14*
U.S. Cl. 208—86 **25 Claims**



1. A process comprising:
introducing a heavy hydrocarbon material comprising oils, resins, asphaltenes and associated organometallic compounds and a first solvent into a first separation zone maintained at an elevated temperature and pressure level to effect a separation of said heavy hydrocarbon material and first solvent into a first light phase including first solvent and a first heavy phase comprising asphaltenes, organometallic compounds and some first solvent;
recovering first solvent from said first light phase in a second separation zone;
introducing said first heavy phase into a vis-breaking zone maintained at an elevated temperature and pressure level to crack said asphaltenes in said first heavy phase to produce distillable and substantially nondistillable liquid vis-broken products including organometallic compounds, said pressure level being such that substantially a single condensed phase exists within said vis-breaking zone;
introducing said distillable and substantially non-distillable liquid products from said vis-breaking zone into a third separation zone to separate at least a portion of said distillable liquid products from the remainder;
introducing said remainder from said third separation zone and a second solvent into a fourth separation zone maintained at an elevated temperature and pressure to effect a separation of said mixture into a fourth light phase comprising nondistillable liquid products substantially free of organometallic compounds, any distillable liquid products present and second solvent and a fourth heavy phase comprising a residue including organometallic compounds and some second solvent; and

4,389,303

PROCESS OF CONVERTING HIGH-BOILING CRUDE OILS TO EQUIVALENT PETROLEUM PRODUCTS

Thomas Simo, Bad Homburg, and Karl-Heinz Eisenlohr, Dreieich, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 3, 1980, Ser. No. 212,393
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949935
Int. Cl.³ C10G *45/58, 47/34, 49/22*
U.S. Cl. 208—107 **11 Claims**

1. A process of converting a high-boiling crude oil having a high content of nondistillable residues, said crude oil containing metals and at least 5 percent of asphaltenes, to equivalent petroleum products which comprises, in a single hydrovisbreaking stage free of catalyst, hydrovisbreaking said high boiling crude oil in the presence of molecular hydrogen and in admixture with a hydrogen donor solvent at a total pressure of 40 to 200 bars, 10 to 50 percent by weight of said mixture being said hydrogen donor solvent, said mixture being at a temperature in the range of 400° to 450° C. and being 4° to 5° C. below the carbonization temperature limit, the hydrovisbreaking conditions comprising a liquid hourly space velocity of 0.5 to 2 and a gas circulation ratio of 400 to 2000 standard cubic meters per metric ton of the entire liquid feed to said hydrovisbreaking stage, withdrawing from said hydrovisbreaking stage a liquid effluent and subjecting said effluent to a distillation, withdrawing from said distillation a residue fraction and at least one distillate fraction, said hydrogen donor solvent being one boiling in the range of 200°–530° C. and being selected from the group consisting of:
(a) a fraction from said crude oil if the crude oil contains more than 20% of naphthenic constituents; or
(b) a distillate fraction from said distillation, said fraction having a naphthene concentration exceeding 20%.

4,389,304

CATALYTIC HYDRODESULFURIZATION OR HYDRODENITROGENATION OF ORGANIC COMPOUNDS EMPLOYING ALUMINA PROMOTED WITH ZINC, TITANIUM, COBALT AND MOLYBDENUM AS THE CATALYTIC AGENT

Alan D. Eastman, and Lloyd E. Gardner, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 125,437, Feb. 28, 1980, Pat. No. 4,287,050. This application Apr. 28, 1981, Ser. No. 258,237
Int. Cl.³ C10G *23/02*
U.S. Cl. 208—254 H **18 Claims**

1. A process for the catalytic hydrodenitrogenation of an organic nitrogen compound comprising the step of contacting said organic nitrogen compound under suitable hydrodenitrogenation conditions with a catalyst composition comprising catalytic grade alumina, zinc titanate, cobalt, and molybdenum.

4,389,305

CATALYTIC HYDRODENITROGENATION OF ORGANIC COMPOUNDS EMPLOYING PROMOTED ZINC TITANATE

Lloyd E. Gardner; Floyd E. Farha, Jr.; Alan D. Eastman, and Lewis E. Drehman, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 125,429, Feb. 18, 1980, abandoned. This application Apr. 30, 1981, Ser. No. 258,975
Int. Cl.³ C10G *45/04*
U.S. Cl. 208—254 H **25 Claims**

1. A process for the catalytic hydrodenitrogenation of an organic nitrogen compound comprising the step of contacting said organic nitrogen compound under suitable hydrodenitrogenation conditions with a catalyst composition comprising zinc, titanium, and at least one promoter selected from the group consisting of vanadium, chromium, cobalt, nickel, molybdenum, tungsten, rhenium, platinum, palladium, rhodium, ruthenium, and compounds thereof, wherein the concentration by weight of said promoter in said catalyst composition is less than the total concentration by weight of said zinc and said titanium in said catalyst composition and wherein said zinc and titanium are present in said catalyst composition in the form of zinc titanate prepared by calcining a mixture of zinc oxide and titanium dioxide in the presence of molecular oxygen at a temperature in the range of about 650° C. to about 1050° C.

4,389,306

PROCESS FOR REMOVING ASH FROM COAL

Takeshi Nakanishi; Kazuo Harada; Nobuyuki Yoshida, and Etsuo Ogino, all of Osaka, Japan, assignors to Hitachi Shipbuilding & Engineering Co., Ltd., Osaka, Japan

Filed Sep. 24, 1981, Ser. No. 305,157
Claims priority, application Japan, Oct. 8, 1980, 55-141504; Oct. 8, 1980, 55-141505; Oct. 8, 1980, 55-141506
Int. Cl.³ B03B *1/00*
U.S. Cl. 209—5 **8 Claims**



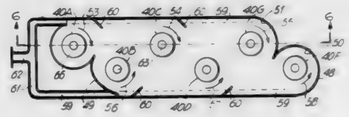
1. A process for removing ash from coal comprising the steps of pulverizing the coal to fine particles, up to hundreds of micro-meters in size, admixing water with the finely divided coal to obtain an ash-containing slurry of finely divided coal, mixing with the slurry an oil and seeds about 1–10 mm in size in the form of oleophilic solid grains and serving as granulating nuclei to granulate the finely divided coal, separating the resulting granules from the mixture and washing the same with water to remove the ash, disintegrating the washed granules and separating the granules into seeds and an oil-containing deashed coal in the form of pellets to obtain the oil-containing deashed coal and recover the seeds, and reusing the seeds for the granulating step.

4,389,307

ARRANGEMENT OF MULTIPLE FLUID CYCLONES

John D. Boadway, Kingston, Canada, assignor to Queen's University at Kingston, Kingston, Canada

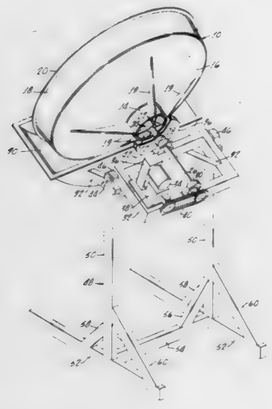
Filed Jun. 22, 1981, Ser. No. 275,987
Int. Cl.³ B04C *5/28;* **55** *346;349;459 R;461*
U.S. Cl. 209—211 **17 Claims**



1. A header for a plurality of cyclones, said header having a first chamber with an inlet thereto and a plurality of outlets therefrom, said outlets being spaced apart from one another downstream from said inlet providing inlets to respective ones of a plurality of cyclones; and deflector means in said passageway to create a stable pattern of multiple vortices of flowing fluid in said chamber, said vortices being in contact with each other and consisting of a series of counter-rotating pairs lo-

cated such that there is a vortex at each of said plurality of outlets.

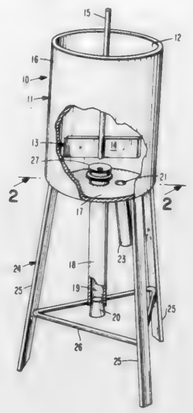
4,389,308
APPARATUS FOR SEPARATING ORES
Keith B. Cleland, 4460 Park Newport, Newport Beach, Calif. 92660
Filed Nov. 19, 1981, Ser. No. 322,906
Int. Cl.³ B03B *5/58*
U.S. Cl. 209—444 **12 Claims**



1. Ore separation apparatus comprising
a rotatable container having a concave portion with an opening for discharging concentrated ore at its center,
an elongated cylindrical hub, one end of which abuts said container and circumscribes said opening to pass said concentrated ore, the hub mounting the container,
drive means including an elongated drive shaft substantially smaller in cross section than said opening,
said drive shaft having one end portion centered within said hub and extending outwardly therefrom away from the container,
and spider means connecting the shaft to the interior of said hub, whereby the hub is mounted to the shaft so that the entire weight of the container is transmitted via the hub to the shaft end portion,
said concave portion of said container facing away from said hub,
and said shaft being axially aligned therewith.

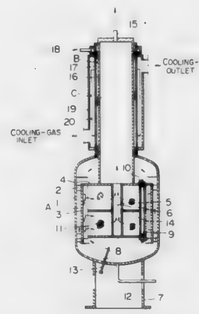
4,389,309
HEAVY METALS SEPARATOR
Laurence H. Konvalin, 7722 Vineyard Rd., Sacramento, Calif. 95823
Filed Nov. 2, 1981, Ser. No. 317,536
Int. Cl.³ B03B *5/02*
U.S. Cl. 209—465 **1 Claim**

1. A heavy metals separator, comprising, in combination, an upright, cylindrical tank containing a rotatable impeller about a vertical shaft for producing a centripetal action force on placer ore placed into said tank, and means to collect heavy metal particles from said ore while a remainder of said ore is flushed out from said tank; said means comprising a sand and gravel collector pipe under the center of said impeller and extending downward through a bottom wall of said tank, an upper end of said sand and gravel collector pipe extending upwardly of said bottom wall and being fitted with a restrictor, while a downward tube also through said bottom wall collects said heavy metal particles, an upper end of said tube being



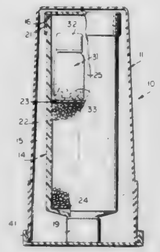
flush with said bottom wall, and a removable mesh placed upon said bottom wall.

4,389,310
COLD TRAP
Katsumi Seki, Hitachi; Yasuo Tachi, Tokyo, and Yoji Shibata, Funabashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 22, 1978, Ser. No. 972,212
Claims priority, application Japan, Dec. 26, 1977, 52-155588
Int. Cl.³ B01D *35/06*
U.S. Cl. 210—183 **9 Claims**



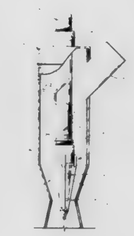
1. A cold trap disposed in a sodium circulating system and adapted for purifying the circulated sodium comprising:
a sodium-cooling zone in which said sodium is cooled through a heat exchange with a cooling fluid of a low temperature;
an impurity-trapping zone, for receiving cooled sodium from said sodium-cooling zone, adapted to trap the impurities precipitated in the cooled sodium;
said impurity-trapping zone being disposed at a position where no heat exchange with said sodium-cooling zone occurs, so that the sodium is cooled in the sodium-cooling zone substantially to the temperature at which it passes through the impurity-trapping zone, whereby the temperature of the sodium in the impurity-trapping zone is substantially constant;
an economizer zone adjacent to said sodium-cooling zone and adapted to reheat the sodium coming from the impurity-trapping zone through a heat exchange with the sodium flowing in said sodium-cooling zone; and
a vessel in which said zones are defined,
whereby heat exchange between said impurity-trapping zone and the sodium-cooling and economizer zones is avoided due to positioning of the three zones.

4,389,311
PORTABLE WATER PURIFIER
Henry La Freniere, 8421 Forest Hills Dr., Coral Springs, Fla. 33065
Continuation of Ser. No. 146,310, May 5, 1980, abandoned. This application Jul. 16, 1981, Ser. No. 283,992
Int. Cl.³ C02F *1/28, 1/50*
U.S. Cl. 210—198.1 **11 Claims**



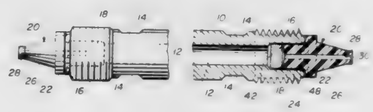
1. A packaged kit for use in the purification of water, comprising:
a kit package comprising a container for retaining water and a removable cover closing said container; a water filter in said kit package which is removable therefrom, said water filter comprising a flow through casing having an inlet end and an opposite outlet end to provide for axial flow through the casing, said casing including a bed of particulate adsorbent for adsorbing impurities from the water and first and second permeable supporting members within the casing supporting and confining said bed of particulate adsorbent therebetween over the casing crosssection, said casing including a water reservoir space between the inlet end and supported bed of particulate adsorbent; and a disinfectant package in said kit package which is removable therefrom, said disinfectant package including a disinfectant for water borne bacteria and viruses.

4,389,312
VARIABLE VENTURI SEWERAGE AERATOR
Harold Beard, P.O. Box 3838, Baton Rouge, La. 70821
Filed Oct. 5, 1981, Ser. No. 308,279
Int. Cl.³ C02F *1/74;* **B01F** *5/04*
U.S. Cl. 210—198.1 **1 Claim**



1. An aerator for use in oxidizing a liquid stream comprising:
(a) a venturi positioned above said liquid stream having an upper cavity and lower restricted opening chamber, said venturi having a stream inlet port opening into said cavity;
(b) a hollow pipe attachable to said venturi and extending into said cavity; and,
(c) a diffuser assembly attached to the lower end of said hollow pipe and comprising a hollow tube section having a tube opening, said diffuser assembly comprising:
i. said hollow tube section being detachable from said hollow pipe;
ii. a conical-shaped hollow pipe attached by the base of said conical-shaped hollow pipe to said hollow tube section;
iii. vanes attached at one end to said hollow tube section and extending downward and inward below said conical-shaped hollow pipe wherein they are attached at their opposite end to an agitator.

4,389,313
CHROMATOGRAPHIC COLUMN WITH IMPROVED SEALS
Andrew R. Charney, State College; Paul W. Kercher, Pennsylvania Furnace, and Stanley A. Stone, State College, all of Pa., assignors to Scientific Systems, Inc., State College, Pa.
Filed Dec. 9, 1981, Ser. No. 328,907
Int. Cl.³ B01A *15/02*
U.S. Cl. 210—198.2 **7 Claims**



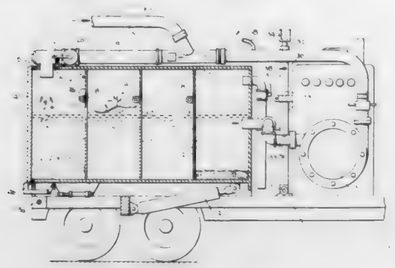
1. A chromatographic column comprising in combination:
(1) a tubular column cartridge having at least one end threaded exteriorly and the interior of said end being arranged to receive one end of a seal member,
(2) a column seal member attachable to said at least one end of said column cartridge and comprising:
a. a body circular in cross-section and having a central straight-through passage from end-to-end of uniform diameter and also having opposite end portions,
b. an annular rib on said body intermediately of the end portions thereof and provided with opposed surfaces to be clamped,
c. one end portion of said body being substantially cylindrical and complementary to and receivable within said one end of said column cartridge,
d. the other end portion of said body being frusto-conical and tapering away from said rib,
(3) an apertured coupling having a cavity in one end complementary to the exterior of said other end portion of said body and adapted to receive the same in sealing relationship,
(4) a seat in said cavity, and
(5) threads in the cavity of said coupling complementary to the exterior threads on said one end of said column and operable to threadably receive the same and connect at least one end of said column cartridge to the cavity end of said coupling in a manner to clamp the annular rib of said seal member to said column cartridge and said coupling by the clamping surfaces of said annular rib being clampingly engaged between said threaded end of said column cartridge and said seat in the cavity of said coupling and said frusto-conical end of said seal member closely filling said cavity inwardly from said seat therein.

4,389,314

EDUCTOR TRUCK

Anthony V. Petretti, Whitestone, N.Y., assignor to Metro Hoist & Body Co., Inc., Whitestone, N.Y.

Filed May 21, 1979, Ser. No. 40,551
Int. Cl.³ C02C *1/18*
U.S. Cl. 210—241 **2 Claims**



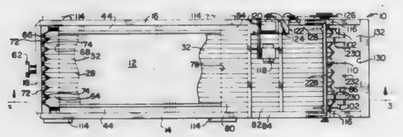
1. An eductor truck comprising a frame, a settling tank pivotally mounted on said frame, said settling tank having an eductor unit thereon, a control valve mounted on said settling tank for operating said eductor unit, said control valve being operable from a point remote from its position on the settling tank, said control valve having a control arm extending therefrom, said control arm being located outside of said eductor unit whereby it is accessible for optional manual operation, a hydraulic motor mounted adjacent the settling tank to operate the control valve, said hydraulic motor having a piston which is operatively connected to the control arm of said control valve, said hydraulic motor being remotely controlled, whereby remote operation of said hydraulic motor will operate said control valve through said control arm.

4,389,315

FILTER DEVICE WITH PERMEABLE CORRUGATED GRID PANEL

Frank Crocket, 36393 Greenspring, Farmington Hills, Mich. 48018

Filed Jul. 24, 1981, Ser. No. 286,563
Int. Cl.³ B01D *33/22*
U.S. Cl. 210—357 **9 Claims**



1. A filter device for separating foreign material from a liquid flow, said device comprising,

a tank for receiving said flow of said liquid and foreign material through an inlet means, and outlet means for discharging said foreign material and the filtered liquid,

a grid panel having permeable corrugated surface carried within said tank to allow passage of said liquid while retaining said foreign material to collect on said corrugated surface, said permeable corrugated surface including a series of permeable filter surfaces interconnected at respective tops and bottoms to form acute angles between said permeable filter surfaces at each such connection, and

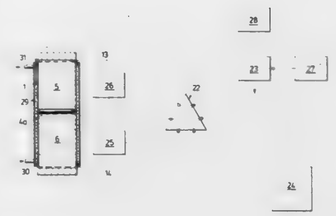
a conveyor operatively connected to said tank, said conveyor having a scraper plate with an edge to complementally engage said grid panel corrugated surface and remove said foreign material collected thereon.

4,389,316

METHOD AND A DEVICE FOR LIQUID CHROMATOGRAPHY

Bengt G. Falk, Upsala, Sweden, assignor to Pharmacia Fine Chemicals AB, Upsala, Sweden

Filed May 13, 1981, Ser. No. 263,128
Claims priority, application Sweden, May 14, 1980, 8003645
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—656 **8 Claims**



1. An arrangement for applying a sample solution on a liquid chromatographic column, comprising

(a) a sample container having uniform cross section,

(b) a piston adapted to move along the axis of said container, sealingly contacting the side walls of the container and dividing the container into a driving solution chamber and a sample solution chamber,

(c) a first passageway for the introduction and removal of driving solution to and from said driving solution chamber,

(d) a second passageway for the introduction and removal of sample solution to and from said sample solution chamber,

(e) pumping means for pumping a driving solution into said driving solution chamber through said first passageway,

(f) a sample solution reservoir and conduits connecting said reservoir to said second passageway,

(g) at least one driving solution reservoir and conduits connecting said reservoir to said first passageway,

(h) a chromatographic column, and

(i) a valve means (A) interconnecting said sample solution reservoir and said sample solution chamber and (B) interconnecting said driving solution reservoir with said driving solution chamber and (C) interconnecting said pumping means to said driving solution chamber and (D) interconnecting said pumping means with said chromatographic column so that

(1) when driving solution is pumped into the driving solution chamber it will displace the piston so as to decrease the volume of the sample solution chamber and discharge from the sample solution chamber an amount of sample solution to the chromatographic column which is directly proportional to the amount of driving solution pumped into said driving solution chamber, and

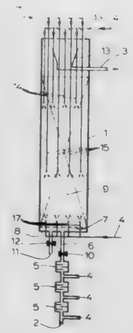
(2) when sample solution is pumped from the sample solution reservoir into the sample solution chamber it will move the piston so as to decrease the volume of the driving solution chamber.

4,389,317

PROCESS FOR CHEMICAL REDUCTION OF THE PHOSPHATE CONTENT OF WATER

Christiaan C. M. Trentelman; Johannis C. van Dijk, both of Leusden, and Johannes H. C. M. Oomen, Amersfoort, all of Netherlands, assignors to DHV Raadgevend Ingenieursbureau BV, Netherlands

Continuation of Ser. No. 39,593, May 16, 1979, abandoned. This application May 11, 1981, Ser. No. 262,419
Claims priority, application Netherlands, May 18, 1978, 7805358
Int. Cl.³ C02F *1/52*; B01D *9/02*
U.S. Cl. 210—715 **2 Claims**



1. A process for the chemical reduction of the dissolved phosphate content of a stream of water containing the dissolved phosphate, which comprises;

passing the stream of water at a velocity of from 30 to 200 m/h through a bed of seed grains, said seed grains ranging in size from 0.1 to 3 mm., whereby said bed of seed grain is fluidized by the passing stream;

providing at least one reagent which will react with the dissolved phosphate to form crystals of a phosphate compound; and

adding the provided reagent to the stream at several sites spread over the height of the fluidized bed;

whereby granules of crystalline material are obtained by crystallization and build-up of said phosphate compound onto the seed grains, said granules being readily separated from the stream as virtually water-free granules.

4,389,318

RAPIDLY DISSOLVING MIXTURES CONTAINING TRICHLOROISOCYANURIC ACID

John A. Wojtowicz, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Mar. 30, 1981, Ser. No. 248,133
Int. Cl.³ C02F *1/76*
U.S. Cl. 210—755 **11 Claims**

8. A composition in compressed form for sanitizing water bodies consisting essentially of a mixture of trichloroisocyanuric acid, an alkali metal bicarbonate and cyanuric acid said mixture having a molar ratio of said alkali metal bicarbonate to said trichloroisocyanuric acid of from about 3:1 to about 1:1, a mole ratio of said cyanuric acid to said trichloroisocyanuric acid in the range of from about 0.05:1 to about 0.75:1, said mixtures containing at least about 50 percent by weight of said trichloroisocyanuric acid, and having a moisture content of less than about 0.2 percent by weight of the mixture.

10. A method of sanitizing a water body having a temperature in the range of from about 12° to about 43° C. which comprises adding to said water body the composition of claim 8.

4,389,319

HIGH TEMPERATURE STABLE VISCOSIFIER AND FLUID LOSS CONTROL SYSTEM

Jacob Block, Rockville, and Peter C. Green, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Apr. 24, 1981, Ser. No. 257,460
Int. Cl.³ C09K *7/02*
U.S. Cl. 252—8.5 A **7 Claims**

1. A composition capable of imparting to clay-free aqueous systems a combination of pseudoplasticity and fluid loss control comprising a mixture of:

(a) a hydroxy containing aluminum component formed by mixing in an aqueous medium and under a high degree of agitation a water-soluble basic agent selected from the group consisting of an alkali metal aluminate, alkali metal hydroxide, ammonium hydroxide and mixtures thereof with a water-soluble acidic agent selected from an inorganic acid, aluminum chloride, aluminum sulfate, aluminum nitrate, their hydrates and mixtures thereof; at least one of said basic and acidic agents being an aluminum containing compound: said acidic and basic agents being reacted in a ratio such that the resultant product is capable of imparting to an aqueous medium a pH of at least about 8; in combination with

(b) a chemical compound capable of converting to a higher oxidation state under alkaline conditions selected from the group consisting of C_1–C_5 alkanols, unsubstituted or C_1–C_3 alkyl, aryl or alkaryl substituted phenols, hydroquinone, C_1–C_{15} alkanothiol, alkali metal, alkaline earth metal or ammonium salt of sulfite, bisulfite or nitrite, ferrous metal salts of chloride or sulfate and cuprous metal salts of chloride and sulfate; in combination with

(c) a reaction product formed between a polymeric material having a weight average molecular weight of at least about 20,000 selected from the group consisting of polyvinyl alcohol and hydroxy C_1–C_3 alkyl cellulose and at least from about 1 to 200 percent of stoichiometry of a cross-linking agent selected from the group consisting of a compound containing at least one aldehyde group therein or a compound capable of generating in situ at least one aldehyde or an epihalohydrin; the reaction between said polymeric material and said aldehyde carried out in an aqueous acidic medium having a pH of 5.5 or less and the reaction between said polymer and said epihalohydrin being carried out in an aqueous basic medium having a pH of at least about 9.5;

wherein the weight ratio of component (a) to (c) is at least from about 0.75:1 to 3:1 and of component (b) to (c) is at least from about 0.2:1 to 1:1.

4,389,320

FOAMABLE COMPOSITIONS AND FORMATIONS TREATMENT

Richard L. Clampitt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 100,085, Dec. 4, 1979, Pat. No. 4,300,634. This application May 4, 1981, Ser. No. 260,471
Int. Cl.³ E21B *43/24, 43/138*
U.S. Cl. 252—8.55 R **9 Claims**

1. A foamable gelled composition consisting essentially of

(a) water,

(b) a water-soluble surfactant in an amount which is sufficient to form a stable, self-collapsing foam when the composition is contacted with steam after polymer component (c) breaks down due to heat,

(c) a water-thickening amount of a water-dispersible polymer selected from the group consisting of cellulose ethers, polyacrylamides, polyalkylene oxides, and biopolysaccharides produced by the action of bacteria of the genus Xanthomonas upon carbohydrates,

(d) a small, but effective amount in the range of 0.02 to 2 weight percent, of at least one aldehyde component selected from the group consisting of glyoxal, glutaralde-

hyde, and terephthaldehyde, and aliphatic monoaldehydes having from one to about 10 carbon atoms per molecule, and

(e) a small, but effective amount in the range of 0.005 to 2 weight percent of at least one phenolic compound selected from the group consisting of phenol, catechol, resorcinol, phloroglucinol, pyrogallol, 4,4'-diphenol, 2,3-dihydroxynaphthalene, 1,4-benzoquinone, hydroquinone, quinhydrone, and quebracho which amounts of aldehyde (d) and phenolic compound (e) are sufficient to cause gelation of an aqueous dispersion of polymer (c) and form said gelled composition.

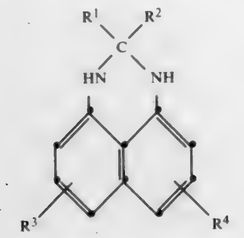
4,389,321

2,3-DIHYDROPERIMIDINES AS ANTIOXIDANTS FOR LUBRICANTS

Roger F. Malherbe, East Northport, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 28, 1981, Ser. No. 334,860
Int. Cl.³ C10M *1/38, 1/32, 1/44*
U.S. Cl. 252—47 **5 Claims**

1. A lubricant composition comprising a mineral oil or a synthetic oil or mixtures thereof and an effective stabilizing amount of a compound of formula (I)



(I)

wherein R^1 is hydrogen or alkyl having 1 to 20 carbon atoms; R^2 is alkyl, phosphono-substituted alkyl, alkyl interrupted by O, alkyl interrupted by S, alkenyl having 3 to 16 carbon atoms, aryl, lower alkyl-substituted aryl, hydroxyl-substituted aryl, halogen-substituted aryl or di(lower) alkylamino-substituted aryl and wherein said alkyl group has from 1 to 20 carbon atoms and said aryl group has from 6 to 10 carbon atoms or R^1 and R^2 together with the carbon atom to which they are attached form cycloalkane of 5 to 25 carbon atoms, alkylcycloalkane of 6 to 25 carbon atoms or cycloalkylcycloalkane of 9 to 25 carbon atoms; and R^3 and R^4 independently are hydrogen or alkyl having 1 to 12 carbon atoms or R^3 and R^4 together are 1,2-ethylene in the peri-position.

5. A lubricant composition according to claim **1**, wherein said compound is selected from the group consisting of 2,3-dihydroperimidine-2-spiro(4-t-amyl-cyclohexane), 2,3-dihydropermidine-2-spiro(4-t-butyl-cyclohexane), 2,3-dihydroperimidine-2-spirocyclododecane, 2,3-dihydroperimidine-2-spiro(decahydro-1-naphthalene), 2,3-dihydroperimidine-2-spiro-8'-tricyclo[5.2.1.$0^{2,6}$]decane, 2,2-dinonyl-2,3-dihydroperimidine, 2-methyl-2-(2-methyl-2-diethylphosphonopropyl)-2,3-dihydroperimidine, 2-undecyl-2,3-dihydroperimidine, 2-(1-pentyl-1-octenyl)-2,3-dihydroperimidine, 2-(3,5-di-t-butyl-4-hydroxyphenyl)-2,3-dihydroperimidine, 2,3-dihydroperimidine-2-spiro(2-cyclohexylcyclohexane), 2,3-dihydroperimidine-2-spiro(4-cyclohexylcyclohexane), 2,3-dihydroaceperimidine-2-spiro(4-t-amylcyclohexane), 2,3-dihydroaceperimidine-2-spirocyclododecane, 2,3-dihydroperimidine-2-spirocyclohexane, 2,3-dihydropermidine-2-spiro(4-t-octylcyclohexane), 2-isobutyl-2-(2,4-dimethylphenyl)-2,3-dihydroperimidine and 2-(p-dimethylaminophenyl)-2,3-dihydroperimidine.

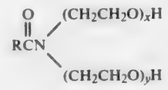
4,389,322

FRICTION REDUCING ADDITIVES AND COMPOSITIONS THEREOF

Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 95,005, Nov. 16, 1979, abandoned. This application Jun. 22, 1981, Ser. No. 276,129
Int. Cl.³ C10M *1/10*
U.S. Cl. 252—49.6 **11 Claims**

1. A lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease or solid lubricant prepared therefrom and a minor friction reducing proportion of an additive compound selected from borated adducts of N-ethoxylated amides having the following generalized structure:



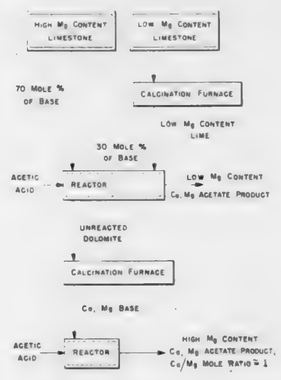
wherein R is hydrocarbyl containing 10–40 carbon atoms selected from alkyl, alkenyl, aralkyl or alkaryl, x and y are whole numbers from 1 to about 10 and where x and y may be the same or different with the proviso that x plus y must be at least 2 or more.

4,389,323

PROCESS OF MAKING TWO UNIFORM GRADES OF CALCIUM MAGNESIUM ACETATE

Alan B. Gancy, 265 Robineau Rd., Syracuse, N.Y. 13207

Filed Nov. 2, 1981, Ser. No. 316,816
Int. Cl.³ C09K *3/18;* **C01F** *5/00, 11/00*
U.S. Cl. 252—70 **6 Claims**



1. In a process of making different grades of calcium magnesium acetate, having substantially uniform but different calcium-to-magnesium mole ratios, from limestone having varying proportions of calcium carbonate and magnesium carbonate, the steps comprising:

a. finely dividing limestone containing calcium carbonate and magnesium carbonate;
b. mixing said finely divided limestone with water to form an aqueous suspension of calcium carbonate and magnesium carbonate;
c. calcining some finely divided limestone;
d. reacting an effective amount of said aqueous suspension not above about 70% of the molar equivalent of base with acetic acid and an effective amount of the calcined limestone not below about 30% of the molar equivalent of base to produce a calcium magnesium acetate salt solution having a calcium-to-magnesium mole ratio much greater than one;

e. separating from said solution substantially all insolubles containing calcium carbonate and magnesium carbonate;
f. calcining said separated insolubles;
g. mixing said calcined insolubles with water to form an aqueous lime suspension; and
h. reacting said lime suspension with acetic acid to produce a calcium magnesium acetate salt solution having a calcium-to-magnesium mole ratio substantially equal to one.

4,389,324

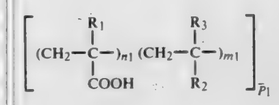
POLYMERIC COMPOSITION FOR PREVENTING THE FORMATION OF SCALE DURING EVAPORATION OF SUGAR JUICES

Renate Keller, Düsseldorf, Fed. Rep. of Germany, assignor to Keller & Bobacek GmbH & Co., KG., Düsseldorf-Rath, Fed. Rep. of Germany

Continuation of Ser. No. 92,455, Nov. 7, 1979, abandoned. This application Apr. 8, 1981, Ser. No. 252,247
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1978, 2848779
Int. Cl.³ C02F *5/10, 5/12;* **C23F** *14/02*
U.S. Cl. 252—180 **2 Claims**

1. A polymeric composition for preventing the formation of scale when evaporating fruit juices, which is characterized in that it contains a mixture of at least three polymers, at least two of said polymers being selected from the group consisting of:

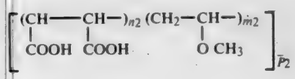
(a) polymers and salts of formula I



I

wherein:
R_1 is —H, —OH, —CH_3, —CH_2OH and/or —Cl
R_2 is —CHO, —CH_2OH and/or —$COOCH_2CH_2COOH$
R_3 is —H, —CH_3 and/or —CH_2OH
n_1 is 0.5 to 0.95
m_1 is 0.05 to 0.5
$n_1+m_1=1$, and
P_1 is 6 to 300;
and wherein said polymers of formula I differ in the mean degree of polymerisation P_1 by at least 20%, based on the value P_1 of the polymer with the lowest mean degree of polymerisation; and at least one further polymer selected from the group consisting of:

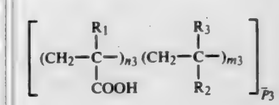
(b) a polymer or salt of formula II



II

wherein:
n_2 is 0.4 to 1.0
m_2 is 0 to 0.6
$n_2+m_2=1$
P_2 is 5 to 4000, or a lower alkyl ester thereof;

(c) a polymer or salt of formula III



III

wherein:
n_3 is 0.95 to 1
m_3 is 0.05 to 0
$n_3+m_3=1$
P_3 is 6 to 300
R_1, R_2 and R_3 have the same meaning as in (a);

(d) an anionic polyacrylamide or salt of formula IV

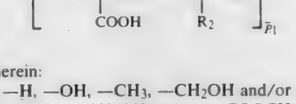


IV

wherein:
n_4 is 0.05 to 0.95
m_4 is 0.95 to 0.05
$n_4+m_4=1$
P is 10 to 500
in which at least one of the polymers is present in an amount of at least 10% by weight and at least two of the polymers are present each in an amount of at least 5% by weight, based on the total amount of the polymers.

2. A polymeric composition for preventing the formation of scale when evaporating fruit juices, which is characterized in that it contains a mixture of at least three polymers, at least three of said polymers being selected from the group consisting of:

(a) polymers and salts of formula I



I

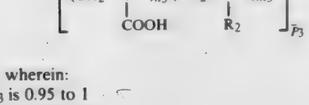
wherein:
R_1 is —H, —OH, —CH_3, —CH_2OH and/or —Cl
R_2 is —CHO, —CH_2OH and/or —$COOCH_2CH_2COOH$
R_3 is —H, —CH_3 and/or —CH_2OH
n_1 is 0.5 to 0.95
m_1 is 0.05 to 0.5
$n_1+m_1=1$, and
P_1 is 6 to 300;
and wherein said polymers of formula I differ in the mean degree of polymerisation P_1 by at least 20%, based on the value P_1 of the polymer with, in each case, the lowest mean degree of polymerisation; said remaining polymers being selected from the group consisting of:

(b) a polymer or salt of formula II

II

wherein:
n_2 is 0.4 to 1.0
m_2 is 0 to 0.6
$n_2+m_2=1$
P_2 is 5 to 4000, or a lower alkyl ester thereof;

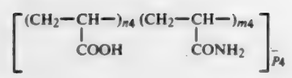
(c) a polymer or salt of formula III



III

wherein:
n_3 is 0.95 to 1
m_3 is 0.05 to 0
$n_3+m_3=1$
P_3 is 6 to 300
R_1, R_2 and R_3 have the same meaning as in (a);

(d) an anionic polyacrylamide or salt of formula IV



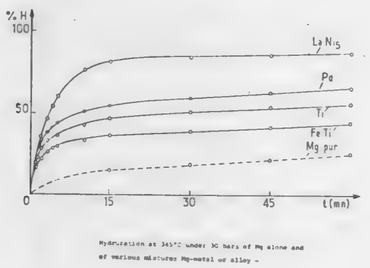
IV

wherein:
n_4 is 0.05 to 0.95
m_4 is 0.95 to 0.05
$n_4+m_4=1$
P is 10 to 500
in which at least one of the polymers is present in an amount of at least 10% by weight and at least two of the polymers are present each in an amount of at least 5% by weight, based on the total amount of the polymers.

4,389,325
CHLOROISOCYANURATE COMPOSITIONS
Clifford D. Eng, University City; James W. Gambell, and Henry K. Yuen, both of St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed Jan. 25, 1982, Ser. No. 342,039
Int. Cl.³ C11D *7/54*
U.S. Cl. 252—186.35 **16 Claims**

1. A composition comprising a solid chloroisocyanurate selected from the group consisting of trichloroisocyanuric acid, dichloroisocyanuric acid, alkali metal salts of dichloroisocyanuric acid and mixtures thereof, and a porous crystalline alumino-silicate having an essentially uniform pore size and a free aperture dimension of at least about 3.5 angstroms, said alumino-silicate being essentially unreactive below 80° C. with said chloroisocyanurate and hydrolysis and decomposition products thereof as determined by accelerating rate calorimetry.

4,389,326
METHOD OF STORING HYDROGEN IN INTIMATE MIXTURES OF HYDRIDES OF MAGNESIUM AND OTHER METALS OR ALLOYS
Bernard Tanguy, Pessec; Jean-Louis Soubeyroux, Voreppe; Michel Pezat, La Brede; Josik Portier, Pessac, and Paul Hagenmuller, Talence, all of France, assignors to Agence Nationale de Valorization de la Recherche, France
Continuation-in-part of Ser. No. 70,175, Aug. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 770,355, Feb. 22, 1977, abandoned. This application Jun. 12, 1981, Ser. No. 272,943
Int. Cl.³ C01B *6/00, 6/04*
U.S. Cl. 252—188.26 **3 Claims**

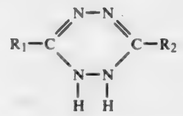


Hydrurations at 345°C under 30 bars of Mg alone and of various mixtures Mg-metal or alloy -

1. A process of storing hydrogen in a mixture of hydrides containing magnesium hydride comprising the steps of:
a. mixing magnesium and at least one other metal or alloy or other metals capable of absorbing hydrogen under the conditions of steps d and e, said other metal or alloy being capable of forming hydrides of thermal stability less than that of magnesium hydride, and having a dissociation pressure of at least 1 bar at 20° C., the amount of said other metal or alloy being sufficient to increase the hydrogen absorptive capacity of the total mixture over that of the sum of its parts under the conditions of steps d and e, the components of said mixture having previously been powdered or pulverized;
b. pelletizing thus produced powder;
c. vacuum degasifying the thus produced pellets;
d. placing the pellets in an enclosed empty vessel; and
e. providing hydrogen to said vessel at a predetermined temperature below 350° C. and the melting point of said pelletized mixture and pressure of 20–60 bars to permit absorption of the hydrogen upon the pellets.

4,389,327
USE OF SELECTED 1,2-DIHYDRO-1,2,4,5-TETRAZINES AS OXYGEN-SCAVENGING AGENTS
Eugene F. Rothgery, North Branford, and Robert N. Scott, Wallingford, both of Conn., assignors to Olin Corporation, New Haven, Conn.
Filed Jun. 14, 1982, Ser. No. 387,989
Int. Cl.³ C09K *15/16, 15/18*
U.S. Cl. 252—188.28 **7 Claims**

1. A method for removing dissolved oxygen in a liquid system, which comprises
adding to said liquid system an effective amount of an oxygen-scavenging chemical selected from 1,2-dihydro-1,2,4,5-tetrazines of the formula



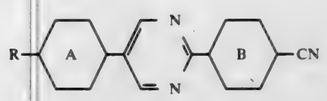
wherein R_1 and R_2 are individually selected from the group consisting of lower alkyl groups having 1 to 4 carbon atoms and phenyl.

4,389,328
DRIER SYSTEMS FOR WATER-BORNE SURFACE-COATING COMPOSITIONS
Samuel J. Bellettiere, Piscataway; Raymond Hurley, New Brunswick, both of N.J., and Samuel Hoch, Brooklyn, N.Y., assignors to Nuodex, Inc., Piscataway, N.J.
Division of Ser. No. 205,834, Nov. 10, 1980, Pat. No. 4,311,625. This application Aug. 24, 1981, Ser. No. 295,396
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—194 **3 Claims**

1. A drier system for water-borne surface-coating compositions containing oxidizable organic film-forming resinous vehicles that has a total metal content of from 5% to 14% by weight and that is a solution comprising a complex that is the product of the reaction of a cobalt salt of a monocarboxylic acid having 2 to 24 carbon atoms with a potassium salt of a monocarboxylic acid having 2 to 24 carbon atoms in amounts that will provide 2 moles of said potassium salt per mole of said cobalt salt, a calcium salt, and a zirconium salt, said calcium and zirconium salts being salts of acids selected from the group consisting of aliphatic branched-chain monocarboxylic acids having 6 to 24 carbon atoms, cycloaliphatic monocarboxylic acids having 6 to 10 carbon atoms, and mixtures thereof, in a solvent mixture that contains from 20% to 80% by weight of polar solvent and 20% to 80% by weight of non-polar solvent.

4,389,329
METEROCYCLIC COMPOUNDS
Arthur Boller, Binningen; Martin Schadt, Seltisberg, and Alois Villiger, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 116,518, Jan. 29, 1980, Pat. No. 4,273,929. This application Jan. 30, 1981, Ser. No. 230,074
Claims priority, application Switzerland, Feb. 5, 1979, 1102/79; Jun. 27, 1979, 5996/79; Nov. 13, 1979, 101126/79
Int. Cl.³ C09K *3/34;* G02F *1/13*
U.S. Cl. 252—299.1 **24 Claims**

2. A liquid crystalline mixture comprising one or more pyrimidine derivatives of the formula



I

wherein at least one of the rings A and B is a trans-1,4-disubstituted cyclohexane ring and the other optionally is aromatic and R is straight-chain alkyl or alkoxy of 1 to 10 carbon atoms or a branched-chain alkyl of the formula C_2H_5—CH(CH$_3$)—$(CH_2)_n$— wherein n is 1,2 or 3, and one or more substances selected from the group consisting of nematic liquid crystal compounds, cholesteric liquid crystal compounds, smectic liquid crystal compounds and dichroic coloring compounds.

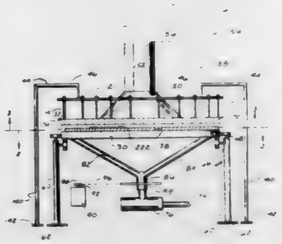
4,389,330
MICROENCAPSULATION PROCESS
Thomas R. Tice, Helena, and Danny H. Lewis, Gardendale, both of Ala., assignors to Stolle Research and Development Corporation, Cincinnati, Ohio
Filed Oct. 6, 1980, Ser. No. 194,127
Int. Cl.³ B01J *13/02;* A61K *9/50*
U.S. Cl. 427—213.36 **17 Claims**

1. A method of preparing microcapsules laden with an active agent, comprising:
(a) dissolving or dispersing an active agent in a solvent and dissolving a wall forming material in said solvent;
(b) dispersing said solvent containing said active agent and wall forming material in a continuous-phase processing medium;
(c) evaporating from 10 to 90 weight % of said solvent from said dispersion of step (b), thereby forming microcapsules containing said active agent in the suspension; and
(d) extracting the remainder of the solvent from said microcapsules.

4,389,331
PROCESS FOR PREPARING PHARMACEUTICALLY ACTIVE COMPOUND-CONTAINING MICROCAPSULES
Masayoshi Samejima, Minoh; Goichi Hirata, Yawata, and Yoshiyuki Koida, Katano, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan
Filed Oct. 7, 1980, Ser. No. 194,809
Claims priority, application Japan, Oct. 31, 1979, 54-141826
Int. Cl.³ B01J *13/02;* A61K *9/50*
U.S. Cl. 427—213.3 **7 Claims**

1. A process for preparing microcapsules containing a pharmaceutically active compound comprising: dissolving
(a) about 0.02 to about 5 g per gram of said compound of ethylcellulose, and
(b) about 0.0002 to about 1 g per gram of the total of said ethylcellulose plus said compound of phospholipids
in cyclohexane, dispersing articles of the compound in said solution, cooling the dispersion under continuous stirring until the ethylcellulose separates out from the dispersion, thereby coating the particles of compound, and then recovering the microcapsules formed.

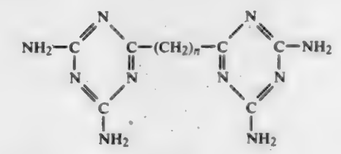
4,389,332
APPARATUS AND A PROCESS FOR HEATING MATERIAL
Donald R. Ross, Box 430, Umatilla, Oreg. 97882
Division of Ser. No. 787,713, Apr. 14, 1977, Pat. No. 4,263,163. This application Mar. 5, 1980, Ser. No. 127,473
Int. Cl.³ C04B *31/22, 31/26;* F27B *14/00*
U.S. Cl. 252—378 R **6 Claims**



1. A process for expanding discrete solid particles in a mixture of said discrete solid particles to make expanded discrete solid particles, said process comprising:
a. contacting said discrete solid particles in said mixture of said discrete solid particles with a hot surface and with combustible materials juxtapositioned to said hot surface and said combustible materials being intermixed with said discrete solid particles and said combustible materials undergoing combustion among said discrete solid particles; and,
b. reflecting heat energy radiating from said hot surface toward said discrete solid particles and said hot surface to assist in expanding said discrete solid particles to make said expanded discrete solid particles.

4,389,333
BISGUANAMINE
Peter Werle, Geinhausen; Wolfgang Merk; Gerhard Pohl, both of Hanau, and Friedhelm Hoevels, Freigericht, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Division of Ser. No. 146,247, May 5, 1980, Pat. No. 4,339,578. This application Feb. 5, 1982, Ser. No. 346,255
Claims priority, application Fed. Rep. of Germany, May 15, 1979, 2919496
Int. Cl.³ C09K *15/16;* C07D *251/18*
U.S. Cl. 252—401 **19 Claims**

1. An aqueous formaldehyde solution containing a stabilizing effective amount of an alkylene bisguanamine of the formula



where n is an integer of 10 to 20.

4,389,334

SUPPORTED CATALYSTS USEFUL FOR THE POLYMERIZATION OF ALPHA-OLEFINS

Raymond J. Weinert, Jr., and Kenneth C. Benton, both of Garfield Heights, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 31, 1980, Ser. No. 221,667
Int. Cl.³ B01J *31/02*
U.S. Cl. 252—429 B **10 Claims**

1. A catalyst comprising a Ziegler-type transition metal complex and a non-rubber support which has been treated with a Group IIA metal halide or Group IIA metal alkyl halide, the support comprising an interpolymer of an alpha, beta-unsaturated dicarboxylic acid, anhydride or ester thereof and a monomer copolymerizable therewith.

4,389,335

CATALYST FOR CARBON MONOXIDE CONVERSION IN SOUR GAS

Jay S. Merriam, LaGrange, and Cecil B. Hogg, Louisville, both of Ky., assignors to United Catalysts Inc., Louisville, Ky.

Filed Apr. 14, 1981, Ser. No. 253,941
Int. Cl.³ B01J *23/34, 23/88*
U.S. Cl. 252—439 **10 Claims**

1. Sulfactive CO conversion catalyst, which comprises:
A. an aluminous catalyst carrier;
B. catalytically active metal compounds including the oxides and sulfides of cobalt and molybdenum;
C. a promotional amount of an alkali metal compound;
D. a promotional amount of an oxide or a sulfide of manganese.

4,389,336

PREPARATION OF NAPHTHALENE-OXIDATION CATALYST BY IMPREGNATION OF SILICA WITH AQUEOUS SOLUTION OF VOC_2O_4—K_2SO_4—$KHSO_4$

Philip H. Harju, Spring Church, and Eugene A. Pasek, Export, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Sep. 17, 1981, Ser. No. 303,169
Int. Cl.³ B01J *27/02*
U.S. Cl. 252—440 **29 Claims**

1. Catalytic material provided by a mixture of compounds deposited upon a silica support, said material prepared by a process comprising:
adding an aqueous solution of salts, comprising vanadyl oxalate, potassium sulfate and potassium bisulfate, to porous silica support to form a substantially free-flowing dry-appearing salt-impregnated silica powder, the powder characterized in having substantially all of said salts contained within pores of the silica powder;
whereby the salt-impregnated silica powder after calcining yields particles of catalytic material over a range of sizes, which particles are characterized in having a substantially uniform chemical composition.

4,389,337

PROMOTED ZINC TITANATE CATALYST FOR THE DEHYDROGENATION OF ORGANIC COMPOUNDS

Alan D. Eastman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 125,436, Feb. 28, 1980, Pat. No. 4,327,238. This application Jan. 18, 1982, Ser. No. 340,401
Int. Cl.³ B01J *21/06, 23/06, 23/10, 23/18*
U.S. Cl. 252—462 **10 Claims**

1. A catalyst composition comprising zinc, titanium and at least one promoter selected from the group consisting of antimony, bismuth, the lanthanides, the actinides, oxides thereof, and compounds convertible to the oxides thereof, wherein the concentration by weight of said at least one promoter in said catalyst composition is less than the total concentration by weight of said zinc and said titanium in said catalyst composition, wherein said zinc and titanium are present in said catalyst composition in the form of zinc titanate which is prepared by calcining a mixture of zinc oxide and titanium dioxide in the presence of free oxygen at a temperature in the range of about 650° C. to about 1050° C. and wherein said catalyst composition does not contain a metal selected from the group consisting of Group IB of the Periodic Table and Group VIIB of the Periodic Table.

4,389,338

METHOD FOR MANUFACTURE OF SILVER CATALYST FOR PRODUCTION OF ETHYLENE OXIDE

Masashi Mitsuhata, Yokohama; Shin-ichi Nagase, Tokyo; Takahiko Nakai, and Toshihiko Kumazawa, both of Yokohama, all of Japan, assignors to Nippon Skokubai Kagaku Kogyo Co., Ltd., Japan

Filed Dec. 17, 1981, Ser. No. 331,576
Claims priority, application Japan, Dec. 26, 1980, 55-183935
Int. Cl.³ B01J *23/04, 23/08, 23/50*
U.S. Cl. 252—463 **23 Claims**

1. In a method for the manufacture of a silver catalyst having silver deposited on a porous inorganic carrier in conjunction with at least one reaction accelerator selected from the group consisting of alkali metals and thallium to be used for the production of ethyelene oxide, the improvement comprising the steps of depositing silver on the porous inorganic carrier in conjunction with at least one reaction accelerator selected from the group consisting of alkali metals and thallium thereby preparing an activated silver catalyst and subsequently subjecting said silver catalyst to a high-temperature treatment at a temperature in the range of 550° to 950° C. in an inert gaseous atmosphere having an oxygen concentration of not more than 3 volume percent in the final step.

4,389,339

PROCESS FOR MAKING A COBALT OXIDE CATALYST

Leonard E. James, Richmond; Lamberto Crescentini, and William B. Fisher, both of Chester, all of Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 87,593, Oct. 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 926,178, Jul. 20, 1978, abandoned. This application Mar. 1, 1982, Ser. No. 353,687
Int. Cl.³ B01J *23/74*
U.S. Cl. 252—472 **10 Claims**

1. A process for making a cobalt oxide catalyst comprising heating a substance from which cobalt oxide can be formed to a first elevated temperature sufficient to decompose said substance and produce a first porous mass of cobalt oxide, saturating the porous mass with a concentrated aqueous solution of cobalt nitrate, heating the resulting saturated mass at a second elevated temperature for a period of time sufficient to complete the reaction and produce a second porous mass of cobalt oxide having improved crushing strength, and grinding the second porous mass to produce a particulate cobalt oxide catalyst having high activity and improved resistance to disintegration during ammonia oxidation.

4,389,340

FLEXIBLE, ELECTRICALLY CONDUCTIVE JOINTING MATERIAL, PARTICULARLY SUITABLE FOR AIRCRAFT

Fernand J. Levy, Puteaux, France, assignor to Avions Marcel Dassault-Breguet Aviation, Vaucresson, France

Filed Aug. 6, 1980, Ser. No. 175,853
Claims priority, application France, Aug. 10, 1979, 79 20499
Int. Cl.³ H01B *1/02*
U.S. Cl. 252—512 **4 Claims**

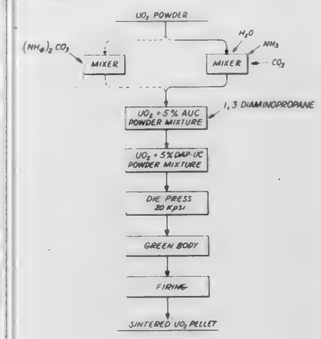
1. A composition of matter, for application to aircraft structural parts made of aluminum or aluminum alloy, comprising a flexible electrically-conductive jointing material consisting of a resilient electrically-insulating matrix formed of an elastomer selected as being, upon application at the desired site of the aircraft, of pasty consistency adapted for spreading and molding in situ, and of generally rectangular particles of aluminum or aluminum alloy distributed throughout said matrix and formed of scales having on average a length of approximately 2 to 4 millimeters, a width of approximately 100 to 150 microns and a thickness of approximately 30 to 60 microns, the proportion of scales in the elastomer being approximately of 1:4 parts by weight.

4,389,341

FUGITIVE BINDER-CONTAINING NUCLEAR FUEL MATERIAL AND METHOD OF PRODUCTION

George L. Gaines, Jr., Scotia, and William J. Ward, III, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 15, 1981, Ser. No. 273,900
Int. Cl.³ C09K *3/00;* **G21C** *21/00*
U.S. Cl. 252—638 **13 Claims**



1. In the method of producing a sintered body of nuclear fuel material, including the steps of pressing a particulate mixture of nuclear fuel material and ammonium uranyl compound binder to form a green body compact and thereafter sintering the compact, the combination of the step prior to the pressing step of reacting the ammonium uranyl compound with an amine compound to displace ammonia and form in the mixture a water-soluble uranyl compound as a binder for the mixture.

6. Nuclear fuel particulate material having on the surface thereof an amount of water-soluble product of the reaction between an amine and ammonium uranyl carbonate, said amount being in the range of from about 0.5 to 7 percent by weight.

4,389,342

SYNTHETIC HORMONE-LIKE PEPTIDES AND METHOD FOR THEIR SYNTHESIS

Friedrich Reinhard, Munich, Fed. Rep. of Germany, assignor to Perignon Investments, Ltd., Georgetown, Cayman Islands

Continuation-in-part of Ser. No. 136,670, Apr. 2, 1980, which is a continuation-in-part of Ser. No. 82,738, Oct. 9, 1979, abandoned, which is a continuation-in-part of Ser. No. 50,408, Jun. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 916,874, Jun. 19, 1978, abandoned. This application Apr. 23, 1981, Ser. No. 256,695
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **5 Claims**

1. A hormone-like peptide having antimetabolic activity comprising a peptide of the formula

$$a\text{-}X_1\text{-Arg-Val-}X_2\text{-(Gln)}_m\text{-(Val)}_n\text{-(Gly)}_o\text{-}(X_3)_p\text{-}(X_4)q\text{-(Pro)}_r\text{-}(X_5)_s\text{-}c$$

wherein
a is a member of the group consisting of a free amino group and an acylated amino group,
c is a member of the group consisting of a free carboxylic acid group, a carboxylic acid amide group, and a carboxylic acid ester group
X_1 is Pyr or Phe,
X_2 is Lys, Tyr or Phe,
X_3 is Ser, Tyr, or Phe
X_4 is Ser or Tyr,
X_5 is Gln or Asn, and
m, n, o, p, q, r and s are integers of 0 or 1, with the proviso that $m \geqq n \geqq o \geqq p \geqq q \geqq r \geqq s$; with the further provisos that:
when X_1 is Phe then X_2 is Lys, X_3=X_4=Ser, and m=n=o=p=q=r=1 and s=0;
when X_2 is Tyr or Phe, then X_1=X_4=Ser, X_5=Gln, and n=n=o=p=q=r=s=1;
when X_3 is Tyr or Phe, then X_4 is Ser, X_5 is Gln and m=n=o=p=q=r=s=1; and
when X_4 is Tyr, then X_5 is Gln and m=n=o=p=q=r=s=1; and when n=1, then o=1.

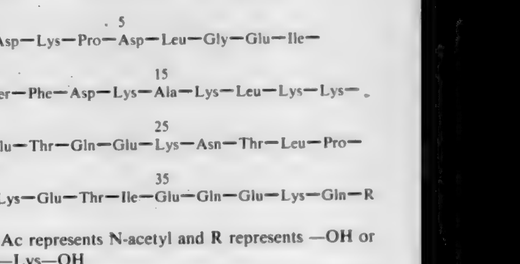
4,389,343

IMMUNOPOTENTIATING PEPTIDES FROM THYMUS

Bernard L. Horecker, New York, N.Y., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 24, 1981, Ser. No. 334,420
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **4 Claims**

1. Polypeptides essentially free of other proteinacious material and having the following amino acid sequence:



wherein Ac represents N-acetyl and R represents —OH or —Ala—Lys—OH
and the pharmaceutically acceptable acid addition salts or base salts thereof.

4,389,344

PROCESS FOR SEPARATING SOLID 1,5- AND/OR 1,8-DINITROANTHRAQUINONE AND LIQUID NITROBENZENE

Axel Schaefer, Bonn; Werner Motika, Leverkusen; Wolfgang Bender, Burscheid; Jörn Todt, Leverkusen, and Udo Oels, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 29, 1979, Ser. No. 99,115
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854427
Int. Cl.³ C07C *49/68*
U.S. Cl. 260—369 **8 Claims**

1. A process for obtaining dry 1,5- and/or 1,8-dinitroanthraquinone from suspensions which contain solid 1,5- and/or 1,8-dinitroanthraquinone and liquid nitrobenzene, comprising separating off mechanically from the suspension at elevated temperature in a first stage, solid 1,5- and/or 1,8-dinitroanthraquinone with a nitrobenzene content of less than 30% by weight and removing in a second stage, the residual nitrobenzene from the 1,5- and/or 1,8-dinitroanthraquinone which has been separated off, by lowering the pressure during which the temperature falls.

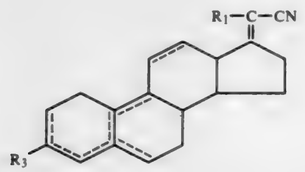
4,389,345

3-OXOESTRA-17-ACETONITRILE AND UNSATURATED ANALOGS

George R. Lenz, Glenview, Ill., assignor to G.D. Searle & Co., Skokie, Ill.

Filed Oct. 9, 1981, Ser. No. 310,204
Int. Cl.³ C07J 7/00
U.S. Cl. 260—397.1 15 Claims

1. A compound of the formula:



wherein R_1 is:
(a) hydrogen;
(b) phenyl alkyl carboxylic acid ester, the alkyl portion having 1 to 6 carbon atoms inclusive;
wherein R_3 is
(a) oxo
(b) =NOH;
(c) $-OR_4$; or
(d) $-OC=O(R_4)$
wherein R_4 is
(a) hydrogen; or
(b) alkyl of 1 to 6 carbon atoms inclusive.

4,389,346

ESTERIFICATION REACTION PRODUCTS AND COSMETICS CONTAINING SAME

Osamu Yamada, Yokohama; Yuzo Higaki, Machida, and Akitoshi Ukai, Yokohama, all of Japan, assignors to The Nisshin Oil Mills, Limited, Tokyo, Japan

Filed Feb. 18, 1981, Ser. No. 235,405
Claims priority, application Japan, Feb. 18, 1980, 55-17761
Int. Cl.³ C11C 3/02
U.S. Cl. 260—410.7 4 Claims

1. An esterification reaction product between a condensate of a polyhydric alcohol having 2–4 hydroxyl groups, represented by the general formula,

$$(HO)_nR—O—R(OH)_n$$

wherein R is a polyhydric alcohol of 2–4 hydroxyl groups having removed hydroxyl groups and n is 1, 2, or 3 and an acid mixture comprising 12-hydroxystearic acid and a rosin constituting resin acid whose content is not more than 50 mol % based on the total of 12-hydroxystearic acid and rosin constituting resin acid and does not have more than half the hydroxyl groups of said condensate of the polyhydric alcohol.

4,389,347

SYNTHESIS OF HETERONUCLEAR TRI-OSMIUM CARBONYL HYDRIDES UNDER GASEOUS HYDROGEN

Sheldon G. Shore, and Wen-Liang Hsu, both of Columbus, Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed Nov. 18, 1981, Ser. No. 322,447
Int. Cl.³ C07F 11/00, 15/02, 15/04, 15/06
U.S. Cl. 260—429 CY 40 Claims

1. A process for producing a tri-osmium heteronuclear metal carbonyl compound, which comprises establishing, in the presence of gaseous hydrogen, a reaction mixture comprising an electron deficient cobalt, nickel, iron, molybdenum or rhodium carbonyl, $H_2Os_3(CO)_{10}$ and a solvent which at least partially solubilizes at least one of said electron deficient carbonyl and said $H_2Os_3(CO)_{10}$, said reaction mixture being established in the substantial absence of molecular oxygen and water, and recovering said tri-osmium heteronuclear metal carbonyl compound from said reaction mixture.

4,389,348

SELECTIVE HYDROGENATION OF DINITRILE TO OMEGA-AMINONITRILE AND SUPPORTED RHODIUM-CONTAINING CATALYST THEREFOR

Steven E. Diamond, New Providence; Frank Mares, Whippany, both of N.J., and Andrew Szalkiewicz, New York, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 26, 1981, Ser. No. 314,902
Int. Cl.³ C07C 121/43
U.S. Cl. 260—465.5 R 10 Claims

1. A process for producing an omega-aminonitrile which comprises reacting at a reaction temperature of between about 20° and about 200° C. a dinitrile of the formula $N\equiv C—(CH_2)_n—C\equiv N$ with n being an integer from 1 to 10 with hydrogen at a partial pressure of at least about one atmosphere in the presence of:
(a) ammonia in a molar amount at least equal to the molar amount of dinitrile present,
(b) an aprotic solvent for the dinitrile, and
(c) a rhodium-containing catalyst prepared by hydrolyzing a rhodium(III) halide on a basic support selected from the group consisting of basic thoria, alkaline earth metal oxides and alkaline earth metal carbonates with strong aqueous base at a first temperature between about 50° C. and about 100° C. to produce a supported rhodium hydroxide, drying the supported rhodium hydroxide at subatmospheric pressure and a second temperature between about 50° C. and about 250° C., and hydrogenating the dried rhodium hydroxide at a third temperature between about 200° and about 400° C.; and recovering the omega-aminonitrile of the formula $N\equiv C—(CH_2)_n—CH_2—NH_2$ as the major product.

4,389,349

PROCESS FOR PREPARING OF N-PHOSPHENOMETHYL GLYCINE

Hung H. Cho, 303-8-4-1 Sec.3, Nanking E. Rd., Taipei, and Min F. Chen, No. 6, Lane 430 Sec. 1, Taichung-Kan Taichung, both of Taiwan

Filed Jan. 25, 1982, Ser. No. 342,723
Int. Cl.³ C07F 9/38
U.S. Cl. 260—502.5 F 10 Claims

1. A process for producing N-phosphenomethyl glycine comprising:
(a) Reacting an alkyl glycinate hydrochloride in an alcoholic solution with paraformaldehyde in the presence of hydrogen chloride, while removing water from the reaction system, to produce alkyl glycinate methylene chloride;
(b) Reacting said alkyl glycinate methylene chloride with a compound of the formula X_2P_2POH, wherein X represents a phenoxy or C_1–C_4 alcoxy radical, under anhydrous conditions and in the presence of an acid absorber to form a di-substituted phosphenomethyl alkyl glycinate and a chloride salt which is removed;
(c) Saponifying said di-substituted phosphenomethyl alkyl glycinate at elevated temperature with sodium hydroxide to form a sodium salt thereof; and
(d) acidifying said salt to form N-phosphenomethyl glycine.

4,389,350

PREPARATION OF O,S-DIALKYL PHOSPHOROAMIDOTHIOATES

Jack J. Lonsinger, Liberty, and Chester W. Halbleib, Holt, both of Mo., assignors to Mobay Chemical Corporation, Kansas City, Mo.

Filed May 19, 1981, Ser. No. 265,046
Int. Cl.³ C07F 9/24
U.S. Cl. 260—989 9 Claims

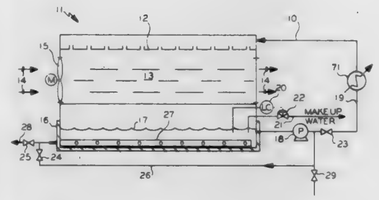
1. In the isomerization of an O,O-dialkyl phosphoroamidothioate to an O,S-dialkylphosphoroamidothioate by heating the O,O-dialkyl starting material in the presence of a catalyst, followed by recovery of the desired O,S-dialkyl end product, the improvement which comprises arresting the heating when about 40 to 70% of the O,O-dialkyl starting material has isomerized to O,S-dialkyl product, separating unreacted O,O-dialkyl starting material from O,S-dialkyl isomerization product, and further treating the O,O-dialkyl starting material to effect further isomerization.

4,389,351

REMOVAL OF SOLIDS FROM A COOLING TOWER BASIN

Sharon R. O'Brien, Old Ocean, Tex. (now by change of name from Sharon R. Fore), assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 22, 1981, Ser. No. 285,701
Int. Cl.³ B01D 47/00
U.S. Cl. 261—36 R 9 Claims



1. A method for removing contaminating substances in a cooling tower basin from the cooling tower basin which substances have been contained in the water fed to the cooling tower for cooling, said method comprising:
(a) passing an aqueous flush fluid in to the cooling tower basin through a perforated flush tube means which extends into the cooling tower basin at, in or near the bottom of said cooling tower basin,
(b) agitating and mixing substances in the cooling tower basin with the aqueous flush fluid of (a) to form a mixture comprising said substances and water, and
(c) withdrawing said mixture from the bottom of the cooling tower basin via said same perforated flush tube means.

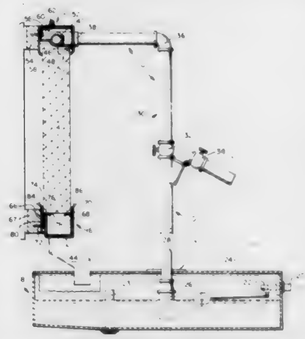
4,389,352

COOLING PAD SUPPORT ASSEMBLY

Hoy R. Bohanon, Sr., Muskogee, Okla., assignor to Acme Engineering & Manufacturing Corporation, Muskogee, Okla.

Filed Mar. 12, 1982, Ser. No. 357,756
Int. Cl.³ B01F 3/04
U.S. Cl. 261—106 10 Claims

1. An improved cooling pad support assembly including a gutter positioned below the cooling cells along a bottom stringer in an opening within the wall of the building, at least one cooling cell, a water conductor provided with a plurality of openings therealong and positioned above the cooling cells along a top stringer in an opening within the wall of the building, a top cover over the water conductor, and a conduit connecting the gutter to the top cover, the improvement comprising:
a plurality of gutter supports having a first horizontal flange extending in a direction away from the wall and positioned continuously along the bottom stringer, a plurality of gutter sections connected to the plurality of gutter supports and having a second horizontal flange extending in a direction toward the wall, a plurality of gutter connectors lining the plurality of gutter sections, the bottom of the cooling pads resting on the first and second horizontal flanges of the plurality of gutter supports and gutter sections; and
a plurality of top cover supports, a plurality of water conductor support brackets positioned in spaced relationship



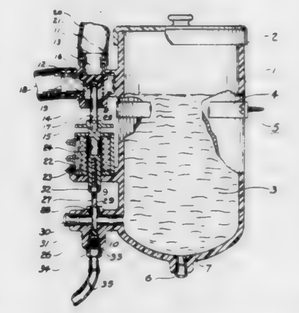
along the plurality of top cover supports, a plurality of top covers connected to the plurality of top cover supports to form a continuous wall above the water conductor, and a plurality of top cover connectors lining the plurality of top covers and positioned immediately above the water conductor, the vertical walls of the top cover supports and the top covers terminating at an angle in downwardly extending flanges that are spaced apart from each other a distance corresponding to the distance between the faces of the cells such that the top portions of the cells are held securely between the downwardly extending flanges.

4,389,353

HUMIDIFYING SYSTEM FOR MOBILE VEHICLES

James T. Gates, 1611 Kirkley Rd., Columbus, Ohio 43221

Division of Ser. No. 258,642, Apr. 29, 1981, Pat. No. 4,346,048.
This application Jul. 2, 1982, Ser. No. 394,519
Int. Cl.³ B60H 3/02
U.S. Cl. 261—130 10 Claims



1. Apparatus for controlling the humidity of the passenger compartment of a vehicle, in combination:
a container for holding water, said container including an

upper opening for filling purposes and two lower openings for discharge purposes,

when in operative condition:

(a) the upper opening being closed by a lid which seals the container in fluid tight condition,

(b) the first of said lower openings being a drain opening having means therein to prevent both water from discharging and air from entering, and

(c) the second of said lower openings leading into a passage.

said passage including a valve seat, a valve member for sealing against said seat in fluid tight arrangement, said valve member being mounted on a common stem with a reciprocal plunger, said plunger being a part of an actuator,

said actuator being controlled by a humidity sensing device and powered by electrical current from the electrical system of said vehicle,

a hose member leading from the passage downstream of the valve seat to a port into a heating vessel

the passage, hose, port and heating vessel being configured to allow water to flow by gravity from the container to the vessel and air to flow from said vessel to the container to relieve the vacuum formed by the discharge of water from the fluid tight container when said valve member is in open position,

a vapor outlet tube leading from the vessel to the interior of the passenger compartment whereby water vapor generated by said heater will exit the vessel and flow to the compartment until the humidity sensing device deactivates the electrical system when a predetermined humidity level has been reached in the compartment.

4,389,354

HEATER FOR DEICING CARBURETORS

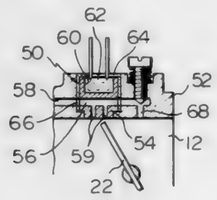
Haruo Endou, Ashigarakami, and Masao Ishizuka, Odawara, both of Japan, assignors to Mikuni Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1981, Ser. No. 324,029

Claims priority, application Japan, Dec. 1, 1980, 55-170962[U]

Int. Cl.³ F02M *17/50*

U.S. Cl. 261—142 **8 Claims**



1. In a carburetor for an internal combustion engine including a housing with an intake passage, a throttle valve in said intake passage, a pilot fuel passage communicating with a fuel chamber and a by-pass port or ports branching from said pilot fuel passage and opening to said intake passage at a location adjacent said throttle valve, the improvement comprising electrical heating means disposed in said housing, said electrical heating means comprising:

a by-pass block mounted in said housing, the by-pass port or ports being formed in said by-pass block and the pilot fuel passage running through said by-pass block;

a heating element disposed within said by-pass block adjacent the by-pass port or ports; and

heat-insulating material in intimate contact with and surrounding said heating element except for the surface of said heating element facing the by-pass port or ports, said surface being free from contact with said heat insulating material.

4,389,355

SINTERING UO_2 AND OXIDATION OF UO_2 WITH MICROWAVE RADIATION

Thomas A. Thornton, and Veldon D. Holaday, Jr., both of Lynchburg, Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jul. 23, 1981, Ser. No. 286,403

Int. Cl.³ G21C *21/00*

U.S. Cl. 264—0.5 **15 Claims**

1. A method for preparing nuclear fuel pellets comprising the steps of:

(a) blending a predetermined quantity of uranium dioxide and organic binder powders;

(b) shaping and pressing the blended mixture into pressed pellet compacts;

(c) heating and sintering the compacts in a microwave induction furnace in a reducing atmosphere;

(d) holding the compacts at the sintering temperature in the reducing atmosphere for a predetermined time;

(e) cooling the compacts to approximately room temperature while maintaining the reducing atmosphere; and

(f) grinding the compacts to the desired finished pellet product.

11. The method according to claim **1** further including the step of adding a predetermined quantity of U_3O_8 powder for blending with said uranium dioxide and organic binder powders of step (a).

4,389,356

SULFUR PRILLING

John T. Higgins, Ladysmith, Canada, assignor to Cominco Ltd., Vancouver, Canada

Continuation-in-part of Ser. No. 283,319, Jul. 13, 1981, abandoned. This application Jun. 14, 1982, Ser. No. 388,394

Claims priority, application Canada, Apr. 29, 1982, 381261

Int. Cl.³ B01J *2/04*

U.S. Cl. 264—9 **19 Claims**

1. A process for the manufacture of particulate sulfur wherein molten sulfur is fed to spray means from which said molten sulfur emanates as a spray of molten sulfur, and said spray is formed into particulate solid sulfur, said process comprising feeding molten sulfur to said spray means at a temperature at least one Celcius degree above the melting temperature of sulfur, said spray means having at least one orifice; forming a spray of molten sulfur at said orifice; vibrating said spray means at a frequency in the range of about 0.2 to 30 cycles per second; forming said spray of molten sulfur into hard spherical particulate sulfur in a current of cooling gas; and recovering said particulate sulfur, whereby the flow of molten sulfur through the orifice is maintained at a uniform, steady rate of flow.

4,389,357

METHOD FOR PREPARING THERMOSETTING RESINS

Richard S. Chu, Worthington, and Maher L. Mansour, Columbus, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Jun. 26, 1981, Ser. No. 277,724

Int. Cl.³ B28B *11/16*

U.S. Cl. 264—40.1 **4 Claims**

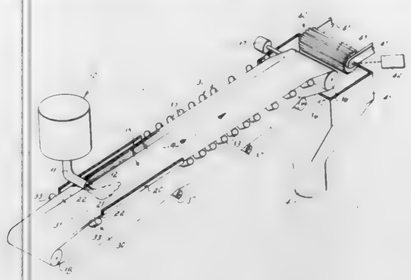
1. The method of preparing a thermosetting resin for subsequent molding operations comprising the steps of,

pouring a partially reacted batch of resin onto a continuously moving belt,

driving said belt at a lineal speed in relation to the speed of the pour to create a layer of resin on said belt which is approximately 2 to 4 inches thick, the layer being thin enough to permit said resin to cool reasonably rapidly to stop the thermosetting reaction well short of completion,

stopping said belt after said complete batch of resin has been poured onto it until said batch has cooled to approximately room temperature,

restarting said belt after said batch has cooled and solidified,



and chopping said solidified batch into chunks at the downstream end of said conveyor.

4,389,358

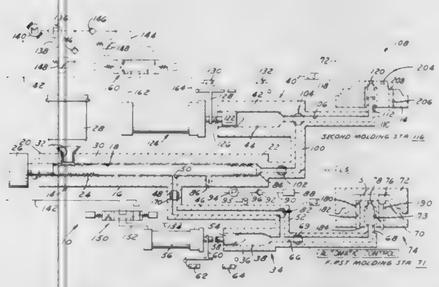
METHOD AND APPARATUS FOR MAKING AN INTEGRAL STRUCTURAL CELLULAR AND NON-CELLULAR PLASTIC OR RESINOUS ARTICLE WITH A SMOOTH OUTER SURFACE

James W. Hendry, East Detroit, Mich., assignor to KMMCO Structural Foam, Inc., East Detroit, Mich.

Filed Jun. 22, 1981, Ser. No. 276,443

Int. Cl.³ B29D *27/00*; B29F *1/05, 1/10*

U.S. Cl. 264—45.1 **18 Claims**



1. A method of making a composite structural homogeneous foam resinous or plastic article having (a) a small, dense, homogeneous or non-cellular relatively thin injection compression molded plastic liner on the outer surface and formed in a mold assembly at a first molding station and (b) a foam or cellular relatively thicker injection molded inner plastic structure or core formed in a mold assembly supporting the outer plastic liner at a second molding station and formed integral with said liner to complete the plastic article comprising the steps of:

(a) transferring a homogeneous or non-cellular resinous or plastic material from a plasticating extruder means into a first injection chamber;

(b) transferring a foamable cellular resinous or plastic material from a plasticating extruder means into a second injection chamber;

(c) establishing communication by a passageway having a first valve between said first injection chamber and a first mold assembly having a movable upper mold part and a stationary lower mold part forming the first cavity at a first molding station; said movable upper mold part being adapted to open the mold assembly and form a gap opening therebetween;

(d) opening said first valve and injecting the non-cellular plastic material into the first cavity of the first mold assembly when the gap opening is provided therein;

(e) applying a compressive force to the first mold assembly at said first molding station to close the gap opening of said first mold assembly and to distribute the non-cellular plastic material uniformly throughout said first cavity to form the non-cellular relatively thin outer molded plastic liner;

(f) transferring the movable upper mold part carrying the formed non-cellular relatively thin outer molded liner to a second molding station where the aforesaid upper mold part forms with another stationary lower mold part a second mold assembly which is closed and having a second mold cavity therein which contains in the upper part thereof the previously molded liner;

(g) establishing communication by a passageway having a second valve between said second injection chamber and the second mold cavity at the second molding station;

(h) opening said second valve; and

(i) injecting the foamable cellular plastic material from said second injection chamber into said second mold cavity to distribute the foamable cellular plastic material throughout said second mold cavity to form the cellular relatively thicker inner structure provided with said non-cellular plastic liner on the outer surface of the plastic article.

4,389,359

METHODS OF MAKING ASBESTOS-FREE, GLASS FIBRE REINFORCED, CEMENT COMPOSITE PRODUCTS AND THE PRODUCTS OF SUCH METHODS

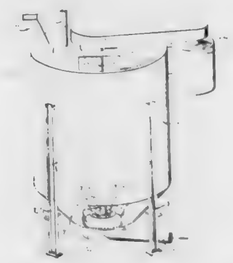
William H. Brunt, Manchester, and Kenneth C. Thatcher, Wigan, both of England, assignors to Tegral Technology Limited, Dublin, Ireland

Filed Mar. 17, 1981, Ser. No. 244,579

Claims priority, application Ireland, Mar. 18, 1980, 552/80

Int. Cl.³ C04B *35/58*

U.S. Cl. 264—69 **18 Claims**



1. A method of making an asbestos-free, fiber reinforced, cement composite product using a Magnani-type asbestos-cement machine wherein a fiber-cement slurry is deposited from a reservoir by a slurry distributor onto a water-permeable web, water is drained from the slurry through the web and thereafter the composite product is cured, the improvements which comprise

(a) substituting glass fiber for the asbestos;

(b) mixing cement and water to form a fiber free flowable slurry in a high shear mixing apparatus;

(c) mixing said fiber free flowable slurry with glass fiber by feeding the fiber onto an exposed surface of the slurry as the slurry flows along a conduit and then changing the flow path of the slurry so that said exposed surface becomes covered by a substantial depth of slurry whereby the glass fiber is incorporated into the slurry and completely surrounded by the slurry; and

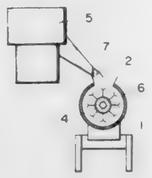
(d) feeding the slurry from step (c) to a reservoir from which it is delivered to the slurry distributor.

4,389,360

METHOD OF FORMING A PROTECTIVE COATING ON A LONG LANCE TO BE IMMERSED IN MOLTEN METAL

Katsuhiko Noro; Yusei Nagaki; Shinpei Sasaki, all of Tokai, and Sakae Kumagai, Chita, all of Japan, assignors to Nippon Steel Corporation, Tokyo and Yoshikawa Kogyo Co., Ltd., Fukuoka, both of, Japan

Filed Dec. 10, 1980, Ser. No. 215,038
Claims priority, application Japan, Dec. 15, 1979, 54-162992
Int. Cl.³ B28B *1/08*
U.S. Cl. 264—71 **6 Claims**



1. A method of forming a protective coating on a long lance adapted to be immersed in molten metal, said method comprising the steps of:

providing a long lance having extending therefrom, around the area thereof to be coated, reinforcing members comprising studs, metal gauze or reinforcing bars;

providing an annular mold having in a peripheral portion thereof at least one inlet port having a width greater then the outer diameter of said long lance;

positioning said annular mold on its side so that said inlet port faces upwardly;

positioning said long lance in said annular mold such that there is provided between said mold and said lance a clearance that corresponds to the required thickness of the coating to be formed, with said reinforcing members extending into said clearance;

providing a flowable coating material made of a blend of a castable refractory and of heat-resistant metal fibers and aggregates as reinforcing materials;

casting said flowable coating material through said clearance, while avoiding substantial downward settling of said reinforcing material, and thereby forming on said lance a substantially uniformly dense coating of said coating material; and

solidifying and drying said coating.

4,389,361

PROCESS FOR MOLDING FIBER LOADED RUBBER COMPOUND

James W. Messerly, Stow, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Continuation-in-part of Ser. No. 206,519, Nov. 13, 1980, abandoned. This application Jul. 13, 1981, Ser. No. 282,764
Int. Cl.³ D04H *3/16*
U.S. Cl. 264—108 **11 Claims**

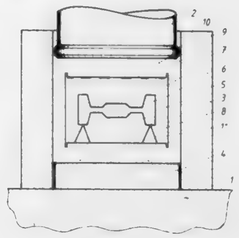
1. A process for the molding of a fiber loaded rubber compound comprising the steps of introducing chopped fibers having lengths with a range which averages between one and two inches into a rubber compound, milling said fibers and rubber compound to break up said fibers during milling to a length that ranges between 0.3 and 0.0625 inches while orientating said fibers in a longitudinal direction to form a fiber loaded rubber compound, placing said fiber loaded rubber compound into a mold, molding said fiber loaded compound in said mold to a desired shape, and removing said molded fiber loaded compound from said mold.

4,389,362

METHOD FOR MANUFACTURING BILLETS OF COMPLICATED SHAPE

Hans-Gunnar Larsson, Västeras, Sweden, assignor to ASEA Aktiebolag, Västeras, Sweden

Filed Apr. 22, 1981, Ser. No. 256,521
Claims priority, application Sweden, Apr. 25, 1980, 8003138
Int. Cl.³ B22F *1/00*
U.S. Cl. 264—111 **9 Claims**



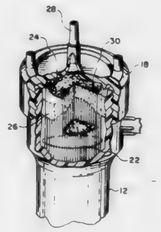
1. A method for manufacturing a metal billet from a metal powder charge which includes the steps of enclosing the metal powder charge in a first compressible metal capsule, placing the first capsule containing the metal powder charge in a second compressible capsule, filling the space between the first capsule and the second capsule with a pressure-transmitting medium which will become viscous at a certain compacting temperature which is at least equal to the bonding temperature of the powder charge, heating the second capsule and its contents at least to said compacting temperature, placing the so-heated second capsule in a press chamber, surrounding the second capsule while in the press chamber with a readily deformable thermally insulating substance in powder form, and inserting a piston into the press chamber to generate a compacting pressure therein to produce compression of the second capsule and a compression of the first capsule and thus effect a bonding and compaction of the powder charge in the first capsule to provide the desired billet.

4,389,363

METHOD OF POTTING MICROPOROUS HOLLOW FIBER BUNDLES

Susan C. Molthop, Mundelein, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 3, 1980, Ser. No. 203,304
Int. Cl.³ B22D *11/126*
U.S. Cl. 264—135 **20 Claims**



1. The method of potting the ends of capillary tubing having microporous walls, which comprises impregnating the ends of said tubing with a curable, fluid sealant, curing said sealant, and thereafter transversely cutting through the sealant-impregnated ends of said tubing to expose an open bore of said tubing

surrounded on its exterior by cured sealant, the improvement comprising, in combination:

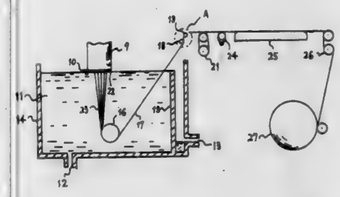
prior to impregnating said tubing ends in sealant, filling the micropores in the walls of said tubing with a liquid capable of entering said micropores, whereby air in the bore of said tubing cannot migrate outwardly through said micropores in the walls as the sealant impregnates the tubing ends.

4,389,364

METHOD OF MAKING THICK-AND-THIN FIBERS

Tadakazu Endo, and Shigemitsu Saitoh, both of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 100,974, Dec. 6, 1979, Pat. No. 4,340,631. This application Jul. 20, 1981, Ser. No. 284,829
Int. Cl.³ D01D *5/20*
U.S. Cl. 264—167 **6 Claims**



1. In a method for producing thick-and-thin fibers having a thick-and-thin ratio of 4 to 50, defined as the ratio of the cross-sectioned area of the thick portion to that of the adjacent thin portion and having a fineness which changes gradually and periodically along the longitudinal direction thereof, the steps which comprise:

(1) continuously extruding molten fiber forming polymer through spinneret holes at a constant throughput;

(2) running the extruded filaments through a gap, the length of which is in the range of 0.1 to 6 millimeters and plunging said filaments into a liquid for solidification or coagulation thereof;

(3) vibrating the solidified or coagulated undrawn filaments with a vibrating guide such that the vibrating frequency applied to the filaments is in the range of 100 to 10,000 cycles per minute and thereafter withdrawing them at a constant speed, and

(4) drawing the undrawn filaments to produce a drawn thick-and-thin yarn.

4,389,365

METHOD AND APPARATUS FOR STRIPPING MOLDED ROUND ARTICLES FROM MOLD

Peter Kudriavetz, Mattapoisett, Mass., assignor to Acushnet Company, New Bedford, Mass.

Filed Dec. 17, 1980, Ser. No. 217,522
Int. Cl.³ B29C *7/00*
U.S. Cl. 264—297.8 **11 Claims**

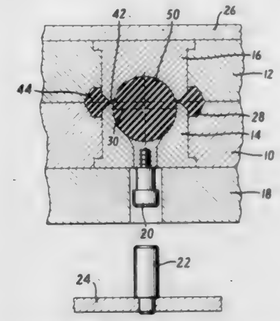
1. A method of molding objects having a curved outer surface comprising:

(a) forming said object in a mold device, said mold device comprising a first set of half molds positioned in a first mold plate and a second set of half molds positioned in a second mold plate, each said half mold in said first set having a cavity therein and each said half mold in said second set having a corresponding cavity which when placed together define the shape of said object and a mold parting line between the cavities, the cavity in each half mold of said first set having a cross-section at the mold parting line whose dimension is from about 0.5% to about 10% less than the dimension of the greatest cross-section of the object to be molded and forming thereby an undercut opening of said cavity,

(b) separating said first mold plate from said second mold plate whereby each molded object is retained in the first set of half molds by the undercut opening thereof;

(c) mechanically removing said molded object from said first set of half molds.

11. A mold device for the production of objects having curved outer surface, said mold device comprising a first set of lower half molds positioned in a first mold plate and a second set of half molds positioned in a second mold plate, each said



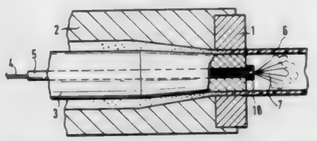
half mold having a cavity therein, the cavity of the corresponding half molds, when together, defining the shape of the object, the cavity in each half mold of said first set having a cross-section at the mold parting line of the mold halves whose dimension is in the range of approximately 0.5% to approximately 10% less than the dimension of the greatest cross-section of the object to be molded whereby upon separation of the mold plates the molded object will be retained in said first set of half molds by the undercut opening thereof, and said device further comprising means for mechanically removing each said object from each half mold of said first set.

4,389,366

PROCESS AND DEVICE FOR COOLING HOLLOW SYNTHETIC MATERIAL PROFILES

Gerhard V. Hoesslin, Düsseldorf, and Jurgen Hesse, Schorndorf, both of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Fed. Rep. of Germany

Filed Sep. 10, 1981, Ser. No. 300,935
Int. Cl.³ B29F *3/08*
U.S. Cl. 264—558 **7 Claims**



1. In a process for cooling hollow synthetic material profiles during extrusion by means of direct heat exchange with a cooling medium wherein the profiles are of small cross section, the process including the steps of

(a) using under-cooled liquid nitrogen under a pressure of 2 to 8 bar as the cooling medium;

(b) introducing the cooling medium into the interior of the hollow synthetic material profile;

(c) supplying the cooling medium via a boring in the arbor of the extrusion tool;

(d) forming as the cooling medium line a plastic capillary tube to and in the extrusion tool with the plastic being

selected from the group consisting of polyimide and PTFE and with the capillary tube having a maximum inside diameter of 1.2 mm; and

(e) enclosing the capillary tube in the insulation tube having a maximum outside diameter of 3 mm with the insulation tube outside diameter being of generally the same dimension as the arbor boring.

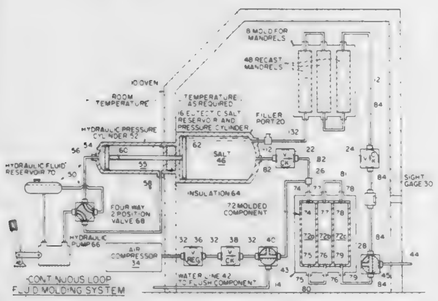
2. In an extrusion installation for extruding hollow synthetic profiles wherein the profiles are formed by an extrusion tube having an arbor and the profiles are of small cross section, a device for cooling the profiles during extrusion by means of direct heat exchange with a cooling medium, said device including a boring extending longitudinally through said arbor, an insulation tube having a maximum outside diameter of 3 mm being in said boring, said insulation tube outside diameter being of generally the same dimension as said boring, a capillary tube in said insulation tube and being open into the hollow interior of the profile, said capillary tube being made of a plastic material selected from the group consisting of polyimide and PTFE and having a maximum inside diameter of 1.2 mm, and means for supplying under-cooled liquid nitrogen into said capillary tube under a pressure of 2 to 8 bar.

4,389,367

FLUID MOLDING SYSTEM

Gordon F. Hudson, Huntington, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Sep. 30, 1981, Ser. No. 306,948
Int. Cl.³ B29C *1/06*
U.S. Cl. 264—570 **31 Claims**



1. An apparatus for forming components, each such component having one or more inner cavities, said apparatus comprising:

a molding fixture in which the component is contained during formation, said molding fixture having a fluid inlet port so arranged that, with the component contained in the molding fixture, each inner cavity of the component is in fluid communication with the fluid inlet port;

a reservoir in fluid communication with the fluid inlet port; and

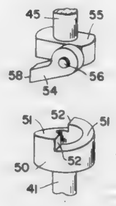
a quantity of eutectic salt partly contained in the reservoir and partly contained in the molding fixture in the form of a number of mandrels about which material forming the component is laid up, the number of mandrels being equal to the number of inner cavities in the component, said eutectic salt existing in either a solid or a molten state depending on its temperature, said eutectic salt in its molten state exhibiting, when compressed, a uniform hydraulic pressure over its containing surface.

4,389,368

FAILSAFE COOLANT PUMP FOR NUCLEAR REACTOR

Richard J. Duncan, 20800 Homestead Rd., Apt. 3C, Cupertino, Calif. 95014

Filed Aug. 15, 1980, Ser. No. 177,994
Int. Cl.³ G21C *9/00*
U.S. Cl. 376—283 **4 Claims**



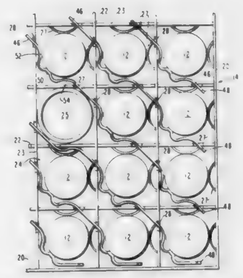
1. In a pressurized fluid nuclear reactor system having a fluid cooled reactor core contained within a reactor vessel, means for delivering the fluid coolant to the reactor core including a centrifugal type coolant pump having a housing and a shaft projecting from said housing, said shaft driven by a drive shaft in vertical end-to-end coaxial relation and means for removing the fluid coolant from the reactor core including a steam generator, said coolant pump delivering coolant from said steam generator to said reactor core and back to said steam generator in a continuous cycle, the improvement consisting a unidirectional drive means in the form of a ratchet means acting along the coaxial axes of said pump shaft and said drive shaft in a plane interposed between the ends of said pump shaft and said drive shaft and exterior of said pump housing enabling said coolant pump to operate at a greater rotational speed than said drive shaft in the pumping direction only said ratchet means comprising a ratchet block rigidly fixed on the end of one of said drive shaft and said pump shaft with a ratchet tooth projecting toward the end of the other of said drive shaft and said pump shaft, a ratchet arm mounting block rigidly fixed on the end of the other of said drive shaft and said pump shaft, a ratchet arm engaging said ratchet tooth upon relative rotation of said drive shaft with respect to said pump shaft in the pumping direction only, and means mounting said ratchet arm on said ratchet mounting block for movement only along said coaxial axes of said drive shaft and said pump shaft.

4,389,369

BI-METALLIC GRID FOR A NUCLEAR REACTOR FUEL ASSEMBLY

William J. Bryan, Penn Township, Westmoreland County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 11, 1980, Ser. No. 176,626
Int. Cl.³ G21C *3/34*
U.S. Cl. 376—442 **5 Claims**



1. An assembled grid for holding fuel rods and control rod guide tubes in spaced relationship with each other in a nuclear reactor fuel assembly comprising:

a first set of straps interleaved at right angles to each other to form multiple openings of square configuration;

a second set of straps interleaved at right angles to each other to form multiple openings of square configuration and of a size the same as the openings formed by the first set of straps;

said second set of straps being mounted on top the first set of straps in a manner wherein the openings in each of said sets are in axial alignment with each other to form multiple cells;

a pair of dimples projecting inwardly into a predetermined number of said cells adapted to receive nuclear fuel rods therein from the cell walls formed by two adjacent straps in the first and second strap sets, thus providing two sets of vertically aligned dimples in each cell; the other two walls of said predetermined number of cells other than those cells on the periphery of said grid each having a slot therein at a location spaced from the corners of each said cell;

a peripheral strap surrounding said top and bottom sets of straps, the ends of said interleaved straps being bonded to the peripheral strap to thus hold the top and bottom strap sets in immovable relationship with respect to each other;

multiple spring means extending across said cells from one side of the assembled grid to the other, each of said spring means being unitary and extending through a plurality of generally diagonally aligned contiguous cells through said slots in said other two walls and having a segment which biases a fuel rod adapted to extend through each of said predetermined number of cells into engagement with said dimples to provide at least five points of support to said fuel rod.

4,389,370

LOW GOLD CONTENT DENTAL ALLOY

Nicholas J. Skalabrin, 1004 Puget Dr., SE., Port Orchard, Wash. 98366

Filed May 6, 1981, Ser. No. 261,000
Int. Cl.³ C22C *5/06*
U.S. Cl. 420—505 **1 Claim**

1. An alloy especially designed to be used for inlays, onlays, crowns and bridges, wherein by weight the Gold content is 10%, the Palladium 22%, the Silver 59%, the Tin 8%, and the Zinc 1%.

4,389,371

PROCESS FOR INHIBITING THE CORROSION OF ALUMINUM

Joe C. Wilson, Woodhaven; Stephen E. Eisenstein, Oak Park; Jerrold F. Maxwell, Trenton, and Stanley T. Hirozawa, Birmingham, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

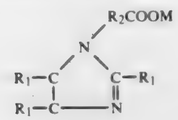
Continuation of Ser. No. 75,689, Sep. 14, 1979, abandoned. This application Jul. 8, 1981, Ser. No. 281,516
Int. Cl.³ C23F *11/14, 11/16, 11/18*
U.S. Cl. 422—15 **4 Claims**

1. A process for inhibiting the corrosion of aluminum in contact with aqueous liquids, excluding alkali metal nitrates and nitrites, said process comprising adding to said liquid an effective amount of

(A) a conventional corrosion inhibitor selected from the group consisting of at least one of the alkali metal carbonates, borax, the alkali metal dichromates, the alkali metal silicates, phosphorus acid, phosphoric acid, an alkali metal tungstate, an alkali metal salt of benzoic or toluic acid, an alkali metal salt of a phenol, benzotriazole, tolyltriazole, an alkanolamine, and an organo-silicone compound;

(B) about 0.5 percent to about 15 percent by weight of an alkanolamine phosphate; and

(C) about 0.03 percent to about 2 percent by weight of a heterocyclic nitrogen compound having the formula:



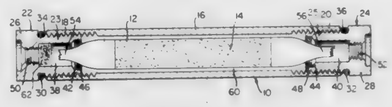
wherein R_1 is individually selected from hydrogen or a monovalent radical selected from the group consisting of straight or branched chain monovalent alkyl of 1 to 18 carbon atoms, monovalent cycloalkyl or alkoxy radical having up to 18 carbon atoms, a monovalent alkylene radical of 1 to 18 carbon atoms, monovalent aryl radical, a monovalent alkylaryl having 1 to 18 carbon atoms in the alkyl portion thereof, or wherein each R_1 is combined into a single divalent alkyl radical having 2 to 18 carbon atoms; and wherein R_2 is a divalent radical selected from the group consisting of at least one of an alkyl radical or an alkoxy radical each having 2 to 18 carbon atoms and wherein said alkoxy radical is derived from an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide, butylene oxide, tetrahydrofuran, and mixtures thereof; and wherein M is an alkali metal.

4,389,372

PORTABLE HOLDER ASSEMBLY FOR GAS DETECTION TUBE

Hill S. Lalin, 10 Bonita Ter., Wayne, N.J. 07470

Filed Jul. 13, 1981, Ser. No. 282,436
Int. Cl.³ G01N *1/22;* **B01L** *9/00*
U.S. Cl. 422—88 **8 Claims**



1. In combination, a portable gas detection tube holder assembly and at least a first and second gas detection tube supported by said holder assembly in a series or parallel arrangement relative to one another with each gas detection tube having an elongated body within which a chemical sorbent material is stored, a tapered neck portion at opposite ends of said elongated body and an opening in each neck portion adapted for drawing ambient gas through said sorbent material, said gas detection tube holder assembly comprising:

a clear hollow tubular shell surrounding each gas detection tube in a spaced apart relationship with each shell having opposite open ends;

end fitting means for closing the open ends of each shell to form a closed chamber between each shell and each gas detection tube with each end fitting means having a longitudinal bore for communicating with the opening in each neck portion of each gas detection tube; means for coupling in series or parallel arrangement said first and second gas detection tubes and said respective tubular shells to one another through an end fitting means for each gas detection tube such that said first gas detection tube has one open neck portion communicating with one open neck portion in said second gas detection tube; and an O-ring mounted in each end fitting means in surrounding engagement about the tapered neck portion of each gas detection tube at each opposite end thereof such that each gas detection tube is suspended between a pair of O-rings in longitudinal alignment with the longitudinal bore of the end fitting means and for sealing off the open ends of each gas detection tube from the surrounding closed chamber.

4,389,373

HEATED ION CURRENT SENSOR FOR HIGH TEMPERATURES

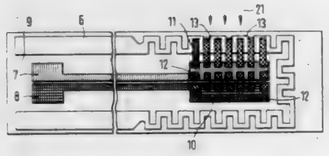
Ernst Linder, Mühlacker; Klaus Müller, Tamm, and Helmut Maurer, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,718

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1980, 3005928

Int. Cl.³ G01N *27/12*

U.S. Cl. 422—98 **10 Claims**



1. Sensor for detecting ion currents in mixtures of hydrocarbon substances comprising

an essentially rectangular substrate plate (**1**) having a major axis and a minor axis, said plate having an insulated surface;

two layer-like electrodes (**3**, **4**; **7**, **8**; **16**, **17**) located on one major surface of the substrate plate inwardly of marginal regions of the substrate plate, along the major axis, spaced from each other, and having a measuring region on a portion thereof;

a heater (**2**, **6**, **15**) located adjacent the electrodes to heat at least the measuring region;

and gas flow guide means (**11**, **12**; **18**) comprising ridges projecting from the major surface of the substrate and leading from a marginal region thereof in the direction along the minor axis towards the measuring region of the electrodes to guide gas, the ionization of which is to be measured, to the measuring region of said electrodes.

4,389,374

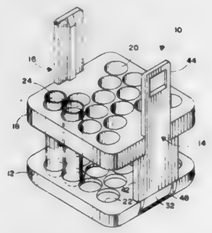
CENTRIFUGE TUBE HOLDER

John H. Sutton, Belmont, and Rebecca J. Woodruff, Fremont, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 29, 1981, Ser. No. 278,772

Int. Cl.³ B01L *9/06*

U.S. Cl. 422—104 **1 Claim**



1. A centrifuge tube holder assembly comprising:

a base having a specified perimeter;

a top having a perimeter the same shape and size as said specified perimeter of said base;

a pair of side panels detachably connected to said base and top to secure and maintain said top and bottom in a spaced apart relationship, each of said side panels having an upwardly extending handle-arm for holding or securing said assembly;

a tongue section on opposite sides of said base and a loop on the bottom of each of said pair of side panels, said loops of said pair of side panels receiving said tongue sections of said base, said tongue sections being recessed within said base, said side panels being within said specified perimeter when attached to said base;

at least two connecting pins on each of said pair of side panels and at least two holes on said top for receipt of said connecting pins for securing said top to said side panels, said top having slots to receive said side panels, said side panels being within said perimeter of said top when attached to said top, said tongue sections and said slots acting cooperatively with said side panels so that said specified perimeter is not enlarged by the attachment of said side panels to said base and said top; and

means in said top and base for locating and positioning centrifuge tubes.

4,389,375

APPARATUS FOR PRODUCING A REACTION MIXTURE OF FLUID COMPONENTS FORMING A FOAM OR SOLID MATERIAL

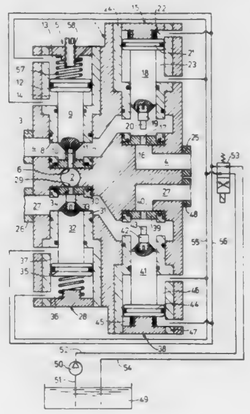
Ferdinand Proksa, Leverkusen; Hans-Michael Sulzbach, Königswinter; Reiner Raffel, Siegburg, and Ferdinand Althausen, Neunkirchen-Seelscheid, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Hennecke GmbH, Leverkusen, Fed. Rep. of Germany

Filed May 11, 1981, Ser. No. 262,017

Claims priority, application Fed. Rep. of Germany, May 28, 1980, 3020203

Int. Cl.³ B01J *14/00*

U.S. Cl. 422—111 **4 Claims**



1. An apparatus for producing a reaction mixture of fluid components forming a solid or foam material and optionally containing filler, the apparatus comprising:

storage vessels for the components, feed pipes which connect the storage vessels via metering pumps to a mixing chamber arranged in a mixing head into which said feed pipes open via injectors; an outlet opening arranged in the mixing chamber; and return pipes with associated shut-off members; the injectors and the shut-off members being in the form of nozzles comprising needles which cooperate with replaceable nozzle seats containing the nozzle orifices; a separate hydraulic positive control piston and chamber being associated with each nozzle, control means, associated with each of said pistons and chambers, adapted to provide that all the nozzles are closed for a short time interval during the changeover from mixing condition to fluid circulation condition and from fluid circulation condition to a mixing condition, wherein

the needles of the nozzles comprise control pins which are designed to sealingly engage the nozzle orifices, the control pins never traveling more than a distance equal to the length of the nozzle orifices back from the nozzle orifices when the nozzles are open, and the nozzles are designed to be simultaneously operated.

4,389,376

APPARATUS FOR THE PREPARATION OF SLAKED LIME SOLUTION

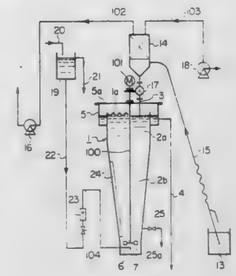
Sadao Kojima, 4-27-4, Mejirodai Hachioji-shi, Tokyo; Masaaki Shimada, 15-1, Sanuka-machi 2-chome, Iwaki-shi, Fukushima-ken; Kunio Sakai, 4-1, Sagiuchi, Nishiki-machi, Iwaki-shi, Fukushima-ken, and Katuo Horie, 59, Odakatakamatsu, Nakoso-machi Iwaki-shi, Fukushima-ken, all of Japan

Division of Ser. No. 134,051, Mar. 26, 1980. This application Jan. 8, 1981, Ser. No. 223,286

Claims priority, application Japan, Mar. 28, 1979, 54-36614; Sep. 21, 1979, 54-121665; Nov. 1, 1979, 54-141888; Nov., 1979, 54-141889; Nov. 1, 1979, 54-141890

Int. Cl.³ B01F *7/18*

U.S. Cl. 422—228 **7 Claims**



1. An apparatus for the preparation of a clear substantially saturated calcium hydroxide solution from slaked lime and water comprising:

a vessel having a lower portion formed by an inverted truncated cone having a closed bottom which defines a bottom of the vessel;

an upper portion formed by a cylinder having a bottom connected to a top of the inverted truncated cone, and having an open top containing a plurality of periodic indentations around the circumferential edge;

means for removing a substantially clear saturated calcium hydroxide solution from the top of the vessel in an overflowing manner over the circumferential edge;

longitudinally extending baffle means positioned axially around the circumference of the inverted truncated cone to cause a slurry in the lower portion to move upwardly in hindered flow without particle entrainment in the upper portion;

inlet means for slaked lime;

inlet means for water positioned in close proximity to the bottom of the vessel, the inlet means directing the flow of water in a downward direction toward the bottom of the vessel; and

means for providing agitation positioned near the bottom of the vessel.

4,389,377

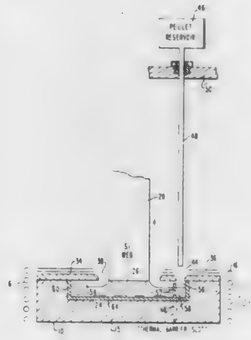
APPARATUS FOR GROWING A DENDRITIC WEB

Charles S. Duncan, Pittsburgh; Paul A. Piotrowski, Monroeville; Maria E. Skutch, Trafford, and James P. McHugh, Pittsburgh, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 10, 1981, Ser. No. 282,334

Int. Cl.³ C30B *15/10*

U.S. Cl. 422—246 **12 Claims**



1. In a melt system for growing a dendritic web, and the like, comprised of a heated susceptor including a body within which a crucible is mounted, said crucible containing a melt of material from which the web is grown and including means for separating the interior of the crucible into a growth region and a replenishment region, the improvement comprising means in the body of said susceptor providing a region of thermal discontinuity in relatively close proximity to said crucible separating means whereby heat transfer in said susceptor body is modified to provide a non-linear change in temperature gradient between the growth and replenishment regions.

4,389,378

PROCESS USING SULPHATE REAGENT FOR RECOVERING VANADIUM FROM COKES DERIVED FROM HEAVY OILS

Lois L. McCorriston, Mississauga, Canada, assignor to Gulf Canada Limited, Toronto, Canada

Continuation of Ser. No. 198,502, Oct. 20, 1980, abandoned. This application Dec. 24, 1981, Ser. No. 334,104

Int. Cl.³ C01G *31/00*

U.S. Cl. 423—68 **4 Claims**

1. A process for the recovery of vanadium from a sulphur-containing material of the group consisting of coke derived from oil and ash obtained from said coke, wherein said hydrocarbonaceous oil is heavy oil, in-situ oil sands bitumen or mineable oil sands bitumen, comprising:

(a) mixing said material with an alkali metal sulphate reagent in a finely divided form,

(b) heating the mixture in the presence of an oxidizing atmosphere at an elevated temperature below the fusion point of the reagent,

(c) contacting the resulting solid residue with water, thereby forming a leach solution consisting essentially of water and sodium vanadate compounds, and
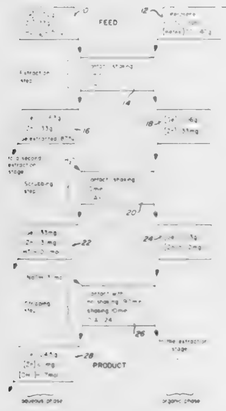
(d) recovering the vanadium values from the leach solution, the amount of said alkali metal sulphate being sufficient to convert the vanadium values present in said material into alkali metal vanadate and to maintain said leach solution substantially free of reagent.

4,389,379

PROCESS FOR SELECTIVE LIQUID-LIQUID EXTRACTION OF GERMANIUM

Denise Rouillard epouse Bauer, Le Raincy; Gerard Cote, Paris, both of France; Paolo Fossi, Elancourt, Italy, and Bruno Marchon, Paris, France, assignors to Societe Miniere et Metallurgique de Penarroya, Paris, France

Filed Aug. 15, 1980, Ser. No. 178,583
Int. Cl.³ C01G *17/00*
U.S. Cl. 423—89 **13 Claims**



1. A process for selective liquid-liquid extraction of germanium from an aqueous acidic liquor containing, besides germanium, at least one other metal selected from the group consisting of cadmium, cobalt and nickel, said process comprising,

adjusting the pH of said aqueous liquor to a value lower than 2 before extracting germanium from said aqueous liquor,

extracting germanium from said aqueous liquor by contacting said liquor with an organic medium which contains a diluent and an extractant, said diluent being immiscible with said aqueous liquor, said extractant being an oxine derivative having a long hydrocarbon chain containing 8 to 16 carbon atoms, said extracting step forming an aqueous phase containing the major part of said at least one other metal and an organic phase containing the major part of germanium from said aqueous liquor, and

stripping germanium from said organic phase by contacting said phase with an alkaline medium, said stripping step forming an aqueous phase containing the major part of germanium from said aqueous liquor and an organic phase containing said diluent and said extractant.

4,389,380

MULTIPLE-STAGE THERMAL BENEFICIATION PROCESS FOR PHOSPHATE ORES

Kenneth L. Parks, Plant City, Fla., assignor to Agrico Chemical Company, Tulsa, Okla.

Filed Jan. 12, 1982, Ser. No. 338,868
Int. Cl.³ C01F *1/00, 5/00, 11/00;* **C01B** *25/26*
U.S. Cl. 423—167 **9 Claims**

1. A method for calcining phosphate rock, comprising:

(a) introducing phosphate rock to be calcined into a first stage;

(b) heating said phosphate rock in said first stage in the presence of excess oxygen to a temperature of from about 1140° F. to about 1200° F. to destroy substantial quantities of organic carbon impurities in said phosphate rock but not to produce an undesirable quantity of sulfides;

(c) introducing the phosphate rock into a second stage afer it has been heated in said first stage; and

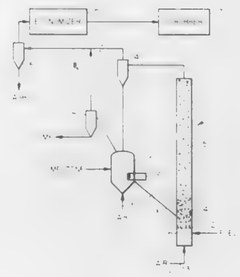
(d) heating said phosphate rock in said second stage in the presence of excess oxygen to a temperature of about 1180° F. to about 1330° F. to destroy most of the remaining organic carbon impurities but without detrimentally diminishing the reactive surface area of the phosphate rock.

4,389,381

LIMESTONE CALCINATION

Salvatore T. Dinovo, Columbus, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Filed Sep. 19, 1980, Ser. No. 188,932
Int. Cl.³ C01F *11/06*
U.S. Cl. 423—175 **4 Claims**



1. A method for producing a finely-divided lime powder substantially free of ash from a limestone raw material which comprises

(A) generating heat from the combustion of fuel in a primary, entrained-bed combustor having relatively fine particles entrained in a primary fluidizing gas,

(B) transferring heat of combustion of the fuel to the fine, entrained-bed particles in the combustor,

(C) circulating at least a portion of the heated, fine, entrained-bed particles to an external, secondary fluidized bed,

(D) removing impurities from the portion of heated, fine, entrained-bed particles prior to entry in the secondary fluidized bed,

(E) introducing particulate limestone and a secondary fluidizing gas into the secondary fluidized bed such that the limestone comes into contact with the heated, fine, entrained-bed particles thereby heating the particulate limestone and decomposing it to particulate lime,

(F) recycling the relatively cool, fine, entrained-bed particles from the secondary fluidized bed to the primary entrained-bed combustor, and

(G) recovering the particulate lime from the secondary fluidized bed.

4,389,382

METHOD OF USING A SIMPLIFIED LOW COST CATALYST SYSTEM

Haren S. Gandhi, Farmington Hills, and Karen M. Adams, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

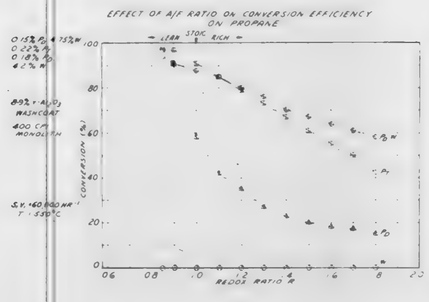
Filed Jul. 20, 1981, Ser. No. 284,763
Int. Cl.³ B01D *53/36;* **B01J** *23/68*
U.S. Cl. 423—213.5 **13 Claims**

1. In a process for treatment of exhaust gases from an internal combustion engine, the steps of:

burning a hydrocarbon fuel or a fuel containing hydrocarbons and alcohol blends in the internal combustion engine thereby to generate exhaust gases from the internal combustion engine containing various amounts of unburned hydrocarbons, carbon monoxide, and oxides of nitrogen depending upon operating conditions of the internal combustion engine; and

passing said generated exhaust gases over an improved catalyst, comprising:

a support medium for supporting a catalyst system, said support medium having both an upstream support portion over which exhaust gases initially flow and a downstream support portion over which exhaust gases flow



after passing over said upstream support portion thereof;

palladium on said upstream support portion of said support medium; and

tungsten on said downstream support portion of said support medium, said downstream support portion of said support medium being free of palladium.

4,389,383

REGENERABLE PROCESS FOR THE SELECTIVE REMOVAL OF SULFUR DIOXIDE FROM EFFLUENT GASES

Joseph E. Sokolik, Jr., Carmel; Alexander J. M. Kosseim, Rye, and Gilbert R. Atwood, Briarcliff Manor, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 153,458, May 27, 1980, abandoned. This application Dec. 2, 1981, Ser. No. 326,915
Int. Cl.³ C01B *17/00*
U.S. Cl. 423—243 **5 Claims**

1. In a process for removing sulfur dioxide from a mixture of gases wherein said mixture is contacted in an absorption zone with an amine solvent in aqueous solution to absorb SO_2 to form an SO_2 rich aqueous amine solution which is then passed to a stripping zone where SO_2 is removed from such aqueous amine solution to form a lean aqueous amine solution containing some SO_2 and heat stable salts which is recycled to the absorption zone the improvement comprising:

(a) using as the solvent an amine; having a boiling point below about 250° at one atmosphere;

(b) removing a portion of said lean aqueous amine being recycled to said absorption zone and passing said portion to a reaction zone;

(c) admixing said portion of lean aqueous amine with at least one alkali or alkaline earth oxide, hydroxide or carbonate in an amount such that at least one equivalent of metal cation is added per one equivalent of sulfur oxy anions present in said lean aqueous amine solution to form a heat stable solid precipitant;

(d) passing said reacted mixture to a separation zone which is at a temperature of less than about 140° C. and at a pressure less than 250 mmHg, and maintaining said mixture at said temperature and pressure, removing as an overhead vapor phase a solution containing mainly all water and amine which is recycled back to said absorption zone and collecting a solid bottom residue comprising essentially all sulfur oxy anion salts.

4,389,384

PROCESS FOR REDUCING PHOSPHATE ORE

Robert A. Hard, Laguna Beach, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed May 10, 1982, Ser. No. 376,335
Int. Cl.³ C01B *25/12, 25/16, 25/01, 25/02*
U.S. Cl. 423—304 **11 Claims**

1. A process for producing phosphorus pentoxide from phosphate ore comprising the steps of:

mixing phosphate ore with silica and solid carbonaceous material in amounts to produce a feed mixture having a CaO/SiO_2 mole ratio less than about 0.5;

forming the feed mixture into agglomerated feed particles;

heating the agglomerated feed particles, by exposure to radiation emanating from an oxidation zone to a temperature sufficient to reduce the phosphate in the agglomerated feed particles by reaction with the solid carbonaceous material to form elemental phosphorus vapors without substantial melting of the agglomerated feed particles; and,

providing sufficient oxygen-containing gas to cause oxidation of the elemental phosphorus vapor within the oxidation zone to produce phosphorus pentoxide and to heat the agglomerated feed particles.

4,389,385

PRODUCTION OF POROUS GELS AND CERAMIC MATERIALS

John D. F. Ramsay, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 733,151, Oct. 18, 1976, abandoned. This application Feb. 1, 1980, Ser. No. 117,766
Claims priority, application United Kingdom, Oct. 22, 1975, 43463/75; Jun. 18, 1976, 25497/76
Int. Cl.³ C01B *33/158;* **C01G** *25/02, 23/08;* **C01F** *7/02*
U.S. Cl. 423—338 **12 Claims**

1. A process for the production of a porous gel of an inorganic substance without hydrothermal treatment to enlarge the pores, which comprises adding solid primary particles of the substance, produced by a vapor phase condensation method, to a quantity of liquid sufficient to form a sol, and dispersing the solid primary particles therein to form a sol containing colloidal particles which are aggregates of the primary particles, and drying the sol to produce a porous gel having a porosity of at least 0.70 and with 70 percent of the pore volume contained within pores having a size in the range of ±25 percent of the mean.

5. A process as claimed in claim **1** wherein the solid primary particles are of alumina, or of silica, or of titania, or of zirconia.

4,389,386

HNCO MANUFACTURE BY CATALYTIC OXIDATION OF HCN WITH A PD DOPED AG CATALYST

Yoseph Feit; David R. Kilanowski, both of Stamford, and Kenneth E. Olson, Riverside, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 24, 1981, Ser. No. 305,058
Int. Cl.³ C01C *3/14*
U.S. Cl. 423—365 **3 Claims**

1. In the process for the manufacture of isocyanic acid by catalytic oxidation of hydrogen cyanide in the gaseous state at temperatures in the range from about 500° to about 800° C. with at least one-half mole of oxygen per mole of hydrogen cyanide, the improvement in which the catalyst comprises a metallic silver catalyst having palladium at the catalyst surface, in an amount effective to increase the catalytic activity of said catalyst in respect of conversion of said hydrogen cyanide.

4,389,387

METHOD FOR PREPARING CARBON FIBERS

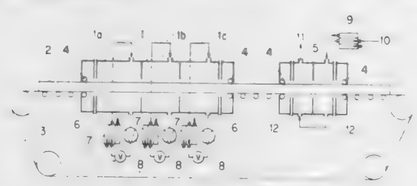
Tamotsu Miyamori; Hisatsugu Kaji; Iwao Kameyama, all of Iwaki, and Michio Takahashi, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 105,130, Dec. 19, 1979, Pat. No. 4,314,981. This application Sep. 18, 1981, Ser. No. 303,624

The portion of the term of this patent subsequent to Feb. 9, 1999, has been disclaimed.

Int. Cl.[3] **C01B** *31/07*

U.S. Cl. 423—447.7 **5 Claims**



1. A method for preparing carbon fibers from a pitch, wherein the pitch is spun into pitch fibers, the pitch fibers are treated with an oxidizing gas and the treated fibers are carbonized into the carbon fibers, said method comprising:

introducing the loaded pitch fibers on a net-belt conveyor into a infusibilizing furnace having at least two exposing chambers arranged in series of increasing temperature said exposing chambers having a temperature gradient of 5° to 100° C. per chamber in the direction of from the inlet to the outlet of said infusibilizing furnace;

exposing the introduced pitch fibers to a gaseous mixture of air and a gaseous oxidizing agent by passing said gaseous mixture between said introduced fibers at a temperature lower than the softening point of said pitch fibers by 5° to 50° C., said gaseous mixture is circulated at a velocity represented by the equation (1):

$$U_G \geqq 0.023\left[\frac{(\rho_B X H) + 10.6}{\theta^{0.7}}\right] \quad (1)$$

wherein U_G represents said velocity of said gaseous mixture in circulation in said infusibilizing furnace and is in a range of not less than 0.1 and not larger than 1.5 Nm/sec, ρ_B represents the packing density of said pitch fibers loaded on said net-belt conveyer and is in a range of not less than 30 and not larger than 300 kg/m^3, H represents the packing height of said pitch fibers loaded on said net-belt conveyer and is in a range of not less than 0.02 and not larger than 0.5 m and θ represents the time period of infusibilization in said infusibilizing furnace and is in a range of not less than 1 and not larger than 4 hours, within said infusibilizing furnace forcibly.

4,389,388

DESULFURIZATION OF PETROLEUM COKE

Charles P. Goforth, Tulsa, and John A. Hamshar, III, Owasso, both of Okla., assignors to Cities Service Company, Tulsa, Okla.

Filed Feb. 22, 1982, Ser. No. 351,051

Int. Cl.[3] **C01B** *31/02, 17/16;* **C10L** *9/04*

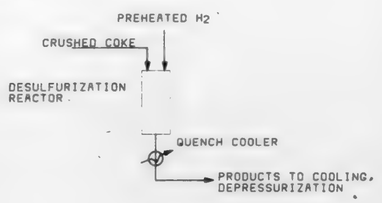
U.S. Cl. 423—461 **2 Claims**

1. A process for the desulfurization and devolatilization of petroleum coke comprising the serial steps of:

a. grinding the coke,

b. introducing the coke into a reactor,

c. contacting the coke with hydrogen, at a temperature varying from about 700° C. (1290° F.) to about 980° C. (1800° F.) and a hydrogen partial pressure varying from about 300 psig (21 kg/cm^2) to about 2000 psig (144 kg/cm^2), for a total reactor contact time of less than 60 seconds,



d. cooling the coke, and

e. removing the treated coke.

4,389,389

PROCESS FOR PREPARATION OF HIGH PURITY TELLURIUM

Santokh S. Badesha, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 2, 1982, Ser. No. 404,257

Int. Cl.[3] **C01B** *19/02*

U.S. Cl. 423—510 **20 Claims**

1. A process for the preparation of tellurium of high purity which comprises reacting tellurium dioxides, with a diol, and subjecting the resulting tellurium ester, subsequent to purification, to a reduction reaction.

16. A process for preparing tellurium in high purity which comprises reacting tellurium tetrachloride with an aliphatic alcohol in the presence of an alkoxide, corresponding to the alcohol, and subjecting subsequent to purification the resulting tellurium ester to a reduction reaction.

4,389,390

PROCESS FOR PRODUCING HYDROGEN PEROXIDE

Augustine I. Dalton, Jr.; Eugene J. Greskovich, and Ronald W. Skinner, all of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 195,828, Oct. 10, 1980, Pat. No. 4,336,238. This application Jan. 29, 1982, Ser. No. 344,235

The portion of the term of this patent subsequent to Jun. 22, 1999, has been disclaimed.

Int. Cl.[3] **C01B** *15/02*

U.S. Cl. 423—584 **14 Claims**

1. In a process for producing hydrogen peroxide by contacting a mixture of gases comprising hydrogen and oxygen with a palladium catalyst supported on a carbon base in a reaction vessel in the presence of an acidic aqueous liquid, containing 70 to 95% by volume of an oxygenated or nitrogenous organic solvent, or methanol containing up to 5% by volume of water, capable of inhibiting the decomposition of thus-produced hydrogen peroxide, the improvement comprising prolonging effective catalyst life by continuously removing from the acidic liquid in the reaction vessel palladium salts produced by solubilization of the palladium catalyst, employing as the carbon catalyst an activated non-graphitic carbon having a surface area above 400 m^2/g, which carbon adsorbs palladium salts produced by solubilization of the palladium catalyst.

11. In a process for producing hydrogen peroxide by contacting a mixture of gases comprising hydrogen and oxygen with a palladium catalyst supported on a carbon base in the presence of an acidic aqueous liquid, containing 70 to 95% by volume of an oxygenated or nitrogenous organic solvent, or methanol containing up to 5% by volume of water, capable of inhibiting the decomposition of thus-produced hydrogen peroxide, the improvement comprising prolonging effective catalyst life by continuously removing from the acidic liquid in the reaction vessel palladium salts produced by solubilization of the palladium catalyst by mixing with the carbon base an anion-exchange resin, capable of removing palladium salts.

13. In a process for producing hydrogen peroxide by contacting a mixture of gases comprising hydrogen and oxygen with a palladium catalyst supported on a carbon base in a reaction vessel in the presence of an acidic liquid capable of inhibiting the decomposition of thus-produced hydrogen peroxide, the improvement comprising prolonging effective catalyst life by continuously removing from the acidic liquid in the reaction vessel palladium salts produced by solubilization of the palladium catalyst, wherein removal of palladium salts is effected by activated nongraphitic carbon, having a surface area above 400 m^2/g, external to the reaction vessel in which hydrogen peroxide is prepared and liquid freed of palladium salts is returned to the reaction vessel.

4,389,391

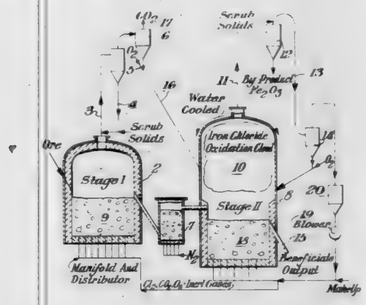
PROCESS FOR BENEFICIATING TITANIFEROUS ORES

Wendell E. Dunn, Jr., Star Rte. 68D, Lead, S. Dak. 57754

Filed Jun. 28, 1981, Ser. No. 278,322

Int. Cl.[3] **C01G** *23/047;* **C22B** *1/00*

U.S. Cl. 423—610 **8 Claims**



1. In a process for beneficiation of titaniferous ore by chlorination under fluidizing and reducing conditions in the presence of a carbonaceous material at elevated temperatures comprising converting the iron oxide portion of the ore to vaporized iron chloride or a mixture of vaporized iron chlorides and producing carbon dioxide and producing thereby a product comprising essentially polycrystalline rutile:

the improvement consisting of:

(a) chlorinating the ore in a first reactor to form a partially beneficiated ore-carbon mixture and a gaseous by-product comprising carbon dioxide, traces of carbon monoxide, iron chlorides and diluent gases;

(b) condensing the iron chloride in the gaseous by-product and exiting the said carbon dioxide, traces of carbon monoxide, and diluent gases in said gaseous by-product;

(c) passing the condensed iron chlorides and partially beneficiated ore carbon mixture to a second reactor;

(d) subjecting the partially beneficiated ore-carbon mixture to chlorine and at elevated temperatures to further beneficiate said ore forming vaporized iron chloride and vaporizing iron chlorides introduced from the first reactor exiting said further beneficiated ore from the second reactor and thereafter cooling and separating the product from unreacted carbon; and

(e) subjecting the vaporized iron chloride or mixture of iron chlorides and the carbon dioxide to oxygen to oxidize the iron chlorides to chlorine and iron oxide.

6. The process of claim 1 comprising transferring the ore-coke product from Stage II to a third reactor, to form a bed which is contacted, at elevated temperature with recycled chlorine from iron chloride oxidization to form a mixture of $TiCl_4$ and minor amounts of iron chloride and other chlorides separating $TiCl_4$ from the mixture venting carbon dioxide and inert gas oxidizing with the $TiCl_4$ to form TiO_2 pigment and chlorine mixed with nitrogen and transferring to chlorine mixed with nitrogen to the first and second reactors.

4,389,392

DETERMINATION OF TUMOR ASSOCIATED GLYCOLINKAGE AND DIAGNOSIS OF CANCERS

Masakazu Adachi, Takasaki, Japan, assignor to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 116,727, Jan. 30, 1980, abandoned. This application Sep. 17, 1980, Ser. No. 187,890

Claims priority, application Japan, Jan. 30, 1979, 54/9435; Nov. 1, 1979, 54/141741

Int. Cl.[3] **G01N** *33/56, 33/58, 33/60*

U.S. Cl. 424—1 **26 Claims**



1. A method for determining the level of tumor associated glycolinkage containing substance in a sample of body fluid which comprises reacting the tumor associated glycolinkage containing substance in a sample of the body fluid with a lectin capable of specifically combining with a terminal galactose (β1→ or β1→4)-N-acetylglucosamine or -N-acetylgalactosamine group to form a tumor associated glycolinkage-containing substance lectin complex and measuring the amount of the tumor associated glycolinkage-containing substance lectin complex or unreacted lectin.

4,389,393

SUSTAINED RELEASE THERAPEUTIC COMPOSITIONS BASED ON HIGH MOLECULAR WEIGHT HYDROXYPROPYLMETHYLCELLULOSE

Joseph M. Schor, Locust Valley; Ashok Nigalaye, Jackson Heights, both of N.Y., and Norman G. Gaylord, New Providence, N.J., assignors to Forest Laboratories, Inc., New York, N.Y.

Filed Mar. 26, 1982, Ser. No. 362,104

Int. Cl.[3] **A61K** *9/22, 9/26*

U.S. Cl. 424—19 **10 Claims**

1. A carrier base material combined with a therapeutically active medicament and shaped and compressed to a solid unit dosage form having a regular and prolonged release pattern upon administration, the carrier base material being one or more hydroxypropylmethylcelluloses or a mixture of one or more hydroxypropylmethylcelluloses and up to 30% by weight of the mixture of methyl cellulose, sodium carboxymethylcellulose and/or other cellulose ether, and wherein at least one of the hydroxypropylmethylcelluloses has a methoxy content of 16-24 weight-%, a hydroxypropoxyl content of 4-32 weight-% and a number average molecular weight of at least 50,000 and wherein the carrier base material constitutes less than about one third of the weight of the solid unit dosage form.

4,389,394

METHODS FOR REDUCING DENTAL CARIES

David B. Drucker, Alderley Edge, England, assignor to Talres Development (N.A.) N.V., Netherlands Antilles

Continuation of Ser. No. 139,474, Apr. 11, 1980, abandoned, which is a continuation-in-part of Ser. No. 954,929, Oct. 26, 1978, abandoned. This application Jan. 27, 1982, Ser. No. 343,286

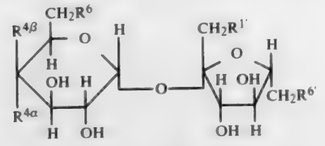
Claims priority, application United Kingdom, Sep. 22, 1978, 37840/78

Int. Cl.[3] **A61K** *7/20, 31/70*

U.S. Cl. 424—53 **8 Claims**

1. A method of preventing or limiting dental caries by administering to the subject an anticariogenic-effective amount of a chlorodeoxysucrose derivative of the general formula

(II)



wherein:

$R^{4\alpha}$ is a hydroxy group and $R^{4\beta}$ is a hydrogen atom, or, one of $R^{4\alpha}$ and $R^{4\beta}$ is a hydrogen atom and the other is a chlorine atom;

R^6 is a hydroxy group or, if at least one of $R^{4\alpha}$, $R^{4\beta}$ or $R^{1'}$ is a chlorine atom, then it is a hydroxy group or a chlorine atom;

$R^{1'}$ is a hydroxy group or a chlorine atom; and

$R^{6'}$ is a hydroxy group, or if at least one of $R^{4\alpha}$, $R^{4\beta}$ or $R^{1'}$ is a chlorine atom, then it is a hydroxy group or a chlorine atom.

4,389,395

LOW MOLECULAR WEIGHT COMPLEX OF POLYRIBOINOSINIC-POLYRIBOCYTIDYLIC ACID AND METHOD OF INDUCING INTERFERON

A. Martin Lerner, 3570 Tuckahoe, Birmingham, Mich. 48010 and Hilton B. Levy, 9400 Linden Ave., Bethesda, Md. 20814

Filed Jan. 9, 1981, Ser. No. 223,881

Int. Cl.[3] **A61K** *45/02;* **C07C** *103/52*

U.S. Cl. 424—85 **8 Claims**

1. A nuclease resistant hydrophilic complex of the nucleotide homopolymers polyriboinosinic and polyribocytidylic acid having homopolymer sedimentations coefficients of 4S, each homopolymer having a molecular weight of 25,000 or less, said complex including a stabilizing means adapted to stabilize the internucleotide linkages of the polyriboinosinic, polyribocytidylic acid polymer to phosdiesterases of primate serum.

4. An injectable preparation in a pharmaceutically acceptable aqueous carrier of a nuclease-resistant hydrophilic complex of a relatively low molecular weight polyriboinosinic-polyribcytidylic acid, poly-l-lysine and carboxymethycellulose, wherein the nucleotide homopolymers have sedimentation coefficients of 4S and each homopolymer has a molecular weight of about 25,000 or less.

5. A method of inducing the synthesis of interferon in a host which comprises administering a nuclease resistant hydrophilic complex of homopolymers of polyriboinosinic and polyribocytidylic acid having homopolymer sedimentation coefficients of 4S, each homopolymer having a molecular weight of about 25,000 or less and said complex including a stabilizing means adapted to stabilize the internucleotide linkages of the polyriboinosinic-polyribcytidylic acid polymer to phosdiesterases of primate serum.

4,389,396

IMMUNOSTIMULATING PREPARATIONS BASED ON RIBOSOMAL RNA'S AND A PROCESS FOR THE PREPARATION OF THE RNA'S

Lucien Dussourd D'Hinterland; Gérard Normier; Anne-Marie Pinel, and Jacques Durand, all of Castres, France, assignors to Pierre Fabre, S.A., Paris, France

PCT No. PCT/FR80/00186, § 371 Date Aug. 18, 1981, § 102(e) Date Aug. 18, 1981

PCT Filed Dec. 19, 1980, Ser. No. 293,639

Claims priority, application France, Dec. 21, 1979, 79 31442

Int. Cl.[3] **A61K** *39/108, 39/02;* **C07H** *21/02;* **A61K** *31/70*

U.S. Cl. 424—92 **10 Claims**

1. A process for the preparation of bacterial ribosomal RNA comprising:

(a) providing a ground bacterial suspension;

(b) separating ribosomes from said suspension;

(c) extracting crude RNA from the separated ribosomes by mixing said ribosomes with an aqueous solution of sodium dodecyl sulfate and precipitating crude RNA; and

(d) treating said crude RNA with at least one proteolytic enzyme and precipitating the treated RNA.

8. A method of treating diseases attributable to immunodeficits with a non-specfic immunostimulating preparation comprising:

providing a non-specific immunostimulating preparation characterized by the absence of adjuvants comprising bacterial ribosomal RNA extracted from *Klebsiella pneumoniae* or *Serratia marcescens* as the sole active principle and a therapeutically acceptable support; and

administering an effective amount of said preparation to the patient being treated.

4,389,397

SOLUBILIZATION OF IVERMECTIN IN WATER

Pak-Kan A. Lo, Edison, and James B. Williams, Freehold, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 174,957, Aug. 4, 1980, abandoned. This application Sep. 21, 1981, Ser. No. 304,124

Int. Cl.[3] **A61K** *31/70*

U.S. Cl. 424—180 **6 Claims**

1. A stabilized aqueous formulation which comprises from 0.1 to 7.5% w/v of an avermectin for parenteral administration or from 0.01 to 2.0% w/v of an avermectin for oral administration; from 0.5 to 2.5% of a surface active agent selected from polyoxyethylene sorbitan monoisostearate, polyoxyethylene sorbitan monostearate and polysorbate 80; from 10 to 60% of a cosolvent selected from glycerol formal, glycerine and polyethyleneglycol; and from 1 to 5% w/v of a substrate selected from benzyl alcohol, lidocaine, parabens and choline.

4,389,398

AMINO GLYCOSIDE ANTIBIOTICS HAVING ANTIPROTOZOAL AND ANTHELMINTIC ACTIVITY

David J. Cooper, Downingtown, Pa.; Jay A. Waitz, Fairfield, N.J.; Mae Counelis, New York, N.Y., and Jay Weinstein, Bloomfield, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 752,375, Dec. 20, 1976, Pat. No. 4,110,439, which is a division of Ser. No. 618,647, Oct. 1, 1975, Pat. No. 4,049,796, which is a division of Ser. No. 389,774, Aug. 20, 1973, Pat. No. 3,915,955, which is a continuation-in-part of Ser. No. 48,017, Jun. 22, 1970, abandoned. This application Aug. 24, 1978, Ser. No. 937,620

Int. Cl.[2] **A61K** *31/71*

U.S. Cl. 424—181 **6 Claims**

1. A method of eliciting an anthelmintic response in animals afflicted with helminthiasis which comprises administering to said animals a therapeutically effective quantity for treating helminthiasis of a member selected from the group consisting of gentamicin A, gentamicin B, gentamicin B_1 and gentamicin X, their non-toxic acid addition salts and mixtures thereof.

4,389,399

THIOCARBAMOYL HETEROCYCLE-ANTHRAQUINONE DERIVATIVES

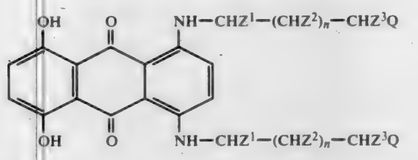
Keith C. Murdock, Pearl River, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 4, 1982, Ser. No. 345,700

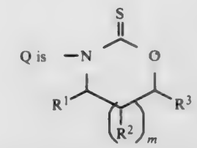
Int. Cl.[3] **A61K** *31/42, 31/535;* **C07D** *263/16, 265/08*

U.S. Cl. 424—248.5 **15 Claims**

1. An anthraquinone derivative of the formula



wherein:



R^1, R^2 and R^3 are each independently selected from hydrogen or alkyl of 1 to 3 carbons; Z^1, Z^2 and Z^3 are each independently selected from hydrogen or alkyl of 1 to 2 carbons; n is 0 or 1; and m is 0 or 1.

13. A method of inducing regression of leukemia cell growth in a patient or inhibiting growth of solid tumors in a patient, which comprises

administering by injection to said patient an effective amount of a derivative according to claim **1**.

4,389,400

2,2-BIS(HALOALKENYL)-1-SUBSTITUTED-1-CYANOETHYLENE FUNGICIDES

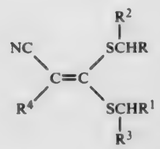
Andrew W. Ho, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 25, 1982, Ser. No. 361,650

Int. Cl.[3] **A01N** *43/84, 37/34;* **C07C** *149/237*

U.S. Cl. 424—248.52 **27 Claims**

1. A compound of the formula:



wherein

(A) R and R^1 are independently

1. lower alkenyl,
2. lower alkynyl,
3. lower alkenyl substituted with 1 to 3 of the same or different halogens, or
4. lower alkynyl substituted with 1 to 3 of the same or different halogens;

(B) R^2 and R^3 are independently

1. hydrogen or
2. lower alkyl;

(C) R^4 is

1. cyano,
2. phenyl,
3. phenyl substituted with 1 to 3 of the same or different halogens,
4. $-S(O)_mR^5$ wherein

(aa) m is 0, 1 or 2; and

(bb) R^5 is

(i) lower alkyl,

(ii) phenyl, or

(iii) phenyl substituted with 1 to 3 of the same or different substituents selected from

(1) halogen or

(2) lower alkyl,

5.



wherein R^6 is

(aa) phenyl,

(bb) phenyl substituted with 1 to 3 of the same or different halogens,

(cc)



wherein R^7 and R^8 are independently

(i) lower alkyl,

(ii) are joined to form a ring containing 4 to 6 carbons, or

(iii) are joined to form a 5- to 7-member ring containing 1 to 2 oxygens.

24. A method for controlling fungi which comprises applying to the fungus or its habitat a fungicidally effective amount of the compound of the formula defined in claim **1**.

4,389,401

ARTHROPOD REPELLENTS

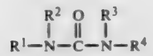
Joel R. Smolanoff, Chalfont, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jul. 10, 1979, Ser. No. 56,179

Int. Cl.[3] **A01N** *47/28, 47/32, 47/36, 47/38*

U.S. Cl. 424—248.56 **6 Claims**

1. A method for repelling arthropods which comprises applying to an appropriate surface an effective repellent amount of the compound of the formula:



wherein R^1 is alkenyl or alkynyl; R^2 is alkenyl, alkynyl or cycloalkyl, or phenyl lower alkyl, R^3 is hydrogen and R^4 is alkyl, alkoxycarbonylakyl or cycloalkyl or R^2 and R^3 are joined to form a dimethyleneoxy or R^2 and R^4, taken together with the nitrogen atom to which they are attached, may be joined to form a 5- to 7-membered heterocyclic ring.

4,389,402

METHOD FOR THE CONTROL OF CATTLE GRUBS USING PENTADIENONE HYDRAZONES

Robert H. Schenkel, Yardley, Pa., assignor to American Cyanamid Company, Stamford, Conn.

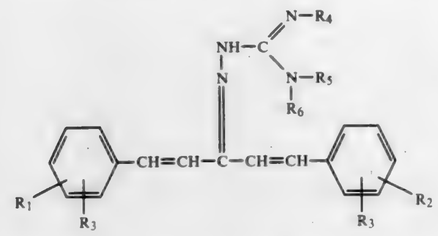
Filed Aug. 21, 1981, Ser. No. 295,056

Int. Cl.[3] **A61K** *31/505, 31/55*

U.S. Cl. 424—251 **6 Claims**

1. A method for protecting ruminant, domestic, and farm animals from infestation by the larvae of flies of the family Hypodermatidae comprising, administering to larvae-infested

animals a larvicidally effective amount of a compound having the formula:



wherein R_1 and R_2 each is hydrogen, halogen, CF_3, C_1–C_4 alkyl, C_1–C_4 alkoxy or C_1–C_4 alkylthio; R_3 is hydrogen or methyl, provided that when R_3 is methyl, R_1 and R_2 is each also methyl; R_4 and R_5 represent hydrogen or C_1–C_4 alkyl, and when taken together, an alkylene group of 2 to 6 carbon atoms, a methyl substituted or a phenyl substituted alkylene group of 2 to 4 carbon atoms, a dimethyl substituted alkylene group of 2 to 4 carbon atoms or 1,2-cyclohexylene; and R_6 is hydrogen or C_1–C_4 alkyl; or salts thereof.

4,389,403

1-AROYL-2-PHENYLAMINO-2-IMIDAZOLINES, DRUGS CONTAINING THESE COMPOUNDS, AND USE THEREOF

Hans-Joachim May, Neustadt; Dieter Lenke, Ludwigshafen; Josef Gries, Wachenheim; Hans-Juergen Teschendorf, Ludwigshafen, and Wolfgang Worstmann, Hiltrup, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

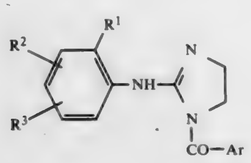
Filed Mar. 3, 1981, Ser. No. 240,111

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1980, 3011327

Int. Cl.³ A61K *31/415, 31/47;* **C07D** *401/06*

U.S. Cl. 424—258 **14 Claims**

1. A 1-aroyl-2-phenylamino-2-imidazoline of the general formula I



(I)

where

R^1 and R^2 are identical or different and each is chlorine, bromine, fluorine, methyl, ethyl, methoxy, trifluoromethyl or cyano,

R^3 has the meanings given for R^1 and R^2 or is hydrogen and

Ar is an unsubstituted or substituted monocyclic or bicyclic heteroaromatic radical containing 1, 2 or 3 nitrogen and-/or oxygen and/or sulfur atoms, and its salts with physiologically tolerated acids.

13. The method of treating hypertonia in a patient suffering therefrom which comprises administering an effective amount of a compound as claimed in claim **1**.

4,389,404

PAIN-KILLING PREPARATION

Vladimor I. Zhorov, Mishina, 12 kv. 96; Jury E. Kirsh, Leninsky prospekt, 70/11, kv. 444; Viktor I. Shumsky, ulitsa Turisticheskaya, 20, korpus 1, kv. 371; Temuri M. Karaputadze, ulitsa Akademika Vargi, 8 kv. 1, and Jury J. Bairamov, 4 Vyatsky pereulok, 20 kv. 67, all of Moscow, U.S.S.R.

PCT No. PCT/SU80/00199, § 371 Date Jul. 22, 1981, § 102(e) Date Jul. 22, 1981, PCT Pub. No. WO81/01653, PCT Pub. Date Jun. 25, 1981

PCT Filed Dec. 16, 1980, Ser. No. 287,738

Claims priority, application U.S.S.R., Dec. 17, 1979, 2874471

Int. Cl.³ A61U *31/485*

U.S. Cl. 424—260 **3 Claims**

1. A pain-killing composition comprising poly-N-vinylpyrrolidone having a molecular mass of 30,000 to 40,000, morphine hydrochloride and water, said poly-N-vinylpyrrolidone being present in an amount between 250 and 310 grams per liter of water and said morphine hydrochloride being present in an amount between 5 and 6.25 grams per liter of water.

4,389,405

1,10-DIMETHYL-2,7-DIHYDROOXAYOHIMBANES AN ANTI-ARRHYTHMIC USE THEREOF

Jean A. Hannart, Dion Valmont, Belgium, assignor to Omnichem, S.A., Brussels, Belgium

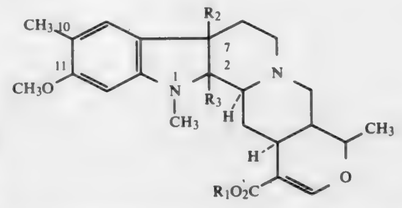
Filed Jan. 7, 1981, Ser. No. 223,159

Claims priority, application Belgium, Jan. 9, 1980, 198889

Int. Cl.³ A61K *31/475;* **C07D** *495/00*

U.S. Cl. 424—262 **8 Claims**

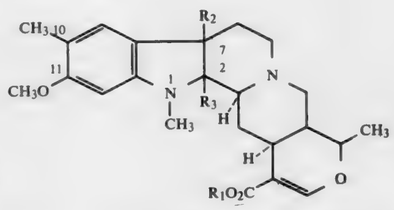
1. Oxayohimbanes having the formula:



(I)

wherein R_1 is selected from the group consisting of an alkyl group having 1 to 8 carbon atoms, dialkyl aminoalkyl group having 1 to 8 carbon atoms and wherein R_2 and R_3 are hydrogen atoms, wherein dialkylamino can form pyrrolidino or piperidino and pharmaceutically acceptable mineral or organic acid addition salts thereof.

5. A pharmaceutical composition for the treatment of cardiac arrhythmia comprising an effective amount an oxayohimbane having the formula



(I)

wherein R_1 is selected from the group consisting of an alkyl group having 1 to 8 carbon atoms, and dialkylaminoalkyl group having 1 to 8 carbon atoms or and wherein R_2 and R_3 are hydrogen atoms, wherein dialkylamino can form pyrrolidino or piperidino and pharmaceutically acceptable mineral or organic acid addition salts thereof and a pharmaceutically acceptable carrier.

8. The process for treating disorders of the heart rhythm of

mammals wherein a pharmaceutical composition as claimed in claim **5** is used.

4,389,406

META-PYRAZOLYLAMINOTETRAMISOLE ANALOGS AND THEIR USE IN PHARMACEUTICAL COMPOSITIONS

Roderick J. Dorgan, Outwood, and Richard A. Webster, Sutton, both of England, assignors to Beecham Group Limited, England

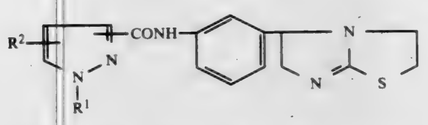
Filed May 15, 1981, Ser. No. 263,927

Claims priority, application United Kingdom, May 30, 1980, 8017694

Int. Cl.³ A61K *31/425;* **C07D** *513/04*

U.S. Cl. 424—270 **11 Claims**

1. A compound of formula (I) in the l-form



(I)

wherein R^1 and R^2 are the same or different and each is selected from hydrogen, (C_{1-7}) alkyl, and phenyl and the dotted line is an optional direct bond, or a pharmaceutically acceptable salt thereof.

5. A pharmaceutical composition having anthelmintic activity comprising a therapeutically effective amount of a compound of formula (I), or a pharmaceutically acceptable salt thereof, as defined in claim **1** and a pharmaceutically acceptable carrier therefor.

4,389,407

1,3-THIAZOLIDIN-4-YL-CARBOXYLIC ACID DERIVATIVES AND ANTIBACTERIAL COMPOSITIONS THEREOF

Michele Di Schiena, and Vittoria Orru, both of Trezzano sul Naviglio, Italy, assignors to Ausonia Farmaceutici s.r.l., Rome, Italy

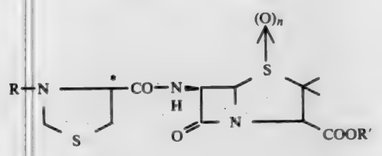
Filed Jul. 1, 1981, Ser. No. 279,425

Claims priority, application Italy, Jul. 15, 1980, 23455 A/80

Int. Cl.³ A61K *31/43;* **C07D** *499/76*

U.S. Cl. 424—271 **11 Claims**

1. A compound of formula



(I)

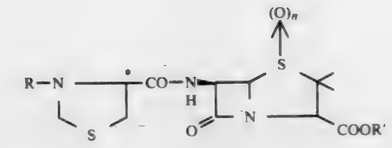
wherein:

R is hydrogen, trichloroethoxycarbonyl, acetyl or pivalyol;

R′ represents hydrogen, a pharmaceutically acceptable sodium, phthalidyl, pivaloyloxymethyl or trichloroethyl,

n is zero or 1; the carbon atom of the 1,3-thiazolidine nucleus has the D- or L-configuration or the racemic form; or a salt thereof with a pharmaceutically acceptable acid.

11. An antibacterial pharmaceutical composition for human, veterinary or agricultural use which contains a pharmaceutically acceptable carrier and as the active ingredient, an antibacterially effective amount of at least one compound of formula I:



(I)

wherein:

R is hydrogen, trichloroethoxycarbonyl, acetyl or pivaloyl;

R′ represents hydrogen, a pharmaceutically acceptable sodium, phthalidyl, pivaloyloxymethyl or trichloroethyl, n is zero or 1; the carbon atom of the 1,3-thiazolidine nucleus has the D- or L-configuration or the racemic form; and a salt thereof with a pharmaceutically acceptable acid.

4,389,408

NOVEL AMPICILLIN ESTERS AND PRODUCTION THEREOF

Fumio Sakamoto, Osaka; Shoji Ikeda, Ibaraki; Goro Tsukamoto, Toyonaka, and Isamu Utsumi, Kyoto, all of Japan, assignors to Kanebo Ltd., Tokyo, Japan

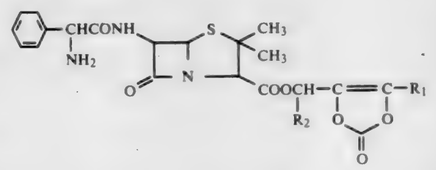
Continuation-in-part of Ser. No. 257,562, Apr. 27, 1981, abandoned. This application Dec. 4, 1981, Ser. No. 327,735

Claims priority, application Japan, Apr. 30, 1980, 55-58510; May 22, 1980, 55-68444

Int. Cl.³ A61K *31/43;* **C07D** *499/32, 499/42*

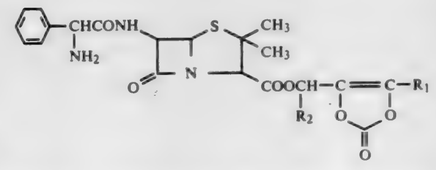
U.S. Cl. 424—271 **9 Claims**

1. An Ampicillin ester of the formula



wherein R_1 represents a hydrogen atom, a methyl group or an aryl group, and R_2 represents a hydrogen atom or may be taken together with R_1 to form a divalent carbon chain residue, or a pharmaceutically acceptable acid addition salt thereof.

6. An antibacterial agent comprising an antibacterially effective amount of an Ampicillin ester of the formula



wherein R_1 represents a hydrogen atom, a methyl group or an aryl group, and R_2 represents a hydrogen atom or may be taken together with R_1 to form a divalent carbon chain residue, or a pharmaceutically acceptable acid addition salt thereof in association with a pharmaceutically acceptable carrier.

4,389,409

1-(α-n-BUTYLTHIO-2,4-DICHLOROPHENETHYL-)IMIDAZOL-3-yl AND FUNGICIDAL USE THEREOF

George A. Miller, Maple Glen, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 18, 1977, Ser. No. 779,211

Int. Cl.³ C07D *233/64;* **A01N** *43/50*

U.S. Cl. 424—273 R **3 Claims**

1. 1-(alpha-n-butylthio-2,4-dichlorophenethyl)imidazol-3-yl.

3. A method for controlling phytopathogenic fungi which comprises applying to the plant, to the plant seed or to the plant habitat, a fungicidally effective amount of a compound according to claim **1**.

4,389,410

ESTERS OF MONIC ACID A USEFUL AS ANTIBACTERIAL AND ANTIMYCOPLASMAL AGENTS

Peter J. O'Hanlon, Redhill, and Norman H. Rogers, Horsham, both of England, assignors to Beecham Group Limited, England

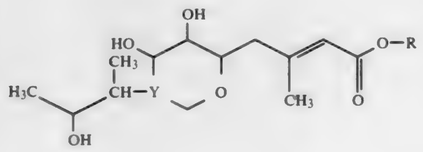
Filed Jul. 21, 1981, Ser. No. 285,612

Claims priority, application United Kingdom, Jul. 24, 1980, 8024221

Int. Cl.³ A61K *31/35;* **C07D** *309/06*

U.S. Cl. 424—283 **10 Claims**

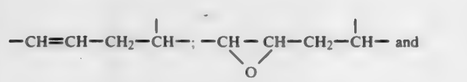
1. A compound of formula (II):



(II)

wherein

Y is selected from



and

R is a group selected from C_{1-20} alkyl, C_{3-8} cycloalkyl; C_{3-20} alkenyl; benzyl; cycloalkylalkyl; furyl and furyl alkyl; said group being substituted by formyl.

9. An antibacterial or antimycoplasmal, pharmaceutical or veterinary composition comprising an effective, non-toxic amount of a compound according to claim **1** and a pharmaceutically or veterinarily acceptable carrier therefor.

4,389,411

CYANO-(2,4-DICHLOROPHENYL)METHYL ETHYL ESTER OF CARBONIC ACID USEFUL AS A NEMATOCIDE

Andrew T. Au, Needham, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 3, 1982, Ser. No. 354,479

Int. Cl.³ A01N *47/06;* **C07C** *121/75*

U.S. Cl. 424—301 **4 Claims**

1. Cyano-(2,4-dichlorophenyl)methyl ethyl ester of carbonic acid.

3. A nematocidal composition comprising an inert horticultural carrier and as a nematocide, the compound of claim **1**, the concentration of said nematocide being from 0.0001 to 50 percent by total weight of the composition.

4. A method for protecting plants from attack from nematodes which comprises treating the plants to be protected with an effective dosage of the compound of claim **1**.

4,389,412

SUBSTITUTED CYCLOPROPANECARBOXYLIC ACID ESTERS AND PESTICIDAL COMPOSITIONS CONTAINING THE SAME AS ACTIVE INGREDIENT

Fumio Mori; Manzo Shiono, both of Kurashiki, and Yoshiaki Omura, Okayama Prefecture, all of Japan, assignors to Kuraray Company, Ltd., Okayama Prefecture, Japan

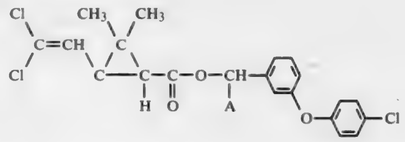
Filed Mar. 27, 1980, Ser. No. 134,589

Claims priority, application Japan, Mar. 30, 1979, 54-39021; Jun. 12, 1979, 54-74387

Int. Cl.³ A01N *53/00*

U.S. Cl. 424—305 **1 Claim**

1. A method for controlling insects or acarids which comprises applying to a habitat of the insects or acarids an effective amount of a substituted cyclopropanecarboxylic acid ester of the general formula:



wherein A is a hydrogen atom or an ethynyl group and said ester is applied to rice paddy.

4,389,413

9,11-METHANO-13-AZA-11A-CARBATHROMBANOIC ACID ANALOGUES

Nobuyuki Hamanaka, 11-38, Koaza Hiroshiki, Ooaza Ooyamazaki, Ooyamazaki-cho, Otokuni-gun, Kyoto; Shinsuke Hashimoto, 3-2, Matsunami-cho, Nishinomiya-city, Hyogo, and Masaki Hayashi, 5-10, Nanpeidai 4-chome, Takatsuki-city, Osaka, all of Japan

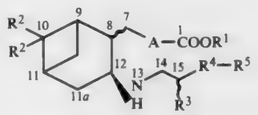
Filed Jul. 22, 1981, Ser. No. 285,723

Claims priority, application Japan, Jul. 22, 1980, 55-99371; Dec. 26, 1980, 55-183762

Int. Cl.³ A61K *31/557;* **C07C** *101/14*

U.S. Cl. 424—305 **43 Claims**

1. A compound of the general formula:



V

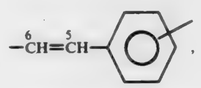
[wherein A represents

$-CH_2CH_2-(CH_2)_m-$, (i)

$-CH\overset{cis}{=}CH-(CH_2)_m-$, (ii)

$-CH_2-O-(CH_2)_m-$ or (iii)

(iv)



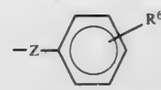
(in which m is an integer of 1 to 6, the double bond between the

carbon atoms in positions 5 and 6 in (iv) is in cis or trans-configuration or a mixture thereof and the phenylene group in (iv) represents o-, m- or p-phenylene), R^1 represents a hydrogen atom or a straight- or branched-chain alkyl group of 1 to 12 carbon atoms, two R^2 both represent hydrogen atoms or methyl groups, R^3 represents a hydrogen atom or a hydroxy group, R^4 represents a single bond or a straight- or branched-chain alkylene group of 1 to 5 carbon atoms, R^5 represents

(i) a straight- or branched-chain alkyl, alkoxy or alkylthio group of 1 to 8 carbon atoms,

(ii) a cycloalkyl or cycloalkyloxy group of 4 to 7 carbon atoms being unsubstituted or substituted by at least one straight- or branched-chain alkyl group of 1 to 8 carbon atoms or

(iii)



(in which Z represents a single bond, an oxygen atom or a sulfur atom and R^6 may occupy any of the free positions on the phenyl ring and represents a hydrogen atom, a halogen atom, a hydroxy group, a straight- or branched-chain alkyl or alkoxy group of 1 to 5 carbon atoms, a trihalomethyl group, an amino group or a mono- or dialkyl-amino group of 1 to 5 carbon atoms)

and the wavy line ∿ attached to the carbon atom in position 15 represents α- or β- configuration or a mixture thereof, provided that, when R^3 represents a hydroxy group and R^4 represents a single bond, R^5 does not represent an alkoxy group, an alkylthio group, a cycloalkyloxy group, a phenoxy group and a phenylthio group],

or cyclodextrin clathrates thereof, or when R^1 represents a hydrogen atom, non-toxic salts thereof.

4,389,414

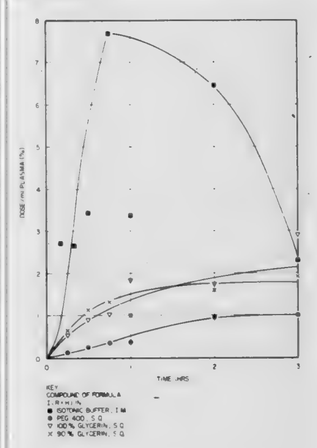
PROSTAGLANDIN COMPOSITIONS

John S. Kent, Cupertino, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

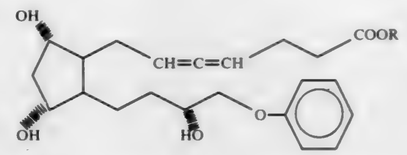
Continuation of Ser. No. 75,912, Jul. 16, 1979, abandoned. This application May 11, 1981, Ser. No. 262,102

Int. Cl.³ A61K *31/235*

U.S. Cl. 424—308 **6 Claims**



1. An injectable composition containing less than 5% by weight water for producing a luteolytic effect in a mammal which comprises polyethylene glycol having a molecular weight of 380 to about 630; a luteolytic effective amount of a compound chosen from those represented by the formula



wherein R is hydrogen or alkyl of 1 through 4 carbon atoms; and optionally a phrmaceutically acceptable excipient, said composition exhibiting a prolonged absorption of said compound by said mammal.

4. A method for producing a prolonged luteolytic effect in a mammal which method comprises parenterally administering the composition of claim **1** to said mammal.

4,389,415

METHOD OF TREATING HYPERTENSION

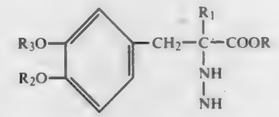
Alexander Scriabine, Ambler, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 82,249, Oct. 5, 1979, abandoned, which is a continuation of Ser. No. 871,879, Jan. 24, 1978, abandoned. This application Jul. 20, 1981, Ser. No. 285,215

Int. Cl.³ A61K *31/24, 31/195*

U.S. Cl. 424—309 **2 Claims**

1. A method of treating hypertension which comprises consecutively administering to a hypertensive patient in an antihypertensively effective ratio an effective amount therefor first of (a) racemic mixture of L-isomer of a hydrazino phenylpropionic acid decarboxylase inhibitor of the formula



wherein R, R_1, R_2, and R_3 are independently selected from hydrogen and C_1-C_4 alkyl or a pharmaceutically acceptable salt thereof and then an effective amount therefor of (b) α-methyl-p-tyrosine, with (a) being administered parenterally and (b) being administered orally.

4,389,416

DIPHENYL ETHER, DIPHENYL THIOETHER AND DIPHENYL METHANE PHENOL MANNICH BASES

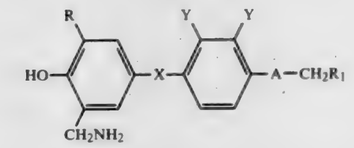
Jacob J. Plattner, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 9, 1981, Ser. No. 310,164

Int. Cl.³ A61K *31/215;* **C07C** *101/30, 103/29, 91/16*

U.S. Cl. 424—309 **30 Claims**

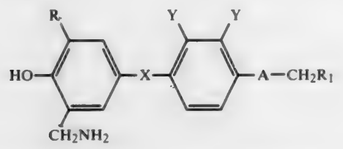
1. A compound of the formula



wherein R is hydrogen, loweralkyl, aminomethyl or halo; R_1 is carboxy, carboxyloweralkyl, aminocarbonyl, hydroxymethyl, anilinomethyl or aminomethyl; A is oxygen, CH_2, sulfur or a single bond; X is oxygen, CH_2, sulfur or sulfoxide; and Y is

hydrogen, loweralkyl or halo and may be the same or different, and pharmaceutically acceptable salts thereof.

11. A method of increasing the urinary excretion of a patient comprising administering to a patient in need of such treatment a therapeutically effective amount of a diuretic agent of the formula



wherein R is hydrogen, loweralkyl, aminomethyl or halo; R_1 is carboxy, carboxyloweralkyl, aminocarbonyl, hydroxymethyl, anilinomethyl or aminomethyl; A is oxygen, CH_2, sulfur or a single bond; X is oxygen, CH_2, sulfur or sulfoxide; and Y is hydrogen, loweralkyl or halo and may be the same or different, and pharmaceutically acceptable salts thereof.

4,389,417

TREATMENT OF GRAY MATTER EDEMA

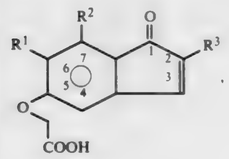
Robert S. Bourke, Slingerlands, N.Y., and Edward J. Cragoe, Jr., Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 184,590, Sep. 5, 1980, abandoned, which is a continuation of Ser. No. 57,637, Jul. 16, 1979, abandoned, which is a continuation of Ser. No. 880,256, Feb. 22, 1978, abandoned. This application Dec. 30, 1981, Ser. No. 336,107

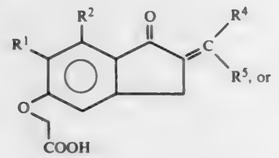
Int. Cl.³ A61K *31/19*

U.S. Cl. 424—317 **25 Claims**

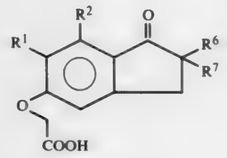
1. A method of treating persons with gray matter edema which comprises administering to such a person an effective amount of a compound of the formulae:



I



II



III

wherein

R^1 is H, CH_3, or Cl

R^2 is CH_3 or Cl

R^3 is alkyl of one through five carbons, cycloalkyl of four through seven carbons, phenyl, and phenylalkyl or halophenylalkyl where the alkyl is one through three carbons

R^4 is H or alkyl of one through five carbons

R^5 is H, alkyl of one through five carbons, phenyl, halo-substituted phenyl, trifluoro alkyl of one through four carbons, or R^4 and R^5 taken together with the carbon to which they are attached may be joined to form a cycloalkylidene ring of four through six carbons such as cyclohexylidene,

R^6 is (1) alkyl of one through five carbons, (2) alkenyl of three through five carbons, (3) cycloalkyl or cycloalkylalkyl of four through seven carbons, or (4) substituted or unsubstituted aryl such as phenyl or aralkyl or alkoxyaryl where alkyl is of one through three carbons, and

R^7 is H or alkyl of one through five carbons or a pharmaceutically acceptable salt, ester, or amide derivative thereof.

4,389,418

SKIN CARE COMPOSITION

Colin K. Burton, Racine County, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Feb. 25, 1981, Ser. No. 238,232

Int. Cl.³ A61K *7/00, 7/48*

U.S. Cl. 424—365 **5 Claims**

1. A skin care composition for moisturizing and conditioning the skin having cosmetically acceptable tactile properties which comprises a water-out emulsion consisting essentially of:

(a) From about 1 to 10% by weight of petrolatum or mineral oil;

(b) From about 2 to 12% by weight of a quaternary ammonium compound of the formula

wherein R_1 and R_2 are each long chain, substantially linear alkyl groups having from about 16 to 22 carbon atoms, R_3 and R_4 are each lower alkyl groups having from about 1 to 3 carbon atoms and X is a salt-forming anion;

(c) From about 1.5 to 5% by weight of a fatty alcohol;

(d) From about 1 to 8% by weight of a fatty ester emollient; and

(e) From about 75 to 95% by weight aqueous vehicle.

4,389,419

VITAMIN ENCAPSULATION

Franklin Lim, Richmond, and Richard D. Moss, Chester, both of Va., assignors to Damon Corporation, Needham Heights, Mass.

Filed Nov. 10, 1980, Ser. No. 205,340

Int. Cl.³ A23L *1/30;* **B01J** *13/02*

U.S. Cl. 426—72 **21 Claims**

1. A process for producing mechanically stable, multi-compartmentalized capsules containing an oil soluble nutrient, said process comprising the steps of:

A. forming an emulsion comprising a mixed aqueous solution of an alkali metal alginate and another non-toxic, water-soluble, alcohol-insoluble substance and a dispersed oil phase containing a nutrient;

B. forming discrete droplets of said emulsion;

C. immersing said droplets in an alcoholic solution of multivalent cations to convert said droplets to shape-retaining, water-insoluble alginate beads and to precipitate said alcohol-insoluble substance therewithin; and

D. drying said beads.

18. A composition of matter comprising a mechanically stable matrix consisting essentially of a water-insoluble multivalent cation containing alginate structure and another water-soluble, alcohol-insoluble polysaccharide, said matrix defining a plurality of compartments containing an oleophilic material.

21. The composition of claim **18** wherein said oleophilic material is a vitamin.

4,389,420

DOUGH GLAZE

Samuel H. Yong, Minneapolis; Donna J. Perlbachs, Edina; Glenn R. Wallin, Minneapolis, and Roberta C. Houle, Champlin, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed May 11, 1981, Ser. No. 262,582

Int. Cl.³ A21D *13/00*

U.S. Cl. 426—94 **10 Claims**

1. A glazed dough product comprising:

a mass of fresh dough made from cereal grain flour;

a coating of glaze on the exterior of said dough mass; said glaze comprising a proteinaceous liquid which contains as an essential component protein having a viscosity above 10^5 centipoise measured at 5.5° C. whereby the glaze is on the next exterior surface of the dough during storage and after baking.

4,389,421

METHOD FOR CONTROLLING LIGHT STABILITY IN MALT BEVERAGES AND PRODUCT THEREOF

S. R. Palamand, St. Louis, Mo., assignor to Busch Industrial Products Corporation

Filed Oct. 30, 1981, Ser. No. 316,466

Int. Cl.³ A23L *2/00*

U.S. Cl. 426—330.4 **19 Claims**

1. A malt beverage, comprising a light stabilizing material selected from the group consisting of organic compounds containing 1,8 epoxy groups and mixtures of organic compounds containing 1,8 and 1,4 epoxy groups in an amount sufficient to extend light stability, whereby the malt beverage is resistant to sunstruck flavor.

4,389,422

METHOD FOR PRODUCING AROMATIZED MICROPOROUS SUBSTRATES

Stephen F. Hudak, Croton-on-Hudson, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 139,058, Apr. 10, 1980, abandoned. This application Sep. 18, 1981, Ser. No. 303,458

Int. Cl.³ A23L *1/22, 1/222;* **A23F** *3/40, 5/46*

U.S. Cl. 426—388 **6 Claims**

1. A method for producing aroma loaded microporous particles of vegetable material which comprises spraying an aqueous solution of said vegetable material into an anhydrous organic solvent which will dehydrate the solution and form microporous particles of soluble solids having an average particle size of less than 200 microns in diameter, thereafter separating the particles from the water-containing solvent and removing residual solvent and then loading the microporous particles with volatile aromatics.

4,389,423

PROCESS FOR THE PRODUCTION OF POWDERED PROTEIN MATERIALS FROM ANIMAL RAW MATERIAL

Tonni B. Madsen, Fredericia, Denmark, assignor to Danske Andelsslagteriers Kodfoder-og Albuminfabrik, Lunderskov, Denmark

Filed Jan. 14, 1981, Ser. No. 224,929

Claims priority, application Denmark, Jan. 31, 1980, 80406

Int. Cl.³ A23J *1/10*

U.S. Cl. 426—417 **7 Claims**

1. A process for the production of protein products from bone containing animal raw material comprising:

(a) grinding the bone containing animal raw material,

(b) heat treating the ground animal raw material at a temperature above 100° C. in order to obtain a mixture consisting of solids in a fluid phase,

(c) mechanically separating said mixture in order to produce a fluid phase, and a moist protein-containing bone/meal fraction,

(d) drying the moist bone/meal fraction,

(e) separating the dried bone/meal fraction into a first protein product containing bone pieces and a second powdered protein product,

(f) separating said fluid phase into a sludge, an aqueous protein phase and a fat containing phase,

(g) returning the sludge to step (b) or step (c),

(h) passing the fat containing phase on to a fat purification apparatus, and

(i) spray-drying the protein phase separately in order to produce a third powdered protein product.

4,389,424

PRODUCTION OF SEMIPROCESSED FRIED POTATO PIECES FOR PRESERVATION AT ROOM TEMPERATURE

Hiroshi Hasegawa, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 127,054, Mar. 4, 1980, abandoned. This application May 18, 1981, Ser. No. 264,239

Claims priority, application Japan, Jun. 4, 1979, 54-68845

Int. Cl.³ A23B *7/14;* **A23L** *1/216*

U.S. Cl. 426—546 **9 Claims**

1. A process for producing semiprocessed fried potatoes for preservation at room temperature which comprises: pre-frying raw potato pieces, having a shape-retaining rigidity, in deep edible oil to partially dry the same so that the water content of the potato pieces is reduced by about 10 to 20 percent by weight to a water content of 61 to 72 percent by weight, said potato pieces having been prepared by washing, peeling and cutting raw potatoes; placing the pieces thus pre-fried into a packaging bag made of a sheet material having a gas-barrier property and lightproofness; gas-tightly sealing the bag thereby to package the pieces; and sterilizing by heating the potato pieces thus packaged.

4,389,425

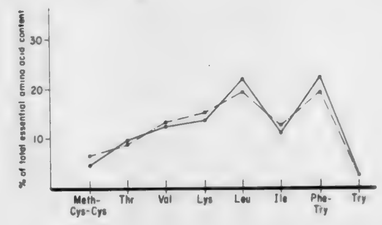
METHOD OF MAKING SOY MILK CONTAINING STABILIZED PROTEIN

Jack Burr, II, P.O. Box 789, Dunedin, Fla. 33528

Filed Jun. 11, 1981, Ser. No. 272,738

Int. Cl.³ A23C *11/10*

U.S. Cl. 426—598 **21 Claims**



1. A process for making a bovine milk substitute or a bovine milk extender, comprising the steps of,

preparing a predetermined quantity of soy beans for subsequent treatment by soaking the same in water for a predetermined time and then blanching said beans,

preparing an acidified water solution to provide a source of negatively charged ions for subsequent use in said process,

introducing said prepared beans and said acidified water solution into a first homogenizer means so that the beans are ground to a substantially uniform state or consistency

by said first homogenizer means, so that the protein-containing bean cells are ruptured in the presence of said acidified water solution within said first homogenizer means releasing to the acidified water solution a protein and starch extract to form an extract solution, and so that the amino acids in the proteins released into said acidified water solution by said cell rupturing will be in positively charged form and electrically associated with negatively charged ions supplied by said acidified water solution,

desludging the extract solution,

quickly elevating the temperature of the desludged extract solution under boil-preventing pressure to deactivate enzymes,

thereafter introducing an alkaline compound into the extract solution to increase the pH of the resulting alkaline extract solution and to provide a source of positively charged ions,

treating the alkaline extract solution by removing a predetermined quantity of hydrogen ions from the positively charged amino acid molecules released into said acidified water solution in said first homogenizer means so that the amino acids in the proteins are converted from positively charged amino acid molecules to negatively charged amino acid molecules so that the resulting anionic-form amino acid ions will enter into electrical association with the positively charged ions provided during said pH increasing step,

whereby the resulting alkaline extract solution maintains protein in suspension in a form that substantially duplicates the form that protein is maintained in suspension in bovine milk.

4,389,426

25 TO 65 WT. % FAT CONTENT WATER-IN-OIL EMULSION SPREAD WHOSE AQUEOUS PHASE COMPRISES A GELLING SYSTEM

Hermann A. W. Reissmann, Ellerbek, and Bernd T. Milo, Hamburg, both of Fed. Rep. of Germany, assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 13, 1981, Ser. No. 321,028

Claims priority, application United Kingdom, Nov. 22, 1980, 8037545

Int. Cl.³ A23D *5/00, 3/00*

U.S. Cl. 426—602 **6 Claims**

1. Water-in-oil edible emulsion spread having a fat content ranging from 25 to 65 wt%, which comprises a dispersed aqueous phase containing a gelling system comprising:

(i) at least one hydrocolloid selected from the group consisting of dextrins having a DE-value of at least 20, pectin having a degree of esterification of at least 48%, lambda carrageenan and alginates; and

(ii) at least one hydrocolloid selected from the group consisting of guar gum, locust bean gum and iota carrageenan

wherein an effective amount of each type of said hydrocolloid is employed sufficient to stabilize the emulsion spread under storage conditions while de-stabilizing the emulsion spread under palate conditions affording a pleasant melting behavior.

4,389,427

PROCESS FOR THE CONTINUOUS ROASTING OF COCOA KERNEL PASTE

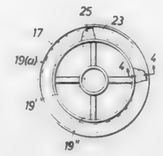
Armin Schmitt, Am Birkeneck 88, 6056 Heusenstamm, and Rüdiger Nosthinski, Frankenstr. 1, 6051 Dietzenbach-Steinberg, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 136,399, Apr. 1, 1980, abandoned, which is a continuation-in-part of Ser. No. 948,248, Oct. 3, 1978, abandoned. This application Dec. 14, 1981, Ser. No. 330,856

Int. Cl.³ A23G *1/02*

U.S. Cl. 426—631 **21 Claims**

1. A process comprising roasting liquid cocoa paste by applying the same as a thin layer which is advanced on an unheated surface and heating the paste by passing a hot gas along the layer and by generating shearing and friction forces in said layer, said shearing and friction forces being generated by



scraping paste out of said layer and spraying the thusly scraped paste back into the layer.

4,389,428

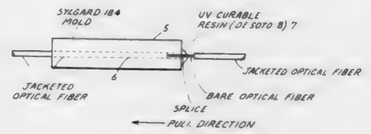
METHOD OF REJACKETING A FUSION SPLICE IN AN ULTRAVIOLET LIGHT CURABLE RESIN JACKETED OPTICAL FIBER

Frederick T. McDuffee, Manchester, N.H., and Carrie L. Kozikowski, Bedford, Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 15, 1982, Ser. No. 357,950

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—54.1 **26 Claims**



1. A method of rejacketing a fusion splice in an ultraviolet light curable resin jacketed optical fiber comprising the steps of

forming an ultraviolet light transparent mold including a cylindrical passageway having a diameter equal to the diameter of said jacketed optical fiber;

placing said jacketed optical fiber in said passageway with said splice without a jacket thereon being disposed a predetermined distance from said transparent mold;

applying an ultraviolet curable resin to an end of said passageway adjacent said splice;

pulling said splice very slowly through said resin into said passageway along with a portion of said resin;

curing said resin under an ultraviolet lamp; and

removing said transparent mold from said optical fiber after said splice has been completely rejacketed.

4,389,429

METHOD OF FORMING INTEGRATED CIRCUIT CHIP TRANSMISSION LINE

Sidney I. Soclof, San Gabriel, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 160,031, Jun. 16, 1980, Pat. No. 4,379,307. This application Jun. 28, 1982, Ser. No. 393,149

Int. Cl.³ B05D *5/12;* **C23F** *1/02;* **H01L** *21/306*

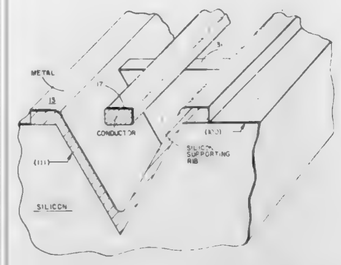
U.S. Cl. 427—90 **5 Claims**

1. A method for making interconnections on integrated chips which substantially reduces the RC time constant of present interconnections, comprising the steps of:

applying a conductive coating to a semiconductor substrate;

selectively etching or milling through the conductive coating to define a first conductor;

etching into the substrate and under at least one elongated portion of the first conductor; and



applying a further conductive coating to the etched substrate to comprise a second conductor in spaced relation to the first conductor.

4,389,430

METHOD AND ARRANGEMENT FOR COATING ORIFICE WALLS

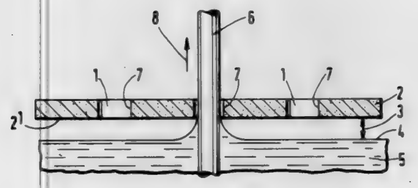
Renate Rettich, New-Ulm, and Wilhelm Schwedes, Ulm-Ermingen, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 6, 1981, Ser. No. 318,913

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1980, 3041986

Int. Cl.³ B05C *7/06, 5/02;* **B05D** *1/28, 7/22*

U.S. Cl. 427—230 **13 Claims**



1. A method of coating the inner walls of at least one orifice of a perforated plate or board with a liquid wherein the plate has a surface which is held substantially parallel to the surface of said liquid, without touching said liquid and at least one element at least touches said liquid through said at least one orifice and as a result of the movement of said element and/or as a result of the capillarity at the interface between said liquid and said element, said walls of said orifice are wetted by said liquid.

4,389,431

PROCESS FOR MECHANICALLY DEPOSITING HEAVY METALLIC COATINGS

David W. Erismann, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 230,861, Feb. 2, 1981, abandoned, which is a division of Ser. No. 148,732, May 12, 1980, abandoned. This application Jun. 30, 1982, Ser. No. 393,737

Int. Cl.³ B05D *3/12*

U.S. Cl. 427—242 **5 Claims**

1. A mechanical plating process for providing metallic articles with a heavy, thick metallic coating of a mechanical plating metal, comprising the steps of:

(a) providing an acidic aqueous mixture of said metallic articles, impact media and a flash promoter, the acidity of the mixture being sufficient to remove metal oxides contained on the articles to be plated and on a finely divided mechanical plating metal to be added, said flash promoter comprising per 100 square feet of plating surface area, up to about 400 grams of a strong acid or an acid engendering salt, from about 10 to about 80 grams of a soluble salt of a metal more noble than said plating metal, an effective amount of a dispersant capable of dispersing said plating metal, and an effective amount of an inhibitor capable of inhibiting corrosion of said plating metal;

(b) adding to said mixture said finely divided mechanical plating metal in sufficient quantity to effect a galvanomechanical deposition of said metal more noble than said plating metal;

(c) agitating the resultant mixture until said deposition is effected;

(d) adding to said mixture a portion of finely divided mechanical plating metal and an effective amount of a continuing promoter, said continuing promoter comprising, per pound of finely divided mechanical plating metal, from about 20 to about 150 grams of a strong acid or an acid engendering salt, from about 1.0 to about 20 grams of a soluble salt of a metal more noble than said plating metal, an effective amount of a dispersant capable of dispersing said plating metal, and an effective amount of an inhibitor capable of inhibiting corrosion of said plating metal;

(e) agitating said mixture for a sufficient time to effect mechanical plating of said finely divided plating metal on said metallic articles; and

(f) repeating steps (d) and (e) until said heavy, thick metallic coating is obtained on said metallic articles.

4,389,432

METHOD OF IMPROVING ADHESION AND ADHESION IMPROVERS USED THEREFOR

Yoshio Inoue, and Hisashi Shimizu, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1982, Ser. No. 386,230

Claims priority, application Japan, Jun. 17, 1981, 56-92352

Int. Cl.³ B05D *1/36;* **C08L** *31/02*

U.S. Cl. 427—299 **8 Claims**

1. An adhesion improver which comprises

(a) 100 parts by weight of a copolymer formed of

(a-1) an organosilicon compound having at least one hydrolyzable atom or group bonded to the silicon atom and at least one ethylenic double bond in a molecule,

(a-2) glycidyl methacrylate, and

(a-3) an organic monomer having an ethylenic unsaturation; and

(b) from 1.0 to 40.0 parts by weight of a reaction product formed by the reaction of

(b-1) an organosilane compound having an aminoalkyl group as represented by the general formula

$$H+NH—CH_2—CH_2\overline{)_m}NH+CH_2\overline{)_n}Si(R)_a(X)_{3-a},$$

in which R is a monovalent hydrocarbon group having from 1 to 6 carbon atoms, X is a hydrolyzable group, m is zero, 1 or 2, n is 1, 2 or 3 and a is zero, 1 or 2, and

(b-2) an acid anhydride having at least three carbon atoms in a molecule.

4,389,433

SULFUR DIOXIDE CURED COATINGS

Thomas R. Pampalone, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 212,810, Dec. 4, 1980, abandoned. This application May 6, 1981, Ser. No. 261,017

Int. Cl.³ B05D *3/04, 3/10*

U.S. Cl. 427—341 **14 Claims**

1. A method of forming a film on a substrate consisting essentially of applying to the substrate a nonaqueous composi-

tion comprising a solution of a free radical initiator having a hydroperoxide moiety in a liquid monomer containing one or more acrylate moieties and curing said composition by exposing same to sulfur dioxide gas.

4,389,434

PERMEABLE GRASS-LIKE SPORT SURFACE WITH FUSED GLASS MEMBRANE

Herman A. Polman, Fijnaart, Netherlands, assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 12, 1982, Ser. No. 348,385
Int. Cl.³ E01C *7/00*
U.S. Cl. 428—17 **9 Claims**



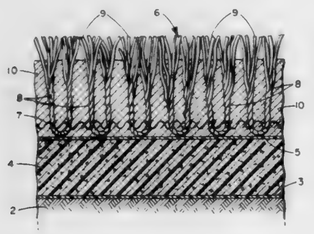
1. A water-permeable, grass-like sport surface comprising:
(a) a solid, porous, resilient base mat, formed from rubber or rubber-like particles bonded together by binder;
(b) a thermoplastic, synthetic fiber, grass-like mat placed over the base mat, said grass-like mat having been prepared by tufting the synthetic fibers into a fabric to obtain a fabric having loops of the synthetic fibers on the fabric's bottom side and a grass-like pile on its top side, placing on the loops on the bottom side of the fabric a water-permeable, heat-resistant membrane, composed of glass fibers or high melting-point fibers or a mixture of high melting-point fibers and glass fibers, followed by heating the membrane to thereby fuse the synthetic fibers to the membrane; and
(c) a discontinuous adhesive to attach the grass-like mat to the base mat.

4,389,435

TOP DRESSED PLATING SURFACE WITH RESILIENT UNDERPAD

Frederick T. Haas, Jr., Metairie, La., assignor to Mod-Sod Sports Surfaces, Inc., Metairie, La.

Continuation of Ser. No. 115,141, Jan. 24, 1980, abandoned, which is a division of Ser. No. 947,036, Sep. 29, 1978, abandoned. This application Aug. 25, 1981, Ser. No. 296,128
Int. Cl.³ D03D *27/00*; D04H *11/00*
U.S. Cl. 428—17 **18 Claims**



1. A golf green comprising:
(a) a firm, stable subsurface;
(b) a resilient, compressible underpad from ¼ to 1¼" thick and having a density from about 3.5 to 12 lbs. per cubic foot;
(c) a pile fabric having a flexible backing and normally upstanding pile elements resembling grass; the length of said pile elements being substantially uniform and lying in the range from ½ to 1½"; and
(d) a compacted top dressing layer of sand having a particle size in the range from 10 to 200 U.S. screen mesh interspersed among the pile elements and on the backing to a substantially uniform depth at least ½ the length of the pile elements;
the combination of subsurface, underpad, pile fabric and top dressing providing natural footing for players and facilitating ball control by dissipating the shock of objects impacting on the surface.

4,389,436

FLEXIBLE FILM LAMINATE AND RETORTABLE FOOD POUCH THEREFROM

Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 28, 1981, Ser. No. 334,763
Int. Cl.³ B65D *73/00, 1/00*; B32B *27/08*
U.S. Cl. 428—35 **15 Claims**

1. A flexible film laminate which comprises:
(a) a first layer of heat-sealable polyolefin film;
(b) a syndiotactic poly-1,2-butadiene adhesive bonding said first layer to;
(c) a second layer of polyacrylonitrile homopolymer film; said laminate having been subjected to conditions sufficient to effect the generation of free radicals in the system to an extent resulting in a greater bond strength between layers than in the absence of said conditions.

15. The retortable food pouch fabricated from a flexible film laminate which comprises:
(a) a first layer of heat-sealable polyolefin film;
(b) a syndiotactic poly-1,2-butadiene adhesive bonding said first layer to;
(c) a second layer of polyacrylonitrile homopolymer film; said laminate having been subjected to conditions sufficient to effect the generation of free radicals in the system to an extent resulting in a greater bond strength between layers than in the absence of said conditions.

4,389,437

BOIL RESISTANT FILM LAMINATE AND RETORTABLE FOOD POUCH THEREFROM

Gordon P. Hungerford, Palmyra, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 28, 1981, Ser. No. 334,764
Int. Cl.³ B65D *89/00*; B32B *27/40, 27/32*
U.S. Cl. 428—35 **9 Claims**

1. A flexible film laminate comprising:
(a) a first layer of a heat-sealable polyolefin film;
(b) a first adhesive layer contacting said polyolefin film; said first adhesive being a maleic acid anhydride adduct of an ethylene-propylene copolymer;
(c) a second adhesive layer contacting said first adhesive layer, said second adhesive being a combination of a styrene-butadiene block copolymer and a random terpolymer of from about 30 to about 40 parts by weight of 1,3-pentadiene; about 30 to about 40 parts by weight of a monocyclic terpene; and from about 25 to about 33 parts by weight of alpha methylstyrene, said combination consisting of from about 1 to about 3 parts by weight of the block copolymer to from about 3 to about 1 parts by weight of the terpolymer, said second adhesive also contacting;
(d) a second layer of a polyacrylonitrile homopolymer film; said laminate having been subjected to ultra violet radiation through said second layer to an extent resulting in a greater bond strength between layers than in the absence of said radiation.

4,389,438

PROCESS FOR PREPARING LAMINATES

Akira Ohtsuki; Hirokichi Ishino; Hiromu Sakai; Takahiko Yamasoba; Susumu Tsuchiko, and Takashi Yoshino, all of Kyobashi, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1981, Ser. No. 282,343
Claims priority, application Japan, Jul. 22, 1980, 55-99425
Int. Cl.³ B65D *37/00*
U.S. Cl. 428—35 **20 Claims**

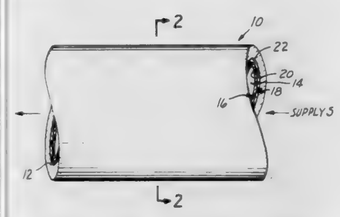
1. A process for preparing a final laminate comprising the steps of:
putting a thermoplastic resin sheet or film and a metal foil or sheet one upon another with a specific polyolefin type resin being interposed therebetween, the specific polyolefin type resin being at least one member selected from the group consisting of carboxyl group-containing polyolefin resins and metal compound-added carboxyl group-containing polyolefin resins,
heating the thus interposed specific polyolefin type resin through the metal foil or sheet to a temperature not lower than the melting point of the specific polyolefin type resin to obtain an intermediate laminate and
laminating at least one member selected from the group consisting of paper and thermoplastic sheets or films, on the metal foil or sheet side of said intermediate laminate using therebetween an ordinary adhesive which does not require to be heated to a temperature not lower than the melting point of said specific polyolefin type resin at the time of lamination, thereby to obtain a final laminate.

4,389,439

EROSION RESISTANT TUBULAR APPARATUS FOR HANDLING SLURRIES

Eugene V. Clark, Northridge, and George K. Sievers, Burbank, both of Calif., assignors to Turbine Metal Technology, Inc., Burbank, Calif.

Filed Jul. 2, 1981, Ser. No. 279,827
Int. Cl.³ B05D *7/22*; B32C *1/08*
U.S. Cl. 428—36 **23 Claims**



1. Fluid handling system comprising a supply of a finely particulate slurry free of gross particulate and of a highly erosive composition, and tubular apparatus conveying said slurry from said supply along a predetermined path extending from said supply, said apparatus comprising a steel wall of elongated tubular configuration defining an interior surface confining said slurries on said predetermined path, said surface tending to erode through passing contact with said composition, and an erosion resistant diffusion coating on said surface having an inner layer comprising intimately dispersed iron carbide and an outer layer consisting essentially of iron boride, in erosion blocking relation during conveyance of said slurry through said tubular apparatus.

4,389,440

TORQUE PRELOADED ELASTIC COVER FOR TORQUE COUPLING

Roger H. Keith, White Bear Lake, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Feb. 8, 1982, Ser. No. 346,574
Int. Cl.³ H01B *7/00*; B23P *19/02*
U.S. Cl. 428—36 **6 Claims**



1. An elastic cover assembly for couplings or splices completed by rotational movement between the members comprising an elastic tubular cover member having an axial twist formed between the ends of the member with said member supported in a radially stretched condition on a hollow core member comprising a tough flexible material formed as a substantially rigid tube which can be collapsed and removed, allowing the cover to relax tightly about a coupling or splice without loss of the twist.

4,389,441

HIGH DENSITY INFORMATION RECORD LUBRICANTS

Pabitra Datta, Cranbury; Eugene S. Poliniak, Willingboro, and Vladimir S. Ban, Princeton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 1, 1982, Ser. No. 344,552
Int. Cl.³ B32B *3/02*; G11B *5/74*
U.S. Cl. 428—65 **3 Claims**

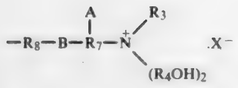
1. In a high density information record adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus, said record comprising a disc of a conductive material containing an information track constituted by a surface relief pattern in said track to accommodate recovery of signals of said bandwidth upon establishment of relative motion at said rate, said record being coated with a methyl alkyl siloxane lubricant having the formula



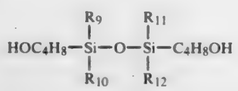
wherein R_1 and R_2 are alkyl groups of 4–20 carbon atoms, x is an integer of 2–4, y is an integer of 0–2 and wherein the sum of x and y is 4 or less, the improvement which comprises adding to said lubricant at least two dopants, at least one of which is selected from the following three classes having the formulas



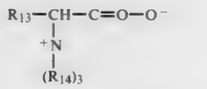
wherein R_3 is hydrogen, lower alkyl or hydroxyalkyl; R_4 is R_6A wherein R_6 is an alkyl group of 1–5 carbon atoms and A is hydroxyl or carboxyl; R_5 can be R_7A wherein R_7 is a straight chain alkyl group of 1–10 carbon atoms and A has the meaning given above or can be R_7A-B-R_8 wherein R_7 and A have the above meaning, B is a linking group which can be —O— or —C≡C— and R_8 is an alkyl group of 6–25 carbon atoms, or their corresponding ammonium salt of the formula



wherein R_7, R_8, A and B have the above meanings and X can be an anion;



wherein R_9 and R_{11} can be methyl or ethyl and R_{10} and R_{12} are long chain alkyl groups of up to 20 carbon atoms; and



wherein R_{13} is an alkyl group of 10–20 carbon atoms and R_{14} is an alkyl group of 1–5 carbon atoms wherein said second dopant is of a different dopant class.

4,389,442

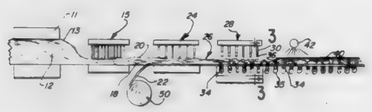
WALL COVERING FABRIC WITH TEXTURIZED LOOPS

Robert C. Pickens, Jr., Gurnee; Patricia R. Kirchherr, Wonder Lake, and Reese R. Thomas, Libertyville, all of Ill., assignors to Ozite Corporation, Libertyville, Ill.

Continuation of Ser. No. 159,471, Jun. 16, 1980, abandoned. This application Dec. 10, 1981, Ser. No. 329,648

Int. Cl.³ B32B *3/02, 33/00*

U.S. Cl. 428—92 **9 Claims**



1. A fabric comprising:

a needled batt of non-woven staple fibers,

a cloth or film of woven, knitted or extruded film needled punched to a face surface of said batt, and

texturized loops of staple fibers are formed from the staple fibers of said batt and extend from said batt outwardly through said cloth or film,

the texturized loops of fibers are comprised of a plurality of clusters of loops of fibers with each cluster containing a plurality of different sized loops of fibers,

said clusters of loops are formed in a pattern on said cloth or film with spaces between selected clusters of loops through which spaces said cloth or film is visible.

4,389,443

CUT PILE FABRIC WITH FUSED CARRIER AND METHOD OF MAKING SAME

Reese R. Thomas, Libertyville; John W. Ellicson, McHenry, and Ronald Somerville, Gurnee, all of Ill., assignors to Ozite Corporation, Libertyville, Ill.

Continuation of Ser. No. 159,473, Jun. 16, 1980, abandoned. This application Dec. 10, 1981, Ser. No. 329,649

Int. Cl.³ B32B *3/02, 33/00*

U.S. Cl. 428—92 **7 Claims**

1. A cut pile fabric comprising:

a needled batt of non-woven staple fibers,

a carrier member fused on one surface of said batt from said staple fibers,

a plurality of texturized loops of staple fibers pushed from said batt and extending upwardly through the fused carrier member,

the texturized loops of fibers comprising a plurality of clusters



of loops of staple fibers with each cluster containing a plurality of different sized loops of staple fibers,

means formed on the other surface of said batt for backing said batt and for securing the staple fibers of said texturized loops and of said batt to said batt, and

a substantial portion of said texturized loops being cut to form cut pile.

4,389,444

NOVEL ALLOY COMPOSITIONS AND PRODUCTS

Ralf Korpman, Bridgewater, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 142,692, May 5, 1980, Pat. No. 4,301,255, which is a continuation-in-part of Ser. No. 54,540, Jul. 5, 1979, abandoned. This application Apr. 14, 1981, Ser. No. 254,225

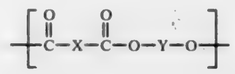
Int. Cl.³ B32B *3/10*

U.S. Cl. 428—137 **3 Claims**

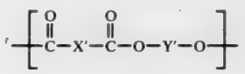
1. A permanently heat-shaped reticular web which comprises strands intersecting in a pattern and defining a corresponding pattern of holes, said web being formed from an alloy composition comprising

(a) from about 5 to 95 parts by weight of a thermoplastic-elastomeric block copolymer component, wherein the block copolymer is an A-B-A or A-B block copolymer or a mixture thereof in which A represents an alkenylarene polymer block and B represents a polymer block of a conjugated lower aliphatic diene, and

(b) correspondingly from about 95 to 5 parts by weight of a copolyester component, wherein the copolyester is a polymeric ester of at least two different ester units, each ester unit being a condensation product of a dicarboxylic acid and an aliphatic diol, said ester units being represented by the formulas



and



wherein X and X′ are nuclei of dicarboxylic acids and Y and Y′ are nuclei of aliphatic diols, and the copolyester is characterized by having a thermal softening temperature below about 225° C.

4,389,445

DATA RECORDING SHEET

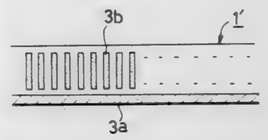
Masafumi Yoshida, and Kenichi Nakamura, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1979, Ser. No. 55,836

Claims priority, application Japan, Jul. 10, 1978, 53/83008

Int. Cl.³ B32B *3/02, 7/02;* **H01L** *41/08, 41/18*

U.S. Cl. 428—77 **10 Claims**



1. In a data recording sheet in which data signals are stored in a polarizable macromolecular material sheet layer having a different polarization locally in the direction of the surface of said sheet layer, said sheet layer causing pyroelectric or piezoelectric polarization through polarization operation, and said data signals thus stored are reproduced in a pyroelectric or piezo-electric mode, the improvement comprising: a macromolecular substrate layer, a thin intermediate electrode layer adjacent said substrate layer and said polarizable macromolecular material sheet layer adjacent to said intermediate electrode layer and laminated through said thin intermediate electrode layer on to said macromolecular substrate layer, said substrate layer having a Young's modulus greater than that of said sheet layer.

4,389,446

LIQUID ABSORBING FIBROUS MATERIAL TREATED WITH A WOOD PRESERVATIVE AGENT

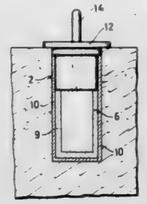
Cornelis W. Blom, Sassenheim, and Jacobus M. van Keulen, Bilthoven, both of Netherlands, assignors to Woodcap, B.V., Netherlands

Division of Ser. No. 889,977, Mar. 24, 1978, Pat. No. 4,265,958. This application Mar. 13, 1981, Ser. No. 243,474

Claims priority, application Netherlands, Mar. 29, 1977, 7703412

Int. Cl.³ A01N *9/02, 17/10, 9/30;* **B32B** *21/04*

U.S. Cl. 428—166 **6 Claims**



1. A liquid absorbing fibrous material provided with a sealed covering and having absorbed a composition for treating wood with a wood preservative agent in liquid or paste-like form comprising a liquid water expelling agent in an amount of at least 5%, biocide and water expelling agent.

4,389,447

DIMENSIONALLY STABLE COMPOSITE MATERIAL AND PROCESS FOR THE MANUFACTURE THEREOF

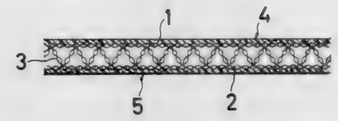
Dieter Disselbeck, Bad Soden am Taunus, and Dieter Stahl, Kriftel, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 12, 1982, Ser. No. 338,856

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3101022

Int. Cl.³ B32B *3/12*

U.S. Cl. 428—178 **8 Claims**



1. Dimensionally stable composite material consisting substantially of a double fabric having a face fabric and a back fabric linked to each other by rigid spacer filaments, and provided on outsides of both the face fabric and the back fabric with a plastics layer, wherein the filaments linking the face fabric and the back fabric of the double fabric are rigid monofilaments permitting the double fabric to withstand compressive forces substantially without deformation, and wherein said plastics layer is a cured laminate.

4,389,448

PATTERNED DRYER ADDED FABRIC CONDITIONING ARTICLES

Donald L. Green, Forest Lakes, N.J., assignor to Beecham Products, Parsippany, N.J.

Continuation of Ser. No. 208,950, Nov. 21, 1980, abandoned. This application Jul. 8, 1982, Ser. No. 396,458

Int. Cl.³ B32B *3/00*

U.S. Cl. 428—195 **44 Claims**

1. An article useful for conditioning clothes in an automatic laundry dryer during the drying cycle, which article comprises a flexible polyurethane foam substrate impregnated with an effective amount of a conditioning agent and having on at least one surface thereof a pattern imprinted with an ink which adheres to the substrate, said ink being stable to the conditioning agent and stable during the impregnation of the substrate with the conditioning agent, or the ink is applied to the substrate after it has been impregnated, the ink pattern substantially disappearing from the substrate during the drying cycle.

4,389,449

CARBON FILM

Ulrich Kohle, Tiefenauweg 17, D-3167 Burgdorf, and Hans Paffhausen, Tiergartenstrasse 17 A, D-3000 Hannover, both of Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 219,090

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951618

Int. Cl.³ B32B *3/00, 5/16;* **B41M** *3/10;* **B41L** *1/16*

U.S. Cl. 428—203 **3 Claims**

1. Carbon film, consisting of a transparent plastic film as base, a coloring carbon layer and a thin intervening layer located between the base and the carbon layer, wherein the intervening layer contains synthetic lustrous pigments.

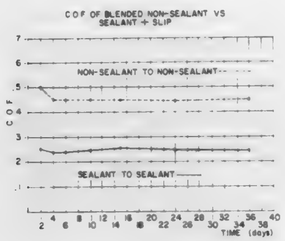
3. Carbon film according to claim 1 or 2, wherein a plastic film printed before application of the carbon layer and the intervening layer is used as the base.

4,389,450

MULTIPLE LAYER PACKAGING FILM

Suzanne E. Schaefer, Neenah, and Jack E. Knott, II, Appleton, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Feb. 26, 1981, Ser. No. 238,210
Int. Cl.³ B32B *7/02;* **C09J** *7/02*
U.S. Cl. 428—212 **12 Claims**



1. A multiple layer heat sealable packaging sheet structure comprising: on one side thereof, a sealant layer; and on the other side thereof, a non-sealant layer, said sealant and non-sealant layers being heat sealable each to themselves and to each other; said non-sealant layer being a blend of about 25 percent to about 75 percent of a first base polymeric material which, in unblended composition, has a coefficient of friction of less than about 2, and about 75 percent to about 25 percent of a second blended-in tacky additive polymeric material which, in unblended composition, has a coefficient of friction greater than 2; said sealant layer being a blend of a tacky heat sealable polymer and up to about 25 percent of a slip additive.

4,389,451

ELECTROSTATIC RECORD MATERIAL

Hironari Fujioka, Takatsuki, and Hajime Matsubayashi, Akashi, both of Japan, assignors to Kanzaki Paper Manufacturing Company, Ltd., Japan

Filed Feb. 3, 1982, Ser. No. 345,366
Claims priority, application Japan, Feb. 13, 1981, 56-20322
Int. Cl.³ B32B *7/02;* **G01D** *15/06*
U.S. Cl. 428—212 **3 Claims**

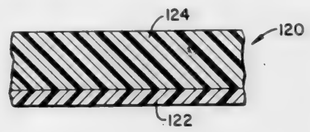
1. An electrostatic record material comprising an electroconductive base sheet and a record layer formed on the base sheet and composed mainly of insulating resin, the record material being characterized in that the electroconductive base sheet has an electroconductive layer comprising (1) electron conductive particles produced by coating the particles of an inorganic compound with an electroconductive substance consisting of stannic oxide and 0.1 to 20 percent by weight of antimony, the electron conductive particles having a specific resistivity of 10^{-2} to 10^{3} ohm. cm. at a pressure of 150 kg/cm^2 and (2) a water-soluble adhesive composed of salts of a copolymer of at least 20 mole % of acrylic acid or methacrylic acid monomer, the amount of the water-soluble adhesive being 3 to 100 parts by weight per 100 parts by weight of the electron conductive particles.

4,389,452

TRANSPARENT INFRARED RADIATION ABSORPTION SYSTEM

Day Chahroudi, Placitas, N. Mex., and John R. Brookes, Berkeley, Calif., assignors to The Southwall Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 870,396, Jan. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 680,262, Apr. 26, 1976, abandoned, which is a continuation-in-part of Ser. No. 471,767, May 20, 1974, Pat. No. 3,953,110. This application Apr. 9, 1980, Ser. No. 138,784
Int. Cl.³ B32B *7/02, 9/04*
U.S. Cl. 428—215 **5 Claims**



1. Apparatus for minimizing the transmission of long wave infrared energy without significantly affecting the transmission of solar energy to provide an energy efficient building component, such apparatus comprising:

a flexible plastic substrate of sheet material having a thickness of no more than approximately 20 mils; and

sheet means secured to said substrate for absorbing long-wave infrared radiation, said absorbing means including an oxide coating absorptive to long wave infrared radiation and having a thickness of between 0.01 and 50 microns, the sheet material of said substrate with said sheet means having adjacent faces in engagement with each other throughout substantially the entire surface areas of said faces;

said substrate and said absorbing means in combination being at least 94% transmissive to visible and other solar radiation while absorbing sufficient long wave infrared radiation to prevent the transmission of at least 80% of all incident long wave infrared radiation.

4,389,453

REINFORCED POLYPHENYLENE SULFIDE MOLDED BOARD, PRINTED CIRCUIT BOARD INCLUDING THIS MOLDED BOARD AND PROCESS FOR PREPARATION THEREOF

Minoru Kitanaka, Nagoya, and Yukichi Deguchi, Otsu, both of Japan, assignors to Toray Industries, Inc., Japan

Filed Jun. 7, 1982, Ser. No. 386,054
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—240 **24 Claims**

8. A printed circuit board comprising as an insulating substrate a reinforced polyphenylene sulfide molded board comprising 20 to 85% by weight of polyphenylene sulfide having a degree of crystallinity of at least 40% and 15 to 80% by weight of glass fibers having a length of at least 5 mm, and a metallic foil bonded to the surface of the substrate.

4,389,454

MOLDED FOAMED POLYURETHANE PART HAVING A LIGHTWEIGHT SKIN AND A PROCESS FOR ITS MANUFACTURE

Heinrich Horacek, Ludwigshafen; Matthias Marx, Bad Durkheim, and Dietmar Hobein, Neu-Estingen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 8, 1981, Ser. No. 252,060
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1980, 3014161
Int. Cl.³ B29D *27/04*
U.S. Cl. 428—318.6 **12 Claims**

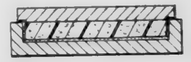
1. A process for the preparation of molded parts having a lightfast polyurethane skin and a polyurethane foam core comprising

A. applying a mixture of the following ingredients, which are reacted in one stage, to the inside wall of an open mold in an amount sufficient to form a skin for the molded part:

(1) an organic polyisocyanate, selected from the group consisting of an aliphatic, cycloaliphatic, and a urethane, biuret, or isocyanurate group containing aliphatic or cycloaliphatic polyisocyanate

(2) a polyol having a molecular weight of 1000 to 8000,

(3) an aliphatic primary or secondary diamine,



(4) chain extender, other than c, having a molecular weight of 60 to 600, selected from the group consisting of dialkanolamines, trialkanolamines, aliphatic diols and triols having 2 to 6 carbon atoms, and hydroxyl group-containing polyalkylene oxides based on ethylene oxide and/or propylene oxide and an initiator, and

(5) a catalyst; and

B. filling the mold with a formable polyurethane reaction mixture;

C. foaming and curing the foamed composite resin product and subsequently removing it from the mold.

12. A molded polyurethane part prepared in accordance with claim **1**.

4,389,455

PHOTOGRAPHIC RESIN COATED PAPER

Yasuzi Asao, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanatawa, Japan

Filed Aug. 21, 1981, Ser. No. 294,867
Int. Cl.³ B32B *5/16, 27/10, 27/20*
U.S. Cl. 428—328 **9 Claims**



1. A photographic printing paper, comprising:

a base paper sheet; and

a coating on said base paper sheet, wherein said coating is comprised of a polyolefin resin containing particles of titanium oxide pigment wherein surfaces of said particles are coated with a polyhydric alcohol selected from the group consisting of dihydric alcohols, trihydric alcohols, or tetrahydric alcohols.

4,389,456

STABILIZED FINISH COMPOSITION

Robert M. Marshall, Chester, Va., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 30, 1981, Ser. No. 316,584
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—375 **49 Claims**

1. An oil-in-water yarn finish composition, the nonaqueous portion of which comprises:

(a) about 0.25 to 10 weight percent of an emulsion stabilizer selected from the group consisting of a salt of dialkyl sulfosuccinate neat wherein each alkyl group comprises 8 to 18 carbon atoms, a salt of dialkyl sulfosuccinate in solution or mixture wherein each alkyl group comprises 9 to 18 carbon atoms, and a mixture of a salt of dioctyl sulfosuccinate and a salt of an aromatic carboxylic acid; and

(b) the balance comprising:

about 55 to 60 weight percent of a lubricant comprising transesterified lauric oil and oleic oil, the lauric oil containing at least about 40 percent lauric groups and the oleic oil containing at least about 60 percent oleic groups; about 15 to 28 weight percent of polyoxyalkylene castor oil; about 4 to 15 weight percent selected from the group consisting of triglycerol monooleate, triglycerol dioleate and mixtures thereof; about 7 to 12 weight percent selected from the group consisting of decaglycerol tetraoleate, decaglycerol pentaoleate and mixtures thereof; and about 1 to 5 weight percent of a suitable antioxidant.

33. In a process for the production of synthetic polymer yarn, the improvement which comprises: treating the yarn with a sufficient amount of an oil-in-water yarn finish composition to achieve a total oil on yarn of 0.1 to 2.0 weight percent, the nonaqueous portion of the composition comprising:

(a) about 0.25 to 10 weight percent of an emulsion stabilizer selected from the group consisting of a salt of dialkyl sulfosuccinate neat wherein each alkyl group comprises 8 to 18 carbon atoms, a salt of dialkyl sulfosuccinate in solution or mixture wherein each alkyl group comprises 9 to 18 carbon atoms, and a mixture of a salt of dioctyl sulfosuccinate and a salt of an aromatic carboxylic acid; and

(b) the balance comprising: about 55 to 60 weight percent of a lubricant comprising transesterified lauric oil and oleic oil, the lauric oil containing at least about 40 percent lauric groups and the oleic oil containing at least about 60 percent oleic groups; about 15 to 28 weight percent of polyoxyalkylene castor oil; about 4 to 15 weight percent selected from the group consisting of triglycerol monooleate, triglycerol dioleate and mixtures thereof;

about 7 to 12 weight percent selected from the group consisting of decaglycerol tetraoleate, decaglycerol pentaoleate and mixtures thereof; and about 1 to 5 weight percent of a suitable antioxidant.

39. A method for improving the emulsion stability of an oil-in-water yarn finish composition by adding thereto the nonaqueous portion which comprises:

about 55 to 60 weight percent of a lubricant comprising transesterified lauric oil and oleic oil, the lauric oil containing at least about 40 percent lauric groups and the oleic oil containing at least about 60 percent oleic groups, said lubricant including about 10 to 90 percent lauric oil and about 10 to 90 percent oleic oil;

about 15 to 28 weight percent of polyoxyalkylene castor oil;

about 4 to 15 weight percent selected from the group consisting of triglycerol monooleate, triglycerol dioleate and mixtures thereof;

about 7 to 12 weight percent selected from the group consisting of decaglycerol tetraoleate, decaglycerol pentaoleate and mixtures thereof; and

about 1 to 5 weight percent of a suitable antioxidant; said method comprising:

adding about 0.25 to 10 percent, based on the weight of the final nonaqueous portion of the composition, of an emulsion stabilizer selected from the group consisting of a salt of dialkyl sulfosuccinate neat wherein each alkyl group comprises 8 to 18 carbon atoms, a salt of dialkyl sulfosuccinate in solution or mixture wherein each alkyl group comprises 9 to 18 carbon atoms, and a mixture of a salt of dioctyl sulfosuccinate and a salt of an aromatic carboxylic acid.

4,389,457

HOT-MELT POLYESTERIMIDE-POLYISOCYANATE ELECTRICAL COATING COMPOSITIONS

Denis R. Pauze, Scotia, and Otto S. Zamek, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 154,838, May 30, 1980, Pat. No. 4,296,229. This application Jul. 14, 1981, Ser. No. 283,134

Int. Cl.³ C08G *18/80, 18/42;* **C08F** *283/04*

U.S. Cl. 428—379 **6 Claims**

1. An electrical conductor provided with a coating of a composition comprising a resinous reaction product obtained by heating ingredients comprising:

(a) an aromatic diamine;

(b) an aromatic carboxylic anhydride containing at least one additional carboxylic group;

(c) terephthalic acid or a reactive derivative thereof;

(d) a polyhydric alcohol having at least three hydroxyl groups;

(e) an alkylene glycol; and

(f) a small amount of

(i) an alkylene glycol monoether or monoester;

(ii) a polyalkylene glycol monoether or monoester; or

(iii) a mixture of (i) and (ii),

until an acid number of lower than about 6 to about 7 is attained, and adding to the hot reaction product a blocked polyisocyanate in an amount of from about 1 to about 40 parts by weight per 100 parts by weight of the polyesterimide and blocked polyisocyanate.

4,389,458

MAGNETIC RECORDING MEDIUM

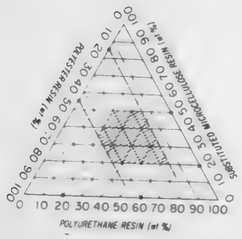
Akihiko Hosaka, and Kiyotaka Okuyama, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1982, Ser. No. 341,053

Claims priority, application Japan, Mar. 26, 1981, 56-43184

Int. Cl.³ B32B *27/28, 27/30, 27/36, 27/40*

U.S. Cl. 428—425.9 **2 Claims**



1. In a magnetic recording medium having a substrate coated with a magnetic layer comprising a magnetic powder and a binder, the improvement characterized in that said binder in said magnetic layer comprises 20 to 60 wt.% of a polyurethane, 15 to 45 wt.% of a polyester resin and 20 to 50 wt.% of a vinyl chloride-vinyl acetate copolymer-impregnated nitrocellulose.

4,389,459

CONDUCTIVE COATINGS FOR METAL SUBSTRATES

Michael J. Mirra, and Albert H. Giles, both of Greeneville, Tenn., assignors to Ball Corporation, Muncie, Ind.

Division of Ser. No. 147,004, May 6, 1980, Pat. No. 4,331,487. This application Nov. 30, 1981, Ser. No. 325,691

Int. Cl.³ B32B *15/04*

U.S. Cl. 428—457 **3 Claims**

1. A metal substrate treated by the process of contacting a metal surface with a solution containing 0.1 to 2.5 weight percent of a salt selected from the group consisting of iron nitrate, nickel nitrate and copper nitrate, 0.01 to 3.5 weight percent of an oxidizing agent selected from the group consisting of perborates, peroxides, persulfates and perchlorates, 2 to 20 weight percent of a mineral acid selected from the group consisting of sulfuric acid and phosphoric acid and the remainder water, drying the contacted surface and thereafter applying an electrically conductive coating thereon.

4,389,460

METHOD OF PROTECTING SUBMERGED ARTICLES AGAINST FOULING

François Dawans, Bougival; Marguerite Devaud, Mont St Aignan, and Denise Nicolas, Maurepas, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Division of Ser. No. 935,822, Aug. 22, 1978, Pat. No. 4,262,097. This application Nov. 19, 1980, Ser. No. 208,463

Claims priority, application France, Aug. 22, 1977, 77 25771

Int. Cl.³ B32B *15/08*

U.S. Cl. 428—458 **37 Claims**

1. In a water-submersible article of manufacture protected against fouling by marine organisms by the application thereon of a surface coating of a biocidal coating composition,

the improvement wherein said biocidal coating composition comprises an anti-fouling amount of an organometallic polymer composition comprising a graft copolymer formed of:

(a) a main chain consisting of a chlorinated polymer of a conjugated diene monomer; and

(b) at least one grafted chain formed at least partly of recurrent units having at least one pendant tin or organotin carboxylate function;

wherein said chlorinated polymer of a conjugated diene monomer has a chlorine content such that the final graft copolymer contains from 20 to 65% by weight of chlorine.

19. In a method of treating an article to be submerged in water, to protect the article against fouling by marine organisms, comprising applying to the article a surface coating of a biocidal coating composition,

the improvement wherein said biocidal coating composition comprises an anti-fouling amount of an organometallic polymer composition comprising a graft copolymer formed of:

(a) a main chain consisting of a chlorinated polymer of a conjugated diene monomer; and

(b) at least one grafted chain formed at least partly of recurrent units having at least one pendant tin or organotin carboxylate function;

wherein said chlorinated polymer of a conjugated diene monomer has a chlorine content such that the final graft copolymer contains from 20 to 65% by weight of chlorine.

4,389,461

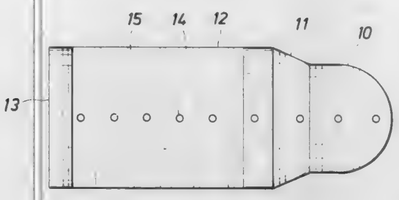
PIPELINE PIG

Paul R. Scott, Brazoria, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 8, 1982, Ser. No. 356,011

Int. Cl.³ B32B *1/06;* **B05D** *7/22*

U.S. Cl. 428—543 **10 Claims**



1. A pipeline pig comprising a cylindrically shaped body of polymeric foam having cells filled with a gel.

4,389,462

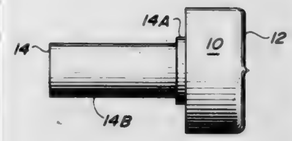
PROCESS FOR ENCLOSING A PIN SHANK WITHIN AN ENCLOSING MEMBER AND ARTICLE PRODUCED THEREBY WHICH IS SUBSTANTIALLY DEVOID OF A GAP BETWEEN THE ENCLOSING MEMBER AND THE HEAD OF THE PIN

Paul J. Walsh, and Jeffrey A. Burkart, both of Kokomo, Ind., assignors to Cabot Corporation, Kokomo, Ind.

Filed Jul. 8, 1981, Ser. No. 281,541

Int. Cl.³ B32B *15/16*

U.S. Cl. 428—564 **14 Claims**



1. A process for enclosing a pin shank within an enclosing member, comprising the steps of: providing a pin having a head and a shank, the pin being formed from a metal, the cross-section of the head being larger than that of the shank in a direction normal to the length of the pin, and in the same direction, the cross-section of the shank being larger adjacent the head then over all other parts thereof, the larger cross-section of the shank being less than 30% of the length of the shank; providing an enclosing member, the enclosing member being of material dissimilar to that of the pin, the enclosing member being formed from material in powder form; inserting the shank into the enclosing member; and sintering the enclosing member, the enclosing member adhering to the shank during sintering, the enclosing member fitting up against the head so that the article is substantially devoid of a gap therebetween.

4,389,463

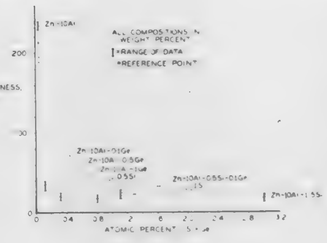
ZINC-ALUMINUM HOT DIP COATED FERROUS ARTICLE

John G. Smeggil, Simsbury, and Norman S. Bornstein, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 23, 1981, Ser. No. 286,128

Int. Cl.³ C23C *1/02;* **C22C** *18/04*

U.S. Cl. 428—659 **11 Claims**



1. A ferrous metal article having on the surface thereof a hot dip coating comprised predominantly of zinc (Zn), up to 17 weight percent aluminum (Al), and at least 0.1 weight percent germanium (Ge).

4,389,464

BLACK CHROME COATING FOR SOLAR COLLECTORS AND METHOD OF ELECTRODEPOSITING SAID COATING

August Mühlratzer, Gilching, Fed. Rep. of Germany, assignor to Man Maschinenf Abrik Augsburn-Nurnberg, Munich, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 289,210

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1980, 3029637

Int. Cl.³ B32B *15/01;* **C25D** *3/56, 5/12*

U.S. Cl. 428—667 **10 Claims**

1. A black chrome electrolyte for the electrodeposition of selective layers for solar collectors, said black chrome electrolyte consisting essentially of chromium trioxide (CrO_3), fluorosilic acid (H_2SiF_6) as a catalyst and sodium molybdate ($Na_2MoO_4.2H_2O$), said black chrome electrolyte being adapted to form a thin, black layer, by electrodeposition, on a substrate.

9. A solar absorber comprising a substrate having a nickel surface, and an electrocoating on said nickel surface of said substrate comprising an electrodeposit from a black chrome electrolyte consisting essentially of chromium trioxide, fluorosilic acid and sodium molybdate.

4,389,465

SINTERED COMPACT FOR USE IN A TOOL AND THE METHOD FOR PRODUCING THE SAME

Tetsuo Nakai; Yuichiro Kono; Shuji Yazu, and Akio Hara, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 145,454, Apr. 25, 1980, abandoned. This application Feb. 17, 1982, Ser. No. 349,663

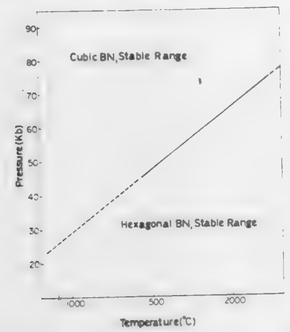
Claims priority, application Japan, May 1, 1979, 54-53583

Int. Cl.³ C04B *35/58*

U.S. Cl. 428—698 **5 Claims**

1. A sintered compact for use in an ultrahard tool consisting essentially of 20–80 volume % cubic boron nitride and the residual part consisting of Al_2O_3, said residual part constituting a continuous phase in the structure of the sintered compact,

characterized in that the half width of (116) in X-ray diffraction of CuKα ray of the Al_2O_3 crystals in the sintered compact



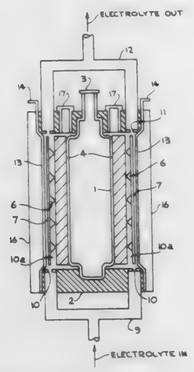
is within the range from 0.600 deg. to 0.200 deg., and the particle size of the cubic boron nitride is less than 5 μm.

4,389,466

RAPIDLY REFUELABLE FUEL CELL

Richard W. Joy, Santa Clara, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 3, 1981, Ser. No. 270,113
Int. Cl.³ H01M *8/02, 8/18*
U.S. Cl. 429—27 **10 Claims**



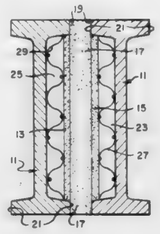
1. A refuelable electrochemical fuel cell comprising:
a housing defining a chamber therein and having a removable cover,
at least one air-cathode positioned within said chamber of said housing,
an expandable and contractable member positioned within said chamber of said housing,
at least one consumable reactive metal anode movably positioned within said chamber of said housing and located intermediate said member and said air-cathode, said consumable anode having a sheet-like configuration and positioned in said chamber such that a peripheral edge of said anode is adjacent said removable cover of said housing,
current collector means positioned within said chamber of said housing and located intermediate said anode and said air-cathode,
means for directing electrolyte through said housing intermediate said anode and said air-cathode, and
means for causing expansion and contraction of said member, whereby expansion of said member applies an even pressure to said anode causing said anode to be moved toward said air-cathode and to maintain said anode in constant contact with said current collector means during consumption of said anode, and whereby contraction of said member allows placement of a new consumable anode in said housing via said removable cover.

4,389,467

POROUS ELECTROLYTE RETAINER FOR MOLTEN CARBONATE FUEL CELL

Raj N. Singh, and Joseph T. Dusek, both of Downers Grove, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 107,741, Dec. 27, 1979. This application Nov. 28, 1980, Ser. No. 211,001
Int. Cl.³ H01M *8/14*
U.S. Cl. 429—41 **11 Claims**



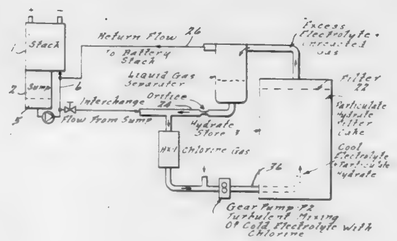
1. In a fuel cell including a porous metal plate for use as an anode electrode, a porous plate containing a metal oxide for use as a cathode electrode, the electrode plates having porosities of about 65–75%, first and second channel means for providing a fuel gas to the anode and an oxidant gas to the cathode respectively and a porous $LiAlO_2$ tile intermediate said cathode and anode plates, the improvement wherein said $LiAlO_2$ tile is a structurally stable plate of more than 50% porosity but of a porosity near to but below that of the electrode plates, said porous $LiAlO_2$ tile having particles consisting essentially of gamma $LiAlO_2$ bonded together at points of contact by mutual diffusion at sintering conditions.

4,389,468

METAL HALOGEN BATTERY SYSTEM WITH MULTIPLE OUTLET NOZZLE FOR HYDRATE

Harry K. Bjorkman, Jr., Birmingham, Mich., assignor to Energy Development Associates, Inc., Madison Heights, Mich.

Filed Mar. 16, 1982, Ser. No. 358,628
Int. Cl.³ H01M *2/40*
U.S. Cl. 429—70 **5 Claims**



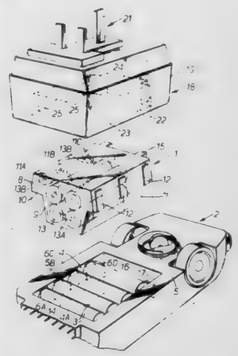
1. In a metal halogen battery system, including at least one cell having a positive electrode and a negative electrode contacted by aqueous electrolyte containing the material of said metal and halogen, store means whereby halogen hydrate is formed and stored as part of an aqueous material, means for circulating electrolyte through the cell and to the store means, and conduit means for transmitting halogen gas formed in the cell to a hydrate former whereby the hydrate is formed in association with the store means, said store means being constructed in the form of a container which includes a filter means, said filter means being operative to separate the hydrate formed from the electrolyte,
the improvement comprising,
a hydrate former pump means associated with the store means and being operative to intermix halogen gas with aqueous electrolyte to form halogen hydrate,
said hydrate former means including,
multiple outlet nozzle means connected with the outlet side of said pump means and being operative to minimize plugging,
said nozzle means being comprised of at least one divider means which is generally perpendicular to rotational axes of gears within the pump means, said divider means acting to divide the flow from the pump means into multiple outlet flow paths.

4,389,469

ELECTRICAL POWER PACKS AND CHARGING DEVICES

Bryan F. Nicholls, Kingsley, England, assignor to The Mettoy Company Limited, Northampton, England

Filed Oct. 2, 1981, Ser. No. 308,098
Claims priority, application United Kingdom, Oct. 10, 1980, 8032800; Jan. 9, 1981, 8100682
Int. Cl.³ H01M *2/10*
U.S. Cl. 429—98 **16 Claims**



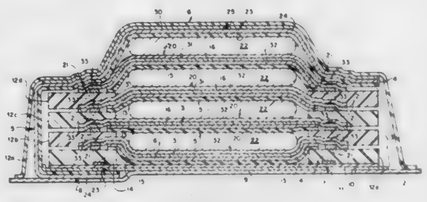
1. A power pack in combination with a battery operated device, the power pack comprising a casing, means for receiving rechargeable cells within the casing, power output terminals carried by the casing, and conductor means within the casing connecting the rechargeable cell terminals electrically to said output terminals, the casing being sealed permanently against removal of the rechargeable cells, said battery operated device comprising a base member including a recess having opposite sides, and pairs of opposed electrical power input terminals located on said opposite sides of the recess adapted for receiving individual conventional battery cells therebetween, the recess and power pack casing including complementary keying means for said recess to receive the power pack in place of said individual conventional battery cells in one predetermined orientation of said power pack relative to said recess, and said output terminals of the power pack engaging predetermined input terminals of the battery operated device with the power pack in the recess.

4,389,470

LAMINAR CELLS AND BATTERIES

Paul A. Plasse, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 24, 1981, Ser. No. 295,268
Int. Cl.³ H01M *6/46*
U.S. Cl. 429—152 **5 Claims**



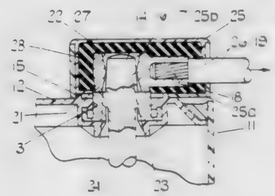
1. A battery comprising a stack of laminar cells terminated at one end by an end terminal formed with a pocket, said end terminal comprising an external metal collector sheet laminated to a sheet of conductive plastic confronting the cell components, said cells each comprising at least one electrode comprising a slurry of electrochemically active particles in an aqueous electrolyte, a second electrode, and a separator between said slurry electrode and said second electrode, in which at least the separator in the cell adjacent said pocketed end terminal comprises a layer of regenerated cellulose in contact with said second electrode and a layer of porous bibulous material over said regenerated cellulose layer and in contact with said slurry electrode to limit migration of electrolyte from said slurry electrode.

4,389,471

ELECTRIC STORAGE BATTERIES

John L. Woodhouse, Kingshurst, England, assignor to Lucas Industries Limited, Birmingham, England

Continuation-in-part of Ser. No. 102,309, Dec. 11, 1979, abandoned. This application Jan. 30, 1981, Ser. No. 230,085
Claims priority, application United Kingdom, Dec. 16, 1978, 48818/78; Dec. 16, 1978, 48819/78
Int. Cl.³ H01M *2/02*
U.S. Cl. 429—178 **2 Claims**



1. A combination of an electric storage battery and a connector for making an electrical connection to the battery, wherein the connector includes a hollow conductive body having a bore therein mounted on and welded to a terminal of the battery and connected thereto by a weld, and a flexible conductive cable connected to and extending from the body, and wherein the bore in the body is non-complementary with the terminal and is shaped so that the wall thereof defines intermediate its ends a projecting portion which engages the terminal, the weld between the terminal and the conductive body being restricted to the region thereof between said projecting portion and the outer end of the bore, and the relative shaping of the bore and the terminal being such that a clearance is defined between the wall of the bore and the terminal in the region between the other end of the bore and said projecting portion.

4,389,472

PROCESS FOR THE PRODUCTION OF DOCUMENTS WHICH CANNOT BE FALSIFIED

Karl-Friedrich Neuhaus; Hans J. Rosenkranz, and Hermann Perrey, all of Krefeld, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 16, 1980, Ser. No. 216,852

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1979, 2952322; Jul. 22, 1980, 3027759

Int. Cl.³ B32B *7/04;* **G03C** *1/87*

U.S. Cl. 430—10 **24 Claims**

1. A tamper proof document which is proof against falsification, consisting of an information carrier comprised of a sheet having a photographic emulsion layer carrying information and laminated with at least one transparent foil on one or both sides, wherein the foil carries an adhesive layer containing a polymer hardened by radical cross-linking by high energy radiation or by initiators capable of being activated by UV light or by heat, or by accelerators

said adhesive layer bonding the foil to the surface of the information carrier photographic sheet in such a manner that the foil and sheet cannot be separated without destruction of the information carrier sheet and of the information contained in it.

4,389,473

PRODUCTION OF TRANSFER MATERIAL

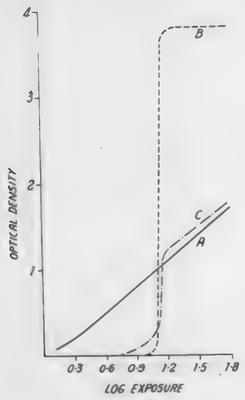
Simon L. Scrutton, London; William F. G. Marwick, Sittingbourne, and David R. Wilson, Tadworth, all of England, assignors to Letraset USA, Inc., Bergenfield, N.J.

Division of Ser. No. 959,145, Nov. 9, 1978, Pat. No. 4,254,211, which is a continuation-in-part of Ser. No. 794,988, May 9, 1977, abandoned, and Ser. No. 795,420, May 9, 1977, abandoned. This application Nov. 3, 1980, Ser. No. 203,265

Claims priority, application United Kingdom, May 7, 1976, 18906/76

Int. Cl.³ G03C *5/00, 1/90*

U.S. Cl. 430—17 **8 Claims**



1. The transfer material obtained by applying to a transparent or translucent substrate a coating layer which comprises a photosensitized composition of a homopolymer or copolymer of vinylacetate with polyvinyl alcohol or polyvinyl pyrrolidone the coating layer being insoluble but swellable in water and the ratio of said acetate constituent of the layer to said alcohol or pyrrolidone constituent of the layer being sufficiently high to render the layer insoluble in water prior to exposure and the adhesion of the coating layer to the substrate increasing on exposure to actinic light,

imagewise exposing the coating layer to actinic light through the substrate to increase the adhesion of the coating layer to the substrate in the exposed areas, and

developing the imagewise exposed coating layer by applying water to the coating layer to wash away those parts of the coating layer which have not been exposed and to retain substantially the original thickness of the coating layer in the areas which have been exposed.

4,389,474

THIOPYRYLIUM COMPOUNDS AND PHOTOCONDUCTIVE COMPOSITIONS CONTAINING SAID COMPOUNDS

Kouichi Kawamura; Hideo Sato, and Harumi Katsuyama, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

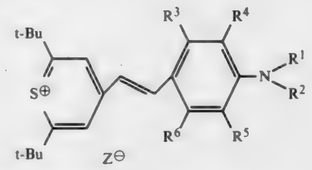
Filed Aug. 20, 1981, Ser. No. 294,644

Claims priority, application Japan, Aug. 20, 1980, 55-114259

Int. Cl.³ G03G *5/04, 9/08*

U.S. Cl. 430—37 **8 Claims**

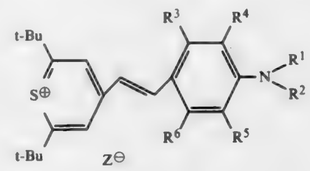
1. A photoconductive composition comprising (a) a thiopyrylium compound of the general formula (I)



(I)

wherein t-Bu represents a tertiary butyl group; R^1 and R^2, which may be the same or different, each represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, a substituted alkyl group, an unsubstituted aryl group, or a substituted aryl group, with the proviso that both R^1 and R^2 are not both an alkyl group, R^3, R^4, R^5, and R^6, which may be the same or different, each represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, or a halogen atom; and Z represents an anion and (b) a photoconductive material.

8. Photoconductive photosensitive particles used for a photoelectrophoresis electrophotographic process containing a thiopyrylium compound of the general formula (I)



(I)

wherein t-Bu represents a tertiary butyl group; R^1 and R^2, which may be the same or different, each represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, a substituted alkyl group, an unsubstituted aryl group, or a substituted aryl group, with the proviso that both R^1 and R^2 are not both an alkyl group; R^3, R^4, R^5, and R^6, which may be the same or different, each represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, or a halogen atom; and Z represents an anion.

4,389,475

MULTILAYERED ELECTROPHOTOGRAPHIC RECORDING MEDIUM

Gerhard Hoffmann, Otterstadt, and Peter Neumann, Wiesloch, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

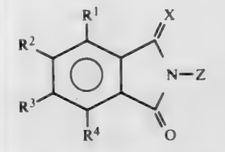
Filed Mar. 16, 1982, Ser. No. 358,582

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3110958

Int. Cl.³ G03G *5/06*

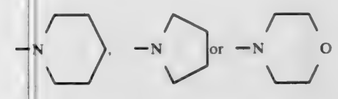
U.S. Cl. 430—58 **7 Claims**

1. An electrophotographic recording medium which consists essentially of an electrically conductive base, a first layer containing charge carrier-producing dyes, and a second layer which is substantially transparent to actinic light and is composed of an insulating organic material containing at least one compound which is charge carrier-transporting when exposed to light, wherein the charge carrier-producing dye is of the formula I



(I)

where R^1, R^2, R^3 and R^4 are each hydrogen, halogen, methyl or methoxy, or one or two of the radicals R^1, R^2, R^3 and R^4 are C_1–C_6-alkyl, phenyl, phenoxy, phenylthio, nitro, amino N,N-C_1–C_4-dialkylamino, a radical of the formula



or a radical of the formula —NHCOR⁵, where R^5 is C_1–C_6-alkyl or unsubstituted or substituted phenyl, and the remaining radicals R^1, R^2, R^3 and R^4 are each hydrogen, X is the radical of a methylene-active compound or a radical of the formula =N-R⁶', where R⁶', is the radical of an aromatic or heterocyclic amine or hydrazine, and Z is hydrogen, methyl or phenyl.

4,389,476

BARRIER COAT FOR ELECTROSTATIC MASTER

Michael J. Whalen-Shaw, Paw Paw, and Robert J. Thiessen, Richland, both of Mich., assignors to Allied Paper Incorporated, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 53,168, Jun. 29, 1979, Pat. No. 4,340,659, which is a continuation-in-part of Ser. No. 827,127, Aug. 24, 1977, abandoned. This application Oct. 27, 1981, Ser. No. 315,287

The portion of the term of this patent subsequent to Oct. 6, 1998, has been disclaimed.

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—64 **14 Claims**

1. A method for the preparation of electrostatic masters having improved water and pick resistance for lithographic printing comprising the steps of

(a) applying to a base a barrier coat formulation which comprises an aqueous dispersion of a copolymer of at least about 60% ethylenically unsaturated polymerizable monomer having non-polar functionality and about 3% to about 40% of a polymerizable olefinically unsaturated monomer having polar functionality;

(b) drying the formed barrier coat; and

(c) applying to said barrier coat a photoconductive coating comprising a photoconductive material and binder.

4,389,477

PHOTOCONDUCTIVE COMPOSITION SENSITIZED BY A THIOBARBITURIC ACID DERIVATIVE

Syunichi Kondo; Hirotsugu Nomaguchi, and Hideo Sato, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 21, 1981, Ser. No. 256,211

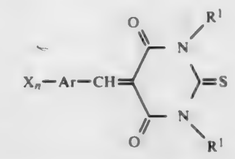
Claims priority, application Japan, Apr. 22, 1980, 55/53125

Int. Cl.³ G03G *5/09*

U.S. Cl. 430—81 **13 Claims**

1. A photoconductive composition comprising a mixture of a photoconductive substance and

a thiobarbituric acid derivative in a sensitizing amount represented by the formula (I):



(I)

wherein R^1 is an alkyl group containing 1 to 12 carbon atoms, an alkoxyl group containing 1 to 5 carbon atoms, or a phenyl group; X is a hydrogen atom, a halogen atom, a cyano group or a nitro group; Ar is a divalent, trivalent or tetravalent group derived from benzene, naphthalene, pyridine, furan or thiophene; and n is 1, 2 or 3, wherein the photoconductive substance is a polymer with a pi electron system in a main or side chain thereof.

6. An electrophotographic light-sensitive medium comprising

a support with an electrically conductive surface thereon and

a layer of the photoconductive composition as claimed in claims **1** or **2**.

11. The electrophotographic light-sensitive medium as claimed in claim **6**, wherein said photoconductive substance is a poly-N-vinyl carbazole or an N-vinyl carbazole copolymer.

4,389,478

APPARATUS FOR AND METHODS OF MAKING BIMODAL ELECTROPHOTOGRAPHIC COPIES

Rudolph Guzik, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 110,427, Jan. 7, 1980, abandoned. This application Jun. 22, 1981, Ser. No. 275,882

Int. Cl.³ G03G *13/09, 13/22*

U.S. Cl. 430—97 **4 Claims**

1. A bimodal electrophotographic process for printing black on white copy on a photosensitive layer of a single type of material coated on one side of a substrate from either a black on white or a white on black document comprising the steps of:

a. selectively applying a bias for a reversal mode and interchangeably therewith removing a bias for a positive mode of operation;

b. In the positive mode:

(i) electrostatically charging with a negative charge one surface of said photosensitive layer of said single type of coated material;

(ii) exposing the negatively charged surface to an image having light and dark areas for causing the negative charge to dissipate in varying degree depending on the amount of light in the exposure areas;

(iii) passing said coated material through a gap between a magnetic brush and a supporting structure containing an electrically insulating area adjacent the gap, whereby said insulation provides an area which does not have current flow capability;

(iv) applying a positively charged toner which is electrostatically attracted to the negatively charged surface,

said toner being applied via said magnetic brush while the opposite side of said substrate is electrically insulated in the area adjacent the gap for prohibiting a current through the substrate; and

(v) fusing the toner deposited on the photosensitive layer of the coated material; and

c. In the reversal mode:

(i) electrostatically charging with a positive charge said one surface of the photosensitive layer of the same single type of coated material;

(ii) exposing the positively charged surface to an image having light and dark areas for causing the positive charge to dissipate in varying degree depending on the amount of light in the exposure areas;

(iii) passing said coated material through said gap;

(iv) applying said positively charged toner which is electrostatically repelled from the positively charged surface, said toner being applied via said magnetic brush while said brush has a positive electrostatic bias applied thereto, and without causing a current through said substrate, while the opposite surface of said substrate is electrically insulated by the area adjacent the gap for prohibiting current flow from said magnetic brush to said opposite surface of said layer; and

(v) fusing the deposited toner to said surface of the photosensitive layer of the single type of coated material.

4,389,479

NEUTRALIZING LAYER FOR COLOR TRANSFER ASSEMBLAGES

John F. Bishop, Rochester, and Wayne A. Bowman, Walworth, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 14, 1981, Ser. No. 263,523

Int. Cl.³ G03C *1/40, 5/54, 1/78, 1/76*

U.S. Cl. 430—216 **55 Claims**

1. In a photographic assemblage comprising:

(a) a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material;

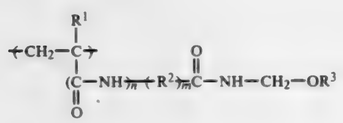
(b) a dye image-receiving layer;

(c) a neutralizing layer for neutralizing an alkaline processing composition; and

(d) a timing layer located between said neutralizing layer and said dye image-receiving layer so that said processing composition must first permeate said timing layer before contacting said neutralizing layer;

the improvement wherein said neutralizing layer comprises a cross-linked polymer derived from:

(i) 5 to 30 weight percent of recurring units which conform to the structure:



wherein

R^1 is hydrogen or methyl,

R^2 is alkylene, arylenealkylene, alkylenebisarylene, arylenebisalkylene or arylene,

R^3 is an alkyl group of 1 to about 10 carbon atoms, and n and m are 0 or 1 with the proviso that when m is 0, then n is 0, and when m is 1, then n is 0 or 1;

(ii) 30 to 80 weight percent of recurring units derived from a substituted or unsubstituted acrylic acid; and

(iii) 5 to 30 weight percent of recurring units derived from an alkyl acrylic ester wherein the alkyl group has from 1 to about 16 carbon atoms.

4,389,480

LIGHT-SENSITIVE LAYER TRANSFER MATERIAL

Werner Franke, Wiesbaden, and Markus Seibel, Mainz, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 972,817, Dec. 26, 1978, abandoned. This application Jan. 12, 1981, Ser. No. 224,230

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758575

Int. Cl.³ G03C *5/04*

U.S. Cl. 430—271 **1 Claim**

1. In a light-sensitive layer transfer material consisting essentially of a temporary film support and a negative-working light-sensitive thermoplastic photopolymerizable photoresist layer detachably connected therewith, the improvement that the adhesion of the upper side of the film support, which carries the light-sensitive layer, is increased with respect to that layer by treatment with an adhesive-promoting agent so that the adhesive difference between the upper side and the underside of the film support is at least 8 g/100 mm, and the adhesion of the upper side does not exceed 70 g/100 mm.

4,389,481

METHOD OF MAKING PLANAR THIN FILM TRANSISTORS, TRANSISTOR ARRAYS

Michael Poleshuk, and Joseph J. Wysocki, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 2, 1980, Ser. No. 155,335

Int. Cl.³ H01L *21/84*

U.S. Cl. 430—319 **3 Claims**



1. A process of preparing a planar thin film transistor on a substrate by forming in sequential or in reverse sequential order layers **1**, **2**, **3** and **4** on the substrate which comprises:

forming layer **1** by depositing a gate electrode on a discrete area of a light transmitting substrate, said gate electrode having a given thickness;

depositing a photoresist material over the substrate and the gate electrode;

exposing the photoresist material through the substrate so that the gate electrode serves as a mask thereby eliminating the concern about photomask alignment;

removing the exposed photoresist material leaving the unexposed photoresist material covering the gate electrode;

depositing an insulating material on the substrate and the photoresist covered gate electrode to a depth substantially equal to the thickness of the gate electrode in the area unoccupied by the gate electrode;

removing the insulating material and photoresist material from the gate electrode by dissolution of the photoresist material so that the insulating material left on the substrate together with the gate electrode form a planar layer on the substrate of substantially uniform thickness;

forming layer **2** by depositing on said substantially planar surface of layer **1** a layer of insulating material having a substantially uniform thickness;

forming layer **3** by depositing on said uniform layer **2** of insulating material a layer of semiconducting material, said semiconducting material being in a discrete area in field effect transistor positional relationship with said gate electrode, depositing an insulating material on said uniform layer of insulating material in the areas unoccupied by said semiconducting material to a depth substantially equal to the thickness of the semiconducting material, to form a substantially planar surface of uniform thickness; and

forming layer **4** by depositing on said substantially planar surface of layer **3** in discrete areas thereof a source electrode and a drain electrode, said source electrode and drain electrode being in field effect transistor positional relationship with respect to said semiconducting material, and depositing an insulating material on said substantially planar surface of layer **3** in the areas unoccupied by said source and drain electrodes to a depth substantially equal to the thickness of the source electrode and drain electrode.

4,389,482

PROCESS FOR FORMING PHOTORESISTS WITH STRONG RESISTANCE TO REACTIVE ION ETCHING AND HIGH SENSITIVITY TO MID- AND DEEP UV-LIGHT

Joachim Bargon, Los Gatos; Hiroyuki Hiraoka, Saratoga, and Lawrence W. Welsh, Jr., Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,103

Int. Cl.³ G03C *5/24*

U.S. Cl. 430—325 **5 Claims**

1. In a process for forming a patterned photoresist by pattern-wise exposing a resist material to light and developing with a solvent, the improvement of increasing the resistance of the resist to reactive ion etching by employing as the resist a copolymer of methacrylonitrile and methacrylic acid and by baking the resist in two stages, one before and one after the exposure to light with the first baking being at a temperature and for a time sufficient to increase the photosensitivity of the photoresist, and with the second baking being at a temperature and for a time sufficient to increase the ion etching resistance of the patterned photoresist.

4,389,483

METHOD FOR PRODUCING L-GLUTAMIC ACID BY FERMENTATION

Hirofumi Hiraga, Yokohama; Minoru Yoshimura, Kawasaki; Shigeho Ikeda, and Hiroe Yoshii, both of Yokohama, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Dec. 17, 1981, Ser. No. 331,758

Claims priority, application Japan, Dec. 29, 1980, 55-185678

Int. Cl.³ C12P *13/14, 13/18;* **C12R** *1/13, 1/15*

U.S. Cl. 435—110 **3 Claims**

1. A method for producing L-glutamic acid by fermentation, which comprises: culturing aerobically in a culture medium a mutant of the genus of Brevibacterium or Corynebacterium which is resistant to Decoyinine, Psicofuranine, Formycin, Toyocamycin, Cordice, Sangwanycin, or Tubercidin and which is capable of producing L-glutamic acid, and recovering the L-glutamic acid which accumulates in the culture medium.

4,389,484

METHOD FOR PRODUCING CITRIC ACID

Takeshi Tabuchi, and Matazo Abe, both of Tokyo, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 783,740, Dec. 13, 1968, abandoned, which is a continuation-in-part of Ser. No. 735,199, Jun. 7, 1968, abandoned, This application Jun. 16, 1978, Ser. No. 916,261

Claims priority, application Japan, Jun. 7, 1967, 42-36391; Dec. 13, 1967, 42-79802

Int. Cl.³ C12P *7/48;* **C12N** *1/28;* **C12R** *1/72, 1/73, 1/74*

U.S. Cl. 435—144 **29 Claims**

1. A method for producing citric acid which comprises inoculating a citric acid-accumulating and hydrocarbon-assimilating strain of a yeast belonging to the genus Candida in an aqueous culture medium containing at least one normal paraffin containing 9 to 20 carbon atoms in the molecule as the main carbon source; incubating the culture at a pH of from about 4 to about 7.5 until citric acid is substantially accumulated in the culture broth; and separating the so-accumulated citric acid therefrom.

4,389,485

URICASE PRODUCTION METHOD

Roberto Olivieri, Mentana; Eugenio Fascetti; Pierluigi Ciuffolotti, both of Rome, and Ludwig Degen, Rome, all of Italy, assignors to E.N.I. Ente Nazionale Idrocarburi, Rome, Italy

Filed Aug. 20, 1981, Ser. No. 294,510

Claims priority, application Italy, Sep. 19, 1980, 24757 A/80

Int. Cl.³ C12N *9/06;* **C12Q** *1/62;* **C12R** *1/265*

U.S. Cl. 435—191 **5 Claims**

1. A process for the production of uricase comprising the step of culturing the microorganism *Micrococcus roseus* NRRL B-12196 under aerobial conditions in the presence of a culturing medium containing a source of assimilable carbon, a nitrogen source, a phosphorus source and mineral salts.

4,389,486

BIOLOGICALLY PURE CULTURE

Toshihito Mori; Takeo Deushi; Akio Iwasaki; Takafumi Kunieda; Toshimi Mizoguchi; Kazuhiro Kamiya; Masahoto Nakayama, all of Higashimurayama; Hisakatsu Ito, Kawagoe, and Takeshi Oda, Kodaira, all of Japan, assignors to Kowa Company, Ltd., Japan

Division of Ser. No. 955,412, Oct. 26, 1978, Pat. No. 4,328,307, which is a division of Ser. No. 888,149, Mar. 16, 1978, Pat. No. 4,206,206. This application Oct. 29, 1981, Ser. No. 316,526

Claims priority, application Japan, Mar. 24, 1977, 52-31580; Nov. 8, 1977, 52-133051

Int. Cl.³ C12N *1/20*

U.S. Cl. 435—253 **1 Claim**

1. A biologically pure culture of *Saccharopolyspora hirsuta* KC-6606 which has the characteristics identified as FERM P No. 3912 or ATCC 20501 and has the ability to produce an antibiotic KA-6606 by fermentation in nutrient culture medium containing a carbon source, a nitrogen source and minerals.

4,389,487

PROCESS FOR THE PREPARATION OF A COLLAGEN PRODUCT FOR MEDICAL AND COSMETIC PURPOSES

Peter E. Ries, Reinach, Switzerland, assignor to Pentapharm A.G., Basel, Switzerland

PCT No. PCT/CH80/00107, § 371 Date Jun. 8, 1981, § 102(e) Date May 29, 1981, PCT Pub. No. WO81/00963, PCT Pub. Date Apr. 16, 1981

PCT Filed Sep. 17, 1980, Ser. No. 269,023

Claims priority, application Switzerland, Oct. 8, 1979, 9030/79

Int. Cl.³ C07G *7/00*

U.S. Cl. 435—273 **7 Claims**

1. In a process for the preparation of collagen products for medical and cosmetic purposes comprising the steps of finely comminuting collagen-containing animal tissues at temperatures not exceeding 40° C., degreasing the resulting tissue pulp and simultaneously removing therefrom undesireable water-soluble non-collagen type ballast substances by repeatedly treating the said tissue pulp with about a five-fold volume, based on the pulp volume, of a 5 to 15% aqueous sodium chloride solution containing about 0.2 to 1 part by weight of sodium azide as a preserving agent per 1000 parts by weight of the said solution and 0.5 to 2% by weight of a non-ionic fat-dispersing wetting agent, washing the resulting fiber pulp with water or 0.1 to 0.5% aqueous formic, acetic or citric acid, digesting the fiber pulp for 8 to 48 hours at a pH of about 2.5 to 3.5 in a five-fold volume, based on the volume of the pulp, of 0.1 to b 5% aqueous acetic acid containing about 1 part by weight of pepsin per 1000 parts by weight of the tissue used as the starting material in order to remove non-collagen type proteins and telopeptides, precipitating collagen from the resulting collagen suspension by the addition thereto of aqueous sodium chloride in such a quantity that the sodium chloride concentration of the suspension is about 3 to 5%, separating the precipitated collagen and substantially desalting it by ultrafiltration, dialysis or washing with 60 to 75% aqueous ethyl

alcohol so that the collagen concentration in the desalted solution is about 1%, dissolving the desalted collagen in demineralized or distilled water containing up to 3% by weight of a volatile strong organic acid in such a proportion that the concentration of collagen in the resulting solution corresponds to a dry residue of about 0.5 to 2% by weight, freeze-drying the collagen solution, and sterilizing the freeze-dried collagen product, the improvement comprising:

subjecting the collagen product to a heat treatment or a treatment with gaseous hydrogen halide after freeze-drying, before or after sterilization, for a time sufficient to impart increased absorption and wet strength to the collagen product.

4,389,488

PROCESS FOR THE ENZYMATIC PREPARATION OF L-2-AMINO-4-METHYLPHOSPHINOBUTYRIC ACID

Susanne Grabley, Kelkheim, and Klaus Sauber, Bad Soden am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

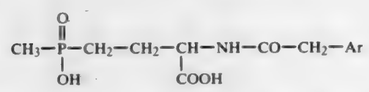
Filed Dec. 21, 1981, Ser. No. 332,852

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048612

Int. Cl.³ C07B *19/02;* **C12P** *13/04;* **C12R** *1/19*

U.S. Cl. 435—280 **5 Claims**

1. A process for the enzymatic separation of D,L-2-amino-4-methylphosphinobutyric acid, which comprises treating its N-aracetyl derivatives of the formula



(1)

(in which Ar represents a phenyl radical which is optionally substituted by halogen or hydroxyl) in an aqueous or aqueous-organic medium with a penicillin-G-acylase.

4,389,489

OPTICALLY PURE HETEROCYCLIC AMINOACID COMPOUNDS, A PROCESS FOR THEIR USE FOR THE SYNTHESIS OF MEDICAMENTS

Michael Preiss, and Hermann Schutt, both of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

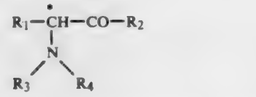
Division of Ser. No. 163,359, Jun. 26, 1980, abandoned. This application Jun. 15, 1981, Ser. No. 274,083

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1979, 2927534

Int. Cl.³ C07B *19/02;* **C12P** *13/04;* **549** *493*

U.S. Cl. 435—280 **4 Claims**

1. A process for the production of a compound which is an optically pure heterocyclic aminoacid of the general formula



(I)

or a salt, preferably a pharmaceutically acceptable salt, thereof, in which

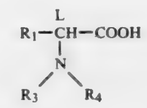
R_1 denotes a saturated or unsaturated, optionally substituted heterocyclic radical which contains 1 to 4 identical or different heteroatoms selected from oxygen, sulphur and nitrogen and is optionally benzo-fused,

R_2 denotes a hydroxyl group, a C_1 to C_4 alkoxy group or a $N(R_5)_2$ radical,

R_3 and R_4 independently denote a hydrogen atom, an acyl radical or a C_2 to C_4 alkenyl radical which is substituted by C_1 to C_4 alkoxy carbonyl and

R_5 denotes a hydrogen atom or a C_1 to C_4 alkyl group,

and in which the carbon atom marked with * is in either the D-form or the L-form which comprises subjecting a racemic compound of the formula (I) in which R_1, R_3 and R_5 are defined as above, R_2 denotes a C_1 to C_4 alkoxy group or a $N(R_5)_2$ radical and R_4 denotes an acyl radical, or a C_2 to C_4 alkenyl radical which is substituted by C_1 to C_4 alkoxycarbonyl, to a proteolytic enzyme bonded to a carrier in a two-phase medium consisting of water and and water-immiscible solvent, separating off the unchanged D-compound from the L-compound of the formula



in which R_1, R_3 and R_4 have the above-mentioned meaning, and, if desired, converting the D- and L-compounds which have been separated from each other into compounds of the formula (I) in which R_2 denotes a hydroxyl group and R_3 and R_4 denote hydrogen atoms, and in the case of the L-compound converting, if desired, the carboxyl group into a $-COR_2$ group in which R_2 denotes C_1 to C_4 alkoxy group or a $N(R_5)_2$ radical in which R_5 has the above-mentioned meaning.

4,389,490

METHOD OF STABILIZING PLATELETS FOR DETERMINING MULTIPLE PLATELET PARAMETERS IN REFERENCE CONTROL AND CALIBRATOR COMPOSITIONS; AND DILUENTS THEREOF

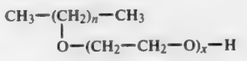
Harold R. Crews, Miami; James H. Carter, II, Ft. Lauderdale, and Ted Sena, Miami, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed May 29, 1981, Ser. No. 268,049

Int. Cl.³ G01N *33/48;* **C09K** *3/00*

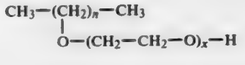
U.S. Cl. 436—17 **14 Claims**

1. A method of stabilizing platelets for determining multiple platelet parameters in reference controls and calibrators for electronic particle counting instruments which comprises adding to a platelet rich plasma a composition containing glutaraldehyde in a concentration of 0.1% to 5% w/v, and a non-ionic surfactant which is a mixture of ethoxylates of isomeric linear alcohols having the formula:



in which the polyoxyethylene chain is randomly attached to the linear aliphatic chain, n=9 to 13, and x=9 to 13, said nonionic surfactant being present in a concentration of 0.01 to 1% w/v, and the mixture being adjusted to a preselected range of pH and osmolality.

2. A method of stabilizing platelets for determining multiple platelet parameters in reference controls and calibrators for electronic particle counting instruments which comprises adding to a platelet rich plasma a composition containing glutaraldehyde in a concentration of 0.1% to 5% w/v, and a non-ionic surfactant which is a mixture of ethoxylates of isomeric linear alcohols having the formula:



in which the polyoxyethylene chain is randomly attached to the linear aliphatic chain, n=9 to 13, and x=9 to 13, said

nonionic surfactant being present in a concentration of 0.01% to 1% w/v and the mixture being adjusted to a pH of 7.3 to 7.4 and an osmolality of 290 mOs/kg.

4,389,491

METHOD AND KIT FOR CHROMATOGRAPHIC SEPARATION OF HEMOGLOBIN A_{1c}

Mark S. Hanamoto, Mill Valley, and Steve K. Tanaka, Vallejo, both of Calif., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed Apr. 26, 1982, Ser. No. 371,844

Int. Cl.³ G01N *33/72, 33/66*

U.S. Cl. 436—67 **33 Claims**

1. A method for the separation of hemoglobin A_{1c} from other glycosylated and nonglycosylated hemoglobins and the Schiff base precursor to hemoglobin A_{1c} in a sample of human blood which comprises:

(a) lysing the red blood cells contained in said sample to form a hemolysate containing said hemoglobin A_{1c}, said glycosylated and nonglycosylated hemoglobins, and said Schiff base precursor,

(b) impregnating a weak cation exchanger with said hemolysate,

(c) passing through said exchanger a first buffer solution with ions of an alkali metal dissolved therein at a concentration of from about 0.02 M to about 0.05 M to dissociate said Schiff base precursor into glucose and hemoglobin A and to preferentially elute said glucose and said other glycosylated hemoglobins over said hemoglobin A, said hemoglobin A_{1c} and said other nonglycosylated hemoglobins,

(d) passing through said exchanger a second buffer solution containing ions of an alkali metal dissolved therein at a concentration of from about 0.06 M to about 0.11 M to preferentially elute said hemoglobin A_{1c} over said hemoglobin A and said other nonglycosylated hemoglobins, and

(e) recovering the eluate from step (d).

31. A kit for use in an assay for determining the hemoglobin A_{1c} content in a sample of human blood without interference from other glycosylated or nonglycosylated hemoglobins or the Schiff base precursor to hemoglobin A_{1c}, said kit comprising:

(a) a weak cation exchanger,

(b) a first buffer solution with ions of an alkali metal dissolved therein at a concentration of from about 0.02 M to about 0.05 M, and

(c) a second buffer solution with ions of an alkali metal dissolved therein at a concentration of from about 0.06 M to about 0.11 M.

4,389,492

SPINEL-MAGNESIA BASIC BRICK

Fumikazu Tunemura, Aichi, Japan, assignor to Mino Yogyo Co., Ltd., Gifu, Japan

Filed Oct. 5, 1981, Ser. No. 308,672

Claims priority, application Japan, Oct. 7, 1980, 55/140290

Int. Cl.³ C04B *35/04*

U.S. Cl. 501—112 **3 Claims**

1. A spinel-magnesia basic brick composition consisting essentially of 10–50% spinel ($MgO.Al_2O_3$) clinker, 50–90% magnesia clinker, and 0.5–4.5% diiron trioxide, (Fe_2O_3), said diiron trioxide being present on the basis of the amounts of said spinel and magnesia clinkers totalling 100% by weight.

4,389,493

PROCESS FOR THE PRODUCTION OF SILICON-CONTAINING AND CARBON-CONTAINING RAW MATERIAL MOLDINGS, AND THE USE OF SUCH MOLDINGS

Gert-Wilhelm Lask, Uberhenn, Fed. Rep. of Germany, assignor to International Minerals & Chemical Luxembourg Societe Anonyme, Luxembourg, Luxembourg

Continuation-in-part of Ser. No. 242,991, Mar. 12, 1981, abandoned. This application Apr. 8, 1981, Ser. No. 252,063

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009808

Int. Cl.³ C04B *35/52*

U.S. Cl. 501—154 **5 Claims**

1. A method of making silicon-and-carbon-containing bodies capable of being treated in an electric furnace to produce silicon or a silicon alloy, comprising the steps of mixing a fine-grain silicon carrier in the form of SiO_2 with fine-grain caking coal to form a substantially binder-free mixture, and hot briquetting the substantially binder-free mixture at a temperature of 350° to 550° C. to coherent briquettes constituting said bodies, the carbon content being about 40% by weight of the silicon carrier.

4,389,494

PROCESS FOR PRODUCING A MEMBRANE FOR ELECTROLYSIS BY FORMING REMOVABLE THIN LAYER UPON ELECTRODE

Manabu Suhara; Tomoki Gunjima, and Haruhisa Miyake, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jul. 15, 1981, Ser. No. 283,546

Claims priority, application Japan, Jul. 29, 1980, 55-103096

Int. Cl.³ B01J *47/12;* **C25C** *7/02*

U.S. Cl. 521—27 **5 Claims**

1. A process for producing an ion exchange membrane for electrolysis which comprises forming a removable thin layer of polyacrylate, polyvinylalcohol optionally mixed with inorganic fiber on a surface of a perforated electrode; forming a layer of a thermoplastic fluorinated polymer having ion exchange groups or functional groups convertible to ion exchange groups on said removable thin layer; converting said layer of a thermoplastic fluorinated polymer into a liquid impermeable membrane; and removing said removable thin layer by treating with an aqueous solution of an alkali metal hydroxide, and if necessary, converting said functional groups into ion exchange groups.

4,389,495

FOAMABLE POLYMERIC STYRENE PARTICLES

Richard A. Schwarz, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Filed Sep. 24, 1982, Ser. No. 422,629

Int. Cl.³ C08J *9/20*

U.S. Cl. 521—56 **6 Claims**

1. An expandable polymeric styrene particle having incorporated therein a blowing agent, from about 0.1% to about 0.5% by weight of bis(allyl ether) of tetrabromobisphenol A and from about 0.6% to about 1.5% by weight of pentabromomonochlorocyclohexane all percentages being based upon the weight of the polymeric styrene.

4,389,496

THIXOTROPIC FORMULATIONS OF SILICONE PASTES FOR IMPRESSIONS OF TEETH AND MUCOUS MEMBRANE

Bernhard Leüsner, Leverkusen; Hans-Hermann Schulz, Leichlingen; Reiner Voigt, and Michael Walkowiak, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 128,340, Mar. 7, 1980, abandoned. This application Nov. 12, 1981, Ser. No. 320,623

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1979, 2910560

Int. Cl.³ C09K *3/00*

U.S. Cl. 523—109 **12 Claims**

1. A thixotropic silicone paste for the production of impressions, said paste consisting essentially of

(a) 50–90%, based on the weight of the paste, of a silicone oil with terminal hydroxyl groups;

(b) 1–15%, based on the weight of the paste, of an organic thixotropic agent; and

(c) 5–50% of calcium silicate,

wherein

(i) said calcium silicate has a specific surface area of 20 to 100 m^2/g (measured by the BET method) and

(ii) said thixotropic agent is selected from the group consisting of hydrogenated castor oil and polyglycol ethers of glycerides.

4,389,497

USE OF AGGLOMERATES OF SILICIC ACID AS FILLERS IN DENTAL MATERIALS

Werner Schmitt; Robert Purrmann, both of Starnberg; Peter Jochum, Hechendorf, and Heinz-Joachim Hübner, Seefeld, all of Fed. Rep. of Germany, assignors to Espe Fabrik parmazeutischer Präparate GmbH, Fed. Rep. of Germany

PCT No. PCT/EP80/00135, § 371 Date Jul. 22, 1981, § 102(e) Date Jul. 22, 1981, PCT Pub. No. WO81/01366, PCT Pub. Date May 28, 1981

PCT Filed Nov. 21, 1980, Ser. No. 285,115

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1979, 2947129

Int. Cl.³ A61K *5/06;* **C08K** *3/36*

U.S. Cl. 523—116 **16 Claims**

1. A dental material comprising a polymerizable monomer and an inorganic filler, said filler comprising agglomerates of silicic acid having an average agglomerate size of 0.5 to 50 μm, said agglomerates comprising primary particles of silicic acid having an average particle size of 1 to 100 nm.

4,389,498

OXIDATIVELY COUPLED COLD-SET BINDERS

Charles E. Seeney, Brazil; John F. Kraemer, Terre Haute, both of Ind., and Nancy C. Varnum, Kingsville, Mo., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Division of Ser. No. 283,718, Jul. 16, 1981. This application Aug. 25, 1982, Ser. No. 411,201

Int. Cl.³ C08L *49/00*

U.S. Cl. 523—139 **17 Claims**

1. A foundry composition adaptable to forming cores and molds comprising a foundry aggregate, a polymerizable binder therefor, an amine and a metal salt catalyst, the binder being a diacetylene compound resin.

4,389,499

ERASABLE INKS CONTAINING THERMOPLASTIC BLOCK COPOLYMERS

Diane A. Riesgraf, Rockville, Md., assignor to The Gillette Company, Boston, Mass.

Filed Nov. 5, 1981, Ser. No. 318,306

Int. Cl.³ C08K *5/01;* **C09D** *11/18;* **C08L** *53/00*

U.S. Cl. 523—161 **7 Claims**

1. An erasable ink for use in a ball-point writing instrument comprising a pigmented organic solvent solution containing a mixture of thermoplastic block copolymers at least one of which has an arrangement of A (thermoplastic) and B (rubbery) blocks selected from the class consisting of ABA and $(—AB)—_n$; at least one other of which has an arrangement of A (thermoplastic) and B (rubbery) blocks consisting of $(AB)_nX$; in which said thermoplastic blocks are selected from the class consisting of styrene, ester and urethane blocks; in which said rubbery blocks are selected from the class consisting of butadiene, isoprene and ethylene-butylene blocks; in which the ratio of said rubbery blocks to said thermoplastic blocks is from 60:40 to 90:10; and in which the solubility parameter of said organic solvent is from about 7 to about 10.5.

4,389,500

Patent Not Issued For This Number

4,389,501

SULFUR MODIFIED EPOXY RESIN SEALING COMPOSITION

Michael V. Burris, 1750 Industrial Rd., Las Vegas, Nev. 89102

Filed Nov. 9, 1981, Ser. No. 319,633

Int. Cl.³ C08L *63/00*

U.S. Cl. 523—400 **4 Claims**

1. An epoxy resin composition consisting essentially of an epoxy resin, a polyamide curing agent, and between about 0.1 and about 10% by weight of elemental sulfur.

4,389,502

CLEAR AIR-DRY ACRYLIC LACQUER COATING COMPOSITION

Grant C. Fry, and Walter C. Meyer, both of Lake Orion, Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 24, 1981, Ser. No. 334,161

Int. Cl.³ C08L *1/14*

U.S. Cl. 524—37 **13 Claims**

1. A clear coating composition consisting essentially of 5–40% by weight of a film-forming binder and 60–95% by weight of volatile organic solvents; wherein the binder consists essentially of:

(a) about 0–65% by weight, based on the weight of the binder, of one or more polymers selected from the group consisting of poly(methyl methacrylate) and other copolymers of methyl methacrylate having a relative viscosity of about 1.17 to 1.20 measured at 25° C. on a 0.5% polymer solids solution using dichloroethylene solvent;

(b) about 0–25% by weight, based on the weight of the binder, of cellulose acetate butyrate having a viscosity of about 1–20 seconds and a butyryl content of 30–55% by weight;

(c) about 10–40% by weight, based on the weight of the binder, of a polyester plasticizer comprising the reaction product of a polyol and an organic dicarboxylic acid or an anhydride of an organic dicarboxylic acid having an acid number of 0.1–10;

(d) about 0–10% by weight, based on the weight of the binder, of a phthalate plasticizer; and

(e) about 15–80% by weight, based on the weight of the binder, of a terpolymer of about 20–90% by weight of units of methyl methacrylate, 2–40% by weight of units of ethyl acrylate, and 2–60% by weight of units of t-butylaminoethyl methacrylate;

wherein (a), (b), (c), (d), and (e) total 100%.

4,389,503

OPAQUE JET INK COMPOSITIONS

Dorothy Maxwell, and David A. Fell, both of Neenah, Wis., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 177,944, Aug. 14, 1980, Pat. No. 4,352,901. This application Apr. 28, 1982, Ser. No. 372,820

Int. Cl.³ C08L *1/14;* **C08K** *5/06;* **C08L** *93/00;* **C08K** *5/07*

U.S. Cl. 524—38 **11 Claims**

1. A method of producing opaque indicia with jet printing apparatus consisting essentially of the steps of

(1) providing a jet ink composition consisting essentially of (A) 2 to 15% by weight of a gellable cellulose ester film former having a hydroxyl content of between 2 to 8% by weight, (B) between 1.5 and 15% of a binding agent selected from the group consisting of rosin based ester resins and maleic type resins soluble in dilute alkali solutions, polyvinyl acetate resins, acrylic resins, polyvinyl acetate and acrylic copolymer resins, and combinations of the same, and (C) a solvent blend, the solvent blend being a mixture of (1) a solvent selected from the group consisting of aliphatic alcohols of one to three carbons, ethers of four to ten carbons, acetone, other aliphatic ketones of four to seven carbons, acetates of three to seven carbons, and compatible combinations of the same, said acetates and other ketones being less than 50% of the solvent present in the composition, and (2) a non-solvent of low volatility within which the film former is essentially insoluble, the non-solvent being between 2 and 10% by weight of the jet ink composition, said solvent blend not containing an azeotrope that solubilizes the film former, and the binding agent being soluble in the solvent blend;

(2) dispensing said ink composition in a continuous stream of electrically deflectable droplets onto a non-porous substrate at essentially ambient conditions to form indicia, whereby rapid auto-evaporation of the solvent blend forms a gelled film comprising residual solvent blend, cellulose ester and binding agent; said gelled film containing a multiplicity of microdroplets of solvent blend comprising substantially the non-solvent component of the ink composition, further auto-evaporation of the remaining solvent blend forming a reticulated ester-resin film having a multiplicity of microvoids, said microvoids scattering light incident thereto rendering said dry film opaque.

4,389,504

ELASTOMER TOUGHENED POLYIMIDE ADHESIVES

Anne K. St. Clair, and Terry L. St. Clair, both of Poquoson, Va., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration Office of General Counsel-Code GP, Washington, D.C.

Filed Oct. 2, 1981, Ser. No. 308,201

Int. Cl.³ C08K *5/20*

U.S. Cl. 524—233 **6 Claims**

1. A method for preparing a high temperature elastomer-containing addition polyamic acid adhesive in a solvent solution which comprises:

chemically reacting an aromatic diamine and an aromatic amine-terminated butadiene/acrylonitrile (AATBN) or an aromatic amine-terminated silicone (AATS) with an aromatic dianhydide selected from the group consisting of:

3,3',4,4'-benzophenone tetracarboxylic acid dianhydride,

4,4'-oxydiphthalic anhydride,

2,2-bis(3-4-dicarboxyphenyl) hexafluoropropane dianhydride,

bis(3,4-dicarboxyphenyl) sulfone dianhydride, and

bis-(4-(3',4'-dicarboxyphenoxy) diphenyl sulfone dianhydride,

each member of said group of dianhydrides being mixed with a reactive endcapping agent;

all ingredients being dissolved and reacted in a solvent or mixture of solvents, at least one of which is selected from the group consisting of:

N,N'-dimethylformamide,

N,N'-dimethylacetamide,

N-methyl-2-pyrrolidone, and

dimethylsulfoxide,

to yield an addition polyamic acid adhesive solution having the inherent physical property characteristic of being converted to a fully crosslinked polyimide matrix with rubbery inclusions when applied to substrate surfaces and heated in the range of 250°–300° C. under pressure.

4,389,505

PLASTICIZED POLYACRYLONITRILE, A FILM THEREOF AND A PROCESS FOR FILM PREPARATION AND PLASTICIZATION

Gordon P. Hungerford, Palmyra, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 16, 1981, Ser. No. 331,427

Int. Cl.³ C08K *5/06*

U.S. Cl. 524—376 **21 Claims**

1. A plasticized polyacrylonitrile composition comprising:

(a) a high nitrile addition polymer having at least 80% acrylonitrile repeating units; and containing

(b) a plasticizing proportion of a liquid polyether prepared by reacting ethylene oxide and propylene oxide with at least one monohydric alcohol active hydrogen compound initiator having about 1 to about 10 aliphatic carbon atoms to yield a heterized copolymer, wherein said polyether is water soluble or water miscible and has an average molecular weight of from about 500 to about 5,000 and a Saybolt viscosity at 100° F. of from about 85 to about 5200 seconds.

4,389,506

POLYVINYL ALCOHOL DUST SUPPRESSION BY ADMIXING POLYGLYCOL

Thomas Hassall, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 29, 1981, Ser. No. 276,668

Int. Cl.³ C08F *6/00;* **C08K** *5/06*

U.S. Cl. 524—377 **5 Claims**

1. A process for the preparation of a substantially dustless polyvinyl alcohol powder with a viscosity of 2 to 125 mPa.s and a degree of hydrolysis of at least 80 mole percent comprising contacting the polyvinyl alcohol with about 0.5 to 4.0 weight percent of a dedusting additive selected from the group consisting of polyethylene glycol with a molecular weight (number average) of about 200 to 14,000 and an oxyethylene content of 3 to 400 moles, and methoxypolyethylene glycol with an oxyethylene content of 3 to 400 moles and a molecular weight (number average) of 200 to 14,000, said contacting taking place at a temperature at which the polyglycol is a liquid and at which the PVA is not subject to degradation.

4. The product of the process of claim 1 or claim 2.

4,389,507

FILLER-CONTAINING BEAD POLYMERS

Wolfgang Podszun, Cologne; Carlhans Süling, Odenthal; Michael Walkowiak, Leverkusen, and Hans-Hermann Schulz, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer AG, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 93,293, Nov. 13, 1979, abandoned. This application Sep. 2, 1981, Ser. No. 298,784

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849279; Nov. 17, 1978, 2849936

Int. Cl.[3] **C08L** *31/00*

U.S. Cl. 524—460 **8 Claims**

1. A process for the production of cross-linked bead polymers of (meth)acrylic acid esters and up to 20% by weight of other monomers, filled with a uniformly distributed inorganic filler and having an average diameter of from 5 to 500μ comprising

(i) working inorganic filler into a monomer liquid or a mixture, of monomer liquid and polymer, said monomer or said mixture, respectively, having a viscosity of from 0.1 to 10 Pa.s at the dispersion temperature,

(ii) adding a polymerization ititiator to the mixture of filler, monomer liquid and, optionally, polymer and suspending the mixture in an aqueous medium in the presence of a dispersant and

(iii) polymerizing the suspension by heating it to the decomposition temperature of said initiator, said monomer liquid containing a cross-linking agent.

4,389,508

COMPOSITION FOR AN INTERLAYER OF LAMINATED SAFETY GLASS

Takeshi Mori, Kusatsu; Toshiyuki Takashima; Kenichi Asahina, both of Shiga; Toshiharu Matsumiya, Shinnanyo, and Ariyasu Sugita, Yamaguchi, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha and Tokuyama Sekisui Kogyo Kabushiki Kaisha, both of Osaka, Japan

Continuation of Ser. No. 155,082, Jun. 2, 1980, abandoned. This application Sep. 21, 1981, Ser. No. 304,337

Claims priority, application Japan, May 31, 1979, 54-68502

Int. Cl.[3] **C08K** *5/57, 5/10*

U.S. Cl. 524—548 **4 Claims**

1. A composition for an interlayer film of a laminated safety glass, said composition comprising (A) a thermoplastic resin resulting from copolymerization of (1) vinyl chloride, (2) glycidyl methacrylate and (3) ethylene, said thermoplastic resin comprising 80 to 98.5% by weight of vinyl chloride, 1 to 10% by weight of glycidyl methacrylate and 0.5 to 10% by weight of ethylene, (B) 10 to 40% by weight of a plasticizer, and (C) 1 to 10 parts by weight of an organotin stabilizer per 100 parts by weight of said thermoplastic resin.

4,389,509

CATHODICALLY DEPOSITABLE COATING COMPOSITIONS

Georgios Pampouchidis; Wolfgang Daimer, and Heiner Verdino, all of Graz, Austria, assignors to Vianova Kunstharz, A.G., Vienna, Austria

Filed Dec. 19, 1977, Ser. No. 860,145

Claims priority, application Austria, Dec. 13, 1976, 9210/76

Int. Cl.[3] **C08L** *75/04*

U.S. Cl. 524—591 **11 Claims**

1. Thermosetting aqueous binders for cathodically depositable coatings comprising the reaction product of (A) a hydroxyl group containing diene polymer having a hydroxyl number of at least about 40 mg KOH/g, and an average maximum molecular weight of about 4000; and (B) compounds carrying per molecule an average of from about 0.8 to 1.5 free isocyanate groups and at least one basic aliphatically bound nitrogen atom, neutralized with inorganic or organic acids.

4,389,510

WATER SOLUBLE POLYIMIDE PREPARED FROM 1,2,3,4 BUTANE TETRACARBOXYLIC ACID AND METHOD OF PREPARATION

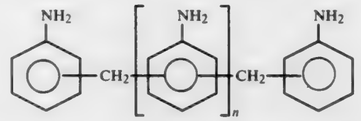
Charles W. McGregor, and Lionel J. Payette, both of Fort Wayne, Ind., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 17, 1981, Ser. No. 255,206

Int. Cl.[3] **C08G** *73/10*

U.S. Cl. 524—600 **7 Claims**

1. A water soluble polyimide comprising the reaction product of 1, 2, 3, 4 butane tetracarboxylic acid, a multifunctional amine of the formula:



and at least one diamine; where n=0.3, the multifunctional amine constitutes at least 5% of the total amine equivalents of the reactants and the butane tetracarboxylic acid to amine molar ratio is 100:94.8 to 100:98.

4,389,511

BLENDS OF POLYPHENYLENE ETHER RESINS AND STYRENE-TERT-BUTYLSTYRENE COPOLYMERS

Glenn D. Cooper, and Arthur Katchman, both of Delmar, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 4, 1981, Ser. No. 327,440

Int. Cl.[3] **C08L** *61/04*

U.S. Cl. 525—68 **5 Claims**

1. A thermoplastic composition, which comprises a homogeneous, single phase admixture of:

(a) a polyphenylene ether resin; and

(b) a copolymer of styrene and 4-tert-butylstyrene modified with rubber in which the copolymer comprises from 5% to 65% by weight of the 4-tert-butylstyrene based on the total copolymer weight.

4,389,512

CYCLOALIPHATIC ACRYLATE COMPOSITIONS

Hans R. Friedli; Donald L. Nelson, and John L. Massingill, Jr., all of Lake Jackson, Tex., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 951,416, Oct. 13, 1978, Pat. No. 4,319,009. This application May 29, 1981, Ser. No. 268,218

Int. Cl.[3] **C08L** *67/00, 63/00;* **C08G** *63/76;* **C08F** *232/00*

U.S. Cl. 525—112 **4 Claims**

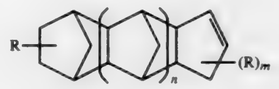
1. A thermosetting resin composition which comprises

(1) vinyl ester resin having terminal unsaturation, and

(2) an unsaturated monomer mixture of a vinyl aromatic monomer and a cycloaliphatic acrylate composition comprising

(A) about 60 to 95 percent by weight of dicyclopentadiene acrylate, methacrylate, or mixtures thereof

(B) about 2 to 15 percent by weight of a mixture of polycyclopentadienyl acrylates of the formula



where

R is CH_2=CZ—C(O)—O—

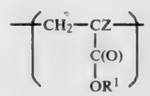
Z is H, or methyl

n is 1, or 2

m is 0 or 1 and when m is 0 there is a double bond present

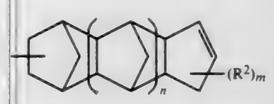
(C) about 1 to about 21 percent by weight of a mixture of the copolymers of methacrylic acid or acrylic acid with adducts of cyclopentadiene with isoprene, piperylene, or mixtures thereof,

(D) about 0.05 to about 10 percent by weight of a mixture of poly acrylates having the repeating unit



where

R^1 is hydrogen or



R^2 is CH_2=CZ—C(O)—O—

Z is H or methyl

n is 0, 1 or 2, and

m is 0 or 1 and when m is 0 there is a double bond present.

4,389,513

HIGHLY ABSORBENT RESIN

Hirotoshi Miyazaki, Ibaraki, Japan, assignor to Kuraray Company, Limited, Kurashiki, Japan

Filed Oct. 8, 1981, Ser. No. 309,773

Claims priority, application Japan, Oct. 22, 1980, 55/148639

Int. Cl.[3] **C08F** *8/32*

U.S. Cl. 525—186 **15 Claims**

1. A highly absorbent resin which is essentially a polyamine-crosslinked, partial neutralization product obtained by reaction of an alkali metal hydroxide with a carboxyl-containing polymer selected from the group consisting of alpha-olefin-maleic anhydride copolymers, vinyl compound-maleic anhydride copolymers, polyacrylic acid, polymethacrylic acid, and mixtures thereof, the degree of neutralization of said neutralization product being within the range of 0.4 to 0.8 equivalent of total carboxyl groups of the said carboxyl-containing polymer, the amount of polyamine having a general formula shown by H—NH—CH_2CH_2—n NH_2, wherein n is an integer of 1 to 110, as a crosslinking agent, being not more than 2 parts by weight per 100 parts by weight of the neutralization product on the uncrosslinked basis, said resin being capable of absorbing at least 20 times its own weight of distilled water.

4,389,514

ACCELERATED POLYMERIZATION OF ACRYLIC MONOMERS INITIATED BY DIALKYL AND DIARALKYL PEROXIDE FREE RADICAL GENERATORS IN THE PRESENCE OF TIN ACCELERATORS

Claude J. Schmidle, Trenton, N.J., and Seevaram N. Varadhachary, Newtown, Pa., assignors to Congoleum Corporation, Kearny, N.J.

Continuation of Ser. No. 191,201, Sep. 26, 1980, abandoned. This application Dec. 7, 1981, Ser. No. 327,864

Int. Cl.[3] **C08F** *8/42, 4/76*

U.S. Cl. 525—364 **14 Claims**

1. In a method for increasing the reaction rate of the polymerization and/or cross-linking of reactive polymerizable and/or cross linkable acrylic monomeric materials initiated by dialkyl or diaralkyl peroxides as the free radical generator, the improvement which comprises carrying out such polymerization and/or cross-linking reaction in the presence of from at least 0.1 to about 9% by weight, of a stannous accelerator from the group consisting of stannous alkanoates, alkenoates, aralkanoates and aralkenoates, dialkyl stannous dialknoates, dialkenoates, diaralkanoates and diaralkenoates, and mixtures thereof.

4,389,515

CURABLE POLYEPOXIDE-UNSATURATED MONOMER COMPOSITIONS SUITABLE FOR USE IN RIM PROCESSES

Harold E. De La Mare, and Thomas F. Brownscombe, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 14, 1981, Ser. No. 330,414

Int. Cl.[3] **C08L** *63/10*

U.S. Cl. 525—420.5 **17 Claims**

1. A rapid curing, storage stable, thermosetting composition, especially suitable for use in reaction injection molding processes comprising

(1) an epoxy compound containing more than one vicinal epoxy group,

(2) a miscible amount of at least one ethylenically unsaturated aromatic monomer,

(3) a curing amount of at least one amino compound containing at least three amino hydrogens,

(4) a catalytic amount of lithium or calcium nitrate, and

(5) From about 0.1 to about 3 parts by weight of a polyalkylene ether glycol per 100 parts by weight of epoxy compound.

4,389,516

CURABLE POLYPHENYLENE ETHER RESIN COMPOSITION

Akitoshi Sugio, Ohmiya; Masanobu Masu, Tokyo, and Masatugu Matunaga, Ibaraki, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed Mar. 23, 1981, Ser. No. 246,314

Claims priority, application Japan, Mar. 24, 1980, 55-37130; Apr. 3, 1980, 55-44428; Apr. 15, 1980, 55-49391

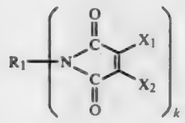
Int. Cl.[3] **C08L** *71/04*

U.S. Cl. 525—534 **21 Claims**

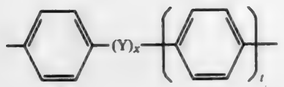
1. A curable polyphenylene ether resin composition comprising:

(a) a polyphenylene ether resin, and

(b) at least one polyfunctional compound selected from the group consisting of polyfunctional maleimides of the general formula:



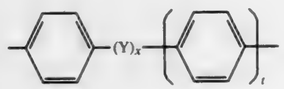
wherein k is an integer of at least 2; X_1 and X_2 are identical or different and each represents a hydrogen atom, a halogen atom or a lower alkyl group; and R_1 represents an aromatic or aliphatic organic group having a valence of k, which is selected from the group consisting of a linear or cyclic aliphatic hydrocarbon group having 4 to 16 carbon atoms, a monocyclic or fused ring aromatic hydrocarbon group, a triazine ring, a moiety resulting from the removal of the amino group from a condensation product of aniline and formaldehyde and a polybenzene group represented by the following formula:



wherein x represents 0 or 1 and when x represents 1, Y represents a linear, branched or cyclic aliphatic hydrocarbon group having 1 to 14 carbon atoms, a phenylene group, a xylylene group, an oxygen atom, a sulfur atom, a carbonyl group, a sulfonyl group, a sulfinyl group, an alkyleneoxyalkylene group, a phosphonyl group, a phosphinyl group, or an imino group; and t is an integer of 1 or 2, or the homoprepolymer thereof obtained by reacting at least one of said polyfunctional maleimides under heat and stopping the reaction before the reaction mixture is gelled, polyfunctional cyanate esters of the general formula:

$R_2(-O-C\equiv N)_l$

wherein l is an integer of at least 2; and R_2 represents an aromatic organic group having a valence of l, which is selected from the group consisting of a monocyclic or fused ring aromatic hydrocarbon roup, a triazine ring, a residue resulting from the removal of the amino group from a condensation product of aniline and formaldehyde and a polybenzene group represented by the following formula:



wherein x represents 0 or 1 and when x represents 1, Y represents a linear, branched or cyclic aliphatic hydrocarbon group having 1 to 14 carbon atoms, a phenylene group, a xylylene group, an oxygen atom, a sulfur atom, a carbonyl group, a sulfonyl group, a sulfinyl group, an alkyleneoxyalkylene group, a phosphonyl group, a phosphinyl group, or an imino group; and t is an integer of 1 or 2, wherein the groups $-(O-C\equiv N)_l$ are directly bonded to the aromatic ring of the organic group, or the homoprepolymers thereof obtained by polymerizing at least one of said polyfunctional cyanate esters and containing in the molecule a sym-triazine ring formed by the trimerization of the cyano groups, and precopolymers thereof obtained by reacting said polyfunctional maleimide with said polyfunctional cyanate ester under heat and stopping the reaction before the reaction mixture is gelled.

4,389,517

HYDROGENATION OF PHENYLACETYLENE PRIOR TO STYRENE POLYMERIZATION

Duane B. Priddy, and James M. Roe, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 2, 1982, Ser. No. 364,958

Int. Cl.³ C08F *4/48, 112/08*

U.S. Cl. 526—64 **4 Claims**

1. A process for the preparation of styrene polymers from a petroleum byproduct stream by providing a byproduct stream from the cracking of petroleum products, the stream containing primarily compounds containing 8 carbons and of an aromatic nature, the stream comprising 30 to 60 parts by weight styrene, 40 to 70 parts by weight of mixed isomers of xylene and 0.5 to 2 parts by weight of phenylacetylene, hydrogenating at least a major portion of the phenylacetylene in the stream to styrene, passing the hydrogenated stream to a continuously stirred tank reactor and initiating polymerization of the styrene in the stream with an organolithium initiator whereby at least 99 percent of the styrene initially present in the stream is converted to polymer, discharging the stream from the reactor and recovering styrene polymer therefrom.

4,389,518

PROCESS FOR PRODUCING POLYETHYLENE

Masato Harada, Kisarazushi; Atsushi Suzuki, Ichiharashi; Sadahiko Yamada, Ichiharashi, and Jun Masuda, Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Aug. 25, 1981, Ser. No. 296,148

Claims priority, application Japan, Aug. 29, 1980, 55-119387

Int. Cl.³ C08F *4/02, 10/02*

U.S. Cl. 526—97 **2 Claims**

1. A process for producing polyethylene by ethylene polymerization in the presence of a catalyst obtained by combining a solid product (II), obtained by the following steps (a) and (b), with an organoaluminum compound:

(a) obtaining a solid product (I) by reacting

(i) a trivalent metal halide selected from the group consisting of anhydrous aluminum chloride and anhydrous ferric chloride, with

(ii) a divalent metal hydroxide, oxide, carbonate or a composite compound containing a divalent metal hydroxide, oxide or carbonate or a hydrate of a divalent metal compound,

the ratio by weight of said (i) to said (ii) being in the range of 1 to 20; and

(b) reacting in the presence of a polysiloxane, said solid product (I) with at least two kinds of transition metal compounds consisting of

(1) at least one halogen-containing transition metal compound selected from the group (A) consisting of the halides, oxyhalides, alkoxyhalides and acetoxyhalides of titanium or vanadium, and

(2) at least one halogen-free transition metal compound selected from the group (B) consisting of tetraalkyl orthotitanates, vanadyl trialcoholoates and polytitanic acid esters expressed by the general formula

$RO-[Ti(OR)_2-O]_m-R$

wherein m is an integer of 2 or more and the Rs are the same or different kinds of alkyl groups, aryl groups or aralkyl groups.

4,389,519

COMPOSITION FOR POLYURETHANE ADHESIVES

Kyuya Yamazaki, Ibaraki; Sachio Igarashi, Suita, and Koichi Shibata, Ashiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

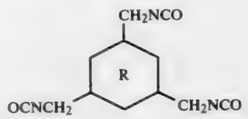
Filed Nov. 16, 1981, Ser. No. 321,926

Claims priority, application Japan, Nov. 28, 1980, 55-168374

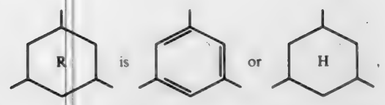
Int. Cl.³ C08G *18/75, 18/79*

U.S. Cl. 528—73 **8 Claims**

1. A composition for polyurethane adhesives which comprises (1) a triisocyanate of the formula:



wherein



a modified product of said triisocyanate selected from the group consisting of a dimer of said triisocyanate, a trimer of said triisocyanate and a carbodiimide of said triisocyanate or an adduct of said triisocyanate having terminal isocyanate groups in a reaction product of said triisocyanate with an active hydrogen compound, and

(2) an active hydrogen compound; wherein the proportions of (1) and (2) are such that the NCO/OH equivalent ratio is 0.4 to 20.

4,389,520

ADVANCEMENT CATALYSTS FOR EPOXY RESINS

John A. Gannon, Danbury, Conn., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,729

Int. Cl.³ C08G *59/62, 59/68*

U.S. Cl. 528—89 **8 Claims**

1. A precatalyzed epoxy resin composition which comprises

(a) a liquid epoxy resin bearing an average of more than one vicinal epoxy group per molecule, and

(b) a small, but effective catalytic amount of formylmethylenetriphenylphosphorane or formylmethyltriphenylphosphonium halide.

6. An improved process for advancing a liquid epoxy resin bearing at least one vicinal epoxy group with a polyphenol to form a solid, essentially linear resin at about 50° C. to about 225° C. wherein the improvement comprises

carrying out the advancement reaction in the presence of a small, but effective catalytic amount of formylmethylene triphenylphosphorane or formylmethyltriphenylphosphonium halide.

4,389,521

PROCESS FOR PREPARING A CYCLIC AMIDE POLAR SOLVENT COMPOSITION

Keizo Shimada; Hiroshi Mera, both of Iwakuni; Tsutomu Nakamura, Yamaguchi, and Akihiro Aoki, Iwakuni, all of Japan, assignors to Teijin Limited, Yamaguchi, Japan

Continuation-in-part of Ser. No. 131,642, Mar. 19, 1980, abandoned. This application Nov. 19, 1981, Ser. No. 322,892

Claims priority, application Japan, Mar. 26, 1979, 54-34214; Apr. 18, 1979, 54-46745

Int. Cl.³ C08G *69/26*

U.S. Cl. 528—336 **29 Claims**

1. A process for preparing a cyclic amide polymer-amide polar solvent composition, which process comprises the steps of:

(A) prepolymerizing, in an amide organic polar solvent, at least one cyclic diamine selected from the group consisting of aromatic diamines and heterocyclic diamines which are neither ortho nor peri oriented, with at least one cyclic dicarboxylic acid chloride selected from the group consisting of aromatic dicarboxylic acid chlorides and heterocyclic dicarboxylic acid chlorides which are neither ortho nor peri oriented, in a molar equivalent less than that of said cyclic diamine, to prepare a prepolymer solution containing a by-product consisting of hydrogen chloride;

(B) removing at least a portion of said hydrogen chloride from said prepolymer solution by first neutralizing it with ammonia and, then, separating the resultant precipitate consisting of ammonium chloride from said prepolymer solution by means of filtration, to prepare a prepolymer filtrate;

(C) high polymerizing said prepolymer in said prepolymer solution with an amount of at least one cyclic dicarboxylic acid chloride selected from the group consisting of aromatic and heterocyclic dicarboxylic acid chlorides in addition to that used in the prepolymerizing step, to prepare a polyamide solution containing a by-product consisting of hydrogen chloride, and;

(D) converting the entire amount of said hydrogen chloride in said polyamide solution to a salt, which is soluble in said amide type polar solvent and capable of enhancing the solubility of said polyamide in said amide polar solvent, with a neutralizing agent, to provide a cyclic amide polymer composition, and which process is characterized in that:

(a) in said prepolymerization step (A), the resultant prepolymer solution exhibits a solution viscosity of 20 poise or less at a temperature of 50° C.;

(b) in said removing step (B), said first neutralizing procedure of said prepolymer solution with ammonia is carried out to such an extent that a mixture of 10 g of the resultant neutralized mixture with 200 ml of ion-exchanged water exhibits a pH of from 3.7 to 8.0, and;

(c) in said conversion step (D), 10 to 70% of the hydrogen chloride contained in said polyamide solution is also converted with said neutralizing agent into said amide polar solvent-soluble salt, and the entire amount of said amide polar solvent-soluble salt corresponds to from 5 to 95% by weight of the theoretical amount of said amide polar solvent-soluble salt to be derived from the entire amount of said cyclic dicarboxylic acid chloride used in said prepolymerization step (A) and said high polymerization step (C).

4,389,522

PROCESS FOR THE THERMAL AFTER-TREATMENT OF PASTE-FORMING POLYMERS OF VINYL CHLORIDE

Burkhard Boeke, Haltern; Josef Kalka, Herten; Manfred Smolinski, Marl, and Heinz Baukholt, Dorsten, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls, A.G., Marl, Fed. Rep. of Germany

Filed Sep. 16, 1981, Ser. No. 316,018

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1980, 3034983

Int. Cl.³ C08F *6/14*

U.S. Cl. 528—503 **8 Claims**

1. In a process for the thermal after-treatment of paste-forming homo- or copolymers of vinyl chloride, obtained by aqueous emulsion polymerization, followed by spray-drying to produce a spray dried powder, the improvement wherein 20 to 60 percent by weight of the spray-dried powder is warmed for 30 minutes to 1 second to a treating temperature of 75°–110° C. and, then is recombined with the non heat-treated, 80–40 percent by weight portion of the spray dried powder.

4,389,523

CELLULOSE SULFATE SALT HAVING ANTI-COAGULATING ACTION AND PROCESS FOR PREPARING SAME

Kunihiko Okajima, Takatsuki; Kenji Kamide, Ikoma, and Toshihiko Matsui, Takatsuki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 25, 1981, Ser. No. 324,918

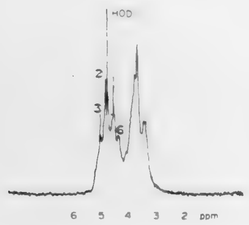
Claims priority, application Japan, Nov. 27, 1980, 55-165786

Int. Cl.³ C08G *18/10*

U.S. Cl. 536—59 **11 Claims**

1. A cellulose sulfate salt having a heparinic action, which satisfies the requirements of $0.8 \leqq <<F>> \leqq 2.6$, $<<f_2>> \geqq <<f_3>>$ and $<<f_2>> \geqq <<f_6>>$ wherein $<<f_2>>$, $<<f_3>>$ and $<<f_6>>$ stand for probability of substitution of atoms H in OH groups bonded to the C_2, C_3 and

C_6 positions of the glucopyranose ring unit by sulfuric acid radicals, respectively, and <<F>> stands for the total sub-



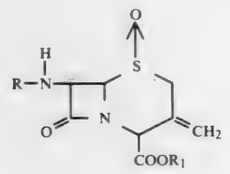
stitution degree which is the sum of $<<f_2>>$, $<<f_3>>$ and $<<f_6>>$.

4,389,524
CEPHAM COMPOUNDS

Riccardo Scartazzini, Allschwil, and Hans Bickel, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 373,819, Jun. 26, 1973, abandoned. This application Feb. 5, 1976, Ser. No. 655,664
Claims priority, application Switzerland, Jun. 29, 1972, 9787/72; Dec. 22, 1972, 18721/72
Int. Cl.³ C07D *501/22;* **A61K** *31/545*
U.S. Cl. 544—016 **12 Claims**

1. The compound of the formula



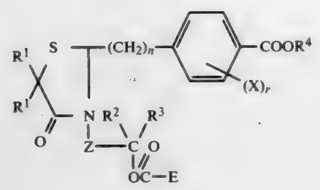
wherein R is phenoxyacetyl or phenylacetyl and R_1 is hydrogen, p-nitrobenzyl, p-methoxybenzyl, benzhydryl, or 2,2,2-trichloroethyl.

4,389,525
PROCESS FOR THE RESOLUTION OF SOME INTERPHENYLENE 9-THIA-11-OXO-12-AZAPROSTANOIC ACIDS

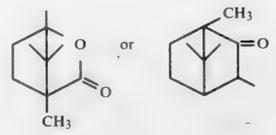
Mark G. Bock, Hatfield, and Robert M. Di Pardo, Lansdale, both of Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 22, 1981, Ser. No. 276,116
Int. Cl.³ C07D *277/04*
U.S. Cl. 548—187 **3 Claims**

1. The diastereomer having the formula



wherein
(1) X is chlorine or methyl;
(2) n is 0, 1 or 2;
(3) n is 3 or 4;
(4) R^1 is hydrogen, deuterium or methyl;
(5) E is



(6) R^2 is H or C_1–C_3 alkyl;
(7) R^3 is 4-pentenyl, 5,5,5-trifluoropentyl or C_3–C_7 alkyl and
(8) Z is $(CH_2)_2$, $(CH_2)_3$, cis or transpropenylene or propynylene.

4,389,526
INTERMEDIATES AND SYNTHESIS OF 2-AMINO-2-DEOXYTETRITOLS

Milos Sovak, La Jolla, and Ramachandran Ranganathan, San Diego, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 3, 1981, Ser. No. 289,743
Int. Cl.³ C07D *321/06*
U.S. Cl. 549—347 **9 Claims**

1. A method for preparing a 1,4-dihydroxyl protected -2-amino-2-deoxyerythritol which comprises:
combining a source of positive halogen of atomic number 17 to 80, a nitrile, aqueous base unreactive with alkylhalogen under the conditions of the reaction, and hydroxyl protected 1,4-dihydroxybutene-2 under mild conditions whereby trans-halo-acylamido is formed;
treating the trans-halo-acylamido with a mild aqueous base at an elevated temperature to produce cis-hydroxy-acylamido; and
treating the cis-hydroxy-acylamido with a basic deacylating agent above about 60° C. to produce the desired 1,4-dihydroxyl protected-2-amino-2-deoxyerythritol.

4,389,527
PROCESS FOR THE PREPARATION OF DIHYDROCINNAMALDEHYDE DERIVATIVES

Roy H. Valentine, Caterham, Great Britain, and Harold A. Brandman, Glen Ridge, N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed Jun. 30, 1981, Ser. No. 278,968
Claims priority, application United Kingdom, Jul. 4, 1980, 8021949; Apr. 27, 1981, 8112923; Jun. 16, 1981, 8118538
Int. Cl.³ C07C *45/46*
U.S. Cl. 549—438 **16 Claims**

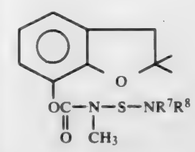
1. A process for the manufacture of a 3-aryl propionaldehyde which comprises reacting an alken-2-ylidene diacylate or an α-ethylenic aldehyde with an aromatic compound in the presence of trifluoroacetic acid.

4,389,528
TRIALKYLAMINE/SULFUR DIOXIDE CATALYZED SULFENYLATION OF CARBAMATES

John W. Ager; Maurice J. C. Harding, both of Princeton, and Charles E. Hatch, III, Pennington, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 202,526, Oct. 31, 1980, Pat. No. 4,329,293. This application Feb. 22, 1982, Ser. No. 350,792
The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.
Int. Cl.³ C07D *307/86*
U.S. Cl. 549—470 **6 Claims**

1. A process for preparing a compound of the formula



which comprises, reacting carbofuran with a disubstituted aminosulfenyl halide of the formula R^3SX in the presence of a solvent and acid acceptor in the presence of a catalytic amount of a complex of sulfur dioxide and a trialkylamine of the formula $R^4NR^5R^6$ wherein each of R^4, R^5 and R^6 is a lower alkyl group, wherein
(a) X is a halogen atom and R^3 is $—NR^7R^8$;
(b) one of R^7 and R^8 is a group of the formula $—CH_2CO_2R^9$ wherein R^9 is a lower alkyl group and, the other of R^7 and R^8 is a lower alkyl group or a group of the formula $—CH_2CO_2R^9$.

4,389,529
METHOD FOR EPOXIDIZING OLEFINS

Charles J. Stark, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 263,839, May 15, 1981, Pat. No. 4,344,887, and a continuation-in-part of Ser. No. 107,899, Dec. 28, 1979, abandoned. This application Apr. 22, 1982, Ser. No. 370,763
Int. Cl.³ C07D *301/12*
U.S. Cl. 549—531 **3 Claims**

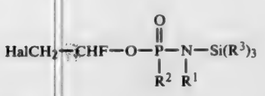
1. An epoxidation method which comprises
(1) incrementally adding aqueous 30–90% by weight hydrogen peroxide to a refluxing mixture comprising an olefinically unsaturated organic material, symmetrical tetrachloroacetone, and an inert organic solvent,
(2) continuously azeotroping water of reaction from the mixture of (1) until the mixture is substantially free of water,
(3) washing the resulting organic solution of (2) with an aqueous base and
(4) distilling the inert organic solvent from the resulting solution of (3) to effect recovery of the epoxidized organic material.

4,389,530
PESTICIDALLY ACTIVE NOVEL PHOSPHORIC (PHOSPHONIC) ACID ESTER AMIDES

Dieter Arlt, Cologne; Bernhard Homeyer, Leverkusen, and Ingeborg Hammann, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 26, 1982, Ser. No. 352,723
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110596
Int. Cl.³ C07F *7/08, 7/18*
U.S. Cl. 556—404 **13 Claims**

1. A phosphoric (phosphonic) acid ester amide of the formula



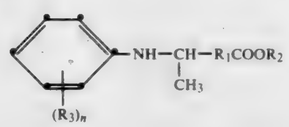
wherein
R^1 is hydrogen or optionally substituted alkyl,
R^2 is optionally substituted alkyl or optionally substituted alkoxy,
R^3 is optionally substituted alkyl, and
Hal is halogen.

4,389,531
PREPARATION OF N-SUBSTITUTED ANILINES

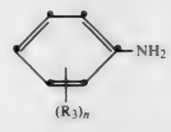
Gary T. Clark, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 158,748, Jun. 12, 1980, abandoned, which is a continuation of Ser. No. 26,481, Apr. 2, 1979, abandoned. This application Feb. 22, 1982, Ser. No. 350,936
Int. Cl.³ C07C *67/30*
U.S. Cl. 560—43 **4 Claims**

1. The process for the preparation of disperse dye couplers of the general formula



wherein R_1 is selected from straight or branched alkylene of 1-4 carbons, R_2 is selected from phenyl, cyclohexyl and straight or branched alkyl of 1–10 carbons which may be substituted with lower alkoxy, lower alkoxyalkoxy, benzyl, or cyclohexyl, and R_3 is selected from hydrogen, lower alkyl, lower alkoxy, lower alkanoylamino, and aryl, and n is 1, 2 or 3, comprising contacting at between about 75° C. and 200° C. under hydrogen at between about 100 and 3,000 psi a mixture of at least one amine compound of the formula



or its nitro precursor and at least one compound of the formula



in the presence of from about 0.1 to about 30 parts by weight of a hydrogenation catalyst per part by weight of the amine or its nitro precursor, and from about 5.3×10^{-4} to about 1.0×10^{-1} moles per mole of said amine or its nitro precursor of one or more of lower alkyl sulfonic acid, p-toluenesulfonic acid, benzenesulfonic acid, or naphthalene sulfonic acid, each of which may be substituted with 1–3 lower alkyl groups.

4,389,532
PROCESS FOR THE PREPARATION OF ACETALDEHYDE

Thomas H. Larkins, Jr., and Guy R. Steinmetz, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

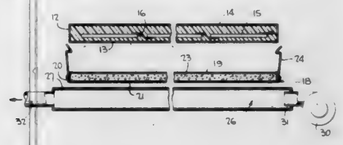
Filed May 10, 1982, Ser. No. 376,975
Int. Cl.³ C07C *47/06*
U.S. Cl. 568—487 **16 Claims**

1. A process for the preparation of acetaldehyde from hydrogen, carbon monoxide, and methanol which comprises conducting the reaction at carbonylation temperature and pressure in the presence of a catalyst system comprising cobalt, platinum, and iodide.

4,389,533
PHOTOVOLTAIC DEVICE FOR PRODUCING ELECTRICAL AND HEAT ENERGY

Douglas A. Ames, 1301 20th St., NW., Washington, D.C. 20036

Filed Mar. 9, 1981, Ser. No. 242,101
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—248 9 Claims



1. A photovoltaic device for transforming light energy into usable electrical energy and heat energy, comprising

(a) a solar panel having a bottom and side walls forming a tray with an open front to receive light;

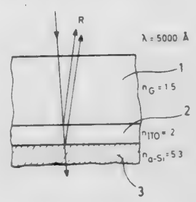
(b) photovoltaic cells positioned in said tray beneath said open front, said cells having light-receiving, upwardly facing surfaces and electrical contacts for collecting and channeling electrical energy generated by said cells to perform work, said bottom of said tray being formed of material that allows heat to pass through it so that heat also generated during operation of said cells passes to and through said tray bottom, and

(c) a container housing salt hydrate materials that are solid at ambient temperatures of use of said solar panel and can be melted by the heat generated during operation of said photovoltaic cells, said container being releasably positioned in proximity to said tray bottom, so that heat generated during the operation of said photovoltaic cells will pass to and through said bottom and melt said salt hydrate materials, thereby effectively storing heat in said materials and lowering the operating temperature of said photovoltaic cells.

4,389,534
AMORPHOUS SILICON SOLAR CELL HAVING IMPROVED ANTIREFLECTION COATING

Gerhard Winterling, Ottobrunn, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed Dec. 11, 1981, Ser. No. 329,999
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048381
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—256 1 Claim



1. A semiconductor component for the conversion of light to electric energy, comprising at least one layer of amorphous silicon, a cover layer of poly-crystalline silicon, and an anti-reflection layer of semiconducting transparent oxide of a refractive index less that 2.8, said cover layer of poly-crystalline silicon having an optical density of

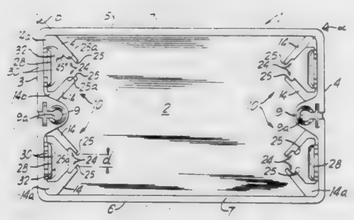
$$\frac{\lambda_{light}}{4} \text{ or } \frac{3\lambda_{light}}{4}$$

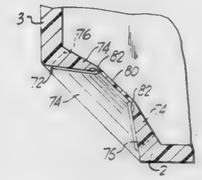
and being arranged between said anti-reflection layer and said layer of amorphous silicon.

4,389,535
CABLE ENTRY PORT MEANS FOR ELECTRICAL OUTLET BOX

Thomas S. Slater, Port Washington, and Wade R. Bowden, Jr., Northport, both of N.Y., assignors to Slater Electric Inc., Glen Cove, N.Y.

Division of Ser. No. 22,993, Mar. 22, 1979, abandoned, which is a continuation-in-part of Ser. No. 879,767, Feb. 21, 1978. This application Apr. 27, 1981, Ser. No. 257,814
Int. Cl.³ H02G *3/08*
U.S. Cl. 174—65 R 6 Claims





1. In an electrical outlet box having a wall structure providing front to rear wall means and a bottom wall interconnected therebetween, the front to rear wall means and bottom wall defining a chamber within the wall structure which opens through the front of the box, and wherein said wall structure houses cable entry port means for the passage of electrical power cable into said box chamber, the improvement therein which comprises, said cable entry port means including:

said front-to-rear wall means and said bottom wall being interconnected by an intermediate wall portion extending generally diagonally therebetween,

at least one aperture located in said diagonally extending intermediate wall portion having a plural-sided configuration;

closure panel means depending from the rim of said aperture and extending angularly inwardly from the plane of said aperture,

said closure panel means comprises a plurality of closure panels converging angularly inwardly toward each other from each side rim of said plural-sided aperture,

the convergent inner free ends of said plurality of converging closure panels separated by a distance less than the narrowest dimension of said electrical power cable; and

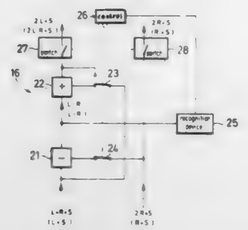
said free end portions of said closure panels adapted to deflect away from each other upon passage of said cable into said aperture and to thereafter resistingly bear against the installed cable.

4,389,536

RECEIVER FOR A TWO CHANNEL TELEVISION SOUND

Willi Schickedanz, Langener Strasse 70, 6050 Offenbach am Main, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 190,639
Int. Cl.³ H04N *5/60*
U.S. Cl. 179—1 G **11 Claims**



1. In a receiver for receiving TV sound signals, said sound signals being transmitted by means of a first and a second channel:

(a) decoder means having a first and a second input as well as a first and second output, the first input being supplied with the signal of the first channel and the second input being supplied with the signal of the second channel;

(b) subtractor means for subtracting the signal of the second input of the decoder from the signal of the first input of said decoder;

(c) adder means for adding the output signal of the subtractor means to the signal of the first input of the decoder;

(d) means for connecting the output of the adder means to the first output of the decoder and

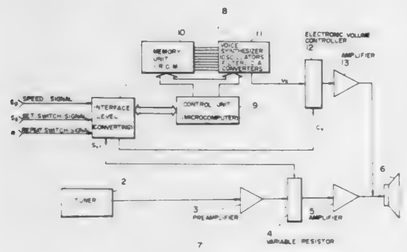
(e) means for connecting the second input of the decoder to the second output of said decoder.

4,389,537

VOICE WARNING SYSTEM FOR AN AUTOMOTIVE VEHICLE PROVIDED WITH AN AUTOMATIC SPEED CONTROL DEVICE

Masakazu Tsunoda, Fujisawa, and Kazuyuki Mori, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Oct. 3, 1980, Ser. No. 193,814
Claims priority, application Japan, Oct. 4, 1979, 54-127357
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SM **6 Claims**



1. A voice warning system for an automotive vehicle provided with an automatic speed control device, which comprises:

(a) a vehicle speed sensor for detecting vehicle speed and for outputting a vehicle speed signal S_p;

(b) a set switch provided for the automatic speed control device for setting the vehicle to travel at a constant speed under control of the automatic speed control device, and for outputting a set switch signal S_s;

(c) a voice synthesizing system responsive to the vehicle speed and set switch signals for reading the speed signal output by said vehicle speed sensor in response to said set switch signal output by said set switch, and for outputting a voice form output message in accordance with the detected vehicle speed signal;

(d) an interface for controlling the connections of the vehicle speed signal and the set switch signal to the voice synthesizing system;

(e) a volume control for a car-radio in the vehicle, said volume control generating a sound volume signal connected to said interface;

(f) said interface including means for generating a voice volume control signal corresponding to said sound volume signal; and

(g) an electronic volume control for adjusting the voice volume of the voice form output message in accordance with the voice volume control signal generated by said interface,

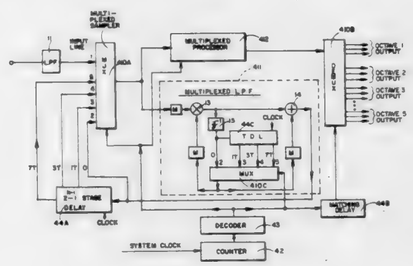
whereby the vehicle speed is indicated to the driver as a voiced message having a volume level according to the car-radio sound volume as adjusted by driver preference, when said set switch is turned on.

4,389,538

MULTIPLEXER FOR SINGLE-OCTAVE DATA PROCESSOR

Stanley A. White, Santa Ana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 12, 1981, Ser. No. 224,401
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SA **8 Claims**



1. Multiplexing means for allowing multi-octave processing of sampled data by means of a single octave data processor and comprising:

means for progressively delaying said sampled data, corresponding to delay coding thereof so that delay-coded data is produced by said means for delaying; and

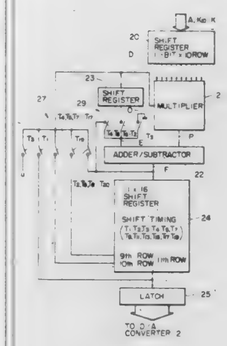
multiplex means for producing multiplexed sampled data by progressively sampling said delay-coded data from said means for delaying at progressively reduced data sampling rates, corresponding to lower octaves of interest, so that said multiplexed sampled data includes interleaved samples corresponding to a plurality of octaves for processing by said single octave data processor.

4,389,539

DIGITAL FILTER FOR PERFORMING SERIAL OPERATIONS AND VOCAL SOUND SYNTHESIZING APPARATUS HAVING THE DIGITAL FILTER

Taisuke Watanabe; Katsuyuki Niyada, both of Sagamihara; Shoji Hiraoka, and Kenji Kaga, both of Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Company, Ltd., Osaka, Japan

Filed Mar. 10, 1981, Ser. No. 242,191
Claims priority, application Japan, Mar. 12, 1980, 55-31797
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SM **7 Claims**



1. A digital filter for filtering a digital exciting input signal by modifying the digital exciting input signal with various parameters, comprising:

(a) means for storing a plurality of filter factors applied as said various parameters;

(b) a serial multiplier having a set of first inputs responsive to the output data of said storing means, a second input and an output;

(c) an adder/subtractor having a first input responsive to the output data of said multiplier, a second input and an output;

(d) a first delay circuit for retarding the output data of said adder/subtractor;

(e) latch means for temporarily storing the output data of said first delay circuit so as to effect series/parallel conversion;

(f) a first selecting means for selecting one of the following circuits: the first delay output; the adder/subtractor output; or said digital exciting input signal; so that selected data are fed to said second input of said multiplier;

(g) a second delay circuit for retarding the output data of said first selecting means; and

(h) a second selecting means for selectively applying the output data of said second delay circuit to said second input of said adder/subtractor;

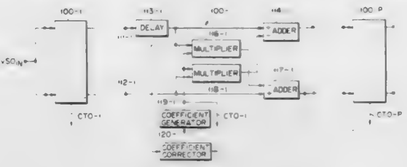
said serial multiplier, said adder/subtractor, said first and second delay circuits, said latch, said first and second selecting means being all arranged such that data transmission from said first selector to said second input of said serial multiplier and to said second delay circuit, from said second delay circuit to said second selecting means, from said serial multiplier to said first input of said adder/subtractor, from said second selecting means to said second input of said adder/subtractor, from said adder/subtractor to said first delay circuit, from said first delay circuit to said first selecting means, and from said first delay circuit to said latch means are all effected serially.

4,389,540

ADAPTIVE LINEAR PREDICTION FILTERS

Makoto Nakamura, Kanagawa, and Fumio Sugiyama, Sagamihara, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 19, 1981, Ser. No. 245,435
Claims priority, application Japan, Mar. 31, 1980, 55-41574
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1.5 A **31 Claims**



1. A voice analyzing apparatus comprising a plurality of cascade-connected delay filter circuit each including:

a delay circuit connected to delay an input signal received at a first input terminal by a predetermined period of time;

a variable coefficient generating circuit;

a first multiplier circuit connected to produce an output signal corresponding to the product of output signals from said delay circuit and said variable coefficient generating circuit;

a second multiplier circuit connected to produce an output signal corresponding to the product of output signals from said delay circuit and said variable coefficient generating circuit and an input signal received at a second input terminal;

a first adder circuit connected to produce an output signal coresponding to the sum of or the difference between output signals from said delay circuit and said second multiplier circuit;

a second adder circuit connected to produce an output signal corresponding to the sum of or the difference between the output signal from said first multiplier circuit and an input signal received at said second input terminal; and

a coefficient correction circuit connected to said variable coefficient generating circuit and including a first coefficient control signal generating circuit having two inputs connected to the output terminals of said delay circuit and said second adder circuit to produce a coefficient control signal to change a coefficient output signal from said variable coefficient generating circuit to suppress an output signal from said second adder circuit to the minimum and an attenuator circuit connected to attenuate the coefficient control signal generated from said coefficient control signal generating circuit.

4,389,541

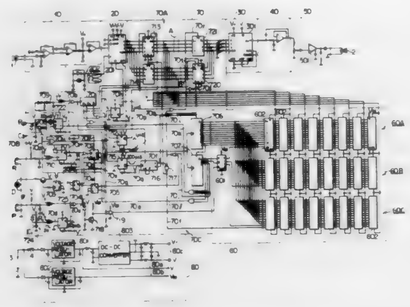
VEHICLE-MOUNTED MESSAGE APPARATUS

Osamu Nakano, and Kunihiro Sowa, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 15, 1981, Ser. No. 254,496
Claims priority, application Japan, Apr. 18, 1980, 55-52186
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SM **14 Claims**

1. A vehicle-mounted message apparatus comprising a recording switch; a converter enabled responsive to an actuation of said switch for converting an applied voice message into an electrical signal; memory means for recording and holding data corresponding to said electrical signal; sensor means for sensing a vehicle starting condition and generating a start signal; and reproduction means responsive to the start signal

for reading out the data held in the memory means to convert to an output voice; whereby an optional message recorded by



a prior driver can be communicated to a present driver in voice form when the present driver is ready to drive.

4,389,542

ORTHODYNAMIC HEADPHONE

Rudolf Görike, Vienna, Austria, assignor to AKG Akustische u. Kino-Geräte, Austria

PCT No. PCT/AT80/00026, § 371 Date Apr. 23, 1981, § 102(e) Date Apr. 21, 1981, PCT Pub. No. WO81/00660, PCT Pub. Date Mar. 5, 1981

PCT Filed Aug. 18, 1980, Ser. No. 261,151

Claims priority, application Austria, Aug. 23, 1979, 5675/79

Int. Cl.³ H04R *3/00, 9/06, 19/04*

U.S. Cl. 179—1 R **12 Claims**



1. A headphone having earpieces which each comprise at least one electroacoustic transducer operating on the isodynamic principle and including a small-mass diaphragm corresponding at least to the area of an average auricle, with a coupling space of each of the earpieces being designed for minimum sound reflection, characterized in that in order to effect a coupling to the ear, a cushion of reticulate foam material is provided bounding the coupling space at least laterally and having an acoustic frictional resistance which, with the cushion resting in a use position to form the coupling space, is approximately on the order of magnitude of the transformed wave impedance of air, so that the diaphragm oscillation is impeded predominantly by friction and a critical damping of the low-frequency resonance of the diaphragm is established.

4,389,543

TELEPHONE-ACTIVATED AUDIO CONTROL CIRCUIT

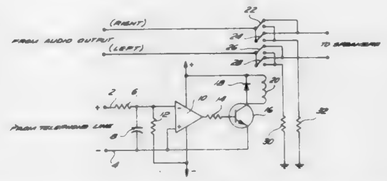
Martus Granirer, 100 S. Mountain Rd., New City, N.Y. 10956, and Andrew Jason, Miami, Fla., assignors to Martus Granirer, New City, N.Y.

Filed Dec. 18, 1980, Ser. No. 217,998

Int. Cl.³ H04M *11/00*

U.S. Cl. 179—2 B **9 Claims**

1. A circuit for use with telephone lines and the like, designed to mute an audio source after a telephone receiver has been taken off the hook, comprising: a high-impedance front end which can be connected across a telephone line and which can respond to voltage changes thereacross; a comparator connected to the front end and comparing voltage across the telephone line to a voltage reference source, the comparator having an output at which a control voltage proportional to a



difference between the voltage reference source and voltage across the telephone line appears; and control means coupled to the output of said comparator and connected to said audio source to activate or deactivate the source in response to changes in said control voltage.

4,389,544

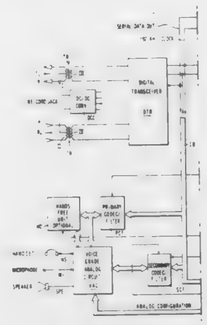
DIGITAL TELEPHONE APPARATUS

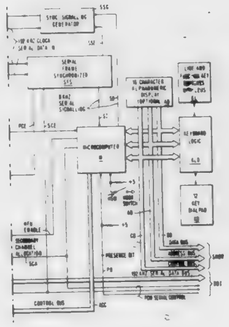
Theodore W. Wagner, West Palm Beach; Sam Liang, Deerfield Beach, both of Fla., and Deepak R. Muzumdar, Somerset, N.J., assignors to Siemens Corporation, Iselin, N.J. and Siemens Corporation, Iselin, N.J.

Filed Mar. 31, 1981, Ser. No. 249,400

Int. Cl.³ H04M *11/06;* **H04J** *3/06*

U.S. Cl. 179—2 DP **39 Claims**





1. Digital telephone apparatus suitable for subscriber stations and attendant consoles and adapted to be connected for communication with a telephone transmission line, said apparatus comprising, in combination:

(a) an internal data bus;

(b) a digital transceiver connected to said internal data bus and adapted to be connected to said telephone transmission line for receiving and transmitting digital speech data, signalling data and other information via said transmission line and also via said internal data bus, said digital transceiver including means for transmitting and receiving signals on said transmission line which correspond to digital data received and transmitted, respectively, on said data bus;

(c) a sync/signalling generator connected to said internal data bus for repeatedly generating and passing to said data bus a first data word containing a binary synchronizing code and a signalling code;

(d) a serial frame synchronizer connected to said internal data bus for repeatedly receiving from said data bus and decoding a first data word containing a synchronizing code and a signalling code;

(e) a microcomputer connected to said sync/signalling generator and to said serial frame synchronizer for repeatedly transmitting binary signalling information to said sync-/signalling generator for formation of said first data word to be transmitted, and for repeatedly receiving binary signalling information from said serial frame synchronizer that has been decoded from a received first data word;

(f) input/output means connected to said microcomputer for entering input information into, and indicating output information received from said microcomputer, said microcomputer being operative to translate between said signalling information and said input and output information;

(g) a first codec/PCM filter connected with said internal data bus for converting a second data word appearing on said data bus into an analog voice signal and converting an analog voice signal into a second data word for transmission on said data bus.

4,389,545

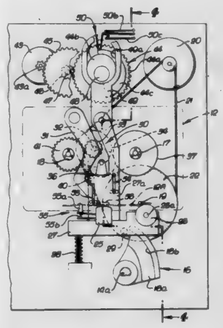
REMOTE REWIND MECHANISM AND CONTROL CIRCUITRY FOR A TAPE CASSETTE TELEPHONE ANSWERING DEVICE

Sava Jacobson, 8130 Orion St., Van Nuys, Calif. 91406

Filed Dec. 29, 1980, Ser. No. 220,359

Int. Cl.³ H04M *1/64*

U.S. Cl. 179—6.07 **6 Claims**



1. A telephone answering device in which incoming messages from a telephone line are recorded on a cassette tape, and in which previously recorded incoming messages can be played back under remote control upon receipt of a remote control signal from said telephone line, the improvement comprising:

a carriage movable between a cassette tape engaging position and a disengaged, rewind position, said carriage carrying the playback head and pinch roller for said tape, said carriage being biased into the tape engaging position,

drive transfer means, linked to the movement of said carriage, for transferring motor imparted tape driving force from the cassette takeup reel spindle to the supply reel spindle when said carriage is moved to said disengaged, rewind position, and

cam motor driven lost motion linkage means including a lost motion linkage coupled to said carriage, and a motor driven cam operatively engaging said lost motion linkage and positionable between first and second cam orientations, the lost motion of said linkage permitting unimpeded manual retraction of said carriage when said cam is in said first orientation, receipt of said remote control playback signal causing said cam to be motor driven to said second orientation in which said lost motion linkage urges said carriage against the bias thereof into said disengaged, rewind position.

4,389,546

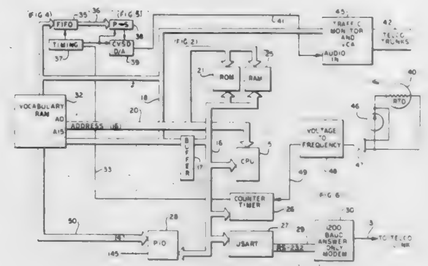
DIGITAL ANNOUNCEMENT SYSTEM INCLUDING REMOTE LOADING AND INTERROGATION

David Glisson, Lawrenceville; Gerald Huber, Snellville, and Bruce Biskey, Norcross, all of Ga., assignors to The Audichron Company, Atlanta, Ga.

Filed Mar. 23, 1981, Ser. No. 246,733

Int. Cl.³ H04M *3/50, 15/00*

U.S. Cl. 179—18 B **2 Claims**



1. In an automatic time of day announcement system for providing time of day announcements to at least one telephone truck in response to an incoming call, including a clock comprising time base means for providing a time base signal of nominally constant frequency and scaling means for dividing said time base signal by a scale to provide a time of day signal stored in a time of day register, the improvement comprising:

interface means for connecting a control trunk and said clock means in response to a first sequence of pre-determined signals provided on said control trunk from a remote location; and

scale correcting means responsive to a second sequence of predetermined signals occurring on said control trunk subsequent to said interface means connecting said clock means, to change said scale of said scaling means.

4,389,547

TELEPHONE SET

Friedrich L. Jansen, Hilversum, Netherlands, and Ian Phillips, Sherston Near Malmesloury, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,113

Claims priority, application United Kingdom, Sep. 17, 1979, 7932107

Int. Cl.³ H04M *1/00*

U.S. Cl. 179—81 R **6 Claims**

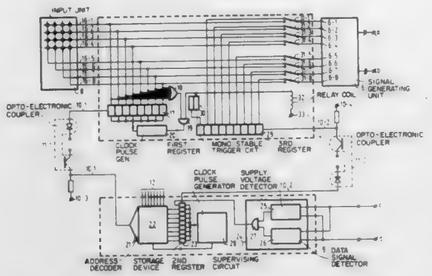
1. A telephone set comprising:

an input unit,

a signal generating unit coupled to a first pair of connecting terminals for connection to a first pair of wires of a subscriber's line,

an information processing unit under the control of said input unit for processing information signals from said input unit for use in said signal generating unit, and

a switching unit which is connected to said input unit and said signal generating unit for receiving information signals from said input unit and said information processing unit,



said information processing unit comprising a supervisory circuit for supervising the operation of said information processing unit, said switching unit coupling said input unit to said information processing unit under the control of said supervisory circuit when said information processing unit operates to convert information to be transmitted, said switching unit coupling said input unit to said signal generating unit when said information processing unit fails to transmit the information signals supplied by said input unit.

4,389,548

ACOUSTIC TRANSDUCER

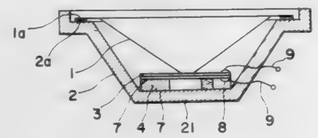
Eiji Morikawa, Neyagawa; Toshifumi Morita, Osaka, and Masayuki Hirate, Takatsuki, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 27, 1981, Ser. No. 248,330

Claims priority, application Japan, Sep. 11, 1980, 55-130588[U]

Int. Cl.³ H04R *15/00*

U.S. Cl. 179—110 A **4 Claims**



1. An acoustic transducer including a piezoelectric element comprising:

a frame body having a space defined by a flat bottom portion of a predetermined area, a side frame connected with the peripheral edge of the bottom portion and a flange formed integrally with the free end of the side frame,

a cushioning means having a bottom face and a top face, said bottom and top faces having an adhesive layer formed thereon prior to the assembly of said acoustic transducer, the bottom face thereof being fitted on the upper surface of the bottom portion,

a piezoelectric element mounted on the top face of the cushioning means, and

a speaker diaphragm with an apex having an axially movable portion formed in a conical form in cross-section along the axis, the apex portion of the diaphragm being attached to the central portion of the upper face of the piezoelectric element,

wherein said cushioning means has an outer diameter equal to or less than the diameter of the flat bottom face of the frame body and wherein said cushioning means is adhered onto the top face of the bottom portion of the frame body by means of the adhering layer formed on the bottom face thereof and said cushioning means is adhered to the piezoelectric element by means of the adhering layer formed on the top face thereof such that the apex portion of the speaker diaphragm is secured to the central portion of the piezoelectric element, said piezoelectric element having been previously secured to said cushioning means, with the peripheral edge of the speaker diaphragm being secured to the flange of the frame body, said cushioning means further includes at least one cut portion and/or through hole thereby decreasing the energy absorbed in the cushioning means from the piezoelectric element.

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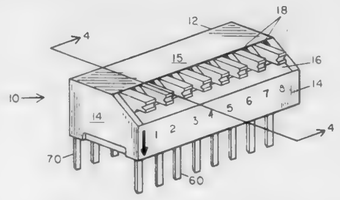
SIDE ACTUATED MINIATURE DIP SWITCH

Richard P. Brown, Paso Robles, Calif., assignor to CTS Corporation, Elkhart, Ind.

Filed Nov. 23, 1981, Ser. No. 323,919

Int. Cl.³ H01H *19/04*

U.S. Cl. 200—5 R **13 Claims**



1. A miniature DIP switch comprising a housing having a plurality of walls and a base defining a cavity and an arcuately shaped boss disposed within said cavity, electrically conductive movable contact arms disposed within the cavity and providing first contacts, first terminals each integral with a respective movable contact arm and supported by the housing, stationary contact arms disposed within the cavity, second terminals each integral with an end of a stationary contact arm and supported by the housing, said electrically conductive movable contact arms and stationary contact arms in respective aligned sets and in spaced apart relationship, and insulative rotatable lever actuators each having an arcuate bearing surface engaging the arcuately shaped boss, bearing means, and cam means, each actuator being interposed between a respective movable contact arm and the boss whereby said bearing means is disposed adjacent the base and said cam means engages said respective movable contact arm so that rotation of said actuator about the arcuately shaped boss biases said respective movable contact arm into wipable engagement or disengagement with its aligned stationary contact arm.

4,389,550

SWITCH ACTUATING MECHANISM

John J. Reiter, 6521 Stevens Ave. S., Minneapolis, Minn. 55423

Continuation-in-part of Ser. No. 195,407, Oct. 9, 1980, abandoned. This application Aug. 31, 1981, Ser. No. 297,877

Int. Cl.³ H01H *3/16, 3/20, 9/28*

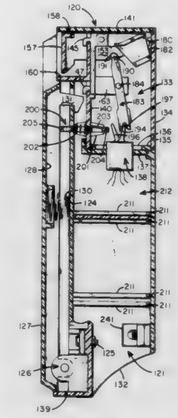
U.S. Cl. 200—44 **17 Claims**

1. A switch actuating mechanism to be used with electrical motor driven apparatus for facilitating the energization and deenergization thereof, comprising, in combination:

(a) an electrical junction box for containing an electrical switch to be actuated, said electrical switch having at least one operating lever extending through a top surface of said box;

(b) a broad surface member of a predetermined length and width dimension pivotally coupled to said junction box;

(c) a housing affixed to said top surface of said electrical junction box having mating mutually perpendicular top, front and side walls, said front wall being of a height less than said side walls to define an opening;



(d) a push button member of a relatively small size compared to said broad surface member mounted for reciprocal movement within said opening of said housing;

(e) means coupling said push button member to said operating lever for moving said lever to an "on" position when said push button member is depressed; and

(f) means coupling said broad surface member to said switch operating lever for moving said lever to an "off" position when said broad surface member is depressed.

4,389,551

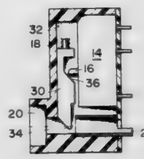
PROBE-ACTUATED GUARD SHIELD SWITCH

Florian C. Deibele, Portland, and William F. Schell, Banks, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jul. 13, 1981, Ser. No. 282,761

Int. Cl.³ H01H *9/22*

U.S. Cl. 200—51 R **4 Claims**



1. A guard voltage input device having a probe-actuated switch which automatically disconnects a guard shield from a signal input line upon insertion of a probe tip into said device and automatically reconnecting said guard shield to said signal input line upon removal of said probe tip, comprising:

a non-conductive housing having a probe tip insertion opening therein;

a receptacle axially aligned with said opening for receiving said probe tip, said receptacle electrically connectable to said guard shield;

a switch disposed in said housing, said switch having a first terminal electrically connectable to said signal input line and a second terminal electrically connectable to said guard shield; and

a spring-biased actuating member disposed at a substantially right angle to the central axis of said receptacle, said member being engaged by said probe tip as it is inserted and being displaced thereby, opening said switch.

4,389,552

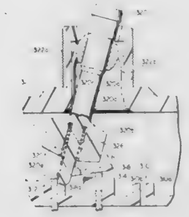
SWITCH CONSTRUCTION

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Division of Ser. No. 234,664, Feb. 11, 1981, Pat. No. 4,347,417. This application Dec. 9, 1981, Ser. No. 328,828

Int. Cl.³ H01H *5/06, 21/42*

U.S. Cl. 200—68 **7 Claims**



1. A switch comprising a base defining an upwardly open cavity, a plurality of fixed contacts spaced along the bottom wall of said base cavity, said switch having means defining a top opening with an inwardly facing bearing surface, a movable actuator having a depending portion and having shoulder means engaging said bearing means, at least one movable contact element slidably received inside said switch base cavity for movement generally across the upper ends of said fixed contacts to selectively bridge certain of said fixed contacts, said movable contact element having at least one upwardly open recess to receive said depending portion so that said element moves in response to actuator movement, and spring means retained by said depending actuator portion for biasing said movable contact element toward engagement with said fixed contacts and for biasing said actuator defined shoulder means into engagement with said inwardly facing bearing surface for said actuator.

4,389,553

ROTARY DISCONNECT SWITCH

Werner König, Heddesheim; Wolfgang Wagenbach, Linsengericht; Hans May, Bad Durkheim, and Rolf Bleidt, Hanau, all of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim-Käfertal, Fed. Rep. of Germany

Filed Jun. 18, 1980, Ser. No. 160,560

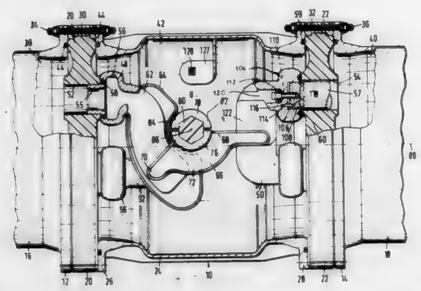
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1979, 2924630

Int. Cl.³ H01H *33/60*

U.S. Cl. 200—148 H **17 Claims**

1. Rotary disconnect switch assembly, comprising a metal encapsulation insulated with SF_6 gas, flanges integral with said encapsulation, support insulators disposed on said flanges, a drive shaft passing through said encapsulation and having a portion disposed outside and a portion disposed inside said encapsulation, a drive connected to said outside portion of said drive shaft for rotating said drive shaft, a profile formed on said inside portion of said drive shaft, three disconnect blades fastened side by side in axial direction on said inside portion of said drive shaft, intermediate pieces passing through said support insulators from within said encapsulation and being connectible to phase conductors leading outwardly from said support insulators, and an opposite pair of first and second fixed contacts for each individual phase connected along said

intermediate pieces in said encapsulation in axial direction of said drive shaft, said blades being rotatable with said drive



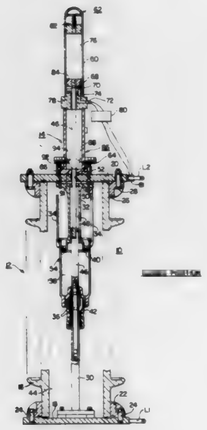
shaft between an on position in which they connect said first and second contacts to each other and a disconnect position.

4,389,554

TRANSFORMER PROTECTIVE SWITCH

Willie B. Freeman, Irwin, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 26, 1980, Ser. No. 163,131
Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 A **7 Claims**



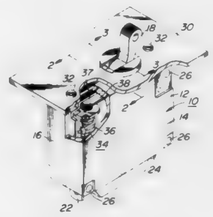
1. An electric switch comprising:
a stationary contact;
a movable contact operable between open and closed positions with respect to said stationary contact;
means for moving said movable contact during an opening operation comprising:
an operator shaft directly coupled at one end to said movable contact and having a piston at the other end thereof;
an operator cylinder having disposed therein said piston;
a chemical operator extending into said operator cylinder and being longitudinally disposed intermediate said piston and said movable contact, said chemical operator, upon activation, igniting and generating a hot gas within said operator cylinder and against said piston to cause movement thereof, movement of said piston causing movement of said movable contact through said operator shaft; and
means for activating said chemical operator; and
means for inserting pressurized air against said piston distal from said movable contact to move said piston, and said movable contact through said operator shaft, during a closing operation.

4,389,555

CIRCUIT BREAKER WITH INCREASED ELECTRICAL SPACING

Thomas Guinan, Hamilton Township, Mercer County, N.J., assignor to Heinemann Electric Company, Lawrenceville, N.J.

Filed Apr. 5, 1982, Ser. No. 365,516
Int. Cl.³ H07H *9/04*
U.S. Cl. 200—303 **4 Claims**



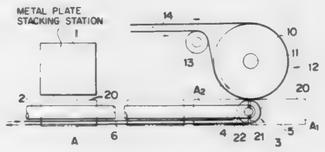
1. In a circuit breaker the combination of a case,
two half-cases abutting together to jointly form said case,
a link including a handle accessible to an operator,
an electromagnetic device within said case,
said electromagnetic device including a portion which is electrically energized and closest to the outside of the circuit breaker,
a mechanism within said case operated by said handle,
said half-cases defining an opening through which said handle extends,
said half-cases having abutting, interfitting tongue and groove portions adjacent to said operator accessible handle to increase the creepage and clearance distances from outside the circuit breaker to said portion which is electrically energized and closest to the outside of the circuit breaker.

4,389,556

METHOD FOR ELECTRIC RESISTANCE SEAM WELDING OF THE SIDE OVERLAPPED PORTION OF A TUBULAR FORM

Tetuo Nozawa, Shizuoka; Jun Nagata, Koganei, and Michiyuki Kakimoto, Shimizu, all of Japan, assignors to Daiwa Can Company, Limited, Tokyo, Japan

Filed Sep. 1, 1981, Ser. No. 298,526
Claims priority, application Japan, Sep. 19, 1980, 55/130207
Int. Cl.³ B23K *1/16, 11/06, 9/00*
U.S. Cl. 219—64 **7 Claims**



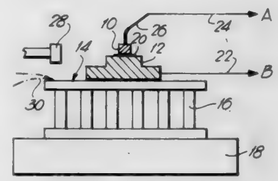
1. A method for electric resistance seam welding of the side overlapped portion of tubular forms made of thin steel plate, the tubular forms having front and rear edge parts and a central part between the front and rear edge parts, the method comprising the steps of:
a. successively passing the overlapped portion of each of the tubular forms between welding electrodes such that before the overlapped portion of a preceding tubular form has passed out from between the welding electrodes, the overlapped portion of a following tubular form is inserted between the welding electrodes; and
b. applying a current to the welding electrodes so as to successively subject the overlapped portion of each of the tubular forms to electric resistance seam welding while between the welding electrodes;
c. the step of applying a current including the steps of applying a first welding current having a first magnitude to the welding electrodes while the central part of the tubular forms is between the welding electrodes, such that substantially no burrs are formed along the overlapped portion thereof, and apply a second welding current having a second magnitude greater than the first magnitude to the welding electrodes while the front and rear edge parts are between the welding electrodes.

4,389,557

SEMICONDUCTOR LASER BONDING TECHNIQUE

Tibor F. Devenyi, Nepean; Tibor F. I. Kovats, Ottawa, and Christopher M. Look, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 17, 1981, Ser. No. 293,112
Int. Cl.³ H01L *21/58*
U.S. Cl. 219—85 CM **14 Claims**



1. A method of bonding a semiconductor laser chip to a heatsink comprising depositing solder on the heatsink, positioning and pressing the chip onto the solder, passing a small fixed current through the laser chip, applying regulated heat to the heatsink to render the solder molten, measuring a change in voltage across the laser chip caused by such heating to determine the temperature of a pn junction of said laser chip, regulating the applied heat on the basis of that predetermined temperature, and cooling the solder to render it solid and to bond the laser chip to the heatsink.

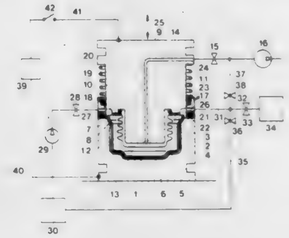
4,389,558

METHOD FOR MAKING A BELLOWS UNIT

Jorn M. Schmidt, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed May 1, 1981, Ser. No. 259,682
Claims priority, application Fed. Rep. of Germany, May 5, 1980, 3017138
Int. Cl.³ B23K *11/30*
U.S. Cl. 219—119 **3 Claims**

1. A method for assembling a bellows unit of the type having a cup shaped housing and disposed in spaced and nested relation thereto a corrugated cup shaped diaphragm having a rigid annular flange, said assembling involving pressure welding said flange to said housing, said method comprising the steps of providing a bottom electrode having a cavity for receiving and supporting a housing, providing an upper electrode having a central projection which protrudes into said diaphragm and a surrounding collar for biasing said diaphragm flange into abutting engagement with the upper edge of said housing, providing suction means including passage means in said electrode projection to provide a partial vacuum for drawing said diaphragm into engagement with said upper electrode projection, providing sealing means between said upper and lower electrodes, providing filling medium passage means in said apparatus extending from said cavity to a point externally thereof, filling said cavity including the space between said housing and said diaphragm with a filling medium via said filling medium passage means, and joining said housing and said diaphragm to form a bellows unit with a portion of said filling medium being sealed internally therein.

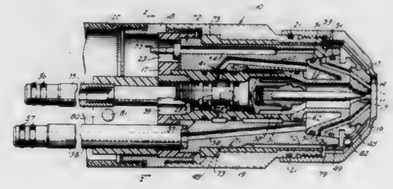


4,389,559

PLASMA-TRANSFERRED-ARC TORCH CONSTRUCTION

Anthony J. Rotolico, Hauppauge, and Eduardo Romero, Coram, both of N.Y., assignors to Eutectic Corporation, Flushing, N.Y.

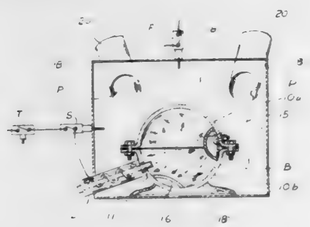
Filed Jan. 28, 1981, Ser. No. 229,275
Int. Cl.³ B23K *28/00, 9/00*
U.S. Cl. 219—121 PP **21 Claims**



1. A plasma-transferred-arc torch construction comprising an elongate central cathode subassembly having a downstream-directed cathode-discharge end and a radial mounting shoulder at an upstream mounting region thereof, an elongate insulating sleeve forming part of said subassembly downstream from said shoulder; a tubular mounting subassembly including a radially extending base of insulating material at said region and having a central bore through which the upstream end of said cathode assembly extends, with said shoulder in axial reference to said base; and an annular anode subassembly adapted for axial reference to said base via said sleeve and having a bore removably supported by said sleeve, said anode subassembly being convergent at its downstream end for axially overlapped radially spaced coaction with said cathode-discharge end; said tubular mounting subassembly including elongate outer tubular structure fully surrounding said cathode and anode subassemblies and having a convergent annular downstream end overlapping but in spaced relation to the convergent end of said anode subassembly, said outer tubular structure having axially adjustable threaded reference to said base, and angularly spaced insulating spacer elements of limited angular extent in the space between said convergent ends and adapted for insulated compressional loading upon threaded

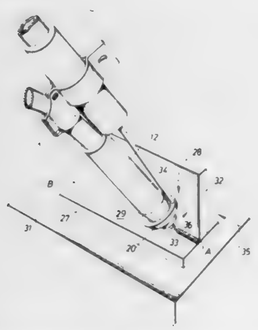
adjustment of said outer tubular structure to retain the base reference of both said cathode and anode subassemblies, and said anode subassembly including shielding-gas supply-passage means communicating with the convergent space between said convergent ends, whereby said convergent space serves both as a manifold for shielding-gas flow and as a convergent nozzle for discharge of shielding gas around an externally transferred arc discharge downstream from and between said cathode and anode subassemblies.

4,389,560
LASERS
Wilbur A. E. Mitchell, 1329 - 11th Ave., Greeley, Colo. 80631
Filed Apr. 10, 1981, Ser. No. 253,034
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 L **2 Claims**



1. In combination, a laser heater enclosed furnace having, an iron heater fire pot therein, an operable electrically controlled laser light of upwards of 20,000 watts associated with the fire pot and adapted on light operation to project its light beam into the fire pot, a reflector mirror within the fire pot in position and adapted to reflect the laser light beam within the fire pot on laser operation, temperature electric control means internally and exteriorly of the furnace and exteriorly of the fire pot for electrically controlling operation of the laser light, whereby, upon operation of the laser light, that light is absorbed by the iron fire pot and the fire pot is oxidized and heated proportionally to the laser light wattage and duration of operation.

4,389,561
SELF-POSITIONING WELDING OR CUTTING TORCH
Klas B. Weman, and Hans E. A. Grohn, both of Laxa, Sweden, assignors to Esab Aktiebolag, Sweden
Filed Jun. 26, 1981, Ser. No. 277,989
Claims priority, application Sweden, Jul. 3, 1980, 8004926
Int. Cl.³ B23K *9/12*
U.S. Cl. 219—124.34 **3 Claims**



1. A torch comprising a torch body having a longitudinal axis and a tip; a sensor mounted to said torch body for establishing the relative positions of said tip of said torch body and an object radially disposed relative to said longitudinal axis, said sensor comprising:

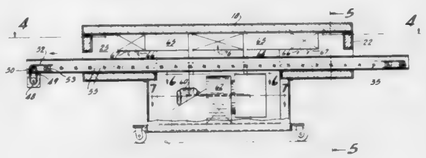
(a) an annular sensing body surrounding said tip of said torch body so that said torch body extends through said sensing body, said sensing body being radially displaceable relative to said tip upon contacting an object radially disposed relative to said tip of said torch at any point about the periphery of said tip;

(b) connecting means mounted to said sensing body to be angularly displaced with respect to said longitudinal axis in a direction and to an extent directly corresponding to the displacement of said sensing body;

(c) means for continuously detecting the angular displacement of said connecting means and generating a signal directly corresponding to said angular displacement; and

means for receiving said signal and continuously positioning said torch body in a direction and to an extent directly corresponding to said signal.

4,389,562
CONVEYOR OVEN
Roderick J. Chaudoir, Fox Point, Wis., assignor to Hatco Corporation, Milwaukee, Wis.
Filed Aug. 5, 1981, Ser. No. 290,150
Int. Cl.³ F27B *9/06;* **A21B** *1/22*
U.S. Cl. 219—388 **17 Claims**



1. A conveyorized oven comprising:

an insulated oven housing having at least one pair of spaced apart openings and an elongate heating tunnel located between each pair of openings;

conveyor means extending between each pair of said openings and adapted for moving a product to be heated from one of said openings to the other of said openings through said heating tunnel, said conveyor means comprising a bed of live rollers and said oven further comprising motor means coupled to said rollers for revolving said rollers whereby product may be moved through said heating tunnel;

heating element means located along the floor of said heating tunnel and adapted for heating product carried through said heating tunnel by said conveyor means, said heating element means comprising a plurality of elongate electrical resistance heating elements and wherein said resistance heating elements are disposed between said live rollers;

fan means;

duct means coupled to said fan means and including outlet means within said heating tunnel above said conveyor means; and,

air heating means for heating air flowing through said duct means whereby product carried through said heating tunnel by said conveyor means is heated by heated air as well as by said heating element means.

4,389,563
TAXIMETER SYSTEM FOR AVOIDING OPERATOR FRAUD IN THE COMPUTATION AND DISPLAY OF TRIP FARES
Claude F. Ricard, 10 Oliveraie G-Rte. de Nice, Aix-en Provence, France (13100)
Filed Oct. 6, 1980, Ser. No. 194,261
Claims priority, application France, Oct. 12, 1979, 79 25736
Int. Cl.³ G07B *13/10;* **G06F** *15/20*
U.S. Cl. 377—20 **4 Claims**



1. A process for avoiding fraud on the price of the fare indicated by an electronic taximeter of the type powered by a vehicle battery and having a computing unit for calculating the fare value, a luminous display means to display the fare, and a voltage comparator means which compares the supply voltage from the battery with a safety threshold voltage level and which suspends the calculation of the fare in the computing unit when the battery voltage drops below said safety threshold voltage level comprising the steps of:

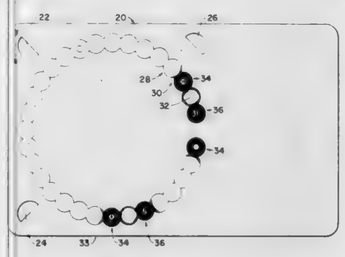
comparing the supply voltage level of the taximeter with a safety threshold voltage level;

measuring the actual time period duration that the supply voltage level is below said safety threshold voltage level;

comparing the actual time period duration with a reference time period duration when the supply voltage level returns and exceeds said safety threshold voltage level; and

returning the value of the fare in the computing unit and the luminous display means to zero if the actual time period duration exceeds the reference time period duration, but resuming the calculation of the fare starting with the fare value reached when the operation of the computing unit was suspended if the actual time period duration does not exceed the reference time period duration.

4,389,564
INDEXING MECHANISM FOR CARD ACCEPTOR
Henry J. Flair, Franklin Park, and Charles C. Rayburn, Mt. Prospect, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 262,096, May 11, 1981. This application Oct. 1, 1981, Ser. No. 307,469
Int. Cl.³ G06K *21/00*
U.S. Cl. 235—489 **5 Claims**



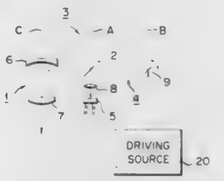
1. An acceptor mechanism for an encoded card and for performing a cycle of operation upon the acceptance thereof comprising punch means for punching at least one hole in said card upon the first operating cycle of said acceptor mechanism, punch carrier which carries said punch means and rotatable indexing means which may be selectively coupled to said punch carrier means and aligns said punch means with predetermined areas of said encoded card wherein said punch means may be indexed by said indexing means when said indexing means is coupled to said punch carrier means to a new area after a previous area has been punched.

4,389,565
AUTOMATIC FOCUS CONTROLLING DEVICE
Saburo Numata, Urawa, Japan, assignor to Fuji Photo Optical Co., Ltd., Japan
Filed Feb. 27, 1981, Ser. No. 238,747
Claims priority, application Japan, Feb. 29, 1980, 55/24772
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—201 **8 Claims**



1. A device for automatically controlling focus adapted to an endoscope comprising an image transmitting fiber tube, an objective for focusing an image of an object to be observed or photographed on an entrance end face of the image transmitting fiber tube, an eyepiece for enlarging and viewing the image appearing at an exit end face of the image transmitting fiber tube, a light source for illuminating the object, a flexible light transmitting fiber tube for transmitting light from said light source to the object, and means for measuring the brightness of the object illuminated by said light source wherein the improvement comprises means for periodically changing the intensity of the light source, means for comparing the output of said brightness measuring means with a predetermined value and giving an output signal when the output of the measuring means has become equal to the predetermined value, means connected with said comparing means to receive said output signal for determining the distance of the object based on the intensity of the light source when the output signal is received thereby, and means for axially moving said objective to control focus according to the determined distance.

4,389,566
AUTOMATIC FOCUSING APPARATUS FOR CAMERAS
Tadashi Kimura, Tokyo; Akihiko Hashimoto, Hachioji, and Atsushi Kidawara, Tachikawa, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 41,336, May 22, 1979, abandoned. This application Jul. 13, 1981, Ser. No. 282,875
Claims priority, application Japan, May 26, 1978, 53-62926; May 26, 1978, 53-62927
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—204 **7 Claims**



1. An automatic focus detection apparatus for a camera, comprising a first focusing optical system including a first half mirror transmitting light from a subject to a predetermined imaging position, a second focusing optical system including a second mirror leading light from the subject to said half mirror to be reflected on said half mirror to be led to said imaging position, at least one of said first and second mirrors being capable of moving to change the angle of reflection thereof, and a single focus detection element disposed in said imaging

position to detect focusing by means of the lights from both said mirrors.

4,389,567

SEMICONDUCTOR SWITCHING DEVICE FOR GUIDING AND AMPLIFYING RADIATION

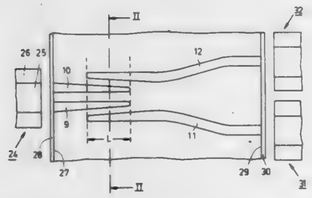
Giok D. Khoe; Lambertus J. Meuleman, both of Eindhoven, Netherlands, and Tullio E. Rozzi, Wirrat, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 30, 1980, Ser. No. 154,633

Claims priority, application Netherlands, Jun. 7, 1979, 7904470

Int. Cl.³ H01J *31/50*

U.S. Cl. 250—213 R **13 Claims**



1. A semiconductor switching device for guiding and amplifying electromagnetic radiation, having a semiconductor body with a substantially flat surface comprising a substrate region which is provided with a connection conductor, a plurality of strip-shaped radiation guiding members which comprise a layer structure having an active layer in which the radiation propagates and having a p-n junction in which each radiation guiding member is provided at its surface with at least one electrode for controlling a current in the forward direction through the p-n junction, at least one first radiation guiding member branching through a transition area into at least two further radiation guiding members which over the greater part of theri length are situated outside each other's amplification profile, and a layer structure on the substrate region which is common to all radiation guiding members and has an active layer of a homogeneous thickness and doping concentration, in which in the transition area between said first and said further radiation guiding members the electrodes of said guiding members have tapering juxtaposed ends, the active layer in the transition area, taken in the direction of width of the radiation guiding members, having a sufficiently small effective refractive index variation for the radiation and the distance between the two adjacent radiation guiding members being sufficiently small such that the guiding members are situated within each other's amplification profile, and the transverse dimensions of all radiation guiding members being sufficiently small such that guiding and amplification of only one single transversal mode of oscillation occurs.

4,389,568

METHOD FOR MONITORING IRRADIATED NUCLEAR FUEL USING CERENKOV RADIATION

Edward J. Dowdy; Nicholas Nicholson, and John T. Caldwell, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 21, 1980, Ser. No. 151,870

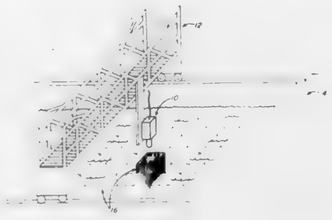
Int. Cl.³ G01T *1/22*

U.S. Cl. 250—362 **8 Claims**

1. A method of confirming irradiated nuclear fuel inventories located in a water-filled storage pond comprising the steps of:

locating a Cerenkov radiation receiving instrument above the surface of said pond and orienting said instrument such that its optical axis is aligned with the axis of a nuclear fuel assembly;

measuring the intensity of the Cerenkov radiation emitted from the water adjacent the fuel assembly; and



comparing the measured intensity with the expected intensity for nuclear fuel having a corresponding degree of exposure in a reactor core and time period after removal from the reactor core.

4,389,569

EMISSION COMPUTED TOMOGRAPH

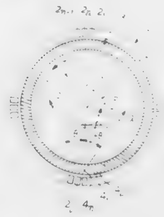
Hiroyuki Hattori, Kyoto, and Kazuo Uemura, Akita, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Dec. 10, 1980, Ser. No. 214,987

Claims priority, application Japan, Dec. 14, 1979, 54-163317

Int. Cl.³ G01T *1/20*

U.S. Cl. 250—363 S **16 Claims**



1. An emission computed tomograph comprising: means for supporting an object to be examined at a predetermined position so that the axis of said object coincides with a center, said object having taken therein a radionuclide that emits penetrating radiation such as gamma radiation; a plurality of radiation detectors; means for supporting said detectors side by side along a circle about said center so that the radiation incident planes of said detectors face said object so as to receive radiation from said object; collimating means disposed between said predetermined position and said detectors concentrically with said circle and provided with a plurality of slits arranged side by side circumferentially about said center for regulating said radiation emitted from said object so as to enter said detectors; means for supporting said collimating means rotatably about said center; and means for causing said collimating means to be rotated about said center so that those of the radiations emitted from said object which have a direction defined by each of said slits successively enter the corresponding one of said detectors thereby to tomographically scan said object.

4,389,570

WIDE RANGE RADIATION MONITORING APPARATUS

Norman P. Goldstein, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

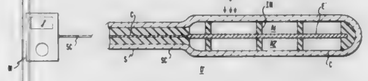
Continuation of Ser. No. 20,598, Mar. 14, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,490

Int. Cl.³ G01T *1/24*

U.S. Cl. 250—370 **3 Claims**

1. A wide range radiation detector apparatus for generating a current signal measurement of impinging radiation in a range from about 10^{-1} to about 10^{8} R/hr, said current signal including an ionization current component and self-powered current component, comprising:

a self-contained single detector means consisting of spaced apart collector means and an emitter element disposed therebetween, said collector means being constructed of a material having a different work function and different atomic number from the material of said emitter element,



a gas filling the volume defined by said spaced apart collector means, said volume of gas being such that the ionization current component of said current signal exceeds the self-powered current component at low radiation levels, the self-powered current component of said current signal exceeding said ionization current component at high radiation levels; and

current measuring means connected to said detector to manifest said current signal as an indication of impinging radiation.

4,389,571

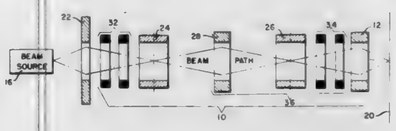
MULTIPLE SEXTUPOLE SYSTEM FOR THE CORRECTION OF THIRD AND HIGHER ORDER ABERRATION

Albert V. Crewe, Palos Park, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 1, 1981, Ser. No. 249,782

Int. Cl.³ G21K *1/08*

U.S. Cl. 250—396 R **6 Claims**



1. In an electron beam device having a source of electrons, the improvement in the device for correcting higher order aberration, comprising: first and second sextupoles, each for focusing a beam in an image plane, and each having a second-order astigmatism distribution, an intermediate lens positioned between said first and said second sextupoles for focusing the beam to a point in the center of said second, sextupole, a first lens for focusing the beam to a point in the center of said first, sextupole, and a second lens positioned in said image plane of said second, sextu-pole for focusing the beam to a point in a final image plane.

4,389,572

TWO MAGNET ASYMMETRIC DOUBLY ACHROMATIC BEAM DEFLECTION SYSTEM

Ronald M. Hutcheon, Deep River, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Mar. 23, 1981, Ser. No. 246,872

Claims priority, application Canada, Jun. 4, 1980, 353640

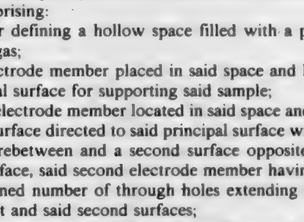
Int. Cl.³ H01J *37/147*

U.S. Cl. 250—396 R **6 Claims**

1. A magnetic charged particle beam deflection system comprising:

first dipole magnet means for deflecting the beam in a plane along a path having a bending radius ρ_1 and a bending angle θ_1 greater than 180° and less than 225°, said first magnet means having an effective exit edge at an angle $(90-\eta_1)$ with respect to the beam path at exit; and

second dipole magnet means for further deflecting the beam in the plane along a path having a bending radius ρ_2 and a bending angle θ_2 of less than 90°, the second magnet



means having an effective entry edge at an angle $(90-\eta_2)$ with respect to the beam path, where $\eta_1 \approx -\eta_2$, and the first magnet means effective exit edge being a drift distance D from the second magnet means effective entry edge, wherein D is selected to match the first and second dipole magnet means dispersions in the drift region D.

4,389,573

PULSED ELECTRON BEAM DEVICE COMPRISING A CATHODE HAVING THROUGH HOLES

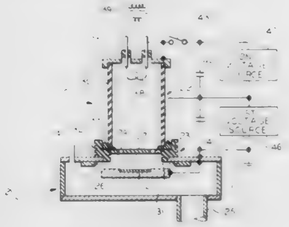
Tadatsugu Itoh, Tokyo, Japan, assignor to Anelva Corporation, Tokyo, Japan

Filed Feb. 12, 1981, Ser. No. 233,858

Claims priority, application Japan, Feb. 14, 1980, 55-16850; Nov. 26, 1980, 55-165247

Int. Cl.³ H01J *3/00, 33/00*

U.S. Cl. 250—492.2 **6 Claims**



1. A pulsed electron beam device for use in momentarily processing a sample by electron beams, said electron beam device comprising:

a chamber defining a hollow space filled with a predetermined gas;

a first electrode member placed in said space and having a principal surface for supporting said sample;

a second electrode member located in said space and having a first surface directed to said principal surface with a gap left therebetween and a second surface opposite to said first surface, said second electrode member having a predetermined number of through holes extending between said first and said second surfaces;

a third electrode member directed to said second surface in said space and being capable of emitting electrons;

first voltage providing means for providing a first voltage between said first and said second electrode members, with said first and said second electrode members kept at a first electric potential and a second electric potential negative relative to said first electric potential by said first voltage, respectively; and

second voltage providing means for momentarily providing a second voltage between said second and said third elec-

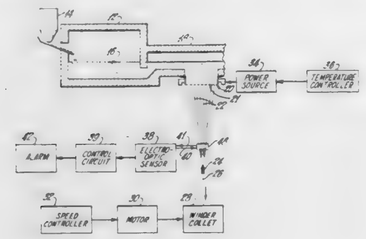
trode members, with said third electrode member momentarily given a third electric potential negative relative to said second electric potential by said second voltage, respectively, said second voltage thereby making a portion of the electrons emitted by said third electrode member pass through said through holes and momentarily produce said electron beams between said first and said second electrode members.

4,389,574

METHOD AND APPARATUS FOR DETECTING A BREAK IN A PLURALITY OF GLASS FIBERS

Frederick M. Shofner, Knoxville, Tenn.; Neil E. Greene, Granville, and Terry J. Hanna, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 2, 1981, Ser. No. 222,110
Int. Cl.³ C03B *37/025*
U.S. Cl. 250—561 **14 Claims**



1. A method of detecting breakage of glass fibers comprising the steps of:

(a) illuminating a predetermined portion of said fibers in a fiber fan with electromagnetic radiation;

(b) sensing all of the electromagnetic radiation scattered backwards from the fibers which pass through a predetermined reflection zone;

(c) generating a first electrical signal, V_f, responsive to the amount of electromagnetic radiation sensed when the fibers are present;

(d) generating a second electrical signal, V_b, responsive to the amount of electromagnetic radiation sensed when no fibers are present;

(e) generating a third electrical signal, V_{CAL}, with a calibration device which interconnects the electromagnetic illuminating device of (a) above and the electromagnetic radiation sensing device of (b) above;

(f) inputting a fourth electrical signal, V_{ref}, by suitable exterior switching devices;

(g) using a microcomputer to generate a fifth electrical signal, V_f' from the above signals one through four proportional to the relationship:

$$V_f' = (V_f - V_b)\frac{V_{ref}}{V_{CAL}}$$

(h) integrating said fifth electrical signal V_f' over time to produce a sixth electrical signal V_{out};

(i) comparing the sixth electrical signal V_{out} to a predetermined reference signal to determine when signal V_{out} is less than the reference signal which is an indication of broken fibers; and

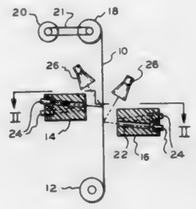
(j) activating an electrical circuit which alerts the operator when signal V_{out} is less than the reference signal in (i) above to warn of broken fibers.

4,389,575

FABRIC INSPECTION SYSTEM

Frederick A. Cole, Jackson, Mich., assignor to Sparton Corporation, Jackson, Mich.

Filed Jul. 3, 1980, Ser. No. 165,780
Int. Cl.³ G01N *21/88*
U.S. Cl. 250—563 **5 Claims**



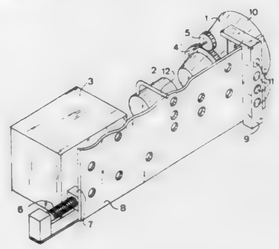
1. A fabric inspection system wherein relative movement occurs between a fabric and fabric inspection apparatus, comprising, in combination, motor means translating the fabric to be tested past an inspection station, electronic sensing means for detecting a defect in the fabric located at said inspection station and producing an electronic signal upon a defect being sensed, amplifier means amplifying said signal, a counter for recording the occurrence of a defect, counter control means connected to said amplifier means receiving said amplified signal and producing an electric pulse for operating said counter to record a defect wherein each pulse records a single defect upon said counter, said counter control means including pulse duration adjustment means whereby the duration of said pulse may be adjusted, said pulse, during its duration, rendering said counter control means inoperative to operate said counter upon receiving an amplified defect signal whereby said counter records only defect signals received intermediate pulse durations providing a defect count for spaced defects as determined by said pulse duration.

4,389,576

INSTALLATION TO MEASURE THE VISIBILITY LIMIT IN A FOG

Paul Rouet, Avenue Meurée, 4, B 6001 Marcinelle, Belgium

Filed Jul. 13, 1981, Ser. No. 282,786
Claims priority, application European Pat. Off., Jul. 17, 1980, 80200696
Int. Cl.³ G01M *15/06*
U.S. Cl. 250—573 **7 Claims**



1. An apparatus for measuring the limit distance of visibility in a fog, comprising

a series of lights placed along a measuring distance;

an observation screen;

optical apparatus having a variable focus means for projecting an image of one or more of said lights on said observation screen;

control means for setting said variable focus means on a light selected from said series of lights and simultaneously actuating said selected light;

at least one stationary assembly;

at least one movable assembly which moves in relation to said stationary assembly;

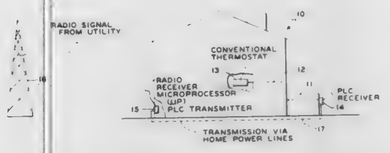
wherein one of said movable and stationary assemblies includes detectable information and the other of said movable and stationary assemblies includes at least one detector for detecting said information; and wherein said control means drives said movable assembly simultaneously with setting of said variable focus means whereby the position of said movable assembly indicates the positioning of said variable focus means.

4,389,577

APPARATUS FOR POWER LOAD-SHEDDING WITH AUXILIARY COMMANDABLE THERMOSTAT

Paul A. Anderson, New Brighton; Jeffrey M. Hammer, St. Louis Park, and J. Ward MacArthur, Minneapolis, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 14, 1982, Ser. No. 368,487
Int. Cl.³ H02J *13/00*
U.S. Cl. 307—39 **10 Claims**



1. An apparatus for controlling the operation of a thermostatically controlled space-conditioning means comprising:

auxiliary thermostat means disposed in a conditioned space for controlling the ON-OFF cycling function of a space conditioning means during a load-shedding interval;

space conditioning control means in communication with said auxiliary thermostat means for connecting and disconnecting power to said space conditioning means in response to communications from said auxiliary thermostat means;

disconnect means connected to said space conditioning control means for disconnecting the thermostat utilized during normal operation of the space conditioning means for the interval of control by said auxiliary thermostat means; and

communication means including transmitter means associated with said auxiliary thermostat means for sending control signals to said space conditioning control means and receiving means associated with said space conditioning control means for receiving said control signals.

4,389,578

CONTROLLED GATE CIRCUIT

Delmer W. Wagner, 326 Pine Grove Rd., Rogue River, Oreg. 97537

Division of Ser. No. 61,087, Jul. 26, 1979, abandoned, which is a division of Ser. No. 795,945, May 18, 1977, which is a division of Ser. No. 702,874, Jul. 6, 1976, Pat. No. 4,039,939. This application Apr. 2, 1981, Ser. No. 255,393
Int. Cl.³ H03K *17/74, 5/00*
U.S. Cl. 307—256 **8 Claims**

1. A controllable gate circuit comprising:

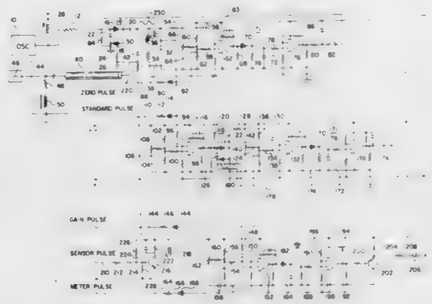
an input terminal and an output terminal,

a first diode poled in the first direction between said input terminal and output terminal,

a series connection of a capacitor and an oppositely poled diode disposed in that order between said input terminal and said output terminal,

integrating circuit means for generating a gating signal having a relatively steady value,

means for coupling said gating signal to the juncture between said capacitor and said oppositely poled diode to control the analog clipping levels of said diodes,



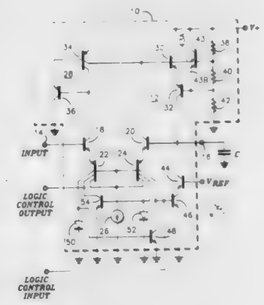
and means for controllably varying said value of said gating signal from said integrating circuit means over a relatively continuous range to determine said clipping levels of said diodes and therefore to determine the degree of conduction between said input terminal and said output terminal.

4,389,579

SAMPLE AND HOLD CIRCUIT

Marc T. Stein, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 11,733, Feb. 13, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 238,729
Int. Cl.³ H03K *5/03;* **G01R** *19/04;* **G11C** *27/02*
U.S. Cl. 307—353 **12 Claims**



1. Sample and hold circuit comprising:

charge storage means;

unity gain amplifier means having first, second inputs and an output, said output being coupled both to second input and to said charge storage means, said unit gain amplifier means being responsive to an input signal being applied to said first input for producing an output signal at said output having a magnitude substantially equal to the magnitude of said input signal such that said charge storage means is charged to the magnitude of said output signal;

discharging circuit means coupled with said unity gain amplifier means to said charge storage means for discharging said charge storage means when said magnitude of the signal developed across said charge storage means is greater than said magnitude of said input signal such that said signal developed across said charge storage means

becomes substantially equal to the magnitude of said input signal; and

said unity gain amplifier means including

a. power supply conductor means adapted to be connected to a source of operating potential;

b. a differential amplifier having first and second inputs and first and second outputs, the input signal being applied to said first input, said second input being coupled to said second input of said unity gain amplifier means;

c. current mirror circuit means coupled between said first and second outputs of said differential amplifier and said power supply conductor means for providing substantially equal currents thereto in response to said input signal exceeding the magnitude of said signal appearing across said charge storage means; and

d. cascoded circuit means coupled between said second output and said second input of said differential amplifier.

4,389,580

FLEXIBLE TAPE ELECTROACOUSTIC TRANSDUCER USING AN ELECTRET

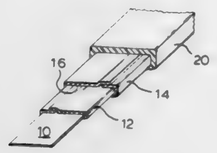
Andre P. J. Bendyshe Walton, Guildford; Francis H. Townsend, Alton, and John N. Ribet, East Twickenham, all of England, assignors to C. Tape Developments Limited, Four Marks, England

Filed Jan. 22, 1981, Ser. No. 227,476

Claims priority, application United Kingdom, Mar. 3, 1980, 8007167

Int. Cl.³ H04R *23/00*

U.S. Cl. 307—400 **6 Claims**



1. A transducer in the form of a flexible tape comformable to a surface to detect acoustic waves propagating along the surface, the transducer comprising a first flat metal foil, an outer metal foil which is wrapped around the first metal foil so as to envelop said first metal foil and which is separated therefrom by a dielectric material acting as an electret and means for applying a d.c. voltage across the electret in a sense to enhance the polarisation within the electret, the outer metal foil being maintained at earth potential.

4,389,581

PULSE DUTY CONTROL SYSTEM

Shinichiro Iwasaki, Auburn Heights, Mich., assignor to Aisin Seiki Company, Limited, Kariya, Japan

Filed Aug. 29, 1980, Ser. No. 182,846

Int. Cl.³ H02M *5/10*

U.S. Cl. 307—419 **8 Claims**

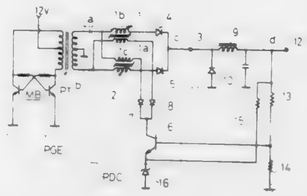
1. A pulse duty control system, comprising:

pulse generator means for producing a first and a second set of pulses, said first and second set of pulses being phase displaced by 180° from each other;

a current controlling element having a conduction level controlled in accordance with a control voltage derived from a signal appearing at an output terminal of said system;

a first pulse duty controlling element including a first core made of an amorphous magnetically soft material having a first electrical coil and a second electrical coil disposed thereon, said first coil having a first terminal coupled to receive said first set of pulses and having a second terminal coupled to said output terminal of said system through a first diode, said second coil having a first terminal coupled to receive said second set of pulses and having a second terminal coupled to said current controlling element; and

a second pulse duty controlling element including a second core made of an amorphous magnetically soft material



having a third electrical coil and a fourth electrical coil disposed thereon, said third coil having a first terminal coupled to receive said second set of pulses and having a second terminal coupled to said output terminal of said system through a second diode, said fourth coil having a first terminal coupled to receive said first set of pulses and having a second terminal coupled to said current controlling element.

4,389,582

MOS INTEGRATED LOGIC CIRCUIT DEVICE WITH IMPROVED SWITCHING SPEED CHARACTERISTICS

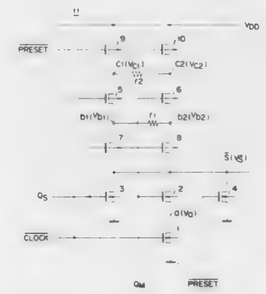
Yasoji Suzuki, and Kenji Matsuo, both of Kawasaki, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 29, 1980, Ser. No. 116,556

Claims priority, application Japan, Feb. 9, 1979, 54-13412; Feb. 9, 1979, 54-13413; Feb. 9, 1979, 54-13892

Int. Cl.³ H03K *19/017, 19/096, 19/20*

U.S. Cl. 307—452 **3 Claims**



1. A semiconductor integrated logic circuit device for delivering a signal to an output terminal in response to a plurality of input signals, including clock and control signals, and being connected to first and second power sources, said device comprising:

a first logic circuit including a plurality of first series circuits, each first series circuit being constructed by connecting in a series a plurality of MOS transistors of a first conductivity type having drain, gate and source electrodes, with a predetermined one of said source electrodes of each first series circuit being connected to the first power source and a predetermined one of said drain electrodes of each first series circuit being connected to the output terminal to dispose said first series circuits in parallel between the first power source and the output terminal, said predetermined ones of said drain and said source electrodes collectively defining a set of electrodes;

a second logic circuit including a plurality of second series circuits connected in parallel between the second power source and the output terminal, each second series circuit being constructed by connecting at least one MOS type transistor of a second conductivity type having drain, gate and source electrodes, in series between the second power source and the output terminals;

each of said gate electrodes of said first and second logic circuits receiving one of the input signals wherein at least one of the transistors of said first logic circuit receives the clock signal and wherein the rest of the transistors of said first logic circuit not receiving said clock signal receive the control signals, with a predetermined number of transistors of said first logic circuit together defining a first set of transistors with each transistor of said first set of transistors being selected from a different one of said first series circuits and with the gate electrodes of said first set of transistors all connected in common to receive the same input signal; and

first electrical resistor means connecting at least one pair of like electrodes other than said gate electrodes of said first set of transistors, wherein said like electrodes are selected from other than said set of electrodes.

4,389,583

CAPACITANCE SWITCH DETECTION CIRCUITRY

James P. Walber, Cedar Grove, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Jun. 8, 1981, Ser. No. 271,398

Int. Cl.³ H03K *9/06, 17/18*

U.S. Cl. 307—522 **7 Claims**



1. Detection circuitry for a capacitance switch having one capacitance value in an activated condition and a different capacitance value in a deactivated condition, the circuitry comprising

a source suppling a first clock node and a second clock node with two-state electrical pulses 180° out of phase,

first and second switch connection nodes for connecting a switching element in said capacitance switch to said circuitry,

a buffer having an input connected to said first switch connection node, and providing an output signal depending upon the condition at said buffer input relative to a threshold value,

means connected between said clock nodes and said switch connection nodes for responding to the capacitance associated with one condition of said switch by maintaining said buffer input at a condition relative to said threshold value of said buffer and for responding to a capacitance associated with another condition of said switch by permitting the condition at said buffer input to vary sufficiently to cause the output of said buffer to vary with said two-state pulses, and

a frequency detector connected to said buffer, to determine which condition said capacitance switch is in.

4,389,584

DYNAMOELECTRIC MACHINE PHASE INSULATORS AND APPARATUS FOR MAKING THE SAME

Richard D. Burns, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 8,603, Feb. 1, 1979. This application Aug. 29, 1980, Ser. No. 182,631

Int. Cl.³ H02K *1/04*

U.S. Cl. 310—43 **4 Claims**



1. In a stator assembly for a dynamoelectric machine comprising a magnetic core having axially extending and circumferentially spaced slots, a centrally disposed axially extending bore, first and second winding phases arranged in selected ones of such slots; wherein circumferentially extending end turn portions of the winding phases are insulated from one another by phase insulation having circumferentially extending portions positioned between end turn portions of the first and second winding phases, the improvement wherein: the phase insulation includes first and second circumferentially extending insulation portions interconnected by elongate connectors that extend between and interconnect the circumferentially extending insulation portions and wherein the legs are made from insulating material that is in a prestressed and inelastically pre-elongated condition.

4,389,585

SUPERCONDUCTIVE ROTOR

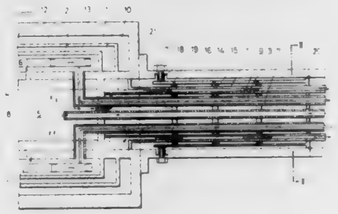
Kiyoshi Yamaguchi, Hitachi; Naoki Maki, Tokai, and Toshio Tamura, Hitachiohta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 1, 1981, Ser. No. 279,552

Claims priority, application Japan, Jul. 1, 1980, 55-88479

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—52 **9 Claims**



1. A superconductive rotor comprising a torque tube, a superconductive field coil supported by said torque tube, a hollow shaft connected to said torque tube, at least one power lead passing through said hollow shaft for supplying exciting electric current to said superconductive field coil, refrigerant supply and discharge pipes extending through said hollow shaft for supplying and discharging a refrigerant to cool said superconductive field coil, a plurality of spacer means disposed in the hollow shaft for holding said at least one power lead and said pipes, supporting sleeve means axially extending through

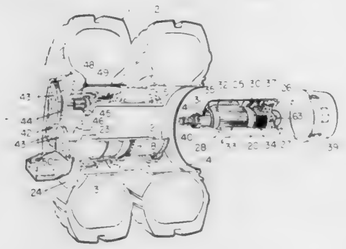
said hollow shaft for securing thereto said spacer means, and adjusting means for supporting one axial end portion of said supporting sleeve means and for enabling a centering of said supporting sleeve means with respect to said hollow shaft from an outer side of said hollow shaft.

4,389,586

ELECTRIC WHEEL WITH REMOVABLE MOTOR

David L. Foster, North East; John F. Haupt, and Malcolm W. Waite, both of Erie, all of Pa., assignors to General Electric Company, Erie, Pa.

Filed Feb. 22, 1982, Ser. No. 350,832
Int. Cl.³ H02K *7/00;* **B60K** *7/00*
U.S. Cl. 310—67 R **11 Claims**



1. For propelling a traction vehicle having a frame and a rotatable wheel, a dynamoelectric machine including;

a. a stator yoke comprising (i) an outer hollow cylindrical member of relatively large diameter adapted to be secured to said frame and (ii) an inner hollow cylindrical member of smaller diameter nested generally concentrically inside said outer member, (iii) both of said members being made of magnetizable material, (iv) said inner member being removably mounted to the outboard end of said outer member and, when so mounted, having most of its convex outside surface normally spaced by a small gap from the cooperating concave inside surface of said outer member;

b. means for rotatably supporting said wheel on the outside of said outer member;

c. a rotor supported concentrically within said inner member so as to be rotatable with respect thereto, said rotor comprising a cylindrical core of magnetizable material disposed in spaced relation to said inner member;

d. means including a speed-reducing gear train for mechanically coupling said rotor to said wheel; and

e. means for producing a field of magnetic flux in said stator yoke and said core, the path of the flux in said yoke including parallel first and second branches in said inner and outer members, respectively, with said second branch carrying a substantial portion of said flux;

f. said first branch of said flux path having a cross-sectional area such that the magnetic flux density in said first branch would be appreciably greater than an intrinsic saturation limit if said first branch alone were carrying all of the flux that is produced when said machine is operating at its maximum continuously rated load.

4,389,587

UNITARY SLEEVING INSULATION

Herbert R. Levine, Dover, and L. Gerard Landry, Somersworth, both of N.H., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 23, 1981, Ser. No. 324,307
Int. Cl.³ H02K *3/04*
U.S. Cl. 310—208 **5 Claims**

3. An electrical coil lead insulated with an electrically insulating sleeving material, the improvement comprising as the electrically insulating sleeving a material having an electrically insulating inner layer overcoated with an electrically insulating polymer, and a layer of fibrous insulation overbraided on the insulating polymer, the entire sleeving impregnated with a polymer binder so as to produce a unitary insulating sleeving with high dielectric strength, flexibility, and resistance to slippage.



4. The insulated coil lead of claim 3 wherein the inner layer is woven fiberglass, the insulating polymer is acrylic polymer, and the fibrous insulation is fiberglass.

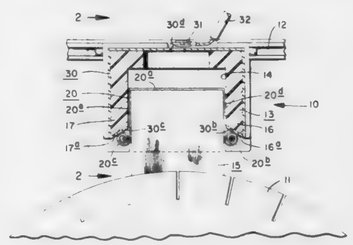
5. The insulated coil lead of claim 3 additionally coated with VPI resin or dip varnish.

4,389,588

CURRENT CARRYING CONSTANT FORCE BRUSH HOLDER ASSEMBLY

Alexander Rankin, c/o Vulcan Spring & Mfg. Co., 1458 County Line Rd., Huntingdon Valley, Pa. 19006

Filed Mar. 24, 1982, Ser. No. 361,336
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—242 **3 Claims**



1. For use in making electrical contact between relatively movable electrical conductors, a brush holder assembly comprising:

a brush holder having a brush-receiving cavity and a pair of shoulders disposed on opposite sides of said cavity and adapted to confront a movable conductor,

a brush slidably received in said cavity, said brush having an outer end and an inner end adapted to engage said movable conductor,

a twin coil spring of electrically-conductive metal mounted in said holder, said twin coil spring having a pair of coils disposed on opposite sides of said brush and an integral saddle engaging the outer end of said brush, said twin coil spring between said coils and said saddle portion adapted to engage opposite sides of said brush and provide electrical communication between said coils and brush, and

means providing an electrical contact between at least one of said shoulders and its respective coil of said twin coil spring,

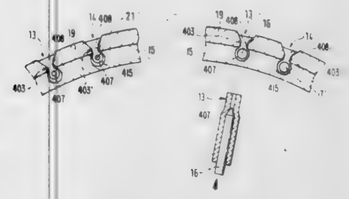
whereby a relatively short current path is provided between the spring coil and the brush.

4,389,589

DYNAMO ELECTRIC MACHINE-INTERNAL COMBUSTION ENGINE COMBINATION STRUCTURE

Siegfried E. Schustek, Immenstaad, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 289,194
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1980, 3037793
Int. Cl.³ H02K *1/28*
U.S. Cl. 310—258 **5 Claims**



1. Dynamo electric machine construction in combination with an internal combustion engine structure including

a flywheel (**15**) and a housing (**2**) surrounding, at least in part, said flywheel

said dynamo electric machine construction having a stator (**1**) secured to the housing (**2**);

segmental permanent magnet rotor element (**19**);

and attachment means for attaching the segmental permanent magnet elements of the rotor to the flywheel under tension, to securely attach said segmental elements to the flywheel,

said attachment means comprising

a shaft, or web element (**403**, **403'**) and two head elements (**407**, **408**) formed on said shaft or web element;

one head element (**408**) bearing against the permanent magnet segments, and other head element (**407**) bearing against the flywheel,

wherein the flywheel is formed with a plurality of axially extending cylindrical bores (**415**) adjacent the rim thereof and in the region of attachment of the permanent magnet segments;

the head elements (**407**) engaging the flywheel are formed with enlargements fitting into the axial bore of the flywheel, said enlarged head elements being formed with an axially extending bo..s (**21**) therein, the head elements being deformed by expansion from a smaller size, after insertion into the axially extending bores (**415**) of the flywheel to place the shaft or web element connecting the head elements under tension and thereby securely attach the permanent magnet segments against the flywheel, said enlarged, deformed head element essentially filling the axially extending bores in the flywheel.

4,389,590

SYSTEM FOR RECORDING WAVEFORMS USING SPATIAL DISPERSION

Robert R. Whitlock, Hyattsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 26, 1981, Ser. No. 296,402
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—313 R **12 Claims**

1. A waveform recorder comprising:

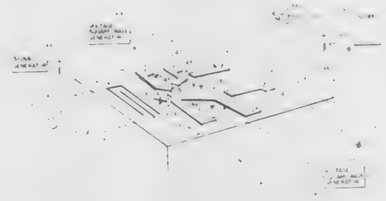
a semiconductor body;

a planar piezoelectric body having a main surface overlying and in proximity to the semiconductor body;

first wave propagation means for propagating acoustic wave signals on the main surface of the piezoelectric body to create traveling potential wells in the underlying semiconductor body;

charge injection means for injecting into the potential wells traveling past at least one first location in the semiconductor body a quantity of minority charge carriers whose magnitude tracks with time the waveform of a signal to be recorded;

charge collection means for collecting the injected charge carriers at a plurality of spatially separated second locations in the semiconductor body;



first semiconductor depletion means for depleting the semiconductor body in one region between the first and second locations to provide a first channel for the transport of the minority charge carriers by the traveling potential wells; and

charge dispersion means for causing charge carriers injected into the potential wells at each of a plurality of instants of time to be transported to a respective one of the second locations,

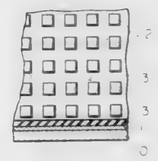
whereby the pattern of charge collected at the plurality of spatially separated second locations represents the waveform of the signal to be recorded.

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IMAGE STORAGE TARGET AND IMAGE PICK-UP AND STORAGE TUBE

Yoshihiro Uno, Kawasaki, Japan, assignor to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Continuation of Ser. No. 876,061, Feb. 8, 1978, abandoned, which is a continuation-in-part of Ser. No. 623,013, Oct. 16, 1975, abandoned. This application Jan. 11, 1980, Ser. No. 111,308
Int. Cl.³ H01J *31/58*
U.S. Cl. 313—391 **4 Claims**



1. A target structure for an electron storage tube operable on a potential lower than the potential which produces electron-bombardment-induced conductivity to store an electron image in response to an intensity-modulated electron beam and repeatedly read out the stored electron image in response to a periodic impingement of an unmodulated electron beam, comprising an electrically conductive layer, a resistive layer disposed on said conductive layer, and a plurality of insulative regions having a resistivity greater than the 14th power of 10 ohm cm. for storage of said electron image and disposed on said resistive layer, said resistive layer having a resistivity in a range between the 5th power of 10 ohm-cm. and the 12th power of 10 ohm cm. which remains unchanged in the presence of said impingement of the electron beam accelerated by

the regions in the direction of the electron beam being in a range between 1 micrometer and 100 micrometers.

4,389,592

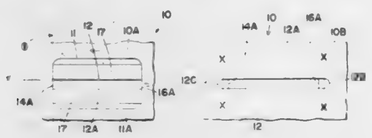
COLOR PICTURE TUBE AND APERTURE MASK THEREFOR

Roland Thoms, Mullheim, Fed. Rep. of Germany, assignor to Buckbee-Mears Company, St. Paul, Minn.

Continuation of Ser. No. 148,682, May 12, 1980, abandoned. This application Jan. 28, 1982, Ser. No. 343,149

Int. Cl.³ H01J *29/07*

U.S. Cl. 313—403 **6 Claims**



1. A color television tube comprising:

an enclosure having a viewing surface on one end with a plurality of phosphor regions for generating light of three primary colors on the viewing surface of said enclosure, at least one electron gun to excite said phosphor regions;

an aperture mask located proximate said viewing surface, said aperture mask having a plurality of line of sight openings, said aperture mask having a first side and a second side, said aperture mask first side having an edge which defines an outline of a portion of a line of sight opening in said first side of said aperture mask;

said aperture mask second side surface having an edge which defines an outline of a portion of a line of sight opening in said second side of said aperture mask so that a line of sight opening of said plurality of line of sight openings comprises an opening for electrons to pass through which is partially bounded by said edge on said aperture mask first side and partially bounded by said edge on said aperture mask second side, said aperture mask positioned between said electron gun and said phosphor regions with said aperture mask first side facing said viewing surface and said aperture mask second side facing said electron gun to thereby permit said second side of said mask to act as a shield to prevent electrons from impinging on the improper phosphor region.

4,389,593

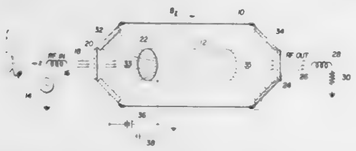
ACTIVE DIELECTRIC WAVEGUIDE AMPLIFIER OR OSCILLATOR USING A HIGH DENSITY CHARGED PARTICLE BEAM

Charles M. DeSantis, Neptune, and Louis J. Jasper, Jr., Ocean, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 17, 1981, Ser. No. 255,121

Int. Cl.³ H01J *25/00*

U.S. Cl. 315—4 **16 Claims**



1. An RF slow wave particle beam amplifier device comprising:

an evacuated waveguide structure included within an envelope, said waveguide structure having an internal cross sectional dimension which exceeds five times the wavelength of a predetermined RF frequency of a wave propagated therethrough, including a coaxial RF input window and a coaxial RF output window for providing entry and exit of a wave to and from said envelope, the waveguide structure comprising a hollow cylindrical, metal structure with a smooth inner wall;

thermionic cathode means for generating and projecting a relatively high density electron particle beam providing an effective dielectric constant through said waveguide structure to provide an active, dielectric medium;

means for providing an axial magnetic field through said waveguide structure for focusing, confining and causing rotation of the particles of said beam in said waveguide structure at a cyclotron frequency w_c which is expressed by the equation:

$$w_c = hB_O$$

where h is the charge to mass ratio of said beam and B_O is the magnetic flux density, including means for adjusting B_O and h for shaping the beam geometry;

means for generating and launching an elliptically polarized RF wave of predetermined millimeter waveband frequency onto said high density beam whereupon said active dielectric medium operates as a waveguide to guide said RF wave and transfer energy to said wave as the RF wave propagates on said beam when the drift velocity of said beam is substantially the same as or greater than the phase velocity of said RF wave; wherein the effective relative dielectric constant e_r of said beam is expressed in the form of a diagonal matrix as:

$$e_r = \begin{pmatrix} 1 - \frac{w_p^2}{ww_D}\left(\frac{W_D}{W_D \pm W_c}\right) & o & o \\ o & 1 - \frac{w_p^2}{ww_D}\left(\frac{W_D}{W_D \pm W_c}\right) & o \\ o & o & 1 - \frac{w_p^2}{ww_D} \end{pmatrix}.$$

where w_p is the beam frequency, w_c is the cyclotron frequency, w is the frequency of the RF wave, and W_D is the Doppler shifted frequency of the RF wave according to the expression:

$$W_D = W\left(1 - \frac{u_o}{v}\right)$$

where u_o is the drift velocity of the beam and v is the phase velocity of the wave in the beam;

means for controlling the drift velocity of said particle beam in said waveguide structure by means of d.c. fed electrode;

collector means for collecting said beam downstream at opposite end from said generating and projecting means; and

means for receiving said RF wave emerging from said beam following propagation thereon.

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DEVICE FOR ELECTRONICALLY TUNING A POWER MAGNETRON

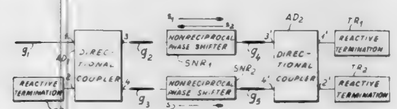
Giuseppe Conciauro, and Paolo Arcioni, both of Pavia, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

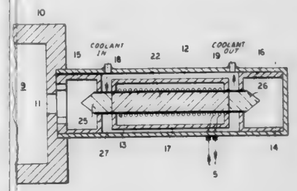
Filed Aug. 6, 1980, Ser. No. 175,923

Claims priority, application Italy, Aug. 7, 1979, 24966 A/79

Int. Cl.³ H01J *25/50*

U.S. Cl. 315—39.55 **8 Claims**





1. A device for electronically tuning a power magnetron provided with an anode cavity, comprising:

a first waveguide connected at one end to said anode cavity through a coupling aperture and provided with a first reactive termination at the opposite end;

a second waveguide communicating via a first directional coupler with a section of said first waveguide adjacent said one end thereof and via a second directional coupler with a section of said second waveguide adjacent said opposite end thereof, said second waveguide being provided with a second reactive termination adjacent said second directional coupler and with a third reactive termination adjacent said first directional coupler;

a first ferrite insert disposed in said first waveguide between said first and second directional couplers;

a second ferrite insert disposed in said second waveguide between said first and second directional couplers; and

control means for subjecting each of said ferrite inserts to a variable magnetization current, thereby differentially shifting the phases of two microwave components traversing said waveguides through said directional couplers in mutually opposite directions.

6. A device for electronically tuning a power magnetron provided with an anode cavity, comprising:

an elongate waveguide of identical configuration in two mutually orthogonal axial planes, said waveguide being connected at one end to said anode cavity through a coupling slot extending in one of said planes and being provided with a reactive termination at the opposite end, said waveguide being longitudinally divided into a first transition portion adjoining said one end, a main portion adjoining said first transition portion and a second transition portion extending from said main portion to said opposite end;

a ferrite insert disposed in said main portion; and

control means for subjecting said ferrite insert to a variable magnetization current for differentially shifting the phases of two counterrotating components of a linearly polarized microwave transmitted to said waveguide from said anode cavity through said coupling slot and reflected back toward said coupling slot by said reactive termination, said first and second transition portions being devoid of phase-shifting means.

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FLUORESCENT LAMP

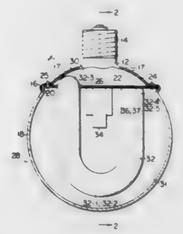
Taketo Kamei, and Motokazu Hayashi, both of Yokosuka, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 24, 1980, Ser. No. 190,252

Claims priority, application Japan, Sep. 29, 1979, 54-135196[U]; Sep. 29, 1979, 54-135197[U]; Sep. 29, 1979, 54-135208[U]

Int. Cl.³ H01J *7/44, 17/34, 19/78, 29/96;* **H01K** *1/62*

U.S. Cl. 315—57 **22 Claims**



1. A fluorescent lamp comprising:

an envelope including a hollow globe member made of at least a translucent material and defining an open end, and a base member including a screw base, said base member attached to and covering said open end of said globe member, said globe and said base members together defining an inner space;

a fluorescent tube comprising a light emitting tube section which is encased in said envelope and which is formed in a folded U-shape having two ends, a U-shaped end portion and a pair of leg portions parallel to said U-shaped end portion and respectively extending from said two ends, a pair of electrodes respectively formed at said two ends, an exhaust tube protruding from at least one of said two ends, and a pair of lead wires connected to said electrodes and respectively extending from said two ends;

plate means disposed in said envelope for dividing said inner space of said envelope into a globe side space and a base side space for supporting said fluorescent tube at least at said two ends thereof so that most of said fluorescent tube is enclosed within said globe side space, said plate means including means permitting a portion of said fluorescent tube to extend into said base side space through said plate means, said portion thereby forming a cooling area on said fluorescent tube;

reactance ballast means provided on said plate means enclosed in said globe side space and connected to said lead wires for regulating current flowing through said fluorescent tube; and

cooling means defining openings in said envelope for expelling heat generated by said fluorescent tube and said reactance ballast means to the exterior of said envelope.

4,389,596

PHOTOMETRY POWER SUPPLY FOR AUTOMATIC ELECTRONIC FLASH

Isao Kondo, and Hiroaki Nakamura, both of Hachioji, Japan, assignors to Olympus Optical Company Ltd., Japan

Filed Nov. 9, 1981, Ser. No. 319,424

Claims priority, application Japan, Dec. 5, 1980, 55-172451

Int. Cl.³ H05B *41/36*

U.S. Cl. 315—151 **5 Claims**

1. Apparatus, comprising:

a main capacitor connected to a power supply;

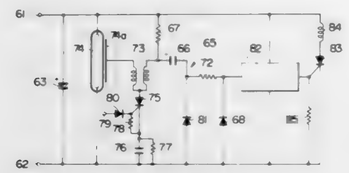
a first discharge circuit for discharging a trigger capacitor in response to the actuation of a trigger switch;

a flash discharge tube connected to said main capacitor in such a manner that said main capacitor discharges through

said flash tube, causing said flash tube to emit light, in response to the discharge of said trigger capacitor;

a second discharge circuit for discharging part of the charge on said main capacitor once said first discharge circuit has stopped discharging said trigger capacitor, said second discharge circuit including said trigger capacitor;

an impedance element forming part of said second discharge



circuit for developing a voltage thereacross as said part of the charge of said main capacitor is discharged through said second discharge circuit;

a photometric circuit powered by said voltage developed across said impedance element; and

means for terminating the emission of flash light from said flash discharge tube whenever a proper photometric value, as measured by said photometric circuit, is reached.

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CIRCUIT FOR A FLASHER UNIT

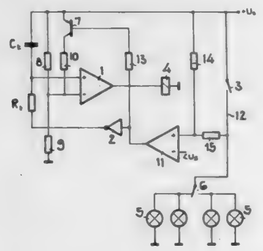
Gerhard Krumrein, Neuenstadt, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 244,257

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 3012263

Int. Cl.³ H05B *39/04, 41/14*

U.S. Cl. 315—200 A **8 Claims**



1. In a circuit for a flasher unit comprising an astable multivibrator which controls a flasher relay and an inverter connected in front of an RC-element of the multivibrator, with said inverter being controlled by a signal which depends on the switching condition of the flasher relay; the improvement wherein the feedback for said multivibrator passes from the contact path of said flasher relay to said RC-element via said inverter and a comparator for establishing and evaluating the switching condition of the relay contact.

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DISCO LIGHT ASSEMBLY

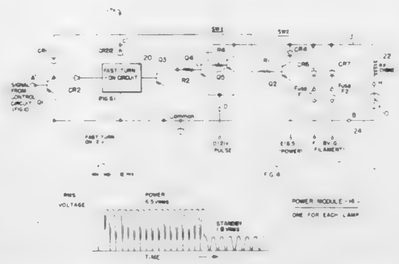
Robert M. Smith, 1443 Centinela Ave., Santa Monica, Calif. 90404

Filed Feb. 10, 1981, Ser. No. 233,173

Int. Cl.³ H05B *39/02*

U.S. Cl. 315—291 **18 Claims**

1. A control system for selectively energizing a plurality of electric lamps including: power supply means; a plurality of control modules connected to said power supply means for respectively energizing respective ones of said lamps; and control circuitry connected to said control modules for causing the control modules selectively to activate the lamps, each of said control modules including: first circuit means for supplying a continuous electric current to the corresponding lamp with an amplitude sufficient to maintain the filament of the lamp in a warm state but insufficient to illuminate the lamp, second circuit means including switching means responsive to



control pulses from said control circuitry for selectively introducing a power current to the corresponding lamp of sufficient intensity to illuminate the lamp, and third circuit means including switching means responsive to said control pulses from said control circuitry for introducing current pulses to the corresponding lamp filament of a high amplitude as compared with the amplitude of said power current, each of said current pulses being introduced to the lamp filament for a limited time interval.

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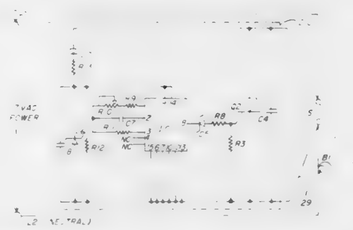
LIGHT SWITCH DELAY CIRCUIT

Tony Jabor, 9001 Galena, El Paso, Tex. 79904

Continuation-in-part of Ser. No. 160,095, Jun. 16, 1980, Pat. No. 4,339,696. This application Jul. 6, 1982, Ser. No. 395,654

Int. Cl.³ H05B *39/00*

U.S. Cl. 315—360 **4 Claims**



1. A delay circuit adapted to be connected across a light switch for maintaining an electric light bulb on for a given time after the switch has been opened, and wherein the switch has two terminals connected to two leads respectively to which A.C. voltage is applied, with the bulb being connected to one of said leads, said delay circuit comprising:

a first lead adapted to be connected to one terminal of the switch,

a second lead adapted to be connected to the other terminal of the switch,

a switching means connected to said first and second leads respectively for turning the bulb on when said switching means is on and the switch is open,

control circuitry comprising an oscillator means and a counting means,

said counting means counting pulses from said oscillator means when said control circuitry becomes operative,

means responsive to the opening of the switch for causing said control circuitry to become operative,

when said control circuitry becomes operative, said control circuitry applies an output to said switching means for enabling said switching means to turn on,

said control circuitry terminating the output after a predetermined count is reached.

4,389,600

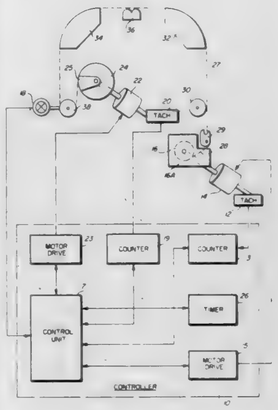
TAPE MEDIA INTERLAYER TENSION CHECK

Charles A. Milligan, Cochise, and Daniel J. Winarski, Pima, both of Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 26, 1981, Ser. No. 315,113

Int. Cl.³ G11B *15/43, 15/18*

U.S. Cl. 318—6 **10 Claims**



1. Apparatus for checking for interlayer slip of a coiled web of material comprising:

a supply reel for holding a coil of a plurality of layers of the web of material;

restraining means for holding the free end of the web of material;

first drive means for reversibly rotating said supply reel in a direction to tighten the coil of the web of material;

sensing means connected to said first drive means for generating signals representing the rotational displacement and direction of said first drive means;

a take-up reel;

second drive means connected to said take-up reel for reversibly rotating said take-up reel; and

control means connected to said first and second drive means and to said sensing means for activating said first drive means to rotate said supply reel in said direction to tighten the web of material against said restraining means and having means responsive to the generated signals from said sensing means indicating a predetermined rotational displacement to control said first and second drive means to rereel the web of material to overcome interlayer slip.

4,389,601

POWER SUPPLY HAVING AUTOMATIC FREQUENCY CONTROL FOR ULTRASONIC BONDING

Robert A. Sullivan, West Chester, Pa., assignor to Sonobond Corporation, West Chester, Pa.

Filed Sep. 8, 1980, Ser. No. 184,840

Int. Cl.³ H01L *41/06*

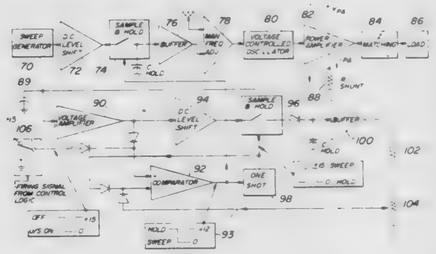
U.S. Cl. 318—118 **8 Claims**

7. An electrical power supply having automatic frequency control for use with an electromechanical bonding device of the type employing ultrasonic frequency vibratory energy wherein the device has a mechanical resonant frequency which changes with the loading conditions, a mechanical standing wave is produced in the device by the resultant of the vibratory energy delivered to the work piece and the vibratory energy delivered back from the work piece, and a ratio (SWR) of the maximum to minimum amplitudes of the standing wave is a minimum at the resonant frequency comprising:

(a) a voltage controlled variable frequency oscillator for producing a variable frequency output signal, the oscillator having a frequency range encompassing at least the frequency range in which it is desired to drive the electromechanical device;

(b) a switching inverter for amplifying the output signal of the voltage controlled oscillator into a driving signal of the same frequency, the driving signal to be supplied to a transducer of the electromechanical device to drive the device at the driving signal frequency, the switching inverter having a current therethrough which is representative of the SWR;

(c) a sweep generator producing a periodic voltage signal having a frequency substantially less than the frequencies of the voltage controlled oscillator;



(d) means for producing a first electrical signal representative of the current through the switching inverter;

(e) means for producing a second electrical signal by increasing the direct current level of the first electrical signal by a fixed amount and then tapping a fixed percentage of the increased signal;

(f) a comparator amplifier receiving at one input the first electrical signal and receiving at the other input the second electrical signal, the comparator being biased to output a logic 1 signal whenever the second signal is greater than the first signal, and logic 0 signal whenever the second signal is less than or equal to the first signal;

(g) means for gating the signal from the sweep generator to the control input of the voltage controlled oscillator whenever the comparator amplifier output is a logic 1 signal, and for blocking the signal from the sweep generator to the control input of the voltage controlled oscillator whenever the comparator amplifier output is a logic 0; and

(h) means for holding the last voltage received by the control input of the voltage controlled oscillator whenever the comparator amplifier output is a logic 0.

4,389,602

ELECTRIC MOTOR CONTROLLER

Stephen F. Post, Pleasant Hill, Calif., assignor to William M. Brobeck & Associates, Berkeley, Calif.

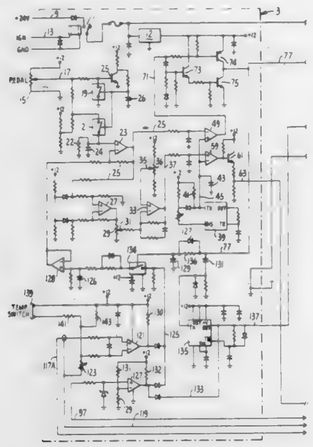
Filed Feb. 20, 1981, Ser. No. 236,231

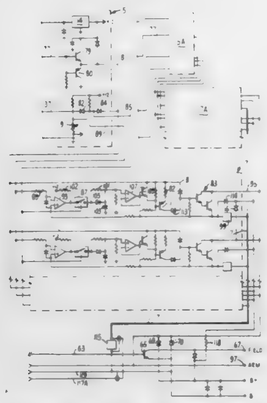
Int. Cl.³ H02P *7/28*

U.S. Cl. 318—341 **7 Claims**

1. In a motor controller for a direct current motor, said controller having a chopper for generating a series of pulses and pulse-width controlling means whereby the off time between pulses can be controlled, said chopper generating a signal to control a plurality of parallel output transistors the

improvement comprising current limit means for each of said output transistors, said current limit means including a low value resistor in the emitter leg of each individual transistor,





and means for sensing the voltage drop across each said individual resistor and reducing the drive to that particular transistor if said voltage drop exceeds a certain predetermined value.

4,389,603

WINDSHIELD WIPER SYSTEM FOR AN AUTOMOTIVE VEHICLE

Kouichi Kogawa; Teruo Kawasaki, both of Yokohama, and Akitoshi Mimura, Tokorozawa, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Feb. 12, 1981, Ser. No. 233,692

Claims priority, application Japan, Feb. 27, 1980, 55-22637

Int. Cl.³ H02P *1/04*

U.S. Cl. 318—443 **14 Claims**

1. A windshield wiper system for an automotive vehicle which comprises:

(a) a distance sensor for detecting a distance travelled by said vehicle and for outputting a train of distance signals;

(b) a time signal generator for generating a reference time interval signal;

(c) an adder for adding the distance signals from said distance sensor and the reference time interval signals from said time signal generator;

(d) an integrator for integrating the output from said adder; and

(e) a calculating means for comparing the signal from said integrator with a predetermined value and for outputting a



wiper driving signal when the signal reaches a predetermined value,

whereby intermittent time intervals of wiper operation can be controlled in accordance with the distance travelled and the time elapsed.

4,389,604

SEWING MACHINE INCORPORATING A PROGRAMMABLE CONTROL AND A LOW-INERTIA MOTOR

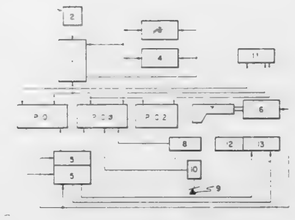
Eduardo G. Blasco, Madrid, Spain, assignor to Industrias Y Confecciones, S.A. (INDUYCO), Madrid, Spain

Filed Feb. 3, 1981, Ser. No. 231,571

Claims priority, application Spain, Feb. 12, 1980, 488,504; Oct. 14, 1980, 495,935

Int. Cl.³ G05B *19/42*

U.S. Cl. 318—568 **6 Claims**



1. A sewing machine, having a programmable control and a low inertia motor, comprising:

an upper microprogrammed controller comprising a microprocessor operatively connected to a static computer storage block and a dynamic computer storage block;

a plurality of input/output means operatively connected to respective sensor means, each of said sensor means providing an output related to a specific operating parameter of said sewing machine;

an electronic speed controller means for controlling the speed of said motor, said controller means operatively connected to and receiving signals from a digital/analog converter which is operatively connected to said upper microprogrammed controller;

a tachometer which is operatively electrically connected to said electronic speed controller means and which provides an output proportional to the speed of said motor;

said electronic speed controller means comprising an adjusting and control stage and a power distribution stage;

a tachometric feedback means operatively connected between said tachometer and said adjusting and control stage for providing a signal corresponding to the speed of said motor;

a current feedback means operatively connected to said motor and said adjusting and control stage for providing a signal corresponding to the current supplied to said motor;

said adjusting and control stage further receiving a reference signal generated by said digital/analog converter;

said power distribution stage comprising an alternating current to direct current converter means powered by an AC power source and operatively connected to a controlled direct current to alternating current converter means connected to the primary winding of a transformer whose secondary winding is connected an additional alternating current to direct current converter means connected to said motor;

said adjusting and control stage operatively connected to said controlled direct current to alternating current converter means and to said second alternating current to direct current converter means;

wherein said controlled direct current to alternating current converter means produces an output having a first frequency which is much higher than the frequency of said AC power source, whereby the size and weight of said transformer may be reduced;

and wherein said electronic speed controller controls the speed of the motor in dependence upon a comparison between said tachometric feedback signal and said reference signal and in dependence upon said current feedback means.

4,389,605

PULSE MOTOR DRIVING APPARATUS
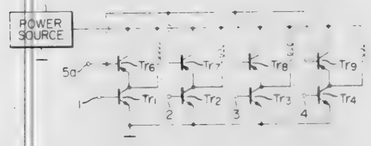
Atsushi Noda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 134,772, Mar. 28, 1980, abandoned. This application Dec. 30, 1981, Ser. No. 335,720

Claims priority, application Japan, Apr. 4, 1979, 54-40533

Int. Cl.³ G05B *19/40*

U.S. Cl. 318—696 **19 Claims**



1. A pulse motor driving apparatus comprising:

resistor means having an electric resistance connected in series with the winding of a pulse motor and with rectifying means having a rectification characteristic to form a closed circuit and

control means connected in parallel with said resistor means and disposed to control said resistor means in such manner that at the time of low revolution of said pulse motor said resistor means may be short-circuited.

4,389,606

AUTOMATICALLY SYNCHRONIZED SYNCHRONOUS MOTOR DRIVE SYSTEM

Richard L. Detering, Seattle, Wash., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 26, 1981, Ser. No. 228,643

Int. Cl.³ H02P *7/36*

U.S. Cl. 318—712 **9 Claims**

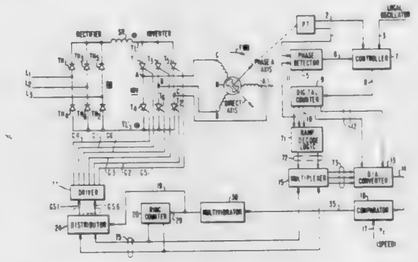
1. A variable speed synchronous motor drive system including a current-fed inverter having thyristors controlled to be turned ON under natural commutation by a variable frequency AC power voltage, comprising:

transducer means coupled to the rotor for providing a signal indicative of rotor position relative to the stator of the motor;

means associated with said rotor for deriving an actual velocity signal characteristic of motor speed;

counter means controlled by said velocity signal deriving means and locked with said transducer means for generating a time wave reference;

a comparator for establishing with said time wave reference and a voltage reference signal a firing angle;



a gate pulse generator responsive to said comparator for selectively applying a firing pulse to a thyristor "next" to be turned ON in a sequential order of said thyristors.

4,389,607

SYNCHRONOUS MOTOR CONTROL DEVICE

Nobuo Sekiyama, and Hisato Miyamura, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 4, 1980, Ser. No. 184,068

Claims priority, application Japan, Sep. 5, 1979, 54-112980

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—717 **10 Claims**



1. A power factor detecting apparatus for a machine supplied with a three phase A.C. voltage comprising:

a potential transformer for detecting a line voltage applied to said machine;

a current transformer for detecting a phase current supplied to said machine, wherein said phase current is selected to have a phase difference of 90° with respect to said line voltage when said machine is operated at a power factor of 1;

first means for producing a first alternating current having a rectangular waveform with positive and negative polarities corresponding to an output of said potential transformer and for producing a second alternating current having a rectangular waveform with positive and negative polarities corresponding to said output of said potential transformer, wherein said first and second alternating currents are 180° out of phase with one another, and

wherein said first and second alternating currents have a substantially identical predetermined amplitude;

second means for producing first and second gate signals which have positive and negative polarities corresponding to an output of said current transformer and which are 180° out of phase with one another;

first switching means for passing said first alternating current to produce a first output signal having positive and negative polarities when said first gate signal has a predetermined polarity;

second switching means for passing said second alternating current to produce a second output signal having positive and negative polarities when said second gate signal has said predetermined polarity;

an adder for adding said first and second outputs of said first and second switching means to produce an adder output signal which has the positive and negative polarities and amplitude of said first and second output signals and a duty cycle of 90° when said machine is operated at a power factor of 1; and

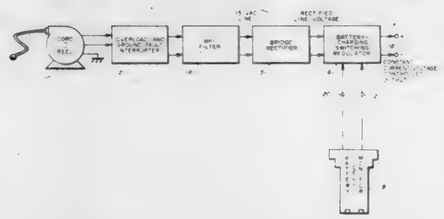
a filtering means for removing an alternating current component from said adder output so that an output of the filtering means represents a power factor of said machine, wherein a first polarity of the output of the filtering means represents a leading power factor of said machine and wherein a second polarity of the output of the filtering means represents a lagging power factor, and further wherein a magnitude of the output of the filtering means represents a magnitude of the power factor of said machine.

4,389,608

TRANSFORMERLESS BATTERY CONTROLLED BATTERY CHARGER

Ernest A. Dahl, 3247 Breaker Dr., Ventura, Calif. 93003, and George H. Barry, 21225 Saratoga Hills, Saratoga, Calif. 95070

Filed Sep. 30, 1981, Ser. No. 306,987
Int. Cl.³ H02J *7/10*
U.S. Cl. 320—33 **9 Claims**



1. A transformerless battery-controlled battery charging system, comprising:

a. an AC power supply for providing an AC line input to the charging system;

b. an RFI filter means connected in series with said AC line input;

c. an overload and ground-fault current interruptor means connected between said AC line input and said RFI filter means for providing user protection;

d. a rectifier means connected in series with the output from said RFI filter means;

e. current-and-voltage controlled battery charging switching regulator means connected to the rectified line voltage output from said rectifier means being operable for reducing the AC line voltage and for providing a constant-current/constant-voltage output throughout each AC cycle as required for the load formed by a battery being charged; said switching regulator means including an inductor which operates to store only a fraction of the energy in each charging pulse from each RC cycle with much of the battery charging energy being supplied directly from said AC power supply and not stored in the charging system; the switching regulator duty cycle being varied through each AC cycle to control input line current;

f. a remote enable input signal means which includes a battery cell monitoring means for sensing temperature, specific gravity, voltage, and electrolyte level conditions of each of the cells of the battery being charged;

g. said remote enable input signal means also being connected to said switching regulator means for providing external shutdown control in response to battery cell condition sensing signals from said battery cell monitoring means, as to any of over-temperature, over-voltage, required specific gravity, and low-electrolyte level;

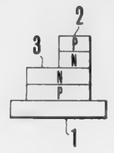
wherein the requirement of each battery being charged is provided by said remote enable input signal means with sensing signal data received from all cells of the battery to provide higher-speed, constant current charging with a transformerless charging system.

4,389,609

BATTERY CHECK DEVICE

Masaharu Kawamura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 25, 1981, Ser. No. 324,808
Claims priority, application Japan, Dec. 3, 1980, 55-171287
Int. Cl.³ H02J *7/00*
U.S. Cl. 320—48 **5 Claims**



1. A battery check device comprising:

(a) display means, said means including a first and a second terminal for carrying out a display with colors in accordance with the level of the signals delivered to the respective terminals;

(b) first signal forming means for decreasing the output signal in accordance with the decrease of the power source voltage, the output signal of said means being delivered to the first terminal of the display means; and

(c) second signal forming means for increasing the output signal in accordance with the decrease of the power source voltage, the output signal of said means being delivered to the second terminal of the display means;

whereby the display means carries out the display with colors corresponding to the state of the power source voltage in accordance with the output signals from the first and the second signal forming means.

4,389,610

ELECTROSTATIC PROBE DEVICE AND METHOD OF MANUFACTURING SUCH A DEVICE

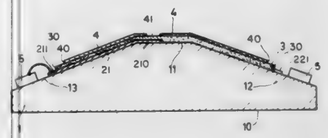
Ulrich Schiebel, Aachen-Brand, and Dieter Wädow, Aachen-Hahn, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 28, 1980, Ser. No. 210,954
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948660
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—72.5 **15 Claims**

1. An electrostatic probe device for measuring charge distribution on an electrically charged surface comprising

an electrically insulating substrate,

a plurality of adjacent, mutually insulated, and mutually extending electrostatic probe electrodes on said substrate, each of said probe electrodes including a probe electrode head, an electrode track, and a connection electrode surface,



a coherent insulating layer provided over at least said probe electrode head of said probe electrodes, and

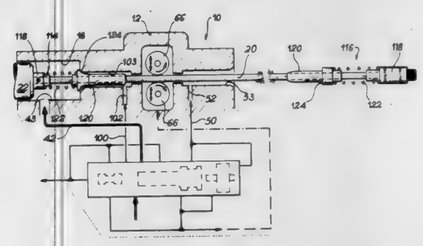
an electrically conductive cover layer provided on said insulating layer, said cover layer having an opening over said probe electrode head of each of said probe electrodes.

4,389,611

APPARATUS FOR DISPLACING A SENSOR INTO A TUBE AND AUTOMATICALLY RETURNING IT

Michel Pigeon, Bures sur Yvette; Claude Vienot, Fontenzy sous Bois, and Robert Saglio, Antony, all of France, assignors to Commissariate a l'Energie Atomique, France

Filed Sep. 25, 1980, Ser. No. 190,876
Claims priority, application France, Sep. 27, 1979, 79 24048
Int. Cl.³ G01R *33/12;* **G01N** *27/90;* **B65H** *49/00*
U.S. Cl. 324—220 **12 Claims**
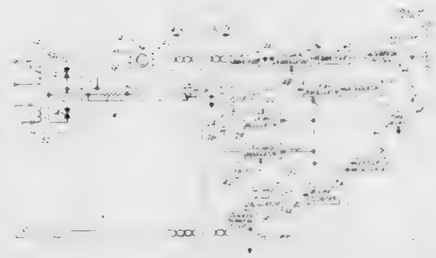


1. An apparatus for displacing and controlling a sensor for tubes, particularly an eddy current sensor, comprising, a cable to which said sensor is connected, means for engaging and displacing said cable, front and rear detection means for detecting front and rear extreme positions of the sensor in the tube, a pressurized fluid source, and an automatic control system operated by a pressurized fluid, said control system comprising at least one box defining at least one bore therewithin, and at least one slide valve slidingly received within said bore, said box having an inlet which communicates with said pressurized fluid source and at least one outlet which is adapted to communicate with the tube to be inspected, the outlet located behind said sensor, and means for actuating said cable engaging and displacing means, said actuating means being sensitive to the position of the slide valve in said bore, said slide valve being sensitive to the operation of said front and rear detection means for sliding within said bore, in order either to communicate the inlet with the outlet, or to actuate said cable engaging and displacing means, respectively.

4,389,612

APPARATUS FOR REDUCING LOW FREQUENCY NOISE IN DC BIASED SQUIDS

Michael B. Simmonds, Del Mar, and Robin P. Giffard, Palo Alto, both of Calif., assignors to S.H.E. Corporation, San Diego, Calif.

Filed Jun. 17, 1980, Ser. No. 160,225
Int. Cl.³ G01R *33/02*
U.S. Cl. 324—248 **15 Claims**



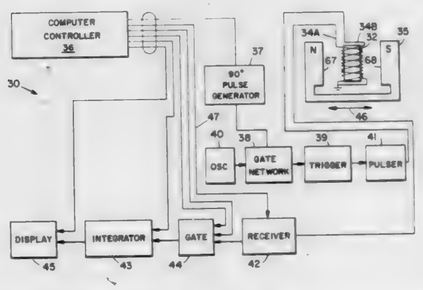
1. A low noise superconducting circuit for measuring magnetic flux comprising a superconducting device including a pair of Josephson junctions and superconductors connecting the junctions in a closed loop, means applying a bias current through the two junctions in parallel, means reversing the bias current direction through the junction periodically at a first frequency, means for generating magnetic flux linking the closed loop, means modulating said flux at a second frequency which is different from said first frequency, demodulating means responsive to reference signals at said first and second frequencies, and means coupling the voltage across said junctions to said demodulating means, the demodulated output providing an output signal whose amplitude is determined by the level of magnetic flux linking the loop.

4,389,613

COMPUTER-CONTROLLED, PORTABLE PULSED NMR INSTRUMENT AND METHOD OF USE

Robert J. S. Brown, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 15, 1981, Ser. No. 255,979
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—303 **18 Claims**



1. Automatic apparatus for swiftly determining fluid-flow properties of a rock sample based on NMR response of hydrogen nuclei of interstitial fluids within pore spaces of said sample in which DC field inhomogeneity and phase background jitter are used to increase data-throughput efficiency (DTE) comprising:

(a) magnet means for producing a DC magnetic field acting on said rock sample, said magnetic field having an inten-

sity of at least 1 kilogauss and an inhomogeneity of at least D gauss to provide a series of nuclear magnetization build-ups associated with said interstitial fluids within said sample as a function of time;

(b) RF coil means acting at right angles to said DC magnetic field;

(c) transmitter means including digital control means for generating a first series of digital control codes associated with a series of RF magnetic pulses of selected frequency, amplitude and duration, connected to said RF coil means to produce said series of RF magnetic pulses for interrogating said sample, said amplitude of each pulse being controlled to be at least greater than the variation D in said DC field over said sample;

(d) receiver means connected to said digital control means and to said RF coil means for generating via a second series of digital control codes associated with a plurality of time windows, output signals proportional to said nuclear magnetic resonance response of said interstitial fluids;

(e) said transmitter means including said digital control means having a phasal background jitter characteristic associated therewith that randomly varies with time so that said sample can be repetitively interrogated to serially indicate nuclear magnetization relaxation without need for applying rescrambling reversing RF magnetic field pulses prior to the start of each magnetization build-up cycle.

4,389,614

METHOD AND APPARATUS FOR GENERATING PULSES OF A PREDETERMINED TIME RELATION WITHIN PREDETERMINED PULSE INTERVALS WITH A HIGH TIME RESOLUTION

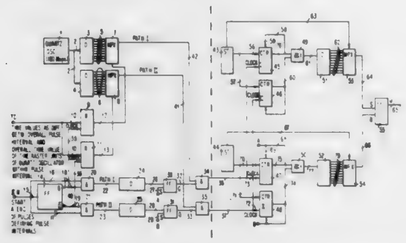
Dieter E. Staiger, Weil im Schoenbuch, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 18, 1981, Ser. No. 264,251

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023699

Int. Cl.³ H03K *3/70, 3/78, 3/86, 5/06*

U.S. Cl. 328—61 **17 Claims**



1. A method for generating, without dead time, pulses appearing in successive pulse intervals, the pulse intervals and pulses being generated with precise time resolution, said method being characterized in:

that the signals characterizing start (**IINA1, IIN2A**) and end (**IIN1E, IIN2E**) of a pulse interval are generated under storage control by an oscillator (**1**) for providing coarse time raster values, and by a delay circuit (**3, 4**) arranged in series with the oscillator (**1**), with selective (**7, 8**) delay circuit taps (**5, 6**) for fine time raster values;

that the signals characterizing the pulse intervals are alternatingly applied to a respective one of two paths (path I, path II) in such a manner that the signal characterizing the respective beginning of the pulse interval is in accordance with the time raster value given by the oscillator (**1**);

that for each path the leading and trailing edge of a pulse to be generated during a pulse interval is derived via counters (**45, 47, 46,** and **48**) driven by an oscillator clock and loadable with a count from a store (**43, 44**) when a specific count is reached; and

that for generating the leading and trailing edge (**45, 46** respectively **47** and **48**) a common delay circuit (**51** and **52**, respectively) with store-controlled (**43, 44**), selectively addressable delay circuit taps (**62, 79** respectively) is arranged in series to the counters for a fine time raster, and that the pulse information generated in accordance with both paths is joined on a common line (**65**).

4,389,615

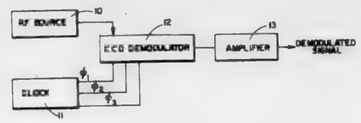
CCD DEMODULATOR CIRCUIT

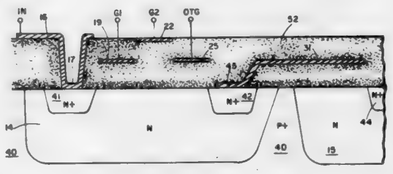
Barry T. French, Fullerton, and Michael J. McNutt, Yorba Linda, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 70,560, Aug. 29, 1979. This application May 17, 1982, Ser. No. 379,244

Int. Cl.³ H03D *1/00, 3/18*

U.S. Cl. 329—101 **14 Claims**





1. A charge coupled demodulator circuit including a radio frequency input, and an output, comprising:

first input means for introducing into a first position of said circuit a predetermined amount of charge;

storage well means functioning to store a predetermined amount of charge in a second portion of said circuit spaced apart from said first portion;

second input means for introducing a time-varying radio frequency signal having a frequency f containing information in the form of amplitude modulation into the circuit; said second input means functioning to cause charge to be transported during a first time interval from said first portion to said second portion, and during a subsequent second time interval from said second portion in the direction of said first portion, so that at the end of a single first and a predetermined plurality of subsequent successive second time intervals corresponding to a plurality of cycles of said radio frequency signal a quantity of charge remains in said storage well representative of the demodulated amplitude of said time-varying radio frequency signal; and

sampling means connected to said storage well for sampling and transferring at a sampling frequency less than said frequency f said quantity of charge remaining in said storage well means during a third time interval subsequent to said predetermined plurality of second time intervals to said output.

4,389,616

METHOD AND ARRANGEMENT FOR THE DIGITAL REGULATION OF THE CARRIER PHASE ERROR IN RECEIVERS OF DATA TRANSMISSION SYSTEMS

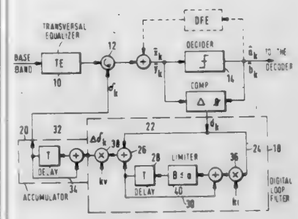
Heinz Göckler, Backnang, and Hagen Hofmeister, Korb, both of Fed. Rep. of Germany, assignors to Aeg-Telefunken AG Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 15, 1980, Ser. No. 217,519

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950339

Int. Cl.³ H04L *27/22*

U.S. Cl. 329—104 **9 Claims**



1. In a method for digitally regulating the carrier phase error in receivers of digital data transmission systems including the steps of: feeding sampled data values of the carrier demodulated input signal of the receiver to a decider to provide estimated values for each associated sampling time; comparing the sampled value of the demodulated input signal with the associated estimated value for each sampling time to determine a deviation value which is a measure for the phase difference between said sampled value said associated estimated value; filtering said deviation value in a digital loop filter including parallelly connected proportional and integral circuit branches, accumulating the output values of said digital loop filter to provide a regulating value; and using said regulating value to correct the carrier phase error of the demodulated input signal; the improvement comprising including a non-linear limit on the said deviation value being integrated over time in said integral branch of said digital loop filter.

4,389,617

COMBINATION RING CAVITY AND BACKWARD RAMAN WAVEGUIDE AMPLIFIER

Norman A. Kurnit, Santa Fe, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 13, 1981, Ser. No. 243,309

Int. Cl.³ H03F *7/00, 7/05;* **H01S** *3/30*

U.S. Cl. 330—4.3 **6 Claims**

1. A combination regenerative ring and backward Raman waveguide amplifier comprising:

CO_2 laser means for producing a CO_2 laser pump signal;

Stokes radiation source means for producing a Stokes radiation signal;

means for combining said CO_2 laser pump signal and said Stokes radiation signal to produce a combined copropagating CO_2 laser pump signal and Stokes radiation signal;

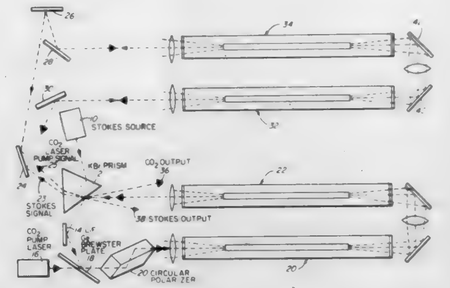
means for directing said copropagating CO_2 laser pump signal and Stokes radiation signal through Raman waveguide amplifier means to produce an amplified Stokes radiation signal by Raman scattering of said CO_2 laser pump signal using rotational transitions in a diatomic molecular gas;

means for splitting said amplified Stokes radiation signal and said CO_2 laser pump signal into first and second portions;

means for combining said first portion of said amplified Stokes radiation signal with said combined copropagating CO_2 laser pump signal and said Stokes radiation signal in a single beam path to increase the intensity of Stokes radiation in said regenerative ring amplifier and thereby increase the amount of energy extracted from said CO_2 laser pump signal;

means for directing said second portion of said amplified Stokes radiation signal through backward Raman waveguide amplifier means in a first direction;

means for directing said second portion of said CO_2 laser pump signal through said backward Raman waveguide amplifier means in a second direction, opposite to said first direction, so that said CO_2 laser pump signal and said amplified Stokes radiation signal counterpropagate through said backward Raman waveguide amplifier means to produce backward Raman amplification, pulse compression, and efficient energy extraction from said CO_2 laser pump signal.



4,389,618

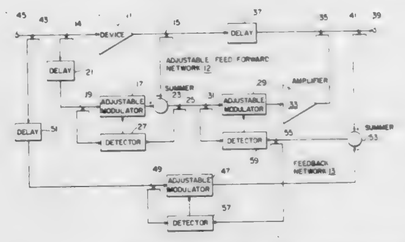
ADAPTIVE FEED-FORWARD SYSTEM

Ronald M. Bauman, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 15, 1981, Ser. No. 254,353

Int. Cl.³ H03F *1/26*

U.S. Cl. 330—149 **10 Claims**



1. An adaptive feed-forward system for reducing the distortion generated by a device such as an amplifier, the feed-forward system comprising:

first sampling means adapted to be connected to the device for extracting a sample of the distortion products from the output of the device;

an adjustable equalizing means connected to the first sampling means for equalizing the sample and the products remaining in the output of the device after extracting the sample;

combining means connected to the first equalizing means and adapted to be connected to the device for subtractively combining the equalized sample and the remaining products to produce a distortion reduced system output;

second sampling means for extracting a sample of the system output;

proportion-changing means connected to the second sampling means for increasing the proportion of distortion in the extracted sample of the system output; and

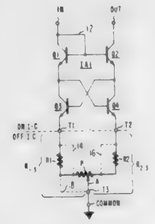
control means connected to the first sampling means, to the proportion-changing means, and to the equalizing means for correlating the distortion-increased sample of the system output with the sample of the distortion products extracted from the output of the device by the first sampling means and adjusting the first equalizing means to minimize the correlation result.

4,389,619

ADJUSTABLE-GAIN CURRENT AMPLIFIER FOR TEMPERATURE-INDEPENDENT TRIMMING

Allen L. Limberg, Titusville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 2, 1981, Ser. No. 230,383
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—288 **17 Claims**



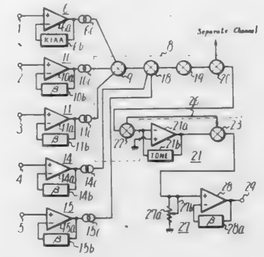
1. A current amplifier with adjustable current gain comprising:
- a substrate having input and output terminals, and having first and second terminals thereon;
- a common terminal external to said substrate;
- first, second, third and fourth transistors of like conductivity type arranged on said substrate, each having respective input, output and common electrodes, the respective output electrodes of said first and second transistors being respectively coupled said input and output terminals, the respective common electrodes of said third and fourth transistors respectively connecting to said first and second terminals, the respective common electrodes of said first and second transistors connecting to the respective output electrodes of said third and fourth transistors, respectively;
- means for applying a potential at the common electrode of said first transistor to the input electrode of said fourth transistor;
- means for applying a potential at the common electrode of said second transistor to the input electrode of said third transistor;
- means for applying a potential at said input terminal to the respective input electrodes of said first and second transistors to condition said first and second transistors for conduction;
- first and second resistance means located external to said substrate, said first resistance means being coupled between said first and common terminals and said second resistance means being coupled between said second and common terminals, said first and second resistance means exhibiting respective resistances in proportion substantially unaffected by temperature, at least one of said first and second resistance means including means for adjusting the resistance thereof.

4,389,620

CURRENT TRANSFER AMPLIFIER

Kazuo Yamaguchi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 27, 1981, Ser. No. 228,960
Claims priority, application Japan, Jan. 29, 1980, 55-8949; Jan. 29, 1980, 55-92908; Jan. 29, 1980, 55-9689
Int. Cl.³ H03F *3/04;* **H03H** *5/00*
U.S. Cl. 330—304 **10 Claims**



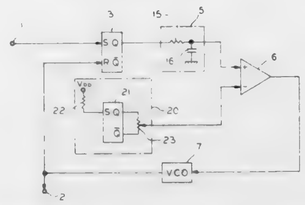
1. A current transfer amplifier comprising:
- voltage signal source means for supplying a voltage signal to be amplified;
- voltage/current converting means supplied with the voltage signal from said voltage source means for converting the samed into a current signal proportional to the voltage signal;
- a tone control circuit of a current amplification type supplied with the current signal from said voltage/current converting means;
- a non-linear switching element interposed between the output of said voltage/current converting means and the input of said tone control circuit to transmit said current signals therethrough; and
- a variable resistor having a pair of terminals connected between the output of said tone control circuit and a reference point to convert the output signal of said tone control circuit into voltage signal.

4,389,621

PHASE LOCKED LOOP STABILIZED AGAINST TEMPERATURE AND VOLTAGE VARIATIONS

Godo Futatsuishi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 45,944, Jun. 6, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,235
Claims priority, application Japan, Jun. 15, 1978, 53/82785
Int. Cl.³ H03L *7/08*
U.S. Cl. 331—1 A **4 Claims**



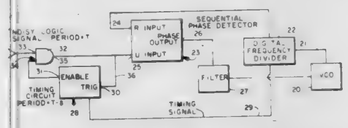
3. A phase-locked loop circuit comprising: a voltage-controlled oscillating means for varying its oscillating frequency in response to a certain control signal; a first logic means for generating pulses having pulse width proportional to the phase difference between applied input pulses and the output of said oscillating means; means for filtering the output of said first logic means; a second logic means for providing a high d.c. level signal and a low d.c. level signal; means for combining said high and low d.c. levels into a predetermined synthesized d.c. level signal; and means for generating said control signal corresponding to the level difference between the outputs of said filtering means and said combining means.

4,389,622

SYSTEM FOR PREVENTING TRANSIENT INDUCED ERRORS IN PHASE LOCKED LOOP

Gerald M. Kackman, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 28, 1981, Ser. No. 306,272
Int. Cl.³ H03L *7/08;* **H04L** *27/12*
U.S. Cl. 332—19 **26 Claims**



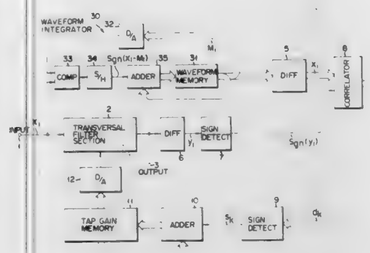
1. A method of minimizing synchronization errors in a phase-locked loop having a sequential phase detector for determining the phase difference between the output of the VCO of the phase-locked loop and a periodic control signal having a characteristic control signal cycle period, wherein said errors are caused by distortion in the control signal, comprising the steps of:
- enabling the control signal input to said sequential phase detector for a relatively short enable time window comprising a small fraction of the control signal cycle period, said enable time window beginning just before a control signal is anticipated;
- limiting the response of said phase detector to the first one of any control signals from said control signal input during any given enable time window;
- disabling said control signal input for the remainder of said control signal period.

4,389,623

AUTOMATIC EQUALIZER UTILIZING A PERIODICALLY CONTAINED REFERENCE SIGNAL

Shunichi Onishi, Yokohama; Masaharu Obara, Tokyo; Masaru Sakurai; Junzo Murakami, both of Kawasaki, and Shinichi Makino, Fujisawa, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki and Nippon Hoso Kyokai, Tokyo, both of, Japan

Filed May 18, 1981, Ser. No. 264,407
Claims priority, application Japan, May 28, 1980, 55-71018
Int. Cl.³ H04B *3/10;* **H04N** *5/21*
U.S. Cl. 333—16 **2 Claims**



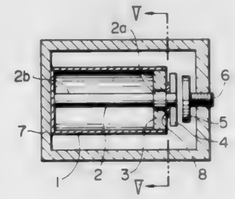
1. An automatic equalizer comprising:
- a transversal filter connected to receive an input signal in which a predetermined reference signal is periodically contained and having variable tap gains;
- a waveform integrator circuit means connected to receive the input signal for integrating the waveform of the reference signal;
- a correlator means responsive to the output of said transversal filter and waveform integrator circuit means; and
- a circuit means responsive to said correlator means to correct the tap gains of said transversal filter.

4,389,624

DIELECTRIC-LOADED COAXIAL RESONATOR WITH A METAL PLATE FOR WIDE FREQUENCY ADJUSTMENTS

Yukichi Aihara, Kawasaki, and Sadahiko Yamashita, Sagamihara, both of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Apr. 3, 1981, Ser. No. 251,967
Claims priority, application Japan, Apr. 4, 1980, 55-44885
Int. Cl.³ H01P *7/04*
U.S. Cl. 333—226 **6 Claims**



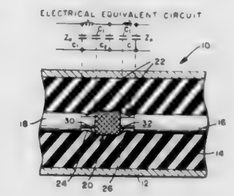
1. A coaxial resonator comprising, an outer conductor having a closed end and an open end, an inner conductor extending concentrically in said outer conductor and connected therewith in a short circuit at said closed end and in an open circuit at said open end, a dielectric member disposed in said open circuit between said outer and inner conductors, a first conductive plate connected to the open circuit end of said inner conductor and having a larger surface area than the transverse cross-sectional area of said inner conductor, and a second conductive plate having a smaller surface area than the surface area of said first conductive plate and disposed between said dielectric member and said first conductive plate while making contact with said inner conductor.

4,389,625

ELECTRICAL CONNECTOR HAVING A CAPTIVATED, ELECTRICALLY COMPENSATED INNER CONDUCTOR

Norbert J. Sladek, Fairfield; Roger P. Avery, Redding, and Saverio T. Bruno, Danbury, all of Conn., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 918,893, Jun. 26, 1978, abandoned. This application Apr. 9, 1980, Ser. No. 138,696
Int. Cl.³ H01R *17/04;* **H02G** *15/00*
U.S. Cl. 333—260 **12 Claims**



1. In an electrical connector having a first conductor disposed within an axially extending opening through a dielectric

member disposed adjacent a second conductor, the improvement comprising:

means for captivating said first conductor against axial and rotational movement within said axially extending opening;

said captivating means having an electrical impedance between said captivating means and said second conductor differing from the characteristic electrical impedance of said first conductor between said first conductor and said second conductor; and

means for compensating for the differing electrical impedance of said captivating means to optimize the voltage standing wave ratio of said electrical connector;

said dielectric member being deformable to permit radial expansion of said axially extending opening and wherein said captivating means includes at least one enlarged portion of said first conductor for radially expanding said axially extending opening to retain said first conductor in an interference fit in said axially extending opening, said enlarged portion of said conductor having an electrical impedance between said first conductor and said second conductor less than the characteristic electrical impedance of the remainder of said first conductor between said first conductor and said second conductor.

4,389,626

ELECTROMAGNETIC RELAY WITH ADJUSTABLE CONTACTS IN A CLOSED CONTACT CHAMBER

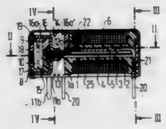
Helmut Schedele, Diessen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 20, 1981, Ser. No. 323,283

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 3102011

Int. Cl.³ H01H *51/22*

U.S. Cl. 335—78 **10 Claims**





1. An electromagnetic relay comprising:

a one-piece coil core body comprised of insulating material and having a hollow interior and a closed end face and a partially open end face;

a ferromagnetic movable contact element having a first end secured in said closed end face of said coil core body, said movable contact element being disposed substantially parallel to a longitudinal axis of said coil core body;

a contact chamber communicating with said hollow interior of said coil core body disposed adjacent to said partially open end face of said coil core body; and

an encapsulation wall for said contact chamber coincident with said partially open end face,

said encapsulation wall having a first part which is a projection of said one-piece coil body and carrying a first stationary contact plate, and a second part which is separately fabricated and inserted in said encapsulation wall for closing said contact chamber, said second part carrying a second contact plate, said first and second parts having a boundary extending through said longitudinal axis, and

each of said first and second parts having a continuous recess extending from an exterior of said relay to a respective one of said first and second contact plates for permitting external adjustment of the position of said contact plates after closure of said contact chamber.

4,389,627

CHANGEOVER SWITCH FOR ACTUATING A PLURALITY OF REED SWITCHES DISPOSED IN A CIRCLE

Toshiaki Uesugi, and Toshikazu Inden, both of Oi, Japan, assignors to Chino Works, Ltd., Saitama, Japan

Filed Nov. 19, 1981, Ser. No. 323,074

Claims priority, application Japan, Nov. 19, 1980, 55-164633

Int. Cl.³ H01H *36/00*

U.S. Cl. 335—206 **8 Claims**



1. A changeover switch comprising

at least one substrate;

a permanent magnet defining an axis of polarity and revolving about a first axis in a circle in proximity to said substrate, said permanent magnet being rotatable about a second axis in the circle around which said permanent magnet revolves;

a plurality of reed switches mounted on said substrate, said reed switches being disposed in a circle having its center lying on the first axis of revolution of said permanent magnet and switched on and off alternately in response to the magnetic lines of force of said permanent magnet when the axis of polarity of said magnet is aligned with said reed switches; and

a means for intermittently rotating said permanent magnet a predetermined angle about said second axis during each revolution of said magnet about said first axis, thereby deviating the axis of polarity of said permanent magnet with respect to said reed switches and placing said reed switches under actuated or unactuated conditions in dependence on the rotation of said permanent magnet about said second axis.

4,389,628

THERMO-MAGNETICALLY OPERATED SWITCHES HAVING TWO DIFFERENT OPERATING TEMPERATURES

Hiroyasu Sato; Yoshiharu Sato, and Tetsuro Baba, all of Sendai, Japan, assignors to Tohoku Metal Industries, Ltd., Miyagi, Japan

Filed May 29, 1981, Ser. No. 268,132

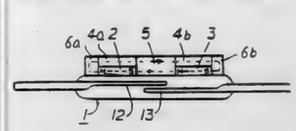
Claims priority, application Japan, Jun. 2, 1980, 55-75140[U]; Jun. 4, 1980, 55-76620[U]; **Jun. 4, 1980, 55-76621**[U]; **Jun. 12, 1980, 55-82137**[U]; **Jun. 12, 1980, 55-82138**[U]

Int. Cl.³ H01H *36/00*

U.S. Cl. 335—208 **20 Claims**

1. In a thermo-magnetically operated switch having two different and predetermined lower and higher operating points on a temperature scale so that the switch may be maintained

open below the lower operating point and above the higher operating point and be maintained closed between the two different operating points, which includes an elongated reed switch having a pair of ferromagnetic reeds hermetically sealed in an envelope with free ends of said reeds overlapped for opening and closing movements relative to one another, two permanent magnets having Curie points higher than said higher operating point and disposed alongside said reed switch over the respective reeds in similar polar directions, a first ferromagnetic body having a Curie point corresponding to said higher operating point and disposed over said overlapped ends



of said reeds and in an axial space between said two magnets to engage said two magnets, and second ferromagnetic body means having a Curie point corresponding to said lower operating point and disposed alongside said two magnets to short-circuit magnetically said two magnets at the temperature of said lower operating point or below, the improvement comprising two third ferromagnetic bodies having Curie points of said lower operating point or above and disposed to engage axial opposite ends of said second ferromagnetic body means and the other pole faces of said magnets opposite the pole faces thereof engaging said first ferromagnetic body.

4,389,629

ELECTRICAL SWITCH WITH A THERMOSTATIC WORKING ELEMENT AS THE ACTUATING ELEMENT, AND A SWITCH ELEMENT IN THE FORM OF A MICROSWITCH

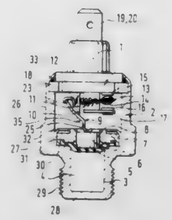
Roland Saur, Stuttgart, and Manfred Kurz, Ditzingen, both of Fed. Rep. of Germany, assignors to Behr-Thomson Dehnstofregler GmbH, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 349,815

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1981, 3109133

Int. Cl.³ H01H *71/18*

U.S. Cl. 337—126 **20 Claims**



1. Electrical switch with a thermostatic actuating element and with a microswitch element, said microswitch element being mounted in a one-piece metal housing that has a round cross section and is open at one end, said housing having a recess in an opposite, bottom, end; a substance which expands when heated, being located in said recess and being covered by a rubber-elastic membrane; a guide part having an axial bore being mounted so as to hold said membrane to said housing; a working piston made of an insulating material being located upon said membrane in a manner displaceable as a result of an expansion of said substance, said piston being guided in said axial bore of the guide part; a rocker pivotably mounted on a rocker support so as to pivot about an axis which runs at right angles to the displacement direction of the working piston, said rocker having one end engageable by an end of said piston facing away from said membrane and having an arm on an opposite end to which an extension spring, which serves as a restoring means for the working piston, is attached, said spring also being attached to a contact tongue that is pivotably supported against the rocker support, said tongue being directed essentially at right angles to the displacement direction of the piston and bearing a contact which faces a normally closed (NC) contact on one side and a normally open (NO) contact on an opposite side, and which is held in place by a contact support; and a circular plate, made of an insulating material, sealing the open end of the housing, said plate carrying the NC contact, a contact support carrying the NO contact and the rocker arm support, and through which electrical leads from at least one of the rocker and NO contact supports is guided to the outside of the housing; characterized by the fact that the NO contact support, viewed in the displacement direction of said piston, is disposed laterally next to said contact tongue and is displaced relative to the middle of said plate.

4,389,630

SNAP ACTION THERMALLY RESPONSIVE SWITCH

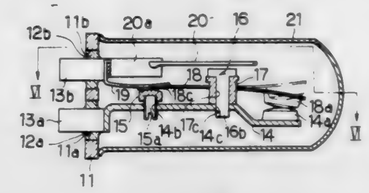
Susumu Ubukata, 549 Nakasuna-cho, Tenpaku-ku, Nagoya; Yasukazu Mizutani, Nagoya, and Syozo Iyada, Nagoya, all of Japan, assignors to Susumu Ubukatu, Nagoya, Japan

Filed Mar. 6, 1981, Ser. No. 241,062

Claims priority, application Japan, Mar. 15, 1980, 55-32882; Jun. 10, 1980, 55-78128; Aug. 7, 1980, 55-108835; Sep. 2, 1980, 55-122165

Int. Cl.³ H01H *37/54*

U.S. Cl. 337—363 **10 Claims**



1. A snap-action thermally responsive switch that comprises:

a multi-metallic thermally responsive strip element including a first end, an opposite second end, a central portion integral with said first and second ends, an upper surface and a lower surface,

a moveable contact fixed to said lower surface at said first end,

a fixed contact secured to a stationary member for engagement and disengagement with said moveable contact,

an elastic member upon which said second end of said strip member is supported,

a first support member that osculates said second end of said strip member and exerts thereon a biasing force against said lower surface,

a second support member that osculates said central portion of said strip member and exerts a biasing force against said upper surface of said strip member,

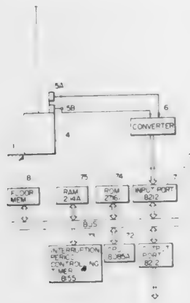
said strip member being unfixed to said first and second support members permitting relative movement therebetween when said strip member undergoes snap-action.

4,389,631

ELEVATOR POSITION DETECTING DEVICE

Ryuichi Kajiyama, and Shigemi Iwata, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 31, 1980, Ser. No. 221,749
Claims priority, application Japan, Jan. 7, 1980, 55-454
Int. Cl.³ B66B *3/02*
U.S. Cl. 340—21 **8 Claims**



1. An elevator position detecting device comprising:
a position-between-floors detector provided on an elevator cage;
a plurality of engaging members for said detector, one of said engaging members being disposed between each two adjacent floors; and
electronic calculating means having inputs coupled to outputs of said detector, said calculating means being programmed such that a digital value corresponding to one floor is added or subtracted from a floor memory of said calculating means to detect the position of said cage thereby to provide a cage position signal, wherein during movement of said cage in one direction, said digital value corresponding to one floor is added to said floor memory whenever said detector meets each said engaging member, and during movement of said cage in the other direction, said digital value corresponding to one floor is subtracted whenever said detector leaves each said engaging member.

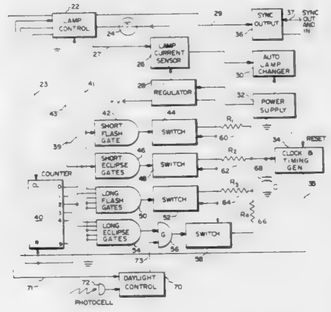
4,389,632

FLASHER UNIT WITH SYNCHRONIZATION AND DAYLIGHT CONTROL

Robert L. Seidler, 104 Ridgewood Dr., Longwood, Fla. 32750

Filed Jun. 25, 1981, Ser. No. 277,087
Int. Cl.³ B60Q *1/26;* **H05B** *39/00*
U.S. Cl. 340—74 **13 Claims**

1. Apparatus for producing a preselected sequence of flashes and eclipses from a lamp comprising:
lamp control means connected to said lamp for energizing said lamp during a flash period;
timing generator means connected to said lamp control means for producing a start timing pulse for starting a flash period and a stop timing pulse for terminating a flash period;
flash period control means connected to said timing generator means for controlling the time between said start timing pulse and said stop timing pulse, said flash period control means having a set of short flash gates connected to said lamp control means and enabled by said lamp control means when a short flash is required, said short flash gates having a short flash control input and a set of long flash gates connected to said lamp control means and enabled by said lamp control means when a long flash is required, said long flash gates having a long flash control input;
eclipse period control means connected to said timing generator means for controlling the time between said stop timing pulse and said start timing pulse, said eclipse period control means having a set of short eclipse gates connected to said lamp control means, and enabled by said lamp control means when a short eclipse is required, said short eclipse gates having a long eclipse control input;
counter means having a set of sequential count outputs, the number of said count outputs selected to be equal to the number of flashes in said preselected sequence, each of said count outputs connected to selected ones of said flash and eclipse gate control inputs for controlling said flash period and said eclipse period to produce the durations of the flash and the eclipse preselected for each position in said preselected sequence, said counter means having its



clocking input connected to said timing generator means for receiving each of said start timing pulses to cause each count output to have a duration equal to the time between its clocking start timing pulse and the next clocking start timing pulse;
a set of electronic switch means having switches connected respectively to the outputs of said short flash gates, said short eclipse gates, said long flash gates, and said long eclipse gates; and
a series resistance-capacitance timing circuit having the capacitance thereof connected to all of said electronic switch means, and in which the resistance thereof is a separate resistor connected to each of said electronic switch means whereby enabling of one of said gates causes the associated one of said electronic switches to close to thereby connect the one of said resistors associated with said closed gate in series with said capacitance to establish a selected long or short duration.

4,389,633

CODED APERTURE IMAGING WITH SELF-SUPPORTING UNIFORMLY REDUNDANT ARRAYS

Edward E. Fenimore, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 26, 1980, Ser. No. 191,192
Int. Cl.³ G01T *1/00*
U.S. Cl. 382—26 **2 Claims**

1. A self-supporting uniformly redundant array aperture imaging device for imaging a source of nonfocusable radiation comprising:
a self-supporting uniformly redundant array aperture having holes which are of a size equal to c/n where c is the spacing between possible hole locations and n is an integer, said holes of said self-supporting uniformly redundant array formed at corresponding positions within hole locations of said uniformly redundant array;
means for detecting said nonfocusable radiation imaged by said uniformly redundant array;
means for balance correlating information from said means



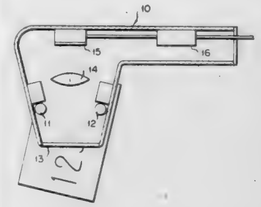
for detecting to generate a decoded image of said source of said nonfocusable radiation, said means for balance correlating information from said means for detecting comprising a balance correlation function wherein holes are represented by 1, nonholes are represented by −1, and supporting area is represented by 0.

4,389,634

CHARACTER READING APPARATUS

Yoshikathu Nakamura, Yokosuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki and Tokyo Electric Co., Ltd., Tokyo, both of, Japan

Filed Nov. 14, 1980, Ser. No. 206,832
Claims priority, application Japan, Nov. 16, 1979, 54-147664; Nov. 16, 1979, 54-147667
Int. Cl.³ G06K *9/22*
U.S. Cl. 382—11 **7 Claims**



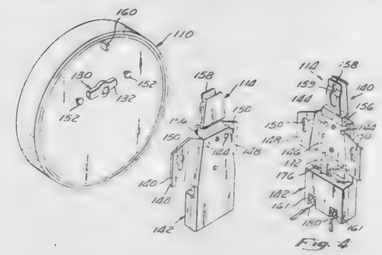
1. A character reading apparatus comprising:
photoelectric converting means having a two-dimensional array of photoelectric converting elements and manually moved for periodically and optically scanning a character and periodically producing character pattern data;
character pattern identifying means for executing identification process on the basis of the character pattern data from said photoelectric converting means;
first memory means storing conditional data for defining a range of size of a character pattern capable of being identified;
second memory means; and
a control circuit means including character size detection means connected to receive a character pattern data from said photoelectric converting means and derive character pattern size data from each character pattern data generated from said photoelectric converting means, judging means for checking whether or not the character pattern data from said photoelectric converting means meets the condition defined by said conditional data stored in said first memory means, said judging means producing an output signal when detecting that the character pattern data from said photoelectric converting means meets the condition defined by said conditional data stored in said first memory means; and comparator means for comparing, in response to the output signal from said judging means, data from said second memory means and character pattern size data from said character size detection means; said comparator means producing, when it is detected that the character pattern size data from said character size detection means is greater than the data from said second memory means, an output signal to said second memory means for causing the data from said character size detection means to be stored in said second memory means, and said control circuit producing an output signal after an output signal is produced from said comparator means, to set said character pattern identifying means to an initial state for causing identification process to be started on the basis of the character pattern data from said photoelectric converting means.

4,389,635

INTERFACING ATTACHMENT FOR REMOTE MECHANICAL FIRE ALARMS

Edward L. Gallagher, Dana Point, Calif., assignor to A-T-O, Inc., Willoughby, Ohio

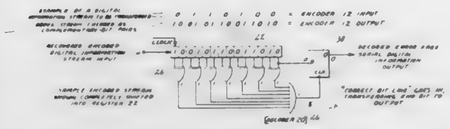
Continuation-in-part of Ser. No. 206,003, Nov. 12, 1980, abandoned. This application Nov. 28, 1980, Ser. No. 211,382
Int. Cl.³ G08B *25/00, 1/08*
U.S. Cl. 340—287 **16 Claims**



1. An attachment for converting a single station, mechanical spring-powered temperature sensitive fire alarm protection device into a remote signalling temperature detector for a central fire alarm system without modifying in any way either the internal apparatus of said fire protective device or the environmental protection for said internal apparatus, said attachment comprising:
a permanent magnet for producing a magnetic field;
an electrical switch, in juxtaposition to said magnet, which is activated by applying an external magnetic field to said switch;
a movable shield member of magnetizable material having a first position located between said magnet and said switch to substantially shield the switch from said magnetic field, and a second position, at least partially removed from between said magnet and said switch, to expose said switch to at least a portion of said magnetic field, said portion of said magnetic field activating said switch, and the magnetic force of said field upon said shield tending to retain said shield in said first position;
a lever attached to said movable shield for moving said shield from said first to said second position;
said mechanical fire alarm protection device having (i) an externally accessible winding key which rotates when said fire alarm protection device is actuated, said winding key having at least one protrusion, and (ii) a mounting wall bracket for mounting said device; and
a housing for mounting said magnet, said switch, and said

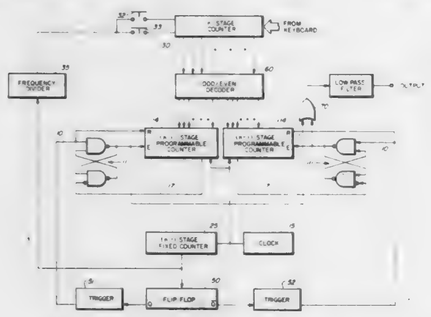
movable shield as a unitary assembly upon said mounting wall bracket, said lever extending from said unitary assembly so that (i) as said winding key rotates, said protrusion engages said lever to move said shield from said first position to said second position upon actuation of said fire alarm protection device, (ii) the electrical state of said switch is changed by such actuation of the alarm, and (iii) as said winding key continues to rotate said winding key ceases to engage said lever and the magnetic force of said field pulls said shield back to said first position.

4,389,636
ENCODING/DECODING SYNCRONIZATION TECHNIQUE
Herbert S. Riddle, Jr., 403 W. Frier Dr., Phoenix, Ariz. 85021
Filed Nov. 3, 1980, Ser. No. 203,475
Int. Cl.³ H04L *3/00*
U.S. Cl. 340—347 DD **13 Claims**



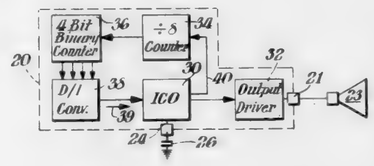
1. An encoding/decoding process for transferring serial digital bits, comprising the steps of:
encoding each bit as a corresponding complementary-bit-pair wherein a predetermined one of the pair corresponds to the original bit and the other is the complement of that bit;
transferring this encoded stream of complementary-bit-pairs to a decoder;
analyzing in said decoder simultaneously a pluralility of adjacent pairs of said encoded stream to determine whether a complementary relationship exists between the adjacent bits of all such pairs; and
directing a predetermined bit of one of said sequential pairs to an output line when all of said currently analyzed adjacent pairs of said encoded stream are determined to have a complementary relationship.

4,389,637
DIGITAL TO ANALOG CONVERTER
Theodore S. Rzeszewski, Lombard, Ill., assignor to Matsushita Electric Corp. of America, Franklin Park, Ill.
Division of Ser. No. 118,495, Feb. 4, 1980, abandoned. This application Aug. 17, 1981, Ser. No. 293,194
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **3 Claims**



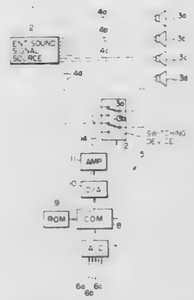
1. A digital to analog converter comprising:
first and second time interval measuring means, each having an input and an output and respectively including therein first and second multi-stage programmable counters, said time interval measuring means each providing a first output state on the output thereof when the interval between input pulses applied to the input thereof is less than a first predetermined amount and providing a second output state on the output thereof whenever the interval between such input pulses is more than a first predetermined amount;
means in each of said first and second time interval measuring means responsive to input pulses applied to the respective inputs thereof for resetting the respective programmable counter therein to a predetermined reset condition;
means for supplying clock pulses coupled with said first and second counters for advancing said counters from initial conditions to output pulse producing conditions in response to a predetermined number of clock pulses, such predetermined number of pulses being the number of pulses necessary to establish said interval of said first predetermined amount;
fixed counter means coupled between said means for supplying clock pulses and the inputs of said first and second time interval measuring means for supplying input pulses at a fixed frequency lower than the frequency of said clock pulses to the inputs of said first and second time interval measuring means, the pulses applied to the input of said first time interval means being 180 degrees out of phase with the input pulses applied to the input of said second time interval measuring means;
a fourth counter, the stages of which are coupled with said first and second programmable counters in a predetermined manner for programing said first and second programmable counters with a digital number to be converted, said number corresponding to the initial conditions, and said fourth counter having at least one input for changing the count therein in response to pulses applied thereto; and
frequency divider means coupled between the output of said fixed counter and the input to said fourth counter to supply pulses to said fourth counter at a predetermined frequency lower than said fixed frequency, whereby the number of clock pulses required to advance said first and second counters from the initial conditions thereof to the output pulse producing condition is proportional to the digital number being converted.

4,389,638
I.C. ALARM SIGNAL GENERATOR
Walter S. Gontowski, Jr., Thompson, Conn., assignor to Sprague Electric Company, North Adams, Mass.
Filed Sep. 30, 1981, Ser. No. 307,057
Int. Cl.³ G08B *3/00*
U.S. Cl. 340—384 E **5 Claims**



1. A yelping alarm signal generator comprising:
a current controlled oscillator means for periodically charging and discharging a capacitor at a rate that is a function of a control current; and
a frequency-to-current converter means being connected from an output to an input of said oscillator means for producing said control current and for setting the amplitude of said control current at a value that is a function of said rate of periodic charging and discharging.

4,389,639
VOICE WARNING DEVICE USING ENTERTAINMENT SPEAKER
Taketsugu Torii, Kasugai; Hisatoshi Oota, and Hiroshi Arai, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan
Filed Nov. 4, 1980, Ser. No. 204,059
Claims priority, application Japan, Apr. 23, 1980, 55-54804
Int. Cl.³ G08B *25/02*; **H04M** *1/00*
U.S. Cl. 340—539 **3 Claims**



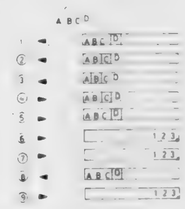
1. A voice warning device for a driver's compartment equipped with an entertainment sound production system comprising a plurality of speakers, an entertainment sound signal production device, and a plurality of electrical connections for conducting entertainment sound-bearing electric signals from the entertainment sound signal production device to said speakers;
said voice warning device, comprising:
a plurality of switching devices, each provided in one of said electrical connections between one of said speakers and said entertainment sound signal production device;
a warning voice sound signal production device, for selectively generating electric signals representing human voice sounds for conveying a warning; and,
means for operating said switching devices such that all of said switching devices are automatically switched to transmit entertainment sound-bearing electric signals from said entertainment sound signal production device to their respective speakers when said warning voice sound signal production device is not generating electric signals, but, when said warning voice sound signal production device is generating electric signals, at least one of said switching devices is automatically switched from transmitting entertainment sound-bearing electric signals from said entertainment sound signal production device to its respective speaker to transmitting warning voice sound-bearing electric signals from said warning voice sound signal production device to said respective speaker;
said operating means automatically changing a number of said switching devices which transmit said warning voice sound-bearing electric signal to a respective speaker in accordance with a type of warning voice sound-bearing electric signal which is being produced so that said number is increased as the severity and urgency of the condition represented by the warning voice sound-bearing electric signal increases.

4,389,640
APPARATUS FOR DETECTING LOSS OF AC POWER SUPPLY AND LOSS OF CURRENT
James E. Dawdy, Cambridge, Canada, assignor to Sutherland-Schultz Limited, Kitchener, Canada
Filed Mar. 31, 1981, Ser. No. 249,537
Claims priority, application Canada, Dec. 8, 1980, 366341
Int. Cl.³ G08B *23/00*
U.S. Cl. 340—664 **10 Claims**



1. Apparatus for detecting loss of AC power supply for an electrical conductor and loss of current through the electrical conductor when the power supply is connected thereto, said apparatus comprising voltage responsive means operable to produce a voltage present signal when the power supply is connected to the electrical conductor and a predetermined voltage is present across the conductor and a voltage absent signal when the predetermined voltage is not present across the conductor, current responsive means operable to produce a current present signal when a predetermined current is flowing through the conductor and a current absent signal when the predetermined current is not flowing through the conductor, fault-signalling means connected to said AC power supply for operation thereby, and means responsive to the simultaneous presence of a voltage present signal and a current present signal and to the simultaneous presence of a voltage absent signal and a current absent signal to cause the power supply to operate the fault-signalling means in a no-fault indicating sense, the absence of said AC power supply or the simultaneous presence of an absent signal and a present signal causing the fault-signalling means to indicate a fault condition.

4,389,641
ALPHANUMERIC DISPLAY
Yasuhiro Nakanishi, and Yoshiyuki Fujikawa, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 11, 1981, Ser. No. 272,694
Claims priority, application Japan, Jun. 13, 1980, 55-80353
Int. Cl.³ G09G *3/36*
U.S. Cl. 340—709 **2 Claims**



1. A display device capable of displaying selectively numerical information or character information on a display panel, said display device comprising:
means for sensing if a specific cursor symbol moving along information now on said display panel upon depression of

a specific key reaches an information display section of a predetermined digit length; and

means for displaying selectively said character information or said numerical information in response to the output of said sensing means.

4,389,642

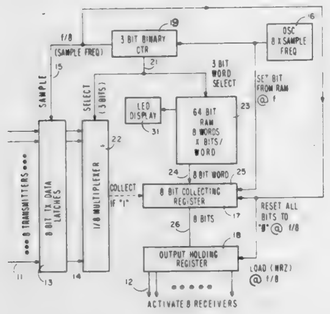
DIGITAL MATRIX SWITCHING

William M. Kahn, 600 Pleasant St., Watertown, Mass. 02154

Filed Jul. 1, 1981, Ser. No. 279,323

Int. Cl.³ H04Q *9/00*

U.S. Cl. 340—825.03 **8 Claims**



1. Switching apparatus comprising,

a plurality of input ports,

a plurality of output ports,

memory means for storing selection signals representative of selected data signal transfer paths between said input ports and said output ports,

collecting register means for receiving sampled data signals from predetermined ones of said input ports and storing a sequence of bit signals representative thereof,

means for sampling said input ports and transferring sampled data signals from selected ones of said input ports to said collecting register means in response to said selection signals provided by said memory means to store a sequence of bit signals representative of the transferred sampled data signals,

means for initially setting each bit signal in said collecting register means to an initial state at the beginning of a sampling interval,

means responsive to coincidence between a bit signal representative of a data signal then sampled by said means for sequentially sampling and a corresponding bit in a selection signal then provided by said memory means for altering the state of a corresponding bit signal during the sampling interval,

and means for transferring the bit signals stored in said collecting register means to said output ports to thereby transfer signals on selected ones of said input ports to selected ones of said output ports in accordance with the selection signal provided by said memory means.

4,389,643

MULTIPLEXED PULSE TONE SIGNAL RECEIVING APPARATUS

Desmond W. Hill, Brentwood Bay, Canada, assignor to Edison Control Corporation, Metuchen, N.J.

Filed Oct. 5, 1981, Ser. No. 308,498

Int. Cl.³ H04Q *9/10;* **H03K** *5/00*

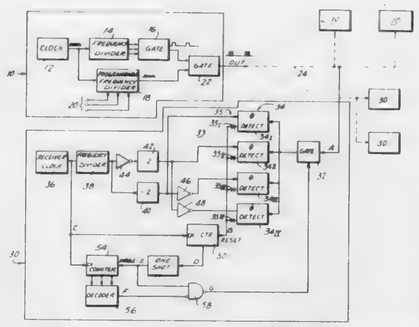
U.S. Cl. 340—825.48 **12 Claims**

1. Apparatus for receiving predetermined ones of multiplexed pulse tone signals, comprising:

tone detector means having an input for receiving a tone signal and operable to detect a tone signal of predetermined frequency;

input gate means coupled to said input of said tone detector means for supplying multiplexed pulse tone signals thereto;

output means coupled to said tone detector means for producing an output signal when said tone detector means detects a tone signal of said predetermined frequency; and



gate control means responsive to said output signal for periodically actuating said input gate means to assume a transmissive condition so as to pass only predetermined ones of said multiplexed pulse tone signals to said tone detector means.

4,389,644

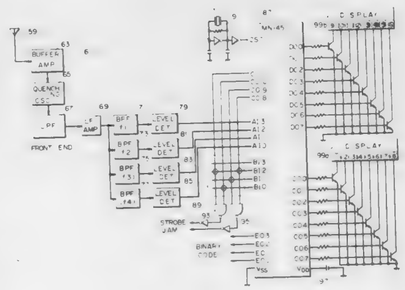
ASYNCHRONOUS TYPE MULTICHANNEL SIGNAL PROCESSING SYSTEM

Toshio Abiko, Ibaragi, and Masayuki Matsuo, Shijonawate, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jan. 21, 1981, Ser. No. 226,874

Int. Cl.³ H04Q *9/12;* **H04B** *1/00*

U.S. Cl. 340—825.52 **16 Claims**



1. An asynchronous type multichannel signal processing system comprising:

a transmitter including;

transmission data generating means for generating data being transmitted,

frequency signal generating means for generating a plurality of frequency signals,

converting means responsive to said transmission data and said frequency signals for converting said transmission data into a transmission signal wherein one unit time period corresponding to one portion of said data being transmitted includes any one of said frequency signals and a group of a plurality of unit time periods constitute an information unit, and

transmitting means for transmitting said transmission signal converted by said converting means to said receiver; and

a receiver including;

receiving means for receiving said transmission signal transmitted from said transmitter, and

received data processing means for repetitively reading the received transmission signal obtained from said receiving means at a plurality of different timings during each said unit time period to produce a plurality of data readings; and

means for determining that said received data is correct when said plurality of data readings which coincide are at least two but not greater than the number of said data readings.

4,389,645

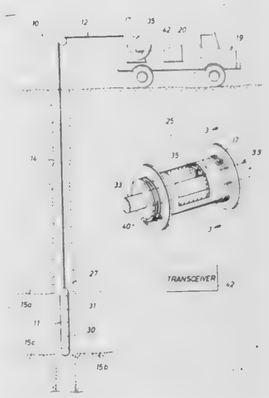
WELL LOGGING FIBER OPTIC COMMUNICATION SYSTEM

Russell P. Wharton, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Sep. 8, 1980, Ser. No. 184,704

Int. Cl.³ G01V *1/40*

U.S. Cl. 340—854 **12 Claims**



1. A well logging system for measuring characteristics of earth formations in a borehole, comprising:

(a) a communication cable having fiber optic means therein for conducting light signals therethrough,

(b) a tool including a sonde connected to one end of said cable,

(c) means in said tool for measuring characteristics of earth formations in the borehole, converting the measurements into modulated light signals, and launching said modulated light signals into said fiber optic means in said cable,

(d) a rotatable winch drum supporting said cable at the upper end of the borehole, and for lowering and raising said cable and tool into and out of the borehole in response to rotation of said winch drum,

(e) transducer means mounted on said drum for rotation therewith and coupled to the end of said cable opposite said tool, for receiving said optical signals and converting them into electrical signals representative of said earth formation measurements,

(f) a receiver mounted outside said drum, and

(g) means for transmitting said electrical signals from said transducer means to said receiver for conveying the information carried by said modulated light signals out of said rotatable winch drum without the use of optical slip rings.

4,389,646

DISPLACEMENT CONVERTING CIRCUIT ARRANGEMENT

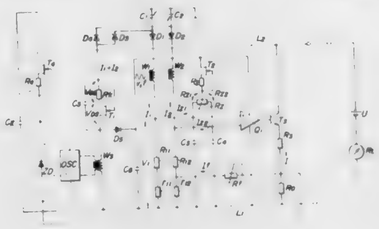
Keiichiro Tago, Kawasaki, Japan, assignor to Fuji Electric Co. Ltd., Kanagawa, Japan

Filed Mar. 31, 1981, Ser. No. 249,351

Claims priority, application Japan, Apr. 30, 1980, 55-58128[U]; Apr. 30, 1980, 55-58129[U]

Int. Cl.³ G08C *19/10;* **G06G** *7/20*

U.S. Cl. 340—870.37 **14 Claims**



1. A displacement converting circuit arrangement comprising:

first and second impedance elements, the impedance of at least one of said elements being variable in response to a mechanical displacement thereof;

means for deriving first and second DC currents, said first and second DC currents being proportional to the impedances of said first and second impedance elements, respectively;

means for deriving a current corresponding to the sum of said first and second DC currents;

a field effect transistor having said current corresponding to the sum of said first and second DC currents flowing between its source and drain electrodes, said field effect transistor maintaining said sum current at a constant value;

means for maintaining at least one of said first and second DC currents at a fixed amount;

a differential amplifier having first and second input terminals and an output terminal, said first and second DC currents being supplied to the first and second input terminals respectively of said differential amplifier; and

an output transistor coupled to the output terminal of said differential amplifier, the current at the output of said output transistor corresponding to the difference between said first and second DC currents, said output current indicating the magnitude of said mechanical displacement.

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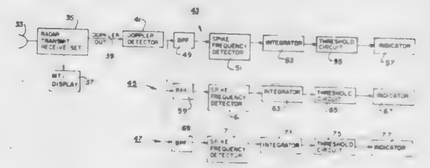
DOPPLER DISCRIMINATION OF AIRCRAFT TARGETS

Michael A. Fanuele, Toms River; Joseph A. McCray, Freehold, and Otto F. Rittenbach, Neptune, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 22, 1980, Ser. No. 219,455

Int. Cl.³ G01S *13/52, 13/00*

U.S. Cl. 343—7.7 **2 Claims**



1. A Doppler radar capable of discriminating between different types of aircraft having rotating elements including cir-

cuitry for sensing the occurrence of increases in the Doppler signal amplitude of target returns resulting from increases in cross section of the rotating elements as they become orthogonal to the incident radar beam of said radar, said circuitry comprising, Doppler detector means for detecting the Doppler signal of said radar including a direct reference voltage indicative of the body of said aircraft and a spike frequency component indicative of the orthogonal rotating element of a particular aircraft type, bandpass filter means coupled to the Doppler detector, said bandpass filter means having a wide passband that blocks the direct voltage and passes the spike frequency component, a threshold circuit and a pulse stretcher connected in cascade to the output of said bandpass filter, said threshold circuit providing an output pulse upon the occurrence of said spike frequency above a set threshold, a microprocessor adapted to receive the output of said pulse stretcher, a clock connected to said microprocessor, and a plurality of indicators connected to the output of said microprocessor, each indicator being associated with a respective aircraft type, said microprocessor being adapted to count the number of stretched pulses occurring in a predetermined time period determined by the frequency of said clock and to operate an indicator if the frequency of said stretched pulses corresponds closely to the rotating element spike frequency of an aircraft represented by that indicator.

4,389,648

DOPPLER RADAR SYSTEM

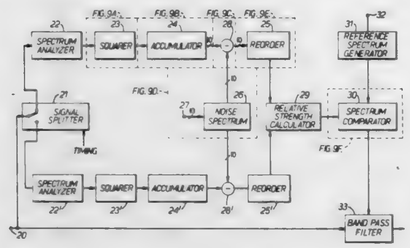
Anthony P. Luscombe, Chelmsford, and Seville R. Brooks, Ongar, both of England, assignors to The Marconi Company Limited, Chelmsford, England

Filed Jul. 30, 1980, Ser. No. 173,912

Claims priority, application United Kingdom, Jul. 31, 1979, 7926636

Int. Cl.³ G01S *13/60*

U.S. Cl. 343—8 **10 Claims**



1. A Doppler radar system including an antenna having a main lobe whose aspect is fixed relative to the radar system; means for separating a signal received by the antenna into at least two signal parts reflected at different times from respective different regions defined by said main lobe, said different regions having a common range of target positions; means for analyzing each signal part into components having different Doppler shifts; means for calculating for each said position, a value constituting a measure of the relative strengths of those components of the two signal parts which are derived from reflections off that position; and selecting means for using the calculated values to determine the frequency components of the received signal derived from reflections in a particular direction or range of directions within the said main lobe.

4,389,649

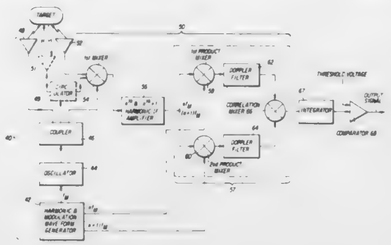
DUAL CHANNEL CORRELATOR FOR AN FM-CW RANGING RADAR

Ross A. Parkhurst, Bethesda; David L. Rodkey, Kensington, and John O. Wedel, Ellicott City, all of Md., assignors to The United States Army as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 14, 1980, Ser. No. 196,409

Int. Cl.³ G01S *13/02*

U.S. Cl. 343—17.5 **16 Claims**



1. A method of eliminating the sidelobe ambiguity in the range response of an FM-CW radar comprising the steps of:

transmitting a periodic FM-CW signal with a selected periodic frequency;

receiving a reflected signal which comprises a reflected portion of the transmitted signal;

combining the reflected signal with a first reference signal to obtain a first combination signal;

amplifyng a selected portion of the first combination signal;

combining the amplified selected portion of the first combination signal with second and third reference signals to obtain second and third combination signals; and

combining the second combination signal with the third combination signal to obtain a fourth combination signal with a main lobe of one polarity and sidelobes of an opposite polarity.

4,389,650

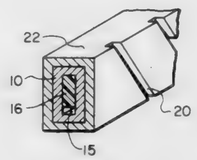
LINE SOURCE ANTENNA FOR ELECTRONIC BEAM SCANNING

Richard A. Stern, Allenwood, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 10, 1980, Ser. No. 205,361

Int. Cl.³ H01Q *13/10*

U.S. Cl. 343—768 **13 Claims**



1. In a line source microwave antenna coupled to a source of RF energy and adapted to provide electronic beam scanning in a plane including the line source by means of an electronic driver circuit, the improvement comprising:

a longitudinal section of rectangular waveguide microwave transmission line having broad and narrow side walls enclosing a central area and including a lengthwise array of radiation means periodically located in one side wall of said waveguide section;

a hollow rectangular monolithic ferrite phase shifter located within said waveguide section extending continuously for the length of all of said radiation means of said array and including phase shifter control means coupled to said driver circuit for controlling the operative state of said ferrite phase shifter in response to output signals from said driver circuit and thereby effect scanning a beam of RF energy radiated from said array of radiation means; and

said waveguide section having internal transverse cross-sectional height and width dimensions of said central area fitting closely about and substantially equal to the external transverse cross-sectional height and width dimensions of said ferrite phase shifter.

4,389,651

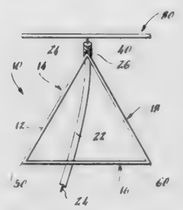
TRIANGULAR ANTENNA

Philip P. Tomasky, 73 Warner Hill Rd., Southport, Conn. 06490

Filed May 4, 1981, Ser. No. 260,373

Int. Cl.³ H01Q *9/28*

U.S. Cl. 343—794 **11 Claims**



1. A broadband radio frequency antenna comprising:

an electrically conductive triangle-shaped first frame member;

a radiator rod electrically insulated from said frame member and situated adjacent and perpendicular to the bisector of one corner of said frame member; and

connector means for electrically connecting an antenna cable to said radiator member and said frame member.

4,389,652

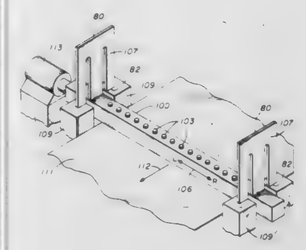
BIDIRECTIONAL INK JET PRINTING

Kenneth H. Fischbeck, Dallas, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 22, 1981, Ser. No. 304,491

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—1.1 **1 Claim**



1. A method of operating a drop-on-demand ink jet ejector, which comprises:

(a) providing an ink jet ejector on a support member,

(b) oscillating said support member,

(c) moving a record-receiving member in a direction perpendicular to the direction of oscillation of said support member,

(d) providing deflection electrodes on said support member on each side of said ink ejector in a direction parallel to the direction of oscillation of said support member,

(e) ejecting droplets from said ejector, and

(f) electrostatically deflecting droplets ejected from said ejector an amount sufficient to ensure that any two contiguous droplets are spaced from each other a distance in the direction parallel to the direction of oscillation of said support member that does not vary regardless of the support member position.

4,389,653

LINE RECORDING DEVICE

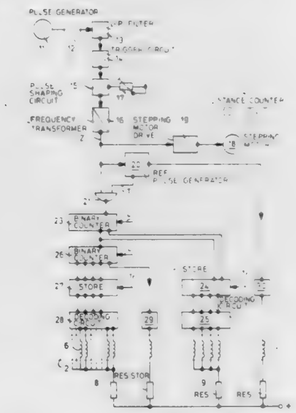
Manfred Fichter, Königsfeld, Fed. Rep. of Germany, assignor to Kienzle Apparate GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Filed May 14, 1981, Ser. No. 263,564

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018744

Int. Cl.³ G01D *9/00, 15/08*

U.S. Cl. 346—49 **6 Claims**



3. A recording device for measuring variable values and recording them on a record carrier, comprising:

moving means for moving the record along a given direction, a plurality of recording means for defining separate tracks along the direction when the record carrier moves and for tracing lines along the tracks when actuated;

said plurality of recording means forming a first group and a second group, measuring means coupled to said recording means for measuring the variable value;

energizing means for energizing a different recording means of the first group for each one of a number of a ranges of measured values and for energizing a different recording means of the second group for each one of a number of increments of measured values within each range, each recording means of the second group being energized for the corresponding increment t within each range.

4,389,654

INK JET DROPLET GENERATOR FABRICATION METHOD

Ari Bar-on, Rochester, and John R. Debesis, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 1, 1981, Ser. No. 307,393

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—75 **8 Claims**

1. A method for fabricating an ink jet drop generator comprising the steps of:

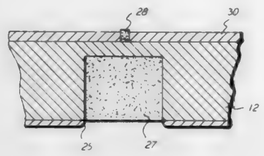
forming a metallic body having an ink cavity therein and a substantially planar nozzle surface;

extending the cavity into said body to within a specified distance of planar nozzle surface at at least one location;

applying a dielectric material to the region of the planar

nozzle surface in alignment with the location at the cavity extension;

electroforming a nozzle plate by adherently plating a metallic layer to other regions of said planar surface not covered by dielectric material; and



etching said metallic body in the region between the cavity extension and the planar surface to create passage-way between the cavity and the planar surface.

4,389,655

OPTICAL DEVICE FOR NON-CONTACT RECORDING AND PARTICULAR FACSIMILE REPRODUCTION OF IMAGES AND TEST

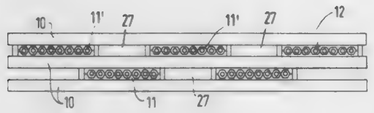
Peter Baues, Krailling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 4, 1980, Ser. No. 184,002

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938301

Int. Cl.³ G01D *9/42*

U.S. Cl. 346—107 R **19 Claims**



2. In an optical display device for non-contact recording information on a recording surface and in particular for use in facsimile reproduction of images and text, said device having a cylindrical recording carrier, a recording head having a plurality of light waveguides in the form of glass fibers having exit ends and entrance ends, said recording head being fixedly mounted with the exit ends facing the cylindrical carrier surface and extending linearly with a dense packing adjacent one another, said entrance end of each of the fibers being in communication with a light source for receiving modulated light to transmit along the fiber to the exit end the improvements comprising the recording head being a multi-recording head of individual sub-recording heads, said individual sub-recording heads being arranged in at least two rows separated from one another by a support member of synthetic material, adjacent individual sub-recording heads in each row being spaced from each other by spacing members with the sub-recording heads of one row overlying the spacing members of the other row and being offset from the sub-recording heads of said other row, each of said sub-recording heads including at least one adjustment plate having a plurality of individual grooves extending inward from one edge surface of the plate with one groove being provided for each of the waveguides, said waveguide being secured in said grooves with the exit ends being adjacent said one edge surface and being oriented in a line extending parallel to the axis of the cylindrical carrier in a fixed true-to-size relationship, and each of said sub-recording heads including a light source member secured thereon, said light source member having the individual light sources for each of the waveguides and means enabling individual exciting of each of the light sources in accordance with the image information to be produced, said individual light sources being arranged at a spacing corresponding to the spacing of the entrance ends of said waveguide so that when secured to the recording head, the individual light sources are aligned with the respective entrance ends of the fibers.

4,389,656

MULTIPLE ELECTRODE SYSTEM

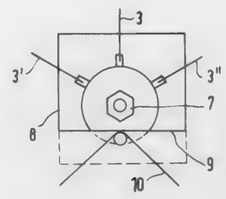
Stephan Hellstab, March-Holzhausen, Fed. Rep. of Germany, assignor to Hugo Sachs Elektronik KG, Fed. Rep. of Germany

Filed Apr. 10, 1981, Ser. No. 252,734

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3013773

Int. Cl.³ G01D *15/08*

U.S. Cl. 346—139 C **13 Claims**



1. A multiple electrode apparatus comprising a stack of alternately arranged electrically insulating plates and electrically conductive plates, the insulating plates being in the form of substantially identical discs as are the conductive plates, each disc having a bore and being mounted on an electrically insulating mounting member, the discs being pressed together on the member by end pressure plates, and said stack being cast in a block of synthetic resin having one side surface-ground up to the conductive discs.

4,389,657

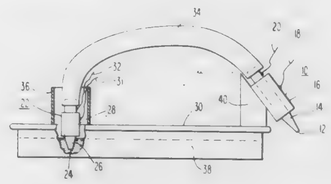
INK JET SYSTEM

James McMahon, New Milford, Conn., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 3, 1980, Ser. No. 203,590

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—140 R **12 Claims**



1. An ink jet system comprising:

an ink jet including an ink chamber, a jet orifice and a jet electromechanical transducer coupled to said chamber for projecting droplets from said orifice as the volume of said chamber changes in response to the state of energization of said transducer;

an ink supply;

a pump coupled to said jet and adapted to communicate with said ink supply, said pump comprising a pump electromechanical transducer and a pump chamber including an orifice for receiving ink through said orifice, said pump chamber being coupled to said pump transducer so as to change the volume of said pump chamber as the state of energization of said pump transducer changes thereby pumping ink toward said jet wherein said pump orifice is characterized by substantially the same maximum cross-sectional dimension of said orifice; and

an ink reservoir for containing said supply of ink, said pump orifice being immersed in said supply within said reservoir.

4,389,658

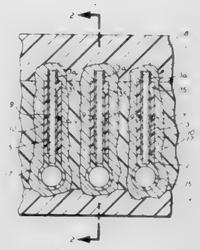
INK JET ARRAY

Theodore P. Perna, Garland; Curt R. Raschke, Dallas, and William L. Baker, Jr., Lewisville, all of Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 31, 1982, Ser. No. 364,066

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **1 Claim**



1. A fluid impulse jet in which a rectangular transducer is arranged abaxially to a fluid channel wherein said fluid channel is formed in a relatively rigid material, and the drive pulse from said transducer is transmitted through said relatively rigid material to said fluid channel.

4,389,659

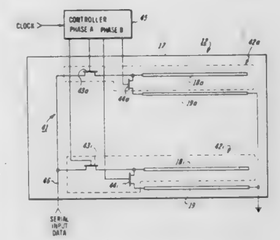
ELECTRO-OPTIC LINE PRINTER

Robert A. Sprague, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 17, 1980, Ser. No. 187,911

Int. Cl.³ G01D *15/00, 9/46;* **G02F** *1/01*

U.S. Cl. 346—153.1 **20 Claims**



1. In an electro-optic line printer having

a multi-gate light valve for p-modulating a sheet-like, collimated light beam in accordance with input data samples of finite duration representing individual picture elements of an image, and

p-sensitive optics for imaging the modulated light beam onto a photosensitive recording medium which advances in a cross line direction relative to said light valve, whereby said recording medium is exposed in an image configuration;

said light valve including

an optically transmissive electro-optic element having a predetermined optical axis, and

a plurality of individually addressable electrodes intimately coupled to said electro-optic element, said electrodes being spaced apart orthogonally relative to said optical axis;

the improvement comprising

respective sample and hold circuits coupled to said electrodes for maintaining the data samples for each line of said image on said electrodes for period of time longer than the duration of any of said data samples, thereby increasing the exposure of said recording medium;

said sample and hold circuits including capacitive storage means;

said capacitive storage means being defined in substantial part by distributed capacitance between said electrodes and said electro-optic element.

4,389,660

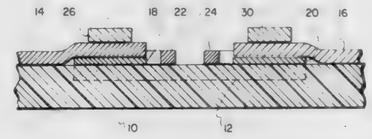
HIGH POWER SOLID STATE SWITCH

D. Richard Decker, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 31, 1980, Ser. No. 174,053

Int. Cl.³ H01L *29/48, 29/80, 27/02*

U.S. Cl. 357—22 **10 Claims**



1. An integrated dual gate switch fabricated on a semi-insulating substrate, comprising:

a region of one conductivity type in said substrate;

an input line on said substrate and coupled to said region by a first ohmic contact;

an output line on said substrate spaced from said input line and coupled to said region by a second ohmic contact;

a first gate on said substrate between said input line and said output line;

a second gate on said substrate between said first gate and said output line, said first and second gates being biassed in the on state of said switch at no less than 0 Volts with respect to said input and output lines;

a first capacitive coupling between said input line and said first gate, including:

a first conductor on said substrate and overlapping a portion of said input line and a portion of said first gate; and

a first dielectric layer between said first gate and said first conductor; and

a second capacitive coupling between said output line and said second gate, including:

a second conductor on said substrate and overlapping a portion of said output line and a portion of said second gate; and

a second dielectric layer between said second gate and said second conductor,

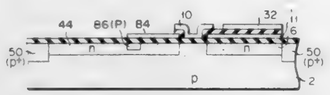
whereby any AC voltage appearing across said switch in the off state will be coupled to said first and second gates by said first and second capacitive couplings to maintain said switch in the off state.

4,389,661

SOLID STATE IMAGE-SENSING DEVICE CAPABLE OF SHIFTING SIGNAL CHARGES TO A CHARGED TRANSFER REGION AT A HIGH SPEED

Tetsuo Yamada, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 23, 1981, Ser. No. 227,935
Claims priority, application Japan, Jan. 25, 1980, 55-6990
Int. Cl.³ H01L *29/78;* **G11C** *19/28*
U.S. Cl. 357—24 **4 Claims**



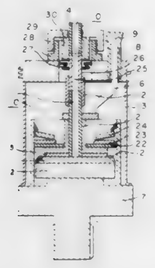
1. A solid state image-sensing device which comprises:
a semiconductor substrate of one conductivity type;
a photoelectric conversion section including at least one semiconductor region having the opposite conductivity type as that of the semiconductor substrate and formed in the surface area of said semiconductor substrate;
a charge transfer section formed apart from the photoelectric conversion section;
a charge-storing section formed spatially between said photoelectric conversion section and said charge transfer section, and including a second semiconductor region integrally formed with the first semiconductor region of said photoelectric conversion section and having the opposite conductivity type as that of said semiconductor substrate, and a first electrode insulatively formed on said second semiconductor region;
a charge-shifting section provided between said photoelectric conversion section and said charge-storing section to shift charges generated in said photoelectric conversion section to said charge-storing section, and including a third semiconductor region formed in said second semiconductor region in a position adjacent to said first semiconductor region and having the same conductivity type as said semiconductor substrate, and a second electrode insulatively formed on said third semiconductor region and in electrical connection with said first electrode; and
a charge-shift control section disposed between said charge-storing section and said charge transfer section to control the operation of shifting charges from said charge-storing section to said charge transfer section.

4,389,662

LIGHT-ACTIVATED SEMICONDUCTOR DEVICE

Tatsuo Miyajima, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1980, Ser. No. 176,104
Claims priority, application Japan, Aug. 28, 1979, 54-110080
Int. Cl.³ H01L *27/14, 23/42*
U.S. Cl. 357—30 **5 Claims**



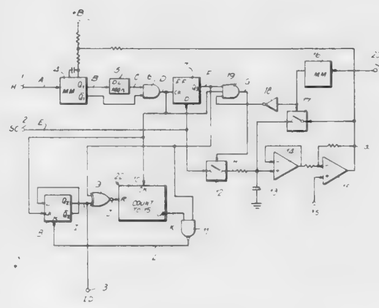
1. In a light activated semiconductor device comprising a semiconductor element activated by an optical signal; at least two main electrodes, mutually insulated for passing current from the activated semiconductor element; a casing comprising said main electrodes and hermetically sealing the semiconductor element; and a light cable passing through the casing by means of a light transmitting passage so as to transmit the optical signal to the semiconductor element, an improvement comprising:
a hermetically formed light transmitting glass optically connected to said light cable, said glass being hermetically held by and contacting a flexible flange fixed to a part of the casing containing said light transmitting glass; and
pressure means inside said casing for press-contacting said semiconductor element with said main electrodes.

4,389,663

APPARATUS FOR INDICATING THE PHASE OF THE COLOR SUBCARRIER SIGNAL IN EACH LINE OF A COLOR TELEVISION SIGNAL

Mitsushige Tatami, Ebina, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 16, 1981, Ser. No. 274,260
Claims priority, application Japan, Jun. 26, 1980, 55-87140
Int. Cl.³ H04N *9/46, 5/76*
U.S. Cl. 358—19 **16 Claims**



1. Apparatus for indicating whether the phase of the color subcarrier signal of a color television signal is positive or negative, comprising: phase detecting means for detecting the phase of the color subcarrier signal which is present at a predetermined time following the occurrence of the horizontal synchronizing signal of said color television signal and for producing a phase indicating signal; and automatic phase adjustment means for sensing relative phase shifts between said horizontal synchronizing signal and said color subcarrier signal and for adjusting the actual time at which the phase of said color subcarrier signal is detected in accordance with sensed relative phase shifts.

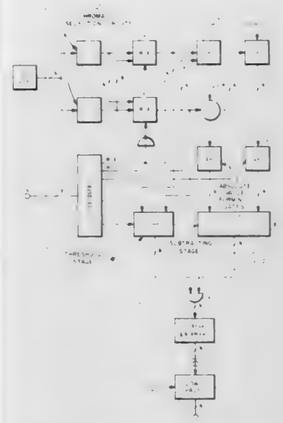
4,389,664

SYSTEM AND METHOD TO DERIVE A DIGITAL VIDEO CONTROL SIGNAL

Herbert Robitzsch, Erzhausen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 13, 1981, Ser. No. 282,730
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1980, 3027054
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—22 **17 Claims**

1. Method of deriving a digital control signal of video frequency from a digital video signal (Y; U, V) comprising the steps of
selecting a desired key color;
deriving a first multiplying factor (m) corresponding to the slope of the portion of the angle that determines desired passage through null of the key color;
wherein the desired key color is represented by an angle ϕ in the color plate of chroma components (U, V);
alternately multiplying the digitized respective types of chroma signal components (U, V) with said first factor to obtain a first multiplied respective chroma signal component (u·m; v·m);
subtracting the multiplied chroma signal component of the first type (u·m) from the chroma signal component of the other type (then v) to provide a subtraction signal (v−u·m; u−v·m);
forming an absolute value of said subtracted signal (|v−u·m|; |u−v·m|);
selecting an angle window, or band of the chroma signal sector;



deriving a second multiplying factor (c) corresponding to the selected angle window or band of the chroma signal component, or sector;
alternately multiplying the digitized respective types of the chroma signal components, in phase synchronism with said first multiplying step, with said second factor to obtain a second multiplied chroma signal component (u·c; v·c);
forming an absolute value of said multiplied second chroma signal components (|u·c|; |v·c|);
comparing said absolute values
$|v-u\cdot m| \geqq |u\cdot c|$; $|u-vm| \geqq |uv\cdot c|$
and deriving a comparison signal;
providing a minimum chroma saturation signal (b) representative of a minimum chroma saturation level;
and furnishing said digital control signal if said comparison signal has a positive value and is at least equal to the minimum chroma saturation level signal (b).

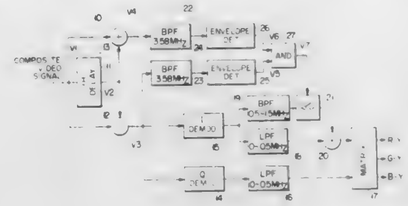
4,389,665

COLOR DEMODULATION DEVICE FOR USE IN COLOR TELEVISION RECEIVERS

Nobuya Nagao, and Teturou Sakai, both of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 22, 1981, Ser. No. 304,591
Claims priority, application Japan, Sep. 30, 1980, 55-135198
Int. Cl.³ H04N *9/50*
U.S. Cl. 358—23 **6 Claims**

1. A color demodulation device for demodulating carrier chrominance signal in a composite video signal, said composite video signal having luminance signal component and carrier chrominance signal component multiplexed in frequency-interleaved relation with the luminance signal component, said chrominance signal component being formed by quadrature modulation (carrier-suppressed AM) of a color subcarrier with an I signal and a Q signal, said I signal having a frequency band wider than the Q signal, comprising:
signal separation circuit means using a comb filter for separating the composite video signal into the luminance and carrier chrominance signal components, said luminance and chrominance signal components being extracted from first and second outputs of said signal separation circuit means, respectively;
line correlation detecting means coupled to said first and second outputs of said signal separation circuit means for detecting the correlation between video signals on adjacent horizontal scanning lines;
I signal demodulation circuit means coupled with said second output of said signal separation circuit means for demodulating the I signal;



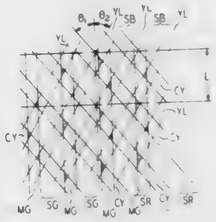
Q signal demodulation circuit means coupled with said second output of said signal separation circuit means for demodulating the Q signal; and
matrix circuit coupled to said I and Q signal demodulation circuit means,
said I signal demodulation circuit means being responsive to said line correlation detecting means to perform wideband demodulation of the I signal so that the I signal is applied in a wide frequency band to said matrix circuit means where there exists line correlation, and to perform narrowband demodulation of the I signal so that the I signal is applied to said matrix circuit means in a narrow frequency band where there exists no line correlation.

4,389,666

COLOR TELEVISION CAMERA SYSTEM

Hiromichi Kurokawa, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 17, 1981, Ser. No. 244,722
Claims priority, application Japan, Mar. 31, 1980, 55-41333
Int. Cl.³ H04N *9/07*
U.S. Cl. 358—47 **8 Claims**



1. A color television camera system comprising an image pickup tube, color filter means for forming color separated images of a viewed object on said image pickup tube, and means for deriving composite color video signals from said image pickup tube representative of said color separated images, said color filter means having a first set of parallel color stripes for generating a first chrominance signal component

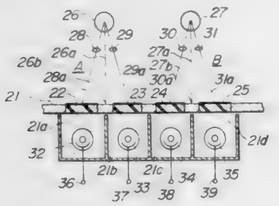
having a first frequency band and having in-phase carrier with respect to every horizontal scanning, a second set of parallel color stripes and a third set of parallel color stripes for generating second and third chrominance signal components having frequency bands on both sides of said first frequency band, respectively with each carrier phase of said second and third chrominance signal components being reversed with respect to every horizontal scanning, wherein said first set of color stripes are oriented vertically and said second and third set of stripes are angularly displaced relative to each other and relative to said first set of color stripes and wherein the ratio of the width t to pitch T for each of said first, second and third set of color stripes is greater than 0.25 and less than 0.5.

4,389,667

FLYING SPOT SCANNER FOR USE IN A COLOR PRINTING PROCESS SIMULATING APPARATUS

Satoru Horiguchi, Iruma, and Takeshi Sasaoka, Kawasaki City, both of Japan, assignors to Dai Nippon Printing Co. Ltd. and Ikegami Tsushinki Co. Ltd., both of Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 240,068
Claims priority, application Japan, Mar. 10, 1980, 55-29893
Int. Cl.³ H04N *1/10, 5/84*
U.S. Cl. 358—75 **4 Claims**



1. In combination with an apparatus for simulating a color printing process, a flying spot scanner for scanning a set of first, second, third and fourth color separation films formed from a color original, the color original being displayed on a color monitor by processing primary color signals derived by scanning said set of color separation films, said flying spot scanner comprising

a film setting stage having first, second, third and fourth transparent sections on which said first, second, third and fourth color separation films are placed, respectively;

a first optical scanning system arranged above said first and second transparent sections for optically scanning said first and second color separation films placed on said first and second transparent sections, respectively, said first optical scanning system comprising a first cathode ray tube for producing a first scanning raster on its screen and having an optical axis which intersects perpendicularly the film setting stage at the midpoint of said first and second color separation films, and first and second lens systems arranged on lines extending from the center of the screen of said first cathode ray tube and the centers of said first and second color separation films, respectively, for projecting images of said first scanning raster on said first and second color separation films, respectively; and

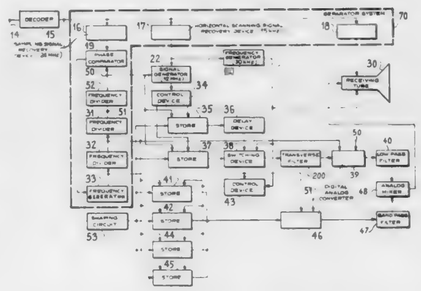
a second optical scanning system arranged above said third and fourth transparent sections for optically scanning said third and fourth color separation films placed on said third and fourth transparent sections, said second optical scanning system comprising a second cathode ray tube for producing a second scanning raster on its screen and having an optical axis which intersects perpendicularly the film setting stage at the midpoint of said third and fourth color separation films, and third and fourth lens systems arranged on lines extending from the center of the screen of said second cathode ray tube and the centers of said third and fourth color separation films, respectively, for projecting images of said second scanning raster on said third and fourth color separation films, respectively.

4,389,668

HIGH DEFINITION TELEVISION SYSTEM

Michel Favreau, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 24, 1981, Ser. No. 276,998
Claims priority, application France, Jun. 27, 1980, 80 14352
Int. Cl.³ H04N *3/34, 5/02*
U.S. Cl. 358—83 **5 Claims**



1. A high definition television system comprising on transmission a camera incorporating a camera or pickup tube having an input supplying a video frequency signal and a first signal generator for generating scanning signals **1H** and **1V** necessary for the operation of the camera or pickup tube, said signals **1H** and **1V** producing an "oscillatory" scan having a line frequency F_L and a ripple frequency F, and on reception a picture restoration device incorporating a signal input, a receiving tube having an input, a second signal generator for generating scanning signals **2H** and V necessary for the operation of the receiving tube, said signals **2H** and V producing a "linear" restoration having a line frequency $2F_L$, a first processing channel having an input coupled to the input of the picture restoration device and an output for supplying a first signal corresponding to the low part of the spectrum of the input signal of the receiving tube, a second processing channel having an input coupled to the input of the picture restoration device and an output for supplying a second signal corresponding to the upper part of the spectrum of the input signal of the receiving tube, and an analog mixer having first and second inputs respectively coupled to the output of the first processing channel and to the output of the second processing channal and an output coupled to the input of the receiving tube.

4,389,669

OPTO-VIDEO INSPECTION SYSTEM

Daniel Epstein, Oceanside, and Robert Lieberman, Bethpage, both of N.Y., assignors to ILC Data Device Corporation, Bohemia, N.Y.

Filed Feb. 27, 1981, Ser. No. 238,831
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—101 **30 Claims**

1. Inspection apparatus for inspecting a plurality of target sites on miniaturized devices comprising:

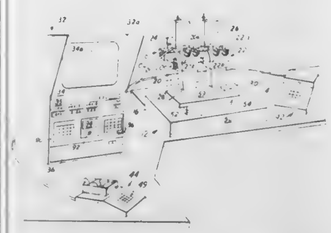
XY table means having a mounting surface provided with plural mounting means;

positioning means coupled to said XY table means for moving said mounting surface in mutually perpendicular directions;

optical viewing means positioned above said mounting surface for enabling an operator to view the site on the surface of said table means beneath said optical viewing means;

plural holding means each being removably receivable on one of said mounting means for accurately positioning at least one of said miniaturized devices upon said mounting surface;

microprocessor means coupled to said positioning means for positioning selected portions of said miniaturized devices in a sequential fashion beneath said optical viewing means



in a predetermined sequence in accordance with a program stored in said microprocessor means; and

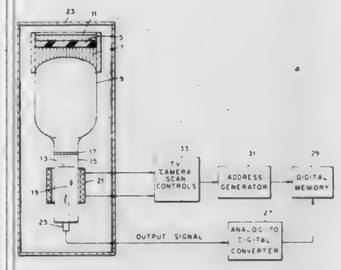
video display means coupled to said optical viewing for displaying the site presented by said optical viewing means enabling an operator to view the site under inspection through either the optical viewing means or the video display means.

4,389,670

ELECTRONIC METHOD FOR AUTOFLUOROGRAPHY OF MACROMOLECULES ON TWO-D MATRICES

Jackson B. Davidson, and Arthur L. Case, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 30, 1981, Ser. No. 335,998
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—111 **9 Claims**



1. An autofluorographic method of detecting and quantifying labeled macromolecules resolved in a matrix in which light spots are produced which correspond to the location and quantity of said macromolecules in said matrix, including the steps of:

exposing said matrix to a television camera system having a lensless, intensified, light sensitive target means on which an electric charge image is accumulated corresponding to said light patterns of said matrix;

scanning said target in a raster with an electron beam to remove the accumulated charge image from said target, and

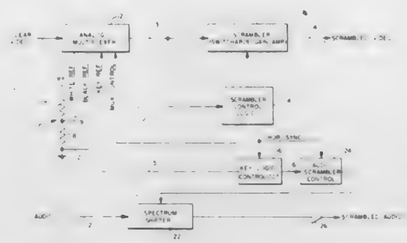
producing output signals indicative of the location and quantity of the electric charge removed from said charge image on said target.

4,389,671

DIGITALLY-CONTROLLED ANALOG ENCRYPTON

Ronald S. Posner, Indian Harbor Beach; Charles R. Burr, Jr., Palm Bay, and David K. Campbell, Melbourne Beach, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 29, 1980, Ser. No. 191,844
Int. Cl.³ H04N *7/16*
U.S. Cl. 358—124 **11 Claims**



1. An apparatus for scrambling a television signal comprising

controllable means connected to receive said television signal for selectively inverting the polarity of the signals applied thereto;

scrambler control logic means responsive to synchronizing pulses in said television signal for operating said controllable means to invert the polarity of those portions of said television signal representing randomly-selected horizontal lines of a television picture, including a pseudorandom noise generator providing an output signal applied to said controllable means for selecting the horizontal lines to be inverted;

means for compensating for differential non-linearities introduced into said television signal due to gain variations and level shifting caused by the selective inversion of the polarity of said horizontal lines of a television picture by said controllable means and said scrambler control logic means, said compensating means including signal generating means for generating a calibration signal representing block and white reference levels for said television signal; and

analog multiplexer means for inserting said calibration signal into a horizontal line portion of said television signal, which forms part of the vertical retrace interval thereof, for use in adjusting both the throughput gain and said throughput offset of the television signal at a receiving station, and further including

key logic control means responsive to synchronizing pulses in said television signal for generating key code signals to control said pseudorandom noise generator, said analog multiplexer means being connected to said key logic control means for inserting said key code signals into a horizontal line portion of said television signal, which forms part of the vertical retrace interval thereof, and

wherein the output of said analog multiplexer is applied to said controllable means for scrambling, and said scrambler control logic means includes key detector means connected to the output of said analog multiplexer for setting the state of said pseudorandom noise generator to correspond to a sequence designated by said key code signals upon detection of said signals, and

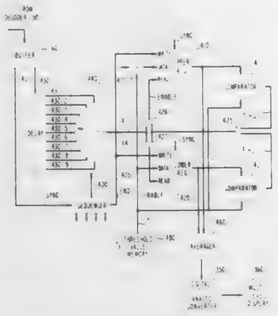
wherein said key logic control means includes a shift register, code selector means for applying said key code signals to said shift register, and key generation control means including a second pseudorandom noise generator responsive to synchronizing pulses in said television signal for randomly shifting the contents of said shift register out to said analog multiplexer means.

4,389,672

DISPLAY OF PSEUDO-GRAY SCALE PICTURE SIGNALS ON MULTILEVEL DISPLAYS

Edward G. Bowen, Laurence Harbor, and Arun N. Netravali, Westfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 2, 1981, Ser. No. 230,458
Int. Cl.³ H04N *7/12*
U.S. Cl. 358—160 **23 Claims**



1. Apparatus for estimating the intensity values of picture elements (pels) in a picture processed by comparing said intensity values of said pels with respective threshold values of said picture elements so as to form a pseudo-gray level signal, comprising:

means for providing an indication of the threshold values corresponding to said picture elements, and

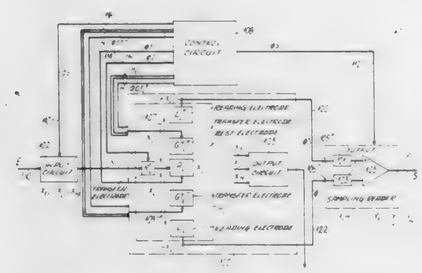
means jointly responsive to said threshold value indications and said pseudo-gray level signal for forming said intensity value estimates.

4,389,673

HADAMARD TRANSFORMER USING CHARGE TRANSFER DEVICES

Claude Despois, 27, rue Pasteur Bat. B, Appt. 208, and Jean-Claude Rebourg, 95, Avenue de la Clairiere, both of 78120 Rambouillet, France

Filed Mar. 9, 1981, Ser. No. 242,120
Claims priority, application France, Mar. 11, 1980, 80 05406
Int. Cl.³ H04N *5/14;* **G06G** *7/12*
U.S. Cl. 358—160 **14 Claims**



1. A Hadamard transformer which makes a group of N transformed samples $Y_1 \ldots Y_j \ldots Y_N$ correspond to a group of given samples $X_1 \ldots Xi \ldots X_N$, each having transformed samples being defined by a weighted sum of N given samples, the weighting coefficients being equal to +1 and −1, wherein it comprises:

(A) a charge transfer device incorporating:

(a) N rest electrodes $R_1 \ldots R_i \ldots R_N$ preceded by N transfer electrodes $R_1' \ldots R_i' \ldots R_N'$

(b) 2N reading electrodes, which rest electrodes R_i being positioned between a first reading electrode L_i^+ and a second reading electrode L_i^-;

(c) 2N transfer electrodes GT_i^+ and GT_i^- positioned between each rest electrode R_i and the associated reading electrodes L_i^+ and L_i^-;

(B) an input circuit able to convert the samples $X_1 \ldots X_i \ldots X_N$ into proportional charge groups;

(C) a means for injecting these charge groups beneath the rest electrodes in such a way that the charges corresponding to the samples $X_1 \ldots X_i \ldots X_N$ are respectively positioned beneath the electrodes $R_1 \ldots R_i \ldots R_N$;

(D) a differential charge reader with two inputs, one positive and the other negative, the reading electrode L_i^+ being connected to the positive input and the reading electrode L_i^- to the negative input and to an output supplying the transformed samples $Y_1 \ldots Y_j \ldots Y_N$;

(E) a control circuit having a first output connection connected to the rest electrodes R_i and carrying a signal ϕ_1 and a second output connection connected to the transfer electrodes R_i and carrying a signal ϕ_2 in phase opposition to ϕ_1, a first group of N output connections connected to the N transfer electrodes GT_i^+ and carrying signals ϕGT_i^+ and a second group of N output connections connected to the N transfer electrode GT_i^- and carrying signals ϕGT_i^-, said signals ϕ_1, ϕ_2, ϕGT_i^+ and ϕGT_i^- being able to firstly control the transfer of charges positioned beneath each rest electrode to one of the two associated reading electrodes, then the return of these charges to said rest electrodes, this taking place N times to obtain the N transformed samples.

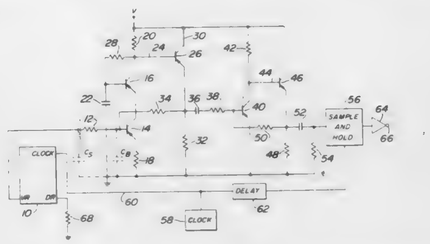
14. A Hadamard transformer according to claim **1**, wherein it is integrated into a picture analyser of the charge transfer type, the input circuit of the transformer being eliminated, its input being directly connected to the output of the picture analyser.

4,389,674

PREAMPLIFIER FOR LOW VOLTAGE SIGNALS IN THE PRESENCE OF HIGH VOLTAGE NOISE

James J. Hitt, Willow Grove, and Scott L. Kern, Perkasie, both of Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Filed Mar. 5, 1981, Ser. No. 240,660
Int. Cl.³ H04N *3/14;* **H03K** *5/159*
U.S. Cl. 358—213 **7 Claims**



1. An improved illumination detecting image sensing device comprising:

a source of clock pulses;

a solid state line scanner having a plurality of photodiodes, a clock pulse input connected to said source of clock pulses for scanning said photodiodes to produce a series of switched signals representative of the illumination level of said photodiodes, a video recharge gate terminal at which said series of switched signals appear, and a dummy recharge gate terminal for producing a series of switched signals independent of said illumination;

an input resistor;

a single-ended preamplifier having an input and an output with said input connected to said video recharge gate terminal through said input resistor;

sample and hold means having a signal input, a signal output, and a timing input with said signal input connected to said output of said preamplifier to hold at its signal output a signal level corresponding to the level of the signal applied to said signal input at the time that a pulse is applied to said timing input; and

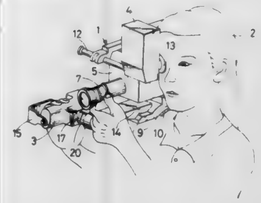
delay means connected between said source of said clock pulses and said timing input of said sample and hold means to delay the sampling time of said sample and hold means until the signal from said preamplifier output has reached a maximum value.

4,389,675

TELEVISION CAMERA APPARATUS

Susumu Suzuki, Ayase, and Akitoshi Okuma, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 31, 1981, Ser. No. 249,655
Claims priority, application Japan, Apr. 5, 1980, 55-46016[U]
Int. Cl.³ H04N *5/26*
U.S. Cl. 358—229 **3 Claims**



1. A portable television camera apparatus comprising:

(A) a camera body housing having a lens mount to which a lens body is mounted;

(B) a shoulder brace secured to a bottom portion of said camera body housing;

(C) a handgrip and mount provided on an arm which extends from said shoulder brace, said handgrip mount constructed as that said handgrip can be interchangeably mounted on either side of said arm; and

(D) a view finder mount including a mounting rod which extends laterally from said camera body and on which said electronic view finder is secured, to interchangeably mount said electronic view finder on either side of said camera body.

4,389,676

TELEVISION RECEIVER HIGH VOLTAGE PROTECTION CIRCUIT

Alvin R. Balaban, Lebanon; Steven A. Steckler, Clark, both of N.J., and Ronald E. Fernsler, Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,338
Int. Cl.³ H04N *5/68*
U.S. Cl. 358—243 **19 Claims**

1. A disabling circuit for a television display that includes a high voltage generator to develop a picture tube ultor voltage, comprising:

an inductive-capacitive resonant network;

means coupled to said inductive-capacitive resonant circuit for exciting said resonant network into sustained oscillation to develop and alternating output signal;

a high voltage generator responsive to said alternating output signal for developing a picture tube ultor voltage;

means for developing a signal representative of said ultor voltage;

means responsive to said ultor voltage representative signal for developing a disabling signal when said ultor voltage exceeds a predetermined level; and



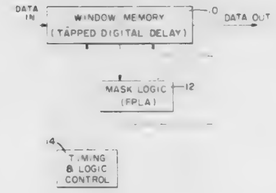
a switching element responsive to said disabling signal to a short-circuit said resonant network for stopping said sustained oscillation to disable operation of said high voltage generator.

4,389,677

METHOD AND APPARATUS FOR REMOVING ERRONEOUS ELEMENTS FROM DIGITAL IMAGES

Robert J. Rushby, Waterloo, and Yashvant S. Parmar, Weston, both of Canada, assignors to NCR Canada Ltd - NCR Canada Ltee, Mississauga, Canada

Filed Dec. 8, 1980, Ser. No. 213,767
Int. Cl.³ H04N *1/40;* **G06F** *11/00*
U.S. Cl. 358—280 **12 Claims**



1. An apparatus for altering erroneous data elements generated by a thresholding operation during the scanning of a document to produce a facsimile image, comprising:

first means for receiving a plurality of data elements obtained by scanning said document, said first means including storage means for storing a specific number of said data elements at any particular time;

second means coupled to said first means for determining whether any of said data elements stored within said first means are erroneous and should be altered, said second means including means for selectively testing said stored data elements for errors, said testing means including multiple logic masks contained in a field programmable logic array device, said multiple logic masks being applied simultaneously to selectively test said stored data elements for errors;

third means, coupled to said first and second means, for altering any data elements which are deemed to be erroneous by said second means;

and control means, coupled to said first means, for generating a plurality of control signals for use in controlling the transfer of said data elements into and out of said first means.

4,389,678

DIGITAL TIME-BASE CORRECTOR FOR SPECIAL MOTION REPRODUCTION BY HELICAL-SCAN VTR

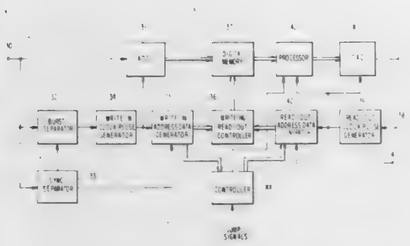
Mineo Mizukami, and Tatsuo Konishi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1980, Ser. No. 194,654

Claims priority, application Japan, Oct. 5, 1979, 54-129181; Oct. 5, 1979, 54-129182

Int. Cl.³ H04N *5/785*

U.S. Cl. 360—10.3 **7 Claims**



1. A time-base corrector for correcting time-base errors in a television video signal reproduced by a rotary magnetic head in a helical-scan video tape reproducer from a magnetic tape on which a plurality of video tracks are formed diagonally with respect to the longitudinal direction of said tape, a television video signal of one or more fields being recorded on each of said video tracks, said tape being able to be transported at a reproducing tape speed different from a normal tape speed at which said television video signal is recorded on said tape, said rotary magnetic head being deflected in a direction perpendicular to said video tracks so that said magnetic head follows a single video track during a single scanning at said reproducing tape speed, said magnetic head jumping in a direction perpendicular to said video tracks by an amount equal to at least one video-track pitch, said helical-scan video tape reproducer providing jump signals representing the direction and amount of the jump of said magnetic head, said time-base corrector comprising:

(a) means for generating a first clock pulse in synchronism with said television video signal;

(b) means responsive to said first clock pulse for converting said television video signal to a digital video signal;

(c) digital memory means for storing said digital video signal;

(d) means for generating write-in address data, in response to (i) said first clock pulse, (ii) a first horizontal sync signal and (iii) a first vertical sync signal, said write-in address data designating an address at which said digital video signal is to be written into said digital memory, said write-in address data including write-in line address data and write-in point address data;

(e) means responsive to said jump signals for latching said write-in line address data into latch means at a time controlled by said jump signals;

(f) means for generating a second clock pulse in a synchronism with a reference signals;

(g) means for generating read-out address data, in response to (i) said second clock pulse, (ii) a second horizontal sync signal, and (iii) a second vertical sync signal, said read-out address data designating an address at which the stored digital video signal is read out from said digital memory means, said read-out address data including read-out line address data and read-out point address data;

(h) means responsive to said second vertical sync signal for transferring the latched data from said latching means to said read-out address data generating means as read-out line address data, the time of transferring said latched data being defined by said second vertical sync signal; and

(i) means responsive to said second clock pulse for converting said read-out digital video signal into an analog video signal.

4,389,679

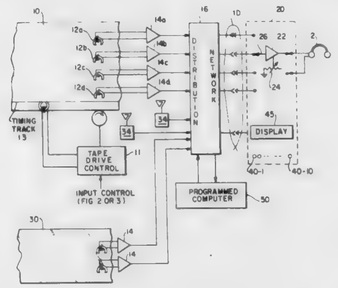
LANGUAGE INFORMATION SYSTEM

Richard S. Missan, 301 E. 78th St., New York, N.Y. 10021, and Leslie M. Orloff, Huntington, N.Y., assignors to Richard S. Missan, New York, N.Y.

Continuation of Ser. No. 23,409, Mar. 23, 1979, which is a continuation of Ser. No. 772,843, Feb. 28, 1977. This application Dec. 22, 1980, Ser. No. 218,769

Int. Cl.³ G11B *5/00, 15/18*

U.S. Cl. 360—12 **17 Claims**



1. An information system for explaining an event which occurs in a number of portions each of a predetermined time period comprising:

a storage medium having a plurality of tracks of audio information pre-recorded thereon in different languages in segments corresponding to the portions of the event, said event occurring external to the pre-recorded information,

means for reading the information from each track of the plurality of tracks,

means for selecting the track whose audio information is to be reproduced, means for aurally reproducing the audio information of the selected track,

and means responsive to selected occurrences of the event external of the pre-recorded information for synchronizing the reproduction of the pre-recorded information from all of the tracks of the storage medium in segments each of which corresponds with a particular portion of the event taking place.

4,389,680

SPECIAL EFFECTS EDITING METHOD AND APPARATUS USING RETRIEVED VIDEO

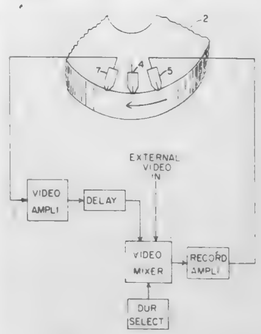
William D. Gramling, 5144 Newport Ave., Chevy Chase, Md. 20016

Filed Dec. 17, 1980, Ser. No. 217,131

Int. Cl.³ H04N *5/795*

U.S. Cl. 360—14.1 **6 Claims**

1. In a video editing apparatus, a head assembly for receiving relatively moving video tape wherein at least a pair of transducers are mounted in a set on said head assembly, said transducers in said set comprising an erasing transducer followed by a recording transducer, the invention characterized by the addition of a further reproducing transducer in said set which retrieves the signals on video tape moving relative to said head assembly prior to said signals being erased by said erasing transducer and means for mixing video signals from another source with signals retrieved by said reproducing transducer,



and transmitting said mixed signals to said recording transducer.

4,389,681

METHOD AND APPARATUS FOR RECORDING DIGITIZED INFORMATION ON A RECORD MEDIUM

Masato Tanaka; Takenori Sonoda, and Nobuhiko Watanabe, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 27, 1981, Ser. No. 286,963

Claims priority, application Japan, Jul. 26, 1980, 55-102853; Jul. 26, 1980, 55-102854

Int. Cl.³ G11B *5/02, 5/09*

U.S. Cl. 360—27 **35 Claims**



1. A method of recording at least one channel of digitized information signal in a selected number of data tracks on a record medium comprising the steps of:

providing a format control signal;

encoding at least one channel of an information signal into digital form;

modulating the encoded information signal;

recording the at least one channel of modulated, encoded information signal in a predetermined number of data tracks on said record medium;

at least one of said steps of encoding, modulating and recording being selectively controlled in accordance with said format control signal;

generating a control signal including control data responsive to said format control signal representing at least one of the following: (a) the number of tracks in which each channel or modulated, encoded information signal is recorded, (b) the encoding scheme used to encode said information signal, and (c) the type of modulation used to modulate said encoded signal; and

recording said control signal in a separate control track on said record medium.

4,389,682

MAGNETIC RECORDING SYSTEMS

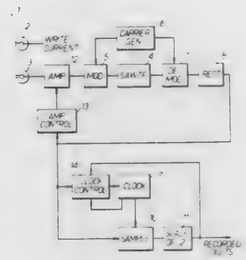
Gordon G. Scarrott, Welwyn Garden City, England, assignor to International Computers Limited, London, England

Filed Aug. 25, 1980, Ser. No. 180,614

Claims priority, application United Kingdom, Aug. 31, 1979, 7930355

Int. Cl.³ G11B *5/09, 5/02*

U.S. Cl. 360—45 **8 Claims**



1. Apparatus for reproducing digital information recorded on a magnetic medium as transitions between regions of the medium magnetised in opposite senses, the apparatus comprising:

a read head for outputting a read waveform on relative movement between the magnetic medium and the read head, the read waveform being composed of read pulses each resulting from the relative movement of a single one of the said transitions past the read head, and read pulses being subject to interference with one another;

means for transforming the read waveform into a transformed waveform, which means comprise in sequence a modulator arranged to modulate a carrier wave in accordance with an input derived from the output of the read head, surface acoustic wave transversal filter means and a demodulator arranged to remove the said carrier wave; and

means for extracting from the transformed waveform a digital signal dependent on the recorded information;

the response of the surface acoustic wave transversal filter means being such as to facilitate the extraction of the said digital signal by controlling the manner in which, or at least reducing the extent to which, the transformed versions of the read pulses interfere with one another.

4,389,683

SWITCH-TUNED FILTERS

Guy Lelandais, Bure sur Yvette, France, assignor to Enertec, Montrouge, France

Filed Oct. 20, 1980, Ser. No. 198,564

Claims priority, application France, Oct. 31, 1979, 79 26969

Int. Cl.³ G11B *5/45, 5/02*

U.S. Cl. 360—65 **11 Claims**

1. A switch-tuned filter for use in an equaliser in a magnetic tape recorder, comprising:

input means arranged to receive an input signal;

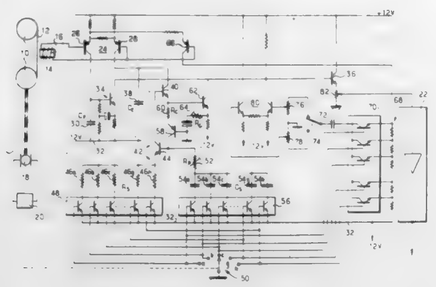
a capacitive filter responsively coupled to said input means to provide a first filtered signal;

a resonant filter responsively coupled to said input means to provide a second filtered signal, said resonant filter including a gyrator and having a frequency response dependent at least in part on circuit values in two circuit paths in said gyrator;

switch means arranged to select different circuit values in at least one of said paths;

amplitude control means responsively coupled to said input means to provide a controlled-amplitude signal;

means, coupled to said amplitude control means, for selectively inverting said controlled-amplitude signal; and



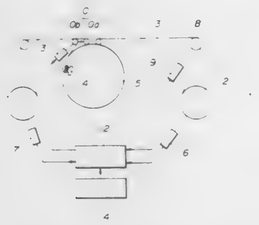
means responsively coupled to said capacitive filter, said resonant filter, and said inverting means to combine said first and second filtered signals with said said controlled amplitude signal.

4,389,684

MOVABLE TAPE-GUIDE CONTROL SYSTEM

Toshiharu Aihara, Hino, Japan, assignor to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 239,889
Claims priority, application Japan, Mar. 6, 1980, 55-27288
Int. Cl.³ G11B *15/32, 17/00, 19/02*
U.S. Cl. 360—71 **5 Claims**



1. A movable tape-guide control system for a helical scan type magnetic recording and reproduction apparatus capable of guiding a magnetic tape relative to a rotary head drum by use of a pair of guide posts, comprising:

magnetic tape reel rotation speed detection means for producing a signal indicating the rotation speed of a magnetic tape reel;

magnetic tape running speed detection means for producing a signal indicating the running speed of a magnetic tape;

control signal generation means for detecting the approach of the end portion of said magnetic tape towards said guide posts based on said signal indicating the rotary speed of said magnetic tape reel and on said signal indicating the running speed of said magnetic tape, and for producing a control signal; and

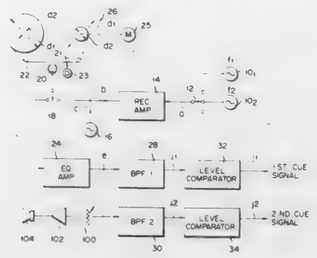
guide post drive means for moving at least one said guide post for guiding said magnetic tape to a predetermined position in accordance with said control signal generated from said control signal generation means, whereby said guide post is moved away from said rotary head drum by a predetermined distance so as to increase the space therebetween when said end portion of the magnetic tape comes near said guide post.

4,389,685

CUE SIGNAL GENERATING SYSTEM

Kenzi Furuta, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 24, 1980, Ser. No. 171,970
Claims priority, application Japan, Aug. 23, 1979, 54-107516
Int. Cl.³ G11B *15/18, 5/43*
U.S. Cl. 360—72.2 **6 Claims**



1. A cue signal generating system for a tape recorder having at least a recording mode and a cue signal detection mode, and which includes means for detecting cue signals recorded on a recording tape, means for causing said tape to travel by a take up reel drive during operation in the cue signal detection mode which produces a variable tape traveling speed during said cue signal detection mode, the variable tape traveling speed being a function of the tape roll diameter on the take up reel;

the cue signal generating system comprising means for producing and recording on said tape at least two different cue signals having the following relation:

$$f1/f2 > d1/d2$$

where d1 is the maximum tape roll diameter of said take up reel, d2 is the minimum tape roll diameter of said take up reel, f1 is first frequency information contained in a first cue signal of said at least two different cue signals, and f2 is second frequency information of a second cue signal of said at least two different cue signals, said recording second cue signal having a lower frequency than that of said first recorded cue signal, the ratio f1/f2 thereby being sufficiently large that there is substantially no overlap of said first and second frequency information (f1,f2) during cue signal detection in said variable speed cue signal detection mode.

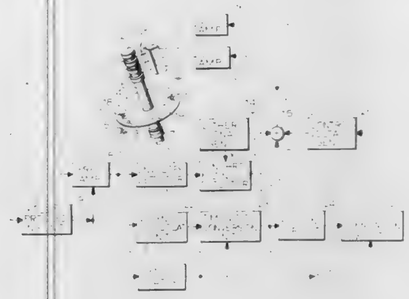
4,389,686

TRACKING APPARATUS FOR USE IN A VIDEO TAPE RECORDER

Takenobu Isaka, Hirakata, and Masaaki Kobayashi, Kawanishi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 1, 1980, Ser. No. 211,713
Claims priority, application Japan, Dec. 7, 1979, 54-159551
Int. Cl.³ G11B *21/10*
U.S. Cl. 360—77 **3 Claims**

1. A video signal reproducing device for reproducing video signals from a magnetic tape on which signals of unit lengths are recorded as video tracks inclined at a peserlbed angle with respect to the lengthwise direction of said magnetic tape, said device being provided with: a tracking apparatus having video heads for scanning said video tracks so as to obtain reproduced signals, an electric-mechanical transducer for moving said video heads in a direction which is perpendicular to the scanning direction of said video tracks, a demodulator for demodulating said reproduced signals so as to obtain reproduced video signals, a vertical synchronizing separator circuit for separating vertical synchronizing signals from said reproduced video signals, a pulse processing circuit for detecting rotary phases of said video heads, a time-voltage conversion circuit for converting cycles of said vertical synchronizing signals into a voltage by means of signals corresponding to said rotary phases of said video heads which are derived from said pulse processing circuit, a holding circuit for holding an output voltage of said time-voltage conversion circuit and said holding circuit, a control voltage generating circuit which compares a set reference voltage with an output of said level comparison circuit and which generates a voltage when said reference voltage and said output voltage are not equal to each other, a tracking control signal generating circuit for controlling said video head positions so as to track said video tracks, and an adder which adds an output signal from said control voltage generating circuit with an output signal from said tracking control signal generating circuit, so that signals derived from said adder are fed to said electric-mechanical transducer, thereby allowing said video heads to scan said video tracks.

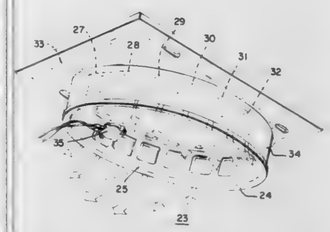


4,389,687

EXHAUST AIR VALVE FOR MAGNETIC DISK DRIVES

Arpad Gorove, Boulder, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Mar. 23, 1981, Ser. No. 246,923
Int. Cl.³ G11B *23/02*
U.S. Cl. 360—98 **6 Claims**



1. In a magnetic disk drive comprising:

a plurality of rotatable magnetic disks;

magnetic heads riding over the surfaces of said disks;

an airtight enclosure for said heads and disks;

a source of pressurized air for said enclosures;

an improved air exhaust valve positioned over the outlet for pressurized air from said enclosure including:

an elliptical housing, one face of said housing being closed, the other face of said housing being open and being positioned over said outlet, the body of said elliptical housing having ports therein; and

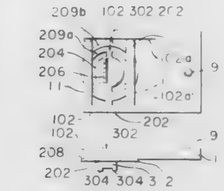
an elastic band positioned over the body of said housing in engagement with said ports so that pressurized air escapes from said enclosure through said ports by expansion of said elastic band which otherwise seals said ports.

4,389,688

MAGNETIC HEAD SUPPORTING MECHANISM

Noboru Higashiyama, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1981, Ser. No. 224,678
Claims priority, application Japan, Jan. 22, 1980, 55/6110
Int. Cl.³ G11B *5/012, 5/48, 5/52, 21/16*
U.S. Cl. 360—104 **10 Claims**



1. A magnetic head supporting mechanism comprising:

holder means;

a gimbal spring having edge portions fixed to said holder means, a central portion and a plurality of elastic ring portions connecting said edge and central portions;

a magnetic head fixed to said central portion; and

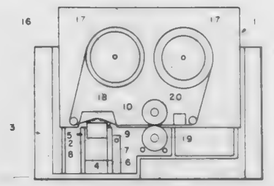
damper means comprising at least one elastic sheet in sliding surface contact with said gimbal spring, whereby at least a portion of the vibration of said magnetic head is absorbed by surface friction between said damper means and said spring.

4,389,689

METHOD AND APPARATUS FOR MOUNTING MAGNETIC TAPE HEADS

Dewey M. Sims, Jr., Wayne, Mich., assignor to Northern Telecom Systems Corporation, Ann Arbor, Mich.

Filed Aug. 25, 1980, Ser. No. 180,841
Int. Cl.³ G11B *21/24*
U.S. Cl. 360—109 **27 Claims**



1. An arrangement for mounting magnetic tape heads and the like, comprising:

a mounting plate adapted for fixedly attaching a magnetic tape head therewith, and including first and second side edges;

a housing having a base and first and second upstanding sidewalls between which said first and second mounting plate side edges are respectively received;

means for pivotally supporting said mounting plate on said housing base for pivotal motion thereon;

means for adjusting the angular orientation of said mounting plate to an aligned position, wherein the magnetic head assumes a predetermined relationship with respect to a magnetic tape sliding thereover;

first and second channels positioned in said first and second mounting plate side edges and housing sidewalls respec-

tively, and extending therealong to an end of one of said mounting plate and said housing sidewalls; and

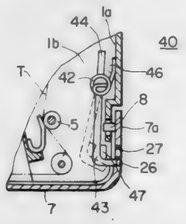
a solidifying plastic material injected into said first and second channels from said end, said material being curable to form first and second keys in said first and second channels which positively interconnect said mounting plate and said housing in the aligned position.

4,389,690

MAGNETIC TAPE CASSETTE INCLUDING A LOCKING MECHANISM

Kengo Oishi; Osamu Suzuki, and Choji Komiyama, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 6, 1981, Ser. No. 232,271
Claims priority, application Japan, Feb. 8, 1980, 55-15004[U]
Int. Cl.³ G11B *23/04*
U.S. Cl. 360—132 **7 Claims**



1. A magnetic tape cassette in which a magnetic tape wound on a pair of hubs in a hollow interior of a cassette casing is guided to run across a front opening formed in said casing and can be pulled out of said front opening, and including a locking mechanism comprising:

a supporting shaft fixed to a bottom wall of said cassette casing;

a rotary hub rotatably mounted on said supporting shaft;

a locking lever extending from said rotary hub for rotating with said rotary hub;

a first stop extending from said hub in a direction substantially opposite to a direction of extension of said locking lever, said first stop rotating with said locking lever;

means for limiting a range of rotation of said first stop to limit a range of rotation of said locking lever as said locking lever rotates with said rotary hub; and

a coil spring having a first end portion thereof locked to said hub, a coil portion thereof disposed around said hub and a second end portion thereof abutted against an inner surface of a side wall of said cassette casing.

4,389,691

SOLID STATE ARC SUPPRESSION DEVICE

Harold E. Hancock, Cincinnati, Ohio, assignor to Power Management Corporation, Centerville, Ohio

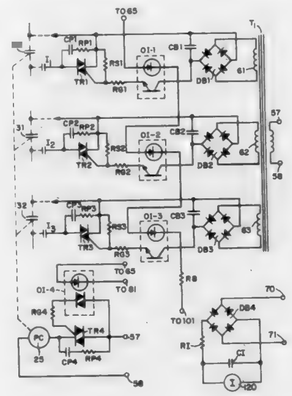
Continuation-in-part of Ser. No. 49,852, Jun. 18, 1979, abandoned. This application Apr. 16, 1981, Ser. No. 254,694
The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.
Int. Cl.³ H02H *7/22*
U.S. Cl. 361—8 **12 Claims**

1. Apparatus adapted to be connected to an existing power contactor without modification thereof, which power contactor includes a solenoid connected to operate at least one pair of power contacts, said apparatus controlling the operation of the power contactor in response to an externally generated control signal and for suppressing arcing at the power contacts during opening and closing thereof, said apparatus including

gate controlled thyristor means connectable in parallel with each of said power contacts,

means for providing a source of direct current for the gate of said thyristor means,

circuit means responsive to the application of the control signal including means for applying current to the solenoid of said power contactor and further including first solid state gate circuit means having a substantially immediate output of predetermined duration in response to the application of the control signal for applying gating current to said thyristor means prior to, during, and for a



limited period of time following closure of the power contacts, and

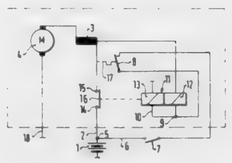
said circuit means also being responsive to the removal of the control signal for removing current from the solenoid and further including second solid state gate circuit means having a substantially immediate output of predetermined duration in response to the removal of the control signal for applying gating current to said thyristor means prior to, during, and for a limited period of time following the opening of the power contacts.

4,389,692

OVERLOAD-PROTECTED SWITCHING APPARATUS FOR ELECTRICAL STARTER SYSTEM FOR COMBUSTION ENGINES

Klaus Sander, Leonberg, and Hans Würth, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 21, 1981, Ser. No. 226,721
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1980, 3002232
Int. Cl.³ H02H *7/08, 5/04*
U.S. Cl. 361—29 **9 Claims**



1. Overload-protected electrical starter circuit switching system, particularly for starting of internal combustion engines, and adapted for energization by a current source (**1**) comprising

a supply cable connection including a starter cable (**2**), a cable terminal (**20**) on the starter cable, and starter relay contacts (**14, 15, 16**), said cable terminal being mechanically and electrically connected to one (**15**) of the starter relay contacts (**14–16**) connecting the current source (**1**) to a starter motor (**3, 4**) through the relay contacts,

a relay coil circuit (**6,7, 11**) including a starter switch (**7**), connectable to said source (**1**) for energizing the coil (**11, 12, 13**) of the relay upon closing of a starter switch (**7**),

a thermostat switch unit (**8, 17**) having switching contacts connected in the relay coil circuit, and a temperature sensing portion (**17**);

and wherein, in accordance with the invention,

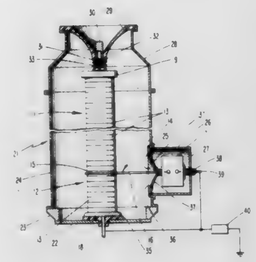
the thermostatic switch unit (**8, 17**) is externally mechanically attached to said cable terminal (**20**), electrically separate therefrom, and in heat transfer relation thereto, and the switching contacts are connected for disabling the relay coil circuit and hence interrupt current supply to the starter motor upon increase of temperature of the cable terminal beyond a predetermined limit.

4,389,693

LIGHTNING ARRESTER

Satoru Yanabu, Machida; Susumu Nishiwaki, Yokohama; Mizuho Yamashita, Yokohama; Toshikazu Satoh, Yokohama; Yoichi Murakami, Yokohama, and Susumu Imai, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 116,968, Jan. 3, 1980, abandoned. This application Dec. 30, 1981, Ser. No. 335,639
Claims priority, application Japan, Jan. 31, 1979, 54-9128
Int. Cl.³ H02H *9/04*
U.S. Cl. 361—127 **4 Claims**



1. A lightning arrester comprising:

at least two stacks of non-linear resistors, each including a plurality of non-linear elements constructed of a metal oxide, and connected in series;

arcing gap means connected in parallel to one of said stacks and operable to shunt said one stack of resistors to ground, said arcing gap means including electrodes which are spaced apart a distance not less than about 0.8 mm;

a hermetically sealed housing enclosing said stacks of resistors and said arcing gap means and filled with sulfur hexafluoride gas at a gauge pressure not less than 2 kg/cm^2;

the impedance of said one stack of resistors being between about 15 to about 35% of the total impedance of the two stacks of resistors when said arcing gap means sparks over; and

the rated voltage of the arrester being not less than about 50 KV.

4,389,694

CABLE CONTINUITY MONITORING SYSTEM

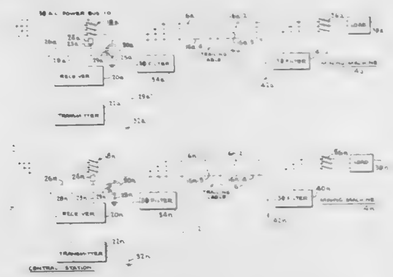
Robert Cornwell, Jr., Bluefield, W. Va., assignor to PEMCO Corporation, Bluefield, W. Va.

Filed Oct. 8, 1980, Ser. No. 195,117
Int. Cl.³ H02H *5/10*
U.S. Cl. 361—48 **13 Claims**

1. A conductor continuity monitoring system for monitoring the continuity of a plurality of cables, each of said cables extending from a common power source to a corresponding one of a plurality of loads to be energized, said monitoring system comprising:

(a) a plurality of transmitter means, each of said transmitter means transmitting a monitoring signal of predetermined amplitude and frequency to and from a corresponding one of said plurality of loads via a corresponding one of said plurality of cables;

(b) a plurality of receiver means, each of said receiver means receiving monitoring signals returned via a corresponding one of said plurality of cables and via said common power source and determining whether the received monitoring signals are within a predetermined frequency range and above a predetermined amplitude to provide a manifestation indicative thereof, one of said plurality of transmitter means and of receiver means being coupled to one end of said one corresponding cable and said corresponding one load being coupled to the other end of said one corresponding cable; and



(c) a plurality of reference means, each associated with each of said plurality of cables and with a corresponding one of said plurality of transmitter means and responsive to the frequency of the received monitoring signals for generating a reference signal of a frequency substantially equal to the frequency of the received monitoring signals, each of said plurality of transmitter means responsive to said reference signal of said corresponding one of said plurality of reference means for transmitting its monitoring signal at substantially the same frequency as that of the other monitoring signals as transmitted by the other of said plurality of transmitter means, whereby said plurality of monitoring signals as transmitted over said plurality of cables are of substantially the same frequency and as a result no difference signals are produced as would result from frequency shifts being imposed on other ones of said monitoring signals as appear on said plurality of cables and said common power source.

4,389,695

EQUIPMENT FOR PROTECTING ELECTRONIC EQUIPMENT AND PERSONNEL AGAINST INADVERTENT OCCURRENCE OF EXTENDED OR TRANSIENT HIGH VOLTAGES AND METHOD

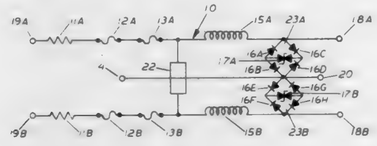
Roy B. Carpenter, Jr., 17001 Bracewood Dr., Hacienda Heights, Calif. 91745

Filed Feb. 9, 1981, Ser. No. 232,540
Int. Cl.³ H02H *9/06*
U.S. Cl. 361—55 **2 Claims**

1. Equipment for protecting electronic equipment and personnel against inadvertent occurrence of extended or transient voltages, having a first line equipped with an input and an output terminal, respectively, and a second line equipped with an input and an output terminal, respectively, for the connection between an incoming power source and the to be protected equipment, comprising:

a first input terminal,

a first current-limiting resistor,
a first low-voltage fuse,
a first high-voltage fuse,
a first resistive inductor,
said first current-limiting resistor, said first low-voltage fuse, said first high-voltage fuse and that first resistive inductor connected in series and in this order between said first input terminal and said first output terminal of said first line,
a second current-limiting resistor,
a second low-voltage fuse,
a second high-voltage fuse,
a second resistive inductor,
said second current-limiting resistor, said second low-voltage fuse, said second high-voltage fuse and said second resistive inductor connected in series and in this order between said second input terminal and said second output terminal of said second line,



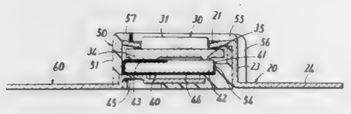
a dual chamber gas-filled tube having a first, a second, and a center terminal, connected across said first and said second line, said first terminal connected to said first line between said first high-voltage fuse and said first resistive inductor, said second terminal connected to said second line between said second high-voltage fuse and said second resistive inductor, said center terminal connected to a first terminal for connection to ground,
four first diodes forming the arms of a first balanced bridge, one diagonal of which is connected across said first line and said first terminal to ground,
a first avalanche diode forming the other diagonal of said first balanced bridge,
four second diodes forming the arms of a second balanced bridge, one diagonal of which is connected across said second line and said first terminal to ground,
a second avalanche diode forming the other diagonal of said second bridge.

4,389,696

TRIMMER CAPACITOR

Yukihiro Azuchi, Sabae, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 11, 1980, Ser. No. 186,257
Claims priority, application Japan, Sep. 17, 1979, 54-128899[U]
Int. Cl.³ H01G 5/06
U.S. Cl. 361—293 **12 Claims**



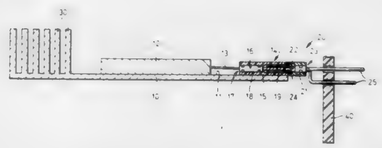
1. A trimmer capacitor, comprising:
(a) an insulating case;
(b) a stator terminal having one end embedded in said insulating case and having another end extending from said insulating case for external electrical connection;
(c) a dielectric stator fixedly receiving in said insulating case and including a dielectric member;
(d) a stator electrode electrically connected to said stator terminal;
(e) a conductive rotor received within said insulating casing and having:
(1) a first step projecting from its upper surface;
(2) a second step projecting from a first portion of its lower surface, which surface faces said stator electrode, said second step having a lower end surface which defines a rotor electrode, said rotor electrode contacting said stator and being spaced from said stator electrode through said dielectric member of said dielectric stator; and
(3) a third step projecting from said lower surface of said rotor and defining an idle electrode, said third step projecting the same distance from said lower surface as said second step, said second and third steps of said metal rotor being located on said lower surface thereof at positions directly opposite to each other in the diametrical direction;
(f) a conductive rotor terminal extending through said insulating case and having at one end thereof a dish-shaped spring portion, said dish-shaped spring portion being centrally formed with a throughgoing hole, said hole rotatably receiving said first projecting step of said conductive rotor to effect electrical contact between said upper surface of said conductive rotor and said rotor terminal around the entire periphery of said first projecting step, contact between said dish-shaped spring portion and said upper surface being made at a position opposite said idle electrode at all rotational positions of said rotor, said rotor terminal having another end that is led out of said insulating case for external electrical connection; and
(g) said insulating case being made of thermal plastic and having an upper edge that is bent inward by heating to retain said dielectric stator, said conductive rotor and said rotor terminal within said insulating case, said bent in upper edge being in pressure engagement with said dish-shaped spring portion formed at one end of said rotor terminal, said insulating case being formed with a notch at said upper edge thereof, said other end of said rotor terminal being let out through said notch of said insulating case, said rotor terminal including a portion at said other end thereof which extends outside said insulating case along the outer side surface thereof, said insulating case being intricately formed at said outer side surface thereof with a pair of clamp portions for engaging at least a portion of said other end of said rotor terminal therebetween.

4,389,697

CIRCUIT ASSEMBLY HAVING A COMPONENT WITH LEADS EXTENDING THEREFROM AND A CONNECTOR BOTH SUPPORTED ON A PLANAR SUBSTRATE

Melvyn R. Bell, Woodbank; John M. Morrison, and Charles M. Stewart, both of Edinburgh, all of Scotland, assignors to Ferranti plc, Gatley, England

Continuation of Ser. No. 18,572, Oct. 3, 1979, abandoned. This application Jul. 31, 1981, Ser. No. 288,807
Int. Cl.³ H05K 7/02
U.S. Cl. 361—380 **1 Claim**



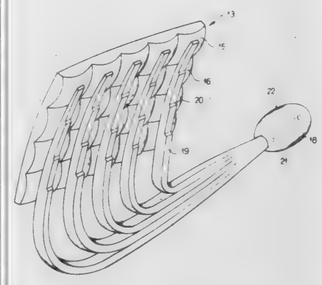
1. A circuit assembly comprising an at least substantially planar substrate, at least one component with leads extending therefrom, at least one connector having a plurality of electrically conducting connector pieces, each connector piece being directly connected with a lead of said at least one component, the plurality of connector pieces being secured at a block of electrical insulating material of the connector, said at least one component being secured to one major surface of said substrate and said at least one connector being coherently secured to said one major surface of said substrate, and a second connector secured to the at least one connector and further providing connector pieces for the second connector extending substantially parallel to said one major surface, comprising terminals of the circuit assembly, and in which at least substantially the whole of at least some of the leads of said at least one component extends at least substantially parallel to said one major surface of the substrate.

4,389,698

HEADLAMP INTER ALIA FOR MOTOR VEHICLES

Pierre Cibie, Bobigny, France, assignor to Cibie Projecteurs, Bobigny, France

Filed Dec. 16, 1980, Ser. No. 217,281
Claims priority, application France, Dec. 20, 1979, 79 31257
Int. Cl.³ F21V 7/04
U.S. Cl. 362—32 **8 Claims**



1. A motor vehicle headlamp, comprising:
(a) a lens having a plurality of juxtaposed dioptric elements, at least some of said dioptric elements being arranged in a row,
(b) a light-transmitting bar extending along the row of dioptric elements adjacent to the interior surface of the lens, said bar carrying a reflecting zone opposite each dioptric element in the row,
(c) a light source spaced from the lens, and
(d) an optical duct terminating at one end in said transparent bar and at its other end near the light source,
(e) whereby light from the light source is transmitted along the light-transmitting bar, the light being reflected by each reflecting zone through its respective dioptric element to create a light beam issuing from the headlamp.

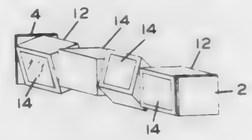
4,389,699

SWIVEL CELL LIGHT FIXTURE

Ned S. Qualls, Downingtown, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Sep. 11, 1981, Ser. No. 301,302
Int. Cl.³ F21S 3/00
U.S. Cl. 362—217 **2 Claims**

1. A light fixture capable of directing light in several different directions, said light fixture comprising:
(a) a support structure for a single fluorescent tube, said support structure being
(1) two end plates having positioned thereon means for receiving the ends of a fluorescent light tube,
(2) a support bar positioned between said two end plates and rigidly holding the two end plates in position,
(3) a single fluorescent light tube positioned between the two end plates in its tube end receiving means and in a parallel relationship with the support bar,
(b) a plurality of individual adjustable reflectors for directing light from said single fluorescent light tube in a plurality of different directions, at least four or more reflectors being positioned around said single fluorescent light tube, each said reflector being:
(1) a housing having an open end, a reflective surface within said housing directing illumination from a source of illumination within the housing outwardly through the open end of the housing,
(2) said housing having two opposite side walls each with an aperture therein, said support bar and said single



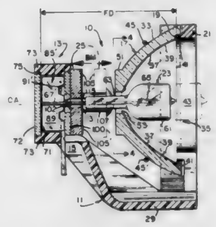
fluorescent light tube passing through the apertures in each of the two side walls, said side wall apertures being such that they position the fluorescent tube in position to function as the source of illumination for providing light rays which the reflective surface will now direct outwardly from the open end of the housing, said apertures of the housing having a plurality of notches around the periphery thereof, said support bar being positioned in one set of notches and said housing being movable to position said support bar in different sets of notches around the periphery of the apertures so that the reflector housing will have its open end pointed in a plurality of different directions around a 360° arc.

4,389,700

PROJECTION UNIT WITH SEPARABLE LAMP CAPSULE AND SLIDABLE MEANS FOR EJECTING SAME

Ronald G. Blaisdell, Saugus, and Harold L. Hough, Beverly, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 13, 1981, Ser. No. 253,333
Int. Cl.³ F21V 7/00
U.S. Cl. 362—306 **21 Claims**



1. A projection unit comprising:
an electrically insulative holder including front and rear upstanding portions, said front upstanding portion including an opening therein and defining a forward reference surface thereon;
a socket positioned on or forming part of said rear upstanding portion of said holder, said socket defining a rear reference surface thereon, said rear reference surface located at a predetermined, fixed distance from said forward reference surface;
a reflector located within said holder, said reflector having a

concave reflecting portion defining a forward aperture and including a front reference surface thereon, and a rear apex portion defining an opening therein, said front reference surface of said reflector mating with said forward reference surface of said holder in a preestablished manner whereby said forward aperture of said reflector is aligned with said opening within said front upstanding portion;

a lamp removably positioned with said socket and oriented in a non-contacting relationship with said reflector, said lamp including an envelope portion located substantially within said concave reflecting portion of said reflector when said lamp is positioned within said socket, a sealed end portion adjacent said envelope portion and located substantially within said opening within said rear apex portion of said reflector when said lamp is positioned within said socket, and a pair of lead-in wires located within said sealed end portion of said lamp and having portions thereof projecting from said sealed end portion for being electrically connected to said socket when said lamp is positioned therein, at least one of said lead-in wires positioned within said socket in contact with said rear reference surface of said socket when said lamp is positioned therein; and

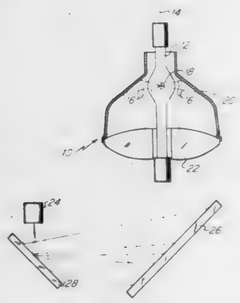
slidable ejection means located substantially between said socket and said reflector for engaging said lamp when sad lamp is positioned within said socket and ejecting said lamp from said socket whereby said lamp will pass through said forward aperture of said reflector and said opening within said front upstanding portion of said holder, said slidable ejection means comprising at least one slide member and an elongated bar member movably positioned on said slide member, said elongated bar member engaging said sealed end portion of said lamp to effect said ejection of said lamp.

4,389,701

ILLUMINATION SYSTEM

Edward H. Phillips, Middletown, Calif., assignor to Optimetrix Corporation, Mountain View, Calif.

Filed Oct. 27, 1980, Ser. No. 200,780
Int. Cl.³ F21V *7/04, 13/04*
U.S. Cl. 362—308 **10 Claims**



1. An illumination system comprising:

a source of light disposed along a central axis of the illumination system for radiating light outwardly from the central axis;

a conical reflector coaxially disposed about the source of light for forming an annular virtual image of the source of light; and

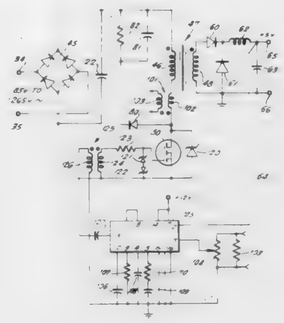
a lens coaxially disposed about the central axis of the illumination system for providing a circular real image of the annular virtual image of the source of light.

4,389,702

SWITCHING POWER SUPPLY CIRCUIT HAVING CONSTANT OUTPUT FOR A WIDE RANGE OF INPUT VOLTAGE

Stefano Clemente, Rancho Palos Verdes; Brian R. Pelly, Palos Verdes Estates, and Rutton Ruttonsha, Torrance, all of Calif., assignors to International Rectifier Corporation, Los Angeles, Calif.

Continuation of Ser. No. 179,695, Aug. 20, 1980, abandoned. This application Aug. 27, 1982, Ser. No. 412,103
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—21 **4 Claims**



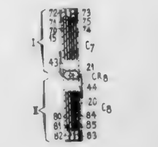
1. A switching regulator comprising, in combination: an input rectifier circuit means, an inverter circuit comprising transformer means and transistor switching means in series with said transformer means and connected to the output of said input rectifier circuit means; an output circuit magnetically coupled to said transformer means for producing a relatively high frequency output a-c voltage at the frequency of switching of said transistor switching means; output rectifier means connected to said output circuit for rectifying said output a-c voltage and for producing a relatively constant output d-c voltage; said transistor switching means having a control electrode control circuit means connected to said transistor switching means control electrode for varying the conduction time of said transistor switching means in a manner to maintain said output d-c voltage at a constant value regardless of variation of the voltage output of said input rectifier circuit means within a given, relatively wide range; and unidirectional clamping circuit means connected in parallel with said transformer means to clamp one polarity of the instantaneous voltage across said transformer means to a value which is lower than the instantaneous value of voltage of the opposite polarity across said transformer means, and producing an asymmetry in the voltage wave form appearing across said transformer means; said unidirectional clamping circuit means being conductive for at least a substantial portion of the time when said transistor switching means is not conductive, so that energy stored in said transformer means when said transistor switching means is conductive is dissipated by said clamping circuit means over said substantial portion of the time when said transistor switching means is not conductive, whereby the peak-to-peak voltage across said transistor switching means is reduced from that which would be produced in the absence of said clamping circuit means; said input rectifier circuit means being connected to an input a-c source which has a voltage within the range from 85 volts to about 265 volts, said transistor switching means consisting of a single power MOSFET; said single power MOSFET transistor having a voltage rating which is less than the peak-to-peak voltage of the maximum voltage within said range of said input a-c source.

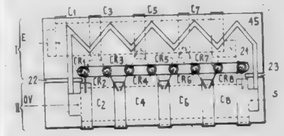
4,389,703

INTEGRATED VOLTAGE MULTIPLIER

Gilbert Morel; Pierre Frappart, and Roland Saint Marcoux, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 10, 1981, Ser. No. 233,122
Claims priority, application France, Feb. 12, 1980, 80 03046
Int. Cl.³ H02M *7/10*
U.S. Cl. 363—61 **5 Claims**





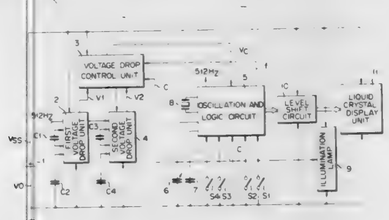
1. An integrated voltage multiplier made in accordance with multilayer technology as a monolithic block comprised of at least two independent groups of series-connected capacitors with diodes interconnecting the capacitors of said two groups, comprising a stack of metallized sheets with metallized parts arranged so that capacitors are formed which are series-connected, means defining at least first, second and third slots between said groups, said first and second slots adjusting the input and output capacitance of said multiplier and a plurality of diodes housed in said third slot for interconnecting the capacitors of said groups.

4,389,704

POWER SOURCE SUPPLY SYSTEM

Ken Sasaki, Higashiyamato, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 9, 1980, Ser. No. 195,473
Claims priority, application Japan, Oct. 19, 1979, 54-135357
Int. Cl.³ H02M *3/06*
U.S. Cl. 363—62 **18 Claims**



1. A power supply system for an electronic device comprising:

an electric cell power source;

first voltage dropping means coupled to said electric cell power source for outputting a first dropped voltage by dropping an output voltage from said electric cell power source to half its value;

second voltage dropping means coupled to said first voltage dropping means for providing a second dropped voltage by dropping said first dropped voltage obtained from said first voltage dropping means to half its value; and

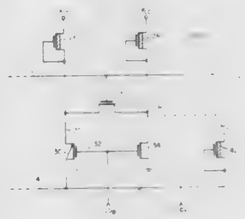
a logic circuit including an oscillation circuit to which said second dropped voltage is applied, and a watch circuit for providing a time display signal by frequency dividing an oscillation signal from said oscillation circuit.

4,389,705

SEMICONDUCTOR MEMORY CIRCUIT WITH DEPLETION DATA TRANSFER TRANSISTOR

Douglas P. Sheppard, Grapevine, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Aug. 21, 1981, Ser. No. 294,842
Int. Cl.³ G11C *17/00, 7/00*
U.S. Cl. 365—104 **4 Claims**



1. A semiconductor memory circuit, comprising:

a word line connected to receive a first address signal;

a column decode line connected to receive a second address signal;

a bit line;

a memory cell for storing a data state, said memory cell connected to be accessed by said first address signal received through said word line for driving said bit line to a voltage state corresponding to the data state stored in said memory cell; and

a depletion data transfer transistor having the gate terminal thereof connected to said column decode line and the drain and source terminals thereof connected between said bit line and said data line for selectively connecting said bit line and said data line in response to said second address signal received through said column decode line.

4,389,706

DIGITAL COMPUTER MONITORED AND/OR OPERATED SYSTEM OR PROCESS WHICH IS STRUCTURED FOR OPERATION WITH AN IMPROVED AUTOMATIC PROGRAMMING PROCESS AND SYSTEM

John W. Gomola; Theodore C. Giras; William G. Wood, all of Pittsburgh; Richard E. Putman, Penn Hills; Rodney E. Gilbreath, Pittsburgh, all of Pa.; John S. Deliyannides, Wilmington, Del.; Terry B. Cullen, and F. David Jones, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 250,061, May 3, 1972, abandoned, and Ser. No. 250,451, May 4, 1972, abandoned. This application May 5, 1972, Ser. No. 250,826
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—130 **76 Claims**
MICROFICHE APPENDIX INCLUDED
(10 Microfiche, 906 Pages)

1. An automatically programmable signal monitoring or process control system for controlling an industrial system or the like comprising:

sensor means associated with the apparatus for generating signals indicative of the state of the system;

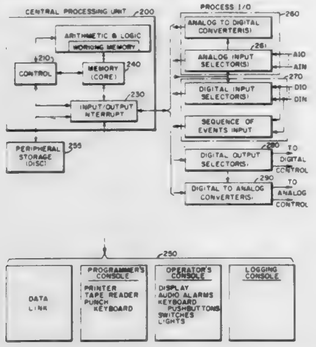
a digital computer system having a memory;

signal scanning means associated with said computer system

and connecting to said sensor means for scanning said sensor signals periodically and including means for transferring a digital record of the status of said signals into the memory of said digital computer system;

at least one machine readable signal-related event definition defining as an event either the periodic scanning or a particular change in the state of at least one sensor signal including a designation which serves as a name for the event and also as a name for the signal, and including a reference to the location in said memory where the status record of the corresponding signal variable is stored;

at least one machine-readable job definition including at least one triggering reference to a designation which serves as



a name for an event and for a signal and which is included in at least one event definition;

loader means for operating said computer system to accept said event and job definitions and to store said definitions in said memory;

trigger-connect means for operating said computer system to link job definitions, but only those containing trigger references to designations, to locations in said memory that are in turn linked to the event definition and status data for the designated signals; and

means for operating said computer system to respond to the occurrence of a signal-related event by initiating execution of any and all job definitions which are linked to the status data and definition corresponding to that event.

4,389,707

ELECTRONIC CASH REGISTER

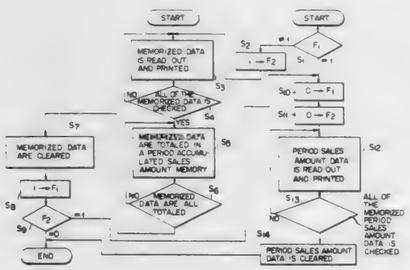
Hanzo Tsuzuki, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,498

Claims priority, application Japan, Dec. 18, 1979, 54-164548

Int. Cl.³ G06F *3/12*

U.S. Cl. 364—405 **1 Claim**



1. An electronic cash register comprising:

a keyboard having data input keys and function keys, said function keys including first and second settlement designation keys;

a central processing unit coupled to said keyboard for processing data inputted through said keyboard;

a first total memory coupled to said central processing unit and having a plurality of memory areas for causing sales data inputted through said keyboard to be cumulatively stored according to classified items of commodities sold;

a second total memory coupled to said central processing unit and having a number of memory areas corresponding to the number of memory areas of said first total memory for causing total sales data to be cumulatively stored according to the classified items; and

printing means for causing the total sales data read by said central processing unit out of said first total memory to be sequentially printed when the first settlement designation key is operated, and for causing the total sales data read by the central processing unit out of said second total memory to be sequentially printed when the second settlement designation key is operated;

said central processing unit including a flag memory for storing flag data indicating the time immediately following the readout and printing of the sales data in said first total memory, and means coupled to said flag memory for causing the total sales data of the classified items in said first total memory to be cumulatively stored in the corresponding memory areas of said total memory when no flag data is stored in said flag memory upon actuation of the section settlement designation key, and thereafter for causing the data in said second total memory to be supplied to said printing means for printing.

4,389,708

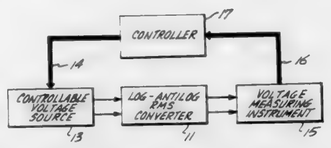
METHOD AND APPARATUS FOR ENHANCING THE OUTPUT OF AN RMS CONVERTER

K. Paul Baldock, Marysville, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Aug. 25, 1980, Ser. No. 180,523

Int. Cl.³ H03K *5/00*

U.S. Cl. 364—573 **22 Claims**



12. An apparatus for enhancing the output of a log-antilog type RMS converter comprising:

a controllable voltage source suitable for producing a variety of DC voltages;

a voltage measuring instrument for measuring DC voltages and producing an output related thereto; and,

a controller connected to said controllable voltage source and to said voltage measuring instrument for:

controlling the output of said controllable voltage source;

receiving the output of said voltage measuring instrument;

determining the positive and negative gain (G_{30} and G_{31}) and offset voltage (V_{0+} and V_{0-}) characteristics of a log-antilog type RMS converter having its input connected to the output of said controllable voltage source and its output connected to the input of said voltage measuring instrument based on the value of DC voltages applied to said log-antilog type RMS converter by said controllable voltage source and the related output of said log-antilog type RMS converter measured by said voltage measuring instrument; and,

using said positive and negative gain and offset voltage characteristics to correct the output of said log-antilog type RMS converter for nonlinearities in the AC/DC transfer characteristic of said log-antilog type RMS converter when an unknown AC signal is applied to said log-antilog type RMS converter.

4,389,709

PROGRAMMABLE INDICATOR SYSTEM

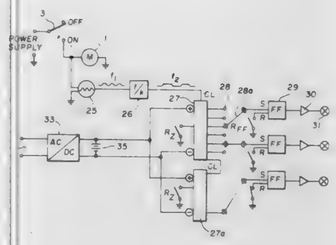
Ernst Knibiehler, Basel, and Georg Hirmann, Zürich, both of Switzerland, assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 8, 1980, Ser. No. 195,033

Claims priority, application Switzerland, Oct. 3, 1979, 8910/79

Int. Cl.³ G06M *3/02*

U.S. Cl. 364—551 **3 Claims**



1. A programmable system for indicating the expiration of appropriate time spans to perform preventive maintenance operations upon a machine tool comprising:

a signal generator adapted to be connected to the machine tool to generate signals whenever the tool is in operation,

integrating means connected to said generator to accumulate said signals with at least two threshold sensitive outputs,

at least two respectively resettable storage means inter-connected between said outputs and at least two respectively indicator means for indicating the advent of the particular maintenance operations,

a programming unit comprising a plurality of switches to selectively connect said indicator means via said storage means to said outputs.

4,389,710

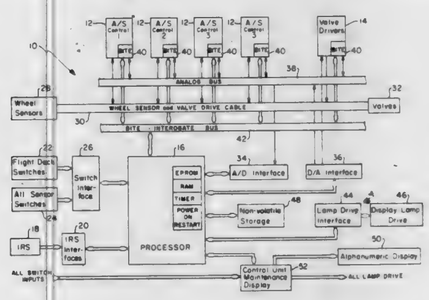
BRAKING SYSTEM TEST CIRCUIT

John P. Rasmussen, Clinton, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jan. 12, 1981, Ser. No. 224,418

Int. Cl.³ G06F *11/32;* **G01R** *15/12*

U.S. Cl. 364—551 **5 Claims**



1. In a braking system for an aircraft having antiskid control circuits associated with the brakes of the wheels thereof, the improvement, comprising:

a digital processor;

interface circuit means interconnected between said processor and the antiskid control circuits for exercising selected circuit functions of the antiskid control circuits under direction of said processor, sensing responses to said selected functions, and providing such responses to said processor for evaluation of the operability of the antiskid control circuits; and

wherein said interface circuit means exercises said selected circuit functions by the application of stimuli which simulate actual responses in the antiskid control circuits resulting from the braking of the aircraft on a runway and wherein said interface circuit means comprises:

first gating means for receiving excitation signals from said processor and applying such signals as inputs to selected test points on the associated antiskid control circuit;

second gating means for receiving response signals from additional selected test points on the associated antiskid control circuit, said response signals resulting from said excitation signals, said second gating means passing said response signals to said processor;

said first gating means comprising an analog switch connected to and addressed by said processor and converter circuit means interconnected between said processor and analog switch for converting digital excitation signals from said processor to states usable by the antiskid control circuits, said converter circuit means comprising both digital to analog and voltage to frequency converters; and

said second gating means comprising an analog selector connected to and addressed by said processor, and an analog to digital converter interposed between said analog selector and processor for converting said response signals form an analog to digital form.

4,389,711

TOUCH SENSITIVE TABLET USING FORCE DETECTION

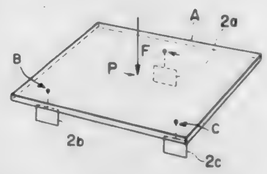
Masao Hotta, Hachioji; Yoshikazu Miyamoto, Kokubunji; Norio Yokozawa, Fuchu, and Yoshimitsu Oshima, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 177,058

Claims priority, application Japan, Aug. 17, 1979, 54-104007; Sep. 19, 1979, 54-119420

Int. Cl.³ G08C *21/00*

U.S. Cl. 364—556 **11 Claims**



1. A touch sensitive tablet using force detection wherein magnitudes of component forces at three fulcra, of an external force applied to one point on a faceplate are detected so as to evaluate coordinates of the point to which the external force has been applied; comprising conversion means to convert the component forces at each fulcrum into electric signals, sensing means to sense that no force components are present at each fulcrum as an indication that no force is applied, memory means to store the output signals of said conversion means at each fulcrum as offset values at, at least, one point of time in the period in which no force is applied, control means to control writing of the output signals of said conversion means into said memory means upon receiving an output of said sensing

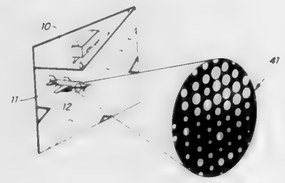
means, subtraction means to subtract outputs of said memory means from the outputs of said conversion means at each fulcrum, and calculation means to execute calculations for evaluating the coordinates of the point to which the external force has been applied, the outputs of said subtraction means in accordance with the output of said sensing means.

4,389,712

HIGH INFORMATION DENSITY LASER IMAGE RECORDING METHOD AND APPARATUS

Joseph R Frattarola, Westford; Richard H. Hudgin, Newton, and Theodore R. Yachik, Belmont, all of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Mar. 9, 1978, Ser. No. 885,057
Int. Cl.³ G11C *11/42, 13/04*
U.S. Cl. 365—127 **16 Claims**



1. An optical memory for storing a human readable pictorial image and machine readable digital information with the same format comprising:

a. an optical recording medium;

b. a pictorial image recorded on said optical recording medium, said pictorial image comprising a large number of separate picture elements, each of said picture elements having a specific optical density value such that all of the large number of picture elements taken together will construct said pictorial image; and

c. each of said large number of picture elements comprising a plurality of discrete parts each of which contribute to and which together define a specific digital value for storing said machine readable digital information.

4,389,713

DUAL PULSE METHOD OF WRITING AMORPHOUS MEMORY DEVICES

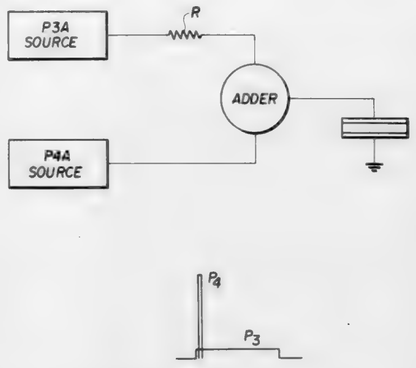
Vipin N. Patel, Melbourne, and Joseph S. Raby, West Melbourne, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Jun. 10, 1981, Ser. No. 272,314
Int. Cl.³ G11C *11/00;* **H01L** *45/00*
U.S. Cl. 365—163 **10 Claims**

5. A method of setting a filament-type memory device including spaced electrodes between which extends a body of high resistance generally amorphous material, a filamentous path of which switches to a low resistance generally crystalline state when a voltage pulse in excess of a given threshold voltage is applied across the electrodes, the method comprising:

applying to said electrodes a first voltage pulse of an amplitude initially sufficient to create across said device a voltage the threshold voltage of the device to switch said device and after switching to create a low amplitude holding current through said device, said first pulse having a first duration sufficient to substantially crystallize said filamentous path; and

applying a second voltage pulse to said electrodes immediately after said device has switched of an amplitude sufficient to create a current through said device sufficient to



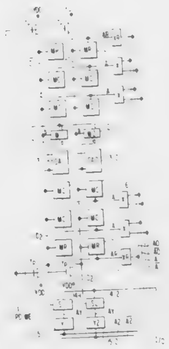
drive said filamentous path into the liquid phase for a very short duration.

4,389,714

MEMORY DEVICE

Masumi Nakao, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 22, 1980, Ser. No. 189,275
Claims priority, application Japan, Sep. 20, 1979, 54/121365
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—189 **20 Claims**



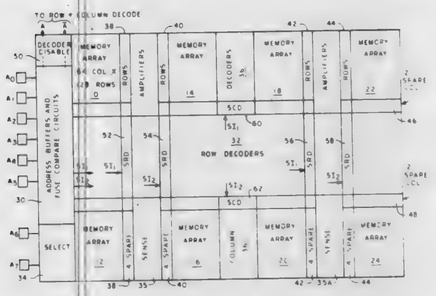
1. A semiconductor memory device comprising a plurality of digit line pairs, each of said digit line pairs including a first digit line and a second digit line, a plurality of memory cells, a plurality of sense amplifiers respectively provided for said digit line pairs and adapted to operatively amplify a potential difference between the first digit line and the second digit line of the associated digit line pair, a bus line, and means for selectively transferring a logic level of the first digit line of one of said digit line pairs to said bus line, and a plurality of drive circuits, each said drive circuit being responsive to a first level of the first digit line of the associated digit line pair for operatively making a potential of the second digit line of said associated digit line pair to a second level, each of said drive circuits including an inverter circuit receiving a signal from the first digit line and switching means responsive to an output of said inverter circuit for operatively feeding a power supply voltage to the second digit line.

4,389,715

REDUNDANCY SCHEME FOR A DYNAMIC RAM

Sargent S. Eaton, Jr., and David R. Wooten, both of Colorado Springs, Colo., assignors to Inmos Corporation, Colorado Springs, Colo.

Filed Oct. 6, 1980, Ser. No. 194,613
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—200 **10 Claims**



8. In a RAM having main columns of memory cells, a plurality of spare memory cells, a main decoder for accessing the main memory cells, and a spare decoder for accessing the spare memory cells, a redundancy scheme for replacing defective main cells with spare cells without disabling the main decoder, comprising:

a memory array divided into first and second sectors, the first sector containing a portion of each main memory column and one or more spare columns, and the second sector containing the remaining portion of each main memory column and one or more spare columns;

means for accessing the main memory columns and the spare memory columns such that, when a portion of an addressed main column in said first sector is defective and its remaining portion in said second sector is not defective, the non-defective portion of said addressed column is accessed and a spare replacement column in one of said sectors is accessed in place of the defective portion of the addressed column; and

means for coupling the data associated with the accessed portion of the addressed column and the replacement spare column to a data output.

4,389,716

MODE CONTROL SYSTEM FOR A RADIO/TAPE PLAYER UNIT

Erik W. Pearson, Canoga Park, Calif., assignor to Superscope, Inc., Chatsworth, Calif.

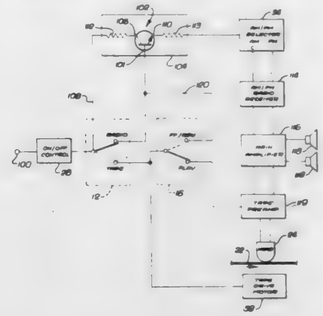
Filed Apr. 24, 1981, Ser. No. 257,168
Int. Cl.³ H04B *1/20, 1/06*
U.S. Cl. 369—6 **16 Claims**

1. In a radio/tape player unit having a radio portion for receiving and converting a radio signal to an audio output, and a tape player portion having drive means for transporting magnetic tape past sensing means for sensing information stored on the tape and for converting the information to an audio output, a system for controlling the mode of operation of the unit, comprising:

a mode selector switch movable between a "radio" mode setting for energization of the radio portion to provide a radio audio output, and a "tape" mode setting for energization of the tape player portion to provide a tape audio output;

means for selectively operating the tape player portion in a fast-forward condition and in a reverse condition for respective rapid advancing and rewinding of the tape past the sensing means; and

a mode override switch responsive to operation of the tape player portion in the fast-forward condition and in the



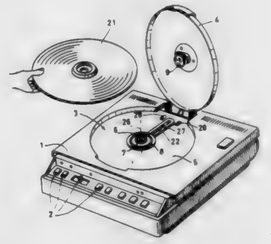
reverse condition to disable the tape audio output and to energize the radio portion to provide a radio audio output.

4,389,717

APPARATUS FOR WRITING AND/OR READING INFORMATION ON A ROTARY INFORMATION DISC WITH THE AID OF A RADIATION BEAM

Eduard Camerik, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,324
Claims priority, application Netherlands, Jul. 31, 1980, 8004379
Int. Cl.³ G11B *1/00, 7/18*
U.S. Cl. 369—75 **8 Claims**



1. An apparatus for recording and/or reading information in an information surface of an information disc which rotates about an axis of rotation, with the aid of a radiation beam, which apparatus comprises:

a main frame (**1**),

an objective frame (**16**),

an objective (**17**), which is movable relative to the objective frame for concentrating the radiation beam to a radiation spot in a focussing plane and which comprises a lens system with one or more lenses and with an optical axis as well as a free end (**20**) to be directed to the information disc, and

a parallel guide (**19**) for guiding the movements of the objective in the direction of its optical axis,

characterized in

that near the free end (**20**) of the movable objective (**17**) there are arranged stationary plane-parallel radiation-beam transmitting shielding means (**22**), which are connected to the main frame (**1**) transversely of the optical axis (**18**), between the lens system and the location of a rotary information disc (**21**) for shielding the objective from dust, contaminants and mechanical damage, and

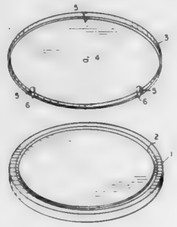
that the lens system is corrected for the optical properties of the shielding means.

4,389,718

PHONOGRAPH DECOUPLING APPARATUS AND METHOD

Frank Rizzello, 85-50 259th St., Floral Park, N.Y. 11004

Continuation of Ser. No. 86,997, Oct. 22, 1979, Pat. No. 4,279,423. This application Mar. 16, 1981, Ser. No. 244,305
The portion of the term of this patent subsequent to Oct. 27, 1998, has been disclaimed.
Int. Cl.³ G11B *3/60*
U.S. Cl. 369—247 **44 Claims**



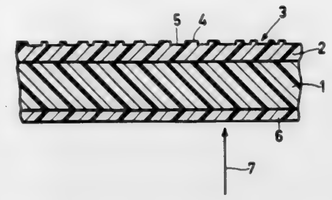
1. A record playing apparatus comprising:
a first motor driven, substantially rigid, turntable platter;
a second substantially rigid turntable platter mounted above said motor driven platter with no further platters mounted therebetween, said first and second platters having confronting surface portions, said second platter adapted to receive a record thereon;
a plurality of low compliance small contact area mounting devices, each of said mounting devices comprising a substantially rigid, substantially inelastic protrusion or projection immovably fixed to and rigidly extending from one of said first and second platters toward the other of said platters and each protrusion or projection having a free end portion of given shape;
receiving means on said other of said platters, said receiving means comprising at least one depression for receiving and contacting at at least two substantially opposed points said free end portions of said small contact area mounting devices such that movement of said other platter relative to said free end portions of said small contact area mounting devices is substantially prevented in all directions in parallel with the planes of said platters during operation of the record playing apparatus;
said small contact area mounting devices being spaced from each other and being unconnected with each other, and being distributed around peripheral portions of said confronting surface portions of said first and second platters for providing a plurality of isolated small contact, substantially rigid, support areas directly between said first and second platters and maintaining said confronting surfaces spaced from each other, the total of the cross sectional areas of said small contact area mounting devices being substantially less than the area of said platters in the plane of said platters, said first and second platters being connected with each other only via said small contact area mounting devices; and
a spindle in the central portion of said second platter for engaging a center of a phonograph record, said spindle not extending to said first platter.

4,389,719

OPTICALLY READABLE INFORMATION DISK

Michael J. C. Van de Donk; Hendricus C. A. M. Heinemans, and Petrus E. J. Legierse, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 8, 1980, Ser. No. 185,052
Claims priority, application Netherlands, Apr. 8, 1980, 8002039
Int. Cl.³ B32B *15/08*
U.S. Cl. 369—275 **3 Claims**



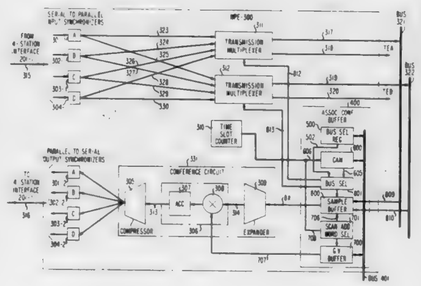
1. An optically readable information disk consisting essentially of a transparent substrate plate of polyvinyl chloride or a copolymer of vinyl chloride provided on one side with a reflecting optical structure comprising a radiation cured lacquer layer containing an information track having a crenelated profile of information areas situated alternatively at a higher and a lower level and a reflecting layer located on said radiation cured lacquer layer, said information track being readable by reflective laser light through said substrate plate, and, on the surface of the substrate plate remote from the optical structure a radiation cured lacquer layer transparent to the laser light employed.

4,389,720

DISTRIBUTED DIGITAL CONFERENCING SYSTEM

Leslie A. Baxter, Eatontown; Paul R. Berkowitz, Red Bank, and Clair A. Buzzard, Lincroft, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 23, 1981, Ser. No. 256,937
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—62 **10 Claims**



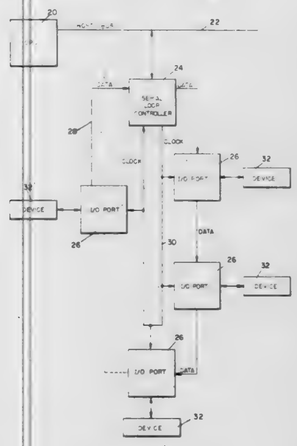
1. A system for providing conference communications among a group of ports served by a common bus, said system characterized by
means for establishing with respect to said common bus a plurality of time slots, each time slot defining a period of time in which a signal sample from any of said ports may be placed on said bus by any port and obtained from said bus by one or more other ports,
a port control circuit associated with each said port, said port control circuit operative for obtaining samples from said common bus, or for placing samples on said common bus, said port circuit comprising,
means for temporarily storing the identities of the time slots destined for said associated port for the duration of a communication connection,
means for temporarily storing unique gain adjustment values for each said obtained signal sample,
means for modifying said obtained signal samples under control of said assigned gain adjustment values, and
means for providing to said associated port a combined signal sample including all said modified signal samples.

4,389,721

TIME-DIVISION MULTIPLEX SERIAL LOOP

William R. Young, and Stanley R. Zepp, both of Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Jun. 30, 1981, Ser. No. 278,990
Int. Cl.³ H04J *6/02*; **G08B** *5/00*
U.S. Cl. 370—88 **32 Claims**



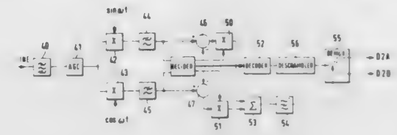
1. A serial loop comprising:
loop controller means for controlling the transmission of data outbound onto said loop and reception of data inbound onto said loop by generating a plurality of frames, each of which includes a frame control field followed by a fixed number of fixed bit length time slot fields, each time slot field including an inbound data control field, a data field and an outbound data control field; and
a plurality of I/O means connected in a series loop to said loop controller, means, each for receiving said frames, monitoring one of said time slot fields to which the I/O means is dedicated, inserting data into the data field of said dedicated time slot field if so signified by the inbound data control field, and removing data from said data field of said dedicated time slot field if so signified by the outbound data control field.

4,389,722

METHOD FOR THE SIMULTANEOUS TRANSMISSION OF A PLURALITY OF DATA STREAM OVER ONE TRANSMISSION CHANNEL

Hagen Hofmeister, Korb, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 12, 1980, Ser. No. 186,631
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1979, 2937073
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—100 **16 Claims**



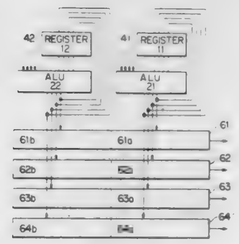
1. In a method for simultaneously transmitting a plurality of modulated digital data streams over one transmission channel with the aid of a pair of modems, one of the modems acting as a transmitter and the other of the modems acting as a receiver, and wherein the data streams are modulated at the modem acting as the transmitter, transmitted via the single channel and demodulated at the modem acting as a receiver; the improvement comprising synchronizing the receiver with the specific modulation of the individual data streams of the transmitter by: applying a small additional modulation to the transmitter signal with the frequency of the additional modulation being equal to the modulation rate of the transmitter signal divided by a whole number; demodulating the additional modulation in the receiver by deriving, from actual values of the received modulated signal, associated values corresponding to the received values to be expected in a system without the additional modulation, and multiplying the derived values by the difference between the associated derived and actual received values; freeing the resulting parameter signal of interferences; and using the interference freed parameter signal as the synchronizing signal in the receiver.

4,389,723

HIGH-SPEED PATTERN GENERATOR

Atsushi Nigorikawa; Hiroshi Yokoyama, and Takanori Fujieda, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd. and Ando Electric Co., Ltd., both of Tokyo, Japan

Filed Jan. 14, 1981, Ser. No. 224,986
Claims priority, application Japan, Jan. 18, 1980, 55-3487
Int. Cl.³ G01R *31/26*
U.S. Cl. 371—27 **5 Claims**



1. A high-speed pattern generator comprising a plurality of n ($n \geqq 2$) of units, said units comprising a plurality of n arithmetic and logic units (hereinafter referred to as "ALUs") having outputs in m bits ($m \geqq 1$) and a plurality of n registers having outputs and also having inputs for receiving the outputs from

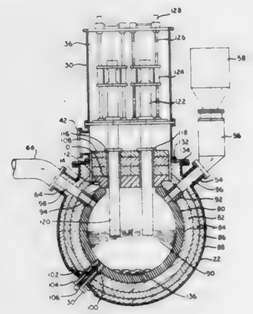
said ALUs, the outputs of one of (a) said plurality of ALUs and (b) said plurality of registers being the outputs of said units, said generator further comprising a plurality m of n-bit shift registers, said ALUs having inputs for receiving input data and receiving outputs from said registers, said shift registers having inputs connected for receiving the outputs of said units in a manner to supply the outputs of the ith ($n \geqq i \geqq 1$) unit to ith bit inputs of said shift registers in the same sequence, thereby enabling said shift registers to produce a pattern output.

4,389,724

ATMOSPHERE CONTROLLED ELECTRIC MELTING

Patrick J. Wooding, Moorestown, N.J., assignor to Wooding Corporation, Moorestown, N.J.

Continuation-in-part of Ser. No. 773,263, Mar. 1, 1977, Pat. No. 4,202,997. This application Feb. 7, 1980, Ser. No. 119,450
The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.
Int. Cl.³ C03B 5/02
U.S. Cl. 373—33 **17 Claims**



1. An electric melting furnace comprising:
a carbon-lined crucible having an upper portion and a lower portion;
means for sealing the interior of said crucible from the atmosphere outside said crucible, said means for sealing including a refractory-lined roof covering said upper portion;
means for controlling the atmosphere within said crucible including means for removing detrimental gases detrimental to the lining therefrom;
means for feeding non-metallic material to be melted into the interior of said crucible including means for preventing atmospheric gases from entering the interior of said crucible while said material is being fed thereto;
electric means for melting the material fed into the crucible, and
taphole means located adjacent the lower portion of said crucible for removing molten material from said crucible while said electric means is melting material within said crucible.

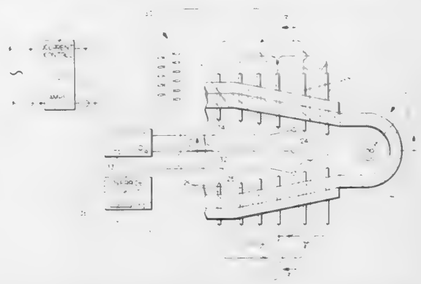
4,389,725

ELECTRIC BOOSTING CONTROL FOR A GLASS FOREHEARTH

Marvin L. Barkhau, Elmore; Philip D. Perry, Toledo, both of Ohio, and Roland F. Pimm, Manteca, Calif., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 27, 1981, Ser. No. 287,382
Int. Cl.³ C03B 5/02
U.S. Cl. 373—40 **6 Claims**

1. Apparatus for heating molten glass flowing through the conditioning section of a forehearth comprising:
a plurality of pairs of electrodes extending through the sidewalls of the forehearth with their ends terminating adjacent the sidewall thereof;
circuit means connected to said electrode pairs, said circuit means being such as to cause joule effect heating of the glass adjacent the sidewalls of the forehearth;
a source of electrical current connected to said circuit means;
a first temperature sensing means positioned within said forehearth at the center line thereof within the conditioning section adjacent the end thereof, said first sensing means including a thermocouple immersed in the glass;



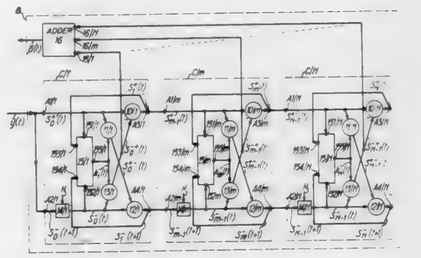
a second temperature sensing means extending into the forehearth adjacent the sidewall thereof in alignment with said first sensing means;
a current controller in said circuit means;
a settable, temperature override circuit connected to said circuit means; and
means connecting said second temperature sensing to said override circuit for adjusting the current to said electrodes to bring the sidewall temperature to the selected set point of said override circuit.

4,389,726

ADAPTIVE PREDICTING CIRCUIT USING A LATTICE FILTER AND A CORRESPONDING DIFFERENTIAL PCM CODING OR DECODING APPARATUS

Alain Le Guyader, 40, Residence Duroux, and Andre Gilloire, 7, rue Yann Peron, both of 22300 Lannion, France

Filed Apr. 10, 1981, Ser. No. 253,154
Claims priority, application France, Apr. 21, 1980, 80 08883
Int. Cl.³ H04B 12/04
U.S. Cl. 375—27 **7 Claims**



1. An adaptive predicting circuit comprising:
(A) a lattice filter with N identical cells (C) each having a first access port (A_1), a second access port (A_2), a third access port (A_3) and a fourth access port (A_4), the first and second access ports (A_1/m, A_2/m) of a cell (C/m) of rank m being respectively connected to the third and fourth access ports (A_3/m−1, A_4/m−1) of the preceding cell (C/m−1) of rank m−1, each cell comprising a circuit (14/m) for delaying sampling time connected to the second access port and circuits of linear combinations of signals appearing at the access ports of the cell, including

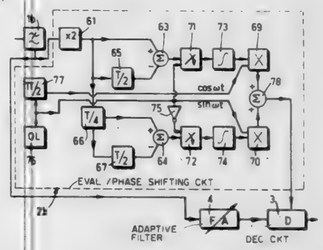
first and second multipliers each having first and second inputs, one of said inputs receiving one of the signals and the other of said inputs receiving a multiplication coefficient $k_m(t)$ dependent on the sampling time t, means being provided for supplying said coefficient $k_m(t)$ to the multipliers; and
(B) an adder (16) having N inputs respectively connected to the N cells and an output supplying a prediction signal;
wherein the means for supplying the coefficient $k_m(t)$ comprise in each cell a circuit (15/m) for the sequential adaptation of the coefficient $k_m(t)$ inherent to each cell, said adaptation circuit having a first input (151/m), a second input (152/m), a third input (153/m), and a fourth input (154/m), said inputs being respectively connected to the first access port (A_1/m) of the cell, to the output of the delay circuit (14/m) and to the third and fourth access ports (A_3/m, A_4/m) of the cell, said adaptation circuit also having an output (155/m) which supplies the coefficient $k_m(t)$, the N coefficients of the lattice filter being readjusted by the N adaptation circuits for each sampling time from the signals present at this time in the filter, and the coefficients being used immediately after readjustment.

4,389,727

METHOD FOR CONTROLLING THE CLOCK PHASE OF A RECEIVING SYSTEM FOR DIGITAL DATA, PHASE RECOVERY CIRCUIT FOR EFFECTUATING THIS METHOD AND DIGITAL DATA RECEIVING SYSTEM COMPRISING SAID CIRCUIT

Denis Rouffet, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 236,942
Claims priority, application France, Feb. 27, 1980, 80 04324
Int. Cl.³ H04L 7/04
U.S. Cl. 375—110 **5 Claims**



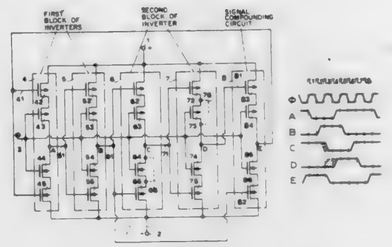
2. A phase recovery circuit for a receiving system for digital data having a symbol period T and being transmitted after linear modulation over a time-varying channel with limited pass-band, characterized in that the phase recovery circuit comprises:
a lowpass filter circuit having a transfer function such that this circuit substantially eliminates the frequencies above 1/T from the received frequency spectrum and the average energy of its output signal, as a function of the time t and the symbol period T of the transmitted data at the input of the channel, is only defined by an expression of the type $E = A + B \cdot \cos(2\pi t/T)$, A and B being two constant or slowly varying positive real coefficients;
an evaluation circuit for determining the phase deviation ϕ_E between the value $\phi_M = 2\pi t_M/T$ maximizing the expression for E and the value $\phi = 2\pi t/T$ corresponding to the value of the average energy of the output signal of the filter circuit at a sampling instant t preceding the clock phase control; and
a phase shifting circuit for shifting the sampling instants fixed by the clock over a time $t_E = (\phi - \phi_M)T/(2\pi)$, taking its sign into consideration.

4,389,728

FREQUENCY DIVIDER

Akira Tsuzuki, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1980, Ser. No. 219,237
Claims priority, application Japan, Dec. 29, 1979, 54-172181
Int. Cl.³ H03K 21/10, 23/22
U.S. Cl. 377—114 **4 Claims**



1. A frequency divider comprising a first block composed of an even number of stages of clock controlled inverters connected in cascade and operative to propagate the change of state of an input signal in synchronism with the change of a clock signal; a second block composed of an even number of stages of clock controlled inverters connected in cascade and operative to propagate the change of state of the input signal from a first electric source line potential to a second electric source line potential in synchronism with the change of the clock signal; and a clock controlled signal compounding circuit having first and second input terminals operative to change the output state in synchronism with the change of the clock signal when the state of the first input terminal is changed from the first electric source line potential to the second electric source line potential and when the state of the second input terminal is changed from the second electric source line potential to the first electric source line potential; the final stage output terminal of the first block being connected to the initial stage input terminal of the second block and to the second input terminal of said clock controlled signal compounding circuit, the final stage output terminal of the second block being connected to said first input terminal; and the output terminal of said signal compounding circuit being connected to the initial input terminal of the first block.

4,389,729

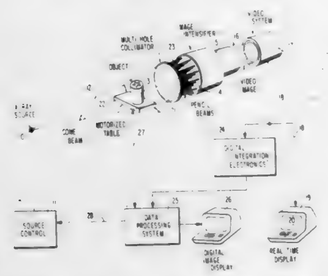
HIGH RESOLUTION DIGITAL RADIOGRAPHY SYSTEM

Jay Stein, Framingham, Mass., assignor to American Science and Engineering, Inc., Cambridge, Mass.

Filed Dec. 15, 1981, Ser. No. 331,100
Int. Cl.³ G01N 23/04; H05G 1/60
U.S. Cl. 378—99 **14 Claims**

12. In a fluoroscopic system of the type comprising an X-ray source located on one side of an object to be examined, an image intensifier tube located on the other side of said object, and a video system for scanning an image generated on an output face of said tube for producing analog signals representative of said image, the improvement comprising collimator means located between said X-ray source and said image intensifier tube, said collimator means having a two-dimensional array of spaced holes therein for directing a corresponding array of pencil beams of X-rays toward the input face of the image intensifier tube, means for raster scanning said pencil beams relative to said object and across said input face through distances substantially corresponding to the distances between the spaced holes in said collimator means while said video system is scanning the images that are generated on the output

face of said tube, means for digitizing the analog signals produced by said video system, and means for interleaving a series



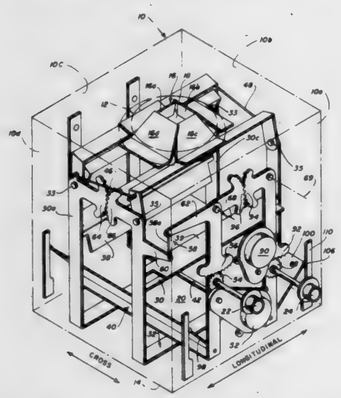
of said digitized signals to provide a composite digital signal representative of a high resolution image of said object.

4,389,730

COMPACT COLLIMATOR

James Cutter, Hollister, Calif., assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed May 14, 1981, Ser. No. 263,448
Int. Cl.³ G21F *5/04*; G21K *1/04*
U.S. Cl. 378—153 **7 Claims**



1. An x-ray collimator adapted for mounting to an x-ray source to adjustably define the longitudinal and transverse boundaries of radiation which emerges from the source in a direction generally orthogonal to both the longitudinal and transverse directions and comprising:

a housing having an inlet port and an outlet port aligned therewith;

a first shutter assembly including a first pair of transversely narrow, longitudinally extending, x-ray absorbing shutter elements adjacent the outlet port and supported for opposing rotational movement about respective longitudinally extending axes adjacent the inlet port, the first shutter element pair having respective transversely inner, longitudinally extending edge portions which define the transverse radiation boundaries;

a second shutter assembly including a second pair of transversely extending, x-ray absorbing shutter elements oppositely adjacent the first pair with respect to the outlet port and supported for opposing rotational movement about respective transversely-extending axes adjacent the inlet port, the second pair of shutter elements having respective, longitudinally inner, transversely extending inner edge portions which define the longitudinal radiation boundaries and further include respective x-ray blocking surfaces extending longitudinally outward from the edge portions towards longitudinally-outward ends thereof;

guide means for opposingly rotating the outer ends of the blocking surfaces about the inner ends thereof as the second pair of shutter elements are rotated;

first means for opposingly rotating the first pair of shutter elements; and

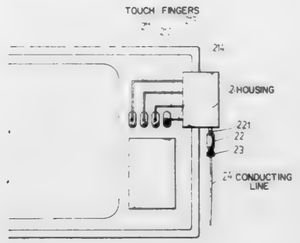
second means for opposingly rotating the second pair of shutter elements.

4,389,731

REMOTE CONTROL DEVICE FOR TOUCH TYPE TUNER OF TELEVISION

Ta-She Wu, No. 42, Feng-Chia St., Tainan, Taiwan

Filed Apr. 17, 1981, Ser. No. 254,849
Int. Cl.³ H03J *9/00*; H04B *1/06*
U.S. Cl. 455—153 **9 Claims**



1. A remote control device for a touch type tuner of a television comprising:

a remote control box including a plurality of pressing means for selectively providing pressed air through individual ones of a respective plurality of outlets;

a touch control mechanism including a plurality of bellow members, each being received in a respective cavity provided on the inner wall of the rearmost end of a housing, each said bellow member having an inlet at one end thereof communicating with one of said plurality of outlets through a respective tube, another end of each of said bellow members capable of biasing a respective movable body forwards when each said bellow member expands;

a plurality of electrically conducting touch fingers, each conducting touch finger having one end thereof abutting against a respective touch button of the tuner, and the other end thereof fixed insulatedly at the inner wall of the foremost end of the housing; and

a potential conducting line electrically coupled to a plurality of electrically conductive tongues, each said tongue mechanically contacting a free end of a respective one of said movable bodies such that as the pressed air expands a respective bellow member, its associated movable body is subsequently biased to cause its respective tongue to contact with a respective conducting touch finger to achieve a selection operation.

4,389,732

TUNING DEVICE FOR RADIO RECEIVER

Yasumasa Sasahara, and Hiroshi Kuroda, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 2, 1980, Ser. No. 193,111
Claims priority, application Japan, Oct. 3, 1979, 54-127737; Oct. 3, 1979, 54-127738
Int. Cl.³ H04B *1/16*; H03J *7/30*
U.S. Cl. 455—160 **15 Claims**

1. A tuning device for a radio receiver capable of selectively carrying out automatic and manual tuning operations, comprising:

a variable tuning element for determining a tuning frequency of the receiver;

a manipulator for manually operating said tuning element in the manual operation;

a motor for operating said tuning element in the automatic operation;

clutch means for selectively transmitting to the tuning element an operating force for said element from either one of said manipulator and said motor;

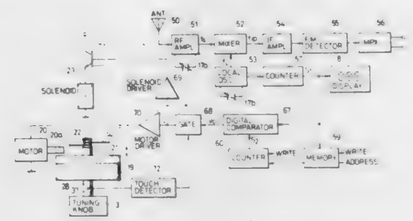
first operating force transmitting means to transmit the operating force from said manipulator to said clutch means;

second operating force transmitting means independently operated relative to said first transmitting means to transmit the operating force from said motor to said clutch means; and

clutch control means to control said clutch means to couple to said tuning element said first transmitting means in the manual operation or said second transmitting means in the automatic operation;

wherein said clutch means comprises

a rotatable clutch plate adapted to selectively receive an operating force from either said first or second transmitting means, and



clutch driving means for driving said clutch plate to receive one of said operating forces.

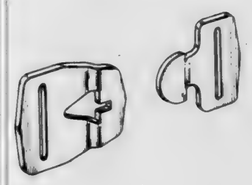
DESIGN PATENTS

GRANTED JUN. 21, 1983

ERRATA

For CLASS	See PATENT NO.
D18–008	269,403
D21–045	269,447

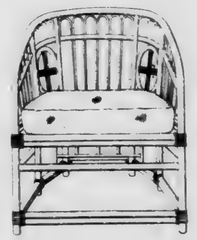
269,389
BUCKLE FOR SAFETY BELT OR HARNESS
Kenneth H. Wood, 152 New St., Brighton, Victoria, 3186, Australia
Filed Jul. 17, 1980, Ser. No. 169,730
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—408



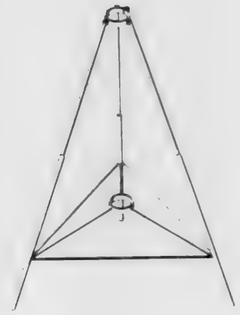
269,390
TOY ROCKING CHAIR
Juliet Holmes a Court, Woollahra, Australia, assignor to Freeflight International Pty. Limited, Sydney, Australia
Filed Dec. 10, 1980, Ser. No. 214,935
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—11



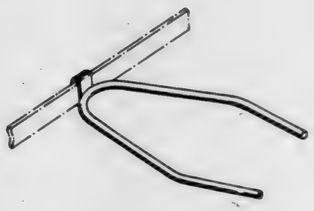
269,391
CHAIR
Mike T. Claman, 475 Park Ave., New York, N.Y. 10022
Filed Jun. 2, 1980, Ser. No. 155,404
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—57



269,392
TREE STAND
John J. Breen, 7100 Alcove Ave., North Hollywood, Calif. 91605
Filed Mar. 6, 1981, Ser. No. 241,463
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—105



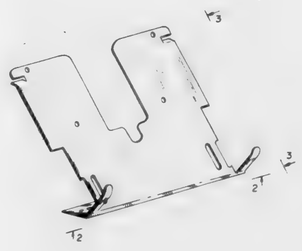
269,393
BOOT HOLDER
Jorgen Larsen, 4772 - 238 St., Langley, British Columbia, Canada (V3A 4P1), and Thor Heske, 24095 - 25 Ave., Aldergrove, British Columbia, Canada (V0X 1A0)
Filed Feb. 17, 1981, Ser. No. 235,108
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—116



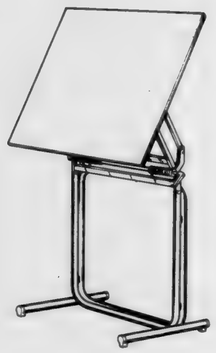
269,394
GUN SECURITY CABINET
Thomas W. Hennessey, 20215 Akin Rd., Farmington, Minn. 55024
Filed Mar. 16, 1981, Ser. No. 244,224
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—167



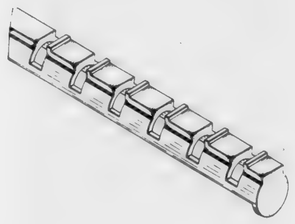
269,396
SUPPORT CADDY FOR TOOLS OR THE LIKE
Stewart J. Bricker, 3373 Mary Ave., Columbus, Ohio 43204
Filed Feb. 5, 1981, Ser. No. 231,905
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—180



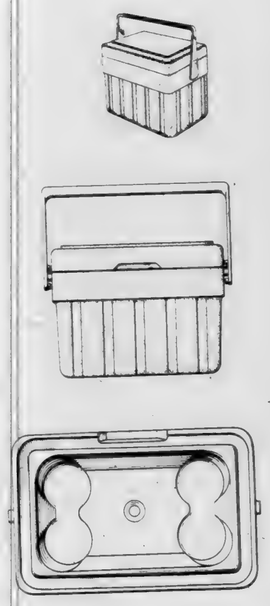
269,395
ADJUSTABLE TABLE
Dennis R. Kapp, 7780 Chichester, Canton, Mich. 48187
Filed May 4, 1981, Ser. No. 260,080
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



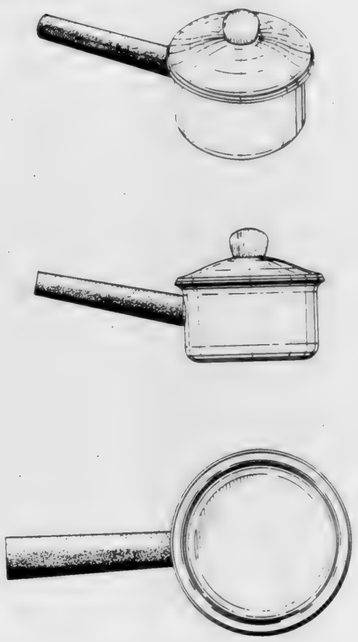
269,397
ARM EXTENSION FOR A RUG SAMPLE DISPLAY STAND
Fred Van Duyne, Ringwood, N.J., assignor to Melrose Displays, Inc., Passaic, N.J.
Filed Dec. 22, 1980, Ser. No. 218,648
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—191



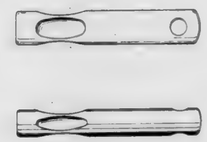
269,398
INSULATED CONTAINER
Craig Ruxton, Harris County, Tex., assignor to Igloo Corporation, Houston, Tex.
Filed Sep. 10, 1980, Ser. No. 186,054
The portion of the term of this patent subsequent to May 17, 1997, has been disclaimed.
Term of patent 14 years
Int. Cl. D07—*07*
U.S. Cl. D7—77



269,399
COVERED SAUCEPAN
Yanta H. T. Lam, Hong Kong, Hong Kong, assignor to Meyer Manufacturing Co. Ltd., Hong Kong
Filed Sep. 29, 1980, Ser. No. 192,114
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—361



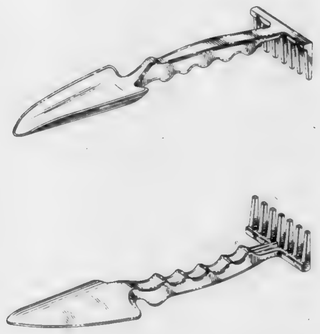
269,400
HANDLE FOR KITCHEN TOOLS, UTENSILS OR THE LIKE
Fredrich W. Usbeck, Frauenstrasse 33, D-3550 Marburg, Lahn, Fed. Rep. of Germany
Division of Ser. No. 26,612, Apr. 3, 1979, Pat. No. Des. 263,920.
This application Sep. 11, 1981, Ser. No. 301,244
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 16 MR 278; Feb. 9, 1979, 16 MR 286; Feb. 21, 1979, 16 MR 287
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—395



269,401
GARDEN SHEARS
Alan K. Pittaway, High Wycombe, England, assignor to Wilkinson Sword, Limited, England
Filed Jul. 28, 1981, Ser. No. 287,604
Claims priority, application United Kingdom, Jan. 31, 1981, 998684; Jan. 31, 1981, 998685
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—5

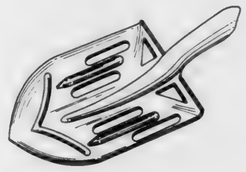


269,402
GARDENING TOOL
Theodore A. Wayman, Youngstown, Ohio, assignor to M and W Electric Manufacturing Co., East Palestine, Ohio
Filed Aug. 3, 1981, Ser. No. 289,216
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—10

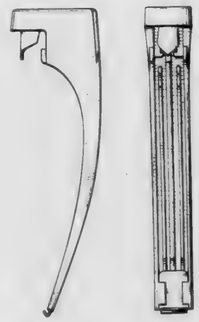




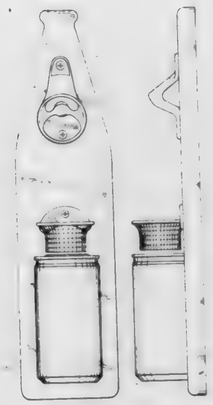
269,403
SHOVEL BLADE
Masao Miyata, No. 2,1-chome, 9-jyo, Kikusui, Shiraishi-ku, Sapporo, Japan
Filed Sep. 14, 1981, Ser. No. 302,126
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D10—8



269,404
COMBINED CAN HANDLE AND OPENER
Robert A. De Mars, 7328 Alabama Ave., Canoga Park, Calif. 91303
Continuation-in-part of Ser. No. 240,131, Mar. 3, 1981. This application Feb. 12, 1982, Ser. No. 348,343
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D8—34



269,405
COMBINED WALL MOUNTED BOTTLE OPENER AND CAP RECEPTACLE
John T. Ehrlich, 1001 SE. Division, Portland, Oreg. 97214
Filed Apr. 30, 1981, Ser. No. 258,895
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D8—37

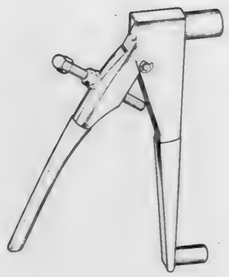




269,406
LOG SPLITTER
Anthony M. Tremaglio, 184 Maybrook Rd., Waterbury, Conn. 06708, and Philip Kaye, 35 Turkey Hill, N., Westport, Conn. 06880
Filed Feb. 19, 1981, Ser. No. 235,850
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—47



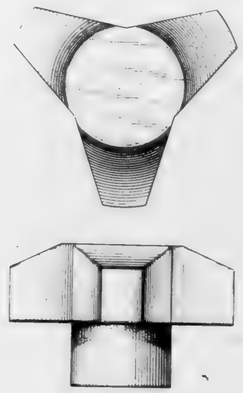
269,407
MOUNTING TOOL FOR WALL EXPANSION ANCHORS
Jan B. H. Ekener, Täby, Sweden, assignor to Jan Ekener AB, Stockholm, Sweden
Filed Dec. 11, 1980, Ser. No. 215,466
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1980, URA 649/80
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—52



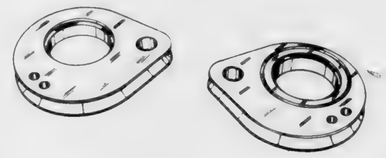
269,408
CYCLE HAND GRIP
Willard Merritt, Wheaton, Ill., assignor to Oury Grip Grip U.S.A., Inc., Wheaton, Ill.
Filed Jul. 20, 1981, Ser. No. 285,143
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D8—303



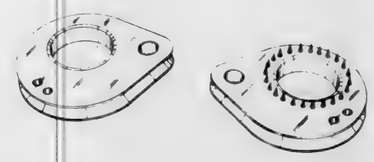
269,409
KNOB
Irwin J. Ferdinand, Glencoe; Richard Sylvan, Glenview, and Michael Peterson, Evanston, all of Ill., assignors to Hirsh Company, Skokie, Ill.
Filed Aug. 19, 1981, Ser. No. 294,404
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—307



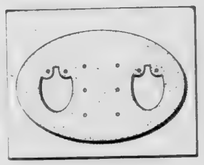
269,410
THIMBLE FOR A ROPE
Bengt Johansson, Kullavägen 7, Sjömarken, Sweden (510 41)
Filed Jun. 8, 1981, Ser. No. 271,688
Claims priority, application United Kingdom, Dec. 9, 1980, 997977
Term of patent 14 years
Int. Cl. D08—*08*
U.S. Cl. D8—367



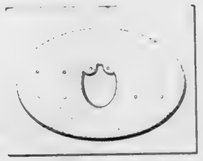
269,411
THIMBLE FOR A ROPE
Bengt Johansson, Kullavägen 7, Sjömarken, Sweden (510 41)
Filed Jun. 8, 1981, Ser. No. 271,689
Claims priority, application United Kingdom, Dec. 9, 1980, 997976
Term of patent 14 years
Int. Cl. D08—*08*
U.S. Cl. D8—367



269,412
JEWELRY DISPLAY CARD
Bruce S. Jeremiah, 387 Charles St., Providence, R.I. 02904
Filed Apr. 27, 1981, Ser. No. 257,909
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—457



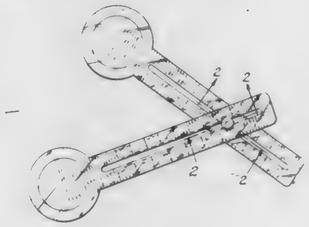
269,413
JEWELRY DISPLAY CARD
Bruce S. Jeremiah, 387 Charles St., Providence, R.I. 02904
Filed Apr. 27, 1981, Ser. No. 257,910
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—457



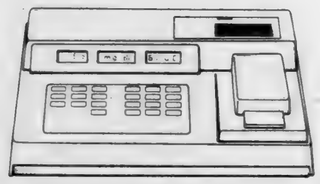
269,414
POCKET CLOCK
Hisako Sugano, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan
Filed Jan. 29, 1981, Ser. No. 230,048
Claims priority, application Japan, Jul. 30, 1980, 55-30929
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—18



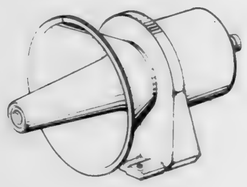
269,415
PILOT TRIANGULATION SCALE
Reginald G. Paton, 2490 Mammoth Dr., San Diego, Calif. 92123
Filed Nov. 6, 1980, Ser. No. 204,489
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—65



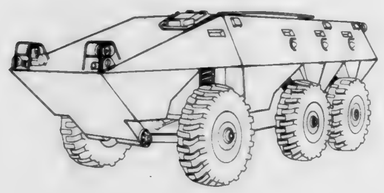
269,416
PHOTOMETER
Erich Retzer, Maisach, and Gerhard Schwarz, Munich, both of Fed. Rep. of Germany, assignors to Compur-Electronic GmbH, Munich, Fed. Rep. of Germany
Filed May 7, 1981, Ser. No. 261,340
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1980, 12 384
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—81



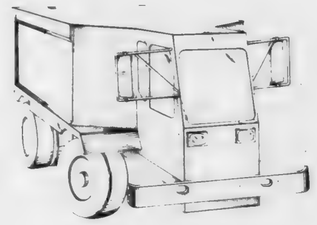
269,417
SIREN
Yoshishige Shintaku, Osaka, Japan, assignor to Ibuki Kogyo Co., Ltd., Osaka, Japan
Filed Sep. 8, 1980, Ser. No. 185,133
Claims priority, application Japan, Apr. 11, 1980, 55-14336
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—120



269,418
SIX-WHEEL ARMORED VEHICLE
Irving Appelblatt, West Bloomfield, and Peter Krawiecki, Utica, both of Mich., assignors to Cadillac Gage Company, Warren, Mich.
Filed Aug. 28, 1980, Ser. No. 182,273
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—12



269,419
TRUCK
Thomas J. Umlauf, Hales Corners, and Robert J. Reese, Wauwatosa, both of Wis., assignors to Central Engineering Co., Inc., Milwaukee, Wis.
Filed Sep. 30, 1980, Ser. No. 192,532
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—96



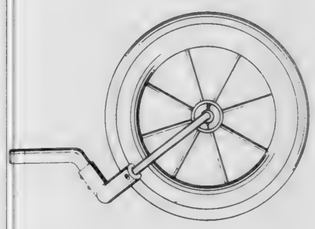
269,420
BOAT AND UTILITY TRAILER STAND OR THE LIKE
Joseph C. McClure, Jr., 38 Park Terrace Dr., St. Augustine, Fla. 32084
Filed Dec. 12, 1980, Ser. No. 215,878
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—106



269,421
BABY CARRIAGE
Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushiki Kaisha, Osaka, Japan
Filed Jul. 24, 1980, Ser. No. 171,996
Claims priority, application Japan, Jan. 29, 1980, 55-2658; Feb. 13, 1980, 55-5197; Feb. 13, 1980, 55-5199
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—129



269,422
WHEEL SHOCK ABSORBER
Lawrence A. Mulholland, 416 Mara St., Ventura, Calif. 93004
Filed Feb. 23, 1981, Ser. No. 236,665
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—159



269,423
VEHICLE IMPACT ABSORBER
William Waite, Darlaston, England, assignor to Rubery Owen Holdings Limited, Wednesbury, England
Filed Jul. 24, 1980, Ser. No. 171,952
Claims priority, application United Kingdom, Jan. 31, 1980, 993 400
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—169



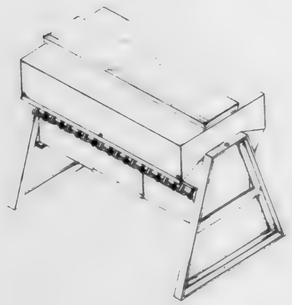
269,424
CALIPER BRAKE FOR BICYCLES
Toshiharu Yoshigai, Higashi-Osaka, Japan, assignor to Yoshigai Kikai Kinzoku Kabushiki Kaisha, Osaka, Japan
Filed Aug. 24, 1981, Ser. No. 290,673
Claims priority, application Japan, Feb. 26, 1981, 56-28288
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—179



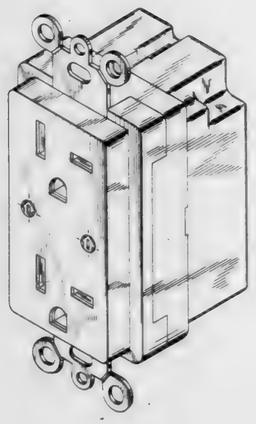
269,425
COMBINED GAS CAP AND FUNNEL
John B. Whitaker, Jr., Rte. 4, Box 898, Wetumpka, Ala. 36092
Filed Jan. 16, 1981, Ser. No. 225,617
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—197



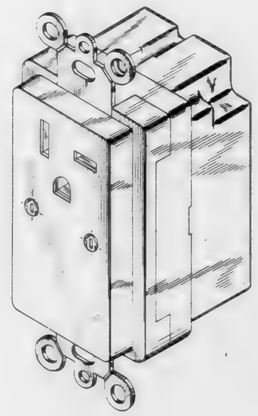
269,426
ELECTRIC POWER DISTRIBUTION UNIT OR SIMILAR ARTICLE
Larry J. Pyle, Second and Gilman Sts., Berkeley, Calif. 94720
Filed Jan. 12, 1981, Ser. No. 224,332
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—12



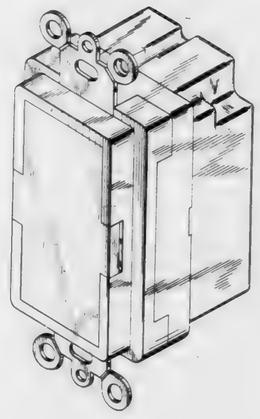
269,427
ELECTRONIC RECEPTACLE
Richard C. Doyle, Greenlawn; Lester Rivera, Glendale, and Saul Rosenbaum, East Meadow, all of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Oct. 7, 1981, Ser. No. 309,339
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—30



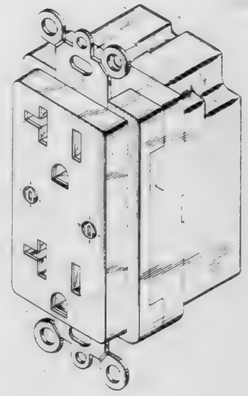
269,428
ELECTRONIC RECEPTACLE
Richard C. Doyle, Greenlawn; Lester Rivera, Glendale, and Saul Rosenbaum, East Meadow, all of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Oct. 7, 1981, Ser. No. 309,340
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—30



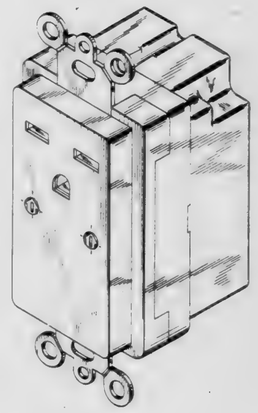
269,429
ELECTRONIC RECEPTACLE HOUSING
Richard C. Doyle, Greenlawn; Lester Rivera, Glendale, and Saul Rosenbaum, East Meadow, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Oct. 7, 1981, Ser. No. 309,353
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—30



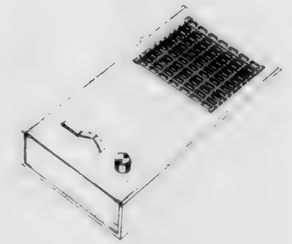
269,430
ELECTRONIC RECEPTACLE
Richard C. Doyle, Greenlawn; Lester Rivera, Glendale, and Saul Rosenbaum, East Meadow, all of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Oct. 7, 1981, Ser. No. 309,538
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—30



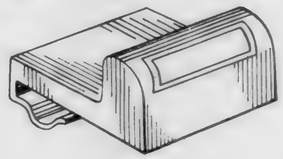
269,431
ELECTRONIC RECEPTACLE
Richard C. Doyle, Greenlawn; Lester Rivera, Glendale, and Saul Rosenbaum, East Meadow, all of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Oct. 7, 1981, Ser. No. 309,540
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—30



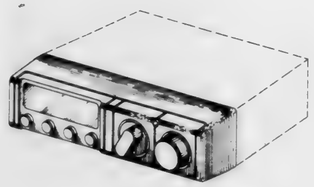
269,432
HOUSING FOR A TELEPHONE AMPLIFIER
John Kowalik, Jr., Freehold; Ronald Longhitano, Matawan, both of N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jul. 7, 1980, Ser. No. 166,099
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—59

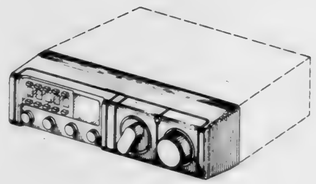


269,433
AUXILIARY TELEPHONE CRADLE
Jeffrey D. Stein, and George A. Saer, both of 3528 Merrimac Ave., San Diego, Calif. 92117
Filed Feb. 17, 1981, Ser. No. 234,991
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—59

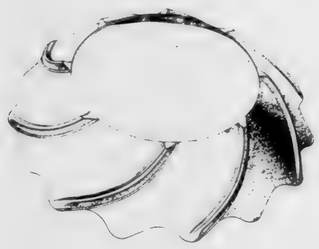


269,434
CONTROL UNIT FOR A VEHICULAR TWO-WAY FM RADIO OR SIMILAR ARTICLE
Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 31, 1981, Ser. No. 249,527
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—76

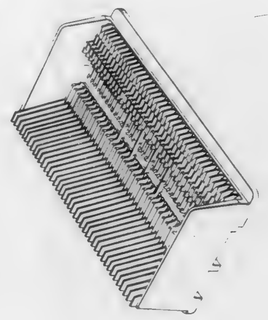




269,435
SKIRT FOR AGRICULTURAL MACHINES FOR MOVING FODDER
Pierre Kaetzel, Saverne, France, assignor to Belrecolt S.A., Marmoutier, France
Filed Apr. 24, 1980, Ser. No. 143,294
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—10



269,436
SLIDE PROJECTOR MAGAZINE
Jochen Jost, Essen, Fed. Rep. of Germany, assignor to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany
Filed Aug. 12, 1980, Ser. No. 178,701
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 5MR578
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—26



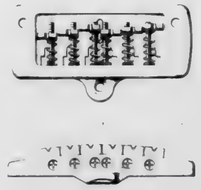
269,437
ELECTRIC GUITAR
Gregg Wilson, Aurora, Colo., and John F. Page, La Mirada, Calif., assignors to CBS Inc., New York, N.Y.
Filed Jun. 10, 1981, Ser. No. 272,310
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14



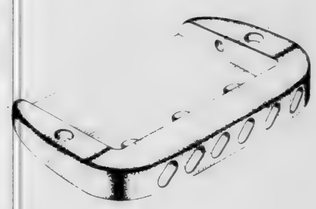
269,438
GUITAR BRIDGE
Hartley D. Peavey, Meridian, Miss., assignor to Peavey Electronics Corp., Meridian, Miss.
Filed May 22, 1981, Ser. No. 266,294
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—21



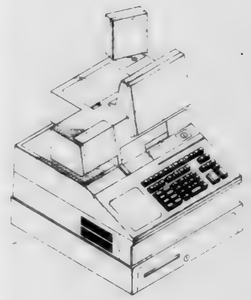
269,439
GUITAR BRIDGE
Hartley D. Peavey, Meridian, Miss., assignor to Peavey Electronics Corp., Meridian, Miss.
Filed May 22, 1981, Ser. No. 266,295
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—21



269,440
GUITAR BRIDGE
C. Leo Fender, 1510 Dana Pl., Fullerton, Calif. 92635
Filed May 26, 1981, Ser. No. 266,822
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—21



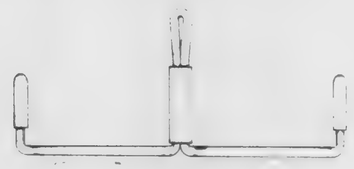
269,441
ELECTRONIC CASH REGISTER
Shuya Matsuda, and Yoshinori Kakiuchi, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Feb. 25, 1981, Ser. No. 237,980
Claims priority, application Japan, Nov. 28, 1980, 55-49598
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—4



269,442
ELECTRONIC TRANSLATOR
Iwao Nakajima, Ikoma, and Kazumasa Takenaka, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Osaka, Japan
Filed Jun. 9, 1980, Ser. No. 157,787
Claims priority, application Japan, Dec. 20, 1979, 54-53712
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



269,443
PAGE HOLDER FOR AN OPEN BOOK
Theodore L. Million, 793 Cambridge Dr., Santa Barbara, Calif. 93111
Filed Apr. 13, 1981, Ser. No. 253,174
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—34



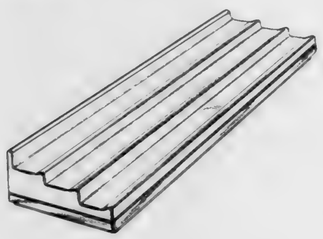
269,444
SET OF FELT PENS
Jürgen Medebach, Kandern-Holzen, Fed. Rep. of Germany, assignor to Pelikan Aktiengesellschaft, Hanover, Fed. Rep. of Germany
Filed Mar. 31, 1980, Ser. No. 135,714
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1980, 82 MR 2308
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—42



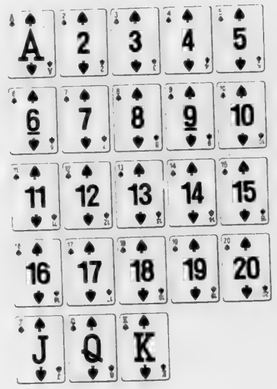
269,445
WRITING INSTRUMENT
Peter A. Krückel, Heroldsberg, and Gerhard Möck, Kirchehrenbach, both of Fed. Rep. of Germany, assignors to Messrs. Schwan-Stabilo Schwanhäusser GmbH & Co., Nuremberg, Fed. Rep. of Germany
Filed Jul. 13, 1981, Ser. No. 283,053
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1981, MR VI 484
Term of patent 14 years
Int. Cl. D19—*00*
U.S. Cl. D19—48



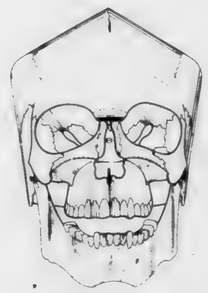
269,446
DESK TRAY FOR STATIONERY ARTICLES
Rino Pirovano, Piazza Castello, 11, Milan, Italy
Filed Aug. 22, 1980, Ser. No. 180,495
Claims priority, application Italy, Mar. 24, 1980, 21267/80[U]
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—75



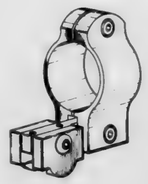
269,447
DECK OF PLAYING CARDS
Bill J. Raheb, 38 Briarwood Dr., Matawan, N.J. 07747
Filed Mar. 26, 1981, Ser. No. 247,870
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—45



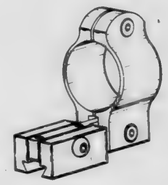
269,448
MODEL SKULL
Bryan Fisher, Flat 21, 43 Wells St., London W1, and Richard J. Miller, 62 Abbott Ave., Wimbledon, London SW20, both of England
Filed Oct. 27, 1980, Ser. No. 200,672
Claims priority, application United Kingdom, May 9, 1980, 994815
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—62



269,449
SCOPE MOUNT FOR A RIFLE
Daniel L. Bechtel, P.O. Box 11281, Fort Worth, Tex. 76109
Filed Mar. 4, 1981, Ser. No. 240,587
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—7



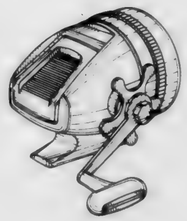
269,450
SCOPE MOUNT FOR A RIFLE
Daniel L. Bechtel, P.P. Box 11281, Fort Worth, Tex. 76109
Filed Mar. 4, 1981, Ser. No. 240,588
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—7



269,451
FOUNTAIN FIREWORK
Zack Treadway, 115 W. 5th, Cordell, Okla. 73632
Filed Jan. 12, 1981, Ser. No. 224,272
Term of patent 14 years
Int. Cl. D22—*03*
U.S. Cl. D22—10



269,452
FISHING REEL
Robert W. Fee, Wichita, and Richard J. Robbins, Derby, both of Kans., assignors to Brunswick Corporation, Skokie, Ill.
Filed May 27, 1981, Ser. No. 267,569
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



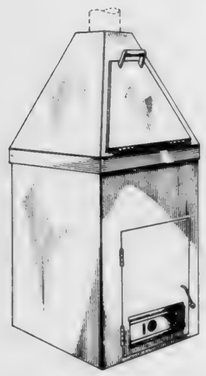
269,453
GARDEN POND FILTER
Waldemar Riepe, Osnabrück, Fed. Rep. of Germany, assignor to Tetra Werke Dr. rer. nat. Ulrich Baensch GmbH, Melle, Fed. Rep. of Germany
Filed Jun. 19, 1980, Ser. No. 161,107
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 9 MR 589
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



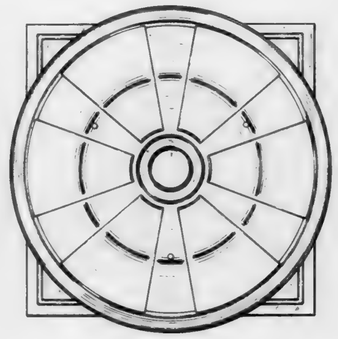
269,454
SEAL FOR A ROOF VENT PIPE OR SIMILAR ARTICLE
David G. Houseman, Bayswater, Australia, assignor to John Deks Australia Pty., Ltd., Baywater, Australia
Filed Jan. 27, 1981, Ser. No. 228,955
Claims priority, application Australia, Jul. 28, 1980, 81,633
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—42

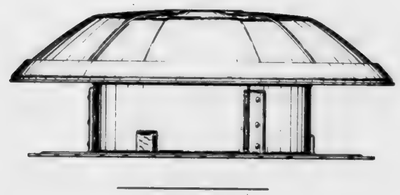


269,455
DOMESTIC INCINERATOR APPARATUS
Harry Green, R.D. #2- Outlet Rd., Shortsville, N.Y. 14548
Filed Dec. 11, 1980, Ser. No. 215,287
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—85



269,456
ROOF VENTILATOR
Bernard A. McDermott, Akron, Ohio, assignor to Questor Corporation, Tampa, Fla.
Filed Jan. 21, 1981, Ser. No. 226,931
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—153

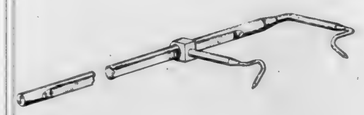




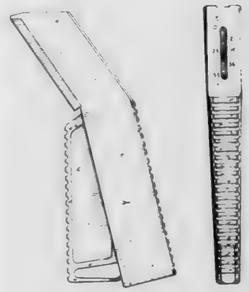
269,457
ENDOSCOPE
Koichiro Ishiwara, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan
Filed Dec. 24, 1980, Ser. No. 220,164
Claims priority, application Japan, Jul. 21, 1980, 55-29633
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—18



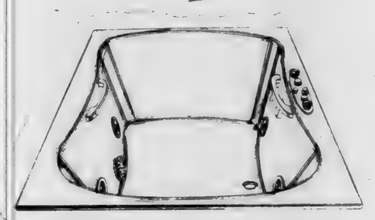
269,458
INCISION APPROXIMATOR
Richard L. Shaffner, 1640 Damon Ct., Dunwoody, Ga. 30338
Filed Dec. 1, 1980, Ser. No. 211,748
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—26



269,459
SURGICAL STAPLING INSTRUMENT
Reinhart Butter, Columbus, Ohio, and Lehmann K. Li, Fairfield, Conn., assignors to American Cyanamid Company, Stamford, Conn.
Filed Oct. 6, 1980, Ser. No. 194,711
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—27



269,460
WHIRLPOOL BATH TUB
Herbert V. Kohler, Jr., Kohler, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Mar. 25, 1981, Ser. No. 247,507
Term of patent 14 years
Int. Cl. D24—*01*; D23—*02*
U.S. Cl. D24—38



269,461
PACIFIER
Robert L. Qually, 2238 Central St., Evanston, Ill. 60201
Filed Dec. 18, 1980, Ser. No. 217,955
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—45

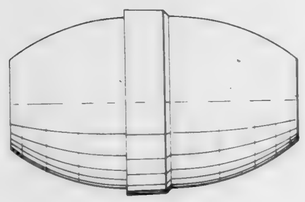




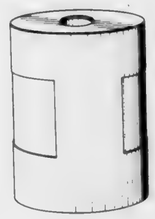
269,462
PACIFIER
Robert L. Qually, 2238 Central St., Evanston, Ill. 60201
Filed Dec. 18, 1980, Ser. No. 217,957
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—45



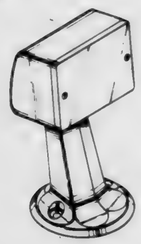
269,463
CONTAINER FOR A MEDICINAL INHALER
David M. Young, Loughborough, England, assignor to Fisons Limited, London, England
Filed Jun. 1, 1979, Ser. No. 44,706
Claims priority, application United Kingdom, Dec. 8, 1978, 987 602
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—62



269,465
CIGAR AND CIGARETTE FILTER PERFORATOR
Rafael T. Cervantes, Malaga, Spain, assignor to The Westbury Foundation, Andorra and Sociedad de Dispositivos Reductores de Tabaco, S.A., Spain, a part interest to each
Filed May 4, 1981, Ser. No. 260,197
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—51



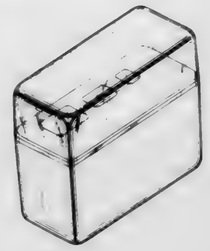
269,464
LAMP FOR VEHICLES
Italo Caroli, Westmount, Canada, assignor to DBM Reflex Enterprises, Inc., Montreal, Canada
Filed Jan. 29, 1981, Ser. No. 229,364
Claims priority, application Canada, Dec. 2, 1980, 02-12-80-1
Term of patent 14 years
Int. Cl. D26—*06, 05*
U.S. Cl. D26—28



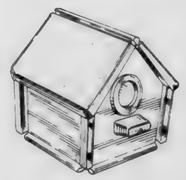
269,466
RAZOR
Kurt Gruber, Solingen, Fed. Rep. of Germany, assignor to Wilkinson Sword Gesellschaft mit beschrankter Haftung, Fed. Rep. of Germany
Filed Jan. 6, 1982, Ser. No. 337,524
Claims priority, application United Kingdom, Jul. 14, 1981, 1 001 473
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—46



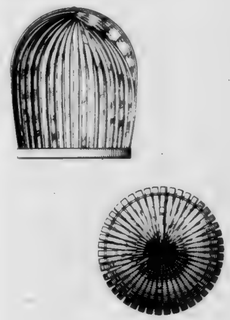
269,467
HOT WAX EPILATION CONSOLE
Samuel J. Mann, Englewood, N.J., assignor to Inverness International Corporation, River Edge, N.J.
Filed Jan. 29, 1982, Ser. No. 344,136
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—73



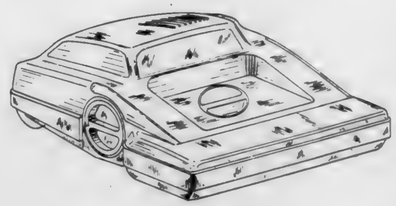
269,468
BIRD HOUSE
Lowell C. Babcock, Marengo, and Duane L. Schultz, Hampshire, both of Ill., assignors to Custom Packaging Co. Inc., Hampshire, Ill.
Filed Aug. 6, 1980, Ser. No. 175,642
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—3



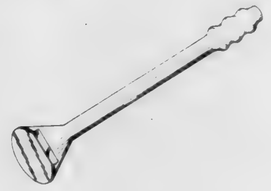
269,469
BIRD CAGE
Marcus W. Rankin, P.O. Box 32275, Washington, D.C. 20007
Filed Jul. 21, 1981, Ser. No. 285,459
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—4



269,470
CLEANER MAIN BODY OR THE LIKE
John D. Essex, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Nov. 6, 1980, Ser. No. 204,466
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—32



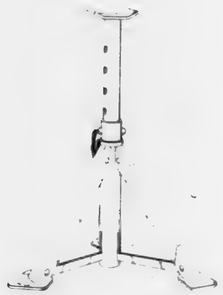
269,471
GARBAGE DISPOSAL PLUNGER
Frederick F. Auerbach, 2660 E. Parley's Way, Salt Lake City, Utah 84109
Filed Sep. 12, 1980, Ser. No. 186,522
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—35



269,472
GOLF CLUB BAG CARRIER FOR A MOTORIZED GOLF CART
Michael J. Avis, 5212 W. 104th St., Overland Park, Kans. 66207
Filed Oct. 3, 1980, Ser. No. 193,732
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—15



269,473
COLLAPSIBLE JACK FOR AUTOMOBILES AND THE LIKE
Leif Jönsson, Box 4036, 311 04 Falkenberg, Sweden
Filed Jul. 9, 1980, Ser. No. 167,372
Claims priority, application Sweden, Jan. 9, 1980, 80-0043
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D34—31



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TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF JUNE, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O, Inc.: *See*—
Gallagher, Edward L., 4,389,635, Cl. 340-287.000.
AB Vretstorp-Verken: *See*—
Stenlund, Rune, 4,389,150, Cl. 414-505.000.
Abbott Laboratories: *See*—
Genese, Joseph N., 4,389,210, Cl. 604-177.000.
Plattner, Jacob J., 4,389,416, Cl. 424-309.000.
ABC Sunray Corporation: *See*—
Kamath, Bola R., 4,389,188, Cl. 431-284.000.
Abe, Matazo: *See*—
Tabuchi, Takeshi; and Abe, Matazo, 4,389,484, Cl. 435-144.000.
Abe, Yoshihiro: *See*—
Ogata, Yoshihiro; and Abe, Yoshihiro, 4,389,112, Cl. 355-3.0TR.
Abel, Heinz: *See*—
Schafer, Paul; Abel, Heinz; and Mayer, Fritz, 4,389,214, Cl. 8-527.000.
Abiko, Toshio; and Matsuo, Masayuki, to Matsushita Electric Works, Ltd. Asynchronous type multichannel signal processing system. 4,389,644, Cl. 340-825.520.
Abou-Ezzeddine, Youssef. Apparatus and method for forming concrete blocks, panels and the like. 4,389,036, Cl. 249-120.000.
Absher, Charles A. Tractor scoop mechanism. 4,389,155, Cl. 414-723.000.
Acme Engineering & Manufacturing Corporation: *See*—
Bohanon, Hoy R., Sr., 4,389,352, Cl. 261-106.000.
Acorn Corrugated Box Co.: *See*—
Oberst, Steven M., 4,389,133, Cl. 403-230.000.
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Kudrjavetz, Peter, 4,389,365, Cl. 264-297.800.
Adachi, Masakazu, to Otsuka Pharmaceutical Co., Ltd. Determination of tumor associated glycolinkage and diagnosis of cancers. 4,389,392, Cl. 424-1.000.
Adachi, Ryuichi; Yamada, Isao; and Takeshita, Kazuhiro, to Osaka Vacuum Chemical Co., Ltd. Sputtering device. 4,389,299, Cl. 204-298.000.
Adams, Karen M.: *See*—
Gandhi, Haren S.; and Adams, Karen M., 4,389,382, Cl. 423-213.500.
Adams, Kenneth D., to Singer Company, The. Reduced load presser bar. 4,388,886, Cl. 112-237.000.
Adie, John F.: *See*—
Griffin, Denis; and Adie, John F., 4,388,853, Cl. 89-1.50F.
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Gockler, Heinz; and Hofmeister, Hagen, 4,389,616, Cl. 329-104.000.
Aeroquip GmbH: *See*—
Steuerwald, Alfred, 4,388,947, Cl. 137-614.060.
Agence Nationale de Valorization de la Recherche: *See*—
Tanguy, Bernard; Soubeyroux, Jean-Louis; Pezat, Michel; Portier, Josik; and Hagenmuller, Paul, 4,389,326, Cl. 252-188.260.
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Kawamura, Yoshio, 4,389,186, Cl. 431-173.000.
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Neuhaus, Karl-Friedrich; Rosenkranz, Hans J.; and Perrey, Hermann, 4,389,472, Cl. 430-10.000.
AGFA-Gevaert N.V.: *See*—
Deconinck, Hugo F., 4,388,992, Cl. 206-455.000.
Agrico Chemical Company: *See*—
Parks, Kenneth L., 4,389,380, Cl. 423-167.000.
Ahlers, Egon, to Seitz-Werke GmbH. Rotating single or multi-chamber counterpressure filling machines. 4,388,954, Cl. 141-39.000.
Ahn, Min H. Collapsible container. 4,388,995, Cl. 220-7.000.
Aihara, Toshiharu, to Hitachi Denshi Kabushiki Kaisha. Movable tape-guide control system. 4,389,684, Cl. 360-71.000.
Aihara, Yukichi; and Yamashita, Sadahiko, to Matsushita Electric Industrial Company, Limited. Dielectric-loaded coaxial resonator with a metal plate for wide frequency adjustments. 4,389,624, Cl. 333-226.000.
Aihoshi, Hiroaki: *See*—
Takeyama, Hidetoshi; Sakamoto, Siro; Sagawa, Koji; Tanishi, Tokio; Aihoshi, Hiroaki; and Morimoto, Takao, 4,388,757, Cl. 29-882.000.
Air Products and Chemicals, Inc.: *See*—
Dalton, Augustine I., Jr.; Greskovich, Eugene J.; and Skinner, Ronald W., 4,389,390, Cl. 423-584.000.
Aisawa, Shiro: *See*—
Lee, Yuen F.; and Aisawa, Shiro, 4,389,054, Cl. 277-214.000.
Aisin Seiki Company, Limited: *See*—
Iwasaki, Shinichiro, 4,389,581, Cl. 307-419.000.
Ajinomoto Company Incorporated: *See*—
Hiraga, Hirofumi; Yoshimura, Minoru; Ikeda, Shigeho; and Yoshii, Hiroe, 4,389,483, Cl. 435-110.000.
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Gorike, Rudolf, 4,389,542, Cl. 179-1.00R.
Albany International Corp.: *See*—
Leunig, Carl V., 4,389,228, Cl. 55-379.000.
Albert, Eugene V., to Q Corporation. Cutter ring and method of making same. 4,388,848, Cl. 83-666.000.
Albert Reiff KG: *See*—
Schaefer, Horst; and Votteler, Hans, 4,388,961, Cl. 160-332.000.
Alleman, Raymond A.: *See*—
Weber, Donald M.; and Alleman, Raymond A., 4,389,279, Cl. 156-640.000.
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Allied Corporation: *See*—
Baughman, Ray H.; Patel, Gordhanbhai N.; and Miller, Granville G., 4,389,217, Cl. 436-2.000.
Diamond, Steven E.; Mares, Frank; and Szalkiewicz, Andrew, 4,389,348, Cl. 260-465.50R.
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James, Leonard E.; Crescentini, Lamberto; and Fisher, William B., 4,389,339, Cl. 252-472.000.
Mani, Krishnamurthy N.; and Chlanda, Frederick P., 4,389,293, Cl. 204-180.00P.
Marshall, Robert M., 4,389,456, Cl. 428-375.000.
Sladek, Norbert J.; Avery, Roger P.; and Bruno, Saverio T., 4,389,625, Cl. 333-260.000.
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Whalen-Shaw, Michael J.; and Thiessen, Robert J., 4,389,476, Cl. 430-64.000.
Allison, William D. Pumping mechanism. 4,388,836, Cl. 74-41.000.
Almgren, David W.; Bartoszek, John T.; Lucas, Robert M.; Berthiaume, Richard P.; Spencer, Richard H.; and Saia, William H., to Arthur D. Little, Inc. Thermal control system. 4,388,964, Cl. 165-32.000.
Alpkvist, Jan A. Combustor for burning a volatile fuel with air. 4,389,185, Cl. 431-164.000.
Altex Scientific, Inc.: *See*—
Magnussen, Haakon T., Jr.; and Ruskewicz, Stephen J., 4,389,163, Cl. 417-2.000.
Althausen, Ferdinand: *See*—
Proksa, Ferdinand; Sulzbach, Hans-Michael; Raffel, Reiner; and Althausen, Ferdinand, 4,389,375, Cl. 422-111.000.
American Can Company: *See*—
Maxwell, Dorothy; and Fell, David A., 4,389,503, Cl. 524-38.000.
Schaefer, Suzanne E.; and Knott, Jack E., II, 4,389,450, Cl. 428-212.000.
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Feit, Yoseph; Kilanowski, David R.; and Olson, Kenneth E., 4,389,386, Cl. 423-365.000.
Murdock, Keith C., 4,389,399, Cl. 424-248.500.
Schenkel, Robert H., 4,389,402, Cl. 424-251.000.
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Westcott, Robert F.; and Delamater, John R., 4,389,179, Cl. 425-302.100.
American Hospital Supply Corporation: *See*—
Schober, Robert C., 4,388,927, Cl. 128-419.0PG.
American Science and Engineering, Inc.: *See*—
Stein, Jay, 4,389,729, Cl. 378-99.000.
American Store Equipment Corporation: *See*—
Logie, Charles F., 4,388,783, Cl. 52-36.000.
Ames, Douglas A. Photovoltaic device for producing electrical and heat energy. 4,389,533, Cl. 136-248.000.
AMP Incorporated: *See*—
Coldren, Daniel R., 4,389,021, Cl. 339-126.00R.
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Anchoring International, Inc.: *See*—
Suttles, Jefferies C., 4,389,034, Cl. 248-49.000.

Anders, Ronald J., to Rockwell International Corporation. Double disc gate vale with replaceable spacer ring. 4,389,037, Cl. 251-327.000.

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Stohlquist, Roger H.; and Strombeck, Leo, 4,388,795, Cl. 53-435.000.

Anderson, Frank H. Rebar tie. 4,388,791, Cl. 52-719.000.

Anderson, Greenwood & Co.: *See*—
Powell, Walter W., 4,388,940, Cl. 137-70.000.

Anderson, Paul A.; Hammer, Jeffrey M.; and MacArthur, J. Ward, to Honeywell Inc. Apparatus for power load-shedding with auxiliary commandable thermostat. 4,389,577, Cl. 307-39.000.

Ando Electric Co., Ltd.: *See*—
Nigorikawa, Atsushi; Yokoyama, Hiroshi; and Fujieda, Takanori, 4,389,723, Cl. 371-27.000.

Anelva Corporation: *See*—
Itoh, Tadatsugu, 4,389,573, Cl. 250-492.200.

Anezaki, Shoji: *See*—
Okamura, Shozo; Nakajima, Hidemasa; Marukawa, Katsukiyo; Anezaki, Shoji; and Hirata, Takeyuki, 4,389,246, Cl. 75-60.000.

Anstett, Maurice. Protective butchers glove. 4,388,733, Cl. 2-161.00R.

Aoki, Akihiro: *See*—
Shimada, Keizo; Mera, Hiroshi; Nakamura, Tsutomu; and Aoki, Akihiro, 4,389,521, Cl. 528-336.000.

Apfel, Richard, to Cedco, Incorporated. Diesel engine incorporating emulsified fuel supply system. 4,388,893, Cl. 123-25.00J.

Arai, Hajime; and Haga, Shoji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Transmission fluid pressure control device with two stepped line pressures. 4,388,844, Cl. 74-752.00C.

Arai, Hiroshi: *See*—
Torii, Taketsugu; Oota, Hisatoshi; and Arai, Hiroshi, 4,389,639, Cl. 340-539.000.

Arcioni, Paolo: *See*—
Conciauro, Giuseppe; and Arcioni, Paolo, 4,389,594, Cl. 315-39.550.

Ariga, Kazuo: *See*—
Teshima, Toru; Ariga, Kazuo; and Kasahara, Takao, 4,389,095, Cl. 350-334.000.

Arlt, Dieter; Homeyer, Bernhard; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Pesticidally active novel phosphoric (phosphonic) acid ester amides. 4,389,530, Cl. 556-404.000.

Armond, Joseph A.; Buky, Gabriel R.; and Patrick, Fred, to Electro-Matic Products Co. Apparatus for packaging magnetic articles. 4,388,792, Cl. 53-236.000.

Armstrong World Industries, Inc.: *See*—
De Santis, William D., 4,388,863, Cl. 101-129.000.
Qualls, Ned S., 4,389,699, Cl. 362-217.000.

Arndt, Gerhard: *See*—
Guntermann, Hans; Arndt, Gerhard; and Baum, Gustav, 4,389,015, Cl. 238-150.000.

Arthur D. Little, Inc.: *See*—
Almgren, David W.; Bartoszek, John T.; Lucas, Robert M.; Berthiaume, Richard P.; Spencer, Richard H.; and Saia, William H., 4,388,964, Cl. 165-32.000.

Asahi Glass Company Ltd.: *See*—
Suhara, Manabu; Gunjima, Tomoki; and Miyake, Haruhisa, 4,389,494, Cl. 521-27.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Okajima, Kunihiko; Kamide, Kenji; and Matsui, Toshihiko, 4,389,523, Cl. 536-59.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Ohishi, Michiro, 4,389,097, Cl. 350-410.000.
Sugiyama, Takahiro; and Hagiwara, Yukio, 4,389,100, Cl. 350-478.000.

Asahina, Kenichi: *See*—
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, 4,389,508, Cl. 524-548.000.

Asai, Komei: *See*—
Hori, Yoshikazu; Asai, Komei; and Fukai, Masakazu, 4,389,096, Cl. 350-339.00R.

Asano, Kiyomitsu; Kondo, Toshikatsu; and Sakaida, Atsuo, to Brother Kogyo Kabushiki Kaisha; and Nippon Telecommunication Engineering Company. Print head for a dot matrix printer. 4,389,128, Cl. 400-124.000.

Asao, Yasuzi, to Fuji Photo Film Co., Ltd. Photographic resin coated paper. 4,389,455, Cl. 428-328.000.

ASEA Aktiebolag: *See*—
Larsson, Hans-Gunnar, 4,389,362, Cl. 264-111.000.

Ashland Oil, Inc.: *See*—
Chu, Richard S.; and Mansour, Maher L., 4,389,357, Cl. 264-40.100.

Aspy, Robert M., to Congoleum Corporation. Marking device. 4,388,760, Cl. 33-42.000.

Atkinson, Cyril M.; and Strong, Barry C. Weaving looms having rotary shed forming drums and beat up mechanisms therefor. 4,388,951, Cl. 139-11.000.

Atkinson, Wallace E. Weed and grass puller. 4,389,065, Cl. 294-50.800.

Atlas Copco Aktiebolag: *See*—
Gidlund, Per A. L., 4,388,972, Cl. 173-162.00R.

Atwood, Gilbert R.: *See*—
Sokolik, Joseph E., Jr.; Kosseim, Alexander J. M.; and Atwood, Gilbert R., 4,389,383, Cl. 423-243.000.

Au, Andrew T., to Dow Chemical Company, The. Cyano-(2,4-dichlorophenyl)methyl ethyl ester of carbonic acid useful as a nematocide. 4,389,411, Cl. 424-301.000.

Audemars, Daniel: *See*—
Simm, Wolfgang; Steine, Hans-Theo; and Audemars, Daniel, 4,389,251, Cl. 75-255.000.

Audichron Company, The: *See*—
Glisson, David; Huber, Gerald; and Biskey, Bruce, 4,389,546, Cl. 179-18.00B.

Aurora Design Associates, Inc.: *See*—
Gardner, James H.; and de Nevers, Noel H., 4,388,813, Cl. 62-457.000.

Ausonia Farmaceutici s.r.l.: *See*—
Di Schiena, Michele; and Orru, Vittoria, 4,389,407, Cl. 424-271.000.

Ausseil, Dominique. Microfilm cassette and the projection apparatus for the viewing of same. 4,389,104, Cl. 353-26.00R.

Autoflug-Stakupress GmbH & Co.: *See*—
Krautz, Kurt; and Ender, Erhard, 4,388,746, Cl. 24-230.00A.

Autoipari Kutato es Fejleszto Vallalat: *See*—
Szarka, Istvan; and Urbantsok, Janos, 4,388,806, Cl. 60-547.100.

Avery, Roger P.: *See*—
Sladek, Norbert J.; Avery, Roger P.; and Bruno, Saverio T., 4,389,625, Cl. 333-260.000.

Avions Marcel Dassault-Breguet Aviation: *See*—
Levy, Fernand J., 4,389,340, Cl. 252-512.000.

Azuchi, Yukihiro, to Murata Manufacturing Co., Ltd. Trimmer capacitor. 4,389,696, Cl. 361-293.000.

B. F. Goodrich Company, The: *See*—
Messerly, James W., 4,389,361, Cl. 264-108.000.

Baba, Tetsuro: *See*—
Sato, Hiroyasu; Sato, Yoshiharu; and Baba, Tetsuro, 4,389,628, Cl. 335-208.000.

Babcock & Wilcox Company, The: *See*—
Thornton, Thomas A.; and Holaday, Veldon D., Jr., 4,389,355, Cl. 264-0.500.

Babitzka, Rudolf; Beck, Walter; and Schlagmuller, Walter, to Robert Bosch GmbH. Electrically controlled valve operating system, particularly for fuel injection. 4,388,908, Cl. 123-500.000.

Bacehowski, David V.; and Brown, Michael J., to Baxter Travenol Laboratories, Inc. Centrifugal processing apparatus and rotatable processing bowl apparatus. 4,389,206, Cl. 494-42.000.

Bacehowski, David V.; and Bucheger, Ronald, to Baxter Travenol Laboratories, Inc. Rotatable bowl assembly for centrifugal processing apparatus having a bonded and prewound umbilical system. 4,389,207, Cl. 494-42.000.

Bader, Christian, to Daimler-Benz Aktiengesellschaft. Electric drive mechanism for vehicles. 4,388,977, Cl. 180-165.000.

Badesha, Santokh S., to Xerox Corporation. Process for preparation of high purity tellurium. 4,389,389, Cl. 423-510.000.

Badzinski, Richard D.; and Nigel, George G., to Shaft Lok Inc. Shaft lock for propellers for sailing boats. 4,389,199, Cl. 440-74.000.

Bairamov, Jury J.: *See*—
Zhorov, Vladimor I.; Kirsh, Jury E.; Shumsky, Viktor I.; Karaputadze, Temuri M.; and Bairamov, Jury J., 4,389,404, Cl. 424-260.000.

Baitis, A. Erich; Woolaver, Dennis A.; and Nigon, Richard T., to United States of America, Navy. Electrical actuator for ship roll stabilization. 4,388,889, Cl. 114-144.00E.

Baker, Alan C.; Boulter, Geoffrey N.; and Wilbert, Daniel H., to Direct Reduction Corporation, The. Interior arrangement for direct reduction rotary kilns and method. 4,389,242, Cl. 75-20.00R.

Baker International Corporation: *See*—
Peterson, Elmer R., 4,388,971, Cl. 166-387.000.

Baker, William L., Jr.: *See*—
Perna, Theodore P.; Raschke, Curt R.; and Baker, William L., Jr., 4,389,658, Cl. 346-140.00R.

Bakke, Even: *See*—
Willett, Howard P.; and Bakke, Even, 4,389,225, Cl. 55-118.000.

Balaban, Alvin R.; Steckler, Steven A.; and Fernsler, Ronald E., to RCA Corporation. Television receiver high voltage protection circuit. 4,389,676, Cl. 358-243.000.

Baldock, K. Paul, to John Fluke Mfg. Co., Inc. Method and apparatus for enhancing the output of an RMS converter. 4,389,708, Cl. 364-573.000.

Baldwin Piano & Organ Company: *See*—
Uetrecht, Dale M., 4,388,850, Cl. 84-1.240.

Baldwin, Roger A.: *See*—
Garwin, Leo; and Baldwin, Roger A., 4,389,302, Cl. 208-86.000.

Ball Corporation: *See*—
Mirra, Michael J.; and Giles, Albert H., 4,389,459, Cl. 428-457.000.

Ballantine, James S. Water-going vessel. 4,389,197, Cl. 440-38.000.

Ballard, Billy G.: *See*—
Godbey, John K.; and Ballard, Billy G., 4,389,164, Cl. 417-36.000.

Ballato, Arthur, to United States of America, Army. Quartz resonator angle correction. 4,389,275, Cl. 156-626.000.

Ban, Mikichi; and Ito, Susumu, to Canon Kabushiki Kaisha. Observing apparatus. 4,389,084, Cl. 350-524.000.

Ban, Vladimir S.: *See*—
Datta, Pabitra; Poliniak, Eugene S.; and Ban, Vladimir S., 4,389,441, Cl. 428-65.000.

Bannikov, Jury G.: *See*—
Yaroshevsky, Stanislav L.; Lukyanchenko, Leonid F.; Sidorenko, Grigory N.; Skladanovsky, Evgeny N.; Zalevsky, Mikhail A.; Machikin, Viktor I.; Bannikov, Jury G.; Ryabenko, Anatoly I.; Okazov, Shamil T.; Stepanov, Vasily V.; Danilin, Evgeny A.; Yarmal, Anatoly A.; Nekhaev, Grigory E.; Bat, Jury I.; Popov, Nikolai N.; Kamardin, Alexei M.; Tereschenko, Valdimir P.; and Stankevich, Romualda S., 4,389,244, Cl. 75-42.000.

Bar-on, Ari; and Debesis, John R., to Xerox Corporation. Ink jet droplet generator fabrication method. 4,389,654, Cl. 346-75.000.

Bargon, Joachim; Hiraoka, Hiroyuki; and Welsh, Lawrence W., Jr., to International Business Machines Corporation. Process for forming photoresists with strong resistance to reactive ion etching and high sensitivity to mid- and deep UV-light. 4,389,482, Cl. 430-325.000.

Barkhau, Marvin L.; Perry, Philip D.; and Pimm, Roland F., to Owens-Illinois, Inc. Electric boosting control for a glass forehearth. 4,389,725, Cl. 373-40.000.

Barry, George H.: *See*—
Dahl, Ernest A.; and Barry, George H., 4,389,608, Cl. 320-33.000.

Bartels, Leroy R.; and Milbright, Arnold M., to International Telephone and Telegraph Corporation. Lightweight ladder. 4,388,983, Cl. 182-189.000.

Barton, Roy C. Land-use portable knock-down hunting-blind frame. 4,388,939, Cl. 135-3.00R.

Bartoszek, John T.: *See*—
Almgren, David W.; Bartoszek, John T.; Lucas, Robert M.; Berthiaume, Richard P.; Spencer, Richard H.; and Saia, William H., 4,388,964, Cl. 165-32.000.

BASF Aktiengesellschaft: *See*—
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, 4,389,216, Cl. 8-639.000.
Hoffmann, Gerhard; and Neumann, Peter, 4,389,475, Cl. 430-58.000.
Horacek, Heinrich; Marx, Matthias; and Hobein, Dietmar, 4,389,454, Cl. 428-318.600.
May, Hans-Joachim; Lenke, Dieter; Gries, Josef; Teschendorf, Hans-Juergen; and Worstmann, Wolfgang, 4,389,403, Cl. 424-258.000.

BASF Wyandotte Corporation: *See*—
Wilson, Joe C.; Eisenstein, Stephen E.; Maxwell, Jerrold F.; and Hirozawa, Stanley T., 4,389,371, Cl. 422-15.000.

Bat, Jury I.: *See*—
Yaroshevsky, Stanislav L.; Lukyanchenko, Leonid F.; Sidorenko, Grigory N.; Skladanovsky, Evgeny N.; Zalevsky, Mikhail A.; Machikin, Viktor I.; Bannikov, Jury G.; Ryabenko, Anatoly I.; Okazov, Shamil T.; Stepanov, Vasily V.; Danilin, Evgeny A.; Yarmal, Anatoly A.; Nekhaev, Grigory E.; Bat, Jury I.; Popov, Nikolai N.; Kamardin, Alexei M.; Tereschenko, Valdimir P.; and Stankevich, Romualda S., 4,389,244, Cl. 75-42.000.

Battelle Development Corporation: *See*—
Dinovo, Salvatore T., 4,389,381, Cl. 423-175.000.

Baues, Peter, to Siemens Aktiengesellschaft. Optical device for non-contact recording and particular facsimile reproduction of images and test. 4,389,655, Cl. 346-107.00R.

Baughman, Ray H.; Patel, Gordhanbhai N.; and Miller, Granville G., to Allied Corporation. Integrated time-temperature or radiation-dosage history recording device. 4,389,217, Cl. 436-2.000.

Baukholt, Heinz: *See*—
Boeke, Burkhard; Kalka, Josef; Smolinski, Manfred; and Baukholt, Heinz, 4,389,522, Cl. 528-503.000.

Baum, Gustav: *See*—
Guntermann, Hans; Arndt, Gerhard; and Baum, Gustav, 4,389,015, Cl. 238-150.000.

Bauman, Ronald M., to United States of America, Navy. Adaptive feed-forward system. 4,389,618, Cl. 330-149.000.

Baumer, Hans, to Licentia Patent-Verwaltungs-GmbH. Circuit arrangement for a combined proximity and impact fuse. 4,388,867, Cl. 102-211.000.

Baxter, Leslie A.; Berkowitz, Paul R.; and Buzzard, Clair A., to Bell Telephone Laboratories, Incorporated. Distributed digital conferencing system. 4,389,720, Cl. 370-62.000.

Baxter Travenol Laboratories, Inc.: *See*—
Bacehowski, David V.; and Brown, Michael J., 4,389,206, Cl. 494-42.000.
Bacehowski, David V.; and Bucheger, Ronald, 4,389,207, Cl. 494-42.000.
Molthop, Susan C., 4,389,363, Cl. 264-135.000.

Bayer AG: *See*—
Podszun, Wolfgang; Suling, Carlhans; Walkowiak, Michael; and Schulz, Hans-Hermann, 4,389,507, Cl. 524-460.000.

Bayer Aktiengesellschaft: *See*—
Arlt, Dieter; Homeyer, Bernhard; and Hammann, Ingeborg, 4,389,530, Cl. 556-404.000.
Leusner, Bernhard; Schulz, Hans-Hermann; Voigt, Reiner; and Walkowiak, Michael, 4,389,496, Cl. 523-109.000.
Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, 4,389,215, Cl. 8-637.000.
Preiss, Michael; and Schutt, Hermann, 4,389,489, Cl. 435-280.000.
Schaefer, Axel; Motika, Werner; Bender, Wolfgang; Todt, Jorn; and Oels, Udo, 4,389,344, Cl. 260-369.000.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Fritzenwenger, Josef, 4,388,979, Cl. 180-226.000.

BBC Brown, Boveri & Company Limited: *See*—
Melton, Keith; Mercier, Olivier; and Riegger, Helmut, 4,389,250, Cl. 75-232.000.

Beard, Harold. Variable venturi sewerage aerator. 4,389,312, Cl. 210-198.100.

Beck, Walter: *See*—
Babitzka, Rudolf; Beck, Walter; and Schlagmuller, Walter, 4,388,908, Cl. 123-500.000.

Beckman Instruments, Inc.: *See*—
Sutton, John H.; and Woodruff, Rebecca J., 4,389,374, Cl. 422-104.000.

Becton Dickinson and Company: *See*—
Burns, James A., 4,388,925, Cl. 128-314.000.
Telang, Anil, 4,388,922, Cl. 604-319.000.

Beecham Group Limited: *See*—
Dorgan, Roderick J.; and Webster, Richard A., 4,389,406, Cl. 424-270.000.
O'Hanlon, Peter J.; and Rogers, Norman H., 4,389,410, Cl. 424-283.000.

Beecham Products: *See*—
Green, Donald L., 4,389,448, Cl. 428-195.000.

Beemer, Richard B.: *See*—
Hennessey, Richard G.; Beemer, Richard B.; and Melles, Harold W., 4,388,987, Cl. 192-3.260.

Behr-Thomson Dehnstoffregler GmbH: *See*—
Saur, Roland; and Kurz, Manfred, 4,389,629, Cl. 337-126.000.

Bell, Gordon D.: *See*—
Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, 4,388,743, Cl. 16-116.00A.

Bell & Howell Company: *See*—
Guzik, Rudolph, 4,389,478, Cl. 430-97.000.

Bell, Melvyn R.; Morrison, John M.; and Stewart, Charles M., to Ferranti plc. Circuit assembly having a component with leads extending therefrom and a connector both supported on a planar substrate. 4,389,697, Cl. 361-380.000.

Bell Telephone Laboratories, Incorporated: *See*—
Baxter, Leslie A.; Berkowitz, Paul R.; and Buzzard, Clair A., 4,389,720, Cl. 370-62.000.
Bowen, Edward G.; and Netravali, Arun N., 4,389,672, Cl. 358-160.000.
Kohl, Paul A.; Ostermayer, Frederick W., Jr.; and Wolowodiuk, Catherine, 4,389,291, Cl. 204-129.300.

Bellettiere, Samuel J.; Hurley, Raymond; and Hoch, Samuel, to Nuodex, Inc. Drier systems for water-borne surface-coating compositions. 4,389,328, Cl. 252-194.000.

Bellinger, James E., to Florida Data Corporation. High speed dot matrix impact printer. 4,389,127, Cl. 400-124.000.

Bendayan, Jacques; and Jocteur, Robert, to Les Cables de Lyon S.A. Mechanical protection and reinforcement for optical fibers. 4,389,087, Cl. 350-96.230.

Bender, Emil A. Positive engagement fail safe mechanism and lift belt construction for long stroke, well pumping unit. 4,388,837, Cl. 74-89.200.

Bender, Wolfgang: *See*—
Schaefer, Axel; Motika, Werner; Bender, Wolfgang; Todt, Jorn; and Oels, Udo, 4,389,344, Cl. 260-369.000.

Bendix Corporation, The: *See*—
deValpillieres, Didier J., 4,388,825, Cl. 73-115.000.
Gallusser, David O.; Hemmer, Valentine J.; and Toombs, Gary C., 4,389,081, Cl. 339-89.00M.
Normann, Richard W.; and Niles, Paul D., 4,389,083, Cl. 339-105.000.

Bendyshe Walton, Andre P. J.; Townsend, Francis H.; and Ribet, John N., to C. Tape Developments Limited. Flexible tape electroacoustic transducer using an electret. 4,389,580, Cl. 307-400.000.

Benisti, Julien. Device for the elaboration, the composition, the mixing and the use of liquids, products or ingredients. 4,388,839, Cl. 73-428.000.

Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., to Intermedics Cardiassist Corporation. Rapid stabilization of external cardiac pulsation. 4,388,919, Cl. 128-64.000.

Benmol Corporation: *See*—
Molayem, Benjamin; and Garrett, David, 4,388,877, Cl. 110-342.000.

Benton, Kenneth C.: *See*—
Weinert, Raymond J., Jr.; and Benton, Kenneth C., 4,389,334, Cl. 252-429.00B.

Beretta, Pier C., to Fabrica D'Armi Pietro Beretta S.p.A. Lever-type closing device for blocking and unblocking the barrel of automatic, portable firearms. 4,388,773, Cl. 42-75.00B.

Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, to BASF Aktiengesellschaft. Navy dye mixtures. 4,389,216, Cl. 8-639.000.

Berkowitz, Paul R.: *See*—
Baxter, Leslie A.; Berkowitz, Paul R.; and Buzzard, Clair A., 4,389,720, Cl. 370-62.000.

Bernard, Clay, II; Matheny, William F., III; Faith, Charles M.; Goswick, Richard L.; and Hauth, Jerry L., to SPS Technologies, Inc. Retrieval and storage mechanism for use with an automated rotating storage unit. 4,389,157, Cl. 414-787.000.

Berry, Chapman; and Hackenberg, Robert A., to Robertson Paper Box Co., Inc. Double-walled carton and blank for forming same. 4,388,999, Cl. 220-416.000.

Berthiaume, Richard P.: *See*—
Almgren, David W.; Bartoszek, John T.; Lucas, Robert M.; Berthiaume, Richard P.; Spencer, Richard H.; and Saia, William H., 4,388,964, Cl. 165-32.000.

Best Lock Corporation: *See*—
Foshee, William R., 4,389,061, Cl. 292-169.140.

Beyer, Herbert: *See—*
Linke, Horst; Erwien, Helmut; Beyer, Herbert; Kerklies, Bodo; Wleklinski, Bernhard; Mainusch, Rudolf; Grundken, Dieter; Kumor, Bernd; and Mohn, Ulrich, 4,389,072, Cl. 299-32.000.

Bhatia, Harsaran S.: *See—*
Anantha, Narasipur G.; Bhatia, Harsaran S.; Lechaton, John S.; and Walsh, James L., 4,389,281, Cl. 156-646.000.
Anantha, Narasipur G.; Bhatia, Harsaran S.; Mauer, John L., IV; and Sarkary, Homi G., 4,389,294, Cl. 204-192.00E.

Bickel, Hans: *See—*
Scartazzini, Riccardo; and Bickel, Hans, 4,389,524, Cl. 544-016.000.

Bio-Rad Laboratories, Inc.: *See—*
Hanamoto, Mark S.; and Tanaka, Steve K., 4,389,491, Cl. 436-67.000.

Birdwell, Glenn E. Intake expansion chamber apparatus for internal combustion engines. 4,388,910, Cl. 123-547.000.

Bishop, John F.; and Bowman, Wayne A., to Eastman Kodak Company. Neutralizing layer for color transfer assemblages. 4,389,479, Cl. 430-216.000.

Biskey, Bruce: *See—*
Glisson, David; Huber, Gerald; and Biskey, Bruce, 4,389,546, Cl. 179-18.00B.

Bjorkman, Harry K., Jr., to Energy Development Associates, Inc. Metal halogen battery system with multiple outlet nozzle for hydrate. 4,389,468, Cl. 429-70.000.

Blackfire Coal Products: *See—*
Pike, John C., 4,389,218, Cl. 44-6.000.

Blair, Matthew J.; Wiktorowski, Thomas A.; and Wogan, W. Dale, to Republic Steel Corporation. Lance ladling. 4,389,245, Cl. 75-58.000.

Blaisdell, Ronald G.; and Hough, Harold L., to GTE Products Corporation. Projection unit with separable lamp capsule and slidable means for ejecting same. 4,389,700, Cl. 362-306.000.

Blasco, Eduardo G., to Industrias Y Confecciones, S.A. (INDUYCO). Sewing machine incorporating a programmable control and a low-inertia motor. 4,389,604, Cl. 318-568.000.

Bleidt, Rolf: *See—*
Konig, Werner; Wagenbach, Wolfgang; May, Hans; and Bleidt, Rolf, 4,389,553, Cl. 200-148.00H.

Block, Jacob; and Green, Peter C., to W. R. Grace & Co. High temperature stable viscosifier and fluid loss control system. 4,389,319, Cl. 252-8.50A.

Bloem, Jan; and van den Brekel, Cornelis H. J., to U.S. Philips Corporation. Method of manufacturing a semiconductor device. 4,389,273, Cl. 156-605.000.

Blom, Cornelis W.; and van Keulen, Jacobus M., to Woodcap, B.V. Liquid absorbing fibrous material treated with a wood preservative agent. 4,389,446, Cl. 428-166.000.

Boadway, John D., to Queen's University at Kingston. Arrangement of multiple fluid cyclones. 4,389,307, Cl. 209-211.000.

Boeing Company, The: *See—*
Glasenapp, Rudi K. H.; and McCulloch, Andrew J., 4,389,029, Cl. 244-103.00R.

Boeke, Burkhard; Kalka, Josef; Smolinski, Manfred; and Baukholt, Heinz, to Chemische Werke Huls, A.G. Process for the thermal after-treatment of paste-forming polymers of vinyl chloride. 4,389,522, Cl. 528-503.000.

Boghosian, Harry: *See—*
Innis, Charles L., Jr.; Salter, Lowell S., Jr.; Boghosian, Harry; and Wilkinson, Donald H., 4,389,053, Cl. 277-95.000.

Bohanon, Hoy R., Sr., to Acme Engineering & Manufacturing Corporation. Cooling pad support assembly. 4,389,352, Cl. 261-106.000.

Bohg, Armin; and Hartmann, Kurt, to International Business Machines Corporation. Bank for accommodating several print hammer units. 4,388,861, Cl. 101-93.020.

Bohman, Carl E.: *See—*
Minor, Ray C.; Treichler, James W.; and Bohman, Carl E., 4,389,154, Cl. 414-699.000.

Boller, Arthur; Schadt, Martin; and Villiger, Alois, to Hoffmann-La Roche Inc. Meterocyclic compounds. 4,389,329, Cl. 252-299.100.

Bon, Luigi D. Self-closing tilting valve. 4,389,004, Cl. 222-402.220.

Bonagura, Ronald L.: *See—*
Floyd, Thomas D.; Nelson, Roland D.; and Bonagura, Ronald L., 4,389,117, Cl. 355-87.000.

Bonfiglioli, Giampaolo: *See—*
Vinciguerra, Costantino; and Bonfiglioli, Giampaolo, 4,388,752, Cl. 29-421.00R.

Bonney, Roland W. Multiple four-way control valve. 4,388,949, Cl. 137-625.170.

Bordes, Cornelis, to Marine Structure Consultants (MSC) BV. Locking device for a pile-shaped element. 4,389,140, Cl. 405-195.000.

Bordet, Rene: *See—*
Queffelec, Corentin; Bordet, Rene; and Malinowsky, Marc, 4,388,785, Cl. 52-222.000.

Bornstein, Norman S.: *See—*
Smeggil, John G.; and Bornstein, Norman S., 4,389,463, Cl. 428-659.000.

Bosco, Lewis R., to Penn Wood Products Co. Wood floor panel. 4,388,788, Cl. 52-390.000.

Bouhier, Roger: *See—*
Garnaud, Guy; and Bouhier, Roger, 4,388,823, Cl. 73-57.000.

Boulter, Geoffrey N.: *See—*
Baker, Alan C.; Boulter, Geoffrey N.; and Wilbert, Daniel H., 4,389,242, Cl. 75-20.00R.

Bourke, Robert S.; and Cragoe, Edward J., Jr., to Merck & Co., Inc. Treatment of gray matter edema. 4,389,417, Cl. 424-317.000.

Bowden, Wade R., Jr.: *See—*
Slater, Thomas S.; and Bowden, Wade R., Jr., 4,389,535, Cl. 174-65.00R.

Bowen, Edward G.; and Netravali, Arun N., to Bell Telephone Laboratories, Incorporated. Display of pseudo-gray scale picture signals on multilevel displays. 4,389,672, Cl. 358-160.000.

Bowles Fluidics Corporation: *See—*
Stouffer, Ronald D.; and Morris, Joseph W., 4,388,950, Cl. 137-829.000.

Bowman, Wayne A.: *See—*
Bishop, John F.; and Bowman, Wayne A., 4,389,479, Cl. 430-216.000.

Boyanowski, Robert E.; Gregory, Floyd A.; and Nemier, Stanley E., to International Business Machines Corporation. Web supply roll jogger. 4,389,008, Cl. 226-123.000.

Boyesen, Eyvind, to Performance Industries, Inc. Fuel porting for two cycle internal combustion engine. 4,388,895, Cl. 123-73.0PP.

Braithwaite, John C.; and Smith, Ian, to British Gas Corporation. Speed control system for a pipeline inspection vehicle. 4,388,871, Cl. 104-138.00G.

Brandell, John T., to Halliburton Company. Downhole tool suction screen assembly. 4,388,968, Cl. 166-236.000.

Brandman, Harold A.: *See—*
Valentine, Roy H.; and Brandman, Harold A., 4,389,527, Cl. 549-438.000.

Branson Ultrasonics Corporation: *See—*
Denslow, Clark A., 4,389,267, Cl. 156-73.200.

Breese, Leonard S., to Thermalloy Incorporated. Solderable mounting stakes for heat sinks. 4,388,967, Cl. 165-80.00B.

Breon, Everett C., to Haghighi, Kamal Banani. Automatic sewer cleaning system. 4,388,741, Cl. 15-104.3SN.

British-American Tobacco Company Limited: *See—*
Luke, John A., 4,388,934, Cl. 131-339.000.

British Gas Corporation: *See—*
Braithwaite, John C.; and Smith, Ian, 4,388,871, Cl. 104-138.00G.

Brockway Glass Co., Inc.: *See—*
Dembicki, Michael T.; and Poad, William J., 4,389,266, Cl. 156-69.000.

Brooke, Michael E., to United States Gypsum Company. Enclosure for bathtub or shower having sliding doors. 4,388,778, Cl. 49-125.000.

Brookes, David J., to USM Corporation. Method of loading rivets. 4,388,753, Cl. 29-433.000.

Brookes, John R.: *See—*
Chahroudi, Day; and Brookes, John R., 4,389,452, Cl. 428-215.000.

Brooks, Seville R.: *See—*
Luscombe, Anthony P.; and Brooks, Seville R., 4,389,648, Cl. 343-8.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Asano, Kiyomitsu; Kondo, Toshikatsu; and Sakaida, Atsuo, 4,389,128, Cl. 400-124.000.
Hirota, Kunio; and Shimomura, Masao, 4,388,883, Cl. 112-121.120.
Hirota, Kunio; and Shimomura, Masao, 4,388,884, Cl. 112-121.120.
Sugiura, Toshiaki, 4,389,129, Cl. 400-144.200.
Yamamoto, Yoshikazu; and Yanagi, Toshiaki, 4,388,882, Cl. 112-121.120.

Brown, Boveri & Cie AG: *See—*
Konig, Werner; Wagenbach, Wolfgang; May, Hans; and Bleidt, Rolf, 4,389,553, Cl. 200-148.00H.

Brown, David J., to Massey-Ferguson Services N.V. Control lever arrangement. 4,389,151, Cl. 414-685.000.

Brown, Gregory N.: *See—*
Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, 4,388,743, Cl. 16-116.00A.

Brown, Michael A.: *See—*
Kalivretenos, Chris A.; and Brown, Michael A., 4,389,028, Cl. 244-3.210.

Brown, Michael J.: *See—*
Bacehowski, David V.; and Brown, Michael J., 4,389,206, Cl. 494-42.000.

Brown, Richard P., to CTS Corporation. Side actuated miniature dip switch. 4,389,549, Cl. 200-5.00R.

Brown, Robert J. S., to Chevron Research Company. Computer-controlled, portable pulsed NMR instrument and method of use. 4,389,613, Cl. 324-303.000.

Brownscombe, Thomas F.: *See—*
De La Mare, Harold E.; and Brownscombe, Thomas F., 4,389,515, Cl. 525-420.500.

Brumen, Claudio, to United Technologies Corporation. Locking of rotor blades on a rotor disk. 4,389,161, Cl. 416-220.00R.

Bruno, Saverio T.: *See—*
Sladek, Norbert J.; Avery, Roger P.; and Bruno, Saverio T., 4,389,625, Cl. 333-260.000.

Brunswick Corporation: *See—*
Sheridan, Stephen E.; and Hundertmark, James M., 4,388,896, Cl. 123-73.0AD.

Brunt, William H.; and Thatcher, Kenneth C., to Tegral Technology Limited. Methods of making asbestos-free, glass fibre reinforced, cement composite products and the products of such methods. 4,389,359, Cl. 264-69.000.

Bryan, Thomas J.: *See—*
Rodgers, David T.; Tursi, Thomas P.; and Bryan, Thomas J., 4,388,782, Cl. 51-241.00A.

Bryan, William J., to Westinghouse Electric Corp. Bi-metallic grid for a nuclear reactor fuel assembly. 4,389,369, Cl. 376-442.000.

Bucheger, Ronald: *See—*
Bacehowski, David V.; and Bucheger, Ronald, 4,389,207, Cl. 494-42.000.

Buckbee-Mears Company: *See—*
Thoms, Roland, 4,389,592, Cl. 313-403.000.

Budde, John S.: *See—*
Underwood, J. Larry; Thompson, Stephen M.; and Budde, John S., 4,388,998, Cl. 220-307.000.

Buky, Gabriel R.: *See—*
Armond, Joseph A.; Buky, Gabriel R.; and Patrick, Fred, 4,388,792, Cl. 53-236.000.

Bureau de Recherches Geologique et Minieres: *See—*
Clin, Francois H.; Gony, Jean-Noel; and Proust, Francois O., 4,389,020, Cl. 241-24.000.

Bures, Horst-Dieter: *See—*
Moller, Eckhard; Bures, Horst-Dieter; Magosch, Karl-Heinz; Kesper, Bernt; Muschelknautz, Edgar; and Vogelsgesang, Roland, 4,389,226, Cl. 55-208.000.

Burgess, Donald M. Apparatus for playing a spectator-controlled game. 4,389,048, Cl. 273-121.00A.

Burk, John H. Rock crusher breaker blocks and adjustment apparatus. 4,389,022, Cl. 241-275.000.

Burkart, Jeffrey A.: *See—*
Walsh, Paul J.; and Burkart, Jeffrey A., 4,389,462, Cl. 428-564.000.

Burns, James A., to Becton Dickinson and Company. Automatic retractable lancet assembly. 4,388,925, Cl. 128-314.000.

Burns, Richard D., to General Electric Company. Methods of making improved rotor assembly. 4,388,756, Cl. 29-598.000.

Burns, Richard D., to General Electric Company. Dynamoelectric machine phase insulators and apparatus for making the same. 4,389,584, Cl. 310-43.000.

Burr, Charles R., Jr.: *See—*
Posner, Ronald S.; Burr, Charles R., Jr.; and Campbell, David K., 4,389,671, Cl. 358-124.000.

Burr, Jack, II. Method of making soy milk containing stabilized protein. 4,389,425, Cl. 426-598.000.

Burris, Michael V. Sulfur modified epoxy resin sealing composition. 4,389,501, Cl. 523-400.000.

Burroughs Corporation: *See—*
Chen, Chau-Shiong; and Dixit, Anant O., 4,389,255, Cl. 148-1.500.

Burton, Colin K., to S. C. Johnson & Son, Inc. Skin care composition. 4,389,418, Cl. 424-365.000.

Burton, John A., to Enterprises International, Inc. Ash removal system. 4,388,876, Cl. 110-275.000.

Busch Industrial Products Corporation: *See—*
Palamand, S. R., 4,389,421, Cl. 426-330.400.

Bushmeyer, Richard W., to J. I. Case Company. Exhaust assembly for tractors. 4,388,804, Cl. 60-319.000.

Buzzard, Clair A.: *See—*
Baxter, Leslie A.; Berkowitz, Paul R.; and Buzzard, Clair A., 4,389,720, Cl. 370-62.000.

C. Tape-Developments Limited: *See—*
Bendyshe Walton, Andre P. J.; Townsend, Francis H.; and Ribet, John N., 4,389,580, Cl. 307-400.000.

Cable, Richard B.; and Cable, Willie D. Infant carrier. 4,389,005, Cl. 224-159.000.

Cable, Willie D.: *See—*
Cable, Richard B.; and Cable, Willie D., 4,389,005, Cl. 224-159.000.

Cabot Corporation: *See—*
Walsh, Paul J.; and Burkart, Jeffrey A., 4,389,462, Cl. 428-564.000.

Cadwell, Vyrl E. Hitch assembly. 4,389,058, Cl. 280-415.00A.

Caimi, Giovanni: *See—*
Ferri, Beniamino; and Caimi, Giovanni, 4,389,272, Cl. 156-297.000.

Cain, George R., to Koppers Company, Inc. Charging hole cover seal. 4,389,284, Cl. 202-247.000.

Calderon, Albert. Method for making coke via induction heating. 4,389,283, Cl. 201-19.000.

Caldwell, John T.: *See—*
Dowdy, Edward J.; Nicholson, Nicholas; and Caldwell, John T., 4,389,568, Cl. 250-362.000.

Camerik, Eduard, to U.S. Philips Corporation. Apparatus for writing and/or reading information on a rotary information disc with the aid of a radiation beam. 4,389,717, Cl. 369-75.000.

Campbell, David K.: *See—*
Posner, Ronald S.; Burr, Charles R., Jr.; and Campbell, David K., 4,389,671, Cl. 358-124.000.

Campbell, Steve, to PSI Energy Systems, Inc. Thermal energy storage device and method for making the same. 4,388,963, Cl. 165-10.000.

Canada, Atomic Energy of, Limited: *See—*
Hutcheon, Ronald M., 4,[illegible]572, Cl. 250-396.00R.

Canadian Fram Limited: *See—*
Cook, John E., 4,388,856, Cl. 91-49.000.

Canadian Patents & Development Limited: *See—*
Dauphinee, Thomas M., 4,388,829, Cl. 73-384.000.

Canon Kabushiki Kaisha: *See—*
Ban, Mikichi; and Ito, Susumu, 4,389,084, Cl. 350-524.000.
Kasamura, Toshirou, 4,389,046, Cl. 271-227.000.
Kawamura, Masaharu, 4,389,609, Cl. 320-48.000.
Kondo, Hiroatsu; Ozawa, Toshiaki; and Miyakawa, Hideaki, 4,389,131, Cl. 400-157.200.
Noda, Atsushi, 4,389,605, Cl. 318-696.000.
Uchidoi, Masanori; Shigeta, Yoshihiro; Yoshikawa, Ryoichi; Tosaka, Yoichi; and Haraguchi, Shosuke, 4,389,111, Cl. 354-173.000.

Capuano, Terry D., to Russell, Burdsall & Ward Corporation. Method of tapping dual thread fasteners. 4,389,145, Cl. 408-1.00R.

Carleton, John V.; and Nenadic, Nick, to Union Tank Car. Railroad vehicle. 4,388,873, Cl. 105-377.000.

Carley, Joseph C.: *See—*
Hoskinson, William R.; Carley, Joseph C.; and Ippolito, Anthony C., 4,388,851, Cl. 84-1.240.

Carlingswitch, Inc.: *See—*
Sorenson, Richard W., 4,389,552, Cl. 200-68.000.

Carminati, Jean; Ehret, Thomas; Ovieve, Gerard; and Thoor, Henry-Albert, to FMC Corporation. Articulated loading arm for the transfer of fluids. 4,388,948, Cl. 137-615.000.

Carpenter, Roy B., Jr. Equipment for protecting electronic equipment and personnel against inadvertent occurrence of extended or transient high voltages and method. 4,389,695, Cl. 361-55.000.

Carrier Corporation: *See—*
Yannascoli, Donald; and Fraser, Bruce A., 4,389,168, Cl. 417-298.000.

Carter, James H., II: *See—*
Crews, Harold R.; Carter, James H., II; and Sena, Ted, 4,389,490, Cl. 436-17.000.

Carter, Russell P., Jr., to Mobay Chemical Corporation. Polycarbonate-silicate compositions. 4,389,500, Cl. 523-216.000.

Case, Arthur L.: *See—*
Davidson, Jackson B.; and Case, Arthur L., 4,389,670, Cl. 358-111.000.

Casio Computer Co., Ltd.: *See—*
Sasaki, Ken, 4,389,704, Cl. 363-62.000.
Tsuzuki, Hanzo, 4,389,707, Cl. 364-405.000.

Castolin S.A.: *See—*
Simm, Wolfgang; Steine, Hans-Theo; and Audemars, Daniel, 4,389,251, Cl. 75-255.000.

Caterpillar Tractor Co.: *See—*
Williams, Hugh K.; and Thies, Jerome A., 4,388,976, Cl. 180-69.00R.

Cedco, Incorporated: *See—*
Apfel, Richard, 4,388,893, Cl. 123-25.00J.

Cegedur Societe de Transformation de l'Aluminium Pechiney: *See—*
Colas, Francois, 4,389,134, Cl. 403-263.000.

Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie: *See—*
Tusset, Vittorino; Hancart, Jules; and Paulus, Philippe, 4,389,254, Cl. 134-3.000.

Centro Automazioni Moderne S.p.A.: *See—*
Righi, Bruno, 4,389,205, Cl. 493-315.000.

Cesin, Louie P. Crossbow with coil spring force developing means for projecting an article. 4,388,914, Cl. 124-27.000.

Chahroudi, Day; and Brookes, John R., to Southwall Corporation, The. Transparent infrared radiation absorption system. 4,389,452, Cl. 428-215.000.

Champion International Corporation: *See—*
Lavery, John J., 4,388,993, Cl. 206-611.000.

Champion Spark Plug Company: *See—*
Grime, Thomas E., 4,388,997, Cl. 220-209.000.

Charney, Andrew R.; Kercher, Paul W.; and Stone, Stanley A., to Scientific Systems, Inc. Chromatographic column with improved seals. 4,389,313, Cl. 210-198.200.

Chase, David O.: *See—*
Handy, Binns; and Chase, David O., 4,388,959, Cl. 150-52.00R.

Chaudoir, Roderick J., to Hatco Corporation. Conveyor oven. 4,389,562, Cl. 219-388.000.

Chemische Werke Huls, A.G.: *See—*
Boeke, Burkhard; Kalka, Josef; Smolinski, Manfred; and Baukholt, Heinz, 4,389,522, Cl. 528-503.000.
Moller, Eckhard; Bures, Horst-Dieter; Magosch, Karl-Heinz; Kesper, Bernt; Muschelknautz, Edgar; and Vogelsgesang, Roland, 4,389,226, Cl. 55-208.000.

Chen, Chau-Shiong; and Dixit, Anant O., to Burroughs Corporation. Method of forming buried collector for bipolar transistor in a semiconductor by selective implantation of poly-si followed by oxidation and etch-off. 4,389,255, Cl. 148-1.500.

Chen, Min F.: *See—*
Cho, Hung H.; and Chen, Min F., 4,389,349, Cl. 260-502.50F.

Chevron Research Company: *See—*
Brown, Robert J. S., 4,389,613, Cl. 324-303.000.
Dahlberg, Arthur J.; Shinn, John H.; Rosenthal, Joel W.; and Chu, Tim T., 4,389,301, Cl. 208-59.000.
Ho, Andrew W., 4,389,400, Cl. 424-248.520.
Mitchell, David S., 4,389,300, Cl. 208-11.0LE.
Polman, Herman A., 4,389,434, Cl. 428-17.000.
Vaughan, Ronald J., 4,389,288, Cl. 204-101.000.

Chien, Wu-Shinn. Reclining chair with supplemental telescoping frame. 4,389,070, Cl. 297-365.000.

Chino Works, Ltd.: *See—*
Uesugi, Toshiaki; and Inden, Toshikazu, 4,389,627, Cl. 335-206.000.

Chinon Kabushiki Kaisha: *See—*
Maruyama, Takashi, 4,389,106, Cl. 354-25.000.

Chisso Corporation: *See—*
Harada, Masato; Suzuki, Atsushi; Yamada, Sadahiko; and Masuda, Jun, 4,389,518, Cl. 526-97.000.

Chlanda, Frederick P.: *See—*
Mani, Krishnamurthy N.; and Chlanda, Frederick P., 4,389,293, Cl. 204-180.00P.

Cho, Hung H.; and Chen, Min F. Process for preparing of N-phosphenomethyl glycine. 4,389,349, Cl. 260-502.50F.

Chow, Ho, to Melnor Industries, Inc. Vent damper with emergency manual override. 4,389,014, Cl. 236-1.00G.

Chu, Richard S.; and Mansour, Maher L., to Ashland Oil, Inc. Method for preparing thermosetting resins. 4,389,357, Cl. 264-40.100.

Chu, Tim T.: *See—*
Dahlberg, Arthur J.; Shinn, John H.; Rosenthal, Joel W.; and Chu, Tim T., 4,389,301, Cl. 208-59.000.

Ciba-Geigy Corporation: *See—*
Durr, Dieter, 4,389,236, Cl. 71-88.000.
Gannon, John A., 4,389,520, Cl. 528-89.000.
Malherbe, Roger F., 4,389,321, Cl. 252-47.000.
Scartazzini, Riccardo; and Bickel, Hans, 4,389,524, Cl. 544-016.000.
Schafer, Paul; Abel, Heinz; and Mayer, Fritz, 4,389,214, Cl. 8-527.000.

Cibie, Pierre, to Cibie Projecteurs. Headlamp inter alia for motor vehicles. 4,389,698, Cl. 362-32.000.

Cibie Projecteurs: *See—*
Cibie, Pierre, 4,389,698, Cl. 362-32.000.

Cimperman, Frederick J.: *See—*
Margaroli, John L.; and Cimperman, Frederick J., 4,388,858, Cl. 99-494.000.

Cities Service Company: *See—*
Goforth, Charles P.; and Hamshar, John A., III, 4,389,388, Cl. 423-461.000.

Citizen Watch Co., Ltd.: *See—*
Nagata, Hiromichi, 4,389,006, Cl. 224-164.000.
Tsuzuki, Akira, 4,389,728, Cl. 377-114.000.

Ciucani, Mario. Machine for stitching the upper border of shoes commonly called moccasins. 4,388,880, Cl. 112-49.000.

Ciuffolotti, Pierluigi: *See—*
Olivieri, Roberto; Fascetti, Eugenio; Ciuffolotti, Pierluigi; and Degen, Ludwig, 4,389,485, Cl. 435-191.000.

Clampitt, Richard L., to Phillips Petroleum Company. Foamable compositions and formations treatment. 4,389,320, Cl. 252-8.55R.

Clark Equipment Company: *See—*
Vig, Michael A.; and Schmidt, Donald K., 4,388,980, Cl. 180-271.000.

Clark, Eugene V.; and Sievers, George K., to Turbine Metal Technology, Inc. Erosion resistant tubular apparatus for handling slurries. 4,389,439, Cl. 428-36.000.

Clark, Gary T., to Eastman Kodak Company. Preparation of N-substituted anilines. 4,389,531, Cl. 560-43.000.

Clark, Roland E.; DiBartolo, Salvatore J.; and Johansen, Tonny L., to General Electric. Plug-in ceramic hybrid module. 4,389,080, Cl. 339-14.00R.

Clark, Silas W. Variable valve for refrigeration system. 4,388,812, Cl. 62-141.000.

Cleland, Keith B. Apparatus for separating ores. 4,389,308, Cl. 209-444.000.

Clemente, Stefano; Pelly, Brian R.; and Ruttonsha, Rutton, to International Rectifier Corporation. Switching power supply circuit having constant output for a wide range of input voltage. 4,389,702, Cl. 363-21.000.

Clin, Francois H.; Gony, Jean-Noel; and Proust, Francois O., to Bureau de Recherches Geologique et Minieres. Rotary screens. 4,389,020, Cl. 241-24.000.

Cline, Robert C. Tabbed pocket for use in ring binder and wire bound books. 4,389,060, Cl. 281-38.000.

Clonce, Ambrose J., Jr.: *See—*
Douglas, Ted L.; Clonce, Ambrose J., Jr.; and Jones, Glenn C., 4,389,285, Cl. 203-9.000.

Cockburn, Paul A. Velocipede. 4,389,055, Cl. 280-274.000.

Coder, James D. Automatically-driven chuck accessory for hand drill. 4,389,146, Cl. 408-240.000.

Colas, Francois, to Cegedur Societe de Transformation de l'Aluminium Pechiney. Coupling of a tube to a ring member. 4,389,134, Cl. 403-263.000.

Colby, Daniel E., to McCord Corporation. Modular slush molding machine. 4,389,177, Cl. 425-144.000.

Coldren, Daniel R., to AMP Incorporated. Panel mounted connector for use in confined areas. 4,389,021, Cl. 339-126.00R.

Cole, Frederick A., to Sparton Corporation. Fabric inspection system. 4,389,575, Cl. 250-563.000.

Combustion Engineering, Inc.: *See—*
Yonushonis, Celeste; and Walters, Thomas E., 4,389,282, Cl. 162-145.000.

Cominco Ltd.: *See—*
Higgins, John T., 4,389,356, Cl. 264-9.000.

Commissariate a l'Energie Atomique: *See—*
Pigeon, Michel; Vienot, Claude; and Saglio, Robert, 4,389,611, Cl. 324-220.000.

Conciauro, Giuseppe; and Arcioni, Paolo, to Societa Italiana Telecomunicazioni Siemens S.p.A. Device for electronically tuning a power magnetron. 4,389,594, Cl. 315-39.550.

Congoleum Corporation: *See—*
Aspy, Robert M., 4,388,760, Cl. 33-42.000.
Schmidle, Claude J.; and Varadhachary, Seevaram N., 4,389,514, Cl. 525-364.000.

Conoco Inc.: *See—*
Fair, Delbert W., 4,388,981, Cl. 181-119.000.
Jones, Emrys H., Jr.; and Thakur, Pramod C., 4,388,974, Cl. 175-325.000.

Consolidated Micrographics, Inc.: *See—*
Floyd, Thomas D.; Nelson, Roland D.; and Bonagura, Ronald L., 4,389,117, Cl. 355-87.000.

Cook, John E., to Canadian Fram Limited. Idle speed control actuator. 4,388,856, Cl. 91-49.000.

Cooper, Adrianus A. G.; and Leopold, Phillip M., to Pepsico, Inc. Sports racket. 4,389,269, Cl. 156-172.000.

Cooper, David J.; Waitz, Jay A.; Counelis, Mae; and Weinstein, Jay, to Schering Corporation. Amino glycoside antibiotics having antiprotozoal and anthelmintic activity. 4,389,398, Cl. 424-181.000.

Cooper, Glenn D.; and Katchman, Arthur, to General Electric Company. Blends of polyphenylene ether resins and styrene-tert-butylstyrene copolymers. 4,389,511, Cl. 525-68.000.

Cornwell, Robert, Jr., to PEMCO Corporation. Cable continuity monitoring system. 4,389,694, Cl. 361-48.000.

Corrigan, Francis R., to General Electric Company. Surface characteristics of boron rich cubic boron nitride. 4,389,223, Cl. 51-307.000.

Cosden Technology, Inc.: *See—*
Schwarz, Richard A., 4,389,495, Cl. 521-56.000.

Cosme, Peter A. Drawer slide assembly. 4,389,079, Cl. 312-330.00R.

Cote, Gerard: *See—*
Rouillard epouse Bauer, Denise; Cote, Gerard; Fossi, Paolo; and Marchon, Bruno, 4,389,379, Cl. 423-89.000.

Coulter Electronics, Inc.: *See—*
Crews, Harold R.; Carter, James H., II; and Sena, Ted, 4,389,490, Cl. 436-17.000.

Counelis, Mae: *See—*
Cooper, David J.; Waitz, Jay A.; Counelis, Mae; and Weinstein, Jay, 4,389,398, Cl. 424-181.000.

Couture, Paul A.: *See—*
Jentoft, Arthur P.; and Couture, Paul A., 4,388,784, Cl. 52-200.000.

Cowden, Reuel W. Personal property security system. 4,388,734, Cl. 2-250.000.

Cragoe, Edward J., Jr.: *See—*
Bourke, Robert S.; and Cragoe, Edward J., Jr., 4,389,417, Cl. 424-317.000.

Cramer, Roderick L. Dulcimer construction. 4,388,852, Cl. 84-284.000.

Creative Controls, Inc.: *See—*
Tenniswood, David M., 4,389,056, Cl. 280-289.0WC.

Crescentini, Lamberto: *See—*
James, Leonard E.; Crescentini, Lamberto; and Fisher, William B., 4,389,339, Cl. 252-472.000.

Crevling, Robert L.: *See—*
Hajost, Mark J.; Crevling, Robert L.; and Powell, Fred B., 4,388,920, Cl. 128-80.00C.

Crewe, Albert V., to United States of America, Energy. Multiple sextupole system for the correction of third and higher order aberration. 4,389,571, Cl. 250-396.00R.

Crews, Harold R.; Carter, James H., II; and Sena, Ted, to Coulter Electronics, Inc. Method of stabilizing platelets for determining multiple platelet parameters in reference control and calibrator compositions; and diluents thereof. 4,389,490, Cl. 436-17.000.

Crocket, Frank. Filter device with permeable corrugated grid panel. 4,389,315, Cl. 210-357.000.

Crosfield Electronics Limited: *See—*
Kellner, Phillip R., 4,388,865, Cl. 101-401.100.

Cselt Centro Studi E Laboratori Telecomunicazioni S.P.A.: *See—*
Modone, Eros; and Roba, Giacomo, 4,389,230, Cl. 65-3.120.

CTS Corporation: *See—*
Brown, Richard P., 4,389,549, Cl. 200-5.00R.

Cullen, Terry B.: *See—*
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; and Jones, F. David, 4,389,706, Cl. 364-130.000.

Cumings, Norman E., to Mobil Oil Corporation. Marine structure having a deck or work platform supported by absorbing mechanisms. 4,389,141, Cl. 405-211.000.

Cunningham, Joseph W.; and Wing, Lawrence D., to United States of America, National Aeronautics and Space Administration. Automatic thermal switch. 4,388,965, Cl. 165-32.000.

Curtiss-Wright Corporation: *See—*
Griffith, Michael J., 4,389,172, Cl. 418-61.00A.

Cutter, James, to Litton Industrial Products, Inc. Compact collimator. 4,389,730, Cl. 378-153.000.

CVI Incorporated: *See—*
Sarcia, Domenico S., 4,388,809, Cl. 62-6.000.

Dabrowski, Joseph M.; Daubar, Valentine P.; Fryer, Richard H.; Geraltowski, John; Underwood, James R.; Waid, Roger K.; and Gilvydis, Jaunutis B., to United States of America, Army. Ammunition storage and transfer mechanism. 4,388,854, Cl. 89-46.000.

Dahl, Ernest A.; and Barry, George H. Transformerless battery controlled battery charger. 4,389,608, Cl. 320-33.000.

Dahlberg, Arthur J.; Shinn, John H.; Rosenthal, Joel W.; and Chu, Tim T., to Chevron Research Company. Two-step hydroprocessing of heavy hydrocarbonaceous oils. 4,389,301, Cl. 208-59.000.

Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
Naka, Akihiro; and Honjo, Shuichi, 4,389,219, Cl. 44-51.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Hasegawa, Hiroshi, 4,389,424, Cl. 426-546.000.

Dai Nippon Printing Co. Ltd.: *See—*
Horiguchi, Satoru; and Sasaoka, Takeshi, 4,389,667, Cl. 358-75.000.

Daimer, Wolfgang: *See—*
Pampouchidis, Georgios; Daimer, Wolfgang; and Verdino, Heiner, 4,389,509, Cl. 524-591.000.

Daimler-Benz Aktiengesellschaft: *See—*
Bader, Christian, 4,388,977, Cl. 180-165.000.
Lindenmaier, Klaus, 4,388,911, Cl. 123-557.000.
Thoma, Frank; Hoffmann, Karlheinz; and Seiler, Gunter, 4,389,018, Cl. 239-533.300.

Daiwa Can Company, Limited: *See—*
Nozawa, Tetuo; Nagata, Jun; and Kakimoto, Michiyuki, 4,389,556, Cl. 219-64.000.

d'Alquen, Gunter, to Krall & Roth, Weberei GmbH & Co., K.G. Process and apparatus for producing a twisted elastic thread. 4,388,801, Cl. 57-12.000.

Dalton, Augustine I., Jr.; Greskovich, Eugene J.; and Skinner, Ronald W., to Air Products and Chemicals, Inc. Process for producing hydrogen peroxide. 4,389,390, Cl. 423-584.000.

Damon Corporation: *See—*
Lim, Franklin; and Moss, Richard D., 4,389,419, Cl. 426-72.000.

Dancs, Tibor, to Gulf Oil Corporation. Apparatus for dumping a top-dumping mine car. 4,389,149, Cl. 414-382.000.

Danfoss A/S: *See—*
Riedhammer, Josef, 4,388,941, Cl. 137-82.000.
Schmidt, Jorn M., 4,389,558, Cl. 219-119.000.

Danilin, Evgeny A.: *See—*
Yaroshevsky, Stanislav L.; Lukyanchenko, Leonid F.; Sidorenko, Grigory N.; Skladanovsky, Evgeny N.; Zalevsky, Mikhail A.; Machikin, Viktor I.; Bannikov, Jury G.; Ryabenko, Anatoly I.; Okazov, Shamil T.; Stepanov, Vasily V.; Danilin, Evgeny A.; Yarmal, Anatoly A.; Nekhaev, Grigory E.; Bat, Jury I.; Popov, Nikolai N.; Kamardin, Alexei M.; Tereschenko, Valdimir P.; and Stankevich, Romualda S., 4,389,244, Cl. 75-42.000.

Danner, Bernard; Mau, Hartmut; and Stettler, Hans, to Sandoz Ltd. Asymmetrical diesters of orthophosphoric acid useful as corrosion inhibitors. 4,389,259, Cl. 148-6.15R.

Danske Andelsslagteriers Kodfoder-og Albuminfabrik: *See—*
Madsen, Tonni B., 4,389,423, Cl. 426-417.000.

Data Motion Incorporated: *See—*
Seitz, Karl G., 4,389,007, Cl. 226-74.000.

Datta, Pabitra; Poliniak, Eugene S.; and Ban, Vladimir S., to RCA Corporation. High density information record lubricants. 4,389,441, Cl. 428-65.000.

Daubar, Valentine P.: *See—*
Dabrowski, Joseph M.; Daubar, Valentine P.; Fryer, Richard H.; Geraltowski, John; Underwood, James R.; Waid, Roger K.; and Gilvydis, Jaunutis B., 4,388,854, Cl. 89-46.000.

Dauphinee, Thomas M., to Canadian Patents & Development Limited. Evaporation type barometer. 4,388,829, Cl. 73-384.000.

Davey, Ernest; Hope, Lawrence L.; and Deschenes, Charles E., to GTE Products Corporation. Thin film phosphor sputtering process. 4,389,295, Cl. 204-192.00P.

Davidson, Jackson B.; and Case, Arthur L., to United States of America, Energy. Electronic method for autofluorography of macromolecules on two-D matrices. 4,389,670, Cl. 358-111.000.

Davis, Alan R.: *See—*
Richards, Elmer A.; and Davis, Alan R., 4,388,838, Cl. 74-331.000.

Dawans, Francois; Devaud, Marguerite; and Nicolas, Denise, to Institut Francais du Petrole. Method of protecting submerged articles against fouling. 4,389,460, Cl. 428-458.000.

Dawdy, James E., to Sutherland-Schultz Limited. Apparatus for detecting loss of AC power supply and loss of current. 4,389,640, Cl. 340-664.000.

Dayme, Jean-Louis: *See—*
Martinon, Gerard R.; Dayme, Jean-Louis; and Martinon, Roger J., 4,388,739, Cl. 8-150.000.

De La Mare, Harold E.; and Brownscombe, Thomas F., to Shell Oil Company. Curable polyepoxide-unsaturated monomer compositions suitable for use in rim processes. 4,389,515, Cl. 525-420.500.

Dearman, Timothy C. Pipefitters square holder. 4,388,765, Cl. 33-464.000.

Debell, John H., Jr.; and Allen, David J. Chain saw measuring device. 4,388,762, Cl. 33-185.00R.

De Bellis, Ferruccio, to S.B.M. Societa Brevetti per la Medicina S.R.L. Cardiac catheter electrodes for pacemakers provided with a cardiac RF receiver for emergency pacing. 4,388,930, Cl. 128-419.0PS.

Debesis, John R.: *See—*
Bar-on, Ari; and Debesis, John R., 4,389,654, Cl. 346-75.000.

Decker, D. Richard, to Rockwell International Corporation. High power solid state switch. 4,389,660, Cl. 357-22.000.

Deconinck, Hugo F., to AGFA-Gevaert N.V. Container suitable for holding a stack of photographic sheets. 4,388,992, Cl. 206-455.000.

De Dionigi, Manlio M., to Nicoletti, Alessandro. Pump for fluids. 4,389,169, Cl. 417-417.000.

Degen, Helmut: *See—*
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, 4,389,216, Cl. 8-639.000.

Degen, Ludwig: *See—*
Olivieri, Roberto; Fascetti, Eugenio; Ciuffolotti, Pierluigi; and Degen, Ludwig, 4,389,485, Cl. 435-191.000.

Deguchi, Yukichi: *See—*
Kitanaka, Minoru; and Deguchi, Yukichi, 4,389,453, Cl. 428-240.000.

Degussa AG: *See—*
Mobius, Olaf, 4,388,768, Cl. 36-68.000.

Degussa Aktiengesellschaft: *See—*
Werle, Peter; Merk, Wolfgang; Pohl, Gerhard; and Hoevels, Friedhelm, 4,389,333, Cl. 252-401.000.

Deibele, Florian C.; and Schell, William F., to Tektronix, Inc. Probe-actuated guard shield switch. 4,389,551, Cl. 200-51.00R.

Delamater, John R.: *See—*
Westcott, Robert F.; and Delamater, John R., 4,389,179, Cl. 425-302.100.

Deliyannides, John S.: *See—*
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; and Jones, F. David, 4,389,706, Cl. 364-130.000.

DeLoach, John R.; Harris, Robert L.; Mayery Richard T.; and Ihler, Garret M., to United States of America, Agriculture. Method of providing systemic protection from bloodsucking insects and other parasites using encapsulated additives in resealed erythrocytes. 4,389,209, Cl. 604-53.000.

Dembicki, Michael T.; and Poad, William J., to Brockway Glass Co., Inc. Preparation of glass container for thermoplastic closure. 4,389,266, Cl. 156-69.000.

Demzin, Fred W. Multiple deposition type seeder foot assembly. 4,388,878, Cl. 111-86.000.

de Nevers, Noel H.: *See—*
Gardner, James H.; and de Nevers, Noel H., 4,388,813, Cl. 62-457.000.

Dennhardt, Werner; and Heist, Hans, to Hoechst Aktiengesellschaft. Device for lifting, gripping and transporting printing plates. 4,389,156, Cl. 414-753.000.

deNora, Oronzio, to Oronzio deNora Impianti Elettrochimici S.p.A. Bipolar electrolyzer. 4,389,289, Cl. 204-128.000.

Denslow, Clark A., to Branson Ultrasonics Corporation. Method of fabricating a flexible cover by ultrasonic vibrations. 4,389,267, Cl. 156-73.200.

DeSantis, Charles M.; and Jasper, Louis J., Jr., to United States of America, Army. Active dielectric waveguide amplifier or oscillator using a high density charged particle beam. 4,389,593, Cl. 315-4.000.

De Santis, William D., to Armstrong World Industries, Inc. Scraper blades used with print rollers. 4,388,863, Cl. 101-129.000.

Deschenes, Charles E.: *See—*
Davey, Ernest; Hope, Lawrence L.; and Deschenes, Charles E., 4,389,295, Cl. 204-192.00P.

Despois, Claude; and Rebourg, Jean-Claude. Hadamard transformer using charge transfer devices. 4,389,673, Cl. 358-160.000

Detering, Richard L., to Westinghouse Electric Corp. Automatically synchronized synchronous motor drive system. 4,389,606, Cl. 318-712.000.

Detonics Pistol Accessories, Ltd.: *See—*
Maes, Michel E., 4,388,772, Cl. 42-1.00S.

Deushi, Takeo: *See—*
Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimi; Kamiya, Kazuhiro; Nakayama, Masahoto; Ito, Hisakatsu; and Oda, Takeshi, 4,389,486, Cl. 435-253.000.

deValpillieres, Didier J., to Bendix Corporation, The. Integral manifold absolute pressure and ambient absolute pressure sensor and associated electronics. 4,388,825, Cl. 73-115.000.

Devaud, Marguerite: *See—*
Dawans, Francois; Devaud, Marguerite; and Nicolas, Denise, 4,389,460, Cl. 428-458.000.

Devellian, Richard D.; and Swenson, Paul M., to Kona Corporation. Injection molding nozzle. 4,389,002, Cl. 222-146.0HS.

Devenyi, Tibor F.; Kovats, Tibor F. I.; and Look, Christopher M., to Northern Telecom Limited. Semiconductor laser bonding technique. 4,389,557, Cl. 219-85.0CM.

deVries, Gerhard H. F., to U.S. Philips Corporation. Method of manufacturing an electric discharge device comprising a glass substrate having a pattern of electrodes. 4,389,276, Cl. 156-630.000.

deVries, Gerhard H. F., to U.S. Philips Corporation. Method of manufacturing an electric discharge device. 4,389,277, Cl. 156-630.000.

DHV Raadgevend Ingenieursbureau BV: *See—*
Trentelman, Christiaan C. M.; van Dijk, Johannis C.; and Oomen, Johannes H. C. M., 4,389,317, Cl. 210-715.000.

Diamond, Steven E.; Mares, Frank; and Szalkiewicz, Andrew, to Allied Corporation. Selective hydrogenation of dinitrile to omega-aminonitrile and supported rhodium-containing catalyst therefor. 4,389,348, Cl. 260-465.50R.

DiBartolo, Salvatore J.: *See—*
Clark, Roland E.; DiBartolo, Salvatore J.; and Johansen, Tonny L., 4,389,080, Cl. 339-14.00R.

Dickson, James; Okazaki, Kenji; and Sanders, Thomas H., to Allied Corporation. Method for homogenizing the structure of rapidly solidified microcrystalline metal powders. 4,389,258, Cl. 148-3.000.

Dinger, Hans; and Klotz, Helmut, to MTU Motoren-und Turbinen-Union Friedrichshafen GmbH. Internal combustion engine. 4,388,802, Cl. 60-606.000.

Dinovo, Salvatore T., to Battelle Development Corporation. Limestone calcination. 4,389,381, Cl. 423-175.000.

Di Nunzio, Vittorio: *See—*
Martinez, Pasquale; and Di Nunzio, Vittorio, 4,388,821, Cl. 73-1.00R.

Di Pardo, Robert M., to Merck & Co., Inc. Process for the resolution of some interphenylene 9-thia-11-oxo-12-azaprostanoic acids. 4,389,525, Cl. 548-187.000.

Direct Reduction Corporation, The: *See—*
Baker, Alan C.; Boulter, Geoffrey N.; and Wilbert, Daniel H., 4,389,242, Cl. 75-20.00R.

Di Schiena, Michele; and Orru, Vittoria, to Ausonia Farmaceutici s.r.l. 1,3-Thiazolidin-4-yl-carboxylic acid derivatives and antibacterial compositions thereof. 4,389,407, Cl. 424-271.000.

Dison, Gordon F.; and Dison, Henry B. Process and apparatus for storing paint brushes and the like. 4,388,767, Cl. 34-78.000.

Dison, Henry B.: *See—*
Dison, Gordon F.; and Dison, Henry B., 4,388,767, Cl. 34-78.000.

Disselbeck, Dieter; and Stahl, Dieter, to Hoechst Aktiengesellschaft. Dimensionally stable composite material and process for the manufacture thereof. 4,389,447, Cl. 428-178.000.
Dixit, Anant O.: *See—*
Chen, Chau-Shiong; and Dixit, Anant O., 4,389,255, Cl. 148-1.500.
Dobson, Jerry E.: *See—*
Won, Sungkuk; and Dobson, Jerry E., 4,389,247, Cl. 75-72.000.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Pantke, Reinhard; and Hofmann, Konrad, 4,388,744, Cl. 16-273.000.
Dodd, Harry D., to Gleason Works, The. Rotary tool for straddle grinding. 4,388,781, Cl. 51-206.00R.
Doellinger, Rolf; Schindler, Rudolf; and Franz, Dieter, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Rotor blade comprising a plurality of individual sections. 4,389,162, Cl. 416-225.000.
Domres, Franklin W. Cutting torch guide and accessories therefor. 4,389,039, Cl. 266-77.000.
Donachie, Stephen J.: *See—*
Erich, Donald L.; Varall, Alfred J., Jr.; and Donachie, Stephen J., 4,389,240, Cl. 75-0.50B.
Donze, Michel; and Rugi, Severino, to Etablissements Somalor-Ferrari 'Somafer'. Process for cutting metal members by means of jets of gas which issue at the periphery of a rotary disc. 4,389,261, Cl. 148-9.00R.
Dorgan, Roderick J.; and Webster, Richard A., to Beecham Group Limited. Meta-pyrazolylaminotetramisole analogs and their use in pharmaceutical compositions. 4,389,406, Cl. 424-270.000.
Dougherty, William R., to Honeywell Inc. Liquid gaging system sensor calibration. 4,388,828, Cl. 73-304.00C.
Douglas, Ted L.; Clonce, Ambrose J., Jr.; and Jones, Glenn C., to Eastman Kodak Company. Process inhibitor for readily polymerizable ethylenically unsaturated aromatic compounds. 4,389,285, Cl. 203-9.000.
Dow Chemical Company, The: *See—*
Au, Andrew T., 4,389,411, Cl. 424-301.000.
Friedli, Hans R.; Nelson, Donald L.; and Massingill, John L., Jr., 4,389,512, Cl. 525-112.000.
Priddy, Duane B.; and Roe, James M., 4,389,517, Cl. 526-64.000.
Dowdy, Edward J.; Nicholson, Nicholas; and Caldwell, John T., to United States of America, Energy. Method for monitoring irradiated nuclear fuel using Cerenkov radiation. 4,389,568, Cl. 250-362.000.
Dravo Corporation: *See—*
Jaquay, Louis H., 4,389,243, Cl. 75-23.000.
Drehman, Lewis E.: *See—*
Gardner, Lloyd E.; Farha, Floyd E., Jr.; Eastman, Alan D.; and Drehman, Lewis E., 4,389,305, Cl. 208-254.00H.
Dreier, Ernst, to Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik. Gap stitch mechanism for sewing machines. 4,388,885, Cl. 112-221.000.
Dresser Industries, Inc.: *See—*
Palm, Michael M., 4,389,152, Cl. 414-694.000.
Drucker, David B., to Talres Development (N.A.) N.V. Methods for reducing dental caries. 4,389,394, Cl. 424-53.000.
Dubois, Gerald; and Kenel, Kaspar, to Revue Thommen AG. Clock with electric oscillator-controlled motor. 4,389,122, Cl. 368-110.000.
Dubowik, John M., to Ingersoll-Rand Company. Filter cleaning apparatus. 4,388,938, Cl. 134-104.000.
Duchac, Joseph O.: *See—*
Kopecko, William L.; Fuller, Robert L.; and Duchac, Joseph O., 4,388,846, Cl. 82-4.00A.
Duncan, Charles S.; Piotrowski, Paul A.; Skutch, Maria E.; and McHugh, James P., to United States of America, Energy. Apparatus for growing a dendritic web. 4,389,377, Cl. 422-246.000.
Duncan, Richard J. Failsafe coolant pump for nuclear reactor. 4,389,368, Cl. 376-283.000.
Dunn, Wendell E., Jr. Process for beneficiating titaniferous ores. 4,389,391, Cl. 423-610.000.
Duntzen, Wilhelm, to Industrietechnik Kalenborn GmbH. Overload clutch between a rope drum body and a rope drum shaft. 4,389,203, Cl. 464-34.000.
Duo-Fast Corporation: *See—*
Grikis, Raimonds; Geist, Bernard W.; and Frank, Edmund, 4,389,012, Cl. 227-120.000.
Du Pont de Nemours, E. I., and Company: *See—*
Fry, Grant C.; and Meyer, Walter C., 4,389,502, Cl. 524-37.000.
Hassall, Thomas, Jr., 4,389,506, Cl. 524-377.000.
Durand, Jacques: *See—*
Dussourd D'Hinterland, Lucien; Normier, Gerard; Pinel, Anne-Marie; and Durand, Jacques, 4,389,396, Cl. 424-92.000.
Durenec, Peter, to United States of America, Army. Swash plate driving means for cryogenic coolers. 4,388,808, Cl. 62-6.000.
Durr, Dieter, to Ciba-Geigy Corporation. Herbicidal 3-phenoxymethylene-anilines. 4,389,236, Cl. 71-88.000.
Dusek, Joseph T.: *See—*
Singh, Raj N.; and Dusek, Joseph T., 4,389,467, Cl. 429-41.000.
Dussourd D'Hinterland, Lucien; Normier, Gerard; Pinel, Anne-Marie; and Durand, Jacques, to Pierre Fabre, S.A. Immunostimulating preparations based on ribosomal RNA's and a process for the preparation of the RNA's. 4,389,396, Cl. 424-92.000.
Dworkin, Lawrence W. Folder with pocket. 4,388,958, Cl. 150-7.000.
E.N.I. Ente Nazionale Idrocarburi: *See—*
Olivieri, Roberto; Fascetti, Eugenio; Ciuffolotti, Pierluigi; and Degen, Ludwig, 4,389,485, Cl. 435-191.000.
Eastman, Alan D.; and Gardner, Lloyd E., to Phillips Petroleum Company. Catalytic hydrodesulfurization or hydrodenitrogenation of organic compounds employing alumina promoted with zinc, titanium, cobalt and molybdenum as the catalytic agent. 4,389,304, Cl. 208-254.00H.
Eastman, Alan D., to Phillips Petroleum Company. Promoted zinc titanate catalyst for the dehydrogenation of organic compounds. 4,389,337, Cl. 252-462.000.
Eastman, Alan D.: *See—*
Gardner, Lloyd E.; Farha, Floyd E., Jr.; Eastman, Alan D.; and Drehman, Lewis E., 4,389,305, Cl. 208-254.00H.
Eastman Kodak Company: *See—*
Bishop, John F.; and Bowman, Wayne A., 4,389,479, Cl. 430-216.000.
Clark, Gary T., 4,389,531, Cl. 560-43.000.
Douglas, Ted L.; Clonce, Ambrose J., Jr.; and Jones, Glenn C., 4,389,285, Cl. 203-9.000.
Larkins, Thomas H., Jr.; and Steinmetz, Guy R., 4,389,532, Cl. 568-487.000.
Eaton Corporation: *See—*
Richards, Elmer A.; and Davis, Alan R., 4,388,838, Cl. 74-331.000.
Teeter, Terry E., 4,388,843, Cl. 74-745.000.
Eaton, Sargent S., Jr.; and Wooten, David R., to Inmos Corporation. Redundancy scheme for a dynamic RAM. 4,389,715, Cl. 365-200.000.
Ebara, Katsuya: *See—*
Nishimura, Shigeoki; Ogawa, Toshio; Ebara, Katsuya; and Takahashi, Sankichi, 4,389,253, Cl. 134-1.000.
Eber, David H.; and Sauls, John R., to Trane Company, The. Gas compressor of the scroll type having reduced starting torque. 4,389,171, Cl. 418-15.000.
Edelson, Stuart K., to United States of America, Navy. Bowed pellet pack warhead. 4,388,870, Cl. 102-494.000.
Edison Control Corporation: *See—*
Hill, Desmond W., 4,389,643, Cl. 340-825.480.
Edison International, Inc.: *See—*
Onal, Hasan F., 4,389,160, Cl. 415-206.000.
Edleson, Stuart K., to United States of America, Navy. Rotating rod warhead. 4,388,869, Cl. 102-494.000.
Edmunds, George W.; McVeigh, George S.; and Schmitt, Werner H., to Hoppmann Corporation. Continuous rotary method of transporting articles. 4,388,989, Cl. 198-339.000.
Edson, Gerald: *See—*
Larson, Wally M., 4,386,898, Cl. 123-90.380.
EG&G Sealol, Inc.: *See—*
Johnson, Norman E.; and Greiner, Harold F., 4,389,050, Cl. 277-26.000.
Mullaney, John J., 4,389,051, Cl. 277-41.000.
Ehret, Thomas: *See—*
Carminati, Jean; Ehret, Thomas; Ovieve, Gerard; and Thoor, Henry-Albert, 4,388,948, Cl. 137-615.000.
Eisenlohr, Karl-Heinz: *See—*
Simo, Thomas; and Eisenlohr, Karl-Heinz, 4,389,303, Cl. 208-107.000.
Eisenstein, Stephen E.: *See—*
Wilson, Joe C.; Eisenstein, Stephen E.; Maxwell, Jerrold F.; and Hirozawa, Stanley T., 4,389,371, Cl. 422-15.000.
Ejiri, Yoshihiro: *See—*
Furusawa, Kahei; Ejiri, Yoshihiro; Yamazaki, Yoshihiko; Matsuzaki, Tadayoshi; Nakashima, Hiroyuki; and Harada, Osamu, 4,389,086, Cl. 350-96.200.
Ekwall, Christer; and Elmqvist, Hakan, to Siemens Aktiengesellschaft. Signal processing means particularly for heart pacemakers. 4,388,928, Cl. 128-419.0PG.
Electricite de France (Service National): *See—*
Queffelec, Corentin; Bordet, Rene; and Malinowsky, Marc (said Rene Bordet assors. to), 4,388,785, Cl. 52-222.000.
Electro-Matic Products Co.: *See—*
Armond, Joseph A.; Buky, Gabriel R.; and Patrick, Fred, 4,388,792, Cl. 53-236.000.
Electrochemical Products, Inc.: *See—*
McCoy, Ewald H., 4,389,286, Cl. 204-44.000.
Elektro-Thermit GmbH: *See—*
Guntermann, Hans; Arndt, Gerhard; and Baum, Gustav, 4,389,015, Cl. 238-150.000.
Ellicson, John W.: *See—*
Thomas, Reese R.; Ellicson, John W.; and Somerville, Ronald, 4,389,443, Cl. 428-92.000.
Elmqvist, Hakan: *See—*
Ekwall, Christer; and Elmqvist, Hakan, 4,388,928, Cl. 128-419.0PG.
Eminger, Robert J., to Windamatic Systems, Inc. Flyer winder for externally slotted dynamoelectric machine core member. 4,389,023, Cl. 242-7.05B.
Ender, Erhard: *See—*
Krautz, Kurt; and Ender, Erhard, 4,388,746, Cl. 24-230.00A.
Endo, Tadakazu; and Saitoh, Shigemitsu, to Toray Industries, Inc. Method of making thick-and-thin fibers. 4,389,364, Cl. 264-167.000.
Endou, Haruo; and Ishizuka, Masao, to Mikuni Kogyo Kabushiki Kaisha. Heater for deicing carburetors. 4,389,354, Cl. 261-142.000.
Energy Development Associates, Inc.: *See—*
Bjorkman, Harry K., Jr., 4,389,468, Cl. 429-70.000.
Enertec: *See—*
Lelandais, Guy, 4,389,683, Cl. 360-65.000.
Eng, Clifford D.; Gambell, James W.; and Yuen, Henry K., to Monsanto Company. Chloroisocyanurate compositions. 4,389,325, Cl. 252-186.350.
Engelhard Corporation: *See—*
Gratzel, Michael; and Neumann-Spallart, Michael, 4,389,290, Cl. 204-128.000.

Engels, Walter, to Milliken Research Corporation. Wrinkle remover for a web of running material. 4,388,750, Cl. 26-75.000.
Enomoto, Hiromu; Yasuda, Yasushi; Mitono, Yoshiharu; Imaizumi, Taketo; and Ohmichi, Hitoshi, to Fujitsu Limited. Structure for and method of manufacturing a semiconductor device by the master slice method. 4,388,755, Cl. 29-577.00C.
Enterprises International, Inc.: *See—*
Burton, John A., 4,388,876, Cl. 110-275.000.
Epstein, Daniel; and Lieberman, Robert, to ILC Data Device Corporation. Opto-video inspection system. 4,389,669, Cl. 358-101.000.
Erich, Donald L.; Varall, Alfred J., Jr.; and Donachie, Stephen J., to Novamet, Inc. Alloying method. 4,389,240, Cl. 75-0.50B.
Erismann, David W., to Minnesota Mining and Manufacturing Company. Process for mechanically depositing heavy metallic coatings. 4,389,431, Cl. 427-242.000.
Ernst, Alfons; and Kober, Hans-Rudolf, to Johannes Heidenhain GmbH. Digital electrical angle-measuring device. 4,388,758, Cl. 33-1.0PT.
Ernst Grob, Firma: *See—*
Krapfenbauer, Hans, 4,388,818, Cl. 72-81.000.
Erwien, Helmut: *See—*
Linke, Horst; Erwien, Helmut; Beyer, Herbert; Kerklies, Bodo; Wleklinski, Bernhard; Mainusch, Rudolf; Grundken, Dieter; Kumor, Bernd; and Mohn, Ulrich, 4,389,072, Cl. 299-32.000.
Esab Aktiebolag: *See—*
Weman, Klas B.; and Grohn, Hans E. A., 4,389,561, Cl. 219-124.340.
Espe Fabrik parmazeutischer Praparate GmbH: *See—*
Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Hubner, Heinz-Joachim, 4,389,497, Cl. 523-116.000.
Estel Hoogovens B.V.: *See—*
Ferket, Florimond; and Kuenen, Cornelis A., 4,388,816, Cl. 72-11.000.
Etablissement Salgad: *See—*
Frostig, Amos, 4,388,868, Cl. 102-473.000.
Etablissements Letang & Remy: *See—*
Victor, Rene R., 4,388,817, Cl. 72-68.000.
Etablissements Somalor-Ferrari 'Somafer': *See—*
Donze, Michel; and Rugi, Severino, 4,389,261, Cl. 148-9.00R.
Ethicon, Inc.: *See—*
Shalaby, Shalaby W.; and Schipper, Edgar, 4,388,926, Cl 128-335.500.
Eutectic Corporation: *See—*
Rotolico, Anthony J.; and Romero, Eduardo, 4,389,559, Cl. 219-121.0PP.
Everall, Palmer B., Jr.; and Lowery, Jack R., Sr., to Springs Mills, Inc. Apparatus for sequentially fabricating pillowcases or like products. 4,388,879, Cl. 112-10.000.
Exxon Research and Engineering Co.: *See—*
McMahon, James, 4,389,657, Cl. 346-140.00R.
F. L. Smidth & Co.: *See—*
Houd, Rolf D.; and Knudsen, Hans B., 4,389,252, Cl. 106-100.000.
Fabrica D'Armi Pietro Beretta S.p.A.: *See—*
Beretta, Pier C., 4,388,773, Cl. 42-75.00B.
Fair, Delbert W., to Conoco Inc. Variable cylinder hydraulic vibrator and control system. 4,388,981, Cl. 181-119.000.
Faith, Charles M.: *See—*
Bernard, Clay, II; Matheny, William F., III; Faith, Charles M.; Goswick, Richard L.; and Hauth, Jerry L., 4,389,157, Cl. 414-787.000.
Falk, Bengt G., to Pharmacia Fine Chemicals AB. Method and a device for liquid chromatography. 4,389,316, Cl. 210-656.000.
Fanuele, Michael A.; McCray, Joseph A.; and Rittenbach, Otto F., to United States of America, Army. Doppler discrimination of aircraft targets. 4,389,647, Cl. 343-7.700.
Farha, Floyd E., Jr.: *See—*
Gardner, Lloyd E.; Farha, Floyd E., Jr.; Eastman, Alan D.; and Drehman, Lewis E., 4,389,305, Cl. 208-254.00H.
Farino, Frank G., to Leading Lady Foundations, Inc. Brassiere with improved seam. 4,388,931, Cl. 128-425.000.
Farr, Glyn P. R., to Lucas Industries Limited. Pump having membrane actuated control valve to unload slave actuated inlet valve. 4,389,167, Cl. 417-289.000.
Fascetti, Eugenio: *See—*
Olivieri, Roberto; Fascetti, Eugenio; Ciuffolotti, Pierluigi; and Degen, Ludwig, 4,389,485, Cl. 435-191.000.
Favreau, Michel, to Thomson-CSF. High definition television system. 4,389,668, Cl. 358-83.000.
Fehrenbach, Robert J., to Seaman Nuclear Corporation. Method of determining density. 4,389,136, Cl. 404-75.000.
Feit, Yoseph; Kilanowski, David R.; and Olson, Kenneth E., to American Cyanamid Company. HNCO Manufacture by catalytic oxidation of HCN with a Pd doped Ag catalyst. 4,389,386, Cl. 423-365.000.
Fell, David A.: *See—*
Maxwell, Dorothy; and Fell, David A., 4,389,503, Cl. 524-38.000.
Fenimore, Edward E., to United States of America, Energy. Coded aperture imaging with self-supporting uniformly redundant arrays. 4,389,633, Cl. 382-26.000.
Ferco S.p.A.: *See—*
Ferri, Beniamino; and Caimi, Giovanni, 4,389,272, Cl. 156-297.000.
Ferket, Florimond; and Kuenen, Cornelis A., to Estel Hoogovens B.V. Method and apparatus for rolling a length of metal bar or wire. 4,388,816, Cl. 72-11.000.
Fernsler, Ronald E.: *See—*
Balaban, Alvin R.; Steckler, Steven A.; and Fernsler, Ronald E., 4,389,676, Cl. 358-243.000.
Ferranti plc: *See—*
Bell, Melvyn R.; Morrison, John M.; and Stewart, Charles M., 4,389,697, Cl. 361-380.000.
Ferri, Beniamino; and Caimi, Giovanni, to Ferco S.p.A. Process and feeding device to provide consecutive series of small objects on a single plane. 4,389,272, Cl. 156-297.000.
Fiat Auto S.p.A.: *See—*
Martinez, Pasquale; and Di Nunzio, Vittorio, 4,388,821, Cl. 73-1.00R.
Fichter, Manfred, to Kienzle Apparate GmbH. Line recording device. 4,389,653, Cl. 346-49.000.
Filley, Charles C. Mental harmonization process. 4,388,918, Cl. 128-1.00C.
Fior, Claude. Suspension system for cycles and in particular for motorcycles. 4,388,978, Cl. 180-219.000.
Fischbeck, Kenneth H., to Xerox Corporation. Bidirectional ink jet printing. 4,389,652, Cl. 346-1.100.
Fischer & Porter Company: *See—*
Schmoock, Roy F., 4,388,834, Cl. 73-861.120.
Fisher, William B.: *See—*
James, Leonard E.; Crescentini, Lamberto; and Fisher, William B., 4,389,339, Cl. 252-472.000.
Flair, Henry J.; and Rayburn, Charles C., to Illinois Tool Works Inc. Indexing mechanism for card acceptor. 4,389,564, Cl. 235-489.000.
Florida Data Corporation: *See—*
Bellinger, James E., 4,389,127, Cl. 400-124.000.
Floyd, Thomas D.; Nelson, Roland D.; and Bonagura, Ronald L., to Consolidated Micrographics, Inc. Microfiche separator and transport apparatus. 4,389,117, Cl. 355-87.000.
FMC Corporation: *See—*
Ager, John W.; Harding, Maurice J. C.; and Hatch, Charles E., III, 4,389,528, Cl. 549-470.000.
Carminati, Jean; Ehret, Thomas; Ovieve, Gerard; and Thoor, Henry-Albert, 4,388,948, Cl. 137-615.000.
Focke, Heinz H.; and Liedtke, Kurt W., to Focke & Pfuhl. Apparatus for cutting and transporting blanks from a web of flexible material. 4,388,794, Cl. 53-389.000.
Focke & Pfuhl: *See—*
Focke, Heinz H.; and Liedtke, Kurt W., 4,388,794, Cl. 53-389.000.
Fohl, Artur, to REPA Feinstanzwerk GmbH. Braking-and/or blocking device for load carrying flexible pulling means, for example, belts or ropes. 4,388,985, Cl. 188-65.400.
Ford Motor Company: *See—*
Gandhi, Haren S.; and Adams, Karen M., 4,389,382, Cl. 423-213.500.
Forest Laboratories, Inc.: *See—*
Schor, Joseph M.; Nigalaye, Ashok; and Gaylord, Norman G., 4,389,393, Cl. 424-19.000.
Foshee, William R., to Best Lock Corporation. Mortise lock with improved deadlock release mechanism. 4,389,061, Cl. 292-169.140.
Fossi, Paolo: *See—*
Rouillard epouse Bauer, Denise; Cote, Gerard; Fossi, Paolo; and Marchon, Bruno, 4,389,379, Cl. 423-89.000.
Foster, David L.; Haupt, John F.; and Waite, Malcolm W., to General Electric Company. Electric wheel with removable motor. 4,389,586, Cl. 310-67.00R.
Fournier, Rene; and Sainte-Foi, Daniel. Apparatus for making fibers from thermoplastic materials. 4,389,232, Cl. 65-16.000.
Frank, Edmund: *See—*
Grikis, Raimonds; Geist, Bernard W.; and Frank, Edmund, 4,389,012, Cl. 227-120.000.
Franke, Werner; and Seibel, Markus, to Hoechst Aktiengesellschaft. Light-sensitive layer transfer material. 4,389,480, Cl. 430-271.000.
Franklin, Jerry C., to Lockwood Technical, Inc. Interface control circuit for multiple hot melt material supply systems. 4,389,001, Cl. 222-63.000.
Franz, Dieter: *See—*
Doellinger, Rolf; Schindler, Rudolf; and Franz, Dieter, 4,389,162, Cl. 416-225.000.
Frappart, Pierre: *See—*
Morel, Gilbert; Frappart, Pierre; and Saint Marcoux, Roland, 4,389,703, Cl. 363-61.000.
Fraser, Bruce A.: *See—*
Yannascoli, Donald; and Fraser, Bruce A., 4,389,168, Cl. 417-298.000.
Frattarola, Joseph R; Hudgin, Richard H.; and Yachik, Theodore R., to Itek Corporation. High information density laser image recording method and apparatus. 4,389,712, Cl. 365-127.000.
Frazer-Nash Limited: *See—*
Griffin, Denis; and Adie, John F., 4,388,853, Cl. 89-1.50F.
Freeman, James D. Hanger-type ceiling-attachable support having self-dispensing cement. 4,389,035, Cl. 248-542.000.
Freeman, Willie B., to Westinghouse Electric Corp. Transformer protective switch. 4,389,554, Cl. 200-148.00A.
French, Barry T.; and McNutt, Michael J., to Rockwell International Corporation. CCD Demodulator circuit. 4,389,615, Cl. 329-101.000.
French, David M.: *See—*
Tompa, Albert S.; French, David M.; and White, Billy R., 4,389,265, Cl. 149-109.600.
Frick, Richard H., to Kimberly-Clark Corporation. Wide band extruder nozzle. 4,389,181, Cl. 425-461.000.
Fridrich, Elmer G.: *See—*
Hansler, Richard L.; and Fridrich, Elmer G., 4,389,201, Cl. 445-26.000.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Ulrich, Klaus; Janssen, Wilhelm; and Herbrig, Reinhard, 4,389,040, Cl. 266-137.000.

Friedli, Hans R.; Nelson, Donald L.; and Massingill, John L., Jr., to Dow Chemical Co., The. Cycloaliphatic acrylate compositions. 4,389,512, Cl. 525-112.000.

Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik: *See—*
Dreier, Ernst, 4,388,885, Cl. 112-221.000.
Ruch, Urs; and Ulmer, Christian, 4,388,887, Cl. 112-279.000.

Fritzenwenger, Josef, to Bayerische Motoren Werke Aktiengesellschaft. Motorcycle power train arrangement. 4,388,979, Cl. 180-226.000.

Frostig, Amos, to Etablissement Salgad. Shell body for fin-stabilized projectiles. 4,388,868, Cl. 102-473.000.

Fry, Grant C.; and Meyer, Walter C., to Du Pont de Nemours, E. I., and Company. Clear air-dry acrylic lacquer coating composition. 4,389,502, Cl. 524-37.000.

Fryer, Richard H.: *See—*
Dabrowski, Joseph M.; Daubar, Valentine P.; Fryer, Richard H.; Geraltowski, John; Underwood, James R.; Waid, Roger K.; and Gilvydis, Jaunutis B., 4,388,854, Cl. 89-46.000.

Fuhrhop, Ronald E., to Union Carbide Corporation. Scarfing apparatus. 4,389,038, Cl. 266-51.000.

Fuji Electric Co. Ltd.: *See—*
Tago, Keiichiro, 4,389,646, Cl. 340-870.370.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Kurihara, Toshiro, 4,388,905, Cl. 123-440.000.
Umezawa, Mitsuo, 4,388,986, Cl. 188-77.00R.

Fuji Photo Film Co., Ltd.: *See—*
Asao, Yasuzi, 4,389,455, Cl. 428-328.000.
Kawamura, Kouichi; Sato, Hideo; and Katsuyama, Harumi, 4,389,474, Cl. 430-37.000.
Kondo, Syunichi; Nomaguchi, Hirotsugu; and Sato, Hideo, 4,389,477, Cl. 430-81.000.
Oishi, Kengo; Moriwaki, Masayoshi; Suzuki, Osamu; and Kamiyama, Kouji, 4,389,010, Cl. 226-196.000.
Oishi, Kengo; Suzuki, Osamu; and Komiyama, Choji, 4,389,690, Cl. 360-132.000.

Fuji Photo Optical Co., Ltd.: *See—*
Numata, Saburo, 4,389,565, Cl. 250-201.000.

Fujieda, Takanori: *See—*
Nigorikawa, Atsushi; Yokoyama, Hiroshi; and Fujieda, Takanori, 4,389,723, Cl. 371-27.000.

Fujii, Takara: *See—*
Oshima, Renzo; Kyojima, Yoshiyuki; Fujii, Takara; and Kato, Shoji, 4,389,268, Cl. 156-150.000.

Fujikawa, Yoshiyuki: *See—*
Nakanishi, Yasuhiro; and Fujikawa, Yoshiyuki, 4,389,641, Cl. 340-709.000.

Fujimura, Akira: *See—*
Suda, Kazuyoshi; Fujimura, Akira; and Tsuda, Kiyoshi, 4,388,994, Cl. 209-564.000.

Fujioka, Hironari; and Matsubayashi, Hajime, to Kanzaki Paper Manufacturing Company, Ltd. Electrostatic record material. 4,389,451, Cl. 428-212.000.

Fujita, Masao: *See—*
Iyama, Yukio; Fujita, Masao; and Higashiiriki, Nobuhiro, 4,389,044, Cl. 266-271.000.

Fujita, Susumu: *See—*
Horikoshi, Ichiro; Murakami, Fumikazu; Hara, Yoshiaki; Fujita, Susumu; and Ide, Osamu, 4,389,123, Cl. 368-250.000.

Fujitsu Limited: *See—*
Enomoto, Hiromu; Yasuda, Yasushi; Mitono, Yoshiharu; Imaizumi, Taketo; and Ohmichi, Hitoshi, 4,388,755, Cl. 29-577.00C.

Fukai, Masakazu: *See—*
Hori, Yoshikazu; Asai, Komei; and Fukai, Masakazu, 4,389,096, Cl. 350-339.00R.

Fukuroi, Takeo, to Yoshida Kogyo K. K. Method and apparatus for manufacturing slide fastener coupling elements. 4,388,751, Cl. 29-410.000.

Fukushima, Syousuke, to Konishiroku Photo Industry Co., Ltd. Zoom lens barrel. 4,389,098, Cl. 350-429.000.

Fuller, Robert L.: *See—*
Kopecko, William L.; Fuller, Robert L.; and Duchac, Joseph O., 4,388,846, Cl. 82-4.00A.

Furusawa, Kahei; Ejiri, Yoshihiro; Yamazaki, Yoshihiko; Matsuzaki, Tadayoshi; Nakashima, Hiroyuki; and Harada, Osamu, to Kokusai Denshin Denwa Co., Ltd.; and Nippon Electric Co., Ltd. Feedthrough terminal comprising a guide member defined for at least one optical fiber cable between a tube and a rod. 4,389,086, Cl. 350-96.200.

Furuta, Kenzi, to Olympus Optical Co., Ltd. Cue signal generating system. 4,389,685, Cl. 360-72.200.

Furuya, Katuji; and Yago, Tokuzo, to Nissan Motor Company, Limited. System for rapidly warming up catalytic converter provided to automotive internal combustion engine. 4,388,803, Cl. 60-284.000.

Futatsuishi, Godo, to Nippon Electric Co., Ltd. Phase locked loop stabilized against temperature and voltage variations. 4,389,621, Cl. 331-1.00A.

G.D. Searle & Co.: *See—*
Lenz, George R., 4,389,345, Cl. 260-397.100.

Gaines, George L., Jr.; and Ward, William J., III, to General Electric Company. Fugitive binder-containing nuclear fuel material and method of production. 4,389,341, Cl. 252-638.000.

Gallagher, Edward L., to A-T-O, Inc. Interfacing attachment for remote mechanical fire alarms. 4,389,635, Cl. 340-287.000.

Gallusser, David O.; Hemmer, Valentine J.; and Toombs, Gary C., to Bendix Corporation, The. Electrical connector coupling ring. 4,389,081, Cl. 339-89.00M.

Gambell, James W.: *See—*
Eng, Clifford D.; Gambell, James W.; and Yuen, Henry K., 4,389,325, Cl. 252-186.350.

Gamble, Christopher L. Load balancing device. 4,388,841, Cl. 74-573.00F.

Gancy, Alan B. Process of making two uniform grades of calcium magnesium acetate. 4,389,323, Cl. 252-70.000.

Gander, Franz. Watercraft with swivel fin drive. 4,389,196, Cl. 440-15.000.

Gandhi, Haren S.; and Adams, Karen M., to Ford Motor Company. Method of using a simplified low cost catalyst system. 4,389,382, Cl. 423-213.500.

Gannon, John A., to Ciba-Geigy Corporation. Advancement catalysts for epoxy resins. 4,389,520, Cl. 528-89.000.

Gardner, James H.; and de Nevers, Noel H., to Aurora Design Associates, Inc. Server for wine bottles and the like. 4,388,813, Cl. 62-457.000.

Gardner, Lloyd E.; Farha, Floyd E., Jr.; Eastman, Alan D.; and Drehman, Lewis E., to Phillips Petroleum Company. Catalytic hydrodenitrogenation of organic compounds employing promoted zinc titanate. 4,389,305, Cl. 208-254.00H.

Gardner, Lloyd E.: *See—*
Eastman, Alan D.; and Gardner, Lloyd E., 4,389,304, Cl. 208-254.00H.

Garnaud, Guy; and Bouhier, Roger, to Medica-Test. Apparatus for automatically measuring the viscosity of liquids. 4,388,823, Cl. 73-57.000.

Garrett, David: *See—*
Molayem, Benjamin; and Garrett, David, 4,388,877, Cl. 110-342.000.

Garwin, Leo; and Baldwin, Roger A., to Kerr-McGee Refining Corporation. Process for vis-breaking asphaltenes. 4,389,302, Cl. 208-86.000.

Gassler, Kurt. Construction means for use in the assembly of wall and/or roof structures. 4,388,786, Cl. 52-282.000.

Gates, James T. Humidifying system for mobile vehicles. 4,389,353, Cl. 261-130.000.

Gaylord, Norman G.: *See—*
Schor, Joseph M.; Nigalaye, Ashok; and Gaylord, Norman G., 4,389,393, Cl. 424-19.000.

Gaz de France: *See—*
Guilhem, Michel, 4,388,810, Cl. 62-47.000.

Geberth, John D., Jr. Spray gun. 4,389,017, Cl. 239-455.000.

GEC-General Signal Limited: *See—*
Hardman, Arthur R., 4,389,033, Cl. 246-37.000.

Geipel, Henry J., Jr.; Hsieh, Ning; Koburger, Charles W., III; and Nesbit, Larry A., to International Business Machines Corporation. Fabrication method for high conductivity, void-free polysilicon-silicide integrated circuit electrodes. 4,389,257, Cl. 148-1.500.

Geist, Bernard W.: *See—*
Grikis, Raimonds; Geist, Bernard W.; and Frank, Edmund; 4,389,012, Cl. 227-120.000.

General Electric: *See—*
Clark, Roland E.; DiBartolo, Salvatore J.; and Johansen, Tonny L., 4,389,080, Cl. 339-14.00R.

General Electric Company: *See—*
Burns, Richard D., 4,388,756, Cl. 29-598.000.
Burns, Richard D., 4,389,584, Cl. 310-43.000.
Cooper, Glenn D.; and Katchman, Arthur, 4,389,511, Cl. 525-68.000.
Corrigan, Francis R., 4,389,223, Cl. 51-307.000.
Foster, David L.; Haupt, John F.; and Waite, Malcolm W., 4,389,586, Cl. 310-67.00R.
Gaines, George L., Jr.; and Ward, William J., III, 4,389,341, Cl. 252-638.000.
Hansler, Richard L.; and Fridrich, Elmer G., 4,389,201, Cl. 445-26.000.
Pauze, Denis R.; and Zamek, Otto S., 4,389,457, Cl. 428-379.000.
Sherman, Ira N., 4,388,831, Cl. 73-623.000.
Stark, Charles J., 4,389,529, Cl. 549-531.000.

General Foods Corporation: *See—*
Hudak, Stephen F., 4,389,422, Cl. 426-388.000.

Genese, Joseph N., to Abbott Laboratories. Catheter placement assembly having axial and rotational alignment means. 4,389,210, Cl. 604-177.000.

Georgia-Pacific Corporation: *See—*
Hall, Richard A.; and Sorensen, James R., 4,389,013, Cl. 229-45.00R.

Geraltowski, John: *See—*
Dabrowski, Joseph M.; Daubar, Valentine P.; Fryer, Richard H.; Geraltowski, John; Underwood, James R.; Waid, Roger K.; and Gilvydis, Jaunutis B., 4,388,854, Cl. 89-46.000.

Gerber, Curtis E. Fruit harvesting machine. 4,388,798, Cl. 56-334.000.

Gersbeck, Rolf, to Hermann Berstorff Maschinenbau GmbH. Continuously operable chipboard press. 4,389,182, Cl. 425-505.000.

Gewerkschaft Eisenhutte Westfalia: *See—*
Linke, Horst; Erwien, Helmut; Beyer, Herbert; Kerklies, Bodo; Wleklinski, Bernhard; Mainusch, Rudolf; Grundken, Dieter; Kumor, Bernd; and Mohn, Ulrich, 4,389,072, Cl. 299-32.000.
Trumper, Thomas, 4,389,073, Cl. 299-45.000.

Gibboni, Roland R.: *See—*
Toll, Alexander R.; and Gibboni, Roland R., 4,389,194, Cl. 434-201.000.

Gibbs, James T. Paraboloidal drinking fountain attachment. 4,389,016, Cl. 239-24.000.

Gidlund, Per A. L., to Atlas Copco Aktiebolag. Vibrationless impact tool. 4,388,972, Cl. 173-162.00R.

Giffard, Robin P.: *See—*
Simmonds, Michael B.; and Giffard, Robin P., 4,389,612, Cl. 324-248.000.

Gilbreath, Rodney E.: *See—*
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; and Jones, F. David, 4,389,706, Cl. 364-130.000.

Giles, Albert H.: *See—*
Mirra, Michael J.; and Giles, Albert H., 4,389,459, Cl. 428-457.000.

Gillette Company, The: *See—*
Riesgraf, Diane A., 4,389,499, Cl. 523-161.000.

Gilloire, Andre: *See—*
Le Guyader, Alain; and Gilloire, Andre, 4,389,726, Cl. 375-27.000.

Gilvydis, Jaunutis B.: *See—*
Dabrowski, Joseph M.; Daubar, Valentine P.; Fryer, Richard H.; Geraltowski, John; Underwood, James R.; Waid, Roger K.; and Gilvydis, Jaunutis B., 4,388,854, Cl. 89-46.000.

Giolitti, Nicolo, to Remington Ind. E Com. De Sistemas Para Escritoria S.A. Device for coupling and releasing a daisy wheel type member. 4,389,130, Cl. 400-144.200.

Giras, Theodore C.: *See—*
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; and Jones, F. David, 4,389,706, Cl. 364-130.000.

Girod, Hansjochen; and Korn, Gerhard, to Thyssen Industrie AG. Railway car bogie construction. 4,388,872, Cl. 105-99.000.

Givaudan Corporation: *See—*
Valentine, Roy H.; and Brandman, Harold A., 4,389,527, Cl. 549-438.000.

Glasenapp, Rudi K. H.; and McCulloch, Andrew J., to Boeing Company, The. Nose wheel water spray deflector. 4,389,029, Cl. 244-103.00R.

Gleason Works, The: *See—*
Dodd, Harry D., 4,388,781, Cl. 51-206.00R.

Glisson, David; Huber, Gerald; and Biskey, Bruce, to Audichron Company, The. Digital announcement system including remote loading and interrogation. 4,389,546, Cl. 179-18.00B.

Gockler, Heinz; and Hofmeister, Hagen, to Aeg-Telefunken AG Licentia Patent-Verwaltungs-GmbH. Method and arrangement for the digital regulation of the carrier phase error in receivers of data transmission systems. 4,389,616, Cl. 329-104.000.

Godbey, John K.; and Ballard, Billy G., to Mobil Oil Corporation. Automatic liquid level controller. 4,389,164, Cl. 417-36.000.

Godley, Fred O.; and Laurents, John A., to Single Vend Inc. Newspaper vending machine. 4,389,000, Cl. 221-8.000.

Goforth, Charles P.; and Hamshar, John A., III, to Cities Service Company. Desulfurization of petroleum coke. 4,389,388, Cl. 423-461.000.

Goldstein, Norman P., to Westinghouse Electric Corp. Wide range radiation monitoring apparatus. 4,389,570, Cl. 250-370.000.

Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; and Jones, F. David, to Westinghouse Electric Corp. Digital computer monitored and/or operated system or process which is structured for operation with an improved automatic programming process and system. 4,389,706, Cl. 364-130.000.

Gontowski, Walter S., Jr., to Sprague Electric Company. I.C. Alarm signal generator. 4,389,638, Cl. 340-384.00E.

Gony, Jean-Noel: *See—*
Clin, Francois H.; Gony, Jean-Noel; and Proust, Francois O., 4,389,020, Cl. 241-24.000.

Goodyear Aerospace Corporation: *See—*
Rasmussen, John P., 4,389,710, Cl. 364-551.000.

Gordon, John H. Mandrel with identical expanding segments. 4,389,180, Cl. 425-403.000.

Gorike, Rudolf, to AKG Akustische u. Kino-Ger/ te. Orthodynamic headphone. 4,389,542, Cl. 179-1.00R.

Gorove, Arpad, to Storage Technology Corporation. Exhaust air valve for magnetic disk drives. 4,389,687, Cl. 360-98.000.

Goswick, Richard L.: *See—*
Bernard, Clay, II; Matheny, William F., III; Faith, Charles M.; Goswick, Richard L.; and Hauth, Jerry L., 4,389,157, Cl. 414-787.000.

Grabley, Susanne; and Sauber, Klaus, to Hoechst Aktiengesellschaft. Process for the enzymatic preparation of L-2-amino-4-methylphosphinobutyric acid. 4,389,488, Cl. 435-280.000.

Graiff, Leonard B.; Heldeweg, Rudolf F.; and Leenaars, Corrie M. J., to Shell Oil Company. Gasoline composition and method for reducing fuel consumption. 4,389,221, Cl. 44-66.000.

Gramling, William D. Special effects editing method and apparatus using retrieved video. 4,389,680, Cl. 360-14.100.

Granirer, Martus; and Jason, Andrew, to Granirer, Martus. Telephone-activated audio control circuit. 4,389,543, Cl. 179-2.00B.

Gratzel, Michael; and Neumann-Spallart, Michael, to Engelhard Corporation. Use of electrocatalytic anodes in photolysis. 4,389,290, Cl. 204-128.000.

Gray, Reed A.: *See—*
Patchett, Gilbert G.; Gray, Reed A.; and Hyzak, Daniel L., 4,389,237, Cl. 71-103.000.

Greco, Michael. Partition and paneling system. 4,388,790, Cl. 52-584.000.

Green, Donald L., to Beecham Products. Patterned dryer added fabric conditioning articles. 4,389,448, Cl. 428-195.000.

Green, Peter C.: *See—*
Block, Jacob; and Green, Peter C., 4,389,319, Cl. 252-8.50A.

Greene, Neil E.: *See—*
Shofner, Frederick M.; Greene, Neil E.; and Hanna, Terry J., 4,389,574, Cl. 250-561.000.

Greenfield, Mark S., to GTE Products Corporation. Mine tools utilizing copper-manganese nickel brazing alloys. 4,389,074, Cl. 299-79.000.

Gregory, Floyd A.: *See—*
Boyanowski, Robert E.; Gregory, Floyd A.; and Nemier, Stanley E., 4,389,008, Cl. 226-123.000.

Greiner, Harold F.: *See—*
Johnson, Norman E.; and Greiner, Harold F., 4,389,050, Cl. 277-26.000.

Greskovich, Eugene J.: *See—*
Dalton, Augustine I., Jr.; Greskovich, Eugene J.; and Skinner, Ronald W., 4,389,390, Cl. 423-584.000.

Gries, Josef: *See—*
May, Hans-Joachim; Lenke, Dieter; Gries, Josef; Teschendorf, Hans-Juergen; and Worstmann, Wolfgang, 4,389,403, Cl. 424-258.000.

Griffin, Denis; and Adie, John F., to Frazer-Nash Limited. Missile launchers. 4,388,853, Cl. 89-1.50F.

Griffith, Michael J., to Curtiss-Wright Corporation. Rotary compressor or expansion engine of hypotrochoidal configuration and angularly displaced gear means. 4,389,172, Cl. 418-61.00A.

Grikis, Raimonds; Geist, Bernard W.; and Frank, Edmund, to Duo-Fast Corporation. Fastener tool loading assembly. 4,389,012, Cl. 227-120.000.

Grime, Thomas E., to Champion Spark Plug Company. Vent for paint cups. 4,388,997, Cl. 220-209.000.

Grimm, Gerold; Rose, Klaus; Kemmner, Ulrich; Schillinger, Rainer; and Stemmer, Alois, to Robert Bosch GmbH. Adjustment device for rotary angle adjustment. 4,388,913, Cl. 123-585.000.

Grohn, Hans E. A.: *See—*
Weman, Klas B.; and Grohn, Hans E. A., 4,389,561, Cl. 219-124.340.

Grumman Aerospace Corporation: *See—*
Hudson, Gordon F., 4,389,367, Cl. 264-570.000.

Grundken, Dieter: *See—*
Linke, Horst; Erwien, Helmut; Beyer, Herbert; Kerklies, Bodo; Wleklinski, Bernhard; Mainusch, Rudolf; Grundken, Dieter; Kumor, Bernd; and Mohn, Ulrich, 4,389,072, Cl. 299-32.000.

GTE Products Corporation: *See—*
Blaisdell, Ronald G.; and Hough, Harold L., 4,389,700, Cl. 362-306.000.
Davey, Ernest; Hope, Lawrence L.; and Deschenes, Charles E., 4,389,295, Cl. 204-192.00P.
Greenfield, Mark S., 4,389,074, Cl. 299-79.000.

Guenette, Louis D.: *See—*
Weir, Roy; Morin, Larry G.; and Guenette, Louis D., 4,389,066, Cl. 296-19.000.

Guilhem, Michel, to Gaz de France. Storage tank for liquefied gas such as methane. 4,388,810, Cl. 62-47.000.

Guinan, Thomas, to Heinemann Electric Company. Circuit breaker with increased electrical spacing. 4,389,555, Cl. 200-303.000.

Gulf Canada Limited: *See—*
McCorriston, Lois L., 4,389,378, Cl. 423-68.000.

Gulf Oil Corporation: *See—*
Dancs, Tibor, 4,389,149, Cl. 414-382.000.

Gunjima, Tomoki: *See—*
Suhara, Manabu; Gunjima, Tomoki; and Miyake, Haruhisa, 4,389,494, Cl. 521-27.000.

Guntermann, Hans; Arndt, Gerhard; and Baum, Gustav, to Elektro-Thermit GmbH. Corrugation-free rail. 4,389,015, Cl. 238-150.000.

Gushurst, Fred W., Jr. Adjustable airfoil. 4,388,888, Cl. 114-90.000.

Guzik, Rudolph, to Bell & Howell Company. Apparatus for and methods of making bimodal electrophotographic copies. 4,389,478, Cl. 430-97.000.

Haas, Frederick T., Jr., to Mod-Sod Sports Surfaces, Inc. Top dressed plating surface with resilient underpad. 4,389,435, Cl. 428-17.000.

Hackenberg, Robert A.: *See—*
Berry, Chapman; and Hackenberg, Robert A., 4,388,999, Cl. 220-416.000.

Hackforth GmbH & Co. KG: *See—*
Walter, Jurgen, 4,389,204, Cl. 464-91.000.

Hada, Takashi: *See—*
Honma, Yoshikiyo; Shimogawara, Jun; Nagata, Muneyoshi; Oka, Yukihiko; Koyanagi, Yukiaki; Hosoya, Yukiyoshi; and Hada, Takashi, 4,389,126, Cl. 400-82.000.

Haga, Shoji: *See—*
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Hagenmuller, Paul: *See—*
Tanguy, Bernard; Soubeyroux, Jean-Louis; Pezat, Michel; Portier, Josik; and Hagenmuller, Paul, 4,389,326, Cl. 252-188.260.

Haghighi, Kamal Banani: *See—*
Breon, Everett C., 4,388,741, Cl. 15-104.3SN.

Hagiwara, Yukio: *See—*
Sugiyama, Takahiro; and Hagiwara, Yukio, 4,389,100, Cl. 350-478.000.

Hajost, Mark J.; Crevling, Robert L.; and Powell, Fred B., to Professional Medical Products, Inc. Variable position knee immobilizer. 4,388,920, Cl. 128-80.00C.

Halbleib, Chester W.: *See—*
Lonsinger, Jack J.; and Halbleib, Chester W., 4,389,350, Cl. 260-989.000.
Hall, Lawrence W. Rotary exercise device. 4,389,047, Cl. 272-69.000.
Hall, Richard A.; and Sorensen, James R., to Georgia-Pacific Corporation. Container having a self-locking lid. 4,389,013, Cl. 229-45.00R.
Halliburton Company: *See—*
Brandell, John T., 4,388,968, Cl. 166-236.000.
Hamada, Osamu, to Sony Corporation. Signal processing system. 4,388,849, Cl. 84-1.180.
Hamanaka, Nobuyuki; Hashimoto, Shinsuke; and Hayashi, Masaki. 9,11-Methano-13-aza-11a-carbathrombanoic acid analogues. 4,389,413, Cl. 424-305.000.
Hamane, Takuhito; Kinoshita, Toshio; and Kihira, Masafumi, to Matsushita Electric Industrial Co., Ltd. Coil winding apparatus. 4,388,952, Cl. 140-92.100.
Hammann, Ingeborg: *See—*
Arlt, Dieter; Homeyer, Bernhard; and Hammann, Ingeborg, 4,389,530, Cl. 556-404.000.
Hammer, Jeffrey M.: *See—*
Anderson, Paul A.; Hammer, Jeffrey M.; and MacArthur, J. Ward, 4,389,577, Cl. 307-39.000.
Hamshar, John A., III: *See—*
Goforth, Charles P.; and Hamshar, John A., III, 4,389,388, Cl. 423-461.000.
Hanamoto, Mark S.; and Tanaka, Steve K., to Bio-Rad Laboratories, Inc. Method and kit for chromatographic separation of hemoglobin A_{1c}. 4,389,491, Cl. 436-67.000.
Hancart, Jules: *See—*
Tusset, Vittorino; Hancart, Jules; and Paulus, Philippe, 4,389,254, Cl. 134-3.000.
Hancock, Harold E., to Power Management Corporation. Solid state arc suppression device. 4,389,691, Cl. 361-8.000.
Handy, Binns; and Chase, David O., to Lenox, Incorporated. Soft container for jewelry. 4,388,959, Cl. 150-52.00R.
Hanna, Terry J.: *See—*
Shofner, Frederick M.; Greene, Neil E.; and Hanna, Terry J., 4,389,574, Cl. 250-561.000.
Hannart, Jean A., to Omnichem, S.A. 1,10-Dimethyl-2,7-dihydrooxayohimbanes an anti-arrhythmic use thereof. 4,389,405, Cl. 424-262.000.
Hansen, Guenter: *See—*
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, 4,389,216, Cl. 8-639.000.
Hansler, Richard L.; and Fridrich, Elmer G., to General Electric Company. Method of manufacturing a lamp. 4,389,201, Cl. 445-26.000.
Hara, Akinori; and Mochizuki, Hiroshi, to Osawa Press Mdg., Co., Ltd. Method of and apparatus for twisting wire end. 4,388,953, Cl. 140-149.000.
Hara, Akio: *See—*
Nakai, Tetsuo; Kono, Yuichiro; Yazu, Shuji; and Hara, Akio, 4,389,465, Cl. 428-698.000.
Hara, Yoshiaki: *See—*
Horikoshi, Ichiro; Murakami, Fumikazu; Hara, Yoshiaki; Fujita, Susumu; and Ide, Osamu, 4,389,123, Cl. 368-250.000.
Harada, Kazuo: *See—*
Nakanishi, Takeshi; Harada, Kazuo; Yoshida, Nobuyuki; and Ogino, Etsuo, 4,389,306, Cl. 209-5.000.
Harada, Masato; Suzuki, Atsushi; Yamada, Sadahiko; and Masuda, Jun, to Chisso Corporation. Process for producing polyethylene. 4,389,518, Cl. 526-97.000.
Harada, Osamu: *See—*
Furusawa, Kahei; Ejiri, Yoshihiro; Yamazaki, Yoshihiko; Matsuzaki, Tadayoshi; Nakashima, Hiroyuki; and Harada, Osamu, 4,389,086, Cl. 350-96.200.
Haraguchi, Shosuke: *See—*
Uchidoi, Masanori; Shigeta, Yoshihiro; Yoshikawa, Ryoichi; Tosaka, Yoichi; and Haraguchi, Shosuke, 4,389,111, Cl. 354-173.000.
Harbormaster, Division of Mathewson Corp.: *See—*
Henderson, Ronald C., 4,389,198, Cl. 440-60.000.
Hard, Robert A., to Occidental Research Corporation. Process for reducing phosphate ore. 4,389,384, Cl. 423-304.000.
Harding, Maurice J. C.: *See—*
Ager, John W.; Harding, Maurice J. C.; and Hatch, Charles E., III, 4,389,528, Cl. 549-470.000.
Hardman, Arthur R., to GEC-General Signal Limited. Broken rail/-bond detectors. 4,389,033, Cl. 246-37.000.
Harju, Philip H.; and Pasek, Eugene A., to Koppers Company, Inc. Preparation of naphthalene-oxidation catalyst by impregnation of silica with aqueous solution of VOC_2O_4—K_2SO_4—$KHSO_4$. 4,389,336, Cl. 252-440.000.
Harris Corporation: *See—*
Patel, Vipin N.; and Raby, Joseph S., 4,389,713, Cl. 365-163.000.
Posner, Ronald S.; Burr, Charles R., Jr.; and Campbell, David K., 4,389,671, Cl. 358-124.000.
Young, William R.; and Zepp, Stanley R., 4,389,721, Cl. 370-88.000.
Harris, Robert L.: *See—*
DeLoach, John R.; Harris, Robert L.; Mayery Richard T.; and Ihler, Garret M., 4,389,209, Cl. 604-53.000.
Hartmann, Kurt: *See—*
Bohg, Armin; and Hartmann, Kurt, 4,388,861, Cl. 101-93.020.
Harvey, Barrie J.; and Willson, Robert C., to M. H. Detrick Co., Ltd. Refractory components for furnaces. 4,389,189, Cl. 432-247.000.
Harvey, Gerald J.; and Huff, Elliot, Jr., to Harvey-Westbury Corp. Self-contained portable air compressor. 4,389,166, Cl. 417-234.000.
Harvey-Westbury Corp.: *See—*
Harvey, Gerald J.; and Huff, Elliot, Jr., 4,389,166, Cl. 417-234.000.
Hasegawa, Hiroshi, to Dai Nippon Insatsu Kabushiki Kaisha. Production of semiprocessed fried potato pieces for preservation at room temperature. 4,389,424, Cl. 426-546.000.
Hasegawa, Katsuji, to Mienan Machinery Works, Inc. Method of patch mending a veneer sheet. 4,388,956, Cl. 144-332.000.
Hashimoto, Akihiko: *See—*
Kimura, Tadashi; Hashimoto, Akihiko; and Kidawara, Atsushi, 4,389,566, Cl. 250-204.000.
Hashimoto, Shinsuke: *See—*
Hamanaka, Nobuyuki; Hashimoto, Shinsuke; and Hayashi, Masaki, 4,389,413, Cl. 424-305.000.
Hashimoto, Shintaro; Morita, Akitaka; and Tsuda, Hiroshi, to Sharp Kabushiki Kaisha. Speech synthesizer timepiece with alarm function. 4,389,121, Cl. 368-63.000.
Hassall, Thomas, Jr., to Du Pont de Nemours, E. I., and Company. Polyvinyl alcohol dust suppression by admixing polyglycol. 4,389,506, Cl. 524-377.000.
Hatch, Charles E., III: *See—*
Ager, John W.; Harding, Maurice J. C.; and Hatch, Charles E., III, 4,389,528, Cl. 549-470.000.
Hatco Corporation: *See—*
Chaudoir, Roderick J., 4,389,562, Cl. 219-388.000.
Hattori, Hiroyuki; and Uemura, Kazuo, to Shimadzu Corporation. Emission computed tomograph. 4,389,569, Cl. 250-363.00S.
Hauffe, Dieter; Muller, Gerhard; Rausch, Werner; Rothkegel, Josef; and Volling, Gudrun, to Occidental Chemical Corporation. Composition and process for the phosphatizing of metals. 4,389,260, Cl. 148-6.15Z.
Haupt, John F.: *See—*
Foster, David L.; Haupt, John F.; and Waite, Malcolm W., 4,389,586, Cl. 310-67.00R.
Hauth, Jerry L.: *See—*
Bernard, Clay, II; Matheny, William F., III; Faith, Charles M.; Goswick, Richard L.; and Hauth, Jerry L., 4,389,157, Cl. 414-787.000.
Hayashi, Kazuo, to Nissan Motor Co., Ltd. Rotary vane pump with passage to the rotor and housing interface. 4,389,170, Cl. 418-15.000.
Hayashi, Masaki: *See—*
Hamanaka, Nobuyuki; Hashimoto, Shinsuke; and Hayashi, Masaki, 4,389,413, Cl. 424-305.000.
Hayashi, Motokazu: *See—*
Kamei, Taketo; and Hayashi, Motokazu, 4,389,595, Cl. 315-57.000.
Heimreid, Ken. External urinary drainage device. 4,388,923, Cl. 128-295.000.
Heinemann Electric Company: *See—*
Guinan, Thomas, 4,389,555, Cl. 200-303.000.
Heinemans, Hendricus C. A. M.: *See—*
Van de Donk, Michael J. C.; Heinemans, Hendricus C. A. M.; and Legierse, Petrus E. J., 4,389,719, Cl. 369-275.000.
Heist, Hans: *See—*
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Heldeweg, Rudolf F.: *See—*
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Heller, Herbert, to Mine Safety Appliances Company. Atmospheric sampling system. 4,388,822, Cl. 73-23.000.
Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, to Lincoln Manufacturing Co., Inc. Lid handle cover. 4,388,743, Cl. 16-116.00A.
Hellstab, Stephan, to Hugo Sachs Elektronik KG. Multiple electrode system. 4,389,656, Cl. 346-139.00C.
Hemmer, Valentine J.: *See—*
Gallusser, David O.; Hemmer, Valentine J.; and Toombs, Gary C., 4,389,081, Cl. 339-89.00M.
Henderson, Clifford W. Scriber. 4,388,761, Cl. 33-42.000.
Henderson, Ronald C., to Harbormaster, Division of Mathewson Corp. Outboard motor system. 4,389,198, Cl. 440-60.000.
Hendry, James W., to KMMCO Structural Foam, Inc. Method and apparatus for making an integral structural cellular and non-cellular plastic or resinous article with a smooth outer surface. 4,389,358, Cl. 264-45.100.
Hennessey, Richard G.; Beemer, Richard B.; and Melles, Harold W., to International Harvester Co. Hydromechanical transmission employing lockup clutch. 4,388,987, Cl. 192-3.260.
Herbrig, Reinhard: *See—*
Ulrich, Klaus; Janssen, Wilhelm; and Herbrig, Reinhard, 4,389,040, Cl. 266-137.000.
Hermann Berstorff Maschinenbau GmbH: *See—*
Gersbeck, Rolf, 4,389,182, Cl. 425-505.000.
Hermann, Carl Z.; and Locke, Timothy L. Toy sailplane. 4,388,777, Cl. 46-79.000.
Hermes, Glenn P. Template guide. 4,388,764, Cl. 33-403.000.
Hesse, Jurgen: *See—*
Hoesslin, Gerhard V.; and Hesse, Jurgen, 4,389,366, Cl. 264-558.000.
Higaki, Yuzo: *See—*
Yamada, Osamu; Higaki, Yuzo; and Ukai, Akitoshi, 4,389,346, Cl. 260-410.700.
Higashiiriki, Nobuhiro: *See—*
Iyama, Yukio; Fujita, Masao; and Higashiiriki, Nobuhiro, 4,389,044, Cl. 266-271.000.

Higashiyama, Noboru, to Mitsubishi Denki Kabushiki Kaisha. Magnetic head supporting mechanism. 4,389,688, Cl. 360-104.000.
Higgins, John T., to Cominco Ltd. Sulfur prilling. 4,389,356, Cl. 264-9.000.
Hill, Desmond W., to Edison Control Corporation. Multiplexed pulse tone signal receiving apparatus. 4,389,643, Cl. 340-825.480.
Hiraga, Hirofumi; Yoshimura, Minoru; Ikeda, Shigeho; and Yoshii, Hiroe, to Ajinomoto Company Incorporated. Method for producing L-glutamic acid by fermentation. 4,389,483, Cl. 435-110.000.
Hirano, Takashi, to Yamato Scale Company, Ltd. Combination weighing device. 4,388,975, Cl. 177-25.000.
Hiraoka, Hiroyuki: *See—*
Bargon, Joachim; Hiraoka, Hiroyuki; and Welsh, Lawrence W., Jr., 4,389,482, Cl. 430-325.000.
Hiraoka, Shoji: *See—*
Watanabe, Taisuke; Niyada, Katsuyuki; Hiraoka, Shoji; and Kaga, Kenji, 4,389,539, Cl. 179-1.0SM.
Hirata, Goichi: *See—*
Samejima, Masayoshi; Hirata, Goichi; and Koida, Yoshiyuki, 4,389,331, Cl. 427-213.300.
Hirata, Takeyuki: *See—*
Okamura, Shozo; Nakajima, Hidemasa; Marukawa, Katsukiyo; Anezaki, Shoji; and Hirata, Takeyuki, 4,389,246, Cl. 75-60.000.
Hirate, Masayuki: *See—*
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Hirmann, Georg: *See—*
Knibiehler, Ernst; and Hirmann, Georg, 4,389,709, Cl. 364-551.000.
Hirose, Yasuo. Evaporating concentrator for sewage sludge. 4,388,875, Cl. 110-224.000.
Hirota, Kunio; and Shimomura, Masao, to Brother Kogyo Kabushiki Kaisha. Stitch pattern sewing machine. 4,388,883, Cl. 112-121.120.
Hirota, Kunio; and Shimomura, Masao, to Brother Kogyo Kabushiki Kaisha. Stitch pattern sewing machine. 4,388,884, Cl. 112-121.120.
Hirozawa, Stanley T.: *See—*
Wilson, Joe C.; Eisenstein, Stephen E.; Maxwell, Jerrold F.; and Hirozawa, Stanley T., 4,389,371, Cl. 422-15.000.
Hitachi Denshi Kabushiki Kaisha: *See—*
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Hitachi, Ltd.: *See—*
Hoshi, Yoshikazu, 4,388,900, Cl. 123-198.0DB.
Hotta, Masao; Miyamoto, Yoshikazu; Yokozawa, Norio; and Oshima, Yoshimitsu, 4,389,711, Cl. 364-556.000.
Nishimura, Shigeoki; Ogawa, Toshio; Ebara, Katsuya; and Takahashi, Sankichi, 4,389,253, Cl. 134-1.000.
Seki, Katsumi; Tachi, Yasuo; and Shibata, Yoji, 4,389,310, Cl. 210-183.000.
Sekiyama, Nobuo; and Miyamura, Hisato, 4,389,607, Cl. 318-717.000.
Tanaka, Toshio; Nakagawa, Sumio; and Toudo, Kenzi, 4,389,184, Cl. 431-15.000.
Yamaguchi, Kiyoshi; Maki, Naoki; and Tamura, Toshio, 4,389,585, Cl. 310-52.000.
Hitachi Shipbuilding & Engineering Co., Ltd.: *See—*
Nakanishi, Takeshi; Harada, Kazuo; Yoshida, Nobuyuki; and Ogino, Etsuo, 4,389,306, Cl. 209-5.000.
Hitt, James J.; and Kern, Scott L., to Leeds & Northrup Company. Preamplifier for low voltage signals in the presence of high voltage noise. 4,389,674, Cl. 358-213.000.
Ho, Andrew W., to Chevron Research Company. 2,2-Bis(haloalkenyl)-1-substituted-1-cyanoethylene fungicides. 4,389,400, Cl. 424-248.520.
Hobbs, John R., to Rolls-Royce Limited. Gas turbine engine air intake. 4,389,227, Cl. 55-306.000.
Hobein, Dietmar: *See—*
Horacek, Heinrich; Marx, Matthias; and Hobein, Dietmar, 4,389,454, Cl. 428-318.600.
Hoch, Samuel: *See—*
Bellettiere, Samuel J.; Hurley, Raymond; and Hoch, Samuel, 4,389,328, Cl. 252-194.000.
Hochreuter, Johann. Shearing pin moment of rotation limiting arrangement for two constructional units that are rotatable relative to one another. 4,389,202, Cl. 464-33.000.
Hoechst Aktiengesellschaft: *See—*
Dennhardt, Werner; and Heist, Hans, 4,389,156, Cl. 414-753.000.
Disselbeck, Dieter; and Stahl, Dieter, 4,389,447, Cl. 428-178.000.
Franke, Werner; and Seibel, Markus, 4,389,480, Cl. 430-271.000.
Grabley, Susanne; and Sauber, Klaus, 4,389,488, Cl. 435-280.000.
Schneider, Manfred; Kruse, Hubert; and Opitz, Konrad, 4,389,213, Cl. 8-524.000.
Hoesslin, Gerhard V.; and Hesse, Jurgen, to Messer Griesheim GmbH. Process and device for cooling hollow synthetic material profiles. 4,389,366, Cl. 264-558.000.
Hoevels, Friedhelm: *See—*
Werle, Peter; Merk, Wolfgang; Pohl, Gerhard; and Hoevels, Friedhelm, 4,389,333, Cl. 252-401.000.
Hoffmann, Gerhard; and Neumann, Peter, to BASF Aktiengesellschaft. Multilayered electrophotographic recording medium. 4,389,475, Cl. 430-58.000.
Hoffmann, Karlheinz: *See—*
Thoma, Frank; Hoffmann, Karlheinz; and Seiler, Gunter, 4,389,018, Cl. 239-533.300.
Hoffmann-La Roche Inc.: *See—*
Boller, Arthur; Schadt, Martin; and Villiger, Alois, 4,389,329, Cl. 252-299.100.
Horecker, Bernard L., 4,389,343, Cl. 260-112.50R.
Hofmann, Konrad: *See—*
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Hofmeister, Hagen, to Licentia Patent-Verwaltungs-GmbH. Method for the simultaneous transmission of a plurality of data stream over one transmission channel. 4,389,722, Cl. 370-100.000.
Hofmeister, Hagen: *See—*
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Hogg, Cecil B.: *See—*
Merriam, Jay S.; and Hogg, Cecil B., 4,389,335, Cl. 252-439.000.
Holaday, Veldon D., Jr.: *See—*
Thornton, Thomas A.; and Holaday, Veldon D., Jr., 4,389,355, Cl. 264-0.500.
Holowaty, Michael O.; Hughes, Ian F.; and Lude, John, to Inland Steel Company. Method for adding ingredient to steel as shot. 4,389,249, Cl. 75-129.000.
Homeyer, Bernhard: *See—*
Arlt, Dieter; Homeyer, Bernhard; and Hammann, Ingeborg, 4,389,530, Cl. 556-404.000.
Honeywell Inc.: *See—*
Anderson, Paul A.; Hammer, Jeffrey M.; and MacArthur, J. Ward, 4,389,577, Cl. 307-39.000.
Dougherty, William R., 4,388,828, Cl. 73-304.00C.
Kackman, Gerald M., 4,389,622, Cl. 332-19.000.
Tamura, Poohsan N., 4,389,092, Cl. 350-162.120.
Honjo, Shuichi: *See—*
Naka, Akihiro; and Honjo, Shuichi, 4,389,219, Cl. 44-51.000.
Honma, Keizo; and Honma, Kunizo, to Honma, Keizo. Device for capturing air bubbles from fluids in piping. 4,388,944, Cl. 137-171.000.
Honma, Kunizo: *See—*
Honma, Keizo; and Honma, Kunizo, 4,388,944, Cl. 137-171.000.
Honma, Yoshikiyo; Shimogawara, Jun; Nagata, Muneyoshi; Oka, Yukihiko; Koyanagi, Yukiaki; Hosoya, Yukiyoshi; and Hada, Takashi, to Nippon Electric Co., Ltd. Serial impact printer having two printing modes. 4,389,126, Cl. 400-82.000.
Hope, Lawrence L.: *See—*
Davey, Ernest; Hope, Lawrence L.; and Deschenes, Charles E., 4,389,295, Cl. 204-192.00P.
Hoppmann Corporation: *See—*
Edmunds, George W.; McVeigh, George S.; and Schmitt, Werner H., 4,388,989, Cl. 198-339.000.
Horacek, Heinrich; Marx, Matthias; and Hobein, Dietmar, to BASF Aktiengesellschaft. Molded foamed polyurethane part having a lightweight skin and a process for its manufacture. 4,389,454, Cl. 428-318.600.
Horecker, Bernard L., to Hoffmann-La Roche Inc. Immunopotentiating peptides from thymus. 4,389,343, Cl. 260-112.50R.
Hori, Yoshikazu; Asai, Komei; and Fukai, Masakazu, to Matsushita Electric Industrial Co., Ltd. Image display apparatus of liquid crystal valve projection type. 4,389,096, Cl. 350-339.00R.
Horie, Izumi: *See—*
Yuasa, Yoshio; Ishikawa, Norio; and Horie, Izumi, 4,389,118, Cl. 356-404.000.
Horie, Katuo: *See—*
Kojima, Sadao; Shimada, Masaaki; Sakai, Kunio; and Horie, Katuo, 4,389,376, Cl. 422-228.000.
Horiguchi, Satoru; and Sasaoka, Takeshi, to Dai Nippon Printing Co. Ltd.; and Ikegami Tsushinki Co. Ltd. Flying spot scanner for use in a color printing process simulating apparatus. 4,389,667, Cl. 358-75.000.
Horikoshi, Ichiro; Murakami, Fumikazu; Hara, Yoshiaki; Fujita, Susumu; and Ide, Osamu, to Kabushiki Kaisha Daini Seikosha. Electronic alarm watch. 4,389,123, Cl. 368-250.000.
Horodysky, Andrew G., to Mobil Oil Corporation. Friction reducing additives and compositions thereof. 4,389,322, Cl. 252-49.600.
Hosaka, Akihiko; and Okuyama, Kiyotaka, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,389,458, Cl. 428-425.900.
Hoshi, Yoshikazu, to Hitachi, Ltd. Automatic stopping device for diesel engine. 4,388,900, Cl. 123-198.0DB.
Hoskinson, William R.; Carley, Joseph C.; and Ippolito, Anthony C., to Wurlitzer Company, The. Non-volatile memory system for an electronic musical instrument. 4,388,851, Cl. 84-1.240.
Hosoya, Yukiyoshi: *See—*
Honma, Yoshikiyo; Shimogawara, Jun; Nagata, Muneyoshi; Oka, Yukihiko; Koyanagi, Yukiaki; Hosoya, Yukiyoshi; and Hada, Takashi, 4,389,126, Cl. 400-82.000.
Hotta, Masao; Miyamoto, Yoshikazu; Yokozawa, Norio; and Oshima, Yoshimitsu, to Hitachi, Ltd. Touch sensitive tablet using force detection. 4,389,711, Cl. 364-556.000.
Houd, Rolf D.; and Knudsen, Hans B., to F. L. Smidth & Co. Plant for manufacturing cement clinker. 4,389,252, Cl. 106-100.000.
Hough, Harold L.: *See—*
Blaisdell, Ronald G.; and Hough, Harold L., 4,389,700, Cl. 362-306.000.
Houle, Roberta C.: *See—*
Yong, Samuel H.; Perlbachs, Donna J.; Wallin, Glenn R.; and Houle, Roberta C., 4,389,420, Cl. 426-94.000.
Hsieh, Ning: *See—*
Geipel, Henry J., Jr.; Hsieh, Ning; Koburger, Charles W., III; and Nesbit, Larry A., 4,389,257, Cl. 148-1.500.
Hsu, Wen-Liang: *See—*
Shore, Sheldon G.; and Hsu, Wen-Liang, 4,389,347, Cl. 260-429.0CY.
Huber, Gerald: *See—*
Glisson, David; Huber, Gerald; and Biskey, Bruce, 4,389,546, Cl. 179-18.00B.

Hubner, Heinz-Joachim: *See—*
Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Hubner, Heinz-Joachim, 4,389,497, Cl. 523-116.000.

Hudak, Stephen F., to General Foods Corporation. Method for producing aromatized microporous substrates. 4,389,422, Cl. 426-388.000.

Hudgin, Richard H.: *See—*
Frattarola, Joseph R; Hudgin, Richard H.; and Yachik, Theodore R., 4,389,712, Cl. 365-127.000.

Hudson, Gordon F., to Grumman Aerospace Corporation. Fluid molding system. 4,389,367, Cl. 264-570.000.

Huff, Elliot, Jr.: *See—*
Harvey, Gerald J.; and Huff, Elliot, Jr., 4,389,166, Cl. 417-234.000.

Hughes, Ian F.: *See—*
Holowaty, Michael O.; Hughes, Ian F.; and Lude, John, 4,389,249, Cl. 75-129.000.

Hugo Sachs Elektronik KG: *See—*
Hellstab, Stephan, 4,389,656, Cl. 346-139.00C.

Hundertmark, James M.: *See—*
Sheridan, Stephen E.; and Hundertmark, James M., 4,388,896, Cl. 123-73.0AD.

Hungerford, Gordon P., to Mobil Oil Corporation. Boil resistant film laminate and retortable food pouch therefrom. 4,389,437, Cl. 428-35.000.

Hungerford, Gordon P., to Mobil Oil Corporation. Plasticized polyacrylonitrile, a film thereof and a process for film preparation and plasticization. 4,389,505, Cl. 524-376.000.

Hurley, Raymond: *See—*
Bellettiere, Samuel J.; Hurley, Raymond; and Hoch, Samuel, 4,389,328, Cl. 252-194.000.

Hutcheon, Ronald M., to Canada, Atomic Energy of, Limited. Two magnet asymmetric doubly achromatic beam deflection system. 4,389,572, Cl. 250-396.00R.

Hydronautics, Inc.: *See—*
Johnson, Virgil E., Jr.; and Lindenmuth, William T., 4,389,071, Cl. 299-14.000.

Hyzak, Daniel L.: *See—*
Patchett, Gilbert G.; Gray, Reed A.; and Hyzak, Daniel L., 4,389,237, Cl. 71-103.000.

Ibau Hamburg Ingenieurgesellschaft Industriebau mbH: *See—*
Klein-Albenhausen, Heinrich, 4,389,142, Cl. 406-120.000.

Ide, Osamu: *See—*
Horikoshi, Ichiro; Murakami, Fumikazu; Hara, Yoshiaki; Fujita, Susumu; and Ide, Osamu, 4,389,123, Cl. 368-250.000.

Igarashi, Sachio: *See—*
Yamazaki, Kyuya; Igarashi, Sachio; and Shibata, Koichi, 4,389,519, Cl. 528-73.000.

Ihler, Garret M.: *See—*
DeLoach, John R.; Harris, Robert L.; Mayery Richard T.; and Ihler, Garret M., 4,389,209, Cl. 604-53.000.

Iio, Toshimasa; and Ohkubo, Toyokazu, to Sumitomo Metal Mining Company Limited. Method of recovering gold from anode slimes. 4,389,248, Cl. 75-99.000.

Ikeda, Kunihiko: *See—*
Matsumoto, Fuyuhiko; Ikeda, Kunihiko; and Tsushima, Shuichi, 4,389,113, Cl. 355-3.0DD.

Ikeda, Shigeho: *See—*
Hiraga, Hirofumi; Yoshimura, Minoru; Ikeda, Shigeho; and Yoshii, Hiroe, 4,389,483, Cl. 435-110.000.

Ikeda, Shoji: *See—*
Sakamoto, Fumio; Ikeda, Shoji; Tsukamoto, Goro; and Utsumi, Isamu, 4,389,408, Cl. 424-271.000.

Ikegami Tsushinki Co. Ltd.: *See—*
Horiguchi, Satoru; and Sasaoka, Takeshi, 4,389,667, Cl. 358-75.000.

ILC Data Device Corporation: *See—*
Epstein, Daniel; and Lieberman, Robert, 4,389,669, Cl. 358-101.000.

Illinois Tool Works Inc.: *See—*
Flair, Henry J.; and Rayburn, Charles C., 4,389,564, Cl. 235-489.000.

Ilon, Bengt E. Skid protection device for wheels. 4,388,754, Cl. 29-446.000.

Imai, Susumu: *See—*
Yanabu, Satoru; Nishiwaki, Susumu; Yamashita, Mizuho; Satoh, Toshikazu; Murakami, Yoichi; and Imai, Susumu, 4,389,693, Cl. 361-127.000.

Imai, Toshihiro, to Olympus Optical Co., Ltd. Photographic lens system. 4,389,099, Cl. 350-464.000.

Imaizumi, Taketo: *See—*
Enomoto, Hiromu; Yasuda, Yasushi; Mitono, Yoshiharu; Imaizumi, Taketo; and Ohmichi, Hitoshi, 4,388,755, Cl. 29-577.00C.

Inden, Toshikazu: *See—*
Uesugi, Toshiaki; and Inden, Toshikazu, 4,389,627, Cl. 335-206.000.

Industrias Y Confecciones, S.A. (INDUYCO): *See—*
Blasco, Eduardo G., 4,389,604, Cl. 318-568.000.

Industrietechnik Kalenborn GmbH: *See—*
Duntzen, Wilhelm, 4,389,203, Cl. 464-34.000.

Ingersoll-Rand Company: *See—*
Dubowik, John M., 4,388,938, Cl. 134-104.000.

Inland Steel Company: *See—*
Holowaty, Michael O.; Hughes, Ian F.; and Lude, John, 4,389,249, Cl. 75-129.000.

Inmos Corporation: *See—*
Eaton, Sargent S., Jr.; and Wooten, David R., 4,389,715, Cl. 365-200.000.

Innis, Charles L., Jr.; Salter, Lowell S., Jr.; Boghosian, Harry; and Wilkinson, Donald H., to Morgan Construction Company. Water guard for rolling mill oil film bearing. 4,389,053, Cl. 277-95.000.

Inoue, Yoshio; and Shimizu, Hisashi, to Shin-Etsu Chemical Co., Ltd. Method of improving adhesion and adhesion improvers used therefor. 4,389,432, Cl. 427-299.000.

Institut Francais du Petrole: *See—*
Dawans, Francois; Devaud, Marguerite; and Nicolas, Denise, 4,389,460, Cl. 428-458.000.

Institut Straumann AG: *See—*
Sutter, Franz; and Straumann, Fritz, 4,388,921, Cl. 128-92.00B.

Intermedics Cardiassist Corporation: *See—*
Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., 4,388,919, Cl. 128-64.000.

International Business Machines Corporation: *See—*
Anantha, Narasipur G.; Bhatia, Harsaran S.; Lechaton, John S.; and Walsh, James L., 4,389,281, Cl. 156-646.000.
Anantha, Narasipur G.; Bhatia, Harsaran S.; Mauer, John L., IV; and Sarkary, Homi G., 4,389,294, Cl. 204-192.00E.
Bargon, Joachim; Hiraoka, Hiroyuki; and Welsh, Lawrence W., Jr., 4,389,482, Cl. 430-325.000.
Bohg, Armin; and Hartmann, Kurt, 4,388,861, Cl. 101-93.020.
Boyanowski, Robert E.; Gregory, Floyd A.; and Nemier, Stanley E., 4,389,008, Cl. 226-123.000.
Geipel, Henry J., Jr.; Hsieh, Ning; Koburger, Charles W., III; and Nesbit, Larry A., 4,389,257, Cl. 148-1.500.
Milligan, Charles A.; and Winarski, Daniel J., 4,389,600, Cl. 318-6.000.
Staiger, Dieter E., 4,389,614, Cl. 328-61.000.

International Computers Limited: *See—*
Scarrott, Gordon G., 4,389,682, Cl. 360-45.000.

International Harvester Co.: *See—*
Hennessey, Richard G.; Beemer, Richard B.; and Melles, Harold W., 4,388,987, Cl. 192-3.260.

International Minerals & Chemical Corp.: *See—*
Seeney, Charles E.; Kraemer, John F.; and Varnum, Nancy C., 4,389,498, Cl. 523-139.000.

International Minerals & Chemical Luxembourg Societe Anonyme: *See—*
Lask, Gert-Wilhelm, 4,389,493, Cl. 501-154.000.

International Rectifier Corporation: *See—*
Clemente, Stefano; Pelly, Brian R.; and Ruttonsha, Rutton, 4,389,702, Cl. 363-21.000.

International Telephone and Telegraph Corporation: *See—*
Bartels, Leroy R.; and Milbright, Arnold M., 4,388,983, Cl. 182-189.000.
McDuffee, Frederick T.; and Kozikowski, Carrie L., 4,389,428, Cl. 427-54.100.
Milbright, Arnold M., 4,388,787, Cl. 52-298.000.

Ionescu, Marian I.; Lenker, Jay A.; Rosenbluth, Robert F.; and Seiler, Louis, Jr., to Shiley Inc. Low profile prosthetic xenograft heart valve. 4,388,735, Cl. 3-1.500.

Ippolito, Anthony C.: *See—*
Hoskinson, William R.; Carley, Joseph C.; and Ippolito, Anthony C., 4,388,851, Cl. 84-1.240.

Isaka, Takenobu; and Kobayashi, Masaaki, to Matsushita Electric Industrial Co., Ltd. Tracking apparatus for use in a video tape recorder. 4,389,686, Cl. 360-77.000.

Ishida, Tokuji: *See—*
Taniguchi, Nobuyuki; Nakai, Masaaki; Ishida, Tokuji; and Uchida, Isamu, 4,389,109, Cl. 354-60.00L.

Ishikawa, Norio: *See—*
Yuasa, Yoshio; Ishikawa, Norio; and Horie, Izumi, 4,389,118, Cl. 356-404.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Shimizu, Masami; and Yasunobe, Junji, 4,389,052, Cl. 277-67.000.

Ishino, Hirokichi: *See—*
Ohtsuki, Akira; Ishino, Hirokichi; Sakai, Hiromu; Yamasoba, Takahiko; Tsuchiko, Susumu; and Yoshino, Takashi, 4,389,438, Cl. 428-35.000.

Ishizuka, Masao: *See—*
Endou, Haruo; and Ishizuka, Masao, 4,389,354, Cl. 261-142.000.

Itek Corporation: *See—*
Frattarola, Joseph R; Hudgin, Richard H.; and Yachik, Theodore R., 4,389,712, Cl. 365-127.000.

Ito, Hisakatsu: *See—*
Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimj; Kamiya, Kazuhiro; Nakayama, Masahoto; Ito, Hisakatsu; and Oda, Takeshi, 4,389,486, Cl. 435-253.000.

Ito, Kazuomi: *See—*
Nishizawa, Jun-ichi; and Ito, Kazuomi, 4,389,256, Cl. 148-1.500.

Ito, Masao: *See—*
Yoshida, Seietsu; Ito, Masao; Kawai, Yujio; and Ogawa, Toshihisa, 4,388,903, Cl. 123-440.000.

Ito, Susumu: *See—*
Ban, Mikichi; and Ito, Susumu, 4,389,084, Cl. 350-524.000.

Itoh, Tadatsugu, to Anelva Corporation. Pulsed electron beam device comprising a cathode having through holes. 4,389,573, Cl. 250-492.200.

ITT Industries, Inc.: *See—*
Ostwald, Fritz, 4,389,076, Cl. 303-92.000.

Iwasaki, Akio: *See—*
Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimi; Kamiya, Kazuhiro; Nakayama, Masahoto; Ito, Hisakatsu; and Oda, Takeshi, 4,389,486, Cl. 435-253.000.

Iwasaki, Koichi: *See—*
Wada, Makoto; Iwasaki, Koichi; and Nakata, Hajime, 4,388,960, Cl. 152-209.00R.

Iwasaki, Shinichiro, to Aisin Seiki Company, Limited. Pulse duty control system. 4,389,581, Cl. 307-419.000.

Iwata, Shigemi: *See—*
Kajiyama, Ryuichi; and Iwata, Shigemi, 4,389,631, Cl. 340-21.000.

Iyada, Syozo: *See—*
Ubukata, Susumu; Mizutani, Yasukazu; and Iyada, Syozo, 4,389,630, Cl. 337-363.000.

Iyama, Yukio; Fujita, Masao; and Higashiiriki, Nobuhiro, to Nippon Mining Co., Ltd. Mechanical punching apparatus for copper smelting converter. 4,389,044, Cl. 266-271.000.

J. I. Case Company: *See—*
Bushmeyer, Richard W., 4,388,804, Cl. 60-319.000.
Pedersen, Carl O.; and Maurer, Herman J., 4,389,153, Cl. 414-695.500.

J. T. Baker Chemical Company: *See—*
Kaufman, Harold A., 4,389,238, Cl. 71-115.000.

Jabor, Tony. Light switch delay circuit. 4,389,599, Cl. 315-360.000.

Jackson, David W., to Probe Systems, Inc. Method and apparatus for coherent detection in optical processors. 4,389,093, Cl. 350-162.140.

Jacobson, Sava. Remote rewind mechanism and control circuitry for a tape cassette telephone answering device. 4,389,545, Cl. 179-6.070.

James, Leonard E.; Crescentini, Lamberto; and Fisher, William B., to Allied Corporation. Process for making a cobalt oxide catalyst. 4,389,339, Cl. 252-472.000.

James River-Dixie/Northern, Inc.: *See—*
Sakschek, Helmut W., 4,389,175, Cl. 425-82.100.

Jamesbury Corporation: *See—*
Johnson, David A.; Wright, Joseph B.; and Pashoogian, Michael, 4,388,945, Cl. 137-315.000.

Jang, Sei-Joo; Pohl, Knut D.; and Saifi, Mansoor A., to Western Electric Co., Inc. Methods and apparatus for fabricating a lightguide preform. 4,389,229, Cl. 65-3.120.

Jansen, Friedrich L.; and Phillips, Ian, to U.S. Philips Corporation. Telephone set. 4,389,547, Cl. 179-81.00R.

Janssen, Wilhelm: *See—*
Ulrich, Klaus; Janssen, Wilhelm; and Herbrig, Reinhard, 4,389,040, Cl. 266-137.000.

Jaquay, Louis H., to Dravo Corporation. Method for the flash oxidation of metal concentrates. 4,389,243, Cl. 75-23.000.

Jason, Andrew: *See—*
Granirer, Martus; and Jason, Andrew, 4,389,543, Cl. 179-2.00B.

Jasper, Louis J., Jr.: *See—*
DeSantis, Charles M.; and Jasper, Louis J., Jr., 4,389,593, Cl. 315-4.000.

Jentoft, Arthur P.; and Couture, Paul A., to Wasco Products, Inc. Thermal break skylight. 4,388,784, Cl. 52-200.000.

Jochum, Peter: *See—*
Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Hubner, Heinz-Joachim, 4,389,497, Cl. 523-116.000.

Jocteur, Robert: *See—*
Bendayan, Jacques; and Jocteur, Robert, 4,389,087, Cl. 350-96.230.

Johannes Heidenhain GmbH: *See—*
Ernst, Alfons; and Kober, Hans-Rudolf, 4,388,758, Cl. 33-1.0PT.

Johansen, Tonny L.: *See—*
Clark, Roland E.; DiBartolo, Salvatore J.; and Johansen, Tonny L., 4,389,080, Cl. 339-14.00R.

John Fluke Mfg. Co., Inc.: *See—*
Baldock, K. Paul, 4,389,708, Cl. 364-573.000.

Johnson, David A.; Wright, Joseph B.; and Pashoogian, Michael, to Jamesbury Corporation. Valve assembly and disassembly device. 4,388,945, Cl. 137-315.000.

Johnson & Johnson: *See—*
Korpman, Ralf, 4,389,444, Cl. 428-137.000.

Johnson, Norman E.; and Greiner, Harold F., to EG&G Sealol, Inc. Mechanical seal having a seal insert mounted in a laminated shell. 4,389,050, Cl. 277-26.000.

Johnson, Virgil E., Jr.; and Lindenmuth, William T., to Hydronautics, Inc. Enhancing liquid jet erosion. 4,389,071, Cl. 299-14.000.

Jones, Emrys H., Jr.; and Thakur, Pramod C., to Conoco Inc. Variable diameter drill rod stabilizer. 4,388,974, Cl. 175-325.000.

Jones, F. David: *See—*
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; and Jones, F. David, 4,389,706, Cl. 364-130.000.

Jones, Glenn C.: *See—*
Douglas, Ted L.; Clonce, Ambrose J., Jr.; and Jones, Glenn C., 4,389,285, Cl. 203-9.000.

Joy, Richard W., to United States of America, Energy. Rapidly refuelable fuel cell. 4,389,466, Cl. 429-27.000.

Jung, Lothar. Burner for manufacture of fused quartz or fused silica ingots. 4,389,235, Cl. 65-302.000.

K. R. Komarek, Inc.: *See—*
Komarek, Karl R., 4,389,178, Cl. 425-237.000.

Kabushiki Kaisha Cubic Engineering: *See—*
Nakanishi, Motoyasu, 4,388,866, Cl. 101-426.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Horikoshi, Ichiro; Murakami, Fumikazu; Hara, Yoshiaki; Fujita, Susumu; and Ide, Osamu, 4,389,123, Cl. 368-250.000.

Kabushiki Kaisha Hokushin Denki Seisakusho: *See—*
Kuwayama, Hideki, 4,388,833, Cl. 73-718.000.

Kackman, Gerald M., to Honeywell Inc. System for preventing transient induced errors in phase locked loop. 4,389,622, Cl. 332-19.000.

Kaga, Kenji: *See—*
Watanabe, Taisuke; Niyada, Katsuyuki; Hiraoka, Shoji; and Kaga, Kenji, 4,389,539, Cl. 179-1.0SM.

Kahn, William M. Digital matrix switching. 4,389,642, Cl. 340-825.030.

Kai, Kazuo. Method for manufacturing circuit board with through hole. 4,389,278, Cl. 156-630.000.

Kaji, Hisatsugu: *See—*
Miyamori, Tamotsu; Kaji, Hisatsugu; Kameyama, Iwao; and Takahashi, Michio, 4,389,387, Cl. 423-447.700.

Kajiyama, Ryuichi; and Iwata, Shigemi, to Mitsubishi Denki Kabushiki Kaisha. Elevator position detecting device. 4,389,631, Cl. 340-21.000.

Kakimoto, Michiyuki: *See—*
Nozawa, Tetuo; Nagata, Jun; and Kakimoto, Michiyuki, 4,389,556, Cl. 219-64.000.

Kalivretenos, Chris A.; and Brown, Michael A., to United States of America, Navy. Flat trajectory projectile. 4,389,028, Cl. 244-3.210.

Kalka, Josef: *See—*
Boeke, Burkhard; Kalka, Josef; Smolinski, Manfred; and Baukholt, Heinz, 4,389,522, Cl. 528-503.000.

Kamardin, Alexei M.: *See—*
Yaroshevsky, Stanislav L.; Lukyanchenko, Leonid F.; Sidorenko, Grigory N.; Skladanovsky, Evgeny N.; Zalevsky, Mikhail A.; Machikin, Viktor I.; Bannikov, Jury G.; Ryabenko, Anatoly I.; Okazov, Shamil T.; Stepanov, Vasily V.; Danilin, Evgeny A.; Yarmal, Anatoly A.; Nekhaev, Grigory E.; Bat, Jury I.; Popov, Nikolai N.; Kamardin, Alexei M.; Tereschenko, Valdimir P.; and Stankevich, Romualda S., 4,389,244, Cl. 75-42.000.

Kamath, Bola R., to ABC Sunray Corporation. Gas burner injector head. 4,389,188, Cl. 431-284.000.

Kamei, Taketo; and Hayashi, Motokazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Fluorescent lamp. 4,389,595, Cl. 315-57.000.

Kameyama, Iwao: *See—*
Miyamori, Tamotsu; Kaji, Hisatsugu; Kameyama, Iwao; and Takahashi, Michio, 4,389,387, Cl. 423-447.700.

Kamide, Kenji: *See—*
Okajima, Kunihiko; Kamide, Kenji; and Matsui, Toshihiko, 4,389,523, Cl. 536-59.000.

Kamiya, Kazuhiro: *See—*
Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimi; Kamiya, Kazuhiro; Nakayama, Masahoto; Ito, Hisakatsu; and Oda, Takeshi, 4,389,486, Cl. 435-253.000.

Kamiyama, Kouji: *See—*
Oishi, Kengo; Moriwaki, Masayoshi; Suzuki, Osamu; and Kamiyama, Kouji, 4,389,010, Cl. 226-196.000.

Kanebo Ltd.: *See—*
Sakamoto, Fumio; Ikeda, Shoji; Tsukamoto, Goro; and Utsumi, Isamu, 4,389,408, Cl. 424-271.000.

Kanzaki Paper Manufacturing Company, Ltd.: *See—*
Fujioka, Hironari; and Matsubayashi, Hajime, 4,389,451, Cl. 428-212.000.

Karaputadze, Temuri M.: *See—*
Zhorov, Vladimor I.; Kirsh, Jury E.; Shumsky, Viktor I.; Karaputadze, Temuri M.; and Bairamov, Jury J., 4,389,404, Cl. 424-260.000.

Kasahara, Takao: *See—*
Teshima, Toru; Ariga, Kazuo; and Kasahara, Takao, 4,389,095, Cl. 350-334.000.

Kasamura, Toshirou, to Canon Kabushiki Kaisha. Sheet feeding mechanism for image forming apparatus. 4,389,046, Cl. 271-227.000.

Katchman, Arthur: *See—*
Cooper, Glenn D.; and Katchman, Arthur, 4,389,511, Cl. 525-68.000.

Kato, Shoji: *See—*
Oshima, Renzo; Kyojima, Yoshiyuki; Fujii, Takara; and Kato, Shoji, 4,389,268, Cl. 156-150.000.

Katsuyama, Harumi: *See—*
Kawamura, Kouichi; Sato, Hideo; and Katsuyama, Harumi, 4,389,474, Cl. 430-37.000.

Kaufman, Harold A., to J. T. Baker Chemical Company. Flowable herbicide and pesticide formulation. 4,389,238, Cl. 71-115.000.

Kaule, Walter, to Krautkramer-Branson, Inc. Method and apparatus for receiving ultrasonic waves by optical means. 4,388,832, Cl. 73-655.000.

Kawai, Yujio: *See—*
Yoshida, Seietsu; Ito, Masao; Kawai, Yujjo; and Ogawa, Toshihisa, 4,388,903, Cl. 123-440.000.

Kawamura, Kouichi; Sato, Hideo; and Katsuyama, Harumi, to Fuji Photo Film Co., Ltd. Thiopyrylium compounds and photoconductive compositions containing said compounds. 4,389,474, Cl. 430-37.000.

Kawamura, Masaharu, to Canon Kabushiki Kaisha. Battery check device. 4,389,609, Cl. 320-48.000.

Kawamura, Yoshio, to Agency for Industrial Science & Technology, Ministry of International Trade & Industry. Combustion apparatus. 4,389,186, Cl. 431-173.000.

Kawasaki Motors Corp.: *See—*
Marcell, Gerald V., 4,388,842, Cl. 74-710.500.

Kawasaki, Teruo: *See—*
Kogawa, Kouichi; Kawasaki, Teruo; and Mimura, Akitoshi, 4,389,603, Cl. 318-443.000.

Keith, Roger H., to Minnesota Mining & Manufacturing Company. Torque preloaded elastic cover for torque coupling. 4,389,440, Cl. 428-36.000.

Keller & Bobacek GmbH & Co., KG.: *See—*
Keller, Renate, 4,389,324, Cl. 252-180.000.

Keller, Renate, to Keller & Bobacek GmbH & Co., KG. Polymeric composition for preventing the formation of scale during vaporation of sugar juices. 4,389,324, Cl. 252-180.000.

Kellner, Phillip R., to Crosfield Electronics Limited. Printing layer of urethane and acetyl polymers and method of making. 4,388,865, Cl. 101-401.100.

Kemmner, Ulrich: *See*—
Grimm, Gerold; Rose, Klaus; Kemmner, Ulrich; Schillinger, Rainer; and Stemmer, Alois, 4,388,913, Cl. 123-585.000.

Kenel, Kaspar: *See*—
Dubois, Gerald; and Kenel, Kaspar, 4,389,122, Cl. 368-110.000.

Kennedy, Robert J., Jr.: *See*—
Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, 4,388,743, Cl. 16-116.00A.

Kent, John S., to Syntex (U.S.A.) Inc. Prostaglandin compositions. 4,389,414, Cl. 424-308.000.

Kercher, Paul W.: *See*—
Charney, Andrew R.; Kercher, Paul W.; and Stone, Stanley A., 4,389,313, Cl. 210-198.200.

Kerklies, Bodo: *See*—
Linke, Horst; Erwien, Helmut; Beyer, Herbert; Kerklies, Bodo; Wleklinski, Bernhard; Mainusch, Rudolf; Grundken, Dieter; Kumor, Bernd; and Mohn, Ulrich, 4,389,072, Cl. 299-32.000.

Kermer, Wolf-Dieter: *See*—
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, 4,389,216, Cl. 8-639.000.

Kern, Scott L.: *See*—
Hitt, James J.; and Kern, Scott L., 4,389,674, Cl. 358-213.000.

Kernforschungsanlage Julich GmbH: *See*—
Klatt, Karl-Heinz; Pietz, Siegfried; and Wenzl, Helmut, 4,389,239, Cl. 75-0.50R.

Kerr-McGee Refining Corporation: *See*—
Garwin, Leo; and Baldwin, Roger A., 4,389,302, Cl. 208-86.000.

Kesper, Bernt: *See*—
Moller, Eckhard; Bures, Horst-Dieter; Magosch, Karl-Heinz; Kesper, Bernt; Muschelknautz, Edgar; and Vogelsgesang, Roland, 4,389,226, Cl. 55-208.000.

Khoe, Giok D.; Meuleman, Lambertus J.; and Rozzi, Tullio E., to U.S. Philips Corporation. Semiconductor switching device for guiding and amplifying radiation. 4,389,567, Cl. 250-213.00R.

Kidawara, Atsushi: *See*—
Kimura, Tadashi; Hashimoto, Akihiko; and Kidawara, Atsushi, 4,389,566, Cl. 250-204.000.

Kiddie Products, Inc.: *See*—
Panicci, Richard L., 4,388,996, Cl. 220-70.000.

Kienzle Apparate GmbH: *See*—
Fichter, Manfred, 4,389,653, Cl. 346-49.000.

Kihira, Masafumi: *See*—
Hamane, Takuhito; Kinoshita, Toshio; and Kihira, Masafumi, 4,388,952, Cl. 140-92.100.

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Feit, Yoseph; Kilanowski, David R.; and Olson, Kenneth E., 4,389,386, Cl. 423-365.000.

Kimber, Edward G.; and Norris, Peter C., to Tridon Limited. Retainer clip and retainer clip backing member combination for windshield wiper blade assemblies. 4,388,742, Cl. 15-250.420.

Kimberly-Clark Corporation: *See*—
Frick, Richard H., 4,389,181, Cl. 425-461.000.

Kimura, Tadashi; Hashimoto, Akihiko; and Kidawara, Atsushi, to Olympus Optical Co., Ltd. Automatic focusing apparatus for cameras. 4,389,566, Cl. 250-204.000.

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Kinoshita, Toshio: *See*—
Hamane, Takuhito; Kinoshita, Toshio; and Kihira, Masafumi, 4,388,952, Cl. 140-92.100.

Kinzer, Charles E.: *See*—
Palmer, James K.; and Kinzer, Charles E., 4,388,827, Cl. 73-302.000.

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Pickens, Robert C., Jr.; Kirchherr, Patricia R.; and Thomas, Reese R., 4,389,442, Cl. 428-92.000.

Kirsh, Jury E.: *See*—
Zhorov, Vladimor I.; Kirsh, Jury E.; Shumsky, Viktor I.; Karaputadze, Temuri M.; and Bairamov, Jury J., 4,389,404, Cl. 424-260.000.

Kishi, Norimasa; and Yamamuro, Shigeaki, to Nissan Motor Co., Ltd. Line pressure control device of an automatic transmission. 4,388,845, Cl. 74-862.000.

Kitai, Kiyoshi; Saito, Takeo; Segawa, Takashi; and Seki, Yoichi, to Seiko Koki Kabushiki Kaisha. Device for detecting coincident focusing points. 4,389,105, Cl. 354-25.000.

Kitanaka, Minoru; and Deguchi, Yukichi, to Toray Industries, Inc. Reinforced polyphenylene sulfide molded board, printed circuit board including this molded board and process for preparation thereof. 4,389,453, Cl. 428-240.000.

Kite, William C., to Lee, Earl J. Arcuate piston rotary engine. 4,389,173, Cl. 418-146.000.

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Klockner-Humboldt-Deutz AG: *See*—
Megerle, Friedrich, 4,389,041, Cl. 266-194.000.

Klohn, Wolfgang H. R.; Muller, Dieter H.; and Schubert, Hiltmar A. O., to s.a. PRB, societe anonyme. Process for the manufacture of insulated propellant sets and of propelling sets provided with an insulating envelope. 4,389,264, Cl. 149-14.000.

Klotz, Helmut: *See*—
Dinger, Hans; and Klotz, Helmut, 4,388,802, Cl. 60-606.000.

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Hendry, James W., 4,389,358, Cl. 264-45.100.

Knibiehler, Ernst; and Hirmann, Georg, to Mobil Oil Corporation. Programmable indicator system. 4,389,709, Cl. 364-551.000.

Kniepkamp, Hermann: *See*—
Mueller, Jan-Erik; Ristow, Dietrich; and Kniepkamp, Hermann, 4,389,280, Cl. 156-645.000.

Knott, Jack E., II: *See*—
Schaefer, Suzanne E.; and Knott, Jack E., II, 4,389,450, Cl. 428-212.000.

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Houd, Rolf D.; and Knudsen, Hans B., 4,389,252, Cl. 106-100.000.

Kobayashi, Ikuro; and Shimizu, Kyozo, to VLSI Technology Research Association. Method for measuring surface temperature distribution and system. 4,389,125, Cl. 374-164.000.

Kobayashi, Masaaki: *See*—
Isaka, Takenobu; and Kobayashi, Masaaki, 4,389,686, Cl. 360-77.000.

Kobayashi, Takehiro: *See*—
Sazaki, Kounin; and Kobayashi, Takehiro, 4,389,027, Cl. 242-84.20G.

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Ernst, Alfons; and Kober, Hans-Rudolf, 4,388,758, Cl. 33-1.0PT.

Koburger, Charles W., III: *See*—
Geipel, Henry J., Jr.; Hsieh, Ning; Koburger, Charles W., III; and Nesbit, Larry A., 4,389,257, Cl. 148-1.500.

Kocks Technik GmbH & Company: *See*—
Moltner, Hermann, 4,388,819, Cl. 72-234.000.

Kodama, Hiroshi; Maeda, Tooru; and Miyatani, Toshio, to Toyo Kogyo Co. Ltd. Lubricating oil supply system for a supercharged rotary piston engine. 4,388,901, Cl. 123-213.000.

Kogawa, Kouichi; Kawasaki, Teruo; and Mimura, Akitoshi, to Nissan Motor Company, Limited. Windshield wiper system for an automotive vehicle. 4,389,603, Cl. 318-443.000.

Kogler, Peter, to Voest-Alpine Aktiengesellschaft. Device for preventing ingress of dust through the annular gap between the cutting arm and the cutting head of a cutting machine. 4,389,075, Cl. 299-81.000.

Kohl, Paul A.; Ostermayer, Frederick W., Jr.; and Wolowodiuk, Catherine, to Bell Telephone Laboratories, Incorporated. Photoelectrochemical processing of InP-type devices. 4,389,291, Cl. 204-129.300.

Kohle, Ulrich; and Paffhausen, Hans. Carbon film. 4,389,449, Cl. 428-203.000.

Koida, Yoshiyuki: *See*—
Samejima, Masayoshi; Hirata, Goichi; and Koida, Yoshiyuki, 4,389,331, Cl. 427-213.300.

Kojima, Sadao; Shimada, Masaaki; Sakai, Kunio; and Horie, Katuo. Apparatus for the preparation of slaked lime solution. 4,389,376, Cl. 422-228.000.

Kokusai Denshin Denwa Co., Ltd.: *See*—
Furusawa, Kahei; Ejiri, Yoshihiro; Yamazaki, Yoshihiko; Matsuzaki, Tadayoshi; Nakashima, Hiroyuki; and Harada, Osamu, 4,389,086, Cl. 350-96.200.

Komarek, Karl R., to K. R. Komarek, Inc. Ram-type feeder for briquetting press. 4,389,178, Cl. 425-237.000.

Komiyama, Choji: *See*—
Oishi, Kengo; Suzuki, Osamu; and Komiyama, Choji, 4,389,690, Cl. 360-132.000.

Kona Corporation: *See*—
Devellian, Richard D.; and Swenson, Paul M., 4,389,002, Cl. 222-146.0HS.

Kondo, Hiroatsu; Ozawa, Toshiaki; and Miyakawa, Hideaki, to Canon Kabushiki Kaisha. Printer with electromagnetic drive yokes. 4,389,131, Cl. 400-157.200.

Kondo, Isao; and Nakamura, Hiroaki, to Olympus Optical Company Ltd. Photometry power supply for automatic electronic flash. 4,389,596, Cl. 315-151.000.

Kondo, Syunichi; Nomaguchi, Hirotsugu; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Photoconductive composition sensitized by a thiobarbituric acid derivative. 4,389,477, Cl. 430-81.000.

Kondo, Toshikatsu: *See*—
Asano, Kiyomitsu; Kondo, Toshikatsu; and Sakaida, Atsuo, 4,389,128, Cl. 400-124.000.

Konig, Gottfried: *See*—
Lenk, Michael; and Konig, Gottfried, 4,389,107, Cl. 354-25.000.

Konig, Werner; Wagenbach, Wolfgang; May, Hans; and Bleidt, Rolf, to Brown, Boveri & Cie AG. Rotary disconnect switch. 4,389,553, Cl. 200-148.00H.

Konishi, Tatsuo: *See*—
Mizukami, Mineo; and Konishi, Tatsuo, 4,389,678, Cl. 360-10.300.

Konishiroku Photo Industry Co., Ltd.: *See*—
Fukushima, Syousuke, 4,389,098, Cl. 350-429.000.

Kono, Yuichiro: *See*—
Nakai, Tetsuo; Kono, Yuichiro; Yazu, Shuji; and Hara, Akio, 4,389,465, Cl. 428-698.000.

Konvalin, Laurence H. Heavy metals separator. 4,389,309, Cl. 209-465.000.

Kopecko, William L.; Fuller, Robert L.; and Duchac, Joseph O. Fixture for resurfacing vehicle brake discs. 4,388,846, Cl. 82-4.00A.

Koppers Company, Inc.: *See*—
Cain, George R., 4,389,284, Cl. 202-247.000.
Harju, Philip H.; and Pasek, Eugene A., 4,389,336, Cl. 252-440.000.

Korach, Malcolm, to PPG Industries, Inc. Permionic membrane electrolytic cell. 4,389,297, Cl. 204-252.000.

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Korf Industrie und Handel GmbH und Co KG: *See*—
Weber, Ralph; and Wells, William, 4,389,043, Cl. 266-218.000.

Korn, Gerhard: *See*—
Girod, Hansjochen; and Korn, Gerhard, 4,388,872, Cl. 105-99.000.

Korpman, Ralf, to Johnson & Johnson. Novel alloy compositions and products. 4,389,444, Cl. 428-137.000

Kosseim, Alexander J. M.: *See*—
Sokolik, Joseph E., Jr.; Kosseim, Alexander J. M.; and Atwood, Gilbert R., 4,389,383, Cl. 423-243.000.

Kovats, Tibor F. I.: *See*—
Devenyi, Tibor F.; Kovats, Tibor F. I.; and Look, Christopher M., 4,389,557, Cl. 219-85.0CM.

Kowa Company, Ltd.: *See*—
Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimi; Kamiya, Kazuhiro; Nakayama, Masahoto; Ito, Hisakatsu; and Oda, Takeshi, 4,389,486, Cl. 435-253.000.

Koyanagi, Yukiaki: *See*—
Honma, Yoshikiyo; Shimogawara, Jun; Nagata, Muneyoshi; Oka, Yukihiko; Koyanagi, Yukiaki; Hosoya, Yukiyoshi; and Hada, Takashi, 4,389,126, Cl. 400-82.000.

Kozikowski, Carrie L.: *See*—
McDuffee, Frederick T.; and Kozikowski, Carrie L., 4,389,428, Cl. 427-54.100.

Kracklauer, John J., to Syntex (U.S.A.) Inc. Method of conditioning diesel engines. 4,389,220, Cl. 44-57.000.

Kraemer, John F.: *See*—
Seeney, Charles E.; Kraemer, John F.; and Varnum, Nancy C., 4,389,498, Cl. 523-139.000.

Kraftanlagen A.G.: *See*—
Korek, Johannes, 4,388,857, Cl. 99-276.000.

Krall & Roth, Weberei GmbH & Co., K.G.: *See*—
d'Alquen, Gunter, 4,388,801, Cl. 57-12.000.

Krallmann, Reinhold: *See*—
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, 4,389,216, Cl. 8-639.000.

Kramer, Gideon A., to Source Technology Corporation. Slide projector having two image-projection systems which operate with a single slide tray. 4,389,103, Cl. 353-25.000.

Krapfenbauer, Hans, to Ernst Grob, Firma. Method and apparatus for fabricating precision teeth. 4,388,818, Cl. 72-81.000.

Krautkramer-Branson, Inc.: *See*—
Kaule, Walter, 4,388,832, Cl. 73-655.000.

Krautz, Kurt; and Ender, Erhard, to Autoflug-Stakupress GmbH & Co. Buckle for a safety belt. 4,388,746, Cl. 24-230.00A.

Krone, Herbert. Process and an apparatus for testing the coagulation properties of liquids. 4,388,824, Cl. 73-64.100.

Kropp, Walter: *See*—
Richter, Rudolf; and Kropp, Walter, 4,388,946, Cl. 137-596.200.

Krumrein, Gerhard, to Licentia Patent-Verwaltungs-GmbH. Circuit for a flasher unit. 4,389,597, Cl. 315-200.00A.

Kruse, Hubert: *See*—
Schneider, Manfred; Kruse, Hubert; and Opitz, Konrad, 4,389,213, Cl. 8-524.000.

Kudriavetz, Peter, to Acushnet Company. Method and apparatus for stripping molded round articles from mold. 4,389,365, Cl. 264-297.800.

Kuenen, Cornelis A.: *See*—
Ferket, Florimond; and Kuenen, Cornelis A., 4,388,816, Cl. 72-11.000.

Kukkula, Juhani, to Valmet Oy. Linkage for moment balancing measuring apparatus. 4,388,943, Cl. 137-85.000.

Kumagai, Sakae: *See*—
Noro, Katsuhiko; Nagaki, Yusei; Sasaki, Shinpei; and Kumagai, Sakae, 4,389,360, Cl. 264-71.000.

Kumazawa, Toshihiko: *See*—
Mitsuhata, Masashi; Nagase, Shin-ichi; Nakai, Takahiko; and Kumazawa, Toshihiko, 4,389,338, Cl. 252-463.000.

Kumor, Bernd: *See*—
Linke, Horst; Erwien, Helmut; Beyer, Herbert; Kerklies, Bodo; Wleklinski, Bernhard; Mainusch, Rudolf; Grundken, Dieter; Kumor, Bernd; and Mohn, Ulrich, 4,389,072, Cl. 299-32.000.

Kunieda, Takafumi: *See*—
Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimi; Kamiya, Kazuhiro; Nakayama, Masahoto; Ito, Hisakatsu; and Oda, Takeshi, 4,389,486, Cl. 435-253.000.

Kunne, Wolfgang, to Stielow GmbH. Apparatus for emptying envelopes. 4,388,793, Cl. 53-381.00R.

Kuraray Company, Limited: *See*—
Miyazaki, Hirotoshi, 4,389,513, Cl. 525-186.000.
Mori, Fumio; Shiono, Manzo; and Omura, Yoshiaki, 4,389,412, Cl. 424-305.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Miyamori, Tamotsu; Kaji, Hisatsugu; Kameyama, Iwao; and Takahashi, Michio, 4,389,387, Cl. 423-447.700.
Yoshida, Masafumi; and Nakamura, Kenichi, 4,389,445, Cl. 428-77.000.

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Kurnit, Norman A., to United States of America, Energy. Combination ring cavity and backward Raman waveguide amplifier. 4,389,617, Cl. 330-4.300.

Kuroda, Hiroshi: *See*—
Sasahara, Yasumasa; and Kuroda, Hiroshi, 4,389,732, Cl. 455-160.000.

Kurokawa, Hiromichi, to Sony Corporation. Color television camera system. 4,389,666, Cl. 358-47.000.

Kurosaki, Shiro; and Watanabe, Minoru, to Sumitomo Electric Industries, Ltd. Process for the production of an optical glass article. 4,389,233, Cl. 65-31.000.

Kurz, Manfred: *See*—
Saur, Roland; and Kurz, Manfred, 4,389,629, Cl. 337-126.000.

Kuwayama, Hideki, to Kabushiki Kaisha Hokushin Denki Seisakusho. Differential pressure gauge. 4,388,833, Cl. 73-718.000.

Kyojima, Yoshiyuki: *See*—
Oshima, Renzo; Kyojima, Yoshiyuki; Fuji, Takara; and Kato, Shoji, 4,389,268, Cl. 156-150.000.

La Freniere, Henry. Portable water purifier. 4,389,311, Cl. 210-198.100.

Lalin, Hill S. Portable holder assembly for gas detection tube. 4,389,372, Cl. 422-88.000.

Lalonde, Louis A. Hub cap display device. 4,388,771, Cl. 40-587.000.

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Levine, Herbert R.; and Landry, L. Gerard, 4,389,587, Cl. 310-208.000.

Larkins, Thomas H., Jr.; and Steinmetz, Guy R., to Eastman Kodak Company. Process for the preparation of acetaldehyde. 4,389,532, Cl. 568-487.000.

Larson, Wally M., to Luttrell, Ronald; and Edson, Gerald. Oil containment device. 4,388,898, Cl. 123-90.380.

Larsson, Hans-Gunnar, to ASEA Aktiebolag. Method for manufacturing billets of complicated shape. 4,389,362, Cl. 264-111.000.

Lask, Gert-Wilhelm, to International Minerals & Chemical Luxembourg Societe Anonyme. Process for the production of silicon-containing and carbon-containing raw material moldings, and the use of such moldings. 4,389,493, Cl. 501-154.000.

Latapie, Jean-Francois, to Societe pour l'Equipement de Vehicules. Ignition timing device avoiding pinging during the functioning of an internal combustion engine. 4,388,902, Cl. 123-425.000.

Laurent, Jean; Monnet, Bernard; and Pertuis, Philippe, to Pont-A-Mousson S.A. External frame injection molding apparatus. 4,389,183, Cl. 425-589.000.

Laurents, John A.: *See*—
Godley, Fred O.; and Laurents, John A., 4,389,000, Cl. 221-8.000.

Laverriere, Stanislas G. L., to S.A. Joulin Sema. Gripping device operating by suction. 4,389,064, Cl. 294-64.00R.

Lavery, John J., to Champion International Corporation. Multiple access carton. 4,388,993, Cl. 206-611.000.

Lawler, Michael S. Pick-proof lock. 4,388,815, Cl. 70-134.000.

Leading Lady Foundations, Inc.: *See*—
Farino, Frank G., 4,388,931, Cl. 128-425.000.

Lechaton, John S.: *See*—
Anantha, Narasipur G.; Bhatia, Harsaran S.; Lechaton, John S.; and Walsh, James L., 4,389,281, Cl. 156-646.000.

Lectromelt Corporation: *See*—
Wynne, Peter J., 4,389,042, Cl. 266-210.000.

Lee, Earl J.: *See*—
Kite, William C., 4,389,173, Cl. 418-146.000.

Lee, Jannan G.: *See*—
Nadin, Robert P.; and Lee, Jannan G., 4,389,143, Cl. 406-197.000.

Lee, Yuen F.; and Aisawa, Shiro, to Westinghouse Electric Corp. Shock absorbent gas seal. 4,389,054, Cl. 277-214.000

Leeds & Northrup Company: *See*—
Hitt, James J.; and Kern, Scott L., 4,389,674, Cl. 358-213.000.

Leenaars, Corrie M. J.: *See*—
Graiff, Leonard B.; Heldeweg, Rudolf F.; and Leenaars, Corrie M. J., 4,389,221, Cl. 44-66.000.

LeFevre, Herve C., to Leland Stanford Jr. Univ., The Board of Trustees of. Fiber optic polarization controller. 4,389,090, Cl. 350-96.290

Legierse, Petrus E. J.: *See*—
Van de Donk, Michael J. C.; Heinemans, Hendricus C. A. M.; and Legierse, Petrus E. J., 4,389,719, Cl. 369-275.000.

Le Guyader, Alain; and Gilloire, Andre. Adaptive predicting circuit using a lattice filter and a corresponding differential PCM coding or decoding apparatus. 4,389,726, Cl. 375-27.000.

Leland Stanford Jr. Univ., The Board of Trustees of: *See*—
LeFevre, Herve C., 4,389,090, Cl. 350-96.290.

Lelandais, Guy, to Enertec. Switch-tuned filters. 4,389,683, Cl. 360-65.000.

Lenaghan, Arlene R. Catamenial bandage. 4,389,211, Cl. 604-383.000.

Lenk, Michael; and Konig, Gottfried, to Veb Pentacon Dresden Kamera und Kinowerke. Focusing device for cameras. 4,389,107, Cl. 354-25.000.

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May, Hans-Joachim; Lenke, Dieter; Gries, Josef; Teschendorf, Hans-Juergen; and Worstmann, Wolfgang, 4,389,403, Cl. 424-258.000.

Lenker, Jay A.: *See—*
Ionescu, Marian I.; Lenker, Jay A.; Rosenbluth, Robert F.; and Seiler, Louis, Jr., 4,388,735, Cl. 3-1.500.

Lenox, Incorporated: *See—*
Handy, Binns; and Chase, David O., 4,388,959, Cl. 150-52.00R.

Lenz, George R., to G.D. Searle & Co. 3-Oxoestra-17-acetonitrile and unsaturated analogs. 4,389,345, Cl. 260-397.100.

Leopold, Phillip M.: *See—*
Cooper, Adrianus A. G.; and Leopold, Phillip M., 4,389,269, Cl. 156-172.000.

Lerner, A. Martin; and Levy, Hilton B. Low molecular weight complex of polyriboinosinic-polyribocytidylic acid and method of inducing interferon. 4,389,395, Cl. 424-85.000.

Les Cables de Lyon: *See—*
Trezequet, Jean-Pierre, 4,389,088, Cl. 350-96.230.
Vives, Jean-Patrick, 4,388,799, Cl. 57-6.000.

Les Cables de Lyon S.A.: *See—*
Bendayan, Jacques; and Jocteur, Robert, 4,389,087, Cl. 350-96.230.

Letraset USA, Inc.: *See—*
Scrutton, Simon L.; Marwick, William F. G.; and Wilson, David R., 4,389,473, Cl. 430-17.000.

Leunig, Carl V., to Albany International Corp. Constant tensioning device. 4,389,228, Cl. 55-379.000.

Leusner, Bernhard; Schulz, Hans-Hermann; Voigt, Reiner; and Walkowiak, Michael, to Bayer Aktiengesellschaft. Thixotropic formulations of silicone pastes for impressions of teeth and mucous membrane. 4,389,496, Cl. 523-109.000.

LeVeen, Eric G.: *See—*
LeVeen, Robert F.; and LeVeen, Eric G., 4,389,208, Cl. 604-95.000.

LeVeen, Robert F.; and LeVeen, Eric G. Catheter advancer. 4,389,208, Cl. 604-95.000.

Lever Brothers Company: *See—*
Reissmann, Hermann A. W.; and Milo, Bernd T., 4,389,426, Cl. 426-602.000.

Levine, Herbert R.; and Landry, L. Gerard, to United Technologies Corporation. Unitary sleeving insulation. 4,389,587, Cl. 310-208.000.

Levy, Fernand J., to Avions Marcel Dassault-Breguet Aviation. Flexible, electrically conductive jointing material, particularly suitable for aircraft. 4,389,340, Cl. 252-512.000.

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Lerner, A. Martin; and Levy, Hilton B., 4,389,395, Cl. 424-85.000.

Lewis, Danny H.: *See—*
Tice, Thomas R.; and Lewis, Danny H., 4,389,330, Cl. 427-213.360.

Liang, Sam: *See—*
Wagner, Theodore W.; Liang, Sam; and Muzumdar, Deepak R., 4,389,544, Cl. 179-2.0DP.

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Baumer, Hans, 4,388,867, Cl. 102-211.000.
Hofmeister, Hagen, 4,389,722, Cl. 370-100.000.
Krumrein, Gerhard, 4,389,597, Cl. 315-200.00A.
Rettich, Renate; and Schwedes, Wilhelm, 4,389,430, Cl. 427-230.000.

Lidholt, Rune; and Nodfelt, Ingvar. Method and device for connecting optical fibers. 4,389,091, Cl. 350-96.200.

Lieberman, Robert: *See—*
Epstein, Daniel; and Lieberman, Robert, 4,389,669, Cl. 358-101.000.

Liedtke, Kurt W.: *See—*
Focke, Heinz H.; and Liedtke, Kurt W., 4,388,794, Cl. 53-389.000.

Lim, Franklin; and Moss, Richard D., to Damon Corporation. Vitamin encapsulation. 4,389,419, Cl. 426-72.000.

Limberg, Allen L., to RCA Corporation. Adjustable-gain current amplifier for temperature-independent trimming. 4,389,619, Cl. 330-288.000.

Lincoln Manufacturing Co., Inc.: *See—*
Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, 4,388,743, Cl. 16-116.00A.

Linde Aktiengesellschaft: *See—*
Richter, Rudolf; and Kropp, Walter, 4,388,946, Cl. 137-596.200.

Lindenmaier, Klaus, to Daimler-Benz Aktiengesellschaft. Apparatus for producing a defined fuel vapor-air mixture for gasoline internal combustion engines. 4,388,911, Cl. 123-557.000.

Lindenmuth, William T.: *See—*
Johnson, Virgil E., Jr.; and Lindenmuth, William T., 4,389,071, Cl. 299-14.000.

Linder, Ernst; Muller, Klaus; and Maurer, Helmut, to Robert Bosch GmbH. Heated ion current sensor for high temperatures. 4,389,373, Cl. 422-98.000.

Lindner, Georg H., to M&T Chemicals Inc. Glass coating hood and method of spray coating glassware. 4,389,234, Cl. 65-60.100.

Lingaraju, Bhartoor, to Square D Company. Strain relief clamp. 4,389,082, Cl. 339-103.00R.

Linke, Horst; Erwien, Helmut; Beyer, Herbert; Kerklies, Bodo; Wleklinski, Bernhard; Mainusch, Rudolf; Grundken, Dieter; Kumor, Bernd; and Mohn, Ulrich, to Gewerkschaft Eisenhutte Westfalia. Longwall mineral mining installation. 4,389,072, Cl. 299-32.000.

Litton Industrial Products, Inc.: *See—*
Cutter, James, 4,389,730, Cl. 378-153.000.

Livemore, Gerald S. V. Gas producers apparatus. 4,389,222, Cl. 48-76.000.

Lo, Pak-Kan A.; and Williams, James B., to Merck & Co., Inc. Solubilization of ivermectin in water. 4,389,397, Cl. 424-180.000.

Locke, Timothy L.: *See—*
Hermann, Carl Z.; and Locke, Timothy L., 4,388,777, Cl. 46-79.000.

Lockwood Technical, Inc.: *See—*
Franklin, Jerry C., 4,389,001, Cl. 222-63.000.

Logie, Charles F., to American Store Equipment Corporation. Prefabricated partition arrangement. 4,388,783, Cl. 52-36.000.

Longenecker, Bruce A. Device for monitoring selected operating conditions of combustion within a solid fossil fuel burning furnace. 4,389,124, Cl. 374-147.000.

Lonsinger, Jack J.; and Halbleib, Chester W., to Mobay Chemical Corporation. Preparation of O,S-dialkyl phosphoroamidothioates. 4,389,350, Cl. 260-989.000.

Look, Christopher M.: *See—*
Devenyi, Tibor F.; Kovats, Tibor F. I.; and Look, Christopher M., 4,389,557, Cl. 219-85.0CM.

Lorenz, Horst, to Th. Kieserling & Albrecht, GmbH & Co. KG. Apparatus for bundling elongated workpieces. 4,389,148, Cl. 414-85.000.

Lovibond, Michael J., to Xerox Corporation. Stitching machine. 4,389,011, Cl. 227-5.000.

Lowe, Richard L. Apparatus for moving a vessel heater cover. 4,389,191, Cl. 432-250.000.

Lowery, Jack R., Sr.: *See—*
Everall, Palmer B., Jr.; and Lowery, Jack R., Sr., 4,388,879, Cl. 112-10.000.

Lucas Industries Limited: *See—*
Farr, Glyn P. R., 4,389,167, Cl. 417-289.000.
Woodhouse, John L., 4,389,471, Cl. 429-178.000.

Lucas, Robert M.: *See—*
Almgren, David W.; Bartoszek, John T.; Lucas, Robert M.; Berthiaume, Richard P.; Spencer, Richard H.; and Saia, William H., 4,388,964, Cl. 165-32.000.

Lude, John: *See—*
Holowaty, Michael O.; Hughes, Ian F.; and Lude, John, 4,389,249, Cl. 75-129.000.

Luke, John A., to British-American Tobacco Company Limited. Filters. 4,388,934, Cl. 131-339.000.

Lukyanchenko, Leonid F.: *See—*
Yaroshevsky, Stanislav L.; Lukyanchenko, Leonid F.; Sidorenko, Grigory N.; Skladanovsky, Evgeny N.; Zalevsky, Mikhail A.; Machikin, Viktor I.; Bannikov, Jury G.; Ryabenko, Anatoly I.; Okazov, Shamil T.; Stepanov, Vasily V.; Danilin, Evgeny A.; Yarmal, Anatoly A.; Nekhaev, Grigory E.; Bat, Jury I.; Popov, Nikolai N.; Kamardin, Alexei M.; Tereschenko, Valdimir P.; and Stankevich, Romualda S., 4,389,244, Cl. 75-42.000.

Luscombe, Anthony P.; and Brooks, Seville R., to Marconi Company Limited, The. Doppler radar system. 4,389,648, Cl. 343-8.000.

Luttrell, Ronald: *See—*
Larson, Wally M., 4,388,898, Cl. 123-90.380.

M. H. Detrick Co., Ltd.: *See—*
Harvey, Barrie J.; and Willson, Robert C., 4,389,189, Cl. 432-247.000.

M&T Chemicals Inc.: *See—*
Lindner, Georg H., 4,389,234, Cl. 65-60.100.

MacArthur, J. Ward: *See—*
Anderson, Paul A.; Hammer, Jeffrey M.; and MacArthur, J. Ward, 4,389,577, Cl. 307-39.000.

MacDonald, J. G. Fraser, to Warner Electric Brake & Clutch Company. Anti-kickback clutch-brake unit. 4,388,988, Cl. 192-12.0BA.

Machikin, Viktor I.: *See—*
Yaroshevsky, Stanislav L.; Lukyanchenko, Leonid F.; Sidorenko, Grigory N.; Skladanovsky, Evgeny N.; Zalevsky, Mikhail A.; Machikin, Viktor I.; Bannikov, Jury G.; Ryabenko, Anatoly I.; Okazov, Shamil T.; Stepanov, Vasily V.; Danilin, Evgeny A.; Yarmal, Anatoly A.; Nekhaev, Grigory E.; Bat, Jury I.; Popov, Nikolai N.; Kamardin, Alexei M.; Tereschenko, Valdimir P.; and Stankevich, Romualda S., 4,389,244, Cl. 75-42.000.

MacMillan Bloedel Limited: *See—*
Schilling, Walter W., 4,388,957, Cl. 144-366.000.

Madsen, Tonni B., to Danske Andelsslagteriers Kodfoder-og Albuminfabrik. Process for the production of powdered protein materials from animal raw material. 4,389,423, Cl. 426-417.000.

Maeda, Tooru: *See—*
Kodama, Hiroshi; Maeda, Tooru; and Miyatani, Toshio, 4,388,901, Cl. 123-213.000.

Maes, Michel E., to Detonics Pistol Accessories, Ltd. Adjustable sight for firearms. 4,388,772, Cl. 42-1.00S.

Magnussen, Haakon T., Jr.; and Ruskewicz, Stephen J., to Altex Scientific, Inc. Pressure booster system for fluids. 4,389,163, Cl. 417-2.000.

Magosch, Karl-Heinz: *See—*
Moller, Eckhard; Bures, Horst-Dieter; Magosch, Karl-Heinz; Kesper, Bernt; Muschelknautz, Edgar; and Vogelsgesang, Roland, 4,389,226, Cl. 55-208.000.

Mainusch, Rudolf: *See—*
Linke, Horst; Erwien, Helmut; Beyer, Herbert; Kerklies, Bodo; Wleklinski, Bernhard; Mainusch, Rudolf; Grundken, Dieter; Kumor, Bernd; and Mohn, Ulrich, 4,389,072, Cl. 299-32.000.

Maki, Naoki: *See—*
Yamaguchi, Kiyoshi; Maki, Naoki; and Tamura, Toshio, 4,389,585, Cl. 310-52.000.

Makino, Shinichi: *See—*
Onishi, Shunichi; Obara, Masaharu; Sakurai, Masaru; Murakami, Junzo; and Makino, Shinichi, 4,389,623, Cl. 333-16.000.

Malherbe, Roger F., to Ciba-Geigy Corporation. 2,3-Dihydroperimidines as antioxidants for lubricants. 4,389,321, Cl. 252-47.000.

Malinowsky, Marc: *See—*
Queffelec, Corentin; Bordet, Rene; and Malinowsky, Marc, 4,388,785, Cl. 52-222.000.

Man Maschinenf Abrik Augsburn-Nurnberg: *See—*
Muhlratzer, August, 4,389,464, Cl. 428-667.000.

Mani, Krishnamurthy N.; and Chlanda, Frederick P., to Allied Corporation. Process for the recovery of anhydrous hydrogen fluoride from aqueous solutions of fluosilicic acid and hydrogen fluoride. 4,389,293, Cl. 204-180.00P.

Mannhart, Peter; and Ruppen, Bruno, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Weapon simulator. 4,388,826, Cl. 73-167.000.

Manor, Sissy J. Identification badge. 4,388,770, Cl. 40-1.600.

Mansour, Maher L.: *See—*
Chu, Richard S.; and Mansour, Maher L., 4,389,357, Cl. 264-40.100.

Mantel, Joseph: *See—*
Weissman, Howard R.; and Mantel, Joseph, 4,388,924, Cl. 128-303.100.

Manzoni, Stephane. Control device for controlling an outside rearview mirror from inside a vehicle. 4,388,840, Cl. 74-501.00M.

Marcell, Gerald V., to Kawasaki Motors Corp. Locking device for a differential mechanism. 4,388,842, Cl. 74-710.500.

Marchon, Bruno: *See—*
Rouillard epouse Bauer, Denise; Cote, Gerard; Fossi, Paolo; and Marchon, Bruno, 4,389,379, Cl. 423-89.000.

Marconi Company Limited, The: *See—*
Luscombe, Anthony P.; and Brooks, Seville R., 4,389,648, Cl. 343-8.000.

Mares, Frank: *See—*
Diamond, Steven E.; Mares, Frank; and Szalkiewicz, Andrew, 4,389,348, Cl. 260-465.50R.

Margaroli, John L.; and Cimperman, Frederick J., to Vistan Corporation. Machine for pitting and stuffing olives. 4,388,858, Cl. 99-494.000.

Marine Structure Consultants (MSC) BV: *See—*
Bordes, Cornelis, 4,389,140, Cl. 405-195.000.

Marshall, Gailen; Myska, C. H.; and Smith, Kenneth E., to NL Industries, Inc. Borehole pipe side entry method and apparatus. 4,388,969, Cl. 166-242.000.

Marshall, Robert M., to Allied Corporation. Stabilized finish composition. 4,389,456, Cl. 428-375.000.

Martinez, Pasquale; and Di Nunzio, Vittorio, to Fiat Auto S.p.A. Apparatus for calibrating the carbon monoxide emission under idling conditions of an internal combustion engine provided with a Bosch L-Jetronic electronic injection apparatus. 4,388,821, Cl. 73-1.00R.

Martinon, Gerard R.; Dayme, Jean-Louis; and Martinon, Roger J. Washing bag for curtains, drapes and the like. 4,388,739, Cl. 8-150.000.

Martinon, Roger J.: *See—*
Martinon, Gerard R.; Dayme, Jean-Louis; and Martinon, Roger J., 4,388,739, Cl. 8-150.000.

Marukawa, Katsukiyo: *See—*
Okamura, Shozo; Nakajima, Hidemasa; Marukawa, Katsukiyo; Anezaki, Shoji; and Hirata, Takeyuki, 4,389,246, Cl. 75-60.000.

Maruyama, Takashi, to Chinon Kabushiki Kaisha. Focusing control device. 4,389,106, Cl. 354-25.000.

Marwick, William F. G.: *See—*
Scrutton, Simon L.; Marwick, William F. G.; and Wilson, David R., 4,389,473, Cl. 430-17.000.

Marx, Matthias: *See—*
Horacek, Heinrich; Marx, Matthias; and Hobein, Dietmar, 4,389,454, Cl. 428-318.600.

Masaki, Kenji, to Nissan Motor Company, Limited. Air-fuel ratio control system. 4,388,904, Cl. 123-440.000.

Maschinenfabrik Hennecke GmbH: *See—*
Proksa, Ferdinand; Sulzbach, Hans-Michael; Raffel, Reiner; and Althausen, Ferdinand, 4,389,375, Cl. 422-111.000.

Masclet, Jean; and Veaux, Jacques, to Messier-Hispano-Bugatti. Device for the detection of the displacement of at least one point relative to a referential, and application of the detection of the underinflated state of tires and/or of mass and centering for aerodynes. 4,388,763, Cl. 33-203.180.

Massey-Ferguson Services N.V.: *See—*
Brown, David J., 4,389,151, Cl. 414-685.000.

Massingill, John L., Jr.: *See—*
Friedli, Hans R.; Nelson, Donald L.; and Massingill, John L., Jr., 4,389,512, Cl. 525-112.000.

Masu, Masanobu: *See—*
Sugio, Akitoshi; Masu, Masanobu; and Matunaga, Masatugu, 4,389,516, Cl. 525-534.000.

Masuda, Jun: *See—*
Harada, Masato; Suzuki, Atsushi; Yamada, Sadahiko; and Masuda, Jun, 4,389,518, Cl. 526-97.000.

Matheny, William F., III: *See—*
Bernard, Clay, II; Matheny, William F., III; Faith, Charles M.; Goswick, Richard L.; and Hauth, Jerry L., 4,389,157, Cl. 414-787.000.

Matsubayashi, Hajime: *See—*
Fujioka, Hironari; and Matsubayashi, Hajime, 4,389,451, Cl. 428-212.000.

Matsui, Toshihiko: *See—*
Okajima, Kunihiko; Kamide, Kenji; and Matsui, Toshihiko, 4,389,523, Cl. 536-59.000.

Matsumiya, Toshiharu: *See—*
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, 4,389,508, Cl. 524-548.000.

Matsumoto, Fuyuhiko; Ikeda, Kunihiko; and Tsushima, Shuichi, to Ricoh Company, Ltd. Improved developing device for two-color electrophotographic copying apparatus. 4,389,113, Cl. 355-3.0DD.

Matsuo, Kenji: *See—*
Suzuki, Yasoji; and Matsuo, Kenji, 4,389,582, Cl. 307-452.000.

Matsuo, Masayuki: *See—*
Abiko, Toshio; and Matsuo, Masayuki, 4,389,644, Cl. 340-825.520.

Matsushita Electric Corp. of America: *See—*
Rzeszewski, Theodore S., 4,389,637, Cl. 340-347.0DA.

Matsushita Electric Industrial Company, Limited: *See—*
Aihara, Yukichi; and Yamashita, Sadahiko, 4,389,624, Cl. 333-226.000.
Hamane, Takuhito; Kinoshita, Toshio; and Kihira, Masafumi, 4,388,952, Cl. 140-92.100.
Hori, Yoshikazu; Asai, Komei; and Fukai, Masakazu, 4,389,096, Cl. 350-339.00R.
Isaka, Takenobu; and Kobayashi, Masaaki, 4,389,686, Cl. 360-77.000.
Uno, Yoshihiro, 4,389,591, Cl. 313-391.000.
Watanabe, Taisuke; Niyada, Katsuyuki; Hiraoka, Shoji; and Kaga, Kenji, 4,389,539, Cl. 179-1.0SM.

Matsushita Electric Works, Ltd.: *See—*
Abiko, Toshio; and Matsuo, Masayuki, 4,389,644, Cl. 340-825.520.
Takeyama, Hidetoshi; Sakamoto, Siro; Sagawa, Koji; Tanishi, Tokio; Aihoshi, Hiroaki; and Morimoto, Takao, 4,388,757, Cl. 29-882.000.

Matsuzaki, Tadayoshi: *See—*
Furusawa, Kahei; Ejiri, Yoshihiro; Yamazaki, Yoshihiko; Matsuzaki, Tadayoshi; Nakashima, Hiroyuki; and Harada, Osamu, 4,389,086, Cl. 350-96.200.

Matthews, Hugh B., to Sperry Corporation. Geothermal power extraction system with above surface heating of working fluid. 4,388,807, Cl. 60-641.400.

Matunaga, Masatugu: *See—*
Sugio, Akitoshi; Masu, Masanobu; and Matunaga, Masatugu, 4,389,516, Cl. 525-534.000.

Mau, Hartmut: *See—*
Danner, Bernard; Mau, Hartmut; and Stettler, Hans, 4,389,259, Cl. 148-6.15R.

Mauer, John L., IV: *See—*
Anantha, Narasipur G.; Bhatia, Harsaran S.; Mauer, John L., IV; and Sarkary, Homi G., 4,389,294, Cl. 204-192.00E.

Maurer, Helmut: *See—*
Linder, Ernst; Muller, Klaus; and Maurer, Helmut, 4,389,373, Cl. 422-98.000.

Maurer, Herman J.: *See—*
Pedersen, Carl O.; and Maurer, Herman J., 4,389,153, Cl. 414-695.500.

Maxwell, Dorothy; and Fell, David A., to American Can Company. Opaque jet ink compositions. 4,389,503, Cl. 524-38.000.

Maxwell, Jerrold F.: *See—*
Wilson, Joe C.; Eisenstein, Stephen E.; Maxwell, Jerrold F.; and Hirozawa, Stanley T., 4,389,371, Cl. 422-15.000.

May, Hans: *See—*
Konig, Werner; Wagenbach, Wolfgang; May, Hans; and Bleidt, Rolf, 4,389,553, Cl. 200-148.00H.

May, Hans-Joachim; Lenke, Dieter; Gries, Josef; Teschendorf, Hans-Juergen; and Worstmann, Wolfgang, to BASF Aktiengesellschaft. 1-Aroyl-2-phenylamino-2-imidazolines, drugs containing these compounds, and use thereof. 4,389,403, Cl. 424-258.000.

Mayer, Fritz: *See—*
Schafer, Paul; Abel, Heinz; and Mayer, Fritz, 4,389,214, Cl. 8-527.000.

Mayery Richard T.: *See—*
DeLoach, John R.; Harris, Robert L.; Mayery Richard T.; and Ihler, Garret M., 4,389,209, Cl. 604-53.000.

McClintock, Jack M., to Morgan Adhesives Company. Method for application of composite pressure sensitive adhesive. 4,389,270, Cl. 156-218.000.

McCord Corporation: *See—*
Colby, Daniel E., 4,389,177, Cl. 425-144.000.

McCorriston, Lois L., to Gulf Canada Limited. Process using sulphate reagent for recovering vanadium from cokes derived from heavy oils. 4,389,378, Cl. 423-68.000.

McCoy, Ewald H., to Electrochemical Products, Inc. Alkaline plating baths and electroplating process. 4,389,286, Cl. 204-44.000.

McCray, Joseph A.: *See—*
Fanuele, Michael A.; McCray, Joseph A.; and Riftenbach, Otto F., 4,389,647, Cl. 343-7.700.

McCulloch, Andrew J.: *See—*
Glasenapp, Rudi K. H.; and McCulloch, Andrew J., 4,389,029, Cl. 244-103.00R.

McDuffee, Frederick T.; and Kozikowski, Carrie L., to International Telephone and Telegraph Corporation. Method of rejacketing a fusion splice in an ultraviolet light curable resin jacketed optical fiber. 4,389,428, Cl. 427-54.100.

McGregor, Charles W.; and Payette, Lionel J., to United Technologies Corporation. Water soluble polyimide prepared from 1,2,3,4 butane tetracarboxylic acid and method of preparation. 4,389,510, Cl. 524-600.000.

McHugh, James P.: *See—*
Duncan, Charles S.; Piotrowski, Paul A.; Skutch, Maria E.; and McHugh, James P., 4,389,377, Cl. 422-246.000.

McInerney Spring & Wire Company: *See—*
Sassak, Frank, 4,388,749, Cl. 24-277.000.

McMahon, James, to Exxon Research and Engineering Co. Ink jet system. 4,389,657, Cl. 346-140.00R.

McNutt, Michael J.: *See*—
French, Barry T.; and McNutt, Michael J., 4,389,615, Cl. 329-101.000.
McVeigh, George S.: *See*—
Edmunds, George W.; McVeigh, George S.; and Schmitt, Werner H., 4,388,989, Cl. 198-339.000.
Meckley, Charles O. Retractable wing kite. 4,389,032, Cl. 244-153.00R.
Medica-Test: *See*—
Garnaud, Guy; and Bouhier, Roger, 4,388,823, Cl. 73-57.000.
Megerle, Friedrich, to Klockner-Humboldt-Deutz AG. Pyrometallurgical furnace system with readily removable wall sections. 4,389,041, Cl. 266-194.000.
Meissner, Konrad E.; and Merritt, Grant R. Vacuum filler. 4,388,955, Cl. 141-286.000.
Melles, Harold W.: *See*—
Hennessey, Richard G.; Beemer, Richard B.; and Melles, Harold W., 4,388,987, Cl. 192-3.260.
Melnor Industries, Inc.: *See*—
Chow, Ho, 4,389,014, Cl. 236-1.00G.
Melton, Keith; Mercier, Olivier; and Riegger, Helmut, to BBC Brown, Boveri & Company Limited. Memory alloys based on copper or nickel solid solution alloys having oxide inclusions. 4,389,250, Cl. 75-232.000.
Mensink, Kornelis A.: *See*—
Renirie, Alexis C. M.; Mensink, Kornelis A.; and Wittkampf, Frederik H. M., 4,388,929, Cl. 128-419.0PG.
Mera, Hiroshi: *See*—
Shimada, Keizo; Mera, Hiroshi; Nakamura, Tsutomu; and Aoki, Akihiro, 4,389,521, Cl. 528-336.000.
Mercier, Olivier: *See*—
Melton, Keith; Mercier, Olivier; and Riegger, Helmut, 4,389,250, Cl. 75-232.000.
Merck & Co., Inc.: *See*—
Bourke, Robert S.; and Cragoe, Edward J., Jr., 4,389,417, Cl. 424-317.000.
Di Pardo, Robert M., 4,389,525, Cl. 548-187.000.
Lo, Pak-Kan A.; and Williams, James B., 4,389,397, Cl. 424-180.000.
Scriabine, Alexander, 4,389,415, Cl. 424-309.000.
Merk, Wolfgang: *See*—
Werle, Peter; Merk, Wolfgang; Pohl, Gerhard; and Hoevels, Friedhelm, 4,389,333, Cl. 252-401.000.
Merriam, Jay S.; and Hogg, Cecil B., to United Catalysts Inc. Catalyst for carbon monoxide conversion in sour gas. 4,389,335, Cl. 252-439.000.
Merritt, Grant R.: *See*—
Meissner, Konrad E.; and Merritt, Grant R., 4,388,955, Cl. 141-286.000.
Merritt, Henry B.; and Sykes, Larry M., to Philip Morris, Incorporated. Process for improving filling power of expanded tobacco. 4,388,932, Cl. 131-291.000.
Meshberg, Philip. Sliding inlet seal for an atomizing pump dispenser. 4,389,003, Cl. 222-321.000.
Messer Griesheim GmbH: *See*—
Hoesslin, Gerhard V.; and Hesse, Jurgen, 4,389,366, Cl. 264-558.000.
Messerly, James W., to B. F. Goodrich Company, The. Process for molding fiber loaded rubber compound. 4,389,361, Cl. 264-108.000.
Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Doellinger, Rolf; Schindler, Rudolf; and Franz, Dieter, 4,389,162, Cl. 416-225.000.
Messerschmitt-Bolkow-Blohm GmbH: *See*—
Winterling, Gerhard, 4,389,534, Cl. 136-256.000.
Messier-Hispano-Bugatti: *See*—
Masclet, Jean; and Veaux, Jacques, 4,388,763, Cl. 33-203.180.
Metallgesellschaft Aktiengesellschaft: *See*—
Simo, Thomas; and Eisenlohr, Karl-Heinz, 4,389,303, Cl. 208-107.000.
Metro Hoist & Body Co., Inc.: *See*—
Petretti, Anthony V., 4,389,314, Cl. 210-241.000.
Mettoy Company Limited, The: *See*—
Nicholls, Bryan F., 4,389,469, Cl. 429-98.000.
Meuleman, Lambertus J.: *See*—
Khoe, Giok D.; Meuleman, Lambertus J.; and Rozzi, Tullio E., 4,389,567, Cl. 250-213.00R.
Meyer, Victor, Jr.: *See*—
Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., 4,388,919, Cl. 128-64.000.
Meyer, Walter C.: *See*—
Fry, Grant C.; and Meyer, Walter C., 4,389,502, Cl. 524-37.000.
Meyn U.S.A., Inc.: *See*—
Zebarth, Ralph S., 4,388,811, Cl. 62-63.000.
Michalik, Anthony J., to Rexnord Inc. Article carrying attachment for conveyor chain. 4,388,990, Cl. 198-645.000.
Mienan Machinery Works, Inc.: *See*—
Hasegawa, Katsuji, 4,388,956, Cl. 144-332.000.
Mikuni Kogyo Kabushiki Kaisha: *See*—
Endou, Haruo; and Ishizuka, Masao, 4,389,354, Cl. 261-142.000.
Milbright, Arnold M., to International Telephone and Telegraph Corporation. Pole construction. 4,388,787, Cl. 52-298.000.
Milbright, Arnold M.: *See*—
Bartels, Leroy R.; and Milbright, Arnold M., 4,388,983, Cl. 182-189.000.
Miller, George A., to Rohm and Haas Company. 1-(α-n-Butylthio-2,4-dichlorophenethyl)imidazol-3-yl and fungicidal use thereof. 4,389,409, Cl. 424-273.00R.
Miller, Granville G.: *See*—
Baughman, Ray H.; Patel, Gordhanbhai N.; and Miller, Granville G., 4,389,217, Cl. 436-2.000.
Milligan, Charles A.; and Winarski, Daniel J., to International Business Machines Corporation. Tape media interlayer tension check. 4,389,600, Cl. 318-6.000.
Milliken Research Corporation: *See*—
Engels, Walter, 4,388,750, Cl. 26-75.000.
Milo, Bernd T.: *See*—
Reissmann, Hermann A. W.; and Milo, Bernd T., 4,389,426, Cl. 426-602.000.
Mimura, Akitoshi: *See*—
Kogawa, Kouichi; Kawasaki, Teruo; and Mimura, Akitoshi, 4,389,603, Cl. 318-443.000.
Mine Safety Appliances Company: *See*—
Heller, Herbert, 4,388,822, Cl. 73-23.000.
Minnesota Mining and Manufacturing Company: *See*—
Erismann, David W., 4,389,431, Cl. 427-242.000.
Keith, Roger H., 4,389,440, Cl. 428-36.000.
Mino Yogyo Co., Ltd.: *See*—
Tanemura, Fumikazu, 4,389,492, Cl. 501-112.000.
Minolta Camera Co., Ltd.: *See*—
Taniguchi, Nobuyuki; Nakai, Masaaki; Ishida, Tokuji; and Uchida, Isamu, 4,389,109, Cl. 354-60.00L.
Minolta Camera Kabushiki Kaisha: *See*—
Yuasa, Yoshio; Ishikawa, Norio; and Horie, Izumi, 4,389,118, Cl. 356-404.000.
Minor, Ray C.; Treichler, James W.; and Bohman, Carl E., to Sperry Corporation. Time delay for a seat s..itch activated loader boom lock. 4,389,154, Cl. 414-699.000.
Mirra, Michael J.; and Giles, Albert H., to Ball Corporation. Conductive coatings for metal substrates. 4,389,459, Cl. 428-457.000.
Miskin, Richard B. Earth moving scraper. 4,388,769, Cl. 37-126.0AC.
Missan, Richard S.; and Orloff, Leslie M., to Missan, Richard S. Language information system. 4,389,679, Cl. 360-12.000.
Mitchell, David S., to Chevron Research Company. Solvent extraction method. 4,389,300, Cl. 208-11.0LE.
Mitchell, Wilbur A. E. Lasers. 4,389,560, Cl. 219-121.00L.
Mito, Akio, to Tokyo Keiki Co., Ltd. Nozzle flapper valve. 4,388,942, Cl. 137-85.000.
Mitono, Yoshiharu: *See*—
Enomoto, Hiromu; Yasuda, Yasushi; Mitono, Yoshiharu; Imaizumi, Taketo; and Ohmichi, Hitoshi, 4,388,755, Cl. 29-577.00C.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Higashiyama, Noboru, 4,389,688, Cl. 360-104.000.
Kajiyama, Ryuichi; and Iwata, Shigemi, 4,389,631, Cl. 340-21.000.
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Mitsubishi Gas Chemical Company, Inc.: *See*—
Sugio, Akitoshi; Masu, Masanobu; and Matunaga, Masatugu, 4,389,516. Cl. 525-534.000.
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Miyake, Haruhisa: *See*—
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Mobay Chemical Corporation: *See*—
Carter, Russell P., Jr., 4,389,500, Cl. 523-216.000.
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Cumings, Norman E., 4,389,141, Cl. 405-211.000.

Godbey, John K.; and Ballard, Billy G., 4,389,164, Cl. 417-36.000.
Horodysky, Andrew G., 4,389,322, Cl. 252-49.600.
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Knibiehler, Ernst; and Hirmann, Georg, 4,389,709, Cl. 364-551.000.
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Haas, Frederick T., Jr., 4,389,435, Cl. 428-17.000.
Modone, Eros; and Roba, Giacomo, to Cselt Centro Studi E Laboratori Telecomunicazioni S.P.A. Process for improving the transmission characteristics of optical fibers drawn from preforms made by the MCVD technique. 4,389,230, Cl. 65-3.120.
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Linke, Horst; Erwien, Helmut; Beyer, Herbert; Kerklies, Bodo; Wleklinski, Bernhard; Mainusch, Rudolf; Grundken, Dieter; Kumor, Bernd; and Mohn, Ulrich, 4,389,072, Cl. 299-32.000.
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Eng, Clifford D.; Gambell, James W.; and Yuen, Henry K., 4,389,325, Cl. 252-186.350.
Morel, Gilbert; Frappart, Pierre; and Saint Marcoux, Roland, to Thomson-CSF. Integrated voltage multiplier. 4,389,703, Cl. 363-61.000.
Moret, Claude M. Machine for the chemical frosting of glass articles. 4,388,937, Cl. 134-73.000.
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McClintock, Jack M., 4,389,270, Cl. 156-218.000.
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Mori, Kazuyuki: *See*—
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Mori, Kei. Lighting system utilizing the sunlight. 4,389,085, Cl. 350-96.100.
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Mueller, Jan-Erik; Ristow, Dietrich; and Kniepkamp, Hermann, to Siemens Aktiengesellschaft. Method of manufacturing very thin semiconductor chips. 4,389,280, Cl. 156-645.000.
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Muller, Dieter H.: *See*—
Klohn, Wolfgang H. R.; Muller, Dieter H.; and Schubert, Hiltmar A. O., 4,389,264, Cl. 149-14.000.
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Murdock, Keith C., to American Cyanamid Company. Thiocarbamoyl heterocycle-anthraquinone derivatives. 4,389,399, Cl. 424-248.500.
Murphy, Wesley T. Closure apparatus for building panels. 4,388,789, Cl. 52-461.000.
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Nadin, Robert P.; and Lee, Jannan G., to Union Carbide Corporation. Method of unplugging dense conveying system. 4,389,143, Cl. 406-197.000.
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Nagao, Nobuya; and Sakai, Teturou, to Tokyo Shibaura Denki Kabushiki Kaisha. Color demodulation device for use in color television receivers. 4,389,665, Cl. 358-23.000.
Nagase, Shin-ichi: *See*—
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Nagata, Hiromichi, to Citizen Watch Co., Ltd. Structure for securing a band to a watchcase. 4,389,006, Cl. 224-164.000.
Nagata, Jun: *See*—
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Nagata, Muneyoshi: *See*—
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Naka, Akihiro; and Honjo, Shuichi, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Stabilized coal-oil mixture. 4,389,219, Cl. 44-51.000.
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Nakai, Tetsuo; Kono, Yuichiro; Yazu, Shuji; and Hara, Akio, to Sumitomo Electric Industries, Ltd. Sintered compact for use in a tool and the method for producing the same. 4,389,465, Cl. 428-698.000.
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Nakamura, Makoto; and Sugiyama, Fumio, to Tokyo Shibaura Denki Kabushiki Kaisha. Adaptive linear prediction filters. 4,389,540, Cl. 179-1.50A.
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Nakamura, Yoshikathu, to Tokyo Shibaura Denki Kabushiki Kaisha; and Tokyo Electric Co., Ltd. Character reading apparatus. 4,389,634, Cl. 382-11.000.
Nakanishi, Keiichi, to Nissan Motor Co., Ltd. Turbo compressor having a surge suppressing arrangement. 4,389,158, Cl. 415-148.000.
Nakanishi, Motoyasu, to Suzuki Sogyo Kabushiki Kaisha; and Kabushiki Kaisha Cubic Engineering. Method of printing. 4,388,866, Cl. 101-426.000.
Nakanishi, Takeshi; Harada, Kazuo; Yoshida, Nobuyuki; and Ogino, Etsuo, to Hitachi Shipbuilding & Engineering Co., Ltd. Process for removing ash from coal. 4,389,306, Cl. 209-5.000.
Nakanishi, Yasuhiro; and Fujikawa, Yoshiyuki, to Sharp Kabushiki Kaisha. Alphanumeric display. 4,389,641, Cl. 340-709.000.
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Nakano, Osamu; and Sowa, Kunihiro, to Nippon Soken, Inc. Vehicle-mounted message apparatus. 4,389,541, Cl. 179-1.0SM.
Nakao, Masumi, to Nippon Electric Co., Ltd. Memory device. 4,389,714, Cl. 365-189.000.
Nakashima, Hiroyuki: *See*—
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Napolitane, Andrew N. Hingeless compact. 4,388,935, Cl. 132-83.00R.
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National Semiconductor Corporation: *See*—
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NCR Canada Ltd - NCR Canada Ltee: *See*—
Rushby, Robert J.; and Parmar, Yashvant S., 4,389,677, Cl. 358-280.000.
Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, to Bayer Aktiengesellschaft. Anthraquinone-azomethine compounds, processes for their preparation and processes for dyeing synthetic fibre materials and for pigmenting organic macromolecular substances. 4,389,215, Cl. 8-637.000.
Nekhaev, Grigory E.: *See*—
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Nenci, Claudio. Machine for the production of tubular casings of alimentary dough. 4,389,176, Cl. 425-101.000.
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Nicholls, Bryan F., to Mettoy Company Limited, The. Electrical power packs and charging devices. 4,389,469, Cl. 429-98.000.
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Nigorikawa, Atsushi; Yokoyama, Hiroshi; and Fujieda, Takanori, to Nippon Electric Co., Ltd.; and Ando Electric Co., Ltd. High-speed pattern generator. 4,389,723, Cl. 371-27.000.
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Nippon Electric Co., Ltd.: *See*—
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Honma, Yoshikiyo; Shimogawara, Jun; Nagata, Muneyoshi; Oka, Yukihiko; Koyanagi, Yukiaki; Hosoya, Yukiyoshi; and Hada, Takashi, 4,389,126, Cl. 400-82.000.
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Nippon Mining Co., Ltd.: *See*—
Iyama, Yukio; Fujita, Masao; and Higashiiriki, Nobuhiro, 4,389,044, Cl. 266-271.000.
Nippon Skokubai Kagaku Kogyo Co., Ltd.: *See*—
Mitsuhata, Masashi; Nagase, Shin-ichi; Nakai, Takahiko; and Kumazawa, Toshihiko, 4,389,338, Cl. 252-463.000.
Nippon Soken, Inc.: *See*—
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Nippon Steel Corporation: *See*—
Noro, Katsuhiko; Nagaki, Yusei; Sasaki, Shinpei; and Kumagai, Sakae, 4,389,360, Cl. 264-71.000.
Nippon Telecommunication Engineering Company: *See*—
Asano, Kiyomitsu; Kondo, Toshikatsu; and Sakaida, Atsuo, 4,389,128, Cl. 400-124.000.
Nippondenso Co., Ltd.: *See*—
Yoshida, Seietsu; Ito, Masao; Kawai, Yujio; and Ogawa, Toshihisa, 4,388,903, Cl. 123-440.000.
Nishimura, Shigeoki; Ogawa, Toshio; Ebara, Katsuya; and Takahashi, Sankichi, to Hitachi, Ltd. Process for removing crud from ion exchange resin. 4,389,253, Cl. 134-1.000.
Nishiwaki, Susumu: *See*—
Yanabu, Satoru; Nishiwaki, Susumu; Yamashita, Mizuho; Satoh, Toshikazu; Murakami, Yoichi; and Imai, Susumu, 4,389,693, Cl. 361-127.000.
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Nissan Motor Company, Limited: *See*—
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Hayashi, Kazuo, 4,389,170, Cl. 418-15.000.
Kimura, Yoshiyuki; Shiobara, Masaji; and Yoshiba, Yasutaka, 4,388,912, Cl. 123-569.000.
Kishi, Norimasa; and Yamamuro, Shigeaki, 4,388,845, Cl. 74-862.000.
Kogawa, Kouichi; Kawasaki, Teruo; and Mimura, Akitoshi, 4,389,603, Cl. 318-443.000.
Kurihara, Toshiro, 4,388,905, Cl. 123-440.000.
Masaki, Kenji, 4,388,904, Cl. 123-440.000.
Nakanishi, Keiichi, 4,389,158, Cl. 415-148.000.
Ogasawara, Hiroshi; and Takai, Miyao, 4,388,909, Cl. 123-501.000.
Shimada, Kiyoshi; and Ogawa, Naoki, 4,388,899, Cl. 123-198.00E.
Sugo, Yuko; and Yamamoto, Tadahiro, 4,388,907, Cl. 123-494.000.

Tsunoda, Masakazu; and Mori, Kazuyuki, 4,389,537, Cl. 179-1.0SM.
Nisshin Oil Mills, Limited, The: *See*—
Yamada, Osamu; Higaki, Yuzo; and Ukai, Akitoshi, 4,389,346, Cl. 260-410.700.
Niyada, Katsuyuki: *See*—
Watanabe, Taisuke; Niyada, Katsuyuki; Hiraoka, Shoji; and Kaga, Kenji, 4,389,539, Cl. 179-1.0SM.
NL Industries, Inc.: *See*—
Marshall, Gailen; Myska, C. H.; and Smith, Kenneth E., 4,388,969, Cl. 166-242.000.
Noda, Atsushi, to Canon Kabushiki Kaisha. Pulse motor driving apparatus. 4,389,605, Cl. 318-696.000.
Nodfelt, Ingvar: *See*—
Lidholt, Rune; and Nodfelt, Ingvar, 4,389,091, Cl. 350-96.200.
Nomaguchi, Hirotsugu: *See*—
Kondo, Syunichi; Nomaguchi, Hirotsugu; and Sato, Hideo, 4,389,477, Cl. 430-81.000.
Norman, Robert M. Oscillating jet head underwater trenching apparatus. 4,389,139, Cl. 405-163.000.
Normann, Richard W.; and Niles, Paul D., to Bendix Corporation, The. Electrical connector assembly. 4,389,083, Cl. 339-105.000.
Normier, Gerard: *See*—
Dussourd D'Hinterland, Lucien; Normier, Gerard; Pinel, Anne-Marie; and Durand, Jacques, 4,389,396, Cl. 424-92.000.
Noro, Katsuhiko; Nagaki, Yusei; Sasaki, Shinpei; and Kumagai, Sakae, to Nippon Steel Corporation; and Yoshikawa Kogyo Co., Ltd. Method of forming a protective coating on a long lance to be immersed in molten metal. 4,389,360, Cl. 264-71.000.
Norris, Peter C.: *See*—
Kimber, Edward G.; and Norris, Peter C., 4,388,742, Cl. 15-250.420.
Northern Telecom Limited: *See*—
Devenyi, Tibor F.; Kovats, Tibor F. I.; and Look, Christopher M., 4,389,557, Cl. 219-85.0CM.
Northern Telecom Systems Corporation: *See*—
Sims, Dewey M., Jr., 4,389,689, Cl. 360-109.000.
Nosthinski, Rudiger: *See*—
Schmitt, Armin; and Nosthinski, Rudiger, 4,389,427, Cl. 426-631.000.
Novamet, Inc.: *See*—
Erich, Donald L.; Varall, Alfred J., Jr.; and Donachie, Stephen J., 4,389,240, Cl. 75-0.50B.
Schelleng, Robert D., 4,389,241, Cl. 75-0.50R.
Nozawa, Tetuo; Nagata, Jun; and Kakimoto, Michiyuki, to Daiwa Can Company, Limited. Method for electric resistance seam welding of the side overlapped portion of a tubular form. 4,389,556, Cl. 219-64.000.
Numata, Saburo, to Fuji Photo Optical Co., Ltd. Automatic focus controlling device. 4,389,565, Cl. 250-201.000.
Nuodex, Inc.: *See*—
Bellettiere, Samuel J.; Hurley, Raymond; and Hoch, Samuel, 4,389,328, Cl. 252-194.000.
Nuovo Pignone S.p.A.: *See*—
Vinciguerra, Costantino; and Bonfiglioli, Giampaolo, 4,388,752, Cl. 29-421.00R.
N.V. APR Europe S.A.: *See*—
Vogel, Bruno, 4,389,116, Cl. 355-85.000.
Obara, Masaharu: *See*—
Onishi, Shunichi; Obara, Masaharu; Sakurai, Masaru; Murakami, Junzo; and Makino, Shinichi, 4,389,623, Cl. 333-16.000.
Oberst, Steven M., to Acorn Corrugated Box Co. Plastic connectors for corrugated material. 4,389,133, Cl. 403-230.000.
O'Brien, Herbert J. Water ski binding. 4,389,200, Cl. 441-70.000.
O'Brien, Sharon R., to Phillips Petroleum Company. Removal of solids from a cooling tower basin. 4,389,351, Cl. 261-36.00R.
Occidental Chemical Corporation: *See*—
Hauffe, Dieter; Muller, Gerhard; Rausch, Werner; Rothkegel, Josef; and Volling, Gudrun, 4,389,260, Cl. 148-6.15Z.
Occidental Research Corporation: *See*—
Hard, Robert A., 4,389,384, Cl. 423-304.000.
Oda, Takeshi: *See*—
Mori, Toshihito; Deushi, Takeo; Iwasaki, Akio; Kunieda, Takafumi; Mizoguchi, Toshimi; Kamiya, Kazuhiro; Nakayama, Masahoto; Ito, Hisakatsu; and Oda, Takeshi, 4,389,486, Cl. 435-253.000.
Oelke, Erwin S., to Smith International, Inc. Two-stage pressure relief valve. 4,388,984, Cl. 184-54.000.
Oels, Udo: *See*—
Schaefer, Axel; Motika, Werner; Bender, Wolfgang; Todt, Jorn; and Oels, Udo, 4,389,344, Cl. 260-369.000.
Ogasawara, Hiroshi; and Takai, Miyao, to Nissan Motor Company, Limited. Fuel injection timing control system for a Diesel engine. 4,388,909, Cl. 123-501.000.
Ogata, Yoshihiro; and Abe, Yoshihiro, to Ricoh Company, Ltd. Transfer sheet separating/conveying apparatus for use in electrophotographic copying machines. 4,389,112, Cl. 355-3.0TR.
Ogawa, Naoki: *See*—
Shimada, Kiyoshi; and Ogawa, Naoki, 4,388,899, Cl. 123-198.00E.
Ogawa, Toshihisa: *See*—
Yoshida, Seietsu; Ito, Masao; Kawai, Yujio; and Ogawa, Toshihisa, 4,388,903, Cl. 123-440.000.
Ogawa, Toshio: *See*—
Nishimura, Shigeoki; Ogawa, Toshio; Ebara, Katsuya; and Takahashi, Sankichi, 4,389,253, Cl. 134-1.000.
Ogino, Etsuo: *See*—
Nakanishi, Takeshi; Harada, Kazuo; Yoshida, Nobuyuki; and Ogino, Etsuo, 4,389,306, Cl. 209-5.000.
O'Hanlon, Peter J.; and Rogers, Norman H., to Beecham Group Limited. Esters of monic acid A useful as antibacterial and antimycoplasmal agents. 4,389,410, Cl. 424-283.000.
Ohio State University Research Foundation, The: *See*—
Shore, Sheldon G.; and Hsu, Wen-Liang, 4,389,347, Cl. 260-429.0CY.
Ohishi, Michiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Ocular optical system. 4,389,097, Cl. 350-410.000.
Ohkubo, Toyokazu: *See*—
Iio, Toshimasa; and Ohkubo, Toyokazu, 4,389,248, Cl. 75-99.000.
Ohmichi, Hitoshi: *See*—
Enomoto, Hiromu; Yasuda, Yasushi; Mitono, Yoshiharu; Imaizumi, Taketo; and Ohmichi, Hitoshi, 4,388,755, Cl. 29-577.00C.
Ohtsubo, Yoshiaki; Watanabe, Sakuji; and Motoori, Ryuzo, to Nippon Kogaku K.K. Power supply control circuit in a camera. 4,389,108, Cl. 354-50.000.
Ohtsuki, Akira; Ishino, Hirokichi; Sakai, Hiromu; Yamasoba, Takahiko; Tsuchiko, Susumu; and Yoshino, Takashi, to Toyo Ink Manufacturing Co., Ltd. Process for preparing laminates. 4,389,438, Cl. 428-35.000.
Oishi, Kengo; Moriwaki, Masayoshi; Suzuki, Osamu; and Kamiyama, Kouji, to Fuji Photo Film Co., Ltd. Magnetic tape guide means. 4,389,010, Cl. 226-196.000.
Oishi, Kengo; Suzuki, Osamu; and Komiyama, Choji, to Fuji Photo Film Co., Ltd. Magnetic tape cassette including a locking mechanism. 4,389,690, Cl. 360-132.000.
Oka, Yukihiko: *See*—
Honma, Yoshikiyo; Shimogawara, Jun; Nagata, Muneyoshi; Oka, Yukihiko; Koyanagi, Yukiaki; Hosoya, Yukiyoshi; and Hada, Takashi, 4,389,126, Cl. 400-82.000.
Okajima, Kunihiko; Kamide, Kenji; and Matsui, Toshihiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Cellulose sulfate salt having anticoagulating action and process for preparing same. 4,389,523, Cl. 536-59.000.
Okamura, Shozo; Nakajima, Hidemasa; Marukawa, Katsukiyo; Anezaki, Shoji; and Hirata, Takeyuki, to Sumitomo Metal Industries. Gasification process of solid carbonaceous material. 4,389,246, Cl. 75-60.000.
Okazaki, Kenji: *See*—
Dickson, James; Okazaki, Kenji; and Sanders, Thomas H., 4,389,258, Cl. 148-3.000.
Okazov, Shamil T.: *See*—
Yaroshevsky, Stanislav L.; Lukyanchenko, Leonid F.; Sidorenko, Grigory N.; Skladanovsky, Evgeny N.; Zalevsky, Mikhail A.; Machikin, Viktor I.; Bannikov, Jury G.; Ryabenko, Anatoly I.; Okazov, Shamil T.; Stepanov, Vasily V.; Danilin, Evgeny A.; Yarmal, Anatoly A.; Nekhaev, Grigory E.; Bat, Jury I.; Popov, Nikolai N.; Kamardin, Alexei M.; Tereschenko, Valdimir P.; and Stankevich, Romualda S., 4,389,244, Cl. 75-42.000.
Okuma, Akitoshi: *See*—
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Okuyama, Kiyotaka: *See*—
Hosaka, Akihiko; and Okuyama, Kiyotaka, 4,389,458, Cl. 428-425.900.
Olin Corporation: *See*—
Rothgery, Eugene F.; and Scott, Robert N., 4,389,327, Cl. 252-188.280.
Wojtowicz, John A., 4,389,318, Cl. 210-755.000.
Yarwood, John C.; Yun, Ik Y.; and Tyler, Derek E., 4,388,962, Cl. 164-455.000.
Olivieri, Roberto; Fascetti, Eugenio; Ciuffolotti, Pierluigi; and Degen, Ludwig, to E.N.I. Ente Nazionale Idrocarburi. Uricase production method. 4,389,485, Cl. 435-191.000.
Olson, Kenneth E.: *See*—
Feit, Yoseph; Kilanowski, David R.; and Olson, Kenneth E., 4,389,386, Cl. 423-365.000.
Olympus Optical Co., Ltd.: *See*—
Furuta, Kenzi, 4,389,685, Cl. 360-72.200.
Imai, Toshihiro, 4,389,099, Cl. 350-464.000.
Kimura, Tadashi; Hashimoto, Akihiko; and Kidawara, Atsushi, 4,389,566, Cl. 250-204.000.
Kondo, Isao; and Nakamura, Hiroaki, 4,389,596, Cl. 315-151.000.
Omnichem, S.A.: *See*—
Hannart, Jean A., 4,389,405, Cl. 424-262.000.
Omura, Yoshiaki: *See*—
Mori, Fumio; Shiono, Manzo; and Omura, Yoshiaki, 4,389,412, Cl. 424-305.000.
Onal, Hasan F., to Edison International, Inc. High speed centrifugal pump and method for operating same at reduced noise levels. 4,389,160, Cl. 415-206.000.
Onishi, Shunichi; Obara, Masaharu; Sakurai, Masaru; Murakami, Junzo; and Makino, Shinichi, to Tokyo Shibaura Denki Kabushiki Kaisha; and Nippon Hoso Kyokai. Automatic equalizer ulitizing a preiodically contained reference signal. 4,389,623, Cl. 333-16.000.
Ono, Shoichi; and Yokoo, Kuniyoshi, to Tohoku University. Ion pump for producing an ultrahigh degree of vacuum. 4,389,165, Cl. 417-49.000.
Oomen, Johannes H. C. M.: *See*—
Trentelman, Christiaan C. M.; van Dijk, Johannis C.; and Oomen, Johannes H. C. M., 4,389,317, Cl. 210-715.000.
Oota, Hisatoshi: *See*—
Torii, Taketsugu; Oota, Hisatoshi; and Arai, Hiroshi, 4,389,639, Cl. 340-539.000.

Opitz, Konrad: *See—*
Schneider, Manfred; Kruse, Hubert; and Opitz, Konrad, 4,389,213, Cl. 8-524.000.

Opprecht, Paul. Apparatus for applying a protective coating to the welding or solder seam of can bodies. 4,388,891, Cl. 118-215.000.

Optimetrix Corporation: *See—*
Phillips, Edward H., 4,389,701, Cl. 362-308.000.

Orejola, Wilmo C. Electrocardiogram caliper. 4,388,759, Cl. 33-1.00C.

Orloff, Leslie M.: *See—*
Missan, Richard S.; and Orloff, Leslie M., 4,389,679, Cl. 360-12.000.

Oronzio deNora Impianti Elettrochimici S.p.A.: *See—*
deNora, Oronzio, 4,389,289, Cl. 204-128.000.
Pellegri, Alberto, 4,389,298, Cl. 204-288.000.

Orru, Vittoria: *See—*
Di Schiena, Michele; and Orru, Vittoria, 4,389,407, Cl. 424-271.000.

Osaka Vacuum Chemical Co., Ltd.: *See—*
Adachi, Ryuichi; Yamada, Isao; and Takeshita, Kazuhiro, 4,389,299, Cl. 204-298.000.

Osawa Press Mdg., Co., Ltd.: *See—*
Hara, Akinori; and Mochizuki, Hiroshi, 4,388,953, Cl. 140-149.000.

Oshima, Renzo; Kyojima, Yoshiyuki; Fujii, Takara; and Kato, Shoji, to Tokyo Shibaura Denki Kabushiki Kaisha; and Toshiba Chemical Products Company. Production of laminate for receiving chemical plating. 4,389,268, Cl. 156-150.000.

Oshima, Yoshimitsu: *See—*
Hotta, Masao; Miyamoto, Yoshikazu; Yokozawa, Norio; and Oshima, Yoshimitsu, 4,389,711, Cl. 364-556.000.

Ostermayer, Frederick W., Jr.: *See—*
Kohl, Paul A.; Ostermayer, Frederick W., Jr.; and Wolowodiuk, Catherine, 4,389,291, Cl. 204-129.300.

Ostwald, Fritz, to ITT Industries, Inc. Arrangement for the supply of pressure to brake slip control apparatus. 4,389,076, Cl. 303-92.000.

Otis Engineering Corporation: *See—*
Setterberg, John R., Jr., 4,388,970, Cl. 166-382.000.

Otsuka Pharmaceutical Co., Ltd.: *See—*
Adachi, Masakazu, 4,389,392, Cl. 424-1.000.

Ovieve, Gerard: *See—*
Carminati, Jean; Ehret, Thomas; Ovieve, Gerard; and Thoor, Henry-Albert, 4,388,948, Cl. 137-615.000.

Owens-Corning Fiberglas Corporation: *See—*
Sanders, James E., 4,389,024, Cl. 242-18.00G.
Shofner, Frederick M.; Greene, Neil E.; and Hanna, Terry J., 4,389,574, Cl. 250-561.000.

Owens-Illinois, Inc.: *See—*
Barkhau, Marvin L.; Perry, Philip D.; and Pimm, Roland F., 4,389,725, Cl. 373-40.000.

Oy E. Sarlin AB: *See—*
Sarvanne, Hannu, 4,389,159, Cl. 415-219.00A.

Ozawa, Toshiaki: *See—*
Kondo, Hiroatsu; Ozawa, Toshiaki; and Miyakawa, Hideaki, 4,389,131, Cl. 400-157.200.

Ozite Corporation: *See—*
Pickens, Robert C., Jr.; Kirchherr, Patricia R.; and Thomas, Reese R., 4,389,442, Cl. 428-92.000.
Thomas, Reese R.; Ellicson, John W.; and Somerville, Ronald, 4,389,443, Cl. 428-92.000.

Paffhausen, Hans: *See—*
Kohle, Ulrich; and Paffhausen, Hans, 4,389,449, Cl. 428-203.000.

Palamand, S. R., to Busch Industrial Products Corporation. Method for controlling light stability in malt beverages and product thereof. 4,389,421, Cl. 426-330.400.

Palm, Michael M., to Dresser Industries, Inc. Stiffleg construction for power shovels. 4,389,152, Cl. 414-694.000.

Palmer, James K.; and Kinzer, Charles E. Method for measuring the depth of a liquid body. 4,388,827, Cl. 73-302.000.

Pampalone, Thomas R., to RCA Corporation. Sulfur dioxide cured coatings. 4,389,433, Cl. 427-341.000.

Pampouchidis, Georgios; Daimer, Wolfgang; and Verdino, Heiner, to Vianova Kunstharz, A.G. Cathodically depositable coating compositions. 4,389,509, Cl. 524-591.000.

Panicci, Richard L., to Kiddie Products, Inc. Self-righting training cup. 4,388,996, Cl. 220-70.000.

Pantke, Reinhard; and Hofmann, Konrad, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Motor vehicle hinge. 4,388,744, Cl. 16-273.000.

Parkhurst, Ross A.; Rodkey, David L.; and Wedel, John O., to United States of America, Army. Dual channel correlator for an FM-CW ranging radar. 4,389,649, Cl. 343-17.500.

Parks, Kenneth L., to Agrico Chemical Company. Multiple-stage thermal beneficiation process for phosphate ores. 4,389,380, Cl. 423-167.000.

Parmar, Yashvant S.: *See—*
Rushby, Robert J.; and Parmar, Yashvant S., 4,389,677, Cl. 358-280.000.

Partus, Fred P., to Western Electric Company, Inc. Method for supplying fluid to a rotating tube. 4,389,231, Cl. 65-3.120.

Pasek, Eugene A.: *See—*
Harju, Philip H.; and Pasek, Eugene A., 4,389,336, Cl. 252-440.000.

Pashoogian, Michael: *See—*
Johnson, David A.; Wright, Joseph B.; and Pashoogian, Michael, 4,388,945, Cl. 137-315.000.

Patchett, Gilbert G.; Gray, Reed A.; and Hyzak, Daniel L., to Stauffer Chemical Company. Thiolcarbamate sulfoxides protected against dry soil deactivation. 4,389,237, Cl. 71-103.000.

Patel, Gordhanbhai N.: *See—*
Baughman, Ray H.; Patel, Gordhanbhai N.; and Miller, Granville G., 4,389,217, Cl. 436-2.000.

Patel, Vipin N.; and Raby, Joseph S., to Harris Corporation. Dual pulse method of writing amorphous memory devices. 4,389,713, Cl. 365-163.000.

Patrick, Fred: *See—*
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Paulus, Philippe: *See—*
Tusset, Vittorino; Hancart, Jules; and Paulus, Philippe, 4,389,254, Cl. 134-3.000.

Pauze, Denis R.; and Zamek, Otto S., to General Electric Company. Hot-melt polyesterimide-polyisocyanate electrical coating compositions. 4,389,457, Cl. 428-379.000.

Payette, Lionel J.: *See—*
McGregor, Charles W.; and Payette, Lionel J., 4,389,510, Cl. 524-600.000.

Peabody Process Systems, Inc.: *See—*
Willett, Howard P.; and Bakke, Even, 4,389,225, Cl. 55-118.000.

Pearson, Erik W., to Superscope, Inc. Mode control system for a radio/tape player unit. 4,389,716, Cl. 369-6.000.

Pedersen, Carl O.; and Maurer, Herman J., to J. I. Case Company. Backhoe swing mechanism. 4,389,153, Cl. 414-695.500.

Pellegri, Alberto, to Oronzio deNora Impianti Elettrochimici S.p.A. Novel bipolar electrode element. 4,389,298, Cl. 204-288.000.

Pelly, Brian R.: *See—*
Clemente, Stefano; Pelly, Brian R.; and Ruttonsha, Rutton, 4,389,702, Cl. 363-21.000.

PEMCO Corporation: *See—*
Cornwell, Robert, Jr., 4,389,694, Cl. 361-48.000.

Penn Wood Products Co.: *See—*
Bosco, Lewis R., 4,388,788, Cl. 52-390.000.

Pentapharm A.G.: *See—*
Ries, Peter E., 4,389,487, Cl. 435-273.000.

Pepsico, Inc.: *See—*
Cooper, Adrianus A. G.; and Leopold, Phillip M., 4,389,269, Cl. 156-172.000.

Performance Industries, Inc.: *See—*
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Perignon Investments, Ltd.: *See—*
Reinhard, Friedrich, 4,389,342, Cl. 260-112.50R.

Perlbachs, Donna J.: *See—*
Yong, Samuel H.; Perlbachs, Donna J.; Wallin, Glenn R.; and Houle, Roberta C., 4,389,420, Cl. 426-94.000.

Perna, Theodore P.; Raschke, Curt R.; and Baker, William L., Jr., to Xerox Corporation. Ink jet array. 4,389,658, Cl. 346-140.00R.

Perrey, Hermann: *See—*
Neuhaus, Karl-Friedrich; Rosenkranz, Hans J.; and Perrey, Hermann, 4,389,472, Cl. 430-10.000.

Perry, Philip D.: *See—*
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Personal Products Company: *See—*
Tritsch, Ludwig, 4,389,212, Cl. 604-389.000.

Pertuis, Philippe: *See—*
Laurent, Jean; Monnet, Bernard; and Pertuis, Philippe, 4,389,183, Cl. 425-589.000.

Peters, Jack. Releasable locking device. 4,389,135, Cl. 403-327.000.

Peterson, Carl R. Easy-to-open, pressure-resistant door assembly. 4,388,779, Cl. 49-253.000.

Peterson, Elmer R., to Baker International Corporation. Hanger and running tool apparatus and method. 4,388,971, Cl. 166-387.000.

Peterson, Steven H.: *See—*
Phillips, D. Colin; and Peterson, Steven H., 4,389,292, Cl. 204-158.00R.

Petretti, Anthony V., to Metro Hoist & Body Co., Inc. Eductor truck. 4,389,314, Cl. 210-241.000.

Pezat, Michel: *See—*
Tanguy, Bernard; Soubeyroux, Jean-Louis; Pezat, Michel; Portier, Josik; and Hagenmuller, Paul, 4,389,326, Cl. 252-188.260.

Pharmacia Fine Chemicals AB: *See—*
Falk, Bengt G., 4,389,316, Cl. 210-656.000.

Philip Morris, Incorporated: *See—*
Merritt, Henry B.; and Sykes, Larry M., 4,388,932, Cl. 131-291.000.
Rainer, Norman B.; and Siwiec, Dean M., 4,388,933, Cl. 131-293.000.

Phillips, D. Colin; and Peterson, Steven H., to Westinghouse Electric Corp. Zirconium isotope separation. 4,389,292, Cl. 204-158.00R.

Phillips, Edward H., to Optimetrix Corporation. Illumination system. 4,389,701, Cl. 362-308.000.

Phillips, Ian: *See—*
Jansen, Friedrich L.; and Phillips, Ian, 4,389,547, Cl. 179-81.00R.

Phillips, Morton. Educational device. 4,389,193, Cl. 434-174.000.

Phillips Petroleum Company: *See—*
Clampitt, Richard L., 4,389,320, Cl. 252-8.55R.
Eastman, Alan D.; and Gardner, Lloyd E., 4,389,304, Cl. 208-254.00H.
Eastman, Alan D., 4,389,337, Cl. 252-462.000.
Gardner, Lloyd E.; Farha, Floyd E., Jr.; Eastman, Alan D.; and Drehman, Lewis E., 4,389,305, Cl. 208-254.00H.
O'Brien, Sharon R., 4,389,351, Cl. 261-36.00R.

Piampiano, Carl P. Eyeglass temple bar retaining means. 4,389,102, Cl. 351-123.000.

Pickens, Robert C., Jr.; Kirchherr, Patricia R.; and Thomas, Reese R., to Ozite Corporation. Wall covering fabric with texturized loops. 4,389,442, Cl. 428-92.000.

Pierre Fabre, S.A.: *See—*
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Pietz, Siegfried: *See—*
Klatt, Karl-Heinz; Pietz, Siegfried; and Wenzl, Helmut, 4,389,239, Cl. 75-0.50R.

Pigeon, Michel; Vienot, Claude; and Saglio, Robert, to Commissariate a l'Energie Atomique. Apparatus for displacing a sensor into a tube and automatically returning it. 4,389,611, Cl. 324-220.000.

Pike, John C., to Blackfire Coal Products. Production of solid fuel shapes from coal fines. 4,389,218, Cl. 44-6.000.

Pilboue, Pierre, to Trefileries et Cableries Chiers-Chatillon-Gorcy Apparatus for winding wire net with simple twist. 4,389,025, Cl. 242-55.000.

Pillsbury Company, The: *See—*
Yong, Samuel H.; Perlbachs, Donna J.; Wallin, Glenn R.; and Houle, Roberta C., 4,389,420, Cl. 426-94.000.

Pimm, Roland F.: *See—*
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Pinel, Anne-Marie: *See—*
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Piotrowski, Paul A.: *See—*
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Pitney Bowes Inc.: *See—*
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Pizzuti, Donato F., to Polaroid Corporation. Folding camera. 4,389,110, Cl. 354-126.000.

Plasse, Paul A., to Polaroid Corporation Laminar cells and batteries. 4,389,470, Cl. 429-152.000.

Plattner, Jacob J., to Abbott Laboratories. Diphenyl ether, diphenyl thioether and diphenyl methane phenol mannich bases. 4,389,416, Cl. 424-309.000.

Plummer, Walter A. One-piece molded toggle clamp. 4,388,747, Cl. 24-255.0SL.

Poad, William J.: *See—*
Dembicki, Michael T.; and Poad, William J., 4,389,266, Cl. 156-69.000.

Podszun, Wolfgang; Suling, Carlhans; Walkowiak, Michael; and Schulz, Hans-Hermann, to Bayer AG. Filler-containing bead polymers. 4,389,507, Cl. 524-460.000.

Pohl, Gerhard: *See—*
Werle, Peter; Merk, Wolfgang; Pohl, Gerhard; and Hoevels, Friedhelm, 4,389,333, Cl. 252-401.000.

Pohl, Knut D.: *See—*
Jang, Sei-Joo; Pohl, Knut D.; and Saifi, Mansoor A., 4,389,229, Cl. 65-3.120.

Polaroid Corporation: *See—*
Pizzuti, Donato F., 4,389,110, Cl. 354-126.000.
Plasse, Paul A., 4,389,470, Cl. 429-152.000.

Poleshuk, Michael; and Wysocki, Joseph J., to Xerox Corporation. Method of making planar thin film transistors, transistor arrays. 4,389,481, Cl. 430-319.000.

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Polman, Herman A., to Chevron Research Company. Permeable grass-like sport surface with fused glass membrane. 4,389,434, Cl. 428-17.000.

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Laurent, Jean; Monnet, Bernard; and Pertuis, Philippe, 4,389,183, Cl. 425-589.000.

Popov, Nikolai N.: *See—*
Yaroshevsky, Stanislav L.; Lukyanchenko, Leonid F.; Sidorenko, Grigory N.; Skladanovsky, Evgeny N.; Zalevsky, Mikhail A.; Machikin, Viktor I.; Bannikov, Jury G.; Ryabenko, Anatoly I.; Okazov, Shamil T.; Stepanov, Vasily V.; Danilin, Evgeny A.; Yarmal, Anatoly A.; Nekhaev, Grigory E.; Bat, Jury I.; Popov, Nikolai N.; Kamardin, Alexei M.; Tereschenko, Valdimir P.; and Stankevich, Romualda S., 4,389,244, Cl. 75-42.000.

Portier, Josik: *See—*
Tanguy, Bernard; Soubeyroux, Jean-Louis; Pezat, Michel; Portier, Josik; and Hagenmuller, Paul, 4,389,326, Cl. 252-188.260.

Posner, Ronald S.; Burr, Charles R., Jr.; and Campbell, David K., to Harris Corporation. Digitally-controlled analog encrypton. 4,389,671, Cl. 358-124.000.

Post, Stephen F., to William M. Brobeck & Associates. Electric motor controller. 4,389,602, Cl. 318-341.000.

Powell, Fred B.: *See—*
Hajost, Mark J.; Crevling, Robert L.; and Powell, Fred B., 4,388,920, Cl. 128-80.00C.

Powell, Walter W., to Anderson, Greenwood & Co. Pressure relief device. 4,388,940, Cl. 137-70.000.

Power Management Corporation: *See—*
Hancock, Harold E., 4,389,691, Cl. 361-8.000.

PPG Industries, Inc.: *See—*
Korach, Malcolm, 4,389,297, Cl. 204-252.000.

Prameta Praezisionsmetall-und Kunststofferzeugnisse G. Baumann & Co.: *See—*
Schneider, Eberhard; Vitt, Theodor; and Sturm, Gerd, 4,388,745, Cl. 16-288.000.

Preiss, Michael; and Schutt, Hermann, to Bayer Aktiengesellschaft. Optically pure heterocyclic aminoacid compounds, a process for their use for the synthesis of medicaments. 4,389,489, Cl. 435-280.000.

Price, Herbert B., to Spencer Wright Industries, Inc. Hand-held tufting machines. 4,388,881, Cl. 112-80.000.

Price, Macy J. Sealing and storage ring with latch apparatus. 4,388,991, Cl. 206-53.000.

Priddy, Duane B.; and Roe, James M., to Dow Chemical Company, The. Hydrogenation of phenylacetylene prior to styrene polymerization. 4,389,517, Cl. 526-64.000.

Probe Systems, Inc.: *See—*
Jackson, David W., 4,389,093, Cl. 350-162.140.

Professional Medical Products, Inc.: *See—*
Hajost, Mark J.; Crevling, Robert L.; and Powell, Fred B., 4,388,920, Cl. 128-80.00C.

Proksa, Ferdinand; Sulzbach, Hans-Michael; Raffel, Reiner; and Althausen, Ferdinand, to Maschinenfabrik Hennecke GmbH. Apparatus for producing a reaction mixture of fluid components forming a foam or solid material. 4,389,375, Cl. 422-111.000.

Proust, Francois O.: *See—*
Clin, Francois H.; Gony, Jean-Noel; and Proust, Francois O., 4,389,020, Cl. 241-24.000.

PSI Energy Systems, Inc.: *See—*
Campbell, Steve, 4,388,963, Cl. 165-10.000.

Purrmann, Robert: *See—*
Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Hubner, Heinz-Joachim, 4,389,497, Cl. 523-116.000.

Putman, Richard E.: *See—*
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; and Jones, F. David, 4,389,706, Cl. 364-130.000.

Q Corporation: *See—*
Albert, Eugene V., 4,388,848, Cl. 83-666.000.

Qualls, Ned S., to Armstrong World Industries, Inc. Swivel cell light fixture. 4,389,699, Cl. 362-217.000.

Queen's University at Kingston: *See—*
Boadway, John D., 4,389,307, Cl. 209-211.000.

Queffelec, Corentin; Bordet, Rene; and Malinowsky, Marc, to Electricite de France (Service National), by said Rene Bordet. Cooling towers. 4,388,785, Cl. 52-222.000.

Raby, Joseph S.: *See—*
Patel, Vipin N.; and Raby, Joseph S., 4,389,713, Cl. 365-163.000.

Raffel, Reiner: *See—*
Proksa, Ferdinand; Sulzbach, Hans-Michael; Raffel, Reiner; and Althausen, Ferdinand, 4,389,375, Cl. 422-111.000.

Rainer, Norman B.; and Siwiec, Dean M., to Philip Morris, Inc. Tobacco stem treatment and expanded tobacco product. 4,388,933, Cl. 131-293.000.

Ramsay, John D. F., to United Kingdom Atomic Energy Authority. Production of porous gels and ceramic materials. 4,389,385, Cl. 423-338.000.

Ranganathan, Ramachandran: *See—*
Sovak, Milos; and Ranganathan, Ramachandran, 4,389,526, Cl. 549-347.000.

Rankin, Alexander. Current carrying constant force brush holder assembly. 4,389,588, Cl. 310-242.000.

Raschke, Curt R.: *See—*
Perna, Theodore P.; Raschke, Curt R.; and Baker, William L., Jr., 4,389,658, Cl. 346-140.00R.

Rasmussen, John P., to Goodyear Aerospace Corporation. Braking system test circuit. 4,389,710, Cl. 364-551.000.

Rausch, Werner: *See—*
Hauffe, Dieter; Muller, Gerhard; Rausch, Werner; Rothkegel, Josef; and Volling, Gudrun, 4,389,260, Cl. 148-6.15Z.

Rayburn, Charles C.: *See—*
Flair, Henry J.; and Rayburn, Charles C., 4,389,564, Cl. 235-489.000.

RCA Corporation: *See—*
Balaban, Alvin R.; Steckler, Steven A.; and Fernsler, Ronald E., 4,389,676, Cl. 358-243.000.
Datta, Pabitra; Poliniak, Eugene S.; and Ban, Vladimir S., 4,389,441, Cl. 428-65.000.
Limberg, Allen L., 4,389,619, Cl. 330-288.000.
Pampalone, Thomas R., 4,389,433, Cl. 427-341.000.
Weber, Donald M.; and Alleman, Raymond A., 4,389,279, Cl. 156-640.000.

Rebourg, Jean-Claude: *See—*
Despois, Claude; and Rebourg, Jean-Claude, 4,389,673, Cl. 358-160.000.

Rees, Spencer C., to Wen Products, Inc. Electric powered wet stone. 4,388,780, Cl. 51-128.000.

Reinhard, Friedrich, to Perignon Investments, Ltd. Synthetic hormone-like peptides and method for their synthesis. 4,389,342, Cl. 260-112.50R.

Reissmann, Hermann A. W.; and Milo, Bernd T., to Lever Brothers Company. 25 To 65 wt. % fat content water-in-oil emulsion spread whose aqueous phase comprises a gelling system. 4,389,426, Cl. 426-602.000.

Reiter, John J. Switch actuating mechanism. 4,389,550, Cl. 200-44.000.

Remington Ind. E Com. De Sistemas Para Escritoria S.A.: *See—*
Giolitti, Nicolo, 4,389,130, Cl. 400-144.200.

Renirie, Alexis C. M.; Mensink, Kornelis A.; and Wittkampf, Frederik H. M., to Vitafin N.V. Programmable pacer and method of external programming. 4,388,929, Cl. 128-419.0PG.

REPA Feinstanzwerk GmbH: *See—*
Fohl, Artur, 4,388,985, Cl. 188-65.400.

Republic Steel Corporation: *See—*
Blair, Matthew J.; Wiktorowski, Thomas A.; and Wogan, W. Dale, 4,389,245, Cl. 75-58.000.

Rettich, Renate; and Schwedes, Wilhelm, to Licentia Patent-Verwaltungs-GmbH. Method and arrangement for coating orifice walls. 4,389,430, Cl. 427-230.000.

Revue Thommen AG: *See—*
Dubois, Gerald; and Kenel, Kaspar, 4,389,122, Cl. 368-110.000.

Rexnord Inc.: *See—*
Michalik, Anthony J., 4,388,990, Cl. 198-645.000.

Ribet, John N.: *See—*
Bendyshe Walton, Andre P. J.; Townsend, Francis H.; and Ribet, John N., 4,389,580, Cl. 307-400.000.

Ricard, Claude F. Taximeter system for avoiding operator fraud in the computation and display of trip fares. 4,389,563, Cl. 377-20.000.

Richard, Spence, Jr. Wheelchair cover. 4,389,057, Cl. 280-289.0WC.

Richards, Elmer A.; and Davis, Alan R., to Eaton Corporation. Multiple countershaft simple transmission. 4,388,838, Cl. 74-331.000.

Richter, Rudolf; and Kropp, Walter, to Linde Aktiengesellschaft. Valves. 4,388,946, Cl. 137-596.200.

Richter, Thomas A. Optical system. 4,389,115, Cl. 355-26.000.

Rickbeil, Kenneth W. Camber correction tool. 4,388,820, Cl. 72-458.000.

Ricoh Company, Ltd.: *See—*
Matsumoto, Fuyuhiko; Ikeda, Kunihiko; and Tsushima, Shuichi, 4,389,113, Cl. 355-3.0DD.
Ogata, Yoshihiro; and Abe, Yoshihiro, 4,389,112, Cl. 355-3.0TR.

Riddle, Herbert S., Jr. Encoding/decoding syncronization technique. 4,389,636, Cl. 340-347.0DD.

Rideout, Merle C., Jr. Power plants deriving their energy from expansion and contraction. 4,388,805, Cl. 60-527.000.

Riedel, Elmer E., to Triad Metal Products Company, The. Band clamping device. 4,388,748, Cl. 24-269.000.

Riedhammer, Josef, to Danfoss A/S. Apparatus for producing a rotary speed-dependent control pressure. 4,388,941, Cl. 137-82.000.

Riedl, Franz, to Wacker-Werke GmbH & Co. KG. Oscillator for soil or road tampers. 4,389,137, Cl. 404-113.000.

Riegger, Helmut: *See—*
Melton, Keith; Mercier, Olivier; and Riegger, Helmut, 4,389,250, Cl. 75-232.000.

Ries, Peter E., to Pentapharm A.G. Process for the preparation of a collagen product for medical and cosmetic purposes. 4,389,487, Cl. 435-273.000.

Riesgraf, Diane A., to Gillette Company, The. Erasable inks containing thermoplastic block copolymers. 4,389,499, Cl. 523-161.000.

Righi, Bruno, to Centro Automazioni Moderne S.p.A. Automatic machine for forming packaging cases. 4,389,205, Cl. 493-315.000.

Ristow, Dietrich: *See—*
Mueller, Jan-Erik; Ristow, Dietrich; and Kniepkamp, Hermann, 4,389,280, Cl. 156-645.000.

Rittenbach, Otto F.: *See—*
Fanuele, Michael A.; McCray, Joseph A.; and Rittenbach, Otto F., 4,389,647, Cl. 343-7.700.

Rizzello, Frank. Phonograph decoupling apparatus and method. 4,389,718, Cl. 369-247.000.

Roba, Giacomo: *See—*
Modone, Eros; and Roba, Giacomo, 4,389,230, Cl. 65-3.120.

Robert Bosch GmbH: *See—*
Babitzka, Rudolf; Beck, Walter; and Schlagmuller, Walter, 4,388,908, Cl. 123-500.000.
Grimm, Gerold; Rose, Klaus; Kemmner, Ulrich; Schillinger, Rainer; and Stemmer, Alois, 4,388,913, Cl. 123-585.000.
Linder, Ernst; Muller, Klaus; and Maurer, Helmut, 4,389,373, Cl. 422-98.000.
Robitzsch, Herbert, 4,389,664, Cl. 358-22.000.
Sander, Klaus; and Wurth, Hans, 4,389,692, Cl. 361-29.000.
Schustek, Siegfried E., 4,389,589, Cl. 310-258.000.

Roberts, Shephard D. Combination applicator-dispenser hair styler. 4,388,936, Cl. 132-88.500.

Robertson Paper Box Co., Inc.: *See—*
Berry, Chapman; and Hackenberg, Robert A., 4,388,999, Cl. 220-416.000.

Robitzsch, Herbert, to Robert Bosch GmbH. System and method to derive a digital video control signal. 4,389,664, Cl. 358-22.000.

Rockwell International Corporation: *See—*
Anders, Ronald J., 4,389,037, Cl. 251-327.000.
Decker, D. Richard, 4,389,660, Cl. 357-22.000.
French, Barry T.; and McNutt, Michael J., 4,389,615, Cl. 329-101.000.
Soclof, Sidney I., 4,389,429, Cl. 427-90.000.
White, Stanley A., 4,389,538, Cl. 179-1.0SA.

Rodgers, David T.; Tursi, Thomas P.; and Bryan, Thomas J., to United States of America, Navy. Handhole seat resurfacing tool for naval pressure fired boilers. 4,388,782, Cl. 51-241.00A.

Rodkey, David L.: *See—*
Parkhurst, Ross A.; Rodkey, David L.; and Wedel, John O., 4,389,649, Cl. 343-17.500.

Rody, Marc P. N.; and Sudia, Frank W. Process and apparatus for generation of steam via catalytic combustion. 4,388,892, Cl. 122-4.00D.

Roe, James M.: *See—*
Priddy, Duane B.; and Roe, James M., 4,389,517, Cl. 526-64.000.

Rogers, Norman H.: *See—*
O'Hanlon, Peter J.; and Rogers, Norman H., 4,389,410, Cl. 424-283.000.

Rohm and Haas Company: *See—*
Miller, George A., 4,389,409, Cl. 424-273.00R.
Smolanoff, Joel R., 4,389,401, Cl. 424-248.560.

Rolf, Meinhard: *See—*
Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, 4,389,215, Cl. 8-637.000.

Rolls-Royce Limited: *See—*
Hobbs, John R., 4,389,227, Cl. 55-306.000.

Romero, Eduardo: *See—*
Rotolico, Anthony J.; and Romero, Eduardo, 4,389,559, Cl. 219-121.0PP.

Roosa, Peter V.; and Roosa, Vernon D. Tank flushing means. 4,388,736, Cl. 4-324.000.

Roosa, Vernon D.: *See—*
Roosa, Peter V.; and Roosa, Vernon D., 4,388,736, Cl. 4-324.000.

Rosa, Bernard. Variable camshaft assembly. 4,388,897, Cl. 123-90.170.

Rosaen, Nils O., to Universal Flow Monitors. Fluid flow meter. 4,388,835, Cl. 73-861.580.

Rose, Klaus: *See—*
Grimm, Gerold; Rose, Klaus; Kemmner, Ulrich; Schillinger, Rainer; and Stemmer, Alois, 4,388,913, Cl. 123-585.000.

Rosenberg, Kenneth W., to United States of America, Navy. Rotary latch. 4,389,062, Cl. 292-190.000.

Rosenbluth, Robert F.: *See—*
Ionescu, Marian I.; Lenker, Jay A.; Rosenbluth, Robert F.; and Seiler, Louis, Jr., 4,388,735, Cl. 3-1.500.

Rosenkranz, Hans J.: *See—*
Neuhaus, Karl-Friedrich; Rosenkranz, Hans J.; and Perrey, Hermann, 4,389,472, Cl. 430-10.000.

Rosenthal, Joel W.: *See—*
Dahlberg, Arthur J.; Shinn, John H.; Rosenthal, Joel W.; and Chu, Tim T., 4,389,301, Cl. 208-59.000.

Ross, Donald R. Apparatus and a process for heating material. 4,389,332, Cl. 252-378.00R.

Rothgery, Eugene F.; and Scott, Robert N., to Olin Corporation. Use of selected 1,2-dihydro-1,2,4,5-tetrazines as oxygen-scavenging agents. 4,389,327, Cl. 252-188.280.

Rothkegel, Josef: *See—*
Hauffe, Dieter; Muller, Gerhard; Rausch, Werner; Rothkegel, Josef; and Volling, Gudrun, 4,389,260, Cl. 148-6.15Z.

Rotolico, Anthony J.; and Romero, Eduardo, to Eutectic Corporation. Plasma-transferred-arc torch construction. 4,389,559, Cl. 219-121.0PP.

Rouet, Paul. Installation to measure the visibility limit in a fog. 4,389,576, Cl. 250-573.000.

Rouffet, Denis, to U.S. Philips Corporation. Method for controlling the clock phase of a receiving system for digital data, phase recovery circuit for effectuating this method and digital data receiving system comprising said circuit. 4,389,727, Cl. 375-110.000.

Rouillard epouse Bauer, Denise; Cote, Gerard; Fossi, Paolo; and Marchon, Bruno, to Societe Miniere et Metallurgique de Penarroya. Process for selective liquid-liquid extraction of germanium. 4,389,379, Cl. 423-89.000.

Roumiguieres, Jean-Louis A.; and Neviere, Michel J., to Roumiguieres, Jean-Louis A. Process for casting on a support the faithfull reproduction of a mask pierced with periodically distributed slits. 4,389,094, Cl. 350-162.170.

Rozzi, Tullio E.: *See—*
Khoe, Giok D.; Meuleman, Lambertus J.; and Rozzi, Tullio E., 4,389,567, Cl. 250-213.00R.

Rubio, Arthur J. Tailgate protecting device. 4,389,067, Cl. 296-50.000.

Ruch, Urs; and Ulmer, Christian, to Fritz Gegauf Aktiengesellschaft Bernina-Nahmaschinenfabrik. Winding device for a sewing machine. 4,388,887, Cl. 112-279.000.

Rugi, Severino: *See—*
Donze, Michel; and Rugi, Severino, 4,389,261, Cl. 148-9.00R.

Ruppen, Bruno: *See—*
Mannhart, Peter; and Ruppen, Bruno, 4,388,826, Cl. 73-167.000.

Rushby, Robert J.; and Parmar, Yashvant S., to NCR Canada Ltd - NCR Canada Ltee. Method and apparatus for removing erroneous elements from digital images. 4,389,677, Cl. 358-280.000.

Ruskewicz, Stephen J.: *See—*
Magnussen, Haakon T., Jr.; and Ruskewicz, Stephen J., 4,389,163, Cl. 417-2.000.

Russell, Burdsall & Ward Corporation: *See—*
Capuano, Terry D., 4,389,145, Cl. 408-1.00R.

Ruttonsha, Rutton: *See—*
Clemente, Stefano; Pelly, Brian R.; and Ruttonsha, Rutton, 4,389,702, Cl. 363-21.000.

Ryabenko, Anatoly I.: *See—*
Yaroshevsky, Stanislav L.; Lukyanchenko, Leonid F.; Sidorenko, Grigory N.; Skladanovsky, Evgeny N.; Zalevsky, Mikhail A.; Machikin, Viktor I.; Bannikov, Jury G.; Ryabenko, Anatoly I.; Okazov, Shamil T.; Stepanov, Vasily V.; Danilin, Evgeny A.; Yarmal, Anatoly A.; Nekhaev, Grigory E.; Bat, Jury I.; Popov, Nikolai N.; Kamardin, Alexei M.; Tereschenko, Valdimir P.; and Stankevich, Romualda S., 4,389,244, Cl. 75-42.000.

Ryan, Michael J., to United States of America, Energy. Reusable tamper-indicating security seal. 4,389,063, Cl. 292-307.00R.

Ryobi Limited: *See—*
Sazaki, Kounin; and Kobayashi, Takehiro, 4,389,027, Cl. 242-84.20G.

Rzeszewski, Theodore S., to Matsushita Electric Corp. of America. Digital to analog converter. 4,389,637, Cl. 340-347.0DA.

S.B.M. Societa Brevetti per la Medicina S.R.L.: *See—*
De Bellis, Ferruccio, 4,388,930, Cl. 128-419.0PS.

S. C. Johnson & Son, Inc.: *See—*
Burton, Colin K., 4,389,418, Cl. 424-365.000.

S.H.E. Corporation: *See—*
Simmonds, Michael B.; and Giffard, Robin P., 4,389,612, Cl. 324-248.000.

Sagawa, Koji: *See—*
Takeyama, Hidetoshi; Sakamoto, Siro; Sagawa, Koji; Tanishi, Tokio; Aihoshi, Hiroaki; and Morimoto, Takao, 4,388,757, Cl. 29-882.000.

Saglio, Robert: *See—*
Pigeon, Michel; Vienot, Claude; and Saglio, Robert, 4,389,611, Cl. 324-220.000.

Saia, William H.: *See—*
Almgren, David W.; Bartoszek, John T.; Lucas, Robert M.; Berthiaume, Richard P.; Spencer, Richard H.; and Saia, William H., 4,388,964, Cl. 165-32.000.

Saifi, Mansoor A.: *See—*
Jang, Sei-Joo; Pohl, Knut D.; and Saifi, Mansoor A., 4,389,229, Cl. 65-3.120.

St. Clair, Anne K.; and St. Clair, Terry L., to United States of America, General Counsel-Code GP. Elastomer toughened polyimide adhesives. 4,389,504, Cl. 524-233.000.

St. Clair, Terry L.: *See—*
St. Clair, Anne K.; and St. Clair, Terry L., 4,389,504, Cl. 524-233.000.

Saint Marcoux, Roland: *See—*
Morel, Gilbert; Frappart, Pierre; and Saint Marcoux, Roland, 4,389,703, Cl. 363-61.000.

Sainte-Foi, Daniel: *See—*
Fournier, Rene; and Sainte-Foi, Daniel, 4,389,232, Cl. 65-16.000.

Saito, Takeo: *See—*
Kitai, Kiyoshi; Saito, Takeo; Segawa, Takashi; and Seki, Yoichi, 4,389,105, Cl. 354-25.000.

Saitoh, Shigemitsu: *See—*
Endo, Tadakazu; and Saitoh, Shigemitsu, 4,389,364, Cl. 264-167.000.

Sakai, Hiromu: *See—*
Ohtsuki, Akira; Ishino, Hirokichi; Sakai, Hiromu; Yamasoba, Takahiko; Tsuchiko, Susumu; and Yoshino, Takashi, 4,389,438, Cl. 428-35.000.

Sakai, Kunio: *See—*
Kojima, Sadao; Shimada, Masaaki; Sakai, Kunio; and Horie, Katuo, 4,389,376, Cl. 422-228.000.

Sakai, Teturou: *See—*
Nagao, Nobuya; and Sakai, Teturou, 4,389,665, Cl. 358-23.000.

Sakaida, Atsuo: *See—*
Asano, Kiyomitsu; Kondo, Toshikatsu; and Sakaida, Atsuo, 4,389,128, Cl. 400-124.000.

Sakamoto, Fumio; Ikeda, Shoji; Tsukamoto, Goro; and Utsumi, Isamu, to Kanebo Ltd. Novel ampicillin esters and production thereof. 4,389,408, Cl. 424-271.000.

Sakamoto, Siro: *See—*
Takeyama, Hidetoshi; Sakamoto, Siro; Sagawa, Koji; Tanishi, Tokio; Aihoshi, Hiroaki; and Morimoto, Takao, 4,388,757, Cl. 29-882.000.

Sakschek, Helmut W., to James River-Dixie/Northern, Inc. Apparatus for distributing dry fibers onto a forming wire. 4,389,175, Cl. 425-82.100.

Sakurai, Masaru: *See—*
Onishi, Shunichi; Obara, Masaharu; Sakurai, Masaru; Murakami, Junzo; and Makino, Shinichi, 4,389,623, Cl. 333-16.000.

Salter, Lowell S., Jr.: *See—*
Innis, Charles L., Jr.; Salter, Lowell S., Jr.; Boghosian, Harry; and Wilkinson, Donald H., 4,389,053, Cl. 277-95.000.

Samejima, Masayoshi; Hirata, Goichi; and Koida, Yoshiyuki, to Tanabe Seiyaku Co., Ltd. Process for preparing pharmaceutically active compound-containing microcapsules. 4,389,331, Cl. 427-213.300.

Sander, Klaus; and Wurth, Hans, to Robert Bosch GmbH. Overload-protected switching apparatus for electrical starter system for combustion engines. 4,389,692, Cl. 361-29.000.

Sanders, James E., to Owens-Corning Fiberglas Corporation. Method and apparatus for packaging strands. 4,389,024, Cl. 242-18.00G.

Sanders, Thomas H.: *See—*
Dickson, James; Okazaki, Kenji; and Sanders, Thomas H., 4,389,258, Cl. 148-3.000.

Sanderson, L. Wayne. Humidity-controlled diverter valve. 4,388,766, Cl. 34-54.000.

Sandoz Ltd.: *See—*
Danner, Bernard; Mau, Hartmut; and Stettler, Hans, 4,389,259, Cl. 148-6.15R.

San Miguel, Anthony, to United States of America, Navy. Canopy mosaic thermal barrier. 4,389,030, Cl. 244-129.300.

Sanyo Electric Co., Ltd.: *See—*
Morikawa, Eiji; Morita, Toshifumi; and Hirate, Masayuki, 4,389,548, Cl. 179-110.00A.

Sarcia, Domenico S., to CVI Incorporated. Cryogenic refrigerator. 4,388,809, Cl. 62-6.000.

Sarkary, Homi G.: *See—*
Anantha, Narasipur G.; Bhatia, Harsaran S.; Mauer, John L., IV; and Sarkary, Homi G., 4,389,294, Cl. 204-192.00E.

Sarvanne, Hannu, to Oy E. Sarlin AB. Centrifugal pump. 4,389,159, Cl. 415-219.00A.

Sasahara, Yasumasa; and Kuroda, Hiroshi, to Nippon Gakki Seizo Kabushiki Kaisha. Tuning device for radio receiver. 4,389,732, Cl. 455-160.000.

Sasaki, Ken, to Casio Computer Co., Ltd. Power source supply system. 4,389,704, Cl. 363-62.000.

Sasaki, Shinpei: *See—*
Noro, Katsuhiko; Nagaki, Yusei; Sasaki, Shinpei; and Kumagai, Sakae, 4,389,360, Cl. 264-71.000.

Sasaoka, Takeshi: *See—*
Horiguchi, Satoru; and Sasaoka, Takeshi, 4,389,667, Cl. 358-75.000.

Sassak, Frank, to McInerney Spring & Wire Company. U-Bolt pipe clamp assembly. 4,388,749, Cl. 24-277.000.

Sato, Hideo: *See—*
Kawamura, Kouichi; Sato, Hideo; and Katsuyama, Harumi, 4,389,474, Cl. 430-37.000.
Kondo, Syunichi; Nomaguchi, Hirotsugu; and Sato, Hideo, 4,389,477, Cl. 430-81.000.

Sato, Hiroyasu; Sato, Yoshiharu; and Baba, Tetsuro, to Tohoku Metal Industries, Ltd. Thermo-magnetically operated switches having two different operating temperatures. 4,389,628, Cl. 335-208.000.

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Yanabu, Satoru; Nishiwaki, Susumu; Yamashita, Mizuho; Satoh, Toshikazu; Murakami, Yoichi; and Imai, Susumu, 4,389,693, Cl. 361-127.000.

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Adrian, Fritz; Sattler, Heinrich; and Sauerland, Werner, 4,389,019, Cl. 241-19.000.

Sauber, Klaus: *See—*
Grabley, Susanne; and Sauber, Klaus, 4,389,488, Cl. 435-280.000.

Sauer, Hans: *See—*
Takeyama, Hidetoshi; Sakamoto, Siro; Sagawa, Koji; Tanishi, Tokio; Aihoshi, Hiroaki; and Morimoto, Takao, 4,388,757, Cl. 29-882.000.

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Adrian, Fritz; Sattler, Heinrich; and Sauerland, Werner, 4,389,019, Cl. 241-19.000.

Sauls, John R.: *See—*
Eber, David H.; and Sauls, John R., 4,389,171, Cl. 418-15.000.

Saur, Roland; and Kurz, Manfred, to Behr-Thomson Dehnstoffregler GmbH. Electrical switch with a thermostatic working element as the actuating element, and a switch element in the form of a microswitch. 4,389,629, Cl. 337-126.000.

Sazaki, Kounin; and Kobayashi, Takehiro, to Ryobi Limited. Bail arm reversing device fishing spinning reels. 4,389,027, Cl. 242-84.20G.

Scarrott, Gordon G., to International Computers Limited. Magnetic recording systems. 4,389,682, Cl. 360-45.000.

Scartazzini, Riccardo; and Bickel, Hans, to Ciba-Geigy Corporation. Cepham compounds. 4,389,524, Cl. 544-016.000.

Schadt, Martin: *See—*
Boller, Arthur; Schadt, Martin; and Villiger, Alois, 4,389,329, Cl. 252-299.100.

Schaefer, Axel; Motika, Werner; Bender, Wolfgang; Todt, Jorn; and Oels, Udo, to Bayer Aktiengesellschaft. Process for separating solid 1,5- and/or 1,8-dinitroanthraquinone and liquid nitrobenzene. 4,389,344, Cl. 260-369.000.

Schaefer, Horst; and Votteler, Hans, to Albert Reiff KG. Strip-type door. 4,388,961, Cl. 160-332.000.

Schaefer, Suzanne E.; and Knott, Jack E., II, to American Can Company. Multiple layer packaging film. 4,389,450, Cl. 428-212.000.

Schafer, Paul; Abel, Heinz; and Mayer, Fritz, to Ciba-Geigy Corporation. Propylene oxide reaction products, process for their manufacture and their use. 4,389,214, Cl. 8-527.000.

Schedele, Helmut, to Siemens Aktiengesellschaft. Electromagnetic relay with adjustable contacts in a closed contact chamber. 4,389,626, Cl. 335-78.000.

Schell, William F.: *See—*
Deibele, Florian C.; and Schell, William F., 4,389,551, Cl. 200-51.00R.

Schelleng, Robert D., to Novamet, Inc. Process for producing lithium-metal master alloy. 4,389,241, Cl. 75-0.50R.

Schenkel, Robert H., to American Cyanamid Company. Method for the control of cattle grubs using pentadienone hydrazones. 4,389,402, Cl. 424-251.000.

Schering Corporation: *See—*
Cooper, David J.; Waitz, Jay A.; Counelis, Mae; and Weinstein, Jay, 4,389,398, Cl. 424-181.000.

Schickedanz, Willi. Receiver for a two channel television sound. 4,389,536, Cl. 179-1.00G.

Schiebel, Ulrich; and Wadow, Dieter, to U.S. Philips Corporation. Electrostatic probe device and method of manufacturing such a device. 4,389,610, Cl. 324-72.500.

Schilling, Dean W. Cryogenic device and method. 4,388,814, Cl. 62-62.000.

Schilling, Walter W., to MacMillan Bloedel Limited. Multiple blade splitting device. 4,388,957, Cl. 144-366.000.

Schillinger, Rainer: *See—*
Grimm, Gerold; Rose, Klaus; Kemmner, Ulrich; Schillinger, Rainer; and Stemmer, Alois, 4,388,913, Cl. 123-585.000.

Schindler, Rudolf: *See—*
Doellinger, Rolf; Schindler, Rudolf; and Franz, Dieter, 4,389,162, Cl. 416-225.000.

Schipper, Edgar: *See—*
Shalaby, Shalaby W.; and Schipper, Edgar, 4,388,926, Cl. 128-335.500.

Schlagmuller, Walter: *See—*
Babitzka, Rudolf; Beck, Walter; and Schlagmuller, Walter, 4,388,908, Cl. 123-500.000.

Schlumberger Technology Corporation: *See—*
Wharton, Russell P., 4,389,645, Cl. 340-854.000.

Schmidle, Claude J.; and Varadhachary, Seevaram N., to Congoleum Corporation. Accelerated polymerization of acrylic monomers initiated by dialkyl and diaralkyl peroxide free radical generators in the presence of tin accelerators. 4,389,514, Cl. 525-364.000.

Schmidt, Donald K.: *See—*
Vig, Michael A.; and Schmidt, Donald K., 4,388,980, Cl. 180-271.000.

Schmidt, Jorn M., to Danfoss A/S. Method for making a bellows unit. 4,389,558, Cl. 219-119.000.

Schmidt, LaVern. Compact position lock parts bin. 4,389,077, Cl. 312-244.000.

Schmitt, Armin; and Nosthinski, Rudiger. Process for the continuous roasting of cocoa kernel paste. 4,389,427, Cl. 426-631.000.

Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Hubner, Heinz-Joachim, to Espe Fabrik parmazeutischer Praparate GmbH. Use of agglomerates of silicic acid as fillers in dental materials. 4,389,497. Cl. 523-116.000.

Schmitt, Werner H.: *See—*
Edmunds, George W.; McVeigh, George S.; and Schmitt. Werner H., 4,388,989, Cl. 198-339.000.

Schmoock, Roy F., to Fischer & Porter Company. Electromagnetic flowmeter having a monolithic conduit. 4,388,834, Cl. 73-861.120.

Schneider, Eberhard; Vitt, Theodor; and Sturm, Gerd, to Prameta Prazisionsmetall-und Kunststofferzeugnisse G. Baumann & Co. Self closing multi pintle hinge. 4,388,745, Cl. 16-288.000.

Schneider, Manfred; Kruse, Hubert; and Opitz, Konrad, to Hoechst Aktiengesellschaft. Use of esterified oxalkylates as formulation agents for dyestuffs and corresponding dyestuff preparations. 4,389,213, Cl. 8-524.000.

Schober, Robert C., to American Hospital Supply Corporation. Programmable digital cardiac pacer. 4,388,927, Cl. 128-419.0PG.

Schor, Joseph M.; Nigalaye, Ashok; and Gaylord, Norman G., to Forest Laboratories, Inc. Sustained release therapeutic compositions based on high molecular weight hydroxypropylmethylcellulose. 4,389,393, Cl. 424-19.000.

Schubert, Hiltmar A. O.: *See—*
Klohn, Wolfgang H. R.; Muller, Dieter H.; and Schubert, Hiltmar A. O., 4,389,264, Cl. 149-14.000.

Schulz, Hans-Hermann: *See—*
Leusner, Bernhard; Schulz, Hans-Hermann; Voigt, Reiner; and Walkowiak, Michael, 4,389,496, Cl. 523-109.000.
Podszun, Wolfgang; Suling, Carlhans; Walkowiak, Michael; and Schulz, Hans-Hermann, 4,389,507, Cl. 524-460.000.

Schulz, Horst: *See—*
Winkelmann, Siegfried; and Schulz, Horst, 4,388,973, Cl. 175-321.000.

Schustek, Siegfried E., to Robert Bosch GmbH. Dynamo electric machine-internal combustion engine combination structure. 4,389,589, Cl. 310-258.000.

Schutt, Hermann: *See—*
Preiss, Michael; and Schutt, Hermann, 4,389,489, Cl. 435-280.000.

Schwarz, Richard A., to Cosden Technology, Inc. Foamable polymeric styrene particles. 4,389,495, Cl. 521-56.000.

Schwedes, Wilhelm: *See—*
Rettich, Renate; and Schwedes, Wilhelm, 4,389.430, Cl. 427-230.000.

Scientific Systems, Inc.: *See—*
Charney, Andrew R.; Kercher, Paul W.; and Stone, Stanley A., 4,389,313, Cl. 210-198.200.

Scott, Paul R., to Shell Oil Company. Pipeline pig. 4,389,461, Cl. 428-543.000.

Scott, Robert N.: *See—*
Rothgery, Eugene F.; and Scott, Robert N., 4,389,327, Cl. 252-188.280.

Scriabine, Alexander, to Merck & Co., Inc. Method of treating hypertension. 4,389,415, Cl. 424-309.000.

Scrutton, Simon L.; Marwick, William F. G.; and Wilson, David R., to Letraset USA, Inc. Production of transfer material. 4,389,473, Cl. 430-17.000.

Sealy, Incorporated: *See—*
Wagner, Robert F., 4,388,738, Cl. 5-421.000.

Seaman Nuclear Corporation: *See—*
Fehrenbach, Robert J., 4,389,136, Cl. 404-75.000.

Seeney, Charles E.; Kraemer, John F.; and Varnum, Nancy C., to International Minerals & Chemical Corp. Oxidatively coupled cold-set binders. 4,389,498, Cl. 523-139.000.

Segawa, Takashi: *See—*
Kitai, Kiyoshi; Saito, Takeo; Segawa, Takashi; and Seki, Yoichi, 4,389,105, Cl. 354-25.000.

Seibel, Markus: *See—*
Franke, Werner; and Seibel, Markus, 4,389,480, Cl. 430-271.000.

Seidler, Robert L. Flasher unit with synchronization and daylight control. 4,389,632, Cl. 340-74.000.

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Kitai, Kiyoshi; Saito, Takeo; Segawa, Takashi; and Seki, Yoichi, 4,389,105, Cl. 354-25.000.

Seiler, Gunter: *See—*
Thoma, Frank; Hoffmann, Karlheinz; and Seiler, Gunter, 4,389,018, Cl. 239-533.300.

Seiler, Louis, Jr.: *See—*
Ionescu, Marian I.; Lenker, Jay A.; Rosenbluth, Robert F.; and Seiler, Louis, Jr., 4,388,735, Cl. 3-1.500.

Seitz, Karl G., to Data Motion Incorporated. Manually assemblable and disassemblable sheet-feed tractor employing improved clamp assembly. 4,389,007. Cl. 226-74.000.

Seitz-Werke GmbH: *See—*
Ahlers, Egon, 4,388,954, Cl. 141-39.000.

Seki, Katsumi; Tachi, Yasuo; and Shibata, Yoji, to Hitachi, Ltd. Cold trap. 4,389,310, Cl. 210-183.000.

Seki, Yoichi: *See—*
Kitai, Kiyoshi; Saito, Takeo; Segawa, Takashi; and Seki, Yoichi, 4,389,105, Cl. 354-25.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, 4,389,508, Cl. 524-548.000.

Sekiyama, Nobuo; and Miyamura, Hisato, to Hitachi, Ltd. Synchronous motor control device. 4,389,607, Cl. 318-717.000.

Sena, Ted: *See—*
Crews, Harold R.; Carter, James H., II; and Sena, Ted, 4,389,490, Cl. 436-17.000.

Sengoku, Ikuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for fixing a window molding onto a windowpane. 4,389,068, Cl. 296-206.000.

Sengoku, Ikuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of and a device for fixing a window molding onto a windowpane. 4,389,069, Cl. 296-206.000.

Setterberg, John R., Jr., to Otis Engineering Corporation. Apparatus and method for controlling injection fluid flow in a well annulus. 4,388,970, Cl. 166-382.000.

Sevink, Theodor J. Support of suspension of insulating material. 4,389,190, Cl. 432-247.000.

Seyffert, Michael; and Taatjes, Steven W., to National Semiconductor Corporation. Edge contacting plating electrode. 4,389,296, Cl. 204-206.000.

Shafran, Dimitry. Heat generator for a circulating heating system. 4,388,915, Cl. 126-247.000.

Shaft Lok Inc.: *See—*
Badzinski, Richard D.; and Nigel, George G., 4,389,199, Cl. 440-74.000.

Shalaby, Shalaby W.; and Schipper, Edgar, to Ethicon, Inc. High compliance monofilament surgical sutures comprising poly[alkylene terephthalate-co-(2-alkenyl or alkyl)succinate]. 4,388,926, Cl. 128-335.500.

Shandy, Walter V.; and Voytilla, Jospeh M., to West Company, The. Method for making molded articles. 4,389,271, Cl. 156-242.000.

Sharp Kabushiki Kaisha: *See—*
Hashimoto, Shintaro; Morita, Akitaka; and Tsuda, Hiroshi, 4,389,121, Cl. 368-63.000.
Nakanishi, Yasuhiro; and Fujikawa, Yoshiyuki, 4,389,641, Cl. 340-709.000.

Shea, H. Richard, Jr. Triangular solar collector. 4,388,917, Cl. 126-450.000.

Shell Oil Company: *See—*
De La Mare, Harold E.; and Brownscombe, Thomas F., 4,389,515, Cl. 525-420.500.
Graiff, Leonard B.; Heldeweg, Rudolf F.; and Leenaars, Corrie M. J., 4,389,221, Cl. 44-66.000.
Scott, Paul R., 4,389,461, Cl. 428-543.000.

Sheppard, Douglas P., to Mostek Corporation. Semiconductor memory circuit with depletion data transfer transistor. 4,389,705, Cl. 365-104.000.

Sheridan, Stephen E.; and Hundertmark, James M., to Brunswick Corporation. Lubricating system for a two-cycle engine. 4,388,896, Cl. 123-73.0AD.

Sherman, Ira N., to General Electric Company. Ultrasonic probe for nondestructive inspection. 4,388,831, Cl. 73-623.000.

Shibata, Koichi: *See—*
Yamazaki, Kyuya; Igarashi, Sachio; and Shibata, Koichi, 4,389,519, Cl. 528-73.000.

Shibata, Yoji: *See—*
Seki, Katsumi; Tachi, Yasuo; and Shibata, Yoji, 4,389,310, Cl. 210-183.000.

Shields, Walter A. Banding machine. 4,388,797, Cl. 53-585.000.

Shigeta, Yoshihiro: *See—*
Uchidoi, Masanori; Shigeta, Yoshihiro; Yoshikawa, Ryoichi; Tosaka, Yoichi; and Haraguchi, Shosuke, 4,389,111, Cl. 354-173.000.

Shiley Inc.: *See—*
Ionescu, Marian I.; Lenker, Jay A.; Rosenbluth, Robert F.; and Seiler, Louis, Jr., 4,388,735, Cl. 3-1.500.

Shimada, Keizo; Mera, Hiroshi; Nakamura, Tsutomu; and Aoki, Akihiro, to Teijin Limited. Process for preparing a cyclic amide polar solvent composition. 4,389,521, Cl. 528-336.000.

Shimada, Kiyoshi; and Ogawa, Naoki, to Nissan Motor Co., Ltd. Noiseless covers. 4,388,899, Cl. 123-198.00E.

Shimada, Masaaki: *See—*
Kojima, Sadao; Shimada, Masaaki; Sakai, Kunio; and Horie, Katuo, 4,389,376, Cl. 422-228.000.

Shimadzu Corporation: *See—*
Hattori, Hiroyuki; and Uemura, Kazuo, 4,389,569, Cl. 250-363.00S.

Shimizu, Hisashi: *See—*
Inoue, Yoshio; and Shimizu, Hisashi, 4,389,432, Cl. 427-299.000.

Shimizu, Kyozo: *See—*
Kobayashi, Ikuro; and Shimizu, Kyozo, 4,389,125, Cl. 374-164.000.

Shimizu, Masami; and Yasunobe, Junji, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Oil seal system for shaft of turbocharger. 4,389,052, Cl. 277-67.000.

Shimogawara, Jun: *See—*
Honma, Yoshikiyo; Shimogawara, Jun; Nagata, Muneyoshi; Oka, Yukihiko; Koyanagi, Yukiaki; Hosoya, Yukiyoshi; and Hada, Takashi, 4,389,126, Cl. 400-82.000.

Shimomura, Masao: *See—*
Hirota, Kunio; and Shimomura, Masao, 4,388,883, Cl. 112-121.120.
Hirota, Kunio; and Shimomura, Masao, 4,388,884, Cl. 112-121.120.

Shin-Etsu Chemical Co., Ltd.: *See—*
Inoue, Yoshio; and Shimizu, Hisashi, 4,389,432, Cl. 427-299.000.

Shinn, John H.: *See—*
Dahlberg, Arthur J.; Shinn, John H.; Rosenthal, Joel W.; and Chu, Tim T., 4,389,301, Cl. 208-59.000.

Shiobara, Masaji: *See—*
Kimura, Yoshiyuki; Shiobara, Masaji; and Yoshiba, Yasutaka, 4,388,912, Cl. 123-569.000.

Shiono, Manzo: *See—*
Mori, Fumio; Shiono, Manzo; and Omura, Yoshiaki, 4,389,412, Cl. 424-305.000.

Shofner, Frederick M.; Greene, Neil E.; and Hanna, Terry J., to Owens-Corning Fiberglas Corporation. Method and apparatus for detecting a break in a plurality of glass fibers. 4,389,574, Cl. 250-561.000.

Shore, Sheldon G.; and Hsu, Wen-Liang, to Ohio State University Research Foundation, The. Synthesis of heteronuclear tri-osmium carbonyl hydrides under gaseous hydrogen. 4,389,347, Cl. 260-429.0CY.

Shumsky, Viktor I.: *See—*
Zhorov, Vladimor I.; Kirsh, Jury E.; Shumsky, Viktor I.; Karaputadze, Temuri M.; and Bairamov, Jury J., 4,389,404, Cl. 424-260.000.

Sicard, Clarence. Method and apparatus for accreting fibrous filter cartridges or other tubular articles. 4,389,224, Cl. 55-55.000.

Sidorenko, Grigory N.: *See—*
Yaroshevsky, Stanislav L.; Lukyanchenko, Leonid F.; Sidorenko, Grigory N.; Skladanovsky, Evgeny N.; Zalevsky, Mikhail A.; Machikin, Viktor I.; Bannikov, Jury G.; Ryabenko, Anatoly I.; Okazov, Shamil T.; Stepanov, Vasily V.; Danilin, Evgeny A.; Yarmal, Anatoly A.; Nekhaev, Grigory E.; Bat, Jury I.; Popov, Nikolai N.; Kamardin, Alexei M.; Tereschenko, Valdimir P.; and Stankevich, Romualda S., 4,389,244, Cl. 75-42.000.

Siemens Aktiengesellschaft: *See—*
Baues, Peter, 4,389,655, Cl. 346-107.00R.
Ekwall, Christer; and Elmqvist, Hakan, 4,388,928, Cl. 128-419.0PG.
Mueller, Jan-Erik; Ristow, Dietrich; and Kniepkamp, Hermann, 4,389,280, Cl. 156-645.000.
Schedele, Helmut, 4,389,626, Cl. 335-78.000.

Siemens Corporation: *See—*
Wagner, Theodore W.; Liang, Sam; and Muzumdar, Deepak R., 4,389,544, Cl. 179-2.0DP.
Wagner, Theodore W.; Liang, Sam; and Muzumdar, Deepak R., 4,389,544, Cl. 179-2.0DP.

Sievers, George K.: *See—*
Clark, Eugene V.; and Sievers, George K., 4,389,439, Cl. 428-36.000.

Simm, Wolfgang; Steine, Hans-Theo; and Audemars, Daniel, to Castolin S.A. Powder mixture for thermal spraying. 4,389,251, Cl. 75-255.000.

Simmonds, Michael B.; and Giffard, Robin P., to S.H.E. Corporation. Apparatus for reducing low frequency noise in dc biased SQUIDS. 4,389,612, Cl. 324-248.000.

Simo, Thomas; and Eisenlohr, Karl-Heinz, to Metallgesellschaft Aktiengesellschaft. Process of converting high-boiling crude oils to equivalent petroleum products. 4,389,303, Cl. 208-107.000.

Sims, Dewey M., Jr., to Northern Telecom Systems Corporation. Method and apparatus for mounting magnetic tape heads. 4,389,689, Cl. 360-109.000.

Sims, Michael H. Extended holder for a lighter. 4,389,187, Cl. 431-277.000.

Singer Company, The: *See—*
Adams, Kenneth D., 4,388,886, Cl. 112-237.000.

Singh, Raj N.; and Dusek, Joseph T., to United States of America, Energy. Porous electrolyte retainer for molten carbonate fuel cell. 4,389,467, Cl. 429-41.000.

Single Vend Inc.: *See—*
Godley, Fred O.; and Laurents, John A., 4,389,000, Cl. 221-8.000.

Sipos, Sandor. Lathe universal tool assembly. 4,389,144, Cl. 407-82.000.

Siwiec, Dean M.: *See—*
Rainer, Norman B.; and Siwiec, Dean M., 4,388,933, Cl. 131-293.000.

Skala, Stephen F. Withdrawal of molten alkali hydroxide through an electrode for depletion of water dissolved therein. 4,389,287, Cl. 204-68.000.

Skalabrin, Nicholas J. Low gold content dental alloy. 4,389,370, Cl. 420-505.000.

Skinner, Ronald W.: *See—*
Dalton, Augustine I., Jr.; Greskovich, Eugene J.; and Skinner, Ronald W., 4,389,390, Cl. 423-584.000.

Skladanovsky, Evgeny N.: *See—*
Yaroshevsky, Stanislav L.; Lukyanchenko, Leonid F.; Sidorenko, Grigory N.; Skladanovsky, Evgeny N.; Zalevsky, Mikhail A.; Machikin, Viktor I.; Bannikov, Jury G.; Ryabenko, Anatoly I.; Okazov, Shamil T.; Stepanov, Vasily V.; Danilin, Evgeny A.; Yarmal, Anatoly A.; Nekhaev, Grigory E.; Bat, Jury I.; Popov, Nikolai N.; Kamardin, Alexei M.; Tereschenko, Valdimir P.; and Stankevich, Romualda S., 4,389,244, Cl. 75-42.000.

Skutch, Maria E.: *See—*
Duncan, Charles S.; Piotrowski, Paul A.; Skutch, Maria E.; and McHugh, James P., 4,389,377, Cl. 422-246.000.

Sladek, Norbert J.; Avery, Roger P.; and Bruno, Saverio T., to Allied Corporation. Electrical connector having a captivated, electrically compensated inner conductor. 4,389,625, Cl. 333-260.000.

Slater Electric Inc.: *See—*
Slater, Thomas S.; and Bowden, Wade R., Jr., 4,389,535, Cl. 174-65.00R.

Slater, Thomas S.; and Bowden, Wade R., Jr., to Slater Electric Inc. Cable entry port means for electrical outlet box. 4,389,535, Cl. 174-65.00R.

Smeggil, John G.; and Bornstein, Norman S., to United Technologies Corporation. Zinc-aluminum hot dip coated ferrous article. 4,389,463, Cl. 428-659.000.

Smith, Ian: *See—*
Braithwaite, John C.; and Smith, Ian, 4,388,871, Cl. 104-138.00G.

Smith International, Inc.: *See—*
Oelke, Erwin S., 4,388,984, Cl. 184-54.000.

Smith, Kendall S., II: *See—*
Hellinger, David L.; Bell, Gordon D.; Brown, Gregory N.; Kennedy, Robert J., Jr.; and Smith, Kendall S., II, 4,388,743, Cl. 16-116.00A.

Smith, Kenneth E.: *See—*
Marshall, Gailen; Myska, C. H.; and Smith, Kenneth E., 4,388,969, Cl. 166-242.000.

Smith, Larry G., to United Merchants & Manufacturers, Inc. Foam random dyeing system. 4,388,740, Cl. 8-151.000.

Smith, Robert M. Disco light assembly. 4,389,598, Cl. 315-291.000.

Smolanoff, Joel R., to Rohm and Haas Company. Arthropod repellents. 4,389,401, Cl. 424-248.560.

Smolinski, Manfred: *See—*
Boeke, Burkhard; Kalka, Josef; Smolinski, Manfred; and Baukholt, Heinz, 4,389,522, Cl. 528-503.000.

Snam S.p.A.: *See—*
Vinciguerra, Costantino; and Bonfiglioli, Giampaolo, 4,388,752, Cl. 29-421.00R.

Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Conciauro, Giuseppe; and Arcioni, Paolo, 4,389,594, Cl. 315-39.550.

Societe Anonyme dite: Les Cables de Lyon: *See—*
Trezeguet, Jean-Pierre; and Vives, Jean-Patrick, 4,388,800, Cl. 57-7.000.

S.A. Joulin Sema: *See—*
Laverriere, Stanislas G. L., 4,389,064, Cl. 294-64.00R.

s.a. PRB, societe anonyme: *See—*
Klohn, Wolfgang H. R.; Muller, Dieter H.; and Schubert, Hiltmar A. O., 4,389,264, Cl. 149-14.000.

Societe Miniere et Metallurgique de Penarroya: *See—*
Rouillard epouse Bauer, Denise; Cote, Gerard; Fossi, Paolo; and Marchon, Bruno, 4,389,379, Cl. 423-89.000.

Societe pour l'Equipement de Vehicules: *See—*
Latapie, Jean-Francois, 4,388,902, Cl. 123-425.000.

Soclof, Sidney I., to Rockwell International Corporation. Method of forming integrated circuit chip transmission line. 4,389,429, Cl. 427-90.000.

Soderstrom, Gert W. Drain pipe. 4,389,138, Cl. 405-43.000.

Sohaei, Iraj. Steerable surfboard. 4,389,195, Cl. 440-15.000.

Sokolik, Joseph E., Jr.; Kosseim, Alexander J. M.; and Atwood, Gilbert R., to Union Carbide Corporation. Regenerable process for the selective removal of sulfur dioxide from effluent gases. 4,389,383, Cl. 423-243.000.

Sokolovsky, Paul J. Firearm pneumatic slide decelerator assembly. 4,388,855, Cl. 89-198.000.

Somerville, Ronald: *See—*
Thomas, Reese R.; Ellicson, John W.; and Somerville, Ronald, 4,389,443, Cl. 428-92.000.

Sommer, Hans. Device for pickling pieces of meat. 4,388,859, Cl. 99-533.000.

Sonobond Corporation: *See—*
Sullivan, Robert A., 4,389,601, Cl. 318-118.000.

Sonoda, Takenori: *See—*
Tanaka, Masato; Sonoda, Takenori; and Watanabe, Nobuhiko, 4,389,681, Cl. 360-27.000.

Sony Corporation: *See—*
Hamada, Osamu, 4,388,849, Cl. 84-1.180.
Kurokawa, Hiromichi, 4,389,666, Cl. 358-47.000.
Suzuki, Susumu; and Okuma, Akitoshi, 4,389,675, Cl. 358-229.000.
Tanaka, Masato; Sonoda, Takenori; and Watanabe, Nobuhiko, 4,389,681, Cl. 360-27.000.
Tatami, Mitsushige, 4,389,663, Cl. 358-19.000.
Yamaguchi, Kazuo, 4,389,620, Cl. 330-304.000.

Sorensen, James R.: *See—*
Hall, Richard A.; and Sorensen, James R., 4,389,013, Cl. 229-45.00R.

Sorenson, Richard W., to Carlingswitch, Inc. Switch construction. 4,389,552, Cl. 200-68.000.

Soubeyroux, Jean-Louis: *See—*
Tanguy, Bernard; Soubeyroux, Jean-Louis; Pezat, Michel; Portier, Josik; and Hagenmuller, Paul, 4,389,326, Cl. 252-188.260.

Source Technology Corporation: *See—*
Kramer, Gideon A., 4,389,103, Cl. 353-25.000.

Southwall Corporation, The: *See—*
Chahroudi, Day; and Brookes, John R., 4,389,452, Cl. 428-215.000.

Sovak, Milos; and Ranganathan, Ramachandran, to University of California, The Regents of the. Intermediates and synthesis of 2-amino-2-deoxytetritols. 4,389,526, Cl. 549-347.000.

Sowa, Kunihiro: *See—*
Nakano, Osamu; and Sowa, Kunihiro, 4,389,541, Cl. 179-1.0SM.

Sparton Corporation: *See—*
Cole, Frederick A., 4,389,575, Cl. 250-563.000.

Spencer, Richard H.: *See—*
Almgren, David W.; Bartoszek, John T.; Lucas, Robert M.; Berthiaume, Richard P.; Spencer, Richard H.; and Saia, William H., 4,388,964, Cl. 165-32.000.

Spencer Wright Industries, Inc.: *See—*
Price, Herbert B., 4,388,881, Cl. 112-80.000.

Sperry Corporation: *See—*
Matthews, Hugh B., 4,388,807, Cl. 60-641.400.
Minor, Ray C.; Treichler, James W.; and Bohman, Carl E., 4,389,154, Cl. 414-699.000.

Spiegel, Werner, to Thyssen Industrie AG. Buried heat exchanger. 4,388,966, Cl. 165-45.000.

Sprague Electric Company: *See—*
Gontowski, Walter S., Jr., 4,389,638, Cl. 340-384.00E.

Sprague, Robert A., to Xerox Corporation. Electro-optic line printer. 4,389,659, Cl. 346-153.100.

Spring, Gorden W., to Tomy Corporation. Pneumatically operated toy employing a movable implement. 4,388,776, Cl. 46-44.000.

Springs Mills, Inc.: *See—*
Everall, Palmer B., Jr.; and Lowery, Jack R., Sr., 4,388,879, Cl. 112-10.000.

SPS Technologies, Inc.: *See—*
Bernard, Clay, II; Matheny, William F., III; Faith, Charles M.; Goswick, Richard L.; and Hauth, Jerry L., 4,389,157, Cl. 414-787.000.

Square D Company: *See—*
Lingaraju, Bhartoor, 4,389,082, Cl. 339-103.00R.

Stahl, Dieter: *See—*
Disselbeck, Dieter; and Stahl, Dieter, 4,389,447, Cl. 428-178.000.

Staiger, Dieter E., to International Business Machines Corporation. Method and apparatus for generating pulses of a predetermined time relation within predetermined pulse intervals with a high time resolution. 4,389,614, Cl. 328-61.000.

Standard Oil Company, The: *See—*
Weinert, Raymond J., Jr.; and Benton, Kenneth C., 4,389,334, Cl. 252-429.00B.

Standard Oil Company (Indiana): *See—*
Won, Sungkuk; and Dobson, Jerry E., 4,389,247, Cl. 75-72.000.

Stankevich, Romualda S.: *See—*
Yaroshevsky, Stanislav L.; Lukyanchenko, Leonid F.; Sidorenko, Grigory N.; Skladanovsky, Evgeny N.; Zalevsky, Mikhail A.; Machikin, Viktor I.; Bannikov, Jury G.; Ryabenko, Anatoly I.; Okazov, Shamil T.; Stepanov, Vasily V.; Danilin, Evgeny A.; Yarmal, Anatoly A.; Nekhaev, Grigory E.; Bat, Jury I.; Popov, Nikolai N.; Kamardin, Alexei M.; Tereschenko, Valdimir P.; and Stankevich, Romualda S., 4,389,244, Cl. 75-42.000.

Stanley Electric Co., Ltd.: *See—*
Teshima, Toru; Ariga, Kazuo; and Kasahara, Takao, 4,389,095, Cl. 350-334.000.

Stark, Charles J., to General Electric Company. Method for epoxidizing olefins. 4,389,529, Cl. 549-531.000.

Stauffer Chemical Company: *See—*
Patchett, Gilbert G.; Gray, Reed A.; and Hyzak, Daniel L., 4,389,237, Cl. 71-103.000.

Steag Aktiengesellschaft: *See—*
Adrian, Fritz; Sattler, Heinrich; and Sauerland, Werner, 4,389,019, Cl. 241-19.000.

Steckler, Steven A.: *See—*
Balaban, Alvin R.; Steckler, Steven A.; and Fernsler, Ronald E., 4,389,676, Cl. 358-243.000.

Stein, Jay, to American Science and Engineering, Inc. High resolution digital radiography system. 4,389,729, Cl. 378-99.000.

Stein, Marc T., to Motorola, Inc. Sample and hold circuit. 4,389,579, Cl. 307-353.000.

Steine, Hans-Theo: *See—*
Simm, Wolfgang; Steine, Hans-Theo; and Audemars, Daniel, 4,389,251, Cl. 75-255.000.

Steinmetz, Guy R.: *See—*
Larkins, Thomas H., Jr.; and Steinmetz, Guy R., 4,389,532, Cl. 568-487.000.

Stemmer, Alois: *See—*
Grimm, Gerold; Rose, Klaus; Kemmner, Ulrich; Schillinger, Rainer; and Stemmer, Alois, 4,388,913, Cl. 123-585.000.

Stenlund, Rune, to AB Vretstorp-Verken. Apparatus for movably spreading material on a railroad embankment. 4,389,150, Cl. 414-505.000.

Stepanov, Vasily V.: *See—*
Yaroshevsky, Stanislav L.; Lukyanchenko, Leonid F.; Sidorenko, Grigory N.; Skladanovsky, Evgeny N.; Zalevsky, Mikhail A.; Machikin, Viktor I.; Bannikov, Jury G.; Ryabenko, Anatoly I.; Okazov, Shamil T.; Stepanov, Vasily V.; Danilin, Evgeny A.; Yarmal, Anatoly A.; Nekhaev, Grigory E.; Bat, Jury I.; Popov, Nikolai N.; Kamardin, Alexei M.; Tereschenko, Valdimir P.; and Stankevich, Romualda S., 4,389,244, Cl. 75-42.000.

Stephenson, Robert L., to Allied Corporation. Seat belt webbing guide. 4,389,059, Cl. 280-808.000.

Stern, Richard A., to United States of America, Army. Line source antenna for electronic beam scanning. 4,389,650, Cl. 343-768.000.

Stettler, Hans: *See—*
Danner, Bernard; Mau, Hartmut; and Stettler, Hans, 4,389,259, Cl. 148-6.15R.

Steuerwald, Alfred, to Aeroquip GmbH. Rapid coupling which is operable even under pressure. 4,388,947, Cl. 137-614.060.

Stevenson, David A., to United States of America, Navy. Electrochemical deoxygenation for liquid phase epitaxial growth. 4,389,274, Cl. 156-624.000.

Stewart, Charles M.: *See—*
Bell, Melvyn R.; Morrison, John M.; and Stewart, Charles M., 4,389,697, Cl. 361-380.000.

Stielow GmbH: *See—*
Kunne, Wolfgang, 4,388,793, Cl. 53-381.00R.

Stoeckli, Oscar W. Envelope opener. 4,388,847, Cl. 83-356.300.

Stohlquist, Roger H.; and Strombeck, Leo, to Anderson Bros. Mfg. Co. Method and apparatus for filling containers. 4,388,795, Cl. 53-435.000.

Stolle Research and Development Corporation: *See—*
Tice, Thomas R.; and Lewis, Danny H., 4,389,330, Cl. 427-213.360.

Stone, Frank K. Prefabricated concrete vault. 4,388,874, Cl. 109-79.000.

Stone, Stanley A.: *See—*
Charney, Andrew R.; Kercher, Paul W.; and Stone, Stanley A., 4,389,313, Cl. 210-198.200.

Storage Technology Corporation: *See—*
Gorove, Arpad, 4,389,687, Cl. 360-98.000.

Stouffer, Ronald D.; and Morris, Joseph W., to Bowles Fluidics Corporation. Fluid flow control element having movable valve and method. 4,388,950, Cl. 137-829.000.

Strack, Richard R., to Warner Lambert Technologies, Inc. Flexible fiber optical conduit and method of making. 4,389,089, Cl. 350-96.260.

Straumann, Fritz: *See—*
Sutter, Franz; and Straumann, Fritz, 4,388,921, Cl. 128-92.00B.

Streit, Kenneth F., to Techplastics, Inc. Modular storage unit. 4,389,078, Cl. 312-322.000.

Strombeck, Leo: *See—*
Stohlquist, Roger H.; and Strombeck, Leo, 4,388,795, Cl. 53-435.000.

Strong, Barry C.: *See—*
Atkinson, Cyril M.; and Strong, Barry C., 4,388,951, Cl. 139-11.000.

Sturm, Gerd: *See—*
Schneider, Eberhard; Vitt, Theodor; and Sturm, Gerd, 4,388,745, Cl. 16-288.000.

Suda, Kazuyoshi; Fujimura, Akira; and Tsuda, Kiyoshi, to Nippon Electric Co., Ltd. Flat-article sorting apparatus. 4,388,994, Cl. 209-564.000.

Sudia, Frank W.: *See—*
Rody, Marc P. N.; and Sudia, Frank W., 4,388,892, Cl. 122-4.00D.

Sugio, Akitoshi; Masu, Masanobu; and Matunaga, Masatugu, to Mitsubishi Gas Chemical Company, Inc. Curable polyphenylene ether resin composition. 4,389,516, Cl. 525-534.000.

Sugita, Ariyasu: *See—*
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, 4,389,508, Cl. 524-548.000.

Sugiura, Toshiaki, to Brother Kogyo Kabushiki Kaisha. Type wheel printer. 4,389,129, Cl. 400-144.200.

Sugiyama, Fumio: *See—*
Nakamura, Makoto; and Sugiyama, Fumio, 4,389,540, Cl. 179-1.50A.

Sugiyama, Shinichi; and Nakatomi, Takayoshi, to Toyota Jidosha Kabushiki Kaisha. Fuel injected engine control device and method performing wall-adhered fuel accounting. 4,388,906, Cl. 123-492.000.

Sugiyama, Takahiro; and Hagiwara, Yukio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Objective system for video disc. 4,389,100, Cl. 350-478.000.

Sugo, Yuko; and Yamamoto, Tadahiro, to Nissan Motor Company, Ltd. Single point fuel injected internal combustion engine and method of operating same. 4,388,907, Cl. 123-494.000.

Suhara, Manabu; Gunjima, Tomoki; and Miyake, Haruhisa, to Asahi Glass Company Ltd. Process for producing a membrane for electrolysis by forming removable thin layer upon electrode. 4,389,494, Cl. 521-27.000.

Suling, Carlhans: *See—*
Podszun, Wolfgang; Suling, Carlhans; Walkowiak, Michael; and Schulz, Hans-Hermann, 4,389,507, Cl. 524-460.000.

Sullivan, Robert A., to Sonobond Corporation. Power supply having automatic frequency control for ultrasonic bonding. 4,389,601, Cl. 318-118.000.

Sulzbach, Hans-Michael: *See—*
Proksa, Ferdinand; Sulzbach, Hans-Michael; Raffel, Reiner; and Althausen, Ferdinand, 4,389,375, Cl. 422-111.000.

Sumitomo Electric Industries, Ltd.: *See—*
Kurosaki, Shiro; and Watanabe, Minoru, 4,389,233, Cl. 65-31.000.
Nakai, Tetsuo; Kono, Yuichiro; Yazu, Shuji; and Hara, Akio, 4,389,465, Cl. 428-698.000.

Sumitomo Metal Industries: *See—*
Okamura, Shozo; Nakajima, Hidemasa; Marukawa, Katsukiyo; Anezaki, Shoji; and Hirata, Takeyuki, 4,389,246, Cl. 75-60.000.

Sumitomo Metal Mining Company Limited: *See—*
Iio, Toshimasa; and Ohkubo, Toyokazu, 4,389,248, Cl. 75-99.000.

Superscope, Inc.: *See—*
Pearson, Erik W., 4,389,716, Cl. 369-6.000.

Sutherland-Schultz Limited: *See—*
Dawdy, James E., 4,389,640, Cl. 340-664.000.

Sutter, Franz; and Straumann, Fritz, to Institut Straumann AG. Device comprising a plate and screws for fastening a plate to a bone. 4,388,921, Cl. 128-92.00B.

Suttles, Jefferies C., to Anchoring International, Inc. Underwater pipe anchoring device. 4,389,034, Cl. 248-49.000.

Sutton, John H.; and Woodruff, Rebecca J., to Beckman Instruments, Inc. Centrifuge tube holder. 4,389,374, Cl. 422-104.000.

Suzuki, Atsushi: *See—*
Harada, Masato; Suzuki, Atsushi; Yamada, Sadahiko; and Masuda, Jun, 4,389,518, Cl. 526-97.000.

Suzuki, Osamu: *See—*
Oishi, Kengo; Moriwaki, Masayoshi; Suzuki, Osamu; and Kamiyama, Kouji, 4,389,010, Cl. 226-196.000.
Oishi, Kengo; Suzuki, Osamu; and Komiyama, Choji, 4,389,690, Cl. 360-132.000.

Suzuki Sogyo Kabushiki Kaisha: *See—*
Nakanishi, Motoyasu, 4,388,866, Cl. 101-426.000.

Suzuki, Susumu; and Okuma, Akitoshi, to Sony Corporation. Television camera apparatus. 4,389,675, Cl. 358-229.000.

Suzuki, Yasoji; and Matsuo, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. MOS Integrated logic circuit device with improved switching speed characteristics. 4,389,582, Cl. 307-452.000.

Swenson, Paul M.: *See—*
Devellian, Richard D.; and Swenson, Paul M., 4,389,002, Cl. 222-146.0HS.

Sykes, Larry M.: *See—*
Merritt, Henry B.; and Sykes, Larry M., 4,388,932, Cl. 131-291.000.

Syntex (U.S.A.) Inc.: *See—*
Kent, John S., 4,389,414, Cl. 424-308.000.
Kracklauer, John J., 4,389,220, Cl. 44-57.000.

Szalkiewicz, Andrew: *See—*
Diamond, Steven E.; Mares, Frank; and Szalkiewicz, Andrew, 4,389,348, Cl. 260-465.50R.

Szarka, Istvan; and Urbantsok, Janos, to Autoipari Kutato es Fejleszto Vallalat. Hydro-pneumatic operating device actuated with a pneumatic pressure-medium or servo-operation, in particular for motor-vehicle clutches. 4,388,806, Cl. 60-547.100.

Taatjes, Steven W.: *See—*
Seyffert, Michael; and Taatjes, Steven W., 4,389,296, Cl. 204-206.000.

Tabuchi, Takeshi; and Abe, Matazo, to Takeda Chemical Industries, Ltd. Method for producing citric acid. 4,389,484, Cl. 435-144.000.

Tachi, Yasuo: *See—*
Seki, Katsumi; Tachi, Yasuo; and Shibata, Yoji, 4,389,310, Cl. 210-183.000.

Tadmor, Zehev: *See—*
Valsamis, Lefteris N.; and Tadmor, Zehev, 4,389,119, Cl. 366-99.000.

Tago, Keiichiro, to Fuji Electric Co. Ltd. Displacement converting circuit arrangement. 4,389,646, Cl. 340-870.370.

Takahashi, Michio: *See—*
Miyamori, Tamotsu; Kaji, Hisatsugu; Kameyama, Iwao; and Takahashi, Michio, 4,389,387, Cl. 423-447.700.

Takahashi, Sankichi: *See—*
Nishimura, Shigeoki; Ogawa, Toshio; Ebara, Katsuya; and Takahashi, Sankichi, 4,389,253, Cl. 134-1.000.

Takai, Miyao: *See—*
Ogasawara, Hiroshi; and Takai, Miyao, 4,388,909, Cl. 123-501.000.

Takashima, Toshiyuki: *See—*
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, 4,389,508, Cl. 524-548.000.

Takeda Chemical Industries, Ltd.: *See—*
Tabuchi, Takeshi; and Abe, Matazo, 4,389,484, Cl. 435-144.000.
Yamazaki, Kyuya; Igarashi, Sachio; and Shibata, Koichi, 4,389,519, Cl. 528-73.000.

Takeshita, Kazuhiro: *See—*
Adachi, Ryuichi; Yamada, Isao; and Takeshita, Kazuhiro, 4,389,299, Cl. 204-298.000.

Takeyama, Hidetoshi; Sakamoto, Siro; Sagawa, Koji; Tanishi, Tokio; Aihoshi, Hiroaki; and Morimoto, Takao, to Matsushita Electric Works, Ltd.; and Sauer, Hans, a part interest. Method for manufacturing electric switching block of electromagnetic relay. 4,388,757, Cl. 29-882.000.

Talres Development (N.A.) N.V.: *See—*
Drucker, David B., 4,389,394, Cl. 424-53.000.

Tamura, Poohsan N., to Honeywell Inc. High speed ambiguity function evaluation by optical processing utilizing a space variant linear phase shifter. 4,389,092, Cl. 350-162.120.

Tamura, Toshio: *See—*
Yamaguchi, Kiyoshi; Maki, Naoki; and Tamura, Toshio, 4,389,585, Cl. 310-52.000.

Tanabe Seiyaku Co., Ltd.: *See—*
Samejima, Masayoshi; Hirata, Goichi; and Koida, Yoshiyuki, 4,389,331, Cl. 427-213.300.

Tanaka, Masato; Sonoda, Takenori; and Watanabe, Nobuhiko, to Sony Corporation. Method and apparatus for recording digitized information on a record medium. 4,389,681, Cl. 360-27.000.

Tanaka, Shuji; and Nagata, Toshio, to Yamaha Hatsudoki Kabushiki Kaisha. Two stroke engine having exhaust timing control valve means. 4,388,894, Cl. 123-65.0PE.

Tanaka, Steve K.: *See—*
Hanamoto, Mark S.; and Tanaka, Steve K., 4,389,491, Cl. 436-67.000.

Tanaka, Toshio; Nakagawa, Sumio; and Toudo, Kenzi, to Hitachi, Ltd. Combustion control apparatus. 4,389,184, Cl. 431-15.000.

Tanemura, Fumikazu, to Mino Yogyo Co., Ltd. Spinel-magnesia basic brick. 4,389,492, Cl. 501-112.000.

Tanguy, Bernard; Soubeyroux, Jean-Louis; Pezat, Michel; Portier, Josik; and Hagenmuller, Paul, to Agence Nationale de Valorization de la Recherche. Method of storing hydrogen in intimate mixtures of hydrides of magnesium and other metals or alloys. 4,389,326, Cl. 252-188.260.

Taniguchi, Nobuyuki; Nakai, Masaaki; Ishida, Tokuji; and Uchida, Isamu, to Minolta Camera Co., Ltd. Camera with a voice command responsive system. 4,389,109, Cl. 354-60.00L.

Tanishi, Tokio: *See—*
Takeyama, Hidetoshi; Sakamoto, Siro; Sagawa, Koji; Tanishi, Tokio; Aihoshi, Hiroaki; and Morimoto, Takao, 4,388,757, Cl. 29-882.000.

Tanner, Lee E., to Allied Corporation. Amorphous alloys of nickel, aluminum and boron. 4,389,262, Cl. 148-403.000.

Tatami, Mitsushige, to Sony Corporation. Apparatus for indicating the phase of the color subcarrier signal in each line of a color television signal. 4,389,663, Cl. 358-19.000.

Tayco Developments, Inc.: *See—*
Taylor, Douglas P., 4,389,045, Cl. 267-8.00R.

Taylor, Douglas P., to Tayco Developments, Inc. Liquid energy absorber device. 4,389,045, Cl. 267-8.00R.

TDK Electronics Co., Ltd.: *See—*
Hosaka, Akihiko; and Okuyama, Kiyotaka, 4,389,458, Cl. 428-425.900.

Techplastics, Inc.: *See—*
Streit, Kenneth F., 4,389,078, Cl. 312-322.000.

Teeter, Terry E., to Eaton Corporation. Auxiliary transmission neutral positioning and locking control and mechanism. 4,388,843, Cl. 74-745.000.

Tegral Technology Limited: *See—*
Brunt, William H.; and Thatcher, Kenneth C., 4,389,359, Cl. 264-69.000.

Teijin Limited: *See—*
Shimada, Keizo; Mera, Hiroshi; Nakamura, Tsutomu; and Aoki, Akihiro, 4,389,521, Cl. 528-336.000.

Teitsu Denshi Kenkyusho Co., Ltd.: *See—*
Narushima, Isao; and Nakano, Morio, 4,388,830, Cl. 73-597.000.

Tektronix, Inc.: *See—*
Deibele, Florian C.; and Schell, William F., 4,389,551, Cl. 200-51.00R.

Telang, Anil, to Becton, Dickinson and Company. Suction canister system for serial collection of fluids. 4,388,922, Cl. 604-319.000.

Tenniswood, David M., to Creative Controls, Inc. Wheelchair. 4,389,056, Cl. 280-289.0WC.

Tereschenko, Valdimir P.: *See—*
Yaroshevsky, Stanislav L.; Lukyanchenko, Leonid F.; Sidorenko, Grigory N.; Skladanovsky, Evgeny N.; Zalevsky, Mikhail A.; Machikin, Viktor I.; Bannikov, Jury G.; Ryabenko, Anatoly I.; Okazov, Shamil T.; Stepanov, Vasily V.; Danilin, Evgeny A.; Yarmal, Anatoly A.; Nekhaev, Grigory E.; Bat, Jury I.; Popov, Nikolai N.; Kamardin, Alexei M.; Tereschenko, Valdimir P.; and Stankevich, Romualda S., 4,389,244, Cl. 75-42.000.

Teschendorf, Hans-Juergen: *See—*
May, Hans-Joachim; Lenke, Dieter; Gries, Josef; Teschendorf, Hans-Juergen; and Worstmann, Wolfgang, 4,389,403, Cl. 424-258.000.

Teshima, Toru; Ariga, Kazuo; and Kasahara, Takao, to Stanley Electric Co., Ltd. Multi-colored liquid crystal display device with characters not displaying shifts in positions even upon color changes. 4,389,095, Cl. 350-334.000.

Th. Kieserling & Albrecht, GmbH & Co. KG: *See—*
Lorenz, Horst, 4,389,148, Cl. 414-85.000.

Thakur, Pramod C.: *See—*
Jones, Emrys H., Jr.; and Thakur, Pramod C., 4,388,974, Cl. 175-325.000.

Thatcher, Kenneth C.: *See—*
Brunt, William H.; and Thatcher, Kenneth C., 4,389,359, Cl. 264-69.000.

Thermalloy Incorporated: *See—*
Breese, Leonard S., 4,388,967, Cl. 165-80.00B.

Thies, Jerome A.: *See—*
Williams, Hugh K.; and Thies, Jerome A., 4,388,976, Cl. 180-69.00R.

Thies, Peter, to Wagener Schwelm GmbH & Co. Belt press with enclosed hydraulic actuator. 4,388,860, Cl. 100-270.000.

Thiessen, Robert J.: *See—*
Whalen-Shaw, Michael J.; and Thiessen, Robert J., 4,389,476, Cl. 430-64.000.

Thoemke, Dale W. Fishing system. 4,388,774, Cl. 43-21.200.

Thoma, Frank; Hoffmann, Karlheinz; and Seiler, Gunter, to Daimler-Benz Aktiengesellschaft. Fuel injection nozzle for internal combustion engines. 4,389,018, Cl. 239-533.300.

Thomas, Reese R.; Ellicson, John W.; and Somerville, Ronald, to Ozite Corporation. Cut pile fabric with fused carrier and method of making same. 4,389,443, Cl. 428-92.000.

Thomas, Reese R.: *See—*
Pickens, Robert C., Jr.; Kirchherr, Patricia R.; and Thomas, Reese R., 4,389,442, Cl. 428-92.000.

Thomas, Thomas A., Jr. Apparatus for silk screen printing. 4,388,862, Cl. 101-126.000.

Thompson, Stephen M.: *See—*
Underwood, J. Larry; Thompson, Stephen M.; and Budde, John S., 4,388,998, Cl. 220-307.000.

Thoms, Roland, to Buckbee-Mears Company. Color picture tube and aperture mask therefor. 4,389,592, Cl. 313-403.000.

Thomson-CSF: *See—*
Favreau, Michel, 4,389,668, Cl. 358-83.000.
Morel, Gilbert; Frappart, Pierre; and Saint Marcoux, Roland, 4,389,703, Cl. 363-61.000.

Thoor, Henry-Albert: *See—*
Carminati, Jean; Ehret, Thomas; Ovieve, Gerard; and Thoor, Henry-Albert, 4,388,948, Cl. 137-615.000.

Thornton, Thomas A.; and Holaday, Veldon D., Jr., to Babcock & Wilcox Company, The. Sintering UO_2 and oxidation of UO_2 with microwave radiation. 4,389,355, Cl. 264-0.500.

Thyssen Industrie AG: *See—*
Girod, Hansjochen; and Korn, Gerhard, 4,388,872, Cl. 105-99.000.
Spiegel, Werner, 4,388,966, Cl. 165-45.000.

Tice, Thomas R.; and Lewis, Danny H., to Stolle Research and Development Corporation. Microencapsulation process. 4,389,330, Cl. 427-213.360.

Todt, Jorn: *See—*
Schaefer, Axel; Motika, Werner; Bender, Wolfgang; Todt, Jorn; and Oels, Udo, 4,389,344, Cl. 260-369.000.

Tohoku Metal Industries, Ltd.: *See—*
Sato, Hiroyasu; Sato, Yoshiharu; and Baba, Tetsuro, 4,389,628, Cl. 335-208.000.

Tohoku University: *See—*
Ono, Shoichi; and Yokoo, Kuniyoshi, 4,389,165, Cl. 417-49.000.

Tokuyama Sekisui Kogyo Kabushiki Kaisha: *See—*
Mori, Takeshi; Takashima, Toshiyuki; Asahina, Kenichi; Matsumiya, Toshiharu; and Sugita, Ariyasu, 4,389,508, Cl. 524-548.000.

Tokyo Electric Co., Ltd.: *See—*
Nakamura, Yoshikathu, 4,389,634, Cl. 382-11.000.

Tokyo Keiki Co., Ltd.: *See—*
Mito, Akio, 4,388,942, Cl. 137-85.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Kamei, Taketo; and Hayashi, Motokazu, 4,389,595, Cl. 315-57.000.
Nagao, Nobuya; and Sakai, Teturou, 4,389,665, Cl. 358-23.000.
Nakamura, Makoto; and Sugiyama, Fumio, 4,389,540, Cl. 179-1.50A.
Nakamura, Yoshikathu, 4,389,634, Cl. 382-11.000.
Onishi, Shunichi; Obara, Masaharu; Sakurai, Masaru; Murakami, Junzo; and Makino, Shinichi, 4,389,623, Cl. 333-16.000.
Oshima, Renzo; Kyojima, Yoshiyuki; Fujii, Takara; and Kato, Shoji, 4,389,268, Cl. 156-150.000.
Suzuki, Yasoji; and Matsuo, Kenji, 4,389,582, Cl. 307-452.000.
Yamada, Tetsuo, 4,389,661, Cl. 357-24.000.
Yanabu, Satoru; Nishiwaki, Susumu; Yamashita, Mizuho; Satoh, Toshikazu; Murakami, Yoichi; and Imai, Susumu, 4,389,693, Cl. 361-127.000.

Toll, Alexander R.; and Gibboni, Roland R. Electronic apparatus for teaching mathematics. 4,389,194, Cl. 434-201.000.

Tomasky, Philip P. Triangular antenna. 4,389,651, Cl. 343-794.000.

Tompa, Albert S.; French, David M.; and White, Billy R., to United States of America, Navy. Breakdown of solid propellants and explosives, recovery of nitramines. 4,389,265, Cl. 149-109.600.

Tomy Corporation: *See—*
Spring, Gorden W., 4,388,776, Cl. 46-44.000.

Toombs, Gary C.: *See—*
Gallusser, David O.; Hemmer, Valentine J.; and Toombs, Gary C., 4,389,081, Cl. 339-89.00M.

Toray Industries, Inc.: *See—*
Endo, Tadakazu; and Saitoh, Shigemitsu, 4,389,364, Cl. 264-167.000.
Kitanaka, Minoru; and Deguchi, Yukichi, 4,389,453, Cl. 428-240.000.

Torii, Taketsugu; Oota, Hisatoshi; and Arai, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Voice warning device using entertainment speaker. 4,389,639, Cl. 340-539.000.

Tosaka, Yoichi: *See—*
Uchidoi, Masanori; Shigeta, Yoshihiro; Yoshikawa, Ryoichi; Tosaka, Yoichi; and Haraguchi, Shosuke, 4,389,111, Cl. 354-173.000.

Toshiba Chemical Products Company: *See—*
Oshima, Renzo; Kyojima, Yoshiyuki; Fujii, Takara; and Kato, Shoji, 4,389,268, Cl. 156-150.000.

Toudo, Kenzi: *See—*
Tanaka, Toshio; Nakagawa, Sumio; and Toudo, Kenzi, 4,389,184, Cl. 431-15.000.

Townsend, Francis H.: *See—*
Bendyshe Walton, Andre P. J.; Townsend, Francis H.; and Ribet, John N., 4,389,580, Cl. 307-400.000.

Toyo Ink Manufacturing Co., Ltd.: *See—*
Ohtsuki, Akira; Ishino, Hirokichi; Sakai, Hiromu; Yamasoba, Takahiko; Tsuchiko, Susumu; and Yoshino, Takashi, 4,389,438, Cl. 428-35.000.

Toyo Kogyo Co. Ltd.: *See—*
Kodama, Hiroshi; Maeda, Tooru; and Miyatani, Toshio, 4,388,901, Cl. 123-213.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Sugiyama, Shinichi; and Nakatomi, Takayoshi, 4,388,906, Cl. 123-492.000.

Toyota Jidosha Kogyo K.K.: *See—*
Yoshida, Seietsu; Ito, Masao; Kawai, Yujio; and Ogawa, Toshihisa, 4,388,903, Cl. 123-440.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Arai, Hajime; and Haga, Shoji, 4,388,844, Cl. 74-752.00C.
Sengoku, Ikuo, 4,389,068, Cl. 296-206.000.
Sengoku, Ikuo, 4,389,069, Cl. 296-206.000.
Torii, Taketsugu; Oota, Hisatoshi; and Arai, Hiroshi, 4,389,639, Cl. 340-539.000.

Trane Company, The: *See—*
Eber, David H.; and Sauls, John R., 4,389,171, Cl. 418-15.000.

Trefileries et Cableries Chiers-Chatillon-Gorcy: *See—*
Pilboue, Pierre, 4,389,025, Cl. 242-55.000.

Treichler, James W.: *See—*
Minor, Ray C.; Treichler, James W.; and Bohman, Carl E., 4,389,154, Cl. 414-699.000.

Trentelman, Christiaan C. M.; van Dijk, Johannis C.; and Oomen, Johannes H. C. M., to DHV Raadgevend Ingenieursbureau BV. Process for chemical reduction of the phosphate content of water. 4,389,317, Cl. 210-715.000.

Trezeguet, Jean-Pierre; and Vives, Jean-Patrick, to Societe Anonyme dite: Les Cables de Lyon. Method of manufacturing an optical fibre cable. 4,388,800, Cl. 57-7.000.

Trezequet, Jean-Pierre, to Les Cables de Lyon. Underwater optical fibre cable. 4,389,088, Cl. 350-96.230.

Triad Metal Products Company, The: *See—*
Riedel, Elmer E., 4,388,748, Cl. 24-269.000.

Tridon Limited: *See—*
Kimber, Edward G.; and Norris, Peter C., 4,388,742, Cl. 15-250.420.

Tritsch, Ludwig, to Personal Products Company. Diaper with potentially elastic tape fastener. 4,389,212, Cl. 604-389.000.

Trumper, Thomas, to Gewerkschaft Eisenhutte Westfalia. Apparatus for use with cutting drums of mineral machines. 4,389,073, Cl. 299-45.000.

Tseng, Ching-Ho. Rotary power plant runner/shutter mechanism. 4,389,174, Cl. 418-222.000.

Tsuchiko, Susumu: *See—*
Ohtsuki, Akira; Ishino, Hirokichi; Sakai, Hiromu; Yamasoba, Takahiko; Tsuchiko, Susumu; and Yoshino, Takashi, 4,389,438, Cl. 428-35.000.

Tsuda, Hiroshi: *See—*
Hashimoto, Shintaro; Morita, Akitaka; and Tsuda, Hiroshi, 4,389,121, Cl. 368-63.000.

Tsuda, Kiyoshi: *See—*
Suda, Kazuyoshi; Fujimura, Akira; and Tsuda, Kiyoshi, 4,388,994, Cl. 209-564.000.

Tsukamoto, Goro: *See—*
Sakamoto, Fumio; Ikeda, Shoji; Tsukamoto, Goro; and Utsumi, Isamu, 4,389,408, Cl. 424-271.000.

Tsunoda, Masakazu; and Mori, Kazuyuki, to Nissan Motor Company, Limited. Voice warning system for an automotive vehicle provided with an automatic speed control device. 4,389,537, Cl. 179-1.0SM.

Tsushima, Shuichi: *See—*
Matsumoto, Fuyuhiko; Ikeda, Kunihiko; and Tsushima, Shuichi, 4,389,113, Cl. 355-3.0DD.

Tsuzuki, Akira, to Citizen Watch Co., Ltd. Frequency divider. 4,389,728, Cl. 377-114.000.

Tsuzuki, Hanzo, to Casio Computer Co., Ltd. Electronic cash register. 4,389,707, Cl. 364-405.000.

Turbine Metal Technology, Inc.: *See—*
Clark, Eugene V.; and Sievers, George K., 4,389,439, Cl. 428-36.000.

Tursi, Thomas P.: *See—*
Rodgers, David T.; Tursi, Thomas P.; and Bryan, Thomas J., 4,388,782, Cl. 51-241.00A.

Tusset, Vittorino; Hancart, Jules; and Paulus, Philippe, to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie. Continuous treatment of steel sheet. 4,389,254, Cl. 134-3.000.

Tyler, Derek E.: *See—*
Yarwood, John C.; Yun, Ik Y.; and Tyler, Derek E., 4,388,962, Cl. 164-455.000.

Ubukata, Susumu; Mizutani, Yasukazu; and Iyada, Syozo, to Ubukatu, Susumu. Snap action thermally responsive switch. 4,389,630, Cl. 337-363.000.

Ubukatu, Susumu: *See—*
Ubukata, Susumu; Mizutani, Yasukazu; and Iyada, Syozo, 4,389,630, Cl. 337-363.000.

Uchida, Isamu: *See—*
Taniguchi, Nobuyuki; Nakai, Masaaki; Ishida, Tokuji; and Uchida, Isamu, 4,389,109, Cl. 354-60.00L.

Uchidoi, Masanori; Shigeta, Yoshihiro; Yoshikawa, Ryoichi; Tosaka, Yoichi; and Haraguchi, Shosuke, to Canon Kabushiki Kaisha. Camera. 4,389,111, Cl. 354-173.000.

Uemura, Kazuo: *See—*
Hattori, Hiroyuki; and Uemura, Kazuo, 4,389,569, Cl. 250-363.00S.

Uesugi, Toshiaki; and Inden, Toshikazu, to Chino Works, Ltd. Changeover switch for actuating a plurality of reed switches disposed in a circle. 4,389,627, Cl. 335-206.000.

Uetrecht, Dale M., to Baldwin Piano & Organ Company. Multiple octave generator tuning system. 4,388,850, Cl. 84-1.240.

Ukai, Akitoshi: *See—*
Yamada, Osamu; Higaki, Yuzo; and Ukai, Akitoshi, 4,389,346, Cl. 260-410.700.

Ulmer, Christian: *See—*
Ruch, Urs; and Ulmer, Christian, 4,388,887, Cl. 112-279.000.

Ulrich, Klaus; Janssen, Wilhelm; and Herbrig, Reinhard, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Apparatus for separating a sponge iron product produced in a rotary furnace. 4,389,040, Cl. 266-137.000.

Umezawa, Mitsuo, to Fuji Jukogyo Kabushiki Kaisha. Speed change control system for an automatic transmission. 4,388,986, Cl. 188-77.00R.

Underwood, J. Larry; Thompson, Stephen M.; and Budde, John S., to Underwood, J. Larry. Lid and container with improved fastening and sealing means. 4,388,998, Cl. 220-307.000.

Underwood, James R.: *See—*
Dabrowski, Joseph M.; Daubar, Valentine P.; Fryer, Richard H.; Geraltowski, John; Underwood, James R.; Waid, Roger K.; and Gilvydis, Jaunutis B., 4,388,854, Cl. 89-46.000.

Union Carbide Corporation: *See—*
Fuhrhop, Ronald E., 4,389,038, Cl. 266-51.000.
Nadin, Robert P.; and Lee, Jannan G., 4,389,143, Cl. 406-197.000.
Sokolik, Joseph E., Jr.; Kosseim, Alexander J. M.; and Atwood, Gilbert R., 4,389,383, Cl. 423-243.000.

Union Tank Car: *See—*
Carleton, John V.; and Nenadic, Nick, 4,388,873, Cl. 105-377.000.

United Catalysts Inc.: *See—*
Merriam, Jay S.; and Hogg, Cecil B., 4,389,335, Cl. 252-439.000.

United Kingdom Atomic Energy Authority: *See—*
Ramsay, John D. F., 4,389,385, Cl. 423-338.000.

United Merchants & Manufacturers, Inc.: *See—*
Smith, Larry G., 4,388,740, Cl. 8-151.000.

United States Gypsum Company: *See—*
Brooke, Michael E., 4,388,778, Cl. 49-125.000.

United States of America
Agriculture: *See—*
DeLoach, John R.; Harris, Robert L.; Mayery Richard T.; and Ihler, Garret M., 4,389,209, Cl. 604-53.000.
Army: *See—*
Allen, Henry C., 4,389,263, Cl. 149-11.000.
Ballato, Arthur, 4,389,275, Cl. 156-626.000.
Dabrowski, Joseph M.; Daubar, Valentine P.; Fryer, Richard H.; Geraltowski, John; Underwood, James R.; Waid, Roger K.; and Gilvydis, Jaunutis B., 4,388,854, Cl. 89-46.000.
DeSantis, Charles M.; and Jasper, Louis J., Jr., 4,389,593, Cl. 315-4.000.
Durenec, Peter, 4,388,808, Cl. 62-6.000.
Fanuele, Michael A.; McCray, Joseph A.; and Rittenbach, Otto F., 4,389,647, Cl. 343-7.700.
Parkhurst, Ross A.; Rodkey, David L.; and Wedel, John O., 4,389,649, Cl. 343-17.500.
Stern, Richard A., 4,389,650, Cl. 343-768.000.
Energy: *See—*
Crewe, Albert V., 4,389,571, Cl. 250-396.00R.
Davidson, Jackson B.; and Case, Arthur L., 4,389,670, Cl. 358-111.000.
Dowdy, Edward J.; Nicholson, Nicholas; and Caldwell, John T., 4,389,568, Cl. 250-362.000.
Duncan, Charles S.; Piotrowski, Paul A.; Skutch, Maria E.; and McHugh, James P., 4,389,377, Cl. 422-246.000.
Fenimore, Edward E., 4,389,633, Cl. 382-26.000.
Joy, Richard W., 4,389,466, Cl. 429-27.000.
Kurnit, Norman A., 4,389,617, Cl. 330-4.300.
Ryan, Michael J., 4,389,063, Cl. 292-307.00R.
Singh, Raj N.; and Dusek, Joseph T., 4,389,467, Cl. 429-41.000.
General Counsel-Code GP: *See—*
St. Clair, Anne K.; and St. Clair, Terry L., 4,389,504, Cl. 524-233.000.
National Aeronautics and Space Administration: *See—*
Cunningham, Joseph W.; and Wing, Lawrence D., 4,388,965, Cl. 165-32.000.
Navy: *See—*
Baitis, A. Erich; Woolaver, Dennis A.; and Nigon, Richard T., 4,388,889, Cl. 114-144.00E.
Bauman, Ronald M., 4,389,618, Cl. 330-149.000.
Edelson, Stuart K., 4,388,870, Cl. 102-494.000.
Edleson, Stuart K., 4,388,869, Cl. 102-494.000.
Kalivretenos, Chris A.; and Brown, Michael A., 4,389,028, Cl. 244-3.210.
Rodgers, David T.; Tursi, Thomas P.; and Bryan, Thomas J., 4,388,782, Cl. 51-241.00A.
Rosenberg, Kenneth W., 4,389,062, Cl. 292-190.000.
San Miguel, Anthony, 4,389,030, Cl. 244-129.300.
Stevenson, David A., 4,389,274, Cl. 156-624.000.
Tompa, Albert S.; French, David M.; and White, Billy R., 4,389,265, Cl. 149-109.600.
Whitlock, Robert R., 4,389,590, Cl. 310-313.00R.
U.S. Philips Corporation: *See—*
Bloem, Jan; and van den Brekel, Cornelis H. J., 4,389,273, Cl. 156-605.000.
Camerik, Eduard, 4,389,717, Cl. 369-75.000.
deVries, Gerhard H. F., 4,389,276, Cl. 156-630.000.
deVries, Gerhard H. F., 4,389,277, Cl. 156-630.000.
Jansen, Friedrich L.; and Phillips, Ian, 4,389,547, Cl. 179-81.00R.
Khoe, Giok D.; Meuleman, Lambertus J.; and Rozzi, Tullio E., 4,389,567, Cl. 250-213.00R.
Rouffet, Denis, 4,389,727, Cl. 375-110.000.
Schiebel, Ulrich; and Wadow, Dieter, 4,389,610, Cl. 324-72.500.
Van de Donk, Michael J. C.; Heinemans, Hendricus C. A. M.; and Legierse, Petrus E. J., 4,389,719, Cl. 369-275.000.
van Rosmalen, Gerard E., 4,389,101, Cl. 350-486.000.
United Technologies Corporation: *See—*
Brumen, Claudio, 4,389,161, Cl. 416-220.00R.
Levine, Herbert R.; and Landry, L. Gerard, 4,389,587, Cl. 310-208.000.
McGregor, Charles W.; and Payette, Lionel J., 4,389,510, Cl. 524-600.000.
Smeggil, John G.; and Bornstein, Norman S., 4,389,463, Cl. 428-659.000.

Universal Flow Monitors: *See—*
Rosaen, Nils O., 4,388,835, Cl. 73-861.580.

University of California, The Regents of the: *See—*
Sovak, Milos; and Ranganathan, Ramachandran, 4,389,526, Cl. 549-347.000.

Uno, Yoshihiro, to Matsushita Electric Industrial Company, Limited. Image storage target and image pick-up and storage tube. 4,389,591, Cl. 313-391.000.

Urbantsok, Janos: *See—*
Szarka, Istvan; and Urbantsok, Janos, 4,388,806, Cl. 60-547.100.

USM Corporation: *See—*
Brookes, David J., 4,388,753, Cl. 29-433.000.
Valsamis, Lefteris N.; and Tadmor, Zehev, 4,389,119, Cl. 366-99.000.

Utsumi, Isamu: *See—*
Sakamoto, Fumio; Ikeda, Shoji; Tsukamoto, Goro; and Utsumi, Isamu, 4,389,408, Cl. 424-271.000.

Valadez, Alfonso L. Eyeglass pen cleaner. 4,389,132, Cl. 401-195.000.

Valentine, Roy H.; and Brandman, Harold A., to Givaudan Corporation. Process for the preparation of dihydrocinnamaldehyde derivatives. 4,389,527, Cl. 549-438.000.

Valmet Oy: *See—*
Kukkula, Juhani, 4,388,943, Cl. 137-85.000.

Valsamis, Lefteris N.; and Tadmor, Zehev, to USM Corporation. Rotary processors. 4,389,119, Cl. 366-99.000.

Van Alsburg, Earl R., to American Can Company. Can support system. 4,389,147, Cl. 413-69.000.

Van de Donk, Michael J. C.; Heinemans, Hendricus C. A. M.; and Legierse, Petrus E. J., to U.S. Philips Corporation. Optically readable information disk. 4,389,719, Cl. 369-275.000.

van den Brekel, Cornelis H. J.: *See—*
Bloem, Jan; and van den Brekel, Cornelis H. J., 4,389,273, Cl. 156-605.000.

van Dijk, Johannis C.: *See—*
Trentelman, Christiaan C. M.; van Dijk, Johannis C.; and Oomen, Johannes H. C. M., 4,389,317, Cl. 210-715.000.

van Keulen, Jacobus M.: *See—*
Blom, Cornelis W.; and van Keulen, Jacobus M., 4,389,446, Cl. 428-166.000.

van Rosmalen, Gerard E., to U.S. Philips Corporation. Device for pivoting an optical element under electro-dynamic control. 4,389,101, Cl. 350-486.000.

Varadhachary, Seevaram N.: *See—*
Schmidle, Claude J.; and Varadhachary, Seevaram N., 4,389,514, Cl. 525-364.000.

Varall, Alfred J., Jr.: *See—*
Erich, Donald L.; Varall, Alfred J., Jr.; and Donachie, Stephen J., 4,389,240, Cl. 75-0.50B.

Varnum, Nancy C.: *See—*
Seeney, Charles E.; Kraemer, John F.; and Varnum, Nancy C., 4,389,498, Cl. 523-139.000.

Vaughan, Ronald J., to Chevron Research Company. Catalyzed electrochemical gasification of carbonaceous materials at anode and production of hydrogen at cathode. 4,389,288, Cl. 204-101.000.

Veaux, Jacques: *See—*
Masclet, Jean; and Veaux, Jacques, 4,388,763, Cl. 33-203.180.

Veb Pentacon Dresden Kamera und Kinowerke: *See—*
Lenk, Michael; and Konig, Gottfried, 4,389,107, Cl. 354-25.000.

Verdino, Heiner: *See—*
Pampouchidis, Georgios; Daimer, Wolfgang; and Verdino, Heiner, 4,389,509, Cl. 524-591.000.

Vianova Kunstharz, A.G.: *See—*
Pampouchidis, Georgios; Daimer, Wolfgang; and Verdino, Heiner, 4,389,509, Cl. 524-591.000.

Victor, Rene R., to Etablissements Letang & Remy. Vehicle wheel and method of manufacturing same. 4,388,817, Cl. 72-68.000.

Vienot, Claude: *See—*
Pigeon, Michel; Vienot, Claude; and Saglio, Robert, 4,389,611, Cl. 324-220.000.

Vig, Michael A.; and Schmidt, Donald K., to Clark Equipment Company. Operator restraint for a loader. 4,388,980, Cl. 180-271.000.

Villiger, Alois: *See—*
Boller, Arthur; Schadt, Martin; and Villiger, Alois, 4,389,329, Cl. 252-299.100.

Vinciguerra, Costantino; and Bonfiglioli, Giampaolo, to Nuovo Pignone S.p.A.; and Snam S.p.A. Method for the sealtight jointing of a flanged sleeve to a pipeline, especially for repairing subsea pipelines laid on very deep sea bottoms. 4,388,752, Cl. 29-421.00R.

Vistan Corporation: *See—*
Margaroli, John L.; and Cimperman, Frederick J., 4,388,858, Cl. 99-494.000.

Vitafin N.V.: *See—*
Renirie, Alexis C. M.; Mensink, Kornelis A.; and Wittkampf, Frederik H. M., 4,388,929, Cl. 128-419.0PG.

Vitt, Theodor: *See—*
Schneider, Eberhard; Vitt, Theodor; and Sturm, Gerd, 4,388,745, Cl. 16-288.000.

Vives, Jean-Patrick, to Les Cables de Lyon. Apparatus for tracking the pitch of helical grooves. 4,388,799, Cl. 57-6.000.

Vives, Jean-Patrick: *See—*
Trezeguet, Jean-Pierre; and Vives, Jean-Patrick, 4,388,800, Cl. 57-7.000.

VLSI Technology Research Association: *See—*
Kobayashi, Ikuro; and Shimizu, Kyozo, 4,389,125, Cl. 374-164.000.
Voest-Alpine Aktiengesellschaft: *See—*
Kogler, Peter, 4,389,075, Cl. 299-81.000.
Vogel, Bruno, to N.V. APR Europe S.A. Method and apparatus for manufacturing seamless printing roll. 4,389,116, Cl. 355-85.000.
Vogelsgesang, Roland: *See—*
Moller, Eckhard; Bures, Horst-Dieter; Magosch, Karl-Heinz; Kesper, Bernt; Muschelknautz, Edgar; and Vogelsgesang, Roland, 4,389,226, Cl. 55-208.000.
Voigt, Reiner: *See—*
Leusner, Bernhard; Schulz, Hans-Hermann; Voigt, Reiner; and Walkowiak, Michael, 4,389,496, Cl. 523-109.000.
Volling, Gudrun: *See—*
Hauffe, Dieter; Muller, Gerhard; Rausch, Werner; Rothkegel, Josef; and Volling, Gudrun, 4,389,260, Cl. 148-6.15Z.
Votteler, Hans: *See—*
Schaefer, Horst; and Votteler, Hans, 4,388,961, Cl. 160-332.000.
Voytilla, Jospeh M.: *See—*
Shandy, Walter V.; and Voytilla, Jospeh M., 4,389,271, Cl. 156-242.000.
W. H. Brady Co.: *See—*
Walber, James P., 4,389,583, Cl. 307-522.000.
W. R. Grace & Co.: *See—*
Block, Jacob; and Green, Peter C., 4,389,319, Cl. 252-8.50A.
Wacker-Werke GmbH & Co. KG: *See—*
Riedl, Franz, 4,389,137, Cl. 404-113.000.
Wada, Makoto; Iwasaki, Koichi; and Nakata, Hajime, to Yokohama Rubber Co., Ltd., The. Motorcycle tire. 4,388,960, Cl. 152-209.00R.
Wadensten, Theodore S. Rotary vibrator with resilient shock mount to provide linear movement. 4,389,120, Cl. 366-126.000.
Wadow, Dieter: *See—*
Schiebel, Ulrich; and Wadow, Dieter, 4,389,610, Cl. 324-72.500.
Wagenbach, Wolfgang: *See—*
Konig, Werner; Wagenbach, Wolfgang; May, Hans; and Bleidt, Rolf, 4,389,553, Cl. 200-148.00H.
Wagener Schwelm GmbH & Co.: *See—*
Thies, Peter, 4,388,860, Cl. 100-270.000.
Wagner, Delmer W. Controlled gate circuit. 4,389,578, Cl. 307-256.000.
Wagner, Robert F., to Sealy, Incorporated. Mattress construction and mattress cover therein. 4,388,738, Cl. 5-421.000.
Wagner, Theodore W.; Liang, Sam; and Muzumdar, Deepak R., to Siemens Corporation; and Siemens Corporation. Digital telephone apparatus. 4,389,544, Cl. 179-2.0DP.
Waid, Roger K.: *See—*
Dabrowski, Joseph M.; Daubar, Valentine P.; Fryer, Richard H.; Geraltowski, John; Underwood, James R.; Waid, Roger K.; and Gilvydis, Jaunutis B., 4,388,854, Cl. 89-46.000.
Waite, Malcolm W.: *See—*
Foster, David L.; Haupt, John F.; and Waite, Malcolm W., 4,389,586, Cl. 310-67.00R.
Waitz, Jay A.: *See—*
Cooper, David J.; Waitz, Jay A.; Counelis, Mae; and Weinstein, Jay, 4,389,398, Cl. 424-181.000.
Walber, James P., to W. H. Brady Co. Capacitance switch detection circuitry. 4,389,583, Cl. 307-522.000.
Walkowiak, Michael: *See—*
Leusner, Bernhard; Schulz, Hans-Hermann; Voigt, Reiner; and Walkowiak, Michael, 4,389,496, Cl. 523-109.000.
Podszun, Wolfgang; Suling, Carlhans; Walkowiak, Michael; and Schulz, Hans-Hermann, 4,389,507, Cl. 524-460.000.
Wallin, Glenn R.: *See—*
Yong, Samuel H.; Perlbachs, Donna J.; Wallin, Glenn R.; and Houle, Roberta C., 4,389,420, Cl. 426-94.000.
Walsh, James L.: *See—*
Anantha, Narasipur G.; Bhatia, Harsaran S.; Lechaton, John S.; and Walsh, James L., 4,389,281, Cl. 156-646.000.
Walsh, Paul J.; and Burkart, Jeffrey A., to Cabot Corporation. Process for enclosing a pin shank within an enclosing member and article produced thereby which is substantially devoid of a gap between the enclosing member and the head of the pin. 4,389,462, Cl. 428-564.000.
Walter, Jurgen, to Hackforth GmbH & Co. KG. Resilient shaft coupling, more particularly an interposed cardan shaft coupling. 4,389,204, Cl. 464-91.000.
Walters, Thomas E.: *See—*
Yonushonis, Celeste; and Walters, Thomas E., 4,389,282, Cl. 162-145.000.
Ward, William J., III: *See—*
Gaines, George L., Jr.; and Ward, William J., III, 4,389,341, Cl. 252-638.000.
Warner "Autolitho" Corporation: *See—*
Warner, Gordon R., 4,388,864, Cl. 101-148.000.
Warner Electric Brake & Clutch Company: *See—*
MacDonald, J. G. Fraser, 4,388,988, Cl. 192-12.0BA.
Warner, Gordon R., to Warner "Autolitho" Corporation. Lithographic dampening system. 4,388,864, Cl. 101-148.000.
Warner Lambert Technologies, Inc.: *See—*
Strack, Richard R., 4,389,089, Cl. 350-96.260.
Wasco Products, Inc.: *See—*
Jentoft, Arthur P.; and Couture, Paul A., 4,388,784, Cl. 52-200.000.
Watanabe, Minoru: *See—*
Kurosaki, Shiro; and Watanabe, Minoru, 4,389,233, Cl. 65-31.000.
Watanabe, Nobuhiko: *See—*
Tanaka, Masato; Sonoda, Takenori; and Watanabe, Nobuhiko, 4,389,681, Cl. 360-27.000.
Watanabe, Sakuji: *See—*
Ohtsubo, Yoshiaki; Watanabe, Sakuji; and Motoori, Ryuzo, 4,389,108, Cl. 354-50.000.
Watanabe, Taisuke; Niyada, Katsuyuki; Hiraoka, Shoji; and Kaga, Kenji, to Matsushita Electric Industrial Company, Ltd. Digital filter for performing serial operations and vocal sound synthesizing apparatus having the digital filter. 4,389,539, Cl. 179-1.0SM.
Weber, Donald M.; and Alleman, Raymond A., to RCA Corporation. Method of etching apertures into a continuous moving metallic strip. 4,389,279, Cl. 156-640.000.
Weber, Ralph; and Wells, William, to Korf Industrie und Handel GmbH und Co KG. Metallurgical melting and refining unit. 4,389,043, Cl. 266-218.000.
Webster, Richard A.: *See—*
Dorgan, Roderick J.; and Webster, Richard A., 4,389,406, Cl. 424-270.000.
Wedel, John O.: *See—*
Parkhurst, Ross A.; Rodkey, David L.; and Wedel, John O., 4,389,649, Cl. 343-17.500.
Weiner, Milton L., to Mobil Oil Corporation. Flexible film laminate and retortable food pouch therefrom. 4,389,436, Cl. 428-35.000.
Weinert, Raymond J., Jr.; and Benton, Kenneth C., to Standard Oil Company, The. Supported catalysts useful for the polymerization of alpha-olefins. 4,389,334, Cl. 252-429.00B.
Weinstein, Jay: *See—*
Cooper, David J.; Waitz, Jay A.; Counelis, Mae; and Weinstein, Jay, 4,389,398, Cl. 424-181.000.
Weir, Roy; Morin, Larry G.; and Guenette, Louis D., to Weir, Roy. Rescue unit. 4,389,066, Cl. 296-19.000.
Weissman, Howard R.; and Mantel, Joseph. Method for laser depilation. 4,388,924, Cl. 128-303.100.
Weldotron Corporation: *See—*
Zelnick, Seymour, 4,388,796, Cl. 53-441.000.
Wells, William: *See—*
Weber, Ralph; and Wells, William, 4,389,043, Cl. 266-218.000.
Welsh, Lawrence W., Jr.: *See—*
Bargon, Joachim; Hiraoka, Hiroyuki; and Welsh, Lawrence W., Jr., 4,389,482, Cl. 430-325.000.
Weman, Klas B.; and Grohn, Hans E. A., to Esab Aktiebolag. Self-positioning welding or cutting torch. 4,389,561, Cl. 219-124.340.
Wen Products, Inc.: *See—*
Rees, Spencer C., 4,388,780, Cl. 51-128.000.
Wenzel, John G. Toilet tank insert water saver. 4,388,737, Cl. 4-415.000.
Wenzl, Helmut: *See—*
Klatt, Karl-Heinz; Pietz, Siegfried; and Wenzl, Helmut, 4,389,239, Cl. 75-0.50R.
Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Mannhart, Peter; and Ruppen, Bruno, 4,388,826, Cl. 73-167.000.
Werle, Peter; Merk, Wolfgang; Pohl, Gerhard; and Hoevels, Friedhelm, to Degussa Aktiengesellschaft. Bisguanamine. 4,389,333, Cl. 252-401.000.
West, Anders: *See—*
Wester, Bengt; and West, Anders, 4,388,890, Cl. 116-204.000.
West Company, The: *See—*
Shandy, Walter V.; and Voytilla, Jospeh M., 4,389,271, Cl. 156-242.000.
Westcott, Robert F.; and Delamater, John R., to American Hoechst Corporation. Apparatus for forming plastic sheet. 4,389,179, Cl. 425-302.100.
Wester, Bengt; and West, Anders. Device for locating in buildings the exact position of hidden objects. 4,388,890, Cl. 116-204.000.
Westerman, Theodore N., to Pitney Bowes Inc. Roll fixing apparatus for a copying machine. 4,389,114, Cl. 355-3.0FU.
Western Electric Co., Inc.: *See—*
Jang, Sei-Joo; Pohl, Knut D.; and Saifi, Mansoor A., 4,389,229, Cl. 65-3.120.
Partus, Fred P., 4,389,231, Cl. 65-3.120.
Westinghouse Electric Corp.: *See—*
Bryan, William J., 4,389,369, Cl. 376-442.000.
Detering, Richard L., 4,389,606, Cl. 318-712.000.
Freeman, Willie B., 4,389,554, Cl. 200-148.00A.
Goldstein, Norman P., 4,389,570, Cl. 250-370.000.
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; and Jones, F. David, 4,389,706, Cl. 364-130.000.
Lee, Yuen F.; and Aisawa, Shiro, 4,389,054, Cl. 277-214.000.
Phillips, D. Colin; and Peterson, Steven H., 4,389,292, Cl. 204-158.00R.
Whalen-Shaw, Michael J.; and Thiessen, Robert J., to Allied Paper Incorporated. Barrier coat for electrostatic master. 4,389,476, Cl. 430-64.000.
Wharton, Russell P., to Schlumberger Technology Corporation. Well logging fiber optic communication system. 4,389,645, Cl. 340-854.000.
White, Billy R.: *See—*
Tompa, Albert S.; French, David M.; and White, Billy R., 4,389,265, Cl. 149-109.600.
White, Stanley A., to Rockwell International Corporation. Multiplexer for single-octave data processor. 4,389,538, Cl. 179-1.0SA.
Whitlock, Robert R., to United States of America, Navy. System for recording waveforms using spatial dispersion. 4,389,590, Cl. 310-313.00R.
Whittington, George R. Parachute. 4,389,031, Cl. 244-145.000.
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Wilbert, Daniel H.: *See—*
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Wiley, Roland H. Compensator for beam of balance scale of counterfeit coin-identification game. 4,389,049, Cl. 273-153.00R.
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Willa, Siegfried; and Zenhausern, Max. Dispensing container for rolled products. 4,389,026, Cl. 242-55.300.
Willett, Howard P.; and Bakke, Even, to Peabody Process Systems, Inc. Electrostatic precipitator having high strength discharge electrode. 4,389,225, Cl. 55-118.000.
William M. Brobeck & Associates: *See—*
Post, Stephen F., 4,389,602, Cl. 318-341.000.
Williams, Hugh K.; and Thies, Jerome A., to Caterpillar Tractor Co. Resilient mounting for engine enclosures. 4,388,976, Cl. 180-69.00R.
Williams, James B.: *See—*
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Willson, Robert C.: *See—*
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Wilson, David R.: *See—*
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Wilson, Joe C.; Eisenstein, Stephen E.; Maxwell, Jerrold F.; and Hirozawa, Stanley T., to BASF Wyandotte Corporation. Process for inhibiting the corrosion of aluminum. 4,389,371, Cl. 422-15.000.
Winarski, Daniel J.: *See—*
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Winkelmann, Siegfried; and Schulz, Horst, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Direct drill bit drive. 4,388,973, Cl. 175-321.000.
Winterling, Gerhard, to Messerschmitt-Bolkow-Blohm GmbH. Amorphous silicon solar cell having improved antireflection coating. 4,389,534, Cl. 136-256.000.
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Wogan, W. Dale: *See—*
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Wojtowicz, John A., to Olin Corporation. Rapidly dissolving mixtures containing trichloroisocyanuric acid. 4,389,318, Cl. 210-755.000.
Wolowodiuk, Catherine: *See—*
Kohl, Paul A.; Ostermayer, Frederick W., Jr.; and Wolowodiuk, Catherine, 4,389,291, Cl. 204-129.300.
Won, Sungkuk; and Dobson, Jerry E., to Standard Oil Company (Indiana). Metal recovery process. 4,389,247, Cl. 75-72.000.
Wood, William G.: *See—*
Gomola, John W.; Giras, Theodore C.; Wood, William G.; Putman, Richard E.; Gilbreath, Rodney E.; Deliyannides, John S.; Cullen, Terry B.; and Jones, F. David, 4,389,706, Cl. 364-130.000.
Woodcap, B.V.: *See—*
Blom, Cornelis W.; and van Keulen, Jacobus M., 4,389,446, Cl. 428-166.000.
Woodhouse, John L., to Lucas Industries Limited. Electric storage batteries. 4,389,471, Cl. 429-178.000.
Wooding Corporation: *See—*
Wooding, Patrick J., 4,389,724, Cl. 373-33.000.
Wooding, Patrick J., to Wooding Corporation. Atmosphere controlled electric melting. 4,389,724, Cl. 373-33.000.
Woodruff, Rebecca J.: *See—*
Sutton, John H.; and Woodruff, Rebecca J., 4,389,374, Cl. 422-104.000.
Woolaver, Dennis A.: *See—*
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Wooten, David R.: *See—*
Eaton, Sargent S., Jr.; and Wooten, David R., 4,389,715, Cl. 365-200.000.
Worstmann, Wolfgang: *See—*
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Wright, Joseph B.: *See—*
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Wright, Newton E. Trap for small animals. 4,388,775, Cl. 43-69.000.
Wu, Ta-She. Remote control device for touch type tuner of television. 4,389,731, Cl. 455-153.000.
Wurlitzer Company, The: *See—*
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Wynne, Peter J., to Lectromelt Corporation. Vacuum degassing apparatus. 4,389,042, Cl. 266-210.000.
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Bar-on, Ari; and Debesis, John R., 4,389,654, Cl. 346-75.000.
Fischbeck, Kenneth H., 4,389,652, Cl. 346-1.100.
Lovibond, Michael J., 4,389,011, Cl. 227-5.000.
Perna, Theodore P.; Raschke, Curt R.; and Baker, William L., Jr., 4,389,658, Cl. 346-140.00R.
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Yamada, Osamu; Higaki, Yuzo; and Ukai, Akitoshi, to Nisshin Oil Mills, Limited, The. Esterification reaction products and cosmetics containing same. 4,389,346, Cl. 260-410.700.
Yamada, Sadahiko: *See—*
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Yamada, Tetsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Solid state image-sensing device capable of shifting signal charges to a charged transfer region at a high speed. 4,389,661, Cl. 357-24.000.
Yamaguchi, Kazuo, to Sony Corporation. Current transfer amplifier. 4,389,620, Cl. 330-304.000.
Yamaguchi, Kiyoshi; Maki, Naoki; and Tamura, Toshio, to Hitachi, Ltd. Superconductive rotor. 4,389,585, Cl. 310-52.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Tanaka, Shuji; and Nagata, Toshio, 4,388,894, Cl. 123-65.0PE.
Yamamoto, Tadahiro: *See—*
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Yamamoto, Yoshikazu; and Yanagi, Toshiaki, to Brother Kogyo Kabushiki Kaisha. Automatic sewing machine. 4,388,882, Cl. 112-121.120.
Yamamuro, Shigeaki: *See—*
Kishi, Norimasa; and Yamamuro, Shigeaki, 4,388,845, Cl. 74-862.000.
Yamashita, Kyoichi. High speed tape feeder. 4,389,009, Cl. 226-188.000.
Yamashita, Mizuho: *See—*
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Yamato Scale Company, Ltd.: *See—*
Hirano, Takashi, 4,388,975, Cl. 177-25.000.
Yamazaki, Kyuya; Igarashi, Sachio; and Shibata, Koichi, to Takeda Chemical Industries, Ltd. Composition for polyurethane adhesives. 4,389,519, Cl. 528-73.000.
Yamazaki, Yoshihiko: *See—*
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Yanabu, Satoru; Nishiwaki, Susumu; Yamashita, Mizuho; Satoh, Toshikazu; Murakami, Yoichi; and Imai, Susumu, to Tokyo Shibaura Denki Kabushiki Kaisha. Lightning arrester. 4,389,693, Cl. 361-127.000.
Yanagi, Toshiaki: *See—*
Yamamoto, Yoshikazu; and Yanagi, Toshiaki, 4,388,882, Cl. 112-121.120.
Yannascoli, Donald; and Fraser, Bruce A., to Carrier Corporation. Apparatus for modulating the capacity of a reciprocating compressor. 4,389,168, Cl. 417-298.000.
Yarmal, Anatoly A.: *See—*
Yaroshevsky, Stanislav L.; Lukyanchenko, Leonid F.; Sidorenko, Grigory N.; Skladanovsky, Evgeny N.; Zalevsky, Mikhail A.; Machikin, Viktor I.; Bannikov, Jury G.; Ryabenko, Anatoly I.; Okazov, Shamil T.; Stepanov, Vasily V.; Danilin, Evgeny A.; Yarmal, Anatoly A.; Nekhaev, Grigory E.; Bat, Jury I.; Popov, Nikolai N.; Kamardin, Alexei M.; Tereschenko, Valdimir P.; and Stankevich, Romualda S., 4,389,244, Cl. 75-42.000.
Yaroshevsky, Stanislav L.; Lukyanchenko, Leonid F.; Sidorenko, Grigory N.; Skladanovsky, Evgeny N.; Zalevsky, Mikhail A.; Machikin, Viktor I.; Bannikov, Jury G.; Ryabenko, Anatoly I.; Okazov, Shamil T.; Stepanov, Vasily V.; Danilin, Evgeny A.; Yarmal, Anatoly A.; Nekhaev, Grigory E.; Bat, Jury I.; Popov, Nikolai N.; Kamardin, Alexei M.; Tereschenko, Valdimir P.; and Stankevich, Romualda S. Method of supplying pulverized fuel mixture to blast furnace tuyeres. 4,389,244, Cl. 75-42.000.

Yarwood, John C.; Yun, Ik Y.; and Tyler, Derek E., to Olin Corporation. Electromagnetic casting method and apparatus. 4,388,962, Cl. 164-455.000.

Yasuda, Yasushi: *See—*
Enomoto, Hiromu; Yasuda, Yasushi; Mitono, Yoshiharu; Imaizumi, Taketo; and Ohmichi, Hitoshi, 4,388,755, Cl. 29-577.00C.

Yasunobe, Junji: *See—*
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Yazu, Shuji: *See—*
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Yokohama Rubber Co., Ltd., The: *See—*
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Yonahara, Yoshihiro. Foothold device. 4,388,982, Cl. 182-82.000.

Yong, Samuel H.; Perlbachs, Donna J.; Wallin, Glenn R.; and Houle, Roberta C., to Pillsbury Company, The. Dough glaze. 4,389,420, Cl. 426-94.000.

Yonushonis, Celeste; and Walters, Thomas E., to Combustion Engineering, Inc. Ceramic fiber board. 4,389,282, Cl. 162-145.000.

Yoshiba, Yasutaka: *See—*
Kimura, Yoshiyuki; Shiobara, Masaji; and Yoshiba, Yasutaka, 4,388,912, Cl. 123-569.000.

Yoshida Kogyo K. K.: *See—*
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Yoshida, Masafumi; and Nakamura, Kenichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Data recording sheet. 4,389,445, Cl. 428-77.000.

Yoshida, Nobuyuki: *See—*
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Yoshida, Seietsu; Ito, Masao; Kawai, Yujio; and Ogawa, Toshihisa, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo K.K. Device for controlling air-fuel ratio for internal combustion engines. 4,388,903, Cl. 123-440.000.

Yoshii, Hiroe: *See—*
Hiraga, Hirofumi; Yoshimura, Minoru; Ikeda, Shigeho; and Yoshii, Hiroe, 4,389,483, Cl. 435-110.000.

Yoshikawa Kogyo Co., Ltd.: *See—*
Noro, Katsuhiko; Nagaki, Yusei; Sasaki, Shinpei; and Kumagai, Sakae, 4,389,360, Cl. 264-71.000.

Yoshikawa, Ryoichi: *See—*
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Yoshimura, Minoru: *See—*
Hiraga, Hirofumi; Yoshimura, Minoru; Ikeda, Shigeho; and Yoshii, Hiroe, 4,389,483, Cl. 435-110.000.

Yoshino, Takashi: *See—*
Ohtsuki, Akira; Ishino, Hirokichi; Sakai, Hiromu; Yamasoba, Takahiko; Tsuchiko, Susumu; and Yoshino, Takashi, 4,389,438, Cl. 428-35.000.

Young, William R.; and Zepp, Stanley R., to Harris Corporation. Time-division multiplex serial loop. 4,389,721, Cl. 370-88.000.

Yuasa, Yoshio; Ishikawa, Norio; and Horie, Izumi, to Minolta Camera Kabushiki Kaisha. Color meter. 4,389,118, Cl. 356-404.000.

Yuen, Henry K.: *See—*
Eng, Clifford D.; Gambell, James W.; and Yuen, Henry K., 4,389,325, Cl. 252-186.350.

Yun, Ik Y.: *See—*
Yarwood, John C.; Yun, Ik Y.; and Tyler, Derek E., 4,388,962, Cl. 164-455.000.

Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See—*
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Zalevsky, Mikhail A.: *See—*
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Zamek, Otto S.: *See—*
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Zebarth, Ralph S., to Meyn U.S.A., Inc. Method for preparing poultry for fresh-pack handling. 4,388,811, Cl. 62-63.000.

Zelnick, Seymour, to Weldotron Corporation. Stretch wrap system and method of packaging. 4,388,796, Cl. 53-441.000.

Zenhausern, Max: *See—*
Willa, Siegfried; and Zenhausern, Max, 4,389,026, Cl. 242-55.300.

Zepp, Stanley R.: *See—*
Young, William R.; and Zepp, Stanley R., 4,389,721, Cl. 370-88.000.

Zhorov, Vladimor I.; Kirsh, Jury E.; Shumsky, Viktor I.; Karaputadze, Temuri M.; and Bairamov, Jury J. Pain-killing preparation. 4,389,404, Cl. 424-260.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF JUNE, 1983

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Acme Highway Products Corporation: *See—*
Puccio, Guy S., Re. 31,283, Cl. 404-68.000.

Consolidated Natural Gas Service Company, Inc.: *See—*
Swenson, Paul F.; and Moore, Paul B., Re. 31,281, Cl. 62-160.000.

Everett, Peter K. Production of electrolytic battery active manganese dioxide. Re. 31,286, Cl. 204-96.000.

Hamada, Hiroshi: *See—*
Yano, Kozo; Inami, Yasuhiko; Hamada, Hiroshi; and Uede, Hisashi, Re. 31,280, Cl. 29-592.00R.

Holmes, Horace D. Locking fastener. Re. 31,284, Cl. 411-311.000.

Inami, Yasuhiko: *See—*
Yano, Kozo; Inami, Yasuhiko; Hamada, Hiroshi; and Uede, Hisashi, Re. 31,280, Cl. 29-592.00R.

Massachusetts Institute of Technology: *See—*
Patil, Suhas S., Re. 31,287, Cl. 340-825.790.

Minnesota Mining and Manufacturing Company: *See—*
van Turnhout, Jan; and Rieke, Johannes C., Re. 31,285, Cl. 55-155.000.

Moore, Paul B.: *See—*
Swenson, Paul F.; and Moore, Paul B., Re. 31,281, Cl. 62-160.000.

National Petro Chemicals Corporation: *See—*
Ware, James R., Re. 31,282, Cl. 222-305.000.

Patil, Suhas S., to Massachusetts Institute of Technology. Asynchronous logic array. Re. 31,287, Cl. 340-825.790.

Puccio, Guy S., to Acme Highway Products Corporation. Elastomeric expansion seal. Re. 31,283, Cl. 404-68.000.

Rieke, Johannes C.: *See—*
van Turnhout, Jan; and Rieke, Johannes C., Re. 31,285, Cl. 55-155.000.

Sharp Kabushiki Kaisha: *See—*
Yano, Kozo; Inami, Yasuhiko; Hamada, Hiroshi; and Uede, Hisashi, Re. 31,280, Cl. 29-592.00R.

Swenson, Paul F.; and Moore, Paul B., to Consolidated Natural Gas Service Company, Inc. Heat pump system. Re. 31,281, Cl. 62-160.000.

Uede, Hisashi: *See—*
Yano, Kozo; Inami, Yasuhiko; Hamada, Hiroshi; and Uede, Hisashi, Re. 31,280, Cl. 29-592.00R.

van Turnhout, Jan; and Rieke, Johannes C., to Minnesota Mining and Manufacturing Company. Method for manufacturing a filter of electrically charged electret fiber material and electret filters obtained according to said method. Re. 31,285, Cl. 55-155.000.

Ware, James R., to National Petro Chemicals Corporation. Shot-feeding metering valve. Re. 31,282, Cl. 222-305.000.

Yano, Kozo; Inami, Yasuhiko; Hamada, Hiroshi; and Uede, Hisashi, to Sharp Kabushiki Kaisha. Electrochromic display device manufacture method. Re. 31,280, Cl. 29-592.00R.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

McCullough, John E., to Authur D. Little, Inc. Scroll-type apparatus with fixed throw crank drive mechanism, B1 4,082,484, Cl. 418—55.

Arthur D. Little, Inc.: *See—*
McCullough, John E. B1 4,082,484, Cl. 418—55.

Hodosh, Milton. Method for desensitizing teeth. B1 3,863,006, Cl. 424—49.

Cavalli, Alfredo. Apparatus for preparing fresh farinaceous pastes. B1 4,219,318, Cl. 425—190.

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Jost, Jochen, 269,436, Cl. D16-26.000.

American Cyanamid Company: *See—*
Butter, Reinhart; and Li, Lehmann K., 269,459, Cl. D24-27.000.

Appelblatt, Irving; and Krawiecki, Peter, to Cadillac Gage Company. Six-wheel armored vehicle. 269,418, 6-21-83, Cl. D12-12.000.

Auerbach, Frederick F. Garbage disposal plunger. 269,471, 6-21-83, Cl. D32-35.000.

Avis, Michael J. Golf club bag carrier for a motorized golf cart. 269,472, 6-21-83, Cl. D34-15.000.

Babcock, Lowell C.; and Schultz, Duane L., to Custom Packaging Co. Inc. Bird house. 269,468, 6-21-83, Cl. D30-3.000.

Bechtel, Daniel L. Scope mount for a rifle. 269,449, 6-21-83, Cl. D22-7.000.

Bechtel, Daniel L. Scope mount for a rifle. 269,450, 6-21-83, Cl. D22-7.000.

Bell Telephone Laboratories, Incorporated: *See—*
Kowalik, John, Jr.; Longhitano, Ronald; and McGarvey, John N., 269,432, Cl. D14-59.000.

Belrecolt S.A.: *See—*
Kaetzel, Pierre, 269,435, Cl. D15-10.000.

Breen, John J. Tree stand. 269,392, 6-21-83, Cl. D6-105.000.

Bricker, Stewart J. Support caddy for tools or the like. 269,396, 6-21-83, Cl. D6-180.000.

Brunswick Corporation: *See—*
Fee, Robert W.; and Robbins, Richard J., 269,452, Cl. D22-25.000.

Butter, Reinhart; and Li, Lehmann K., to American Cyanamid Company. Surgical stapling instrument. 269,459, 6-21-83, Cl. D24-27.000.

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Caroli, Italo, to DBM Reflex Enterprises, Inc. Lamp for vehicles. 269,464, 6-21-83, Cl. D26-28.000.

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Central Engineering Co., Inc.: *See—*
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Cervantes, Rafael T., to Westbury Foundation, The; and Sociedad de Dispositivos Reductores de Tabaco, S.A., a part interest to each. Cigar and cigarette filter perforator. 269,465, 6-21-83, Cl. D27-51.000.

Claman, Mike T. Chair. 269,391, 6-21-83, Cl. D6-57.000.

Compur-Electronic GmbH: *See—*
Retzer, Erich; and Schwarz, Gerhard, 269,416, Cl. D10-81.000.

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Doyle, Richard C.; Rivera, Lester; and Rosenbaum, Saul, to Leviton Manufacturing Co., Inc. Electronic receptacle. 269,431, 6-21-83, Cl. D13-30.000.
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Essex, John D., to Hoover Company, The. Cleaner main body or the like. 269,470, 6-21-83, Cl. D32-32.000.
Fee, Robert W.; and Robbins, Richard J., to Brunswick Corporation. Fishing reel. 269,452, 6-21-83, Cl. D22-25.000.
Fender, C. Leo. Guitar bridge. 269,440, 6-21-83, Cl. D17-21.000.
Ferdinand, Irwin J.; Sylvan, Richard; and Peterson, Michael, to Hirsh Company. Knob. 269,409, 6-21-83, Cl. D8-307.000.
Fisher, Bryan; and Miller, Richard J. Model skull. 269,448, 6-21-83, Cl. D19-62.000.
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Green, Harry. Domestic incinerator apparatus. 269,455, 6-21-83, Cl. D23-85.000.
Gruber, Kurt, to Wilkinson Sword Gesellschaft mit beschrankter Haftung. Razor. 269,466, 6-21-83, Cl. D28-46.000.
Hennessey, Thomas W. Gun security cabinet. 269,394, 6-21-83, Cl. D6-167.000.
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Kowalik, John, Jr.; Longhitano, Ronald; and McGarvey, John N., to Bell Telephone Laboratories, Incorporated. Housing for a telephone amplifier. 269,432, 6-21-83, Cl. D14-59.000.
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McDermott, Bernard A., to Questor Corporation. Roof ventilator. 269,456, 6-21-83, Cl. D23-153.000.
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Pittaway, Alan K., to Wilkinson Sword, Limited. Garden shears. 269,401, 6-21-83, Cl. D8-5.000.
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Qually, Robert L. Pacifier. 269,462, 6-21-83, Cl. D24-45.000.

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Van Duyne, Fred, to Melrose Displays, Inc. Arm extension for a rug sample display stand. 269,397, 6-21-83, Cl. D6-191.000.
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Young, David M., to Fisons Limited. Container for a medicinal inhaler. 269,463, 6-21-83, Cl. D24-62.000.

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Pan-American Plant Company: *See—*
Shoesmith, Leonard H., 5,062, Cl. 76.000.
Shoesmith, Leonard H., to Pan-American Plant Company. Chrysanthemum named Burgundy. 5,062, 6-21-83, Cl. 76.000.

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1.24 4,388,850
4,388,851
284 4,388,852

CLASS 89
1.5 F 4,388,853
46 4,388,854
198 4,388,855

CLASS 91
49 4,388,856

CLASS 99
276 4,388,857
494 4,388,858
533 4,388,859

CLASS 100
270 4,388,860

CLASS 101
93.02 4,388,861
126 4,388,862
129 4,388,863
148 4,388,864
401.1 4,388,865
426 4,388,866

CLASS 102
211 4,388,867
473 4,388,868
494 4,388,869
4,388,870

CLASS 104
138 G 4,388,871

CLASS 105
99 4,388,872
377 4,388,873

CLASS 106
100 4,389,252

CLASS 109
79 4,388,874

CLASS 110
224 4,388,875
275 4,388,876
342 4,388,877

CLASS 111
86 4,388,878

CLASS 112
10 4,388,879
80 4,388,880
80 4,388,881
121.12 4,388,882
4,388,883
4,388,884
221 4,388,885
237 4,388,886
279 4,388,887

CLASS 114
90 4,388,888
144 E 4,388,889

CLASS 116
204 4,388,890

CLASS 118
215 4,388,891

CLASS 122
4 D 4,388,892

CLASS 123
25 J 4,388,893
65 PE 4,388,894
73 AD 4,388,896
73 PP 4,388,895
90.17 4,388,897
90.38 4,388,898
198 DB 4,388,900
198 E 4,388,899
213 4,388,901
425 4,388,902
440 4,388,903
4,388,904
4,388,905
492 4,388,906
494 4,388,907
500 4,388,908
501 4,388,909
547 4,388,910
557 4,388,911
569 4,388,912
585 4,388,913

CLASS 124
27 4,388,914

CLASS 126
247 4,388,915
427 4,388,916
450 4,388,917

CLASS 128
1 C 4,388,918
64 4,388,919
80 C 4,388,920
92 B 4,388,921
295 4,388,923
303.1 4,388,924
314 4,388,925
335.5 4,388,926
419 PG 4,388,927
4,388,928
4,388,929
419 PS 4,388,930
425 4,388,931

CLASS 131
291 4,388,932
293 4,388,933
339 4,388,934

CLASS 132
83 R 4,388,935
88.5 4,388,936

CLASS 134
1 4,389,253
3 4,389,254
73 4,388,937
104 4,388,938

CLASS 135
3 R 4,388,939

CLASS 136
248 4,389,533
256 4,389,534

CLASS 137
70 4,388,940
82 4,388,941
85 4,388,942
4,388,943
171 4,388,944
315 4,388,945
596.2 4,388,946
614.06 4,388,947
615 4,388,948
625.17 4,388,949
829 4,388,950

CLASS 139
11 4,388,951

CLASS 140
92.1 4,388,952
149 4,388,953

CLASS 141
39 4,388,954
286 4,388,955

CLASS 144
332 4,388,956
366 4,388,957

CLASS 148
1.5 4,389,255
4,389,256
4,389,257
3 4,389,258
6.15 R 4,389,259
6.15 Z 4,389,260
9 R 4,389,261
403 4,389,262

CLASS 149
11 4,389,263
14 4,389,264
109.6 4,389,265

CLASS 150
7 4,388,958
52 R 4,388,959

CLASS 152
209 R 4,388,960

CLASS 156
69 4,389,266
73.2 4,389,267
150 4,389,268
172 4,389,269
218 4,389,270
242 4,389,271
297 4,389,272
605 4,389,273
624 4,389,274
626 4,389,275
630 4,389,276
4,389,277
4,389,278
640 4,389,279
645 4,389,280
646 4,389,281

CLASS 160
332 4,388,961

CLASS 162
145 4,389,282

CLASS 164
455 4,388,962

CLASS 165
10 4,388,963
32 4,388,964
4,388,965
45 4,388,966
80 B 4,388,967

CLASS 166
236 4,388,968
242 4,388,969
382 4,388,970
387 4,388,971

CLASS 173
162 R 4,388,972

CLASS 174
65 R 4,389,535

CLASS 175
321 4,388,973
325 4,388,974

CLASS 177
25 4,388,975

CLASS 179
1 G 4,389,536
1 R 4,389,542
1 SA 4,389,538
1 SM 4,389,537
4,389,539
4,389,541
1.5 A 4,389,540
2 B 4,389,543
2 DP 4,389,544
6.07 4,389,545
18 B 4,389,546
81 R 4,389,547
110 A 4,389,548

CLASS 180
69 R 4,388,976
165 4,388,977
219 4,388,978
226 4,388,979
271 4,388,980

CLASS 181
119 4,388,981

CLASS 182
82 4,388,982
189 4,388,983

CLASS 184
54 4,388,984

CLASS 188
65.4 4,388,985
77 R 4,388,986

CLASS 192
3.26 4,388,987
12 BA 4,388,988

CLASS 198
339 4,388,989
645 4,388,990

CLASS 200
5 R 4,389,549
44 4,389,550
51 R 4,389,551
68 4,389,552
148 A 4,389,554
148 H 4,389,553
303 4,389,555

CLASS 201
19 4,389,283

CLASS 202
247 4,389,284

CLASS 203
9 4,389,285

CLASS 204
44 4,389,286
68 4,389,287
96 Re.31,286
101 4,389,288
128 4,389,289
4,389,290
129.3 4,389,291
158 R 4,389,292
180 P 4,389,293
192 E 4,389,294
192 P 4,389,295
206 4,389,296
252 4,389,297
288 4,389,298
298 4,389,299

CLASS 206
53 4,388,991
455 4,388,992
611 4,388,993

CLASS 208
11 LE 4,389,300
59 4,389,301
86 4,389,302
107 4,389,303
254 H 4,389,304
4,389,305

CLASS 209
5 4,389,306
211 4,389,307
444 4,389,308
465 4,389,309
564 4,388,994

CLASS 210
183 4,389,310
198.1 4,389,311
4,389,312
198.2 4,389,313
241 4,389,314
357 4,389,315
656 4,389,316
715 4,389,317
755 4,389,318

CLASS 219
54 4,389,556
85 CM 4,389,557
119 4,389,558
121 L 4,389,560
121 PP 4,389,559
124.34 4,389,561
[illegible] 4,389,562

CLASS 220
7 4,388,995
70 4,388,996
209 4,388,997
307 4,388,998
416 4,388,999

CLASS 221
[illegible] 4,389,000

CLASS 222
63 4,389,001
146 HS 4,389,002
305 Re.31,282
321 4,389,003
402.22 4,389,004

CLASS 224
159 4,389,005
164 4,389,006

CLASS 226
74 4,389,007
123 4,389,008
188 4,389,009
196 4,389,010

CLASS 227
5 4,389,011
120 4,389,012

CLASS 229
45 R 4,389,013

CLASS 235
489 4,389,564

CLASS 236
1 G 4,389,014

CLASS 238
150 4,389,015

CLASS 239
24 4,389,016
455 4,389,017
533.3 4,389,018

CLASS 241
19 4,389,019
24 4,389,020
275 4,389,022

CLASS 242
7.05 B 4,389,023
18 G 4,389,024
55 4,389,025
55.3 4,389,026
84.2 G 4,389,027

CLASS 244
3.21 4,389,028
103 R 4,389,029
129.3 4,389,030
145 4,389,031
153 R 4,389,032

CLASS 246
37 4,389,033

CLASS 248
49 4,389,034
542 4,389,035

CLASS 249
120 4,389,036

CLASS 250
201 4,389,565
204 4,389,566
213 R 4,389,567
362 4,389,568
363 S 4,389,569
370 4,389,570
396 R 4,389,571
4,389,572
492.2 4,389,573
561 4,389,574
563 4,389,575
573 4,389,576

CLASS 251
327 4,389,037

CLASS 252
8.5 A 4,389,319
8.55 R 4,389,320
47 4,389,321
49.6 4,389,322
70 4,389,323
180 4,389,324
186.35 4,389,325
188.26 4,389,326
188.28 4,389,327
194 4,389,328
299.1 4,389,329
378 R 4,389,332
401 4,389,333
429 B 4,389,334
439 4,389,335
440 4,389,336
462 4,389,337
463 4,389,338
472 4,389,339
512 4,389,340
638 4,389,341

CLASS 260
112.5 R 4,389,342
4,389,343
369 4,389,344
397.1 4,389,345
410.7 4,389,346
429 CY 4,389,347
465.5 R 4,389,348
502.5 F 4,389,349
989 4,389,350

CLASS 261
36 R 4,389,351
106 4,389,352
130 4,389,353
142 4,389,354

CLASS 264
0.5 4,389,355
9 4,389,356
40.1 4,389,357
45.1 4,389,358
69 4,389,359
71 4,389,360
108 4,389,361
111 4,389,362
135 4,389,363
167 4,389,364
297.8 4,389,365
558 4,389,366
570 4,389,367

CLASS 266
51 4,389,038
77 4,389,039
137 4,389,040
194 4,389,041
210 4,389,042
218 4,389,043
271 4,389,044

CLASS 267
8 R 4,389,045

CLASS 271
227 4,389,046

CLASS 272
69 4,389,047

CLASS 273
121 A 4,389,048
153 R 4,389,049

CLASS 277
26 4,389,050
41 4,389,051
67 4,389,052
95 4,389,053
214 4,389,054

CLASS 280
274 4,389,055
289 WC 4,389,056
4,389,057
415 A 4,389,058
[illegible] 4,389,059

CLASS 281
38 4,389,060

CLASS 292
169.14 4,389,061
190 4,389,062
307 R 4,389,063

CLASS 294
50.8 4,389,065
64 R 4,389,064

CLASS 296
19 4,389,066
50 4,389,067
206 4,389,068
4,389,069

CLASS 297
365 4,389,070

CLASS 299
14 4,389,071
32 4,389,072
45 4,389,073
79 4,389,074
81 4,389,075

CLASS 303
92 4,389,076

CLASS 307
39 4,389,577
256 4,389,578
353 4,389,579
400 4,389,580
419 4,389,581
452 4,389,582
522 4,389,583

CLASS 310
43 4,389,584
52 4,389,585
67 R 4,389,586
208 4,389,587
242 4,389,588
258 4,389,589
313 R 4,389,590

CLASS 312
244 4,389,077
322 4,389,078
330 R 4,389,079

CLASS 313
391 4,389,591
403 4,389,592

CLASS 315
4 4,389,593
39.55 4,389,594
57 4,389,595
151 4,389,596
200 A 4,389,597
291 4,389,598
360 4,389,599

CLASS 318
6 4,389,600
118 4,389,601
341 4,389,602
443 4,389,603
568 4,389,604
696 4,389,605
712 4,389,606
717 4,389,607

CLASS 320
33 4,389,608
48 4,389,609

CLASS 324
72.5 4,389,610
220 4,389,611
248 4,389,612
303 4,389,613

CLASS 328
61 4,389,614

CLASS 329
101 4,389,615
104 4,389,616

CLASS 330
4.3 4,389,617
149 4,389,618
288 4,389,619
304 4,389,620

CLASS 331
1 A 4,389,621

CLASS 332
19 4,389,622

CLASS 333
16 4,389,623
226 4,389,624
260 4,389,625

CLASS 335
78 4,389,626
206 4,389,627
208 4,389,628

CLASS 337
126 4,389,629
363 4,389,630

CLASS 339
14 R 4,389,080
89 M 4,389,081
103 R 4,389,082
105 4,389,083
126 R 4,389,021

CLASS 340
21 4,389,631
74 4,389,632
287 4,389,635
347 DA 4,389,637
347 DD 4,389,636
384 E 4,389,638
539 4,389,639
[illegible] 4,389,640
709 4,389,641
825.03 4,389,642
825.48 4,389,643
825.52 4,389,644
825.79 Re.31,287
854 4,389,645
870.37 4,389,646

CLASS 343
7.7 4,389,647
[illegible] 4,389,648
17.5 4,389,649
768 4,389,650
794 4,389,651

CLASS 346
1.1 4,389,652
49 4,389,653
75 4,389,654
107 R 4,389,655
139 C 4,389,656
140 R 4,389,657
4,389,658
153.1 4,389,659

CLASS 350
96.10 4,389,085
96.20 4,389,086
4,389,091
96.23 4,389,087
4,389,088
96.26 4,389,089
96.29 4,389,090
162.12 4,389,092
162.14 4,389,093
162.17 4,389,094
334 4,389,095
339 R 4,389,096
410 4,389,097
429 4,389,098
464 4,389,099
478 4,389,100
486 4,389,101
524 4,389,084

CLASS 351
123 4,389,102

CLASS 353
25 4,389,103
26 R 4,389,104

CLASS 354
25 4,389,105
4,389,106
4,389,107
50 4,389,108
60 L 4,389,109
126 4,389,110
173 4,389,111

CLASS 355
3 DD 4,389,113
3 FU 4,389,114
3 TR 4,389,112
26 4,389,115
85 4,389,116
87 4,389,117

CLASS 356
404 4,389,118

CLASS 357
22 4,389,660
24 4,389,661
30 4,389,662

CLASS 358
19 4,389,663
22 4,389,664
23 4,389,665
47 4,389,666
75 4,389,667
83 4,389,668
101 4,389,669
111 4,389,670
124 4,389,671
160 4,389,672
4,389,673
213 4,389,674
229 4,389,675
243 4,389,676
280 4,389,677

CLASS 360
10.3 4,389,678
12 4,389,679
14.1 4,389,680
27 4,389,681
45 4,389,682
65 4,389,683
71 4,389,684
72.2 4,389,685
77 4,389,686
98 4,389,687
104 4,389,688
109 4,389,689
132 4,389,690

CLASS 361
8 4,389,691
29 4,389,692
48 4,389,694
55 4,389,695
127 4,389,693
293 4,389,696
380 4,389,697

CLASS 362
32 4,389,698
217 4,389,699
306 4,389,700
308 4,389,701

CLASS 363
21 4,389,702
61 4,389,703
62 4,389,704

CLASS 364
130 4,389,706
405 4,389,707
551 4,389,709
4,389,710
556 4,389,711
573 4,389,708

CLASS 365
104 4,389,705
127 4,389,712
163 4,389,713
189 4,389,714
200 4,389,715

CLASS 366
99 4,389,119
126 4,389,120

CLASS 368
63 4,389,121
110 4,389,122
250 4,389,123

CLASS 369
6 4,389,716
75 4,389,717
247 4,389,718
275 4,389,719

CLASS 370
62 4,389,720
88 4,389,721
100 4,389,722

CLASS 371
27 4,389,723

CLASS 373
33 4,389,724
40 4,389,725

CLASS 374
147 4,389,124
164 4,389,125

CLASS 375
27 4,389,726
110 4,389,727

CLASS 376
283 4,389,368
442 4,389,369

CLASS 377
20 4,389,563
114 4,389,728

CLASS 378
99 4,389,729
153 4,389,730

CLASS 382
11 4,389,634
26 4,389,633

CLASS 400
82 4,389,126
124 4,389,127
4,389,128
144.2 4,389,129
4,389,130
157.2 4,389,131

CLASS 401
195 4,389,132

CLASS 403
230 4,389,133
263 4,389,134
327 4,389,135

CLASS 404
68 Re.31,283
75 4,389,136
113 4,389,137

CLASS 405
43 4,389,138
163 4,389,139
195 4,389,140
211 4,389,141

CLASS 406
120 4,389,142
197 4,389,143

CLASS 407
82 4,389,144

CLASS 408
1 R 4,389,145
240 4,389,146

CLASS 411
311 Re.31,284

CLASS 413
69 4,389,147

CLASS 414
85 4,389,148
382 4,389,149
505 4,389,150
685 4,389,151
694 4,389,152
695.5 4,389,153
699 4,389,154
723 4,389,155
753 4,389,156
787 4,389,157

CLASS 415
148 4,389,158
206 4,389,160
219 A 4,389,159

CLASS 416
220 R 4,389,161
225 4,389,162

CLASS 417
2 4,389,163
36 4,389,164
49 4,389,165
234 4,389,166
289 4,389,167
298 4,389,168
417 4,389,169

CLASS 419
55 B1 4,082,484
15 4,389,170
4,389,171
61 A 4,389,172
146 4,389,173
222 4,389,174

CLASS 420
505 4,389,370

CLASS 422
15 4,389,371
88 4,389,372
98 4,389,373
104 4,389,374
111 4,389,375
228 4,389,376
246 4,389,377

CLASS 423
68 4,389,378
89 4,389,379
167 4,389,380
175 4,389,381
213.5 4,389,382

243 4,389,383
304 4,389,384
338 4,389,385
365 4,389,386
447.7 4,389,387
461 4,389,388
510 4,389,389
584 4,389,390
610 4,389,391

CLASS 424
49 B1 3,863,006
1 4,389,392
19 4,389,393
53 4,389,394
85 4,389,395
92 4,389,396
180 4,389,397
181 4,389,398
248.5 4,389,399
248.52 4,389,400
248.56 4,389,401
251 4,389,402
258 4,389,403
260 4,389,404
262 4,389,405
270 4,389,406
271 4,389,407
4,389,408
273 R 4,389,409
283 4,389,410
301 4,389,411
305 4,389,412
4,389,413
308 4,389,414
309 4,389,415
4,389,416
317 4,389,417
365 4,389,418

CLASS 425
190 B1 4,219,318
82.1 4,389,175
101 4,389,176
144 4,389,177
237 4,389,178
302.1 4,389,179
403 4,389,180
461 4,389,181
505 4,389,182
589 4,389,183

CLASS 426
72 4,389,419
94 4,389,420
330.4 4,389,421
388 4,389,422
417 4,389,423
546 4,389,424
598 4,389,425
602 4,389,426
631 4,389,427

CLASS 427
54.1 4,389,428
90 4,389,429
213.3 4,389,331
213.36 4,389,330
230 4,389,430
242 4,389,431
299 4,389,432
341 4,389,433

CLASS 428
17 4,389,434
4,389,435
35 4,389,436
4,389,437
4,389,438
36 4,389,439
4,389,440
65 4,389,441
77 4,389,445
92 4,389,442
4,389,443
137 4,389,444
166 4,389,446
178 4,389,447
195 4,389,448
203 4,389,449
212 4,389,450
4,389,451
215 4,389,452
240 4,389,453
318.6 4,389,454
328 4,389,455
375 4,389,456
379 4,389,457
425.9 4,389,458
457 4,389,459
458 4,389,460
543 4,389,461
564 4,389,462
659 4,389,463
667 4,389,464
698 4,389,465

CLASS 429
27 4,389,466
41 4,389,467
70 4,389,468
98 4,389,469
152 4,389,470
178 4,389,471

CLASS 430
10 4,389,472
17 4,389,473
37 4,389,474
58 4,389,475
64 4,389,476
81 4,389,477
97 4,389,478
216 4,389,479
271 4,389,480
319 4,389,481
325 4,389,482

CLASS 431
15 4,389,184
164 4,389,185
173 4,389,186
277 4,389,187
284 4,389,188

CLASS 432
247 4,389,189
4,389,190
250 4,389,191

CLASS 433
166 4,389,192

CLASS 434
174 4,389,193
201 4,389,194

CLASS 435
110 4,389,483
144 4,389,484
191 4,389,485
253 4,389,486
273 4,389,487
280 4,389,488
4,389,489

CLASS 436
2 4,389,217
17 4,389,490
67 4,389,491

CLASS 440
15 4,389,195
4,389,196
38 4,389,197
60 4,389,198
74 4,389,199

CLASS 441
70 4,389,200

CLASS 445
26 4,389,201

CLASS 455
153 4,389,731
160 4,389,732

CLASS 464
33 4,389,202
34 4,389,203
91 4,389,204

CLASS 493
315 4,389,205

CLASS 494
42 4,389,206
4,389,207

CLASS 501
112 4,389,492
154 4,389,493

CLASS 521
27 4,389,494
56 4,389,495

CLASS 523
109 4,389,496
116 4,389,497
139 4,389,498
161 4,389,499
216 4,389,500
400 4,389,501

CLASS 524
37 4,389,502
38 4,389,503
233 4,389,504
376 4,389,505
377 4,389,506
460 4,389,507
548 4,389,508
591 4,389,509
600 4,389,510

CLASS 525
68 4,389,511
112 4,389,512
186 4,389,513
364 4,389,514
420.5 4,389,515
534 4,389,516

CLASS 526
84 4,389,517
97 4,389,518

CLASS 528
73 4,389,519
89 4,389,520
336 4,389,521
503 4,389,522

CLASS 536
59 4,389,523

CLASS 544
016 4,389,524

CLASS 548
187 4,389,525

CLASS 549
347 4,389,526
438 4,389,527
470 4,389,528
531 4,389,529

CLASS 556
404 4,389,530

CLASS 560
43 4,389,531

CLASS 568
487 4,389,532

CLASS 604
53 4,389,209
95 4,389,208
177 4,389,210
319 4,388,922
383 4,389,211
389 4,389,212

CLASSIFICATION OF DESIGNS

D2—	408	269,389		37	269,405	D12—	12	269,418	D14—	59	269,432		62	269,448		38	269,460
D6—	11	269,390		47	269,406		96	269,419			269,433		75	269,446		45	269,461
	57	269,391		52	269,407		106	269,420		76	269,434	D21—	45	269,447			269,462
	105	269,392		303	269,408		129	269,421	D15—	10	269,435	D22—	7	269,449		62	269,463
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	4,389,237		4,388,999		4,389,063		4,389,590		4,389,689		4,389,448
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	4,389,314		4,389,124		4,389,021		4,388,879		4,389,652		4,389,136
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	4,389,393		4,389,269		4,389,208		4,389,459		4,388,808		4,389,503
	4,389,399		4,389,270		4,389,243		4,389,531		4,388,852		4,389,562
	4,389,417		4,389,283		4,389,266		4,389,532		4,388,889		4,389,583
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	269,415	12 :	269,420		269,472		269,467		269,402		269,449
	269,422	13 :	269,458	26 :	269,395	36 :	269,391		269,456		269,450
	269,426	17 :	269,408		269,418		269,427		269,459	49 :	269,471
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Dec. 3, 1982. *Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of May 1983

Affirmed	183
Affirmed in Part	8
Reversed	54
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REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,136,923, Re. S.N. 479,594, Filed Mar. 28, 1983, Cl. 339/258, UNITARY HOODED ELECTRICAL CONTACT, Tedford H. Spaulding, Owner of Record: *Bunker Ramo Corp., Oak Brook, Ill.,* Attorney or Agent: James P. DeClercq, et al., Ex. Gp.: 322

4,244,322, Re. S.N. 456,777, Filed Jan. 10, 1983, Cl. 118/658, MAGNETIC BRUSH TYPE DEVELOPING APPARATUS, Yutaka Nomura, et al., Owner of Record: *Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan,* Attorney or Agent: James R. Longacre, Ex. Gp.: 162

4,262,737, Re. S.N. 484,689, Filed Apr. 13, 1983, Cl. 165/012, EXTRUDER TEMPERATURE CONTROLLER, Louie M. Faillace, Owner of Record: *Inventor,* Attorney or Agent: Robert E. Hillman, Ex. Gp.: 345

4,329,999, Re. S.N. 479,827, Filed Mar. 28, 1983, Cl. 128/760, PATIENT ATTACHED PATCH AND METHOD OF MAKING, Michael Phillips, Owner of Record: *Inventor,* Attorney or Agent: John McKinnon, et al., Ex. Gp.: 335

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,195,868, Reexam. No. 90/000,380, Requested: May 11, 1983, Cl. 366/85, CONTINUOUS MIXER, Bernard A. Loomans, et al., Owner of Record: *Baker Perkins, Inc., New York, N.Y.,* Attorney or Agent: John F. Learman, Ex. Gp.: 242, Requester: Werner & Pfleiderer Corp., Ramsey, N.J.

4,019,518, Reexam. No. 90/000,376, Requested: May 9, 1983, Cl. 128/419R, ELECTRICAL STIMULATION SYSTEM, Donald D. Maurer, et al., Owner of Record: *Requester,* Attorney or Agent: Joseph F. Breimayer, Ex. Gp.: 335, Requester: Medtronic, Inc., Minneapolis, Minn.

4,174,481, Reexam. No. 90/000,375, Requested: May 12, 1983, Cl. 378/20, TOMOGRAPHIC X-RAY APPARATUS FOR THE PRODUCTION OF TRANSVERSE LAYER IMAGES, Reiner Liebetruth, Owner of Record: *Siemens Aktiengesellschaft, Berlin and Munich, Germany,* Attorney or Agent: Hill, van Santen, et al., Ex. Gp.: 330, Requester: Owner

4,305,763, Reexam. No. 90/000,383, Requested: May 24, 1983, Cl. 148/12.7A, METHOD OF PRODUCING AN ALUMINUM ALLOY PRODUCT, William E. Quist, et al., Owner of Record: *Boeing Co., Seattle, Wash.,* Attorney or Agent: Christensen, O'Connor, et al., Ex. Gp.: 111, Requester: Pechiney Ugine Kuhlmann, Lyon, France

Department of the Treasury
United States Customs Service

(T.D. 83-122)
19 CFR Part 133
Recordation of Trade Name: Chams de Baron Ltd.

Agency: U.S. Customs Service, Department of the Treasury

Action: Notice of Recordation

Summary: On Mar. 10, 1983, a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "CHAMS DE BARON LTD." was published in the Federal Register (48 FR 10188-10189). The notice advised that before final action on the application, consideration would be given to relevant data, views, or arguments submitted in opposition to the recordation and received not later than May 10, 1983. No responses were received in opposition to the notice.

Accordingly, as provided in section 133.14, Customs Regulations (19 CFR 133.14), the name "CHAMS DE BARON LTD." is recorded as the trade name used by Chams De Baron Ltd., a corporation organized under the laws of the State of New York, located at 1350 Broadway, New York, N.Y. 10018. The trade name is used in connection with the following merchandise which is manufactured in Taiwan, Hong Kong, South Korea and the Philippines: men's and women's wearing apparel, including shirts, tops, sweaters, jackets and pants.

Date: May 25, 1983.

For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765).

A. PIAZZA,
May 20, 1983. *Acting Director, Entry Procedures and Penalties Division.*

Extension of Transition Period to File Oaths or Declarations in Compliance with 37 CFR 1.63

The Federal Register of Jan. 20, 1983 indicated at 48 FR 2706 that all oaths or declarations filed on and after Feb. 27, 1983, must comply with the requirements of 37 CFR 1.63 except for the transition period as noted below.

The Office indicated that it would continue to accept any oath or declaration in compliance with 37 CFR 1.65 as it existed immediately prior to Feb. 27, 1983 during a transition period ending June 30, 1983, provided that the oath or declaration was attached to and was executed as a part of an application.

Although the Office is not required to do so, it intends to make translated declaration forms available to the public in at least the more frequently required non-English languages. Since these non-English language translations are not yet available, the transition period is extended to end on Sept. 30, 1983 rather than on June 30, 1983. During this period, the Patent and Trademark Office will continue to accept any oath or declaration in compliance with 37 CFR 1.65 as it existed immediately prior to Feb. 27, 1983, if the oath or declaration is attached to and was executed as a part of an application to be filed in the Patent and Trademark Office.

Effective Oct. 1, 1983, all oaths or declarations filed under 37 CFR 1.51(a)(2) as a part of a patent application must fully comply with 37 CFR 1.63.

DONALD J. QUIGG,
May 31, 1983. *Acting Commissioner of Patents and Trademarks.*

Request for Comments on Proposed Expedited Patent Application Procedure

The Patent and Trademark Office is seeking comments on the desirability of providing a new procedure for highly expedited handling and prosecution of a patent application upon the payment of a relatively large fee set to recover the full cost of the expedited processing. The purpose of the procedure would be to provide a patent to applicants who need or desire a patent very quickly and are willing to pay the costs. It is anticipated that the pendency of such an application would normally be a few months. The application would literally be hand-carried through most of the processing in the PTO.

Implementation of such a procedure would require additional staffing of personnel throughout the Office who would personally process the application or insure its immediate processing by regular personnel, and the implementation of special filing, processing, and examining procedures and requirements. Accordingly, the costs would be relatively high.

A program of this nature would only be contemplated to the extent that it would not interfere with achievement of the PTO goal of 18 months average pendency for patent applications in 1987. An outline of the proposed procedure to expedite an application is set forth below:

1. Applicant requests special expedited application.
   a. At time of filing or anytime during pendency of application.
2. Required fees at time of filing (or when requested):
   a. Normal filing fee.
   b. Normal issue fee.
   c. Special fee set to recover the full costs of the expedited processing (possibly $4,000-$5,000 depending on the degree of prosecution permitted after final rejection under 6e below).
3. Applicant would agree to special requirements:
   a. Submission of information disclosure statement.
   b. Immediate correction of drawing informalities and objections.
   c. One month shortened statutory period for response to Office actions (extendable under 37 CFR 1.136).
   d. Automatic election of first claimed invention.
4. Application provided special expedited prosecution throughout Office.
   a. Essentially walk-through processing.
   b. All processing done out-of-turn on immediate basis.
5. Specially designated expeditors for clerical processing throughout Patent and Trademark Office:
   a. Would personally perform certain processing steps where possible.
   b. If not possible, would wait with application for immediate performance of processing steps by regular personnel.
   c. Hand-carry application from step to step.
   d. Special expeditors might be designated employees in existing organizations or a special central clerical operation that would serve as expeditors and do or oversee the processing for most other operations.
6. Examiner processing:
   a. Highest priority for examination.
   b. One month shortened statutory period for response.
   c. Interviews strongly encouraged.
   d. More use of telephone.
      (1) To resolve minor problems.
      (2) For follow-up on interviews.
      (3) To notify applicant of Office mailing and nature of communication.
   e. After final practice.
      (1) Alternative I - Normal tight second action final practice.
      (2) Alternative II - More liberal after final practice.
7. Special distinctive marking on file wrapper.
8. All incoming envelopes, responses, and correspondence specially identified to permit rapid routing and processing.
   a. Preference for hand-carry of all responses to the PTO.
9. Central monitoring of application progress throughout Office to insure that application is not lost or delayed.
10. Special expedited printing procedure.
11. Rules change required to implement.
12. Possible starting date - Jan. 1, 1985.

Written comments on the desirability of the Office offering such a procedure should be submitted by Sept. 30, 1983, and addressed to the attention of R. Franklin Burnett, Crystal Plz. 3-11A13, Patent and Trademark Office, Washington, D.C. 20231. For further information contact R. Franklin Burnett by telephone at (703)557-3054.

DONALD J. QUIGG,
June 1, 1983. *Acting Commissioner of Patents and Trademarks.*

Examination

Pursuant to the provisions of 37 C.F.R. 1.341(c), an examination for persons seeking registration before the United States Patent and Trademark Office as patent attorneys and agents will be held on Tuesday, Oct. 11, 1983.

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent and Trademark Office in patent cases must pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent and Trademark Office in trademark cases. Recognition for practice in trademark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

37 C.F.R. 1.341(f) provides, in pertinent part, "Officers and employees of the United States who are disqualified by statute (18 U.S.C. 203, 205) from practicing as attorneys or agents in proceedings or other matters before Government departments or agencies, may not be registered, * * * but officers or employees whose official duties require the preparation and prosecution of applications for patent may be registered (on compliance with the regulations in this part) or recognized to practice, to the extent necessary to carry out their official duties." If you are an officer or employee of the United States who is not disqualified for registration under 37 C.F.R. 1.341(f) when you apply to take the examination, your application for registration *must* be accompanied by your supervisor's *verified statement* that your official duties as a United States officer or employee require that you prepare and prosecute applications for patent. After passing the examination, you will be considered eligible for registration. If you are disqualified for registration under 37 C.F.R. 1.341(f) when you apply, approval of your application to take the examination will be subject to the following conditions.

1. If you pass the examination, you will not be registered so long as you remain disqualified for registration under 37 C.F.R. 1.341(f). However, if within one (1) year from the date notification of passing is mailed, your status changes and you are no longer disqualified under 37 C.F.R. 1.341(f), you will be considered eligible for registration upon satisfactory proof of your change in status.
2. If you have not become registered within one (1) year from the date notification of passing is mailed, you may not become registered thereafter except upon taking and passing another regularly scheduled examination.

The examination will be given under the supervision of the Office of Personnel Management (formerly Civil Service Commission), and may be taken in any of the cities in which the Office of Personnel Management regularly conducts examinations. Applications to take the examination must be filed in the Patent and Trademark Office together with a $75 fee not later than July 31, 1983.

Application blanks may be obtained from the Clerk of the Committee on Enrollment, Bldg. 3, 11th Floor, Room C16, Crystal Plz., Arlington, Va. or by mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and directed to the attention of the Clerk of the Committee on Enrollment.

DONALD J. QUIGG,
June 1, 1983. *Chairman, Committee on Enrollment.*

Status of PTO Services

The following is an update of the status of PTO services as of May 31, 1983:

Service Item	FY 1983 Performance Goal	Actual	Comment
Filing Receipts:			
Patents	22	23	Reduced by 2 days in the past month.
Trademarks	30	88	Improvement expected over next few months.
Patent Copies:			
Window Coupons	5	90% within 5 days	
Mail Coupons	29	100% within 22 days	
Letter Orders	34	100% within 15 days	
Certified Copies:			
Trademark Registrations	30	12	
Applications-As-Filed	20	97% within 10 days	
File-Wrapper/Contents	N/A	100% within 20 days	
Walk-up Certification	1	99% within 1 day	
Trademark Search Library:			
Filing Drawings	21	33	
Filing Reg. Certificates	3	7	Regs. for 5/24 late from printer.
Assignments:			
Patents	25	24	
Trademarks	25	22	
Avg. Days from Issue Fee Payment to Issue Date		97	
Patent Official Gazette:			
In Bookstore	Issue Date	On Schedule	
Mailed	Issue Date	Avg. 1 day late	
Patent Grants Mailed	Issue Date	Avg. 2 days late	
Patent Copies Available	Issue Date	99%	
Trademark Official Gazette:			
In Bookstore	Issue Date	On Schedule	
Mailed	Issue Date	On Schedule	
Trademark Regs. Mailed	Issue Date	7 days	Regs. for 5/24 late from printer.

IMPROVEMENTS TO SERVICES

- *Documents Processed at the Attorney's Window*—All non-fee amendments filed by 2:30 p.m. at the Mail Room's Attorney's Window, on the lobby level of Crystal Plz. 2, are processed and routed to their proper destinations by 3:30 p.m. that same day. Fee-related amendments, as well as non-fee-related work filed after 3:30 p.m. will be processed and delivered the following work day.
- *Microfilming Active Trademark and Patent File Histories*—On or about June 20, 1983, sample microfiche copies of new patent issues and a Minolta reader/printer will be available to public search room users. We will also provide a survey form for the public to assist us in evaluating fiber quality, format and equipment capabilities.
- *New Statistic*—A new service statistic has been added to the service report - the average number of days from patent issue fee payment to issue date. There is no goal indicated because the specific schedule for issue sizes and the mix of patents (chemical, electrical, mechanical) dictate the number and type of applications which can be built into each issue.

THERESA A. BRELSFORD,
June 6, 1983. *Assistant Commissioner for Administration.*

PATENT NOTICES

Certificates of Correction for the Week of June 28, 1983

D. 268,643	4,342,337	4,368,137	4,376,037
3,618,518	4,342,720	4,368,391	4,376,043
3,838,535	4,343,078	4,368,395	4,376,065
4,007,431	4,343,531	4,369,999	4,376,217
4,117,233	4,345,073	4,370,179	4,376,447
4,146,453	4,345,498	4,370,217	4,376,669
4,169,841	4,346,061	4,370,395	4,376,670
4,174,575	4,348,317	4,370,461	4,377,619
4,175,135	4,348,861	4,371,428	4,377,638
4,213,118	4,349,648	4,372,053	4,377,809
4,236,930	4,351,156	4,372,712	4,378,186
4,252,694	4,353,480	4,372,741	4,378,487
4,260,465	4,354,038	4,372,784	4,379,459
4,267,244	4,354,199	4,373,061	4,379,906
4,292,429	4,355,376	4,373,140	4,380,062
4,292,889	4,358,876	4,373,179	4,380,220
4,293,232	4,359,560	4,373,410	4,380,431
4,294,898	4,364,723	4,373,530	4,380,487
4,295,524	4,364,745	4,373,659	4,380,564
4,299,247	4,364,749	4,374,035	4,380,708
4,301,921	4,365,316	4,374,059	4,381,160
4,304,062	4,365,936	4,374,076	4,381,331
4,306,304	4,365,972	4,374,323	4,382,136
4,308,242	4,367,239	4,374,751	4,382,237
4,314,030	4,367,532	4,374,906	4,382,453
4,314,052	4,367,700	4,375,091	4,382,998
4,328,548	4,367,780	4,375,757	4,383,174

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,243,822 to 3,248,737, inclusive

Plant Patents ..... Numbers 2,616 to 2,627 inclusive

REEXAMINATIONS

June 28, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,887,450 (100th)

PHOTOPOLYMERIZABLE COMPOSITIONS CONTAINING POLYMERIC BINDING AGENTS

Michael N. Gilano, Fullerton, Calif.; Richard E. Beaupre, West Barrington, R.I.; Melvin A. Lipson, Fullerton, Calif., assignors to Dynachem Corporation, Santa Fe Springs, Calif.

Continuation of Ser. No. 112,797, Feb. 4, 1971, abandoned. Reexamination Request No. 90/000,017, Jul. 2, 1981.

Reexamination Certificate for Patent No. 3,887,450, issued Jun. 3, 1975, Ser. No. 315,153, Dec. 14, 1972.

U.S. Cl. 204/159.15 **Int. Cl.[3] CO8F** *2/48, 2/46*

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–3**, **6** and **9** are determined to be patentable as amended:

Claims **4**, **5**, **7**, **8** and **10–15**, dependent on amended claims, are determined to be patentable.

New claims **16** and **17** are added and determined to be patentable.

1. A photopolymerizable composition *characterized by being used as a photoresist in the form of a storable sheet or roll on a peelable film support* [comprising] *consisting essentially of:*

A. from 10 to 60 parts by weight of an addition polymerizable material consisting essentially of and being solely one or more non-gaseous compounds, containing at least two terminal ethylenic groups, having a boiling point above 100° C., and being selected from the group consisting of an unsaturated ester of a polyol, an unsaturated amide, and a vinyl ester;

B. from 0.001 to 10 parts by weight of a photo-initiated free-radical generating addition polymerizing initiating system;

C. from 0.001 to 5 parts by weight of a thermal-addition polymerization inhibitor; and

D. from 40 to 90 parts by weight of a preformed macromolecular polymeric binding agent which is a polymer of:

a first monomeric material which contains one or more non-acidic vinyl compounds selected from the group having the general formula:



wherein **R** is hydrogen, an alkyl group having from 1 to 6 carbon atoms or a halo group; and a second monomeric material which consists essentially of one or more alpha,beta-*ethylenically* unsaturated [carboxyl] *carboxylic acid- or anhydride*-containing monomers having from 3 to 15 carbon atoms;

wherein the ratio of the first monomeric material to the second monomeric material is sufficient to render *substantially all of* the binding agent soluble in a dilute *substantially wholly* aqueous solution containing *2% sodium carbonate* [from 0.01 to 10 percent of a water-soluble base] *wherein following photopolymerization, the photopolymerized portion of the composition is unaffected by sequential contact first with said dilute aqueous solution containing 2% sodium carbonate and subsequently followed by a 45° Baumé solution of ferric chloride and further wherein the photopolymerized portion of the composition is removable from a substrate by a heated solution containing 3% sodium hydroxide.*

REISSUES

JUNE 28, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,288

MACHINE TOOL

Hiroshi Matsuzaki, Kanazawa, and Yoshihiro Tsukiji, Komatsu, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

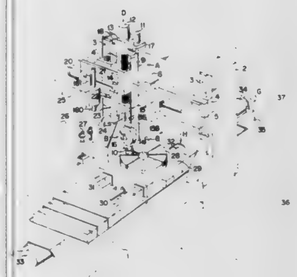
Original No. 4,118,844, dated Oct. 10, 1978, Ser. No. 829,193, Aug. 30, 1977. Application for reissue Jan. 3, 1980, Ser. No. 109,261

Claims priority, application Japan, Aug. 30, 1976, 51-102691; Aug. 30, 1976, 51-102692; Aug. 30, 1976, 51-102693

Int. Cl.[3] B23Q *3/155;* B23C *1/12*

U.S. Cl. 29—27 C

8 Claims



1. A complex machine tool, comprising:

a bed;

a table mounted on the bed so as to be slidably moved in [the] *a* direction of *the* longitudinal axis thereof;

rotating means mounted on said bed to rotate said table;

transfer means mounted on said bed so as to transfer said table in the direction of *the* longitudinal axis of the bed;

rotary indexing means [adapted to index] *for indexing* said table;

a pair of columns installed vertically on either side of said bed;

a cross rail transversely supported on said columns;

ram means attached to said cross rail [and adapted to be moved at right angles to the face of said table] *for a vertical movement*;

means for moving said ram means in a direction at right angles to the face of said table;

a tool post mounted [on] to [the] *a* lower end face of said ram means [and having] *for receiving* a turning tool [fixedly secured thereto];

first tool clamper means provided within said ram means for clamping and unclamping the turning tool in said tool post;

a turret head mounted on one face of said ram means, said turret head having a [rotating] main spindle *rotatably supported therein* for mounting a rotary machining tool;

means provided within said ram means for indexing said turret head means;

second tool clamper means provided within said ram means for clamping and unclamping the rotary machining tool in said turret head; and

[a turret head rotating means adapted to rotate said turret head] *means for driving said main spindle for rotary machining operations.*

Re. 31,289

COLOR ENDOSCOPE WITH CHARGE COUPLED DEVICE AND TELEVISION VIEWING

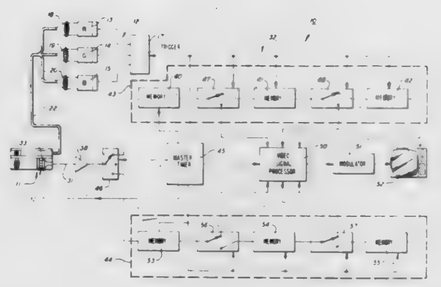
William C. Moore, Skaneateles; Richard W. Newman, Auburn, and Dominick Danna, Syracuse, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Original No. 4,253,447, dated Mar. 3, 1981, Ser. No. 951,653, Oct. 16, 1978. Application for reissue Jul. 10, 1981, Ser. No. 282,086

Int. Cl.[3] A61B *1/00*

U.S. Cl. 128—6

8 Claims



1. An endoscope for providing color information in a form that is capable of being displayed on a standard format video receiver utilizing odd and even interlaced fields for each frame of information displayed, the endoscope including

a viewing head that is capable of being inserted into a body cavity that contains a self-scanning solid state imaging device for recording light images of objects positioned in the viewing region of the head and providing a line by line electrical read-out signal containing the recorded information,

lighting means for bringing illumination from a remote location into the viewing region of said viewing head to sequentially light the viewing region with light of primary colors during each field related period so that read-out signals relating to the color images recorded by the imaging device are clocked out of the device in a sequential flow relationship,

a first memory unit for individually storing read-out signals regarding each of the primary colors clocked out of the imaging device for display during an even field period,

a second memory unit for individually storing read-out signals regarding each of the primary colors clocked out of the imaging device for display during an odd field period, and

switching means for forwarding the signals stored in said first memory unit simultaneously to a transmitter matrix for [combining the color information into composite luminance and chrominance signals for] display in a [standard format] television receiver during an even field period and for forwarding signals stored in said second memory unit simultaneously to said matrix for display during an odd field period.

Re. 31,290

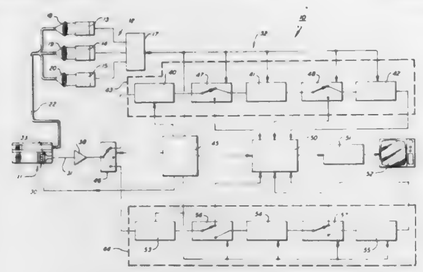
COLOR ENDOSCOPE

William C. Moore, Skaneateles; Richard W. Newman, Auburn, and Dominick Danna, Syracuse, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Original No. 4,261,344, dated Apr. 14, 1981, Ser. No. 78,300, Sep. 24, 1979. Division of Ser. No. 951,653, Oct. 16, 1978, Pat. No. 4,253,447. Application for reissue Jul. 10, 1981, Ser. No. 282,087

Int. Cl.³ A61B *1/06*

U.S. Cl. 128—6 **7 Claims**



1. In an endoscope of the type having a relatively small viewing head containing a single solid state imaging device for recording light images formed in the viewing region of the head and providing an electrical read-out signal containing the image information, the method of generating a full color standard format video signal including the steps of

providing an individual light source for each of the primary colors utilized in the video system at a location that is remote from the viewing head,

turning each of the light sources on and off in an ordered sequence,

transmitting the light emitted by each source into the viewing region of the head by means of a randomly dispersed bundle of optical fibers whereby image shadowing in the viewing region is minimized,

sequentially recording each of the color images on the single solid state imaging device,

electrically coupling the read-out signals of the imaging device to a memory,

storing the individual color read-out signals in the memory, and

periodically forwarding the color signals stored in the memory simultaneously to a processor for [combining the color signals into composite signals that are compatible with a standard format] *placing the signal information in a format compatible with a* color receiver.

Re. 31,291

ROAD SURFACE MARKING PREFABRICATED TAPE MATERIAL, HAVING RETROREFLECTIVE COMPOSITE ELEMENTS ASSOCIATED THERETO

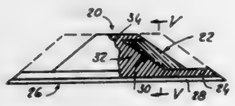
Ludwig Eigenmann, Vacallo, Ticino, Switzerland

Original No. 4,129,397, dated Dec. 12, 1978, Ser. No. 850,024, Nov. 9, 1977. Application for reissue Sep. 22, 1980, Ser. No. 189,771

Claims priority, application Italy, Nov. 10, 1976, 29196 A/76

Int. Cl.³ E01F *9/04*

U.S. Cl. 404—14 **9 Claims**



9. A prefabricated road-surface marking tape, comprising a tape adapted to be placed on and secured to a road surface to form a traffic aid thereon; a plurality of reflectors spaced lengthwise of and upwardly projecting from an upper face of said tape, each of said reflectors comprising a casing having a generally planar base portion of a first width and having a bottom face juxtaposed with said upper face, and a receiver portion of a smaller second width projecting upwardly from said base portion, and optically reflective elements sheltered in said receiver portion and operative for retroreflecting a relatively narrow beam of light lengthwise of said tape in one direction when impinged by vehicle-emitted light rays travelling in the opposite direction; and means including a plurality of recesses in said bottom face and accommodating portions of said tape therein, for fixedly anchoring said reflectors to said tape.

Re. 31,292

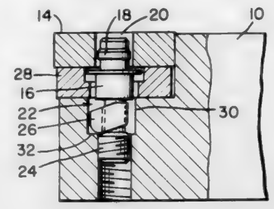
CLAMPING MECHANISM FOR CUTTING INSERT

Robert A. Erickson, Ligonier, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Original No. 4,245,937, dated Jan. 20, 1981, Ser. No. 946,814, Sep. 28, 1978. Application for reissue Mar. 16, 1981, Ser. No. 244,009

Int. Cl.³ B26D *1/00;* **B25G** *3/20*

U.S. Cl. 407—105 **9 Claims**



1. A cutting tool for holding a cutting insert having an axial hole therein, which comprises: a cutter body; an insert seat on said cutter body having at least a bottom wall and a side wall, the insert seat having a transverse pin receiving hole located for at least partial registration with the axial hole in the insert; abutment means in said pin receiving hole beneath said insert seat; a pin having a head for engaging the axial hole of the insert and another end for moving engagement with said cutter body in said pin receiving hole; [an] *a resilient* abutment shoe *captively engaged to said pin and* pivotally mounted in relation to and between said abutment means and said pin so that when said pin is moved in a first direction in the hole said shoe pivots forcing the head of the pin to tilt toward said side wall and clamp the insert in said insert seat, said pivotal shoe allowing said pin to straighten when said pin is moved in a second direction in said hole.

8. A shoe member for use in an insert clamping arrangement which comprises a body of tough resilient material having a top surface having a slanted portion, a bottom surface, a peripheral surface connecting said top surface to said bottom surface, a bore communicating between said top surface and said bottom surface and intersecting said peripheral surface continuously from top to bottom so as to provide said body with a C-shaped configuration when viewed in plan, said bore aligned obliquely with planes defined by said top slanted portion and said bottom surface, a convex surface forming the juncture of said peripheral surface and said bottom surface, and wherein said convex surface is generally located on said shoe body opposite to where said bore intersects said peripheral surface.

9. A pin and shoe arrangement for holding a cutting insert having an axial hole therein on a cutter body with an insert seat thereon, said pin and shoe arrangement comprising: said shoe having a body of tough resilient material having a top surface having a slanted portion, a bottom surface, a peripheral surface connecting said top surface to said bottom surface, a bore communicating between said top surface and said bottom surface and intersecting said peripheral surface continuously from top to bottom so as to provide said body with a C-shaped configuration when viewed in plan, said bore aligned obliquely to planes defined by said top slanted portion and said bottom surface, a convex surface forming the juncture of said peripheral surface and said bottom surface, and wherein said convex surface is generally located on said shoe body opposite to where said bore intersects said peripheral surface; said pin having a threaded end, a reduced diameter intermediate section connecting said threaded end to an increased diameter head end, and wherein said reduced diameter intermediate section is of a length and a diameter sized to be loosely engageable in said bore of said shoe; and said reduced diameter intermediate section of said pin loosely engaged in the bore of said shoe such that said bottom surface of said shoe faces said threaded end of said pin.

Re. 31,293

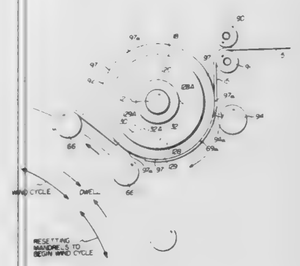
MACHINE FOR PRODUCING A PLASTIC-COVERED GLASS CONTAINER

Stephen W. Amberg, St. James; Thomas E. Doherty, Setauket, both of N.Y., and Clarence A. Heyne, deceased, late of Sun City, Ariz., assignors to Owens-Illinois, Inc., Toledo, Ohio

Original No. 38,224,598, dated Jul. 9, 1974, Ser. No. 378,002, Jul. 10, 1973. Division of Ser. No. 209,751, Dec. 20, 1971, Pat. No. 3,802,942. Application for reissue Sep. 22, 1980, Ser. No. 189,265

Int. Cl.³ B31B *1/16;* **B31C** *1/00*

U.S. Cl. 493—11 **2 Claims**



13. A feed device for a flexible web of material comprising means supporting a web supply of said material, a pair of feed rollers for engaging the web, said rollers rotatably mounted on parallel shafts, means advancing the web into the feed rollers, means connected to said parallel shafts for rotating said feed rollers in opposite directions advancing the web therebetween, a feed drum, means mounting said drum parallel with said rollers and spaced beyond said feed rollers from said web advancing means, said feed drum comprising a continuous peripheral surface of a length greater than one predetermined strip length of material to be cut from said web, first vacuum means connected to the feed drum peripheral surface, and second vacuum means connected to the feed drum peripheral surface, said first and second vacuum means being spaced circumferentially on said drum a distance less than said predetermined strip length, means connected to rotatably drive said feed drum at a speed such that the surface velocity of said drum exceeds the linear velocity of the web being moved by the feed rollers, the first vacuum means and second vacuum means applying a slip-clutch effect on said web maintaining it taut between said feed rollers and feed drum, knife means operable for cutting predetermined lengths of strip from said web on said feed drum, a winding mandrel having a curved outer surface and spaced from said knife means in the direction of peripheral movement of the feed drum surface, said mandrel being disposed parallel with said drum and its outer surface substantially tangentially adjacent said drum, means connected to the feed drum peripheral surface for applying a puff of air under pressure to the underside of the leading edge portion of the strip, and means for introducing air under pressure to said last-mentioned means responsive to movement of the leading edge portion of the strip on the feed drum into tangential relation with the outer surface of the mandrel, thereby positively transferring the strip to the mandrel.

Re. 31,294

MATERIAL-HANDLING APPARATUS

Josef Marosan, Västra Ringvägen 26A, Eksjö, Sweden

Original No. 4,126,506, dated Nov. 21, 1978, Ser. No. 802,665, Jun. 2, 1977. Application for reissue Nov. 19, 1980, Ser. No. 208,277

Claims priority, application Sweden, Jun. 8, 1976, 7606397

Int. Cl.³ B29H *17/36*

U.S. Cl. 156—396 **26 Claims**



1. Material-handling apparatus for a plant processing different sizes or types of products comprising:

(a) a magazine for storing the products to be treated, each size or type of product having a separate supply, a single feed conveyor operable to receive the products from all of said supplies, and to advance a product from said supplies to the terminal end of the feed conveyor, and having stop means to stop the conveyor when a product is positioned at its terminal end;

(b) a plurality of product-treating machines aligned side-by-side with the terminal end of said conveyor;

(c) an outgoing conveyor for removing the treated products from said plurality of machines and having a feed end aligned within said machines;

(d) transfer mechanism for transferring the product selectively from the terminal end of the feed conveyor to a product-treating machine and from a product-treating machine to the feed end of the outgoing conveyor;

(e) a fixing unit associated with the terminal end of the feed conveyor to engage the product thereon and position it in a predetermined position;

(f) indexing means including stop means on the transfer mechanism and a plurality of individual stop means, at least one for each treating machine, operable selectively to index the transfer mechanism to a selected treating machine; and

(g) control means interconnecting said magazine, said treating machines, said transfer mechanism and said indexing means to discharge a product of a given size or type onto the feed conveyor when any selected treating machine for that size or type of product is in condition to receive the product, and conditioning said apparatus to cause said transfer mechanism to transfer the product from the feed conveyor to said selected treating machine.

Re. 31,295

CARRIER SUPPLY FOR FREQUENCY DIVISION MULTIPLEXED SYSTEMS

Thomas J. Haley, Summit, N.J.; Thomas B. Merrick, Plaistow, N.H., and James S. Ronne, Groveland, Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original No. 3,733,438, dated May 15, 1973, Ser. No. 119,750, Mar. 1, 1971. Application for reissue Feb. 2, 1981, Ser. No. 230,874

Int. Cl.[3] **H04J** *1/02, 1/06*

U.S. Cl. 370—120 **5 Claims**



4. A receiver in a frequency division multiplexed transmission system for demodulating an input signal modulated n times [comprising], *the input signal including a carrier pilot signal, said receiver comprising: a phase detector coupled to the input of said receiver,* a plurality of n demodulators having their respective first input and output coupled in a series string between the input and output of said receiver, a plurality of n oscillators having individual output frequencies, a plurality of n−1 modulators having their respective first and second inputs connected to individual pairs of adjacent oscillators of said plurality of n oscillators to form a series string of alternate oscillators and modulators beginning with a first oscillator and ending with a last oscillator of said plurality of n oscillators, the last of said plurality of n oscillators in said series string being connected directly to the second input of the demodulator of said n demodulators connected to the output of said receiver, *means connecting said phase detector with said first oscillator in an automatic phase control loop for establishing phase lock with the carrier pilot signal,* and means connecting the outputs of individual ones of each of said plurality of n−1 modulators to the second input of individual ones of each of said plurality of n demodulators except the demodulator connected to the output of said receiver.

PLANT PATENTS

GRANTED JUNE 28, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,063

AFRICAN VIOLET NAMED JOYCE

Arnold W. Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan-American Plant Company, Parrish, Fla.

Filed May 28, 1981, Ser. No. 268,099

Int. Cl.[3] **A01H** *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new variety of African Violet, substantially as herein shown and described, characterized by its profuse production of medium sized flowers, bloomed intermittently and borne on strong, upright stems.

5,064

CHRYSANTHEMUM NAMED TIGER

May Shoesmith, Westfield, England, assignor to Pan-American Plant Company, Parrish, Fla.

Filed Oct. 19, 1981, Ser. No. 312,944

Int. Cl.[3] **A01H** *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct chrysanthemum cultivar, substantially as herein shown and described, characterized by its small button type of inflorescence having a distinct light bronze color, by its profuse blooming habit, and by its capability for year around small pot production.

PATENTS

GRANTED JUN. 28, 1983

ERRATA

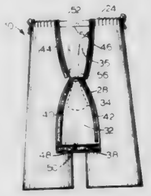
For CLASS	See PATENT NO.
604–236	4,390,016
604–270	4,390,017
436–518	4,390,343
428–090	4,390,387
419–066	4,390,488
424–282	4,390,715
377–006	4,390,779
377–044	4,390,780
179–001	4,390,834

PATENTS

GRANTED JUNE 28, 1983

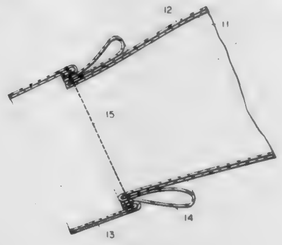
GENERAL AND MECHANICAL

4,389,733
UNIFORM FOR KARATE AND THE LIKE
James L. Boykins, Jr., 1615 N. Monroe St., Baltimore, Md. 21217
Filed Feb. 17, 1981, Ser. No. 234,929
Int. Cl.[3] A41D *13/00, 27/20*
U.S. Cl. 2—2 **2 Claims**



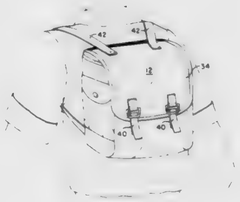
1. In a uniform for a wearer performing one of the martial arts such as Karate, which includes pants with an opening in front, a crotch having a mid-point, supporting means **(52)** for the pants and means for holding **(32)** detachably in the pants a cup **(34)** of rigid material in location for groin protection, the improvement comprising: said supporting means **(52)** having a length extending along the front of the pants, the pants having structure **(37)** defining the opening as beginning at the supporting means **(52)** and extending downwardly and rearwardly to said crotch mid-point, the means **(32)** for holding having connection at said crotch mid-point and proportion for closing said opening when in an upward position from said connection, first means **(50, 48)** for securing the means **(32)** for holding along the length of said means **(52)** for supporting, second means **(54,52)** for securing the means **(32)** for holding along the length of said means **(52)** for supporting, means **(40,42,44,46)** for attaching said means **(32)** for holding to the pants structure **(37)** defining the opening, said first means **(50,48)** for securing including said proportion having a length permitting the upper end **(48)** of the means **(32)** for holding to be passed upwardly over the front of the supporting means **(52)** and a portion thereof then returned downwardly to the rear of the supporting means **(52)**, said downwardly returned portion **(48)** being in position for being gripped between said supporting means **(52)** and a wearer, said second means **(54,52)** for securing, securing said downwardly returned portion **(48)** to the supporting means **(52)** in said position for being gripped, said supporting means **(52)** being belt-like in shape and location, said first means **(50,48)** for securing and said second means **(54,52)** for securing including together a first fastening area **(50)** on a forward side of said downwardly returned portion **(48)** and a second fastening area **(54)** on a rearward side of the supporting means **(52)**, said means **(32)** for holding being "V"-shaped in front view, with the apex of the "V" adjacent said crotch mid-point, said means **(40,42,44,46)** for attaching continuously attaching the sides of said "V" shape along the pants structure defining the opening, and the means **(32)** for holding including a pocket **(32)** with an opening **(38)** at the top for inserting and removing a said cup, the opening of the pocket being at a height causing the pocket to be held closed as result of said securing of the means for holding by said first means **(50,48)** for securing.

4,389,734
IMPERVIOUS OVERSLEEVE WITH ANTIROLL-DOWN COLLAR FOR SURGICAL GOWN
Norman J. Franz, Germantown, and Elizabeth B. Reynolds, Bartlett, both of Tenn., assignors to The Buckeye Cellulose Corporation, Cincinnati, Ohio
Filed Jun. 18, 1981, Ser. No. 274,983
Int. Cl.[3] A41D *27/12;* **A41B** *9/00*
U.S. Cl. 2—59 **10 Claims**



1. A surgical gown sleeve the improvement of which comprises a collar attached at an intermediate location of the forearm region of said sleeve and overlying a portion of said sleeve, said collar having sufficient bulk such that it causes a local bulge in the cuff of a surgeon's glove donned over said collar, whereby the diameter of said glove cuff at said bulge is at least about 5% greater than the adjacent diameter of said glove cuff toward the opening of said glove where said glove cuff does not overlie said collar.

4,389,735
CONVERTIBLE ARTICLE
Rita E. McLaughlin, P.O. Box 1662, Boston, Mass. 02105
Filed Oct. 26, 1981, Ser. No. 315,026
Int. Cl.[3] A41B *11/00*
U.S. Cl. 2—94 **8 Claims**



1. A convertible article adapted to be worn by an individual in one of a first and second modes, said article comprising, in combination:

a coat;

a storage pack formed to an exterior portion of a part of said coat, said storage pack including a first compartment for containing one or more objects to be carried in said storage pack;

shoulder straps secured to said storage pack for extending around the shoulders of the individual so that the storage

pack is supported, at least in part, by said straps when said article is worn by said individual in either of said first or second modes; and

means cooperative with the interior portion of said part of said coat for defining a second compartment for receiving the coat in a concealed manner;

wherein in said first mode said coat and said storage pack are worn by and the shoulder straps extend on the exterior side of said coat around the shoulders of the individual, and in said second mode said storage pack is worn by and the shoulder straps extend around the shoulders of the individual with said coat disposed in and concealed by said second compartment.

4,389,736

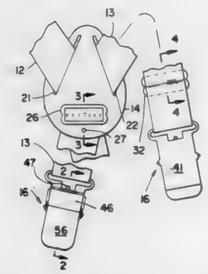
TOOL BELT SUSPENDERS

Norman L. Clifton, 4806 Los Arboles Pl., Fremont, Calif. 94536

Filed May 7, 1981, Ser. No. 261,575

Int. Cl.[3] **A41F** *3/04, 3/02;* **A44B** *21/00*

U.S. Cl. 2—328 **2 Claims**



1. Improved suspenders for supporting a belt adapted to carry tools or the like comprising

a pair of straps adapted to extend one over each shoulder of a wearer and to cross in the back,

a cross-over piece having a pair of inclined slots disposed above a pair of horizontal slots through which said straps are threaded to cross over each other, said straps being separately threaded through said inclined slots and both straps being threaded through both horizontal slots, and said piece having an aperture therethrough for hanging of the suspenders on a peg or the like, and

strong metal clasps attached to each end of each of said straps and each having an over center lock thereon for firmly gripping a belt between facing ends of a pair of plates.

4,389,737

HYDRAULICALLY ACTUATED CARDIAC PROSTHESIS WITH THREE-WAY VENTRICULAR VALVING

Thomas C. Robinson; Sotiris Kitrilakis, both of Berkeley, and Thomas B. Martin, Jr., Oakland, all of Calif., assignors to Foxcroft Associates, San Antonio, Tex.

Filed Sep. 15, 1981, Ser. No. 302,590

Int. Cl.[3] **A61F** *1/24;* **A61M** *1/03*

U.S. Cl. 3—1.7 **28 Claims**

1. An implantable hydraulic actuation system for supplying motive power to a blood pumping chamber having a flexible portion comprising:

an actuation fluid reservoir;

actuation fluid pumping means in fluid communication with said reservoir for pumping actuation fluid therefrom;

an actuation chamber having an actuation fluid inlet, and actuation fluid outlet, said actuation chamber being adapted to cause displacement of the flexible portion of said blood pumping chamber in response to changes in volume of actuation fluid in said actuation chamber; and

three-way valve means in fluid communication with said actuation chamber, said pumping means and said reservoir, said valve means being adapted to alternately and repetitively direct actuation fluid from said pumping means to said actuation chamber through said actuation fluid inlet, and then from said actuation chamber to said reservoir through said actuation fluid outlet, said valve means comprising:

a fluid-tight inlet manifold on said actuation chamber surrounding said actuation fluid inlet and in fluid communication with said pumping means;

a fluid-tight outlet manifold on said actuation chamber surrounding said actuation fluid outlet, said outlet manifold having at least one actuation fluid outlet port in fluid communication with said reservoir;

an inlet valve member in said inlet manifold movable between an open position clear of said actuation fluid inlet to permit actuation fluid entering said inlet manifold from said pumping means to fill said actuation chamber, and a closed position blocking said actuation fluid inlet to prevent the flow of actuation fluid therethrough;

an outlet valve member in said outlet manifold movable between an open position clear of said actuation fluid outlet port to permit actuation fluid to drain from said actuation chamber to said reservoir, and a closed position blocking said actuation fluid outlet port to prevent flow of actuation fluid therethrough;

coupling means interconnecting said inlet and outlet valve members for synchronizing their movements so that when one of said valve members is in its open position the other valve member is in its closed position; and

drive means for moving said valve members between their open and closed positions.

4,389,738

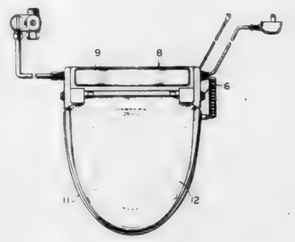
BODY PART CLEANSING DEVICE

Shizuka Ando; Hiroshi Oyama, and Toshio Yamaguchi, all of Kitakyushu, Japan, assignors to Toto, Ltd., Fukuoka, Japan

Filed Mar. 17, 1981, Ser. No. 244,668

Int. Cl.[3] **A47K** *4/00, 3/20*

U.S. Cl. 4—420.2 **15 Claims**



1. A body part cleansing device adapted to be used with a toilet, said device comprising a nozzle comprising means for directing a jet of warm water and air for cleaning to a predetermined part of a user's body and an air intake unit adapted to introduce said air into said nozzle to be mixed with heated water within said nozzle, said nozzle further comprising an injector member and a nozzle member, said injector member and said nozzle member being detachably connected, said injector member having a throttle hole, and said nozzle member having a guide passage connected to said throttle hole, said air intake unit being connected to said guide passage.

4,389,739

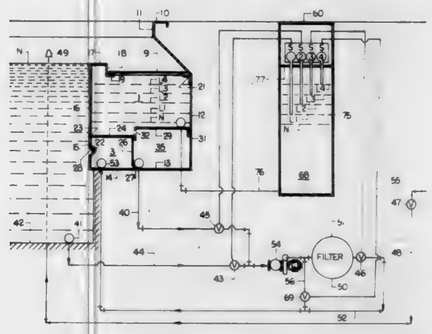
AUTOMATED SURGE WEIR AND RIM SKIMMING GUTTER FLOW CONTROL SYSTEM

William H. Baker, 30 Honeysuckle Woods, Clover, S.C. 29710

Filed Mar. 30, 1981, Ser. No. 249,248

Int. Cl.[3] **E04H** *3/16, 3/20*

U.S. Cl. 4—512 **64 Claims**



1. An automated skimming flow perimeter gutter flow control system for swimming pools comprising, in combination, a water cleaning and recirculation system receiving water from the pool, cleaning it, and returning it to the pool; a gutter conduit for disposition about the perimeter of a swimming pool, receiving overflow across a top edge thereof and adapted to carry water at a level below a predetermined level in the swimming pool; a drain line connecting the gutter conduit with the water recirculation system; suction means in series flow connection with the gutter conduit and drain line for positive withdrawal under suction of water from the gutter conduit and feed of such water to the water recirculation system for return to the pool; at least one of (a) means for controlling water recirculation capacity to accommodate any selected flow of water from the gutter to the water recirculation system; and (b) means for controlling suction flow from the gutter to the water recirculation system; and at least one water level-responsive sensor sensing and directly responding to the level of water in the gutter conduit by adjusting at least one of the means controlling water recirculation capacity to accommodate flow from the gutter and the means for controlling suction flow, to increase gutter drain flow sufficiently to prevent gutter water flooding back from the gutter to the pool.

4,389,740

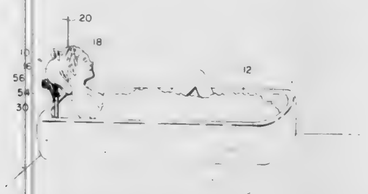
BATH TUB HEAD REST

Hugh A. Henry, P.O. Box 1892, St. Thomas, V.I. 00801

Filed May 7, 1981, Ser. No. 261,601

Int. Cl.[3] **A47K** *3/022*

U.S. Cl. 4—575 **5 Claims**



1. A head rest comprising, in combination:

(a) a head rest member upon which a head is rested, said head rest member being adapted to receive the back of the user's head;

(b) first means for pivotally and rotatively mounting said head rest member, said first means comprising a post having a first end adjacent to said rest member and a second end, said first means further comprising a tongue member that is connected to said head rest member and is rotatable in a vertical plane about a horizontal axis on said first end of said post, said post having a diametrical channel formed at said first end thereof in which said tongue member is mounted receivably for said rotation;

(c) locking means for locking said tongue member at a desired angular position in said channel of said post;

(d) means for mounting said first means to a stationary frame, said means comprising an elongated column having a first end and a second end remote from said first end, said elongated column having a hollow interior adjacent said first end, said second end of said post being positioned in said hollow interior of said first end of said elongated column;

(e) said post comprising a circumferential flange attached adjacent to said second end of said post and a circumferential ring bearing attached to said circumferential flange

(f) said first end of said elongated column also having a circumferential flange and a circumferential ring bearing attached to said flange toward said second end of said post, said ring bearing of said post and said ring bearing of said column abutting each other to thereby allow for rotational movement of said rest member; and

(g) said second means further comprising a suction cup attached to said second end of said elongated column for attaching said head rest to a stationary frame.

4,389,741

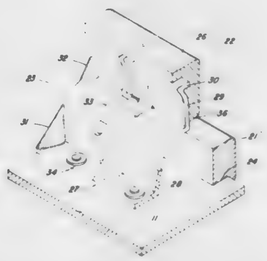
WATERBED FRAME ASSEMBLY

Lynn D. Larson, 6501 Park Crest, Lincoln, Nebr. 68506

Filed Feb. 26, 1981, Ser. No. 238,434

Int. Cl.[3] **A47C** *19/00, 27/08*

U.S. Cl. 5—400 **7 Claims**



1. A frame for a waterbed comprising:

a base;

a containing wall connected to said base at the periphery of said base whereby said base and said containing wall form an open coffer box capable of accepting and supporting a waterbed mattress;

an internal cavity within said containing wall for accepting sheets and other bedding used on a waterbed;

opening means for inserting sheets and other bedding into said enclosed space;

said containing wall is comprised of a plurality of elongate wall sections;

each elongate wall section comprising:

(a) a horizontally extending vertically upright lower member;

(b) a horizontally extending vertically upright upper member positioned above said lower member to form a vertical wall with a continuous horizontal slit therein; and

(c) a horizontally extending flexing member positioned inwardly of said upper and lower members;

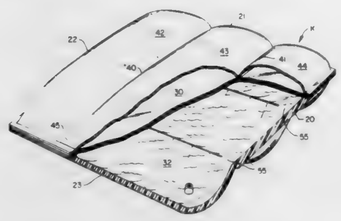
said flexing member being disposed in intersecting angularity with said upper member and wherein said flexing member has a top and a bottom and wherein the top of said flexing member is fixedly attached to said upper member and wherein the bottom of said flexing member is fixedly attached to said base.

4,389,742

PRESSURE CONTROLLED AIR/WATER CUSHION

Nick R. DeWitt, 218 Windyam Dr., Portola, Calif. 94025

Filed Jan. 2, 1981, Ser. No. 222,207
Int. Cl.³ A47C *27/08*
U.S. Cl. 5—455 **2 Claims**



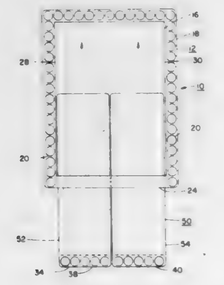
1. A cushion for use between a support and a person seated on said support; the improvement in said cushion comprising first, second, and third membranes, said membranes covering an area sufficient to support said person in said seat, all said membranes joined at the side edges thereof to other membranes in a three-membrane cushion to form a first fluid tight compartment between said first and second membranes and a second fluid tight compartment between said second and third membranes; at least two substantially parallel seams in every compartment, wherein said seams within said first compartment are disposed at right angles to said seams in the second compartments, said seams dividing said compartments into at least three chambers, said seams including along one portion thereof an opening through said seams to permit fluid communication between chambers defined by the seams in the compartments on each side of said seams; said cushion at one of said compartments filled with water; said cushion at the other of said compartments filled with air.

4,389,743

MATTRESS ARRANGEMENT HAVING A REMOVABLE SIDE-INSERTABLE CENTER CORE STRUCTURE

Milton A. Callaway, Jackson, Oreg., assignor to Simmons U.S.A. Corporation, Atlanta, Ga.

Filed Jun. 22, 1981, Ser. No. 276,173
Int. Cl.³ A47C *27/15, 27/04*
U.S. Cl. 5—464 **39 Claims**



1. A mattress arrangement including a removable and interchangeable mattress center core structure locatable within a mattress perimeter section, comprising in combination:

(a) a substantially rigid mattress perimeter structure including support means defining the perimeter outline of said mattress, said support means having an opening communicating with the interior of said mattress arrangement along one side of said mattress perimeter,

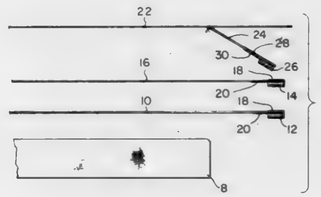
(b) and at least one mattress core section being insertable into said mattress perimeter structure through said opening, said core section being dimensioned to form a complete mattress arrangement in conjunction with said perimeter structure and having one end thereof defining a portion of the perimeter structure.

4,389,744

SYSTEM AND METHOD FOR SECURING BED COVERINGS TO THE MATTRESS OF A BED

Gerald E. Monroe, 1516 NE. 96th St., Seattle, Wash. 98115

Filed Nov. 13, 1980, Ser. No. 206,353
Int. Cl.³ A47G *9/02*
U.S. Cl. 5—498 **6 Claims**



1. A system for securing coverings to the mattress of a bed to prevent their being pulled loose by one sleeping on the bed and make the task of making the bed easier and faster, comprising:

a mattress;

a top sheet for the mattress of greater length and width than the mattress having an elastic strap secured near one end to one surface thereof at two spaced points along the width dimension of the sheet a distance apart essentially equal to the width of the mattress, the strap adapted to fit around and extend over the upper surface of the foot end of the mattress when the end of the sheet having the strap is wrapped around the foot end of the mattress; and

a spread to cover the top sheet and mattress of greater length and width than the mattress having a flap with a width essentially equal to the width of the mattress having an elastic strap with its free end secured at spaced points to one end of the flap, the other end of the flap secured along its width dimension to the surface of the spread which is not exposed when the bed is made, the elastic strap adapted to extend around and over the upper surface of the mattress near the foot end thereof when the flap is wrapped around the foot end of the mattress.

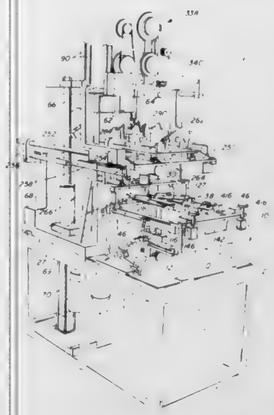
4,389,745

MOLDING AN INSOLE AND ATTACHING THE MOLDED INSOLE TO A LAST BOTTOM

Michael M. Becka, Nashua, N.H., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed May 11, 1981, Ser. No. 262,665
Int. Cl.³ A43D *9/00*
U.S. Cl. 12—142 T **45 Claims**

1. A machine molding an insole and attaching the molded insole to a last bottom comprising: a lower mold; an upper mold, located above the lower mold, mounted for heightwise movement between an elevated position spaced from the lower mold and a lower position proximate to the lower mold; complementary molding surfaces on the top surface of the lower mold and the bottom surface of the upper mold; means for initially maintaining the molding surfaces spaced from each other while a flat insole is transported between the molding surfaces; means for thereafter effecting relative closing movement between the molding surfaces to mold the flat insole to the shape of the molding surfaces; means for thereafter raising the upper mold to its elevated position; means for retaining the



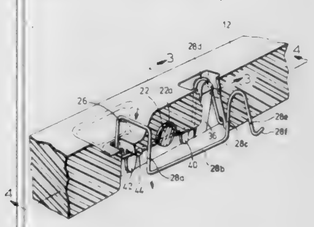
molded insole on the upper mold molding surface during the rise of the upper mold; means for thereafter placing a last supported bottom-up between the molds; means for thereafter releasing the molded insole from the upper mold molding surface to permit the molded insole to descend onto the last bottom; and means for thereafter attaching the molded insole to the last bottom.

4,389,746

CONNECTOR FOR WINDSHIELD WIPERS OF LOW SILHOUETTE TYPE

Edward G. Kimber, Carlisle, Canada, assignor to Tridon Limited, Hamilton, Canada

Filed Jun. 16, 1981, Ser. No. 274,137
Int. Cl.³ B60S *1/40*
U.S. Cl. 15—250.32 **18 Claims**



1. A windshield wiper comprising:

a pressure distributing superstructure having at least a yoke member thereof of moulded plastic material;

the windshield wiper being of the type wherein a releasable connector between the superstructure and a wiper arm includes a pin extending sideways from the wiper arm and entering a cooperating transverse aperture in the said yoke member for the superstructure to pivot, the pin having a circumferential groove therein for releasable retaining engagement by a connector latch member mounted in an underside recess formed in the said yoke member;

wherein said underside recess is moulded in the underside of the yoke member and communicates through an aperture of reduced length with a counter recess moulded in the topside of the yoke member;

wherein a connector latch member is of spring wire material having two parallel transversely-spaced arms connected together at one end by a cross-member, which cross-member when the latch member is mounted in the yoke member is disposed in said counter-recess;

each arm comprising a number of arm portions connected together in the following order, namely,

a connecting portion connected to the said cross-member and extending from the counter-recess through the reduced length aperture into the said underside recess,

a pin-engaging portion connected to the connecting portion and extending lengthwise of the yoke member for releasable retaining engagement in the circumferential pin groove and for heightwise movement into and out of such engagement by corresponding movement of the cross member and the connecting portion;

a spring portion extending heightwise of the yoke member and flexing for said movement of the pin-engaging portion;

and a spring reaction portion also extending heightwise of the yoke member and engaging a wall of the underside recess to provide reaction for the said heightwise movement of the pin-engaging portion;

wherein the latch member during its maximum upward and downward movements remains always within the side profile of the yoke member and the cross-member does not protrude from the counter aperture, and

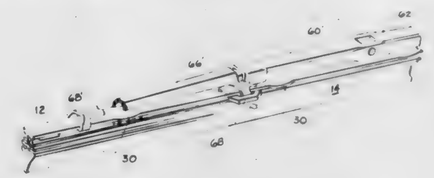
wherein the cross-member is moved downward within the counter aperture for releasable disengagement of the latch member pin-engaging portion from the said connector pin groove, the heightwise downward movement of the cross-member within the counter aperture until the cross-member enters the said aperture of reduced length being sufficient for the said releasable disengagement of the latch member and being insufficient to overstress the spring wire material of the latch member.

4,389,747

WINDSHIELD WIPER BLADE REFILL UNIT

William C. Riester, Williamsville, N.Y., assignor to Trico Products Corporation, Buffalo, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,385
Int. Cl.³ B60S *1/38*
U.S. Cl. 15—250.42 **11 Claims**



1. In a windshield wiper blade refill unit, including a squeegee element of elastomeric material having an elongate body portion terminating in a lip along one longitudinal edge and an anchoring strip along the other longitudinal edge separated from said body portion by a reduced neck portion and a stiff resilient supporting strip longitudinally coextensive with said squeegee element, said supporting strip including a hollow body for slidably receiving said anchoring strip having an upper wall, depending side walls and longitudinally slotted bottom wall for slidably receiving said neck portion, upper and lower lateral flanges coplanar with said upper and bottom walls, respectively, defining laterally open channels for slidably receiving and confining opposed claws of a wiper blade superstructure; retaining means for holding said superstructure and said refill unit assembled characterized in that each of said

side walls include a plurality of sets of openings longitudinally spaced apart along the supporting strip, each set comprising a pair of spaced apart openings in alignment with a like pair of spaced apart openings in the opposite side wall, and notches in said anchoring strip in alignment with said openings, said clip comprising a base portion and a pair of resilient legs extending forwardly from said base, said clip embracing a claw of a superstructure, said legs extending completely through a set of said openings and releasable latching means on said legs for retaining said clip in said openings to thereby accomodate superstructures having claws at different longitudinal positions relative to the supporting strip.

11. In a windshield wiper blade refill unit, including a squeegee element of elastomeric material having an elongate body portion terminating in a lip along one longitudinal edge and an anchoring strip along the other longitudinal edge separated from said body portion by a reduced neck portion and a stiff resilient supporting strip longitudinally coextensive with said squeegee element, said supporting strip including a hollow body for slidably receiving said anchoring strip having an upper wall, depending side walls and longitudinally slotted bottom wall for slidably receiving said neck portion, upper and lower lateral flanges coplanar with said upper and bottom walls, respectively, defining laterally open channels for slidably receiving and confining opposed claws of a wiper blade superstructure; retaining means for holding said superstructure and said refill unit assembled characterized in that said upper wall of said supporting strip and upper coplanar lateral flanges include longitudinally spaced apart laterally broadened areas to accomodate superstructures having opposed claws spaced apart a distance greater than other superstructures.

4,389,748

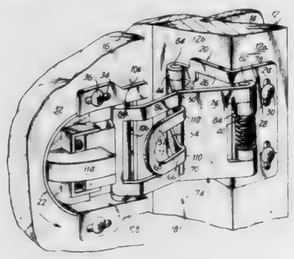
CONCEALED DOOR HINGE

Morris G. Grossman, #5 Horizon Rd., Fort Lee, N.J. 07024

Continuation-in-part of Ser. No. 131,487, Mar. 13, 1980, and Ser. No. 93,448, Nov. 13, 1979, abandoned. This application May 26, 1981, Ser. No. 267,017

Int. Cl.³ E05D *3/06, 308, 3/10, 15/52*

U.S. Cl. 16—278 **90 Claims**



1. A hinge for mounting a door on a cabinet comprising:

an interior leaf, for mounting to a cabinet, including first and second pivots;

an external leaf including a third pivot for fixed positioning within a recess in a door;

a pivoting member having a first end pivotally connected to said second pivot, and a second end pivotally connected to said third pivot;

a forcing member having a first end pivotally connected to said first pivot, said forcing member being operatively associated with said pivoting member; and

forcing means urging said forcing member to interact with said pivoting member when said hinge is being moved to a closed position.

4,389,749

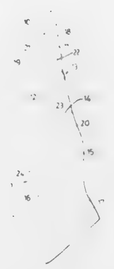
CUTTING-UP PROCESS

Kaarlo J. Korhonen, Säterivägen 18,, 161 70, Bromma, Sweden

Filed Dec. 23, 1980, Ser. No. 219,234

Int. Cl.³ A22C *17/02*

U.S. Cl. 17—46 **9 Claims**



1. In a process for coarse cutting-up of a carcass part comprising a limb, such as a shoulder part or a leg part, comprising separating a meat piece from a skeleton portion of the carcass part, wherein the meat piece comprises a major portion of the meat mass on the carcass part, the improvement including the steps of

gripping the foot-end of the limb and holding it against bending,

making incisions in the carcass part in a pattern adapted for the part while the part is being gripped,

cutting the meat piece away from the skeleton portion while the limb is held against bending, and

gripping the meat piece and subjecting it to a pulling force away from the carcass part during the cutting operation.

4,389,750

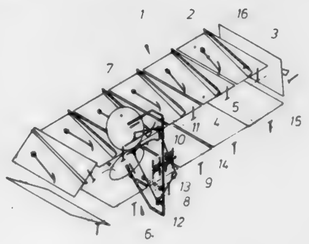
DEVICE FOR THE BEHEADING OF FISH

Sigurdur Kristinsson, Saudarkrokur, and Örn Johannesson, Reykjavik, both of Iceland, assignors to Nordischer Maschinenbau Rud. Baader GmbH & Co KG, Lubeck, Fed. Rep. of Germany

Filed Jun. 11, 1981, Ser. No. 272,540

Int. Cl.³ A22C *25/14*

U.S. Cl. 17—63 **4 Claims**



1. Apparatus for mechanically decapitating fish, said fish having a head end, a tail end, two sides opposing each other intermediate said head end and said tail end, and a longitudinal axis extending between said head end and said tail end, said apparatus including

a. conveying means for conveying said fish in a conveying direction and defining a conveying plane, comprising a trough chain of receiving troughs having two end portions and a bottom surface to receive and convey said fish lying on one of said sides with their longitudinal axis essentially transverse to said conveying direction, and

b. decapitating means arranged at a close spacing beside one of said end portions of said receiving troughs and comprising pairwise arranged rotatingly driven circular knife means and feeler rail means, wherein said knife means are arranged symmetrically with respect to each other, including an angle with each other and being aligned by their plane of symmetry to be nearly parallel to the plane of said bottom surface of said receiving troughs whereby to provide a wedge-shaped cut through said fish, said feeler rail means being arranged symmetrically to the plane of symmetry of said knife means and displaceable synchronously by said fish against the force of spring means, and said knife means being mounted displaceably in height and operatively coupled with said feeder rail means for movement of said knife means in response to displacement of said feeder rail means to reposition said plane of symmetry of said knife means relative to said plane of the bottom surface of said receiving troughs by a distance sufficient to locate the juncture of said angularly-arranged knife means exactly at the longitudinal axis of the fish displacing said feeler rail means, regardless of the size of said fish.

4,389,751

APPARATUS FOR SEVERING A FIBRE LAYER OF STAPLE FIBRES

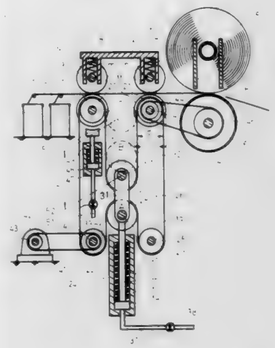
Paul Gyger, Seuzach, and Hugo Schär, Neftenbach, both of Switzerland, assignors to Rieter Machine Works Limited, Winterthur, Switzerland

PCT No. PCT/EP80/00044, § 371 Date Mar. 9, 1981, § 102(e) Date Mar. 2, 1981, PCT Pub. No. WO81/00118, PCT Pub. Date Jan. 22, 1981

PCT Filed Jul. 5, 1980, Ser. No. 243,933

Int. Cl.³ D01G *1/08;* **D01H** *5/86*

U.S. Cl. 19—0.35 **7 Claims**



1. An apparatus for severing a fibre layer composed of mutually slidable staple fibres, comprising:

two pairs of driven rolls;

said two pairs of driven rolls forming two nip lines for the fibre layer which is guided therebetween;

a flexible power transmitting element for kinematically coupling said two pairs of rolls;

each of said pairs of rolls containing a driven roll;

a respective drive roll provided for each driven roll of said two pairs of rolls;

at least two further deflecting rolls which are fixed relative to space and two rolls which are movable with respect to space;

means for interconnecting said two rolls to define a roll tandem;

said power transmitting element being guided about the drive roll of the driven roll of each pair of rolls and about said at least two further deflecting rolls which are fixed relative to space and about said two rolls which are movable with respect to space in such a manner that said power transmitting element forms a respective loop between the drive rolls and one of said rolls of said roll tandem and between the two deflecting rolls and the other roll of said roll tandem; and

one of said loops being shortened by a certain length whereas the other loop is lengthened by essentially the same length as the movable roll tandem is moved, so that one of said pairs of rolls can be rotatated relative to the other pair of rolls and the fibre layer clamped between the nip lines can thus be severed by being pulled apart.

4,389,752

METHOD OF PRODUCING A STAPLE FIBRE SLIVER AND APPARATUS FOR IMPLEMENTING THE METHOD

Emil Briner; Heinz Clement, both of Winterthur, and Heiner Eberli, Steckborn, all of Switzerland, assignors to Rieter Machine Works Limited, Winterthur, Switzerland

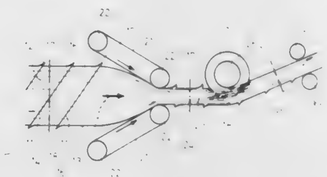
PCT No. PCT/EP80/00045, § 371 Date Mar. 10, 1981, § 102(e) Date Feb. 27, 1981, PCT Pub. No. WO81/00263, PCT Pub. Date Feb. 5, 1981

PCT Filed Jul. 5, 1980, Ser. No. 243,917

Claims priority, application Switzerland, Jul. 10, 1979, 6409/79

Int. Cl.³ D01G *1/04, 1/06;* **D01H** *5/72*

U.S. Cl. 19—0.56 **8 Claims**



3. An apparatus for producing a draftable staple fibre sliver from a strand composed of endless, substantially parallel filaments and possessing a substantially elongate cross-sectional configuration and moved in a predetermined path of travel extending in the longitudinal direction of the strand, comprising:

means for laterally uniting and condensing the moving strand into a staple fibre sliver possessing a substantially circular cross-sectional configuration;

a rotatable rolling-in roll having an axis of rotation and containing a disc arranged along the path of travel of the staple fibre sliver possessing said approximately circular cross-sectional configuration; and

said rolling-in roll protruding into a predetermined region of a generatrix of said sliver containing forwardly protruding points for displacing said region together with said forwardly protruding points of said staple fibre sliver into the interior of the staple fibre sliver.

4,389,753

WEB TAKEOFF ROLL

Michael G. Golan, Amston, Conn., and Leo Desrosiers, Woonsocket, R.I., assignors to The Kendall Company, Walpole, Mass.

Filed Oct. 5, 1981, Ser. No. 308,431

Int. Cl.³ D01G *15/46*

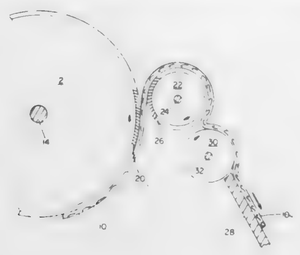
U.S. Cl. 19—106 R **3 Claims**

1. Carding cylinder takeoff apparatus for producing a randomized web of textile fibers, comprising

a rotatable doffing roll having a wire-covered surface for carrying thereon a fibrous web

a rotatable transfer roll having a wire-covered surface

closely spaced from said doffing roll surface for transferring said fibrous web from said rotatable doffing roll surface to said transfer roll surface to form fiber hooks in said web during said transferring to randomize said web, and



a rotatable takeoff roll closely spaced from said transfer roll surface and having a resilient rubber surface with a Shore A Durometer hardness of less than about 80 for removing said randomized web from said transfer roll.

4,389,754

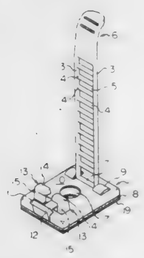
BINDING DEVICE

Yoshio Sohma, Tokyo, Japan, assignor to Nikko Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1981, Ser. No. 235,162

Int. Cl.³ B65D *63/10*

U.S. Cl. 24—16 PB **12 Claims**



1. A binding device comprising: a rigid base plate, a flexible ladder-like belt having a plurality of parallel spaced apart rungs provided between a pair of side rails thereof, said belt being hinged on an upper surface of said base plate near one end thereof, an outwardly inclined stopper formed at the opposite end of said base plate to protrude from the upper surface of said plate and away from said belt hinged point for selectively engaging one of said rungs, and a guide means provided on the upper surface of said plate between said hinged point and said stopper, being close to the stopper for use in guiding said belt toward the stopper permitting retention of the belt in binding position on the stopper.

4,389,755

MULTI-PURPOSE PAPER-WORK ORGANIZER CLIP INTEGRATED WITH ATTACHABLE DETACHABLE INFORMATIVE INDICIA

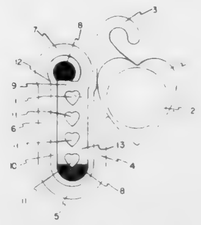
Antony-Euclid C. Villa-Real, 2512 Capistrano Ave., Las Vegas, Nev. 89121

Filed Feb. 12, 1981, Ser. No. 233,913

Int. Cl.³ B42F *1/06*; G09F *3/02*

U.S. Cl. 24—67.9 **11 Claims**

1. A unitary paper clip comprising:
a flat central member having at least one aperture therein;
raised ribs on upper and lower portions of said flat central member for engaging paper articles;
a hinge portion being connected to said flat central member in spaced relation thereto and having an arcuate slot therebetween;
said hinge portion having an upper curved flat portion, a first flat connecting arm, a lower flat arcuate member and



a second flat connecting arm, said upper flat portion, first flat connecting arm, lower flat arcuate member and second flat connecting arm being integral;
a lateral extension member connected to said hinge portion by said second connecting arm and adapted to receive informational or instructional indicia thereon; and
a hook member on said lateral extension for supporting said paper clip on any support member.

4,389,756

CLASP FOR SWIMMING ARTICLE

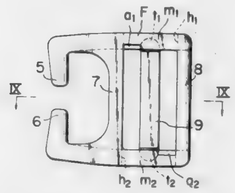
Masatoshi Kusama, Chiba, Japan, assignor to Kinugawa Pacific Kabushiki Kaisha, Japan

Filed Jan. 21, 1981, Ser. No. 226,595

Claims priority, application Japan, Jul. 23, 1980, 55-103216[U]

Int. Cl.³ A44B *11/10*

U.S. Cl. 24—171 **5 Claims**



1. A clasp for a swimming article which comprises
a frame member of substantially rectangular shape formed of a resilient material and having longitudinal slot recesses formed along two opposite sides of the frame member and further having two cutaway portions formed on the same side of the plane of the frame member and at diagonally opposite corners thereof and correspondingly communicating with the recesses, including means on the frame member for affixing it to a portion of said article and
a movable bar formed of a resilient material and whose opposite ends are adapted to slide in said recesses in the opposite sides of the frame member and which is adapted to be inserted into sliding position in the frame by passing the ends of the bar through the cutaway portions and into the recesses,
wherein the frame member and bar are dimensioned such that the effective length of the bar marginally exceeds the diagonal clearance of the frame member, whereby the resilience of the frame member and the bar allows the bar to be pressed and inserted into position, but the relaxed

shape of the frame member prevents the bar from being easily removed.

4,389,757

CONTROL LEVER SEAL

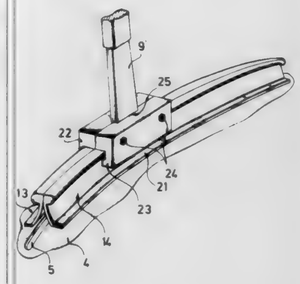
Karl-Heinz Luck, Dusseldorf; Albert Kallenberg, Hurth; Manfred Schnippering, Pulheim, and Herbert Moeselaken, Grevenbroich, all of Fed. Rep. of Germany, assignors to International Harvester Co., Chicago, Ill.

Continuation of Ser. No. 11,332, Feb. 12, 1979, abandoned. This application May 20, 1981, Ser. No. 265,137

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807819

Int. Cl.³ A44B *19/26*

U.S. Cl. 24—205.1 R **1 Claim**



1. In a device to seal a surface penetrated by a pivoted operating lever having a substantially constant cross-section along its length, which lever extends through a slot in the surface, a pair of sealing elements of flexible material secured to said surface, one on each side of said slot and normally engaging to seal said slot, and rims formed on said sealing elements; an improved closing element comprising:
a pair of mating sections;
a longitudinal rim groove formed in each section to accept said rims;
a lever groove in each section transverse to said rim groove and having a shape and size which is complementary to and slidingly engageable with said lever when said sections are connected around said lever;
said rim groove in each section angling toward the other section on each side of said lever groove;
a wedge formed on opposite ends of each section and positioned to protrude into the rim groove on the other section; and
releasable fastening means for connecting said sections around said lever whereby the rims are operated and closed around said lever, as it is pivoted, within said closing element, while allowing minimal contact with said lever.

4,389,758

ORNAMENTAL ATTACHMENT FOR SLIDE FASTENER SLIDERS

Shunji Akashi, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

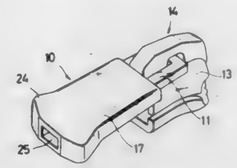
Filed Jun. 8, 1981, Ser. No. 271,602

Claims priority, application Japan, Jun. 24, 1980, 55-88394[U]

Int. Cl.³ A44B *19/00*

U.S. Cl. 24—205.11 R **9 Claims**

1. An ornamental attachment for a slide fastener slider with a pull tab, comprising:
(a) a body having a pair of spaced plates defining therebetween a channel for receiving therein the pull tab;
(b) a locking projection extending from one of said plates into said channel for locking the pull tab in said channel; and
(c) said one plate having a pair of laterally spaced slits communicating with and extending longitudinally of said channel to define therebetween a resilient web portion, said resilient web portion being connected at both opposite ends to said one plate and displaceable against the resiliency thereof away from the other plate in response to



engagement between the pull tab and said locking projection when the pull tab is inserted into said channel, until the pull tab becomes locked by said locking projection;
(d) both of said plates extending outwardly beyond said pull tab when locked in said channel and being connected together at their outward end portions.

4,389,759

RADIATOR GRILLE FIXING STRUCTURE

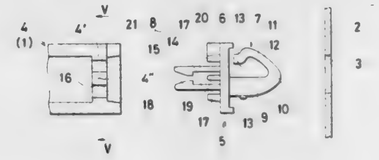
Takuo Yuda, Yokohama, Japan, assignor to Nifco Inc., Tokyo, Japan

Filed Sep. 10, 1980, Ser. No. 185,811

Claims priority, application Japan, Sep. 11, 1979, 54-124667[U]

Int. Cl.³ A44B *17/00*

U.S. Cl. 24—214 **1 Claim**



1. A radiator grille fixing structure comprising a plurality of separate fasteners adapted to engage an array of apertures in a grille and a matching array of apertures in a car body, each of said fasteners comprising:
(a) a base plate,
(b) a first engaging means extending from one side of said plate adapted to be snapped into one of said apertures in said car body, said first means being substantially hook-shaped and including;
(1) a solid shank portion with one end integrally formed with said base plate,
(2) a flexible curved arm extending from the opposite end of said shank portion, said arm having a stepped catch near its free end,
(c) a second engaging means extending from the opposite side of said base plate adapted to be snapped into engagement with one of said apertures in said grille, said second means including;
(1) a pair of resilient legs with oppositely directed hooks at the free ends thereof adapted to grip said grille,
(2) a rib on said base between said legs to abut and support a portion of said grilled engaged by said legs,
(3) tapering lateral support means disposed on said base and located radially outwardly from said legs to provide lateral contact between the fastener and the grille,
(4) a locating projection assymetrically disposed adjacent said support means to facilitate formation of a predeter-

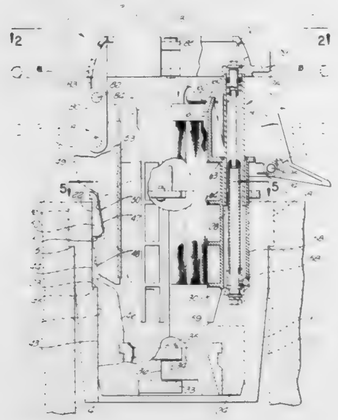
mined arrangement of said fasteners in said grille, whereby said fasteners support said grille in a fixed relation to said car body.

4,389,760

WELL SLIP UNIT

Igor Krasnov, Huntington Beach, Calif., assignor to Varco International, Inc., Orange, Calif.

Filed Dec. 7, 1979, Ser. No. 101,151
Int. Cl.³ A44B *21/00*
U.S. Cl. 24—263 D **22 Claims**



1. A slip assembly comprising:

a support structure adapted to be supported on a well drilling rotary table in a relation to turn with the table;

a carrier structure mounted to said support structure for upward and downward movement relative thereto;

a plurality of slips which have inner faces for gripping a well pipe and which are connected to said carrier structure for movement upwardly and downwardly therewith relative to said support structure between lower active positions and upper retracted positions;

said slips having outer wedge surfaces for camming the slips inwardly into tight gripping engagement with a well pipe upon downward movement of the slips to said active positions;

latch means for releasably retaining said carrier structure and slips in said lower active positions; and

yielding means urging said carrier structure and slips upwardly and acting to return them to said upper retracted positions when said latch means are released;

said yielding means including a unit which is removable from said slip assembly for repair or replacement;

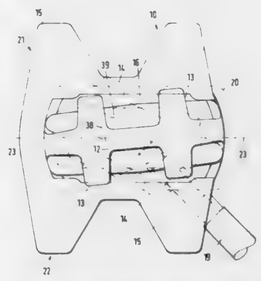
said unit including a vertically extending spring acting upwardly against said carrier structure and downwardly against said support structure to yieldingly urge the carrier structure upwardly relative to the support structure, a first element at the top of said spring urged upwardly thereby, a second element at the bottom of said spring urged downwardly thereby, and stop means acting when said unit is removed from said slip assembly to limit upward movement of said first element relative to said second element in a position maintaining said spring under compression.

4,389,761

CONTAINER COUPLING WITH SPLIT HOUSING

Jürgen F. G. Gloystein, Osterholz-Scharmbeck, and Klaus G. Szirniks, Bremen, both of Fed. Rep. of Germany, assignors to Conver Ingenieur-Technik GmbH & Co. KG, Bremen, Fed. Rep. of Germany

Filed Oct. 3, 1980, Ser. No. 193,687
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 2946509
Int. Cl.³ B63B *25/24*
U.S. Cl. 24—287 **7 Claims**



1. A coupling fitting for releasably locking adjacent corners of stacked shipping containers together, comprising:

(a) a housing (**10**) defined by two assembled, mating halves (**21**, **22**) and having a central support flange (**15**) flanked by outwardly extending centering bosses (**16**, **17**),

(b) a central passage (**11**) extending through the flange and bosses for rotatably accommodating a locking bolt (**12**),

(c) the housing being axially divided into the two halves by a central plane (**23**) passing through the flange and bosses, and having interfacing surfaces (**24**, **25**),

(d) undercut hook-like projections (**26**) extending outwardly from the interfacing surface of one housing half on one side of the passage and from each boss,

(e) first recesses (**27**) defined in the interfacing surface of the other housing half opposite the undercut projections and having configurations complementary thereto.

(f) tapering centering projections (**31**) extending outwardly from the interfacing surface of one housing half on another, opposite side of the passage and from each boss,

(g) second recesses (**34**) defined in the interfacing surface of the other housing half opposite the tapering projections of said one housing half recited in sub-paragraph (f), said recesses having configurations complementary to said tapering projections, and

(h) means for positively securing the tapering projections within their respective recesses upon assembly, whereby after assembly the projections and recesses are fully enclosed within the housing.

4,389,762

METHOD OF MAKING A TRIMMER CAPACITOR

Jeffrey R. Reeves, Marshall, Ill., assignor to TRW, Inc., Marshall, Ill.

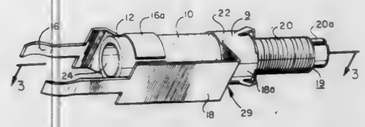
Continuation of Ser. No. 70,102, Aug. 27, 1979, abandoned. This application May 1, 1981, Ser. No. 259,580
Int. Cl.³ H01G *5/12*
U.S. Cl. 29—25.42 **4 Claims**

1. The method of making a variable capacitor having a tubular body comprising a rigid dielectric tube supporting axially-spaced capacitor electrodes on the outer wall of the tube and a metallic threaded cylindrical piston whose outer diameter is threaded and slightly smaller than the inner diameter of the tube, said body having an air-excluding intermediate liner for location between the tube and the piston comprising;

selecting for the intermediate liner a resilient resinous material deformable by cold flow and resistant to change in dimension upon application of heat below 500° F., said material being of tubular form having an outer diameter too large to fit within the inner diameter of the dielectric tube,

axially stretching the tubular deformable material to reduce its outer diameter until its outer diameter fits within the rigid dielectric tube,

positioning the stretched tubular resinous material within the rigid dielectric tube along a substantial length of the rigid body, and



releasing the stretching forces on the tubular deformable material so that it tends to return to its former size and shape and is confined by the inner diameter of the rigid tube and conforms to the inner surface thereof, and

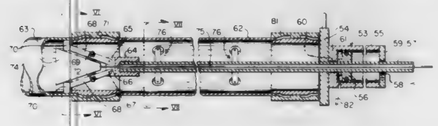
introducing said threaded metallic piston by threading the piston into the liner to deform the liner material by cold-flow and to form threads in said material precisely complementary to the threads of the metallic piston, and making electrical contact between said piston and one of said electrodes.

4,389,763

APPARATUS FOR JOINING PIPE SECTIONS BY JACKING

Richard O. Marsh, Jr., 703 Standard Life Bldg., Pittsburgh, Pa. 15222

Continuation-in-part of Ser. No. 967,965, Dec. 11, 1978, abandoned. This application Dec. 23, 1980, Ser. No. 219,514
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—237 **2 Claims**



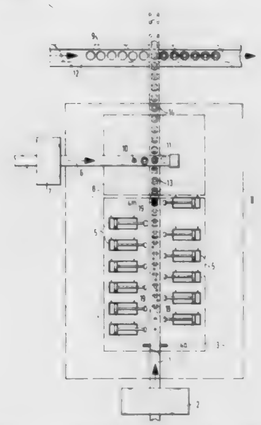
1. Apparatus for joining a plain end pipe section to another through force fit couplings, said apparatus comprising a hydraulic jack having a cylinder and a piston operable therein, a hollow piston rod for said piston supported coaxially within said pipe section, a slotted plate member straddling said piston rod and interposed between said cylinder and coupling at one end of said pipe section, expansible means carried by said hollow piston rod and activated by a rod telescopically movable within said hollow piston rod for engaging a coupling at the opposite end of said pipe section, said piston being operable when subject to fluid pressure to apply a tension force through said piston rod and said expansible means to the last mentioned coupling and to simultaneously apply a reaction force to the coupling at said one end of the pipe section through said slotted plate member.

4,389,764

METHOD FOR THE PRODUCTION AND ASSEMBLY OF LOCK PARTS

Walter Flander, Helsinki; Jukka Leikas, and Vesa Hirvonen, both of Joensuu, all of Finland, assignors to Oy Wartsila Oy, Helsinki, Finland

Filed Mar. 27, 1981, Ser. No. 248,296
Claims priority, application Finland, Apr. 1, 1980, 801037
Int. Cl.³ B23P *17/00*
U.S. Cl. 29—416 **14 Claims**



1. A method for punching disc-like lock parts from a sheet band or the like and for combining them to form lock mechanism units determining different lock combinations, including the steps of:

arranging the punching of said parts to their final form in a series of punching actions carried out by a plurality of punching units;

punching of said parts with different details by having the pattern of said series changeable for each punching stroke; and

that in a final phase of said punching, separating said disc-like lock parts from said band and collecting said parts in an order determined by a pre-selected combination code.

4,389,765

PILING REMOVAL

Floyd M. Thompson, Jr., Spring, Tex., assignor to Crutcher Resources Corporation, Houston, Tex.

Filed May 4, 1981, Ser. No. 260,030
Int. Cl.³ B23P *19/00*; B23B *3/04*; E21B *29/00*
U.S. Cl. 29—426.5 **4 Claims**

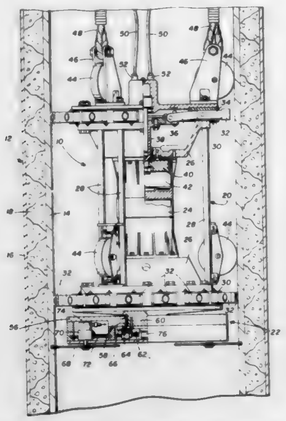
1. A method of removing a piling from a surrounding leg bonded to the piling, comprising the steps of:

breaking the bond interconnecting the piling and leg to free the piling;

lowering a clamp/cutter into the piling to a point located a predetermined distance below the upper end of the piling;

forming an internal circumferential cut through the piling with the cutter of the clamp/cutter to separate the piling into upper and lower portions;

actuating the clamp portion of the clamp/cutter to engage the upper portion of the piling; and



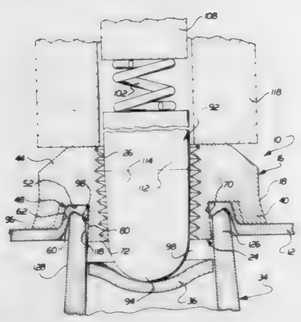
lifting the clamp/cutter and separated upper portion of the piling from the surrounding leg.

4,389,766

METHOD OF MOUNTING A FASTENER

Terry D. Capuano, Hinckley, Ohio, assignor to The Lamson & Sessions Co., Cleveland, Ohio

Filed Jun. 6, 1980, Ser. No. 157,221
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—432.2 **22 Claims**



1. A method of mounting a fastener having a center section with circumferentially spaced indentations located inwardly from a leading end of the center section, the center section projecting from a head section, said method comprising the steps of resiliently stretching a piece of sheet material independently of any force transmitted from the fastener to the sheet material, engaging the sheet material with the leading end of the center section of the fastener while the sheet material is stretched, cutting away a circular portion of the sheet material with the center section of the fastener to form an opening having a circular edge portion in the sheet material while the sheet material is stretched, and, thereafter, terminating said step of stretching the sheet material with at least a portion of the center section of the fastener in the opening to allow the circular edge portion of the opening in the sheet material to spring back into the circumferentially spaced indentations in the center section.

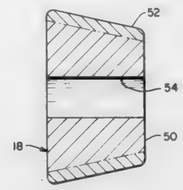
10. A method of mounting a fastener having a center section with circumferentially spaced indentations located inwardly from a leading end of the center section, the center section projecting from a head section, said method comprising the steps of providing a die having an opening with a minimum crosswise dimension which is less than a maximum cross sectional dimension of a center section of the fastener, engaging a first side of a piece of sheet material with the leading end of the center section of the fastener, engaging a second side of the piece of sheet material with the die, cutting away a circular portion of the sheet material by moving the leading end of the center section of the fastener through the sheet material into the opening in the die to form an opening having a circular edge portion, elastically decreasing the maximum cross sectional dimension of the leading end of the center section of the fastener as the center section of the fastener moves into the opening in the die by applying force against the leading end of the center section of the fastener with the die, engaging the center section of the fastener with the circular edge portion of the opening in the sheet material while the leading end of the center section of the fastener has a decreased cross sectional dimension and while the leading end of the center section of the fastener is disposed in the opening in the die, removing the leading end of the center section of the fastener from the opening in the die with the center section of the fastener extending through and disposed in engagement with the sheet material, and elastically increasing the cross sectional size of the leading end of the center section of the fastener as the leading end of the center section of the fastener is removed from the opening in the die to press the indentations in the center section of the fastener against the circular edge portion of the opening in the sheet material.

4,389,767

METHOD OF MANUFACTURING PULVERIZER ROLLS

Henry E. Burbach, Avon, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 10, 1980, Ser. No. 214,847
Int. Cl.³ B22D *11/126;* **B02C** *15/04*
U.S. Cl. 29—527.1 **8 Claims**



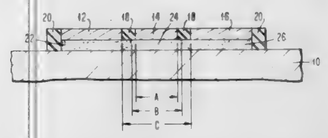
1. In a method of manufacturing a pulverizer roll of the type suitable for use in a bowl mill comprising the steps of forming a body having the overall configuration of a roll and providing a through passage through substantially the center of the body, the improvement comprising the steps of predicting the wear characteristics that the pulverizer roll is expected to experience based on the nature of the use to which the pulverizer roll is intended to be put, forming the outer surface of the body so that the contour thereof is a replication of the outer surface of a body that has actually experienced these predicted wear characteristics, and applying a layer of a hard material characterized by its wear-resistant qualities to the outer surface of the body.

4,389,768

SELF-ALIGNED PROCESS FOR FABRICATING GALLIUM ARSENIDE METAL-SEMICONDUCTOR FIELD EFFECT TRANSISTORS

Alan B. Fowler, Yorktown Heights; Robert Rosenberg, Peekskill, and Hans S. Rupprecht, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 17, 1981, Ser. No. 255,187
Int. Cl.³ H01L *21/225*
U.S. Cl. 29—571 **36 Claims**



1. In a method for fabricating a field effect transistor (FET) wherein a pair of diffusion sources are disposed on a semiconductor layer, and are spaced apart by a first distance, the steps of:

forming on said diffusion sources and, surrounding said diffusion sources at the peripheries thereof with insulation to provide an exposed region of said semiconductor layer between said diffusion sources, thereby defining a gate area having the length of said gate area less than said first distance;

driving said diffusion sources to provide a pair of doped regions in said semiconductor layer forming the source and drain of said FET, which source and drain, as a result of out-diffusion in the lateral direction, are spaced apart by a distance less than said first distance but greater than the length of said gate area; and

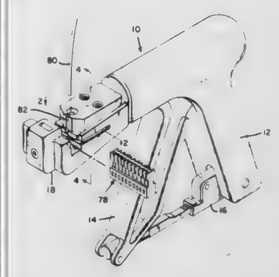
removing said diffusion sources to provide additional exposed regions of said semicondutor layer over said source and drain, all of said exposed regions being surrounded by insulation.

4,389,769

TERMINATING TOOL WHICH IS ADJUSTABLE TO ACCOMMODATE DIFFERENT CENTERLINE SPACING

Daniel T. Casey, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 24, 1981, Ser. No. 246,989
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—751 **10 Claims**



1. A hand tool for terminating individual conductors sequentially into respective insulation displacing conductor engaging portions of terminals preloaded into a connector housing, said hand tool comprising:

a frame having a hand grip, an actuation member pivotably mounted in the frame, and a drive shaft actuated by said actuating member;

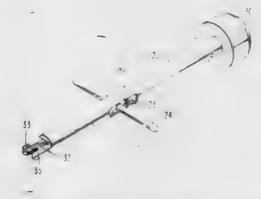
a terminating head mounted on said frame and having a transversely extending connector housing passing groove, a pawl assembly extending at least partly into one side of said groove to engage said housing for unidirectional movement thereof, advancement means extending into the opposite side of said groove and engageable with said connector housing to sequentially move it in a forward direction, means interconnecting said advancement means and insertion means including a yoke member one end of which is detachably secured to said drive shaft, first pin means securing said yoke member to said advancement means to coordinate the movements thereof and second pin means connecting conductor stuffing means selectively to said yoke member whereby a variation in the advancement of a connector housing through said tool to accommodate connectors having different centerline spacings of its terminals is accomplished by appropriate placement of said second pin joining said yoke member and said conductor stuffing means.

4,389,770

TRI-LEAD CABLE HOUSING REMOVAL TOOL

Terrance E. Bocinski, Binghamton, and Alan D. Knight, Newark Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1980, Ser. No. 208,228
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—764 **5 Claims**



1. A tool for removing from a housing a tri-lead cable having end contact terminals removably latched to said housing and having a portion bonded to an encapsulating film which extends partially into said housing, said tool comprising:

a hollow elongated body member;

a spring-biased plunger mounted within said body member;

a spring hook blade attached to said plunger and biased by said plunger to normally extend out an open end of said body member, said spring blade being inserted in between said housing and film to hook onto an edge of said film; and

grasping means on said body member and connected to said spring-biased plunger for retracting said plunger and spring hook blade to unlatched and remove the hooked tri-lead cable from said housing.

4,389,771

TREATMENT OF A SUBSTRATE SURFACE TO REDUCE SOLDER STICKING

Michael P. Cassidy, Ewing Township, Mercer County; John F. D'Amico, Montgomery Township, Somerset County; Michael A. DeAngelo, Jr., Ewing Township, Mercer County, and Kon-Mang Lin, Hopewell Township, Mercer County, all of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,442
Int. Cl.³ H05K *3/02*
U.S. Cl. 29—846 **5 Claims**

1. A method of manufacturing a printed circuit comprising the steps of:

(a) forming a circuit pattern on a flexible rubber modified epoxy coated printed circuit substrate;

(b) mechanically roughening at least that portion of the substrate not having or not to have a circuit pattern thereon either before or after the formation of said pattern

by means which result in roughening equivalent to roughening with a 125–400 mesh grit; and

(c) flowing solder over the circuit board so as to cause solder to coat only the circuit pattern.

4,389,772

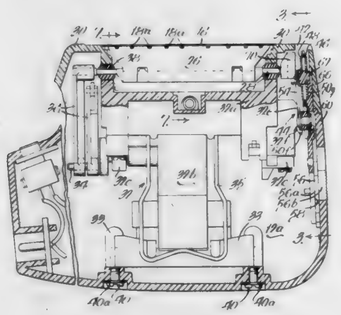
ELECTRIC DRY SHAVER

Donald J. Coleman, Lisle; Wilbur C. Jackson, Wheaton; Robert R. Lube, Countryside, and Albert R. Spohr, Park Ridge, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jun. 27, 1980, Ser. No. 163,743

Int. Cl.³ B26B *19/12*

U.S. Cl. 30—43.9 **7 Claims**



1. An electric shaver including an improved long hair clipper comprising a housing enclosing a motor drivingly connected to a shaving head mounted on a wall of said housing, said head having an arched comb and oscillating cutting means in shearing engagement with said comb, an oscillating shaft mounted for oscillation about its axis and disposed beneath said comb for supporting said cutting means for oscillation about said shaft axis, said shaft being connected to be oscillated by said motor, a long hair clipper assembly mounted adjacent one end of said oscillating shaft for linear slidable movement between a retracted position within said housing to an exposed position in which a portion of said assembly projects outside of said housing, said clipper assembly including a comb having teeth formed along one edge thereof, a support member secured to said comb and having guiding portions which engage portions of said housing to control the linear sliding movement of said clipper assembly, a cutter supported on said comb with teeth on one edge thereof, means biasing said cutter into engagement with said comb whereby said comb and said cutter teeth are in shearing engagement, detent means for retaining said assembly in either said retracted or said exposed position, said comb and said cutter being flat planar members having transverse bearing portions formed thereon for supporting said comb and cutter for relative sliding engagement, said support member being molded onto said comb to enclose a portion thereof, said support member including a transverse rib received within a transverse channel formed on said cutter to guide said cutter for linear movement with respect to said comb, and said means biasing said cutter being mounted on said support member, means on said cutter and said oscillating shaft which drivingly interconnects said shaft with said cutter to reciprocate said cutter when said clipper assembly is in said exposed position.

4,389,773

SHAVING IMPLEMENT

Warren I. Nissen, Topsfield, and Richard J. Petrillo, Norwell, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Apr. 30, 1981, Ser. No. 258,936

Int. Cl.³ B26B *21/02*

U.S. Cl. 30—50 **12 Claims**



1. A shaving implement comprising a platform member having slot means therein and support means adjacent said slot means, said support means having thereon support surface means generally normal to said slot means, blade means comprising a blade member having first and second portions generally normal to each other, said first portion having a cutting edge thereon, and a cap member having support means, said cap member support means having thereon support surface means, said blade member second portion being disposed in said slot means, said blade member first portion being clamped permanently and immovably between said platform member support surface means and said cap member support surface means, said cap member being permanently joined to said platform member.

4,389,774

ASPIRATING CUTTER FOR CUTTING AND ASPIRATING FILAMENTARY MATERIAL

William D. McLaughlin, Jr., Charlotte, N.C., assignor to Fiber Industries, Inc., New York, N.Y.

Filed Jul. 9, 1981, Ser. No. 281,813

Int. Cl.³ B23D *17/06*

U.S. Cl. 30—133 **9 Claims**

1. An aspirating cutter for severing traveling filamentary material and exhausting same to a remote location, comprising:

a housing,

a hollow suction tube projecting forwardly from said housing, and being open at its front end,

said suction tube including at least one generally longitudinally extending first cutting edge at the outer periphery of said suction tube,

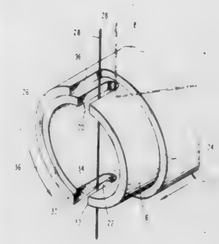
means for generating a rearward suction in said suction tube,

an outer tube mounted on the outside periphery of said suction tube and being co-axial with the latter,

said outer tube including a generally longitudinally extending second cutting edge at an inner periphery of said outer tube and spaced circumferentially from

said first cutting edge in a non-cutting mode to form therebetween a receiving space for receiving traveling filamentary material,

said space being disposed at a downstream side of said suction tube with reference to the direction of travel of the filamentary material,



one of said suction tube and outer tube being mounted for rotation relative to the other about said longitudinal axis, and

means for rotating said one tube to converge said first and second cutting edges into a cutting mode to sever a downstream portion of the filamentary material such that the severed filamentary material becomes entrained within the suction flow in said suction tube,

the front end of said one tube being circumferentially recessed to avoid contact of said one tube with previously severed filamentary material being exhausted in said suction flow while non-severed filamentary material is being subsequently severed by said cutting edges.

4,389,775

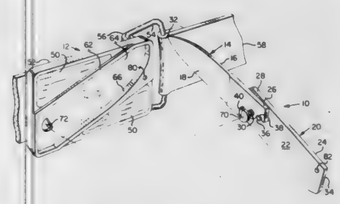
BELT BUCKLE AND KNIFE

Walter W. Collins, 802 Bellwood St., Clover, S.C. 29710

Filed Jul. 22, 1981, Ser. No. 286,052

Int. Cl.³ B26B *3/06;* **A45F** *5/00*

U.S. Cl. 30—156 **16 Claims**



1. A knife and case comprising:

a knife blade having first and second side surfaces;

a handle pivoted to one end of said blade for pivoting from a closed position in which the handle overlays the first side surface of said blade to an open position in which the free end of the handle extends away from the free end of the blade;

a case, said case including blade receiving means for receiving the blade when the handle is in the open position and for permitting pivoting of the handle relative to the received blade;

attachment means for securing the received blade to said case upon pivoting the handle from the open to closed positions and for releasing the received blade from the case upon pivoting the handle from the closed to open positions, to thereby releasably secure the knife to the case.

4,389,776

REPLACEABLE BLADE TYPE KNIFE

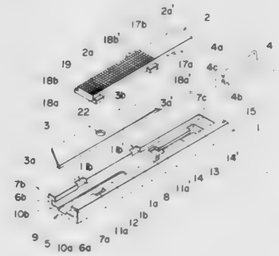
Saburo Okada, Osaka, Japan, assignor to Okada Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 12, 1981, Ser. No. 272,896

Claims priority, application Japan, Sep. 12, 1980, 55/130886[U]

Int. Cl.³ B26B *1/08*

U.S. Cl. 30—162 **4 Claims**



1. A replaceable blade type knife which comprises:

a tubular case body having guide grooves formed along longitudinal side edges thereof, said guide grooves being formed with an opening at a longitudinal forward end of said body;

a blade having a cutting edge along one longitudinal side thereof, said blade being axially, slidably fitted into said guide grooves of said case body so as to be selectively projected from and retracted into said opening of said case body in a longitudinal direction;

a sliding member provided with a bearing surface to be depressed by a finger of an operator, and slidably fitted into said guide grooves of said case body, said blade being interposed between said case body and said sliding member so that said sliding member is guided together with said blade in one unit in said guide grooves of said case body within a predetermined guide stroke;

restrictive means for enabling dismounting of said sliding member from said guide grooves of said case body at a specific position within said guide stroke of said sliding member between the opposite ends of said guide stroke and for unreleasably holding said lifting member in said guide grooves of said case body at positions other than said specific position so as to allow said sliding member to slide in said guide grooves of said case body, said restrictive means comprising recess portions formed in said case body and boss portions so formed on said sliding member as to be fitted into said recess portions when dismounting said sliding member; and

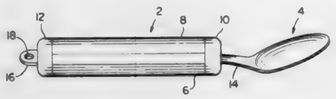
coupling means for releasably coupling said sliding member to said blade so that said sliding member and said blade are slidably guided in one unit in said guide grooves of said case body, whereby a longitudinal forward edge of said blade is selectively and slidably projected from and retracted into said open end of said case body in a longitudinal direction, with said sliding member being arranged to be dismounted from said blade at least at said specific position.

4,389,777

EATING UTENSIL FOR USE BY THE MANUALLY IMPAIRED

David Landsberger, 60 Hibernia Rd., Rockaway, Morris County, N.J. 07866

Filed Jul. 2, 1981, Ser. No. 279,715
Int. Cl.³ A47G *21/04*
U.S. Cl. 30—324 **7 Claims**



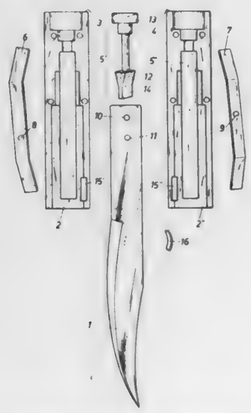
1. An eating utensil for a manually impaired user, comprising:
a substantially hollow, cylindrical handle having a base section and a cover section which fits over the base section, and the handle being sized to facilitate grasping of the utensil by the user;
a functional member having an elongated stem;
means included within the base section for retaining the elongated stem so that said stem extends longitudinally along the axis of the base section;
a pair of end caps, each of which is in cooperative arrangement with an opposite end of the handle when the cover fits over the base section for removably retaining the cover and base section together; and
the cover and base section arranged so that the stem of the functional member is captured within the hollow cylindrical handle when the cover and base section are removably retained together by the end caps, with the functional member thereupon extending along the axis of the handle and external thereto from an end thereof.

4,389,778

DEVICE FOR KNIFE HANDLE

William Håkansson, Åmål, Sweden, assignor to Aktiebolaget Metka, Åmål, Sweden

PCT No. PCT/SE80/00156, § 371 Date Dec. 17, 1980, § 102(e) Date Dec. 17, 1980, PCT Pub. No. WO80/02816, PCT Pub. Date Dec. 24, 1980
PCT Filed May 29, 1980, Ser. No. 227,095
Claims priority, application Sweden, Jun. 29, 1979, 7905049
Int. Cl.³ B25G *3/28*
U.S. Cl. 30—338 **2 Claims**



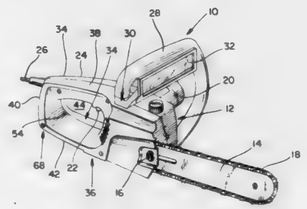
1. A knife handle capable of firmly holding a detachable knife blade having a substantially flat side with a set of openings therein, said handle comprising two spring leaf means for bearing against the flat side of said knife blade, said spring leaf means having protrusions which engage the set of openings in said knife blade, said openings corresponding to the positions of said protrusions, said knife handle including control means for applying pressure between said spring leaf means to disengage said protrusions from said corresponding knife blade openings, wherein said control means includes a wedge means displaceable in said handle for forcing apart said spring leaf means, wherein the maximum displacement of said wedge means displaces said knife blade in a direction parallel to the displacement of said wedge means to leave said knife blade openings in a position which does not correspond to said protrusions.

4,389,779

RIBBED HANDLE AND GUARD CONSTRUCTION FOR CHAIN SAW

Douglas G. Overbury, and Robert J. McDougall, both of Brockville, Canada, assignors to Black & Decker Inc., Newark, Del.

Filed Nov. 18, 1980, Ser. No. 251,721
Int. Cl.³ B27B *17/02*
U.S. Cl. 30—382 **8 Claims**



1. A clamshell housing for a power tool comprising:
(a) a support member having the power tool affixed thereto,
(b) an open section of predetermined width formed on the support member,
(c) a cover member detachably connected to enclose the open section of the support member, and to define a parting line therebetween,
(d) the cover member having a width at least three times greater than the width of the open section,
(e) the cover having a continuous smooth surface on one side thereof,
(f) a plurality of stiffening ribs extending from the underneath side of said surface transversely across the width thereof to support and stiffen the cover, and
(g) fastening means connecting the cover to the open section of the support member.

4,389,780

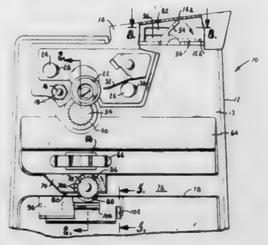
BAG OPENING DEVICE FOR CAN OPENERS

Richard J. Ostroski, Jackson County, Mo.; James B. Aberer, Contra Costa County, Calif., and Gary Best, Jackson County, Mo., assignors to Rival Manufacturing Company, Kansas City, Mo.

Filed May 30, 1980, Ser. No. 154,785
The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.
Int. Cl.³ B21D *53/50*
U.S. Cl. 30—408 **4 Claims**

1. In a power operated can opener having an upright frame, a can feed wheel rotatively mounted on said frame, a hand lever, a cutting element mounted on said lever, means mounting said hand lever on the frame for movement to carry the cutting element toward and away from the can feed wheel, and

power means for effecting rotation of said feed wheel, the combination therewith of:
a bag cutter wheel mounted for rotation on said frame at a location offset from the can feed wheel, said cutter wheel having a peripheral edge formed to cut through a sealed bag containing food when the bag is fed past the cutter wheel in operating cutting proximity therewith;



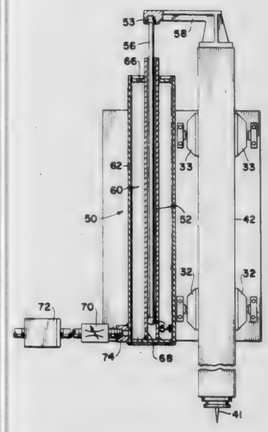
guide means on the frame adjacent said peripheral edge for guiding the bag as same is being fed past the cutter wheel; and
a retainer element removably mounted on said frame at a location to partially overlap the peripheral edge of said cutter wheel.

4,389,781

PNEUMATIC COUNTERBALANCE FOR A COORDINATE MEASURING MACHINE

Robert D. Donaldson, West Carrollton, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 10, 1981, Ser. No. 291,526
Int. Cl.³ G01B *5/20*
U.S. Cl. 33—1 M **15 Claims**



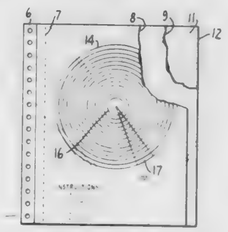
1. In a coordinate measuring machine (**10**), including a base (**20**), a carriage (**30**) for movement relative thereto, a probe arm (**42**) and a probe (**41**) disposed at the free end of said probe arm (**42**) for engaging an article to be measured, characterized by:
a pressurized pneumatic accumulator (**60**);
a cylinder (**52**) having one end in free communication with said pneumatic accumulator (**60**) and the other end vented to atmosphere:
a piston (**54**) disposed within said cylinder (**52**) for relative movement therein and permitting pressurized air to leak around;
connecting means (**56,58**) connecting said piston (**54**) to said probe arm (**54**) for movement together;
a regulated air supply (**72**); and,
variable flow control valve (**10**) connecting said regulated air supply (**72**) to said accumulator (**60**) and being adjusted to balance for leakage past said piston (**54**) at a selected pressure.

4,389,782

DETERMINATION OF THE EXTENT OF A DECUBITUS ULCER

David F. Webster, Santa Rosa, Calif., assignor to Nomode Incorporated, Santa Rosa, Calif.

Continuation of Ser. No. 113,051, Jan. 17, 1980, abandoned. This application Feb. 26, 1982, Ser. No. 352,939
Int. Cl.³ G01B *3/00*
U.S. Cl. 33—1 BB **3 Claims**



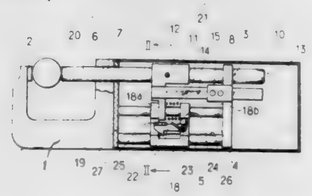
1. A device for recording the extent of a decubitus ulcer on the skin of a patient comprising a transparent barrier sheet having a top face and a bottom face with an adhesive on the bottom face for securing the barrier sheet in position over an ulcerated region on a patient, and a transparent outer sheet removably positioned over the top face of the barrier sheet, said outer sheet having a plurality of spaced concentric rings arranged concentrically about a central eye which is positioned in use over the central portion of the skin lesion provided by a decubitus ulcer.

4,389,783

MEASURING DEVICE

Hideo Sakata, and Seigo Takahashi, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Mitutoya Seisakusho, Tokyo, Japan

Filed Dec. 2, 1980, Ser. No. 212,133
Claims priority, application Japan, Dec. 5, 1979, 54-157577
Int. Cl.³ G01B *5/02*
U.S. Cl. 33—143 K **5 Claims**



1. A measuring device for measuring a linear dimension of a workpiece wherein the linear dimension is measured between two opposed sides of the workpiece, the measuring device comprising:
a frame having an anvil portion and supporting portion wherein the workpiece is positioned with one side against the anvil portion and the other side adjacent to the supporting portion;

a first adjustable element having a surface thereon for engaging the other side of the workpiece;

means for reciprocally mounting the adjustable element on the supporting portion of the frame with the workpiece engaging surface positioned opposite the anvil portion of the frame whereby the workpiece is disposed between the anvil portion and workpiece engaging surface during utilization of the measuring device;

a second adjustable element reciprocally mounted on the frame for motion paralleling that of the first adjustable element, the second adjustable element having a pair of opposed surfaces defining a space therebetween;

a depending portion on the first adjustable element positioned between the opposed surfaces;

spring means disposed between the depending portion and one of the opposed surfaces for biasing the first adjustable element toward the anvil;

ratchet means disposed between the second adjustable element and the frame for preventing movement of the second adjustable element in a direction away from the anvil portion while permitting movement in a direction toward the anvil portion while the ratchet means is engaged;

means for normally holding the ratchet means engaged;

handle means for releasing the ratchet means and for reciprocating the second adjustable element with respect to the anvil, and

means on the frame for indicating the distance between the anvil portion and workpiece engaging surface of the first adjustable element to thereby display the linear dimension of the workpiece when the workpiece is disposed between the anvil portion and workpiece engaging surface;

whereby,

when the workpiece is disposed between the anvil portion of the frame and the workpiece engaging surface of the first adjustable element, the spring means exerts the force necessary to keep the workpiece engaging surface in abutment with the side of the workpiece and thus isolates the holding force from that provided by the measurer.

4,389,784

COMPARATOR WITH PIVOTING FEELER

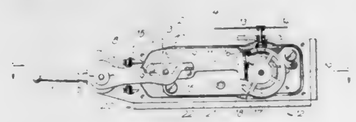
Adriano Zanier, Prilly, Switzerland, assignor to Tesa, S.A., Renens, Switzerland

Filed Sep. 21, 1981, Ser. No. 303,719

Claims priority, application Switzerland, Oct. 2, 1980, 7352/80

Int. Cl.³ G01B *3/22*

U.S. Cl. 33—172 B **4 Claims**



1. A comparator with pivoting feeler comprising:

pivoting lever means for the transmission of the movements of said feeler;

a displacement amplifying device driven by said pivoting lever means;

an indicator member controlled by said amplifying device to permit reading values representing the movements of said pivoting feeler;

spring means for urging said pivoting lever means into a rest position;

end-of-stroke stop means for limiting the pivotal movement of said pivoting lever means from said rest position; and

coil spring means having two fixed ends and a free portion therebetween, said coil spring means being arranged on the path of said pivoting lever means at a distance from said rest position and said end-of-stroke stop means with its axis perpendicular to the plane of pivoting of said pivoting lever means.

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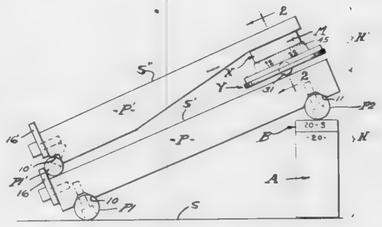
SINE-BAR GAGE-BLOCKS AND DIRECT READING MICROMETER ADJUSTMENT

Wesely R. Goldsmith, 3383 Moore St., Mar Vista, Calif. 90066, and Joel E. Di Marco, 4288 Revere Pl., Culver City, Calif. 90230

Filed Dec. 15, 1980, Ser. No. 216,657

Int. Cl.³ G01B *3/18, 3/30*

U.S. Cl. 33—174 S **13 Claims**



1. In combination, a primary sine-bar having spaced parallel plugs and one plug supportably engaged upon a first surface plane and the other plug displaced from said surface plane in even degree increments by means of at least one gage-block in each instance and establishing a second surface plane of angularity, a secondary sine-bar having a plug parallel to the parallel plugs of the primary sine-bar and supportably engaged upon the second surface plane, and a micrometer spaced from the supportably engaged plug of the secondary sine-bar and comprising an anvil extended by a thimble threadedely engaged upon a barrel of uniform thread pitch depending from the secondary sine-bar for adjustably engaging the anvil with said second surface plane of the primary sine-bar, the thimble being calibrated in minutes of sine-bar angularity within one degree as related to an index line on the barrel.

4,389,786

CONTOUR MEASURING INSTRUMENT

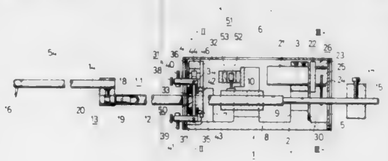
Hideo Sakata, Oomiya, and Seigo Takahashi, Machida, both of Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1981, Ser. No. 250,484

Claims priority, application Japan, Apr. 18, 1980, 55-52098

Int. Cl.³ G01B *7/28*

U.S. Cl. 33—174 P **13 Claims**



1. In a contour measuring instrument for measuring the contour of a surface of a workpiece, the combination comprising: an instrument body; an elongated arm supported on said body for pivotal movement about a pivot axis which extends transverse to said arm so that said arm can pivot in clockwise and counterclockwise directions; a stylus attached to one end of said arm and adapted to contact the surface of the workpiece and to be traversed thereacross to trace the contour of that surface; weight means on said arm for balancing said arm; an arm rotation value detecting means coupled to said arm for detecting the extent of pivotal movement of said arm caused by displacement of said stylus as said stylus is traversed across the surface of the workpiece; a drive mechanism for forcibly pivoting said arm about said axis in a direction to move said stylus away from the surface of the workpiece; and an arm turning angle detecting mechanism responsive to forcible pivoting of said arm by said drive mechanism through a predetermined angle and coupled to said drive mechanism to stop operation of said drive mechanism whereby to prevent said arm from pivoting through an angle larger than said predetermined angle and thereby prevent said stylus from moving farther away from the surface of the workpiece.

4,389,787

GAUGE FOR THE GEOMETRICAL AND/OR DIMENSIONAL CHECKING OF PIECES ROTATING ABOUT A GEOMETRICAL AXIS

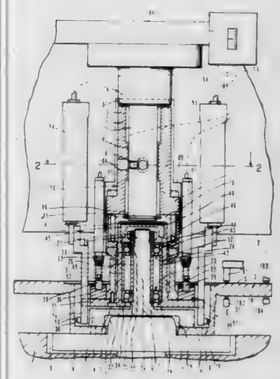
Sergio Solaroli, Bologna, Italy, assignor to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Filed May 15, 1981, Ser. No. 264,217

Claims priority, application Italy, May 16, 1980, 3427 A/80

Int. Cl.³ G01B *7/12, 7/28*

U.S. Cl. 33—174 Q **10 Claims**



1. A gauge for the geometrical and/or dimensional checking of pieces rotating about a geometrical axis, the checking being made with reference to a part of the piece adapted to define a determined geometrical surface, comprising: a frame; piece supporting means carried by the frame for making the piece rotate about said axis; an element—supported by the frame—that rotates, together with the piece, about said axis, the element being adapted to cooperate with the piece in order to locate said geometrical surface with continuity during rotation; gauging means, supported by the frame, including measuring heads adapted to provide signals representative of the position of said geometrical surface, depending on the position of the element; and a reference structure supported by the frame and adapted to cooperate with said element and with the measuring heads, the reference structure including a reference device, first connection means for coupling the element to the reference device and for permitting the relative of the element with respect to the reference device, and second connection means for connecting the reference device to the frame, and for keeping the reference device in a pre-determined position with respect to said geometrical surface, said measuring heads being adapted to cooperate with the reference device.

4,389,788

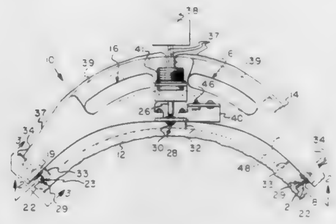
APPARATUS AND METHOD FOR MEASURING ROLL DIAMETERS

Louis J. Balogh; Raymond L. Fitzhugh, both of Akron; Dale S. Kimes, Wadsworth, and Myron Weinstein, Munroe Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 7, 1981, Ser. No. 290,845

Int. Cl.³ G01B *5/08, 7/12*

U.S. Cl. 33—178 D **12 Claims**



1. Apparatus for measuring the variation in diameter of a generally cylindrical body comprising:

a frame member having spaced-apart support means for engaging the surface of said cylindrical body,

a primary sensor positioned between said support means on said frame member to determine the position of the surface of said cylindrical body relative to said frame member at a first point for measuring the approximate variation in diameter of said body, and

at least one secondary sensor positioned on said frame member adjacent one of said support means to determine the position of the surface of said cylindrical body relative to said frame at a second point for measuring a correction to the approximate diameter variation measurement.

4,389,789

CONTRACTING MICROMETER RING GAGE ASSEMBLIES

Franklin Meyer, Jr., Forestdale, R.I., assignor to Comtorgage Corporation, Slatersville, R.I.

Filed Oct. 26, 1981, Ser. No. 314,984

Int. Cl.³ C01B *3/34*

U.S. Cl. 33—178 R **9 Claims**





1. A ring gage assembly adapted to be coupled to an indicating device, comprising a pair of separate but relatively mov-

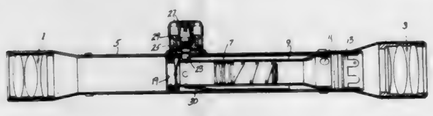
able interconnected gaging members each having a measuring surface remote from the indicating devices and each including a projection in a plane located between the indicating device and the measuring surfaces, each projection being interdigitated with the similar projection on the other gaging member and also including an indentation forming with a corresponding indentation in the opposite projection a generally central socket, a spring-pressed plunger having a tapered tip normally urged into engagement with the socket to cause the measuring surfaces to approach each other in embracing relationship with a workpiece and means for coupling the plunger to the indicating device.

4,389,790
DRILL GUIDE
Alvin E. Dunlap, P.O. Box 861, Folsom, Calif. 95630
Filed Apr. 16, 1981, Ser. No. 254,691
Int. Cl.³ B23B *47/28, 49/00*
U.S. Cl. 33—185 R **10 Claims**



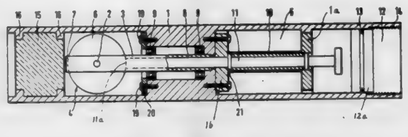
1. A drill guide for accurate placement of bolt holes on a mud sill or the like comprising in combination;
- a guide block having at least one bore therethrough adapted to receive a drill bit for accurate bore placement on the mud sill,
- an upright, orthogonal to said guide block to assure perpendicularity of the bores,
- and means to yieldingly connect said upright to said guide block and to maintain said upright orthogonal to said guide block during a range of relative movement whereby the distance between said guide block and said upright can be varied to accommodate sills of different dimensions along with an associated underlying slab and a placement marker extending up from the slab wherein said upright includes portions above and below said guide block whereby said portion below can abut against the sill.

4,389,791
RANGE-FINDING TELESCOPIC SIGHT
William R. Ackerman, El Paso, Tex., assignor to W. R. Weaver Co., El Paso, Tex.
Filed May 4, 1981, Ser. No. 260,246
Int. Cl.³ F41G *1/38;* **G01C** *9/02*
U.S. Cl. 33—246 **8 Claims**



1. In a telescopic sight of the type comprising an objective lens set, an ocular lens set, an erector lens set disposed between said objective and ocular lens sets, a first reticle, fixed in the rear focal plane of the sight; the improvement comprising in combination:
- (a) a second reticle fixed in the front focal plane of the sight;
- (b) means for controllably displacing the image of said second reticle formed in said rear focal plane operable to bracket a target of known size between said first reticle and said image of said second reticle, said displacing means further including means for indicating the range to said target; and
- (c) means integral with said displacing means for shifting the target image in said rear focal plane subsequent to determining the range to compensate for predetermined bullet drop over the range indicated by said displacing means.

4,389,792
DRILL CORE INCLINOMETER
Heinz Fuchs, Recklinghausen, Fed. Rep. of Germany, assignor to Ruhrkohle A G, Essen, Fed. Rep. of Germany
Filed Jan. 15, 1981, Ser. No. 225,402
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1980, 3000319
Int. Cl.³ E21B *47/022;* **G01C** *9/14*
U.S. Cl. 33—304 **7 Claims**

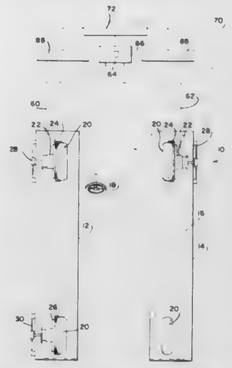


1. Device for measuring vertical and transverse inclination of drill cores which are removed from below ground via a core barrel, comprising a hollow cylindrical member having sealed axial ends and being adapted to be releasably mounted in the core barrel; a gravity-oriented inclination measuring device mounted in said member for turning movement about two mutually normal axes; and arresting means for arresting said device against said turning movement at a predetermined time prior to removal of the drill core from a bore hole, said measuring device including a first shaft extending lengthwise in said member journalled therein turnable about one of said axes and having a bifurcated leading end portion, an eccentrically weighted wheel, and a second shaft mounting said wheel on said leading end portion turnable about the other of said axes, said first shaft having a longitudinal passage extending from said leading end portion to a trailing end of the first shaft; said arresting means comprising a piston having one portion slidable in said passage and provided with a free end face engageable with said wheel to prevent turning of the same.

4,389,793
WHEEL ALIGNMENT APPARATUS
Louis L. Butler, 12489 Lockhaven Ave., Baton Rouge, La. 70815
Filed Feb. 26, 1981, Ser. No. 238,407
Int. Cl.³ G01B *5/24*
U.S. Cl. 33—336 **6 Claims**

1. In an improved wheel alignment apparatus for the measurement in four-wheeled, tired, automotive vehicles of caster, camber, toe, steering axis inclination, and track of the front and rear wheels, while the tired wheels of said vehicle are setting upon parallel aligned runways, a right and left runway, defining a reference plane and direction of orientation for said vehicle, the combination which comprises
- a tire contact wheel clamp inclusive of an elongate wheel bar at each terminal end of which is located a laterally projecting wheel bar clamp for operative contact of the inner face thereof with the alternately disposed outer edges of a tire, one for horizontally mounting on the outer side of each right and left front wheel, and at least one other for horizontally mounting on the outer side of a rear wheel,

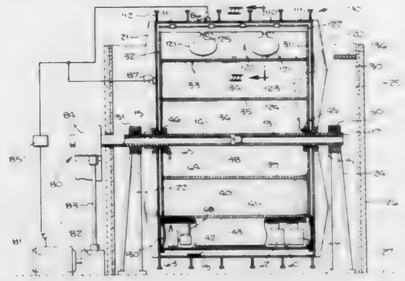
orthogonally related gravity sensing electronic transducers mounted on the elongate wheel bar of each tire contact wheel clamp, one mounted at a right angle to the elongate wheel bar, and another mounted parallel to the elongate wheel bar,
- a flag assembly, one for each tire contact wheel clamp, inclusive of a sliding member slidably mounted on a shaft parallel with a runway connected via linkage to a flag bar mounted parallel to said shaft for contact with a toe sensor plunger and toe calibration adjustment screw located in circuit with the gravity sensing electronic transducers,
- electrical cables connected to and extending from each orthogonally related gravity sensing electronic transducer providing multiplexed electrical circuits,
- a deck switch associated with each of said multiplexed electrical circuits, providing electrical means for selectively



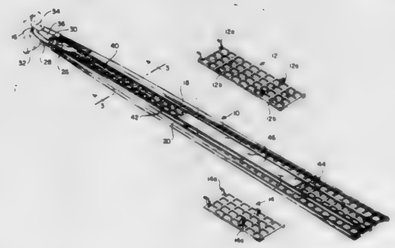
switching from one multiplexed electrical circuit to another,
- logic means electrically coupled via electrical cables to said deck switch,
- an electrical generator which provides voltage signals over the electrical cables to each of the gravity sensing electrical transducers, the electrical transducers when associated with a multiplexed electrical circuit via selective manipulation of the deck switch to transmit to the logic circuit an output voltage proportional to tilt angle of caster, camber, toe, steering axis inclination, and track of said wheels, and
- read out means for numerical interpretation and display of the signals transmitted from said gravity sensing electronic transducers to said logic means in terms of caster, camber, toe, steering axis inclination and track of said wheels.

4,389,794
VACUUM CHAMBER AND METHOD OF CREATING A VACUUM
Jack G. Bitterly, 4723 Vista De Oro Ave., Woodland Hills, Calif. 91367
Filed Dec. 23, 1980, Ser. No. 220,004
Int. Cl.³ F26B *5/06;* **A23G** *9/00;* **F01B** *31/00;* **F27B** *5/04*
U.S. Cl. 34—5 **34 Claims**

23. In a vacuum chamber having an airtight chamber, vacuum means for evacuating the chamber and condenser means for condensing condensables from the product in the chamber, the improvement comprising:
- means associated with the condenser means for increasing the gravitational forces on the condenser means to increase the rate at which the condensables condense thereon.



4,389,795
PELTING BOARD
Harold B. Craggs, 7715 Robe Menzel Rd., Granite Falls, Wash. 98252, and Leo Weisdorfer, 113309 SE. 272nd Ave., Boring, Oreg. 97009
Filed Apr. 20, 1981, Ser. No. 255,767
Int. Cl.³ C14B *1/26*
U.S. Cl. 34—103 **15 Claims**

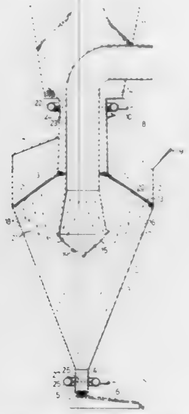


1. A pelting board for drying pelts in a fur out pelting process, capable of tautly holding a pelt about the board, and comprising a generally flat, elongated, generally parabolic, relatively narrow frame, wherein the frame has:
- (a) a curved parabolic end;
- (b) raised edges adapted to hold the pelt substantially out of contact with the frame except around the edges of the frame; and
- (c) at least one open channel on each edge adapted to allow air flow along the edge so that air is capable of directly contacting the pelt to improve pelt drying and to reduce sticking of the pelt along the edge by reducing the area of contact between the pelt and the frame.

4,389,796
HEAT EXCHANGER
Rolf R. Ödman, Malmberget, Sweden, assignor to Luossavaara-Kiirunavaara Aktiebolag, Stockholm, Sweden
Filed Mar. 3, 1981, Ser. No. 239,189
Claims priority, application Sweden, Mar. 5, 1980, 8001749
Int. Cl.³ F26B *17/14*
U.S. Cl. 34—168 **6 Claims**

1. A heat exchanger for heat exchange between downwardly flowing solid particulate material and a gas, comprising a casing having a substantially conical part, and a tubular outlet for material having undergone heat exchange arranged at the

bottom of the conical part; a tube extending downwardly into the casing substantially symmetrically about the vertical axis thereof and forming an outer defining wall of an annular material introducing means, said tube having a material inlet orifice at its upper end and a material discharge orifice at its lower end, the lower end of said tube terminating in the upper portion of said casing; a gas inlet means comprising a gas inlet pipe which extends down into the casing through said tube co-axially therewith and which forms an inner defining wall of said



annular material introducing means, said gas inlet pipe having a discharge orifice located at a given distance beneath the discharge orifice of the material introducing means; and a collecting chamber for gas having undergone heat exchange, said chamber being laterally defined by the wall of said tube and the wall of said casing and being provided with gas outlet means, said given distance being approximately equal to the radial distance between the discharge orifice of the material introducing means and said casing wall.

4,389,797

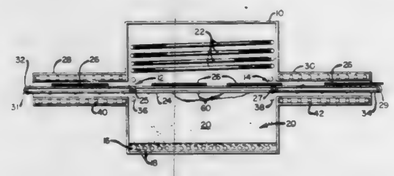
CONTINUOUS VAPOR PROCESSING SYSTEM

Donald J. Spigarelli, Carlisle, and Paul C. Dustin, Reading, both of Mass., assignors to The HTC Corporation, Concord, Mass.

Filed Jun. 23, 1981, Ser. No. 276,493

Int. Cl.³ F26B *21/06*

U.S. Cl. 34—73 **17 Claims**



1. A continuous vapor phase processing system of the type wherein work is selectively heated by a processing vapor in a processing vapor zone to a preselected temperature for vapor phase processing, comprising:

a vessel containing a processing vapor in a processing vapor zone, a first aperture in the vessel side wall within the vapor zone and below the upper level of the processing vapor zone and by which a work product is introduced into the processing vapor, and a second aperture in the confronting vessel side wall within the vapor zone and below the upper level of the processing vapor zone and by which a work product is removed from the processing vapor;

a first conduit in communication with the first aperture and extending outwardly from the vessel side wall and having an outer end open to the atmosphere;

a second conduit in communication with the second aperture and outwardly extending from the confronting vessel side wall and having an outer end open to the atmosphere;

each of said conduits having a cross-section and a length selected to allow passage of a work product therethrough and to provide an intended flow resistance to impede the outward flow of the processing vapor in the conduit and significantly prevent the exit thereof to the atmosphere;

first means associated with each of said apertures for cooling the region of the vessel adjacent the apertures to below the condensation temperature of the processing vapor to prevent significant processing vapor from entering respective conduits;

second means respectively disposed on and extending along at least a portion of the length of said conduits for cooling the processing vapor therein to below the condensation temperature therefor to significantly prevent said processing vapor from exiting the conduits to the atmosphere;

means for conveying a work product through said first conduit into the processing vapor zone of said vessel and out of the vessel through said second conduit; and

said first and second conduits being substantially in alignment on respective sides of the vapor zone of the vessel to provide substantially straight-through conveyance of the work product through the first conduit into the processing zone of the vessel and out of the vessel through the second conduit.

4,389,798

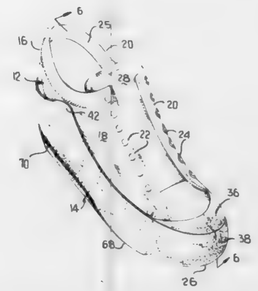
ATHLETIC SHOE

Harvey G. Tilles, P.O. Box 5466, 614 N. Hamilton, High Point, Guilford, N.C. 27262

Filed May 8, 1981, Ser. No. 261,887

Int. Cl.³ A43B *5/00, 13/04*

U.S. Cl. 36—129 **13 Claims**



1. In an athletic shoe comprising an upper portion integral with a sole portion, said upper portion including medial and lateral side portions integral with corresponding medial and lateral side portions of said sole portion, said upper portion including a heel portion and toe portion integral with corresponding portions of said sole portion, and said upper portion including means for securing a user's foot in said shoe, the improvement comprising:

the medial aspect of the sole portion being linear and radiused at least from the ball of the foot toward the heel and beneath and the extent of the plantar arch for permitting the entire medial edge to readily rotate and support the user's foot during maximum pronation over said medial edge.

4,389,799

SCRUB CRUSHER

Leo A. Norton, and Christopher W. Norton, both of Waimauku, New Zealand, assignors to Lyndale Holdings Limited, Waimauku, New Zealand

Filed Nov. 9, 1979, Ser. No. 92,938

Claims priority, application New Zealand, Nov. 10, 1978, 188883; Nov. 10, 1978, 188886

Int. Cl.³ A01D *49/00*

U.S. Cl. 37—2 R **11 Claims**



1. A vehicle dual winch system for operating a single heavy load such as a heavy scrub crushing roller or the like comprising, a winch mounted on each side of a tractor vehicle adjacent one end thereof, each winch having a winch drum, a drive input shaft, a pair of intermediate drive shafts extending in opposite directions perpendicular to the rotational axis of said drive input shaft and operably connected together and to said drive input shaft by a bevel gear mechanism, dual clutches each of which is operably connected to an intermediate drive shaft, dual flexible joints each of which is operably connected to one of said clutches, means to connect said drive input shaft to a power take-off driven by the tractor vehicle, a planetary gear mechanism operably mounted within each winch drum and operably connecting each winch drum to the respective flexible joint, a separate winch cable operably attached to each winch drum and passing along the respective side of said vehicle, a cable guide attached to each side of said vehicle and operably engaging the respective winch cable, said cables being attached to the single roller at spaced points so that said roller can be steered by said winches.

4,389,800

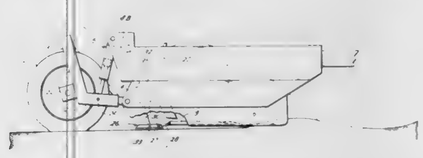
LAND LEVELING SCRAPERS

Larry G. Goby, McAllen, Tex., assignor to Reynolds Manufacturing Company, McAllen, Tex.

Filed Mar. 1, 1982, Ser. No. 351,502

Int. Cl.³ E02F *5/00*

U.S. Cl. 37—124 **10 Claims**



1. In a land leveling scraper, comprising a frame including a front section for connection to a towing vehicle, a rear section pivotally connected to the front section and having wheels with pneumatic tires carried thereon for engagement with the ground surface, a bucket supported by the frame and having a front opening through which soil may pass and a cutting edge across the lower edge of the front opening, and means including an hydraulically operated, cylinder and piston type actuator connecting the frame sections for causing them to swing about their pivotal connection in order to raise or lower the wheels and thus respectively lower or raise the cutting edge of the bucket with respect to the ground surface, and skid shoes each comprising a plate having a substantially flat bottom surface, and mounting on one of the frame sections for sliding over the ground surface during foward movement of the frame; the improvement wherein the forward end of each skid plate is pivotally connected to the one frame section, a leg is pivotally connected at its upper end to said one frame section and at its lower end to the skid plate rearwardly of the forward end thereof, one end of the leg having a cylinder and the other a piston slidable within the cylinder moving the bottom surface of the plate toward or away from the ground surface, and an hydraulic system including a source of hydraulic fluid connected with the cylinders on opposite sides of the pistons thereon.

4,389,801

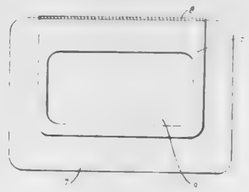
POCKETS FOR GARMENTS

Michael Sharrock, Oxton; Donovan N. Fry, and Robert William, both of Skegness, all of England, assignors to Joel & Aronoff, Inc., Ridgefield, N.J.

Filed Dec. 24, 1981, Ser. No. 334,326

Int. Cl.³ A47G *1/06;* **G09F** *1/10;* **A44C** *3/00;* **A41D** *27/20*

U.S. Cl. 40—159 **12 Claims**



1. A pocket for a garment comprising a facing sheet of flexible material provided with an adhesive backing and having an opening through which a card or the like can be displayed, and a masking sheet of flexible material attached to the facing sheet in order to mask the adhesive backing in the region around and above said opening when the pocket is attached to a garment, whereby the portion of the facing sheet which is around and above the opening in use does not adhere to the garment and enables a card or the like to be inserted into the pocket.

4,389,802

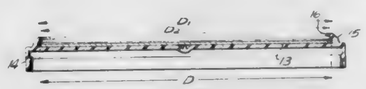
SCALLOPED PAPERBOARD INSERT FOR USE WITH PLASTIC LID

Edwin C. McLaren, Apple Valley, and David J. Adamek, Minneapolis, both of Minn., assignors to Champion International Corporation, Stamford, Conn.

Filed Nov. 12, 1981, Ser. No. 320,330

Int. Cl.³ G09F *3/00;* **F24H** *1/10;* **H05B** *1/00*

U.S. Cl. 40—307 **1 Claim**



1. In combination, a plastic lid having an outer upper medial planar surface bounded by a circular upwardly and inwardly extending bead formed on said upper surface, said bead having a free inner edge defining a circle having a diameter D_1, said medial planar surface having a diameter D_2, which diameter D_2 is larger than the diameter D_1 said bead merging into a flat annular peripheral upper surface on said lid, said flat annular peripheral upper surface merging with an annular skirt portion depending downwardly from the periphery of said lid, said skirt portion including an upper and lower portion having a smooth contiguous outer surface and the inner surface of said upper skirt portion being recessed with respect to the inner

surface of the lower portion of said skirt to define a shoulder therebetween and the inner surface of said lower skirt portion being flared outwardly at an acute angle with respect to the vertical; and

a circular paperboard insert disposed on said medial planar surface of said lid, said insert being free of adhesive securement to said medial planar surface of said lid, said insert having an outer edge formed by a succession of contiguous curvilinear nodes and intervening indents, each node consisting of a portion of a circle having a predetermined radius which is smaller than the radius of said circular insert, said insert having a continuous central portion having printed matter disposed on at least one side thereof, the diameter D of said circular insert as defined collectively by the outermost points on said nodes being larger than the diameter D_1, and the diameter of said circular insert as defined collectively by said indents being of a size whereby deformation of said insert caused by expansion of said insert when the latter is disposed on said medial planar surface of said lid resulting from changes in ambient humidity, and caused by moving said insert past said bead is confined to said nodes.

4,389,803

SLIDE VIEWER OR PROJECTOR

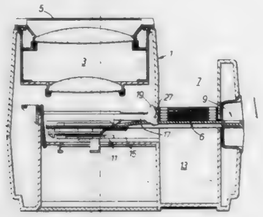
Sidney R. Dunn, Eastbourne, England, assignor to Photax (London) Ltd., Eastbourne, England

Filed Sep. 9, 1981, Ser. No. 300,475

Claims priority, application United Kingdom, Sep. 11, 1980, 8029425

Int. Cl.³ G03B *20/01, 23/04*

U.S. Cl. 40—361 **5 Claims**



1. A slide viewer or projector having a region for receiving a stack of slides and means providing a path extending from said region to a viewing or projecting area, a slide changer for displacing slides one at a time along said path from the region to said than the thickness of the thinnest slide to be accommodated, a wiper pivotally mounted on the barrier and biased to a position in which a portion of the wiper is spaced from the path by a distance not less than the separation of the barrier from the path and is positioned between the barrier and the region, the action of a slide moving from said region to said area causing the wiper to be pivoted against the action of the biasing means until the barrier is raised on to the upper surface of the slide and the wiper then pivots back and wipes over the upper surface of the slide.

4,389,804

MATRIX DISPLAY

Lloyd Seibert, Coeur d'Alene, Id., and George E. Ellefsen, Spokane, Wash., assignors to American Sign & Indicator Corporation, Spokane, Wash.

Filed Dec. 11, 1980, Ser. No. 215,358

Int. Cl.³ G09F *3/04*

U.S. Cl. 40—447 **8 Claims**

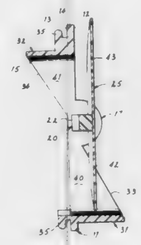
1. A movable display assembly adapted for use in a spatial arrangement that includes a plurality of individually controlled assemblies, said display assembly comprising:

a frame surrounding an open window;

bearing means transversely spanning the window on said frame, said bearing means defining a transverse pivot axis dividing the window asymmetrically into first and second window sections;

a disk assembly pivotally mounted on said frame by said bearing means for movement relative to the frame about the pivot axis, said disk assembly including a thin disk having visually contrasting outer surfaces at opposite sides thereof;

and means on said disk assembly and said frame for selectively positioning said disk assembly about said axis;



said disk having first and second disk ends extending oppositely from the pivot axis, the first and second disk ends having greater widths between the side edges and lengths from the pivot axis to the end edges than the corresponding widths and lengths of the second and first window sections, respectively, for sealing about the disk periphery to prevent light passage when the disk is in a background position;

said first disk end having smaller widths and lengths than the corresponding widths and lengths of the first window section for allowing the disk to freely rotate thereinto.

4,389,805

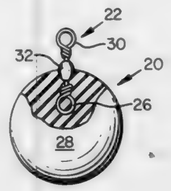
ELASTOMER FORMULATED FISHING PRODUCT

John C. Hargrave, 18010 S.W. Francis, Aloha, Oreg. 97005

Filed Jul. 7, 1980, Ser. No. 166,154

Int. Cl.³ A01K *95/00*

U.S. Cl. 43—43.14 **1 Claim**



1. A fishing sinker comprising a spherical body of elastomeric material formulated with a gravity change additive dispersed throughout the body providing the sinker with a specific gravity between 1.04 and 4.00 and a swivel axially mounted in and bonded to the body for connecting the sinker to a fishing line.

4,389,806

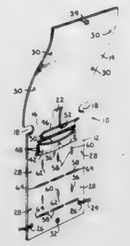
LURE CASE

Charles H. Herring, 1015 N. Scott, Apt. 8, Belton, Mo. 64012

Filed Feb. 3, 1981, Ser. No. 231,258

Int. Cl.³ A01K *97/06*

U.S. Cl. 43—57.1 **10 Claims**



1. A belt mounted lure case for holding fishing lures and other fishing accessories, said lure case comprising:

a generally flat body portion constructed of a flexible material and having a front surface;

a plurality of swivel elements attached to said front surface of the body portion and each presenting an eye adapted to receive a hook of a fishing lure;

a plurality of flexible springs attached at opposite ends thereof to said front surface below the respective swivel elements, each spring being adapted to receive another hook of said fishing lure between the opposite ends of the spring to cooperate with the swivel element in attaching the lure to the front surface of said body portion;

a pouch on said front surface of said body portion presenting a pocket for holding fishing lures and other fishing accessories;

a generally flat flap integral with said body portion and of sufficient size to substantially cover said front surface of the body portion, said flap being adapted to be passed around the belt of a fisherman and folded downwardly over the belt and over said front surface of the body portion to attach the body portion and flap to the belt with the flap covering the front surface of the body portion;

releasable means for securing said flap to the body portion in covering relation to said front surface; and

an elongate cord extending from said body portion and adapted to be drawn around the leg of the fisherman and tied in a manner to secure the body portion against the front of the leg.

4,389,807

SHOCK-ABSORBING ANIMAL TRAP

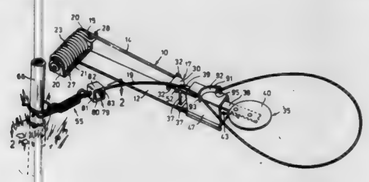
Milan Novak, Aurora, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of Natural Resources, Toronto, Canada

Filed Apr. 7, 1981, Ser. No. 251,876

Claims priority, application Canada, Feb. 6, 1981, 370256

Int. Cl.³ A10M *23/26*

U.S. Cl. 43—96 **4 Claims**



2. In an animal trap having a portion which attaches to an animal when the latter springs the trap, said portion being capable of being affixed with respect to the terrain,

the improvement according to which there is provided a shock-absorbing apparatus through which said portion can be affixed with respect to the terrain, the apparatus comprising:

(a) a resilient member inserted between (1) a connection between said portion and said apparatus and (2) a location where said apparatus is affixed with respect to the terrain, whereby if the trapped animal should lunge away from the trap, the resilient member will extend and absorb at least some of the resulting shock so that injury to the animal is minimized, and

(b) a non-resilient member attached between said connection and said location, said non-resilient member limiting the extension of said resilient member such that the latter does not exceed its elastic limit during extension,

the resilient member being a coil spring, the non-resilient member being an elongated, hairpin-shaped metal clip having a loop at one extremity and two free, adjacent ends at the other extremity, the loop being connected to a ring adapted to engage a stake driven into the ground, said free ends being attached to a coupling member to which the said portion is also connected, the metal clip passing axially through said coil spring, the coil spring being connected at one end to said ring and at the other end to a part of the metal clip adjacent to coupling member.

4,389,808

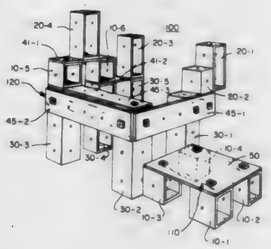
BOLT-TOGETHER BUILDING SET FOR CHILDREN

Jack Podell, and Douglas Haner, both of San Francisco, Calif., assignors to SB/JP Enterprises, Inc., San Francisco, Calif.

Filed Jun. 1, 1981, Ser. No. 268,694

Int. Cl.³ A63H *33/00*

U.S. Cl. 46—16 **3 Claims**



1. A set of building components for children comprising a multiplicity of hollow blocks having one open face and five closed faces and being formed to different lengths corresponding to integer multiples of the length of the shortest block with the open face of each block being along the longest dimension thereof, each of said blocks having the same cross-sectional configuration transverse to said open face thereof, each of said closed block faces having at least one aperture therein formed along the center line of said face with longer faces on said longer blocks having a plurality of apertures therein spaced from each other by integer multiples of one-half the shortest block length, and a plurality of nut and bolt fasteners with said bolts having a length sufficient to extend through at least a pair of aligned apertures in block faces butted together to enable rigid fastening of said blocks together in a variety of structural combinations and configurations; said shortest block being a regular cube; and said set further comprising a plurality of flat boards of different lengths, each of said boards having a width substantially equal to the length of said cube, a length corresponding to an integer multiple of the length of said cube, and a plurality of apertures formed along a centerline thereof and spaced from each other by an integer multiple of one-half the cube length.

4,389,809

CONNECTING ELEMENT

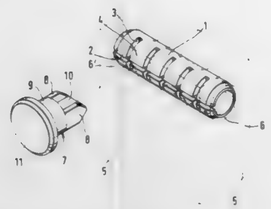
Artur Fischer, Weinhalde 14-18, D-7244 Tumlingen, Waldachtal 3, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 175,196, Jul. 31, 1980. This application Jan. 5, 1981, Ser. No. 222,755

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934094; Sep. 1, 1979, 2935467

Int. Cl.³ A63H *33/10*

U.S. Cl. 46—26 **8 Claims**



1. A pin-shaped connecting element in combination with toy structural elements each having at least two openings which intersect one another and have a predetermined diameter, the connecting element comprising an elongated body part having a portion with a diameter exceeding the diameter of the openings of the structural elements, said portion having at least one longitudinal slot extending over said portion so as to render the latter resiliently yieldable, and a plurality of transverse slots extending transversely to and intersecting said longitudinal slot over a part of the periphery of said portion and subdividing the latter into at least three sections which are thereby resiliently yieldable independently of one another, said transverse slots being arranged so that said portion can be inserted into one of the openings of one of said structural elements, with said transverse slots being located in the region of the other of the openings, which intersect the one opening; means for arresting said portion of said body part in the one opening of the structural element, said arresting means including an arresting member which is arranged to extend through the other intersecting opening of the structural element and having two projections engageable in said transverse slots of said portion, when said arresting member extends through the other intersecting opening of the one structural element and said transverse slots are located in the region of said other intersecting opening; and means for reinforcing said two projections of said arresting member, said reinforcing means including a web which extends between and connects said two projections with one another.

4,389,810

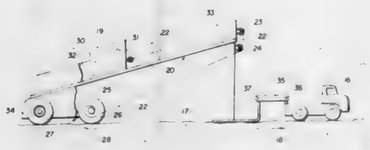
METERING TOY FOR SELECTING A SELF-PROPELLED VEHICLE OF GREATEST STRENGTH

Carmel H. Green, 2169 Carol St., Union City, Tenn. 38261

Filed Apr. 26, 1982, Ser. No. 371,972

Int. Cl.³ A63H *17/05*

U.S. Cl. 46—264 **3 Claims**



1. A toy metering assembly for competitively determining the strengths of self-propelled toy vehicles, comprising in combination,

a set of surface-engaging wheels coupled by an axle for rotation therewith,

a framework mounting said axle for rotation therein,

a sled having a friction mat adapted to slide upon a surface upon which the vehicles are propelled,

a ramp coupled between the framework and sled providing an incline upwardly toward the sled,

a body of predetermined weight movable over a pathway up said ramp,

a cable affixed at respective ends thereof to said body and said axle adapted to wrap around said axle as the wheels are turned thereby to pull the sled up said ramp and increase the weight on said sled and thus the friction between the sled and the surface,

and means for connecting a self-propelled toy vehicle to the sled for pulling the sled assembly and turning the wheels thereby to move the body up the ramp and gradually increase the load on the vehicle as the distance over which the sled is pulled increases.

4,389,811

BIRD ACTION TOY

Hirokatsu Iwaya, Tokyo; Hiroshi Saigo, Kasukabe, and Takashi Suzuki, Tokyo, all of Japan, assignors to Iwaya Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1981, Ser. No. 321,462

Claims priority, application Japan, Nov. 19, 1980, 55-165661[U]

Int. Cl.³ A63H *33/26, 11/00*

U.S. Cl. 46—232 **11 Claims**



1. An animal action toy comprising:

a hollow perch;

means on said perch for detachably supporting said perch on another object;

a battery receptacle in said hollow perch for receiving a battery therein;

an electric switch on said perch for connecting and disconnecting a battery in said receptacle;

model support means on and extending upwardly from said perch;

a model animal including a main hollow body portion and at least one subsidiary body portion relatively movable with respect to said main hollow body portion, said main hollow body portion including an aperture through which said model support means extends;

an operating mechanism located within said main hollow body portion of said model animal and mechanically connected to said model support means on said perch, to said main hollow body portion and to said subsidiary body portion;

and an electric motor located within said main hollow body portion of said model animal, said motor being mechanically connected to drive said operating mechanism and operable when electrically energized to effect relative motion between said main hollow body portion and said perch and between said subsidiary body portion and said main hollow body portion, said motor being electrically connectable to and disconnectable from said battery receptacle by means of said electric switch.

4,389,812

HERBICIDE WAND AND METHOD FOR MAKING

Swen A. Panttaja, 6446 S. Reed, Reedley, Calif. 93654

Filed Aug. 24, 1981, Ser. No. 295,697

Int. Cl.³ A01M *21/00*

U.S. Cl. 47—1.5 **2 Claims**



1. In a wand for applying systemic herbicide having a tubular handle and an elongated tubular distributor head extended from the handle, the handle and distributor head having interconnected reservoirs for herbicide and a releasably closable filler opening, the distributor head having an even number of pairs of diametrically aligned bores therethrough of predetermined diameter disposed in a common plane, the head having a predetermined upper side and a lower side and each pair of bores having a forward bore and a rearward bore and each pair being consecutively numbered from one end of the head; and a single length of braided cord having a diameter greater than that of the bores when untensioned and a diameter smaller than said bores when tensioned, the cord having a knotted end within the reservoir, extended successively outwardly through a first rearward bore, outwardly along the rearward side of the head to the second rearward bore, inwardly through the second rearward bore, outwardly through the second forward bore, successively downwardly about the head beneath each odd numbered pair of aligned bores and successively through the aligned highest even numbered bores from the rearward to the forward thereof, and from the highest even numbered bores along the forward side of the head to the highest odd numbered pair of bores and therethrough from the forward bore through the rearward bore and thence successively downwardly about the head beneath each even numbered pair of aligned bores and successively through the aligned odd numbered bores from the forward to the rearward thereof and being knotted within the reservoir inwardly of the first forward bore, the cord being directly engaged with the walls of the bores in substantially fluid-tight engagement therewith when untensioned and being slidably adjustably movable therethrough when tensioned.

4,389,813

PLANTER TREE FOR FLOOR, WALL OR CEILING MOUNTING

Michael J. Jaques, and Diane H. Jaques, both of 685 E. Monterey, Chandler, Ariz. 85224

Filed Jan. 26, 1981, Ser. No. 228,469

Int. Cl.³ A01G *9/02*

U.S. Cl. 47—67 **2 Claims**

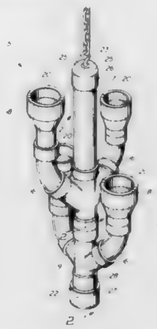
1. A planter comprising:

at least a pair of parts fitted together to form a hollow tree configuration having a trunk comprising a top and bottom, branches extending laterally therefrom and a base at the bottom of said trunk,

each of said branches being open at its top for receiving therein and along at least a part of said trunk growing material for physically and nutritionally supporting root growth of plants growing in the tip of said branches, along said branches and in said trunk,

the base of said trunk forming a drainage opening for any excess liquid moving from the branches of the tree and through its trunk to said base,

support means connected to one of the ends of said trunk for supporting said trunk of the tree configuration in a substantially vertical position,



a light fixture mounted on the top of said trunk,

said light fixture comprising a reflector for reflecting light generated by said fixture onto any plants contained in the planter,

a liquid impervious tube extending between said light fixture and said base of the planter axially of said trunk,

an electric cord connected to said light fixture and extending through said tube outwardly of said base for connecting to a source of electric power, and

a hook mounted on the top of said reflector for use in supporting the planter from a wall or ceiling structure.

4,389,814

SEEDLING TRANSPLANT UNIT

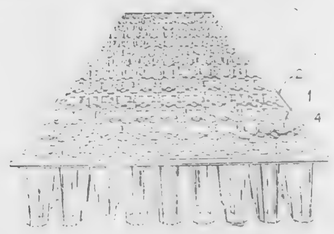
Gustav O. Andreason; Ulf R. Friberg, both of Falun; Heimo H. Kuvaja, Borlänge, and Bengt G. L. Qvarnström, Smygehamn, all of Sweden, assignors to Stora Kopparbergs Bergslags Aktiebolag, Falun, Sweden

Filed Feb. 4, 1981, Ser. No. 231,328

Claims priority, application Sweden, Feb. 15, 1980, 8001210

Int. Cl.³ A01G *9/10*

U.S. Cl. 47—73 **21 Claims**



1. A seedling unit using a growth medium for elevated growing of seedlings and for repeated use, comprising a plurality of seedling pots disposed adjacent to and joined to each other at the region of their openings, each pot including: an upper

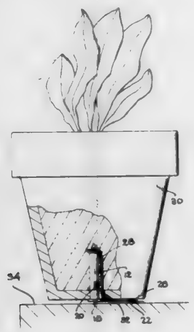
frame forming a top part of the seedling unit, a plurality of spaced strips extending from each said opening in a convergent manner to form each said pot substantially to look like a downwardly converging cage, the spaced strips being free and substantially devoid of bends at their loose ends and defining an open bottom of the pot and being dimensioned to retain the weight of a desired amount of growth medium in each pot, said convergent strips being directly in contact with growth medium in use and being resilient enough to spring back to their original shape when opened in use to be substantially parallel to each other temporarily to release the growth medium along with a seedling for transplantation.

4,389,815

WICK SUPPORT FOR WICK-WATERING PLANTS

Roy L. English, and Irene F. English, both of 1520 Anna Way, #58, Oxnard, Calif. 93030

Filed Nov. 6, 1981, Ser. No. 318,837
Int. Cl.³ A01G *9/00*
U.S. Cl. 47—81 **3 Claims**



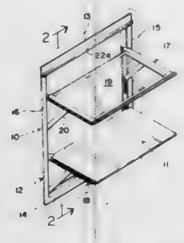
1. A wick support comprising an elongated rigid section having one end which includes means for holding a wick at a first location along the length of the wick, a handle section affixed to the other end of the rigid section and extending outward therefrom; and a flexible section projecting from the handle section in a direction opposite to that of the rigid section and terminating in a free end which includes a means for holding the wick at a second location along the length of the wick.

4,389,816

SHEET METAL PROTECTIVE COVER FOR AWNING WINDOWS

Ward W. Chapman, 2700 W. 3rd Ct., Hialeah, Fla. 33010

Filed Mar. 24, 1981, Ser. No. 247,221
Int. Cl.³ E05B *65/04*
U.S. Cl. 49—62 **2 Claims**



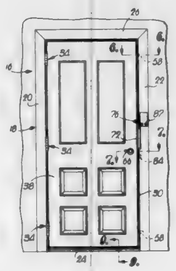
1. A protective cover for the window sashes of awning windows of the type having rectangular sashes mechanically linked with respect to a window frame for movement between open and closed positions and in the closed position of which upper portions of a sash framework locks behind the lower marginal portion of the next higher window sash or, if the top sash, behind a lower marginal portion of the awning window frame header, the combination comprising: a substantially rectangular sheet metal cover member, the lower marginal edge portion of said cover member being reversely bent to provide a shallow, upwardly-directed slot at one side of said cover member, said cover member having a substantially right-angular, upper marginal portion bent in the direction of said one side thereof, the spacing between the bottom of said slot and the under-side of said substantially right-angular upper marginal portion being such that when the protective cover is fitted to an awning window sash by placing the lower marginal edge portion of the sash in said slot, said substantially right-angular bent portion fits in frictional abutment over the top edge of the window sash framework, said substantially right-angular, upper marginal portion of said cover member forming an angle of slightly less than 90 circular degrees with respect to said one side of said cover member, said cover member being integrally formed by bending of somewhat resilient sheet metal to provide for interhooking engagement of said upper marginal portion over the top edge of a window sash framework.

4,389,817

DOUBLE DOOR ASSEMBLY

Leonard E. Olberding, 12960 Quivira, Overland Park, Kans. 66213

Filed Jun. 1, 1981, Ser. No. 268,714
Int. Cl.³ E05D *15/48;* **E05B** *65/04*
U.S. Cl. 49—163 **5 Claims**



1. A safety door assembly for reducing the risk of injury or loss resulting from robbery, burglary or unauthorized entry, said assembly including:

an open, upright framework having a pair of horizontally spaced stiles, a threshold between the stiles and an upper header between the stiles;

an upright, inwardly-opening outer door complementally fitted within, entirely surrounded by said framework and provided with a continuous, inwardly-extending, peripheral band complementally fitted within and entirely surrounded by said framework, presenting an inwardly-facing cavity extending throughout its width and height;

a number of vertically spaced hinges attached to one of said stiles and to the proximal vertical stretch of said band,

said hinges supporting the outer door for horizontal swinging movement into and out of said framework;

an upright, inwardly-opening inner door complementally nested within said cavity, entirely surrounded by said band and operably connected with said hinges along one vertical edge of the inner door,

said hinges supporting the inner door for horizontal swinging movement relative to the outer door into and out of said cavity,

said hinges having vertically aligned hinge pins common to said door and disposed adjacent the inner face of the inner door for horizontal swinging of the doors as a unit about the axes of said pins; and

a solenoid within the other of said stiles having a core reciprocable horizontally toward and away from the outer door when the latter is within said framework,

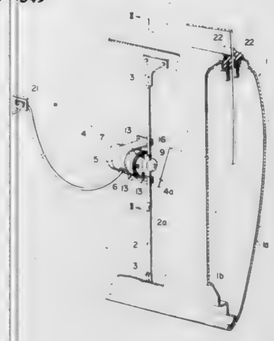
said band being provided with a core-receiving aperture.

4,389,818

POWER OPERATED AUTOMOBILE WINDOW GLASS REGULATING MECHANISM

Toshinori Sakamoto, Hiroshima, Japan, assignor to Toyo Kogyo Co. Ltd., Hiroshima, Japan

Filed Sep. 28, 1981, Ser. No. 306,394
Claims priority, application Japan, Sep. 29, 1980, 55-139630[U]
Int. Cl.³ E05F *15/16*
U.S. Cl. 49—349 **9 Claims**



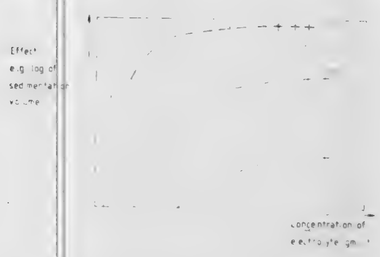
1. A power operated automobile window regulating mechanism for driving a window glass panel between a closed and open positions in an automobile body panel, said regulating mechanism comprising flexible strap means secured to said body panel to extend along a direction of movement of the window glass panel, motor means carried on said window glass panel and having output means, said strap means having means engageable with said output means, guide means for forcing said strap means toward said output means so that the output means is drivingly engaged with the strap means.

4,389,819

GLASS POLISHING PROCESSES

John P. H. Williamson, Chester, and John L. Moilliet, Abberley, both of England, assignors to Rhone-Poulenc Industries, Paris, France

Filed Nov. 25, 1980, Ser. No. 210,261
Claims priority, application United Kingdom, Nov. 29, 1979, 7941296
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—317 **11 Claims**



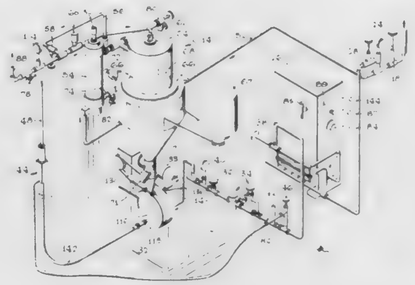
1. A method of polishing mineral and organic material in which the polishing compound comprises a material selected from the group consisting of rare earth metal compounds and zirconium oxide, which material is in powder form mixed with water and is maintained in a state of reversible flocculation by means of mixing the material with (a) an alkali metal or an ammonium salt of the condensation product of naphthalene sulfonic acid with formaldehyde or lignin sulfonic acid serving as an anionic deflocculating agent in an amount necessary to cause deflocculation, and (b) an electrolyte containing a metal cation having a valency greater than 1.

4,389,820

BLASTING MACHINE UTILIZING SUBLIMABLE PARTICLES

Calvin C. Fong, Beverly Hills; John W. Altizer, Simi Valley; Vernon E. Arnold, Fillmore, and John K. Lawson, Granada Hills, all of Calif., assignors to Lockheed Corporation, Burbank, Calif.

Filed Dec. 29, 1980, Ser. No. 220,372
Int. Cl.³ B24C *3/00, 1/00*
U.S. Cl. 51—410 **22 Claims**



1. A blasting machine utilizing particles of materials capable of sublimation comprising:

forming means for producing said particles, said forming means including means for causing said particles to have a substantially uniform length thereto;

dispensing means coupled to said forming means and adapted to receive said particles from said forming means and to introduce said particles into a low pressure transport gas flow;

nozzle means for accelerating said particles and having a high pressure, low velocity gas flow coupled thereto, said nozzle means being adapted to convert said high pressure, low velocity gas flow into a low pressure, high velocity gas flow; and

conduit means coupled to said nozzle means and said dispensing means for receiving said particles and said low pressure transport gas flow and for enabling said low pressure transport gas flow to transport said particles to said nozzle and to deliver said particles into said low pressure, high velocity gas flow within said nozzle;

whereby said particles are entrained in said high velocity gas flow and are accelerated thereby.

4,389,821

INFLATABLE DOCK SEAL

Larry O'Neal, 549 W. Indianola Ave., Youngstown, Ohio 44502

Filed Jul. 13, 1981, Ser. No. 282,926
Int. Cl.³ E06B *7/22*
U.S. Cl. 52—2 **3 Claims**

1. An inflatable dock seal for positioning on a building having an opening defined therein and comprising an inflatable inverted U-shaped device formed of flexible air impervious material and consisting of a horizontal inflatable member and a

pair of vertical inflatable members in communication therewith, means for attaching said members to said building and means for inflating said members, means for supporting portions of the horizontal member when moved toward and away from the building by inflation and deflation, said means comprising spaced inverted U-shaped support members secured transversely to said horizontal member and pivotally secured to said building therebelow and means for retracting said horizontal member when deflated, said means for retracting said horizontal member when deflated comprising a retractable flap on said horizontal member, a spring driven roller on said building, said flap attached to said spring driven roller so that the same can be wound up thereon, said horizontal member having portions extending outwardly from said building and downwardly when inflated, said vertical inflatable members each consisting of an elongated hollow flexible member having a transversely arcuate configuration and secured at their opposite outer longitudinal edges to said building adjacent to said opening.



4,389,822

HEAD FOR PASSAGES, DOOR AND WINDOW OPENINGS

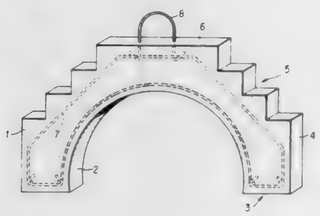
Mathilde Krippner, Sonnenbichl 21, 8952 Marktoberdorf, Fed. Rep. of Germany

Continuation of Ser. No. 916,579, Jun. 19, 1978, abandoned. This application Jul. 30, 1981, Ser. No. 288,352

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1977, 2727625

Int. Cl.³ E06B *1/04*

U.S. Cl. 52—125.4 **6 Claims**



1. A head for passages and door or window openings in brickwork, said head being formed from a prefabricated one-piece beam having two supporting surfaces on opposite sides of a passage, a bottom side between said supporting surfaces, said bottom side being elevated in respect to said supporting surfaces, said head being constructed of light-weight concrete or gas concrete and having a configuration wherein said bottom side of the beam has the shape of an arch and is substantially semi-circular with a center of curvature not substantially below a line connecting said supporting surfaces thus producing substantially little or no tensile load during use, said beam further having a top side which is rectangularly stepped, and a steel reinforcement being incorporated into said beam along its length and conforming to its contour, said reinforcement being canted in the step area, where by said steel provides tensile strength for shipping and handling, but in use suplements the compressive strength of said gas concrete.

4,389,823

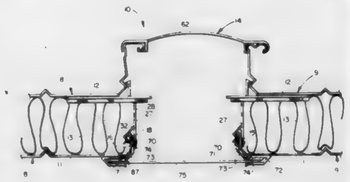
MODULAR ROOF SKYLIGHT

Wayne H. Player, Mesquite, Tex., assignor to Howmet Aluminum Corporation, New York, N.Y.

Filed Jun. 28, 1981, Ser. No. 275,640

Int. Cl.³ E04B *7/18*

U.S. Cl. 52—200 **10 Claims**



1. A modular roofing structure and skylight assembly comprising:

channel shaped roofing panels having upstanding side legs with interlockable flanges formed at their upper ends for interlocking a series of panels together in side by side relationships;

channel shaped ceiling panels having upstanding side legs. with interlockable flanges formed at their upper ends for interlocking a series of panels together in side by side relationships;

means suspending said ceiling panels a selected distance beneath said roofing panels;

a skylight roofing panel disposed between said channel shaped roofing panels said skylight panel being formed of light transmitting material and having locking means formed along the longitudinal edges thereof for engagement with the interlocking flanges on the legs of said roofing members;

a pair of elongated skylight ceiling panel mounting strips each engaging opposite edge regions and side walls of adjacent ceiling panels and being secured thereto, said mounting strips each having first and second flanges aligned one to the other in generally orthogonal relationship;

a substantially planar skylight ceiling panel formed out of light transmitting material disposed beneath and in abutting engagement with said ceiling panel mounting strips; and

a pair of elongated ceiling panel mounting clips matingly engaging the outer edges of said skylight ceiling panel and oppositely disposed flange portions of said mounting strips.

4,389,824

WINDOW AND DOOR TRIM FOR USE WITH SIDING

Carl Anderson, 2571 Richmond Terr., Staten Island, N.Y. 10303

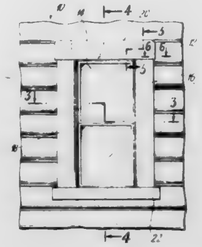
Filed Mar. 3, 1980, Ser. No. 126,953

Int. Cl.³ E06B *1/04*

U.S. Cl. 52—211 **18 Claims**

1. A window and door trim for use with siding, comprising:

elongated, L-shaped panels having one longer and one short leg interconnected by an angle less than 90°, for fitting around a casing having a front and an inside face, coupling means associated with said shorter leg for coupling of the shorter leg onto the inside face of the casing, said longer leg terminating in a free distal end having an inwardly turned, double folded over panel hem tightly retained against said longer leg to form a triple thickness of material at the distal end, the combination of the less than 90° interconnection with the double folded over hem providing for spring held abutment of the longer leg against the siding without the use of any fastening members, and wherein the shorter leg is disposable on the inside face of the casing and the longer leg is disposable in a substantially vertical plane on the front face of the casing and entirely overlying the siding without any portion of the panel lying under the siding, wherein the casing has sections including a side casing and upper casing, and wherein two of said panels form side panels for fitting onto the side casing, the longer legs of said side panels extending across the upper casing and onto the siding, and wherein one of said panels forms an upper panel for fitting onto the upper casing and overlapping said side panels.



4,389,825

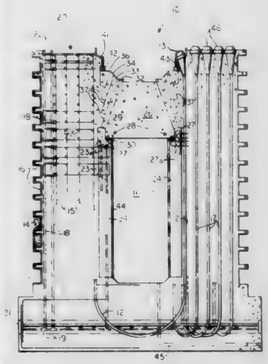
PRESTRESSED CONCRETE PRESSURE VESSELS WITH INCREASED PRESSURE-RETAINING CAPABILITY

Philip Y. Chow, Orinda, Calif., assignor to T. Y. Lin International, San Francisco, Calif.

Filed Aug. 28, 1980, Ser. No. 182,015

Int. Cl.³ E04C *3/10*

U.S. Cl. 52—224 **4 Claims**



1. A very high pressure prestressed concrete pressure vessel, comprising:

a concrete structure having an outer encompassing surface and a body, with the body being shaped to provide internal cavity means for holding fluid under pressure and conduits providing ingress and egress for the cavity means,

series of circumferential annular horizontal tendons at the outer surface of the body for circumferential post-tensioning of the body;

series of generally vertical tendons in the body, including tendons positioned around the cavity means;

accompanying post-tensioning means for each tendon; and

stress relieving means in inner portions of the body adjacent to surfaces of the cavity means, comprising a series of angularly spaced preformed partings oriented generally vertically and extending radially outwardly into the vessel wall from the surfaces of the internal cavity means, for relieving compressive stresses at the internal cavity surfaces and for locating peak compressive stresses due to external circumferential post-tensioning inside the concrete wall so that external post-tensioning can be of very high magnitude without causing stresses to exceed practical limits, and including elastomeric sealing members at the surfaces of the internal cavity means, over the preformed partings, for keeping internal cavity pressure out of the partings, with precompressing means compressing the sealing members toward the partings.

4,389,826

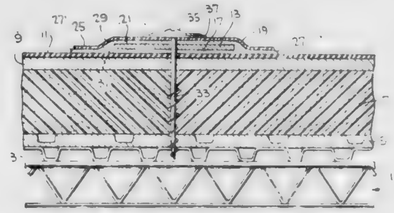
PLATE BONDED SYSTEM ON TOP OF RUBBER AND METHOD OF PREPARING SAME

Thomas L. Kelly, 50 Randolph Ave., Waterbury, Conn. 06710

Filed Sep. 2, 1980, Ser. No. 183,343

Int. Cl.³ E04B *5/00*

U.S. Cl. 52—410 **12 Claims**



1. A roofing installation including, in combination, a deck for supporting the roofing installation, insulation supported by the deck, a flexible membrane supported by the insulation, and a spot bonding pad compatible with adhesive and mounted on and adhesively secured to said flexible membrane, a flexible cover extending over said spot bonding pad and extending beyond the periphery thereof, the flexible cover being adhesively secured to said spot bonding pad and those portions of the cover which extend beyond the periphery of the spot bonding pad being adhesively secured to the flexible membrane, and a fastening means extending through said cover, the spot bonding pad, the flexible membrane, the insulation and the deck.

4,389,827

THROUGH-THE-WALL AIR CONDITIONER COVER KIT

Constance M. Van Valkenburg, 494 Curfew St., St. Paul, Minn. 55104

Filed Jun. 9, 1980, Ser. No. 157,800

Int. Cl.³ E06B *7/00, 9/00*

U.S. Cl. 52—511 **2 Claims**

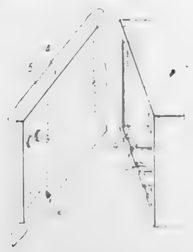
1. A kit for covering an air conditioner unit mounted in a wall of a building, when said unit is not in operation, to reduce heat loss through and around said unit, said kit comprising:

(a) a rigid cover piece formed of a foamed polymeric material which is substantially impermeable to air and thermally nonconductive, having a base wall and four upstanding side walls defining an open-ended chamber having a volume greater than the volume of the portion of the air conditioner unit to be covered: and

(b) an attachment means adapted for securing said cover piece in sealing engagement with said building wall or the housing of said unit comprising:

(1) a backing means which is a flexible polymeric foam selected from a group consisting of polyurethane, polyvinyl chloride and polyethylene, said backing means having a thickness between 0.3 and 2.5 cm.,

(2) a layer of pressure sensitive adhesive on one side of said backing means to attach said backing means to a portion of said cover piece, and



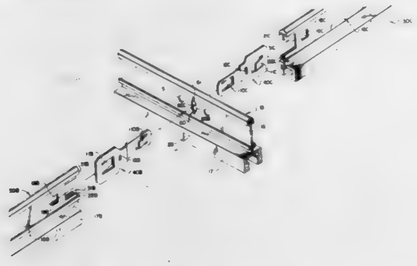
(3) a securing means provided by said backing means itself which is applied to the inner surface of at least one of said side walls of said cover piece whereby said sealing engagement of said cover piece with said housing is provided by friction-fit.

4,389,828

SUSPENDED CEILING SYSTEM WITH CROSSING CLIP

Lloyd H. Cary, Magnolia, Ark., assignor to Howmet Aluminum Corp., New York, N.Y.

Filed Jun. 12, 1980, Ser. No. 158,797
Int. Cl.³ E04C *2/42*
U.S. Cl. 52—665 **9 Claims**



8. In a suspended ceiling system used for supporting ceiling tiles and other fixtures within a grid framework suspended beneath the major structural elements in a building, the connecting apparatus comprising:

a plurality of rails having a vertical web and a flange beneath said web, said plurality of rails including first and second abutting rails and an abutted rail, said first and second abutting rails each being connectable at one end to opposing sides of said abutted rail of the grid framework, both said first and second abutting rails being connectable coaxially to each other and at an angle to the abutted rail;

said first and second abutting rails each having a pair of vertically disposed axial grooves defined by channels connected to said web and positioned separate from said flange on said abutting rail;

a slit through the web of said abutted rail;

a duality of clips, each clip having a first end having a first spring biased detent finger receivable through said slit for attachment to said abutted rail, and a second end having a substantially planar face bounded on opposite sides by parallel edges slidably receivable into said grooves of said abutting rail, and a second spring biased detent finger on said second end, said second detent finger extending from the face of said clip such that it is biased toward the web of said abutting rail when the clip is registered into said grooves for assembly;

a first retaining surface presented for each said first detent finger, said first retaining surface engagable with said second detent finger;

a second retaining surface presented for each said second detent finger, said second retaining surface located on each said abutting rail web and adapted to engage said second detent finger to secure the clip against longitudinally sliding out of reception within said grooves;

a horizontal offset in each of said clips whereby, upon assembly, said first end of each clip is brought into alignment immediately adjacent that plane which longitudinally bisects the webs of both said coaxially aligned abutting rails;

said slit being vertically oriented and of sufficient breadth to allow two clips to pass through, whereby, both said clips are received through said slit from opposite directions and there pass each other in contact at that plane which bisects the web of both said abutting rails; and

a recess in the end of each abutting rail which, upon assembly, receives the extension of the opposite clip in a manner resistant to a bending moment supplied in the vertical plane between the pair of abutting rails; whereby, upon assembly, each clip cooperates with the other in order to secure a pair of abutting rails in coaxial alignment about a mutally abutted rail.

4,389,829

METAL ROOF SYSTEM

Wesley T. Murphy, 94 Prospect St., Auburn, N.Y. 13021

Filed Dec. 22, 1980, Ser. No. 219,262
Int. Cl.³ E04C *3/02*
U.S. Cl. 52—693 **3 Claims**



1. A metal roof support structure that includes

a metal rafter member and a generally opposed metal purlin member each member having a central web and a pair of mounting flanges secured to each end of the web that contain a series of spaced apart elongated holes passing through the flanges thereof,

at least one metal truss for connecting the rafter and the purlin, said truss being formed of a channel shaped member having a base and two opposing side walls, the side wall of the channel having a transverse cut form therein at a predetermined distance from each end of the truss, each cut passing inwardly from the outer edge of the side wall to the base to allow the end sections of the truss to be bent about the base, the inside width between the side walls of the truss being equal to or slightly greater than the outside width of the purlin and rafter flanges so that the end sections of the truss are slidably received over the flanges and can be bent into conformity therewith,

the side walls of the end sections of said truss member having at least one elongated hole formed therein that compliments the holes formed in the side walls of said flanges whereby said holes are brought into alignment in assembly, and

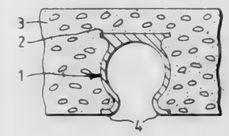
a resilient V-shaped truss pin mounted in the aligned holes that is biased into contact against the truss and the mounting flanges to secure the members in assembly.

4,389,830

ANCHORAGE WITH ACCESSORIES FOR ATTACHMENT TO WALLS, FLOORS AND CEILINGS

Bjorn Ingeberg, Skigardveien 6, Oslo 6, Norway

PCT No. PCT/NO80/00017, § 371 Date Jan. 16, 1981, § 102(e) Date Jan. 9, 1981, PCT Pub. No. WO80/02579, PCT Pub. Date Nov. 27, 1980
PCT Filed May 14, 1980, Ser. No. 230,950
Claims priority, application Norway, May 16, 1979, 791632
Int. Cl.³ E04B *1/40*
U.S. Cl. 52—710 **7 Claims**



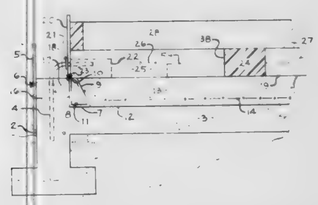
1. An anchorage for attachment of ties to walls, floors, ceilings or the like, the anchorage comprising; a substantially circular tubular section having a longitudinally extending slot for the introduction of one end of the tie, the section having external attachment flanges extending tangentially with respect to the section on the side thereof opposite from the slot, and said flanges also extending longitudinally along the section, the flanges thus forming an external abutment surface on the tubular section and said section being made of extruded aluminum.

4,389,831

SIMPLIFIED CONSTRUCTION SYSTEM

Hanns U. Baumann, Laguna Beach, Calif., assignor to Sharon K. Baumann Trust, Laguna Beach, Calif.

Filed May 26, 1981, Ser. No. 266,834
Int. Cl.³ E04G *21/00*
U.S. Cl. 52—741 **13 Claims**



1. A method of constructing a reinforced concrete building of the tilt-up type comprising the steps of:

a. pouring a concrete slab foundation, including peripheral footings,

b. positioning an exterior form for the outer wall extending upwardly at least one wall thickness above the upper surface of said foundation,

c. positioning an interior form on the upper surface of said foundation so that the vertical side of said form faces away from the center of said foundation and aligns with the desired inner surface of the outer wall, said form having an upper dimension less than its lower dimension,

d. applying a bond-breaking layer to the upper surface of said foundation,

e. pouring a ceiling slab over said bond-breaking layer including corner lift inserts and reinforcement just above said bond-breaking layer,

f. pouring a stub wall between said interior form and said exterior form including a member for hinging about the upper inner corner of said stub wall,

g. applying a bond-breaking layer to the upper surface of said ceiling slab,

h. positioning an inwardly-facing vertical form above said stub wall,

i. pouring a tiltable sidewall slab over said bond-breaking layer including a mating portion for said hinging member,

j. erecting said tiltable sidewall while pivoting about said mating hinging members,

k. erecting an adjacent tiltable sidewall to form a corner area,

l. interconnecting said adjacent sidewalls in said corner area,

m. positioning elevating means across adjacent sidewalls above said corner areas,

n. elevating said ceiling slab by attaching said elevating means to said ceiling slab at said corner lift inserts,

o. adding form means between the bottom of said elevated ceiling slab and the inner surface of said sidewall,

p. filling in the area above said added form means to connect the edge of said ceiling slab with said sidewall.

4,389,832

METHOD AND APPARATUS FOR LOADING BOTTLES INTO OPEN TOP BOTTLE CARRIERS

Rodney K. Calvert, Dunwoody, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Mar. 16, 1981, Ser. No. 244,163
Int. Cl.³ B65B *21/04, 21/16*
U.S. Cl. 53—48 **5 Claims**



1. A bottle carrier loading machine comprising conveyor means having upper and lower reaches for continuously supplying to a loading station a series of set-up multiple cell bottle carriers arranged in abutting contact, the bottom of each cell having an aperture formed therein, a fixed dead plate disposed above the path of movement of said carriers and having its outfeed end at said loading station, pusher means including a series of generally wedge shaped pusher elements mounted on endless means disposed above said dead plate and arranged to supply to said loading station a continuous series of bottles slidable on said dead plate and in generally upright side-by-side relation, each pusher element being arranged to engage and to push a preceding bottle toward the outfeed end of said dead plate and to engage and guide a succeeding bottle downwardly as it drops off of the outfeed end of said dead plate, a plurality of movable positioning pins arranged respectively to enter corresponding apertures in the bottoms of the carrier cells so as to move the carriers through the loading station in such manner that the carriers receive bottles as they slide off of the outfeed end of said dead plate, said positioning pins being mounted on endless means the upper reach of which at the location where the bottles contact the pins is unsupported throughout its entire width and somewhat yieldable intermediate its ends so that downward movement of the bottles is arrested by a cushioned stop due to engagement of the bottles with the positioning pins at the unsupported portion of the conveyor intermediate the ends of the upper reach of said endless means.

4,389,833

BOTTLE CLOSING MACHINE HAVING BOTTLE NECK WASHING ARRANGEMENT

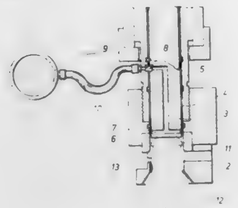
Uwe Knabe, Holzwickede, Fed. Rep. of Germany, assignor to Holstein und Kappert GmbH, Dortmund, Fed. Rep. of Germany

Filed Oct. 14, 1980, Ser. No. 196,296

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948633

Int. Cl.³ B65B *7/28, 61/00;* **B67B** *3/12*

U.S. Cl. 53—167 **9 Claims**



1. An arrangement for closing containers with crown corks and the like, comprising a substantially vertically displaceable cork-displacing piston; guiding means including an inner wall which bounds a guiding opening for displacing said piston therein, said inner wall in the region above and adjacent the cork being spaced from said piston so as to form a gap therebetween; and means for supplying a cleaning liquid and communicating with said gap at a location above the cork in response to displacement of said piston by the cork covering or closing a container, so that said gap is cleaned first above the cork and then the cork is cleaned in condition of a closed container.

4,389,834

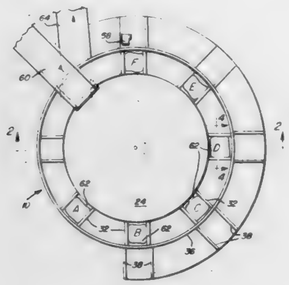
LOOSE PRODUCT BAGGING AND BALING SYSTEM

Gregory E. Wysocki, Rte. 1, Custer, Wis. 54423

Filed Mar. 18, 1981, Ser. No. 245,210

Int. Cl.³ B65B *5/10, 39/14*

U.S. Cl. 53—475 **8 Claims**



1. A loose product bagging and baling machine including a rotary horizontal table, item delivery means for discharging items on said table, a plurality of stationary worker positions spaced slightly outwardly of and about the periphery of said table, rotary container support means spaced apart in a generally circular path substantially concentric with the axis of rotation of said table and supported for simultaneous angular displacement thereabout with said support means substantially registered with the outer periphery of said table, whereby persons positioned at said worker positions may manually transfer items from said table and place the items being transferred into containers supported from said support means, and first drive means operatively connected to said table for rotating the latter and second drive means operably connected to said container support means for angularly displacing the latter.

4,389,835

SAFETY HOPPLES

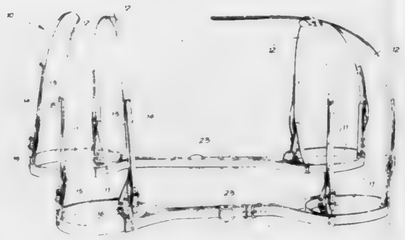
Tony Kavalieros, 14 East Street, Marrickville, New South Wales, 2204, Australia

Filed Aug. 3, 1981, Ser. No. 289,528

Claims priority, application Australia, Aug. 7, 1980, PE4919

Int. Cl.³ B68B *1/00;* **A01K** *15/00*

U.S. Cl. 54—71 **5 Claims**



1. A hopple for a horse, comprising four ovate hopple members each of which is adapted to surround one leg of a horse and is provided at or adjacent each end with a riser strap having first connector means to connect the hopple member to supporting strap means adapted to be positioned about the horse and to support the associated hopple member in a substantially horizontal plane about one of the animal's legs, the hopple being characterized in that at least the front one of the riser straps of each of the front hopple members and the rear one of the riser straps of each of the rear hopple members is provided with a second and independent connector means below said first connector means, the corresponding supporting strap means being longitudinally bifurcated, one of the bifurcated portions of each of the said strap means being connected to each of the first connector means of the corresponding riser strap, the other of the bifurcated portions of each of the said strap means being connected to each of the second connector means of the corresponding riser strap said strap means and the corresponding riser straps being such that in the event that the connection between one of the first connector means and a corresponding one of the bifurcated portions of the strap means is broken the corresponding hopple member will be retained in a substantially horizontal plane by the other of the bifurcated portions of that strap means.

4,389,836

CARRIAGE FOR A GRASS TRIMMING DEVICE

Joseph M. Lowry, 308 Sweetbriar Dr., and Ernest E. Griffin, 12306 Ridgefield Pkwy., both of Richmond, Va. 23233

Filed Jul. 8, 1981, Ser. No. 281,421

Int. Cl.³ A01G *3/06*

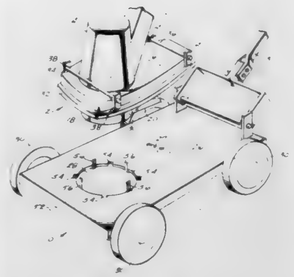
U.S. Cl. 56—12.7 **14 Claims**

1. A carriage for a trimming device of the type having a motor, a housing for the motor, a cutting element in the form of a length of cable connected to said motor so as to be rotatable about an axis at a relatively high rate of speed for cutting grass, weeds or the like, said carriage comprising:

a platform having a top and bottom side, means for supporting said platform for movement over the ground, and defining a first aperture for receiving the rotatable length of cable so that cable extends below and is rotatable beneath said platform bottom side;

a flange member having a top and bottom side, means for clamping said flange member to said trimming device so that said top side of said flange member is in a juxtaposed relationship with the bottom side of said trimming device, said clamping means comprising at least one bar member extending across the upper portion of said trimming device and support post members fixedly attaching to said flange member top side for removably receiving said at least one bar member, said flange member defining a second aperture in coaxial alignment with said first aperture for receiving said rotatable length of cable therethrough; and

cooperating means located on said flange member and on said platform first aperture for removably coupling and securely holding said flange member to said platform.



4,389,837

PLY YARN SPINNING ASSEMBLY

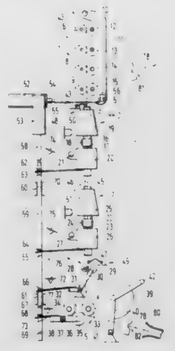
Hans Stahlecker, Haldenstrasse 20, 7334 Suessen, Fed. Rep. of Germany, and Hans Braxmeier, Suessen, Fed. Rep. of Germany, assignors to Fritz Stahlecker and Hans Stahlecker, of DEX

Filed Jun. 10, 1981, Ser. No. 272,261

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1980, 3022149

Int. Cl.³ D01H *13/22, 13/16*

U.S. Cl. 57—16 **29 Claims**



1. Ply yarn spinning assembly comprising:

a drawing unit for drawing sliver,

at least one hollow spindle arranged downstream of the drawing unit,

a binding thread bobbin provided respectively at each of said at least one hollow spindles and having a supply of binding thread thereon for binding the sliver passing through the at least one hollow spindle,

drawing unit and hollow spindle driving means,

thread monitoring means for monitoring the yarn condition at at least one position downstream of the drawing unit,

and an operating mechanism for swinging open a load-bearing member of the drawing unit to interrupt the drawing unit driving means in automatic response to detection of a malfunction by said thread monitoring means.

4,389,838

SINGLE-TWIST STRANDING

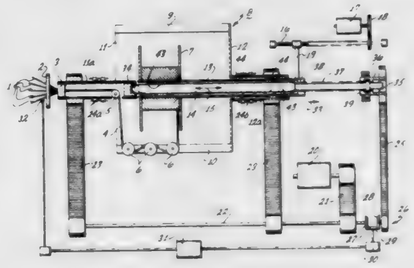
Georg Adelhard, Nuremberg; Herbert Hasselberg, Lauf; Manfred Obermeier, Eckental; Karl Sierwald, Vaterstetten, all of Fed. Rep. of Germany; Jozsef Szedlacsek, and Gyorgy Somogyi, both of Miskolc, Hungary, assignors to Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany and Diosgyori Gepgyar, Miskolc, Hungary

Filed May 7, 1982, Ser. No. 375,724

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111872

Int. Cl.³ D07B *3/08, 7/10;* **D65H** *54/02*

U.S. Cl. 57—71 **11 Claims**



1. A single-twist stranding machine including stranding means for stranding, bunching and twisting together a plurality of elongated elements such as filaments, wires, conductors or the like, a rotatably mounted take-up spool onto which the stranded-together elements are wound, a flyer coaxial with the spool and including a frame and deflection pulleys to run the stranded-together elements from the stranding means to the spool, the flyer revolving about the spool, and drive means for providing rotation, the improvement comprising:

a differential gear transmission having two input gears and an output gear;

first transmission means for drivingly connecting the drive means to the flyer, one of the input gears of the differential gear transmission being connected to the first transmission means;

second transmission means for drivingly connecting the output gear to the spool for causing the spool to rotate;

a control drive drivingly connected to another one of the input gears to provide thereto incremental rotation augmenting the rotation of the first input gear to, thereby, vary the rotational output gear; and

means responsive to the speed of at least one of the elongated elements for controlling the control drive.

4,389,839

REINFORCING CORD FOR ELASTOMERIC ARTICLES, SHAPED ARTICLES OF REINFORCED ELASTOMERIC MATERIAL, MORE PARTICULARLY PNEUMATIC TIRES FOR VEHICLES, AND A PROCESS FOR THE MANUFACTURE OF REINFORCING CORD AND A PROCESS FOR THE MANUFACTURE OF VEHICLE TIRES

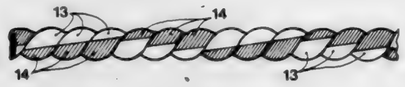
Oebele P. van der Werff, Doetinchem, Netherlands, assignor to Akzo nv, Netherlands

Filed Jan. 7, 1981, Ser. No. 223,150

Claims priority, application Netherlands, Jan. 16, 1980, 8000265

Int. Cl.³ D02G *3/38, 3/40, 3/48*

U.S. Cl. 57—238 **25 Claims**



1. A reinforcing cord for elastomeric articles, which cord is built up from at least two endless filament bundles which are twisted or laid together and comprising two different materials, in which the cord is built up of at least two groups which each contain at least two filament bundles and that in each group at least one filament bundle is of poly-paraphenylene terephthalamide and at least one filament bundle is of viscose rayon, the filament bundles of poly-paraphenylene terephthalamide having the following characteristics:

an inherent viscosity of at least 2.5, and preferably at least 3.5 and less than 7;

a tenacity of at least 10 cN/dtex, and preferably at least 17 cN/dtex and less than 40 cN/dtex;

an elongation at rupture of at least 2.7%, by preference at least 3.4% and less than 6%;

a specific 1%-LASE value of at least 2.8 cN/dtex, and preferably at least 3.5 cN/dtex and less than 15 cN/dtex; and

the filament bundles of viscose rayon having the following characteristics;

a tenacity of at least 3 cN/dtex, and preferably about 5 cN/dtex and less than 12 cN/dtex;

an elongation at rupture of at least 8%, and preferably about 13% and less than 25%;

a specific 5%-LASE value of at least 1.5 cN/dtex, and preferably about 2.5 cN/dtex and less than 20 cN/dtex.

4,389,840

METHOD OF AUTOMATICALLY DOFFING THE FULL BOBBIN PACKAGES FROM, AND DONNING THE EMPTY BOBBIN TUBES ONTO, THE SPINDLES OF A PREPARATORY SPINNING MACHINE

Emil Briner; Peter Novak; Bruno Tanner, all of Winterthur, and Hermann Gasser, Frauenfeld, all of Switzerland, assignors to Rieter Machine Works Limited, Winterthur, Switzerland

PCT No. PCT/EP80/00040, § 371 Date Mar. 10, 1981, § 102(e) Date Mar. 2, 1981, PCT Pub. No. WO81/00264, PCT Pub. Date Feb. 5, 1981

PCT Filed Jun. 30, 1980, Ser. No. 243,947

Claims priority, application Switzerland, Jul. 10, 1979, 6420/79

Int. Cl.³ D01H *9/04*

U.S. Cl. 57—267 **17 Claims**

1. A method of automatically doffing full bobbin packages from and donning empty bobbin tubes onto spindles of a preparatory spinning machine equipped with at least one row of spindles and flyers, each flyer being rotatably supported at a flyer head above a related spindle and comprising two flyer arms and a flyer yoke, comprising the steps of:

shutting down the spinning preparatory machine with the flyers located in a same predetermined position;

pivoting all of the flyer heads in a plane extending substantially at right angles to a plane containing both flyer arms of each flyer when each said flyer is located in said same predetermined position, each flyer being pivoted into a position where the flyer yoke thereof does not obstruct vertical doffing of the full bobbin package from its related spindle;

conjointly vertically doffing the full bobbin packages from all spindles arranged in a row, while the roving is severed between the flyer and the bobbin package and there is formed a free fiber beard at the flyer;

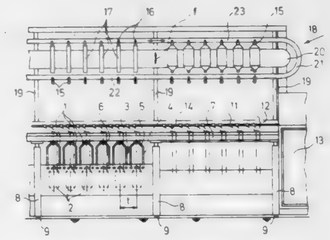
conjointly removing the bobbin packages from the doffing position located vertically above the spindles, and transferring empty bobbin tubes into the same position;

conjointly vertically donning the empty bobbin tubes onto all of the spindles arranged in a row, with the severed free fiber beard at the related flyer being clamped between a foot of the bobbin tube and its related spindle;

pivoting back all of the flyer heads into their working positions above the spindles; and

starting-up the preparatory spinning machine.

5. A preparatory spinning machine for automatically doffing full bobbin packages from and donning empty bobbin tubes



onto spindles of such preparatory spinning machine which is equipped with at least one row of spindles and with flyers, each of the flyers being rotatably supported at a flyer head above a related spindle, and each flyer comprising flyer arms and a flyer yoke, comprising:

a common support beam extending in a longitudinal direction of the preparatory spinning machine;

said flyer heads of the flyers of the spindles which are arranged in a row being supported by said common support beam;

means for imparting to said common support beam for the doffing of bobbin packages and the donning of empty tubes a translatory movement in such a manner that each flyer is substantially pivoted about an axis which substantially symmetrically intersects both flyer arms at lower regions thereof;

a doffing and donning element provided above said spindles;

means for supporting said doffing and donning element for substantially vertical up-and-down movements;

said doffing and donning element comprising for each spindle a gripper for the full bobbin and a bobbin tube support member for the empty bobbin tube; and

control means for bringing each of the flyers to standstill in a predetermined position contemplated for performing pivotal motions thereof and for effectuating the doffing operation.

4,389,841

YARN FALSE TWISTING APPARATUS

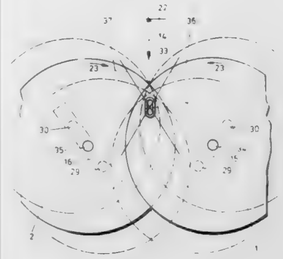
Detley Oberstrass, Tönisheide, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Jun. 12, 1981, Ser. No. 273,076

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022421; Jul. 9, 1980, 3025921

Int. Cl.³ D02G *1/08*

U.S. Cl. 57—340 **27 Claims**



1. A yarn false twisting apparatus comprising

a frame,

a pair of twist imparting circular discs, with each disc including a yarn engaging friction surface, and with at least one of said discs being relatively thin and flexible,

means mounting said discs to said frame, with said discs being rotatable about generally parallel spaced apart axes and such that portions of the respective yarn engaging friction surfaces are disposed in opposing, face to face relationship and define a twisting zone therebetween, and including means permitting selective movement of each of said discs along a path of travel which extends in a direction generally perpendicular to its axis of rotation and generally parallel to a line which is tangent to the disc at a point immediately adjacent the twisting zone when the disc is disposed at a midpoint along its path of travel,

a pressure applying member fixedly mounted to said frame and so as to locally bias said one flexible disc toward the other disc only at said twisting zone,

drive means for rotating each of said discs about their respective axes, and such that a yarn may be continuously advanced through said twisting zone in a direction perpendicular to the plane which includes both axes of rotation of said discs, while having twist imparted thereto by frictional contact between the yarn and the respective opposed friction surfaces resulting from the force exerted by the biasing means,

whereby the ratio of twist to yarn speed may be selectively varied by selective movement of said discs with respect to said pressure applying member.

4,389,842

POWER UNIT WITH GAS TURBINE

Reinhard Behnert, Bremen, Fed. Rep. of Germany, assignor to Vereinigte Flugtechnische Werke GmbH, Bremen, Fed. Rep. of Germany

Filed Mar. 18, 1981, Ser. No. 245,144

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 3012388

Int. Cl.³ F02C *3/08*; F02K *3/02*

U.S. Cl. 60—39.36 **4 Claims**

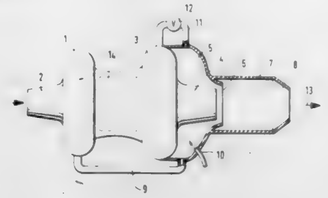
1. A drive and power unit, comprising:

a gas turbine having a central discharge duct;

a compressor drivingly connected to said turbine;

an annular injection chamber with centrifugal action surrounding in part said turbine and said discharge duct, and having its outer wall constructed to have have a diameter reduction in axial direction to become an annular nozzle that surrounds said discharge duct, the extension of the discharge duct constituting an inner boundary for establishing the nozzle is an annular configuration;

first conduct means connecting the compressor to said chamber for feeding thereto air as compressed by said compressor;



fuel injection means for and connected to said chamber; and

second conduct means for feeding a portion of combustion gases as produced by combustion in said chamber, to said turbine for driving same, the remainder of the combustion gases being discharged via said nozzle.

4,389,843

WATER WAVE ENERGY TRANSDUCER

John Lamberti, 1186 Broadway, New York, N.Y. 10001

Filed Mar. 27, 1981, Ser. No. 248,226

Int. Cl.³ F03B *13/12*

U.S. Cl. 60—507 **11 Claims**



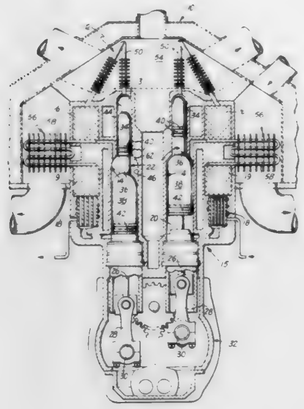
1. A water wave energy transducer comprising a floating vessel having a bow and a stern, a set of three laterally spaced forwardly extending support means at the bow of said vessel and a set of three laterally spaced rearwardly extending support means at the stern of said vessel, each of said sets comprising a port side support, a central support, and a starboard side support, a first shaft extending between and rotatably supported by said port side support and said central support, a second shaft extending between and rotatably supported by said starboard side support and said central support, said first and second shafts being aligned but independently rotatable, a bifurcated fitting fixed on each of said shafts, an arm having an inboard end fixed to each of said bifurcated fittings and having a float on its outboard end, said arms at the stern of the vessel extending rearwardly and said arms at the bow of the vessel extending forwardly, a drive gear rotatably mounted in said vessel, and power transmitting means coupling said shafts with said drive gear, said power transmitting means including means for converting independent oscillatory movement of said shafts produced by rising and falling of said floats and pitching and/or rolling of said vessel into undirectional rotary motion of said drive gear.

4,389,844

TWO STAGE STIRLING ENGINE

Robert A. Ackermann, and Nicholas G. Vitale, both of Schenectady, N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jun. 11, 1981, Ser. No. 272,568
Int. Cl.³ F02G *1/04*
U.S. Cl. 60—517 **2 Claims**



1. A heat engine for utilizing intermediate temperature heat and high temperature heat for high efficiency heat utilization, wherein the improvement comprises:

a vessel enclosing a working space adapted to be charged with a working fluid;

said working space having a compression space and a two stage expansion space including a high temperature expansion space and an intermediate temperature expansion space, for expanding the heated fluid against a movable piston to produce work output;

a two stage displacer reciprocally mounted in said working space for displacing the working fluid between said compression space and said expansion space through two partially separate and partially overlapping fluid paths;

two separate heaters for receiving the fluid from, and passing fluid to said expansion space, including a high temperature heater for heating the working fluid to be expanded in said high temperature expansion space with heat received from a high temperature heat source, and an intermediate temperature heater for heating the working fluid to be expanded in said intermediate temperature expansion space with heat received from an intermediate temperature heat source;

a first regenerator in series with said high temperature heater for receiving heated fluid from, and passing regeneratively heated fluid to, said high temperature heater, and for cyclically removing heat from said fluid, storing the heat and returning the heat to the fluid on the return flow;

a second regenerator in said fluid path for receiving heated fluid from, and passing regeneratively heated fluid to, said intermediate temperature heat exchanger; and

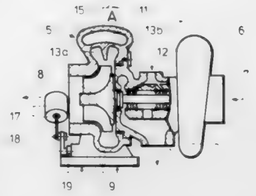
a cooler for cooling and passing regeneratively cooled fluid from said second regenerator to said compression space, and for recooling said fluid after compression and passing it to said second regenerator under the influence of said displacer.

4,389,845

TURBINE CASING FOR TURBOCHARGERS

Takaaki Koike, Hachioji, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1980, Ser. No. 189,369
Claims priority, application Japan, Nov. 20, 1979, 54-161014[U]; Feb. 13, 1980, 55-16416; Feb. 20, 1980, 55-20217
Int. Cl.³ F02D *23/00*; F01D *25/24*
U.S. Cl. 60—602 **1 Claim**



1. A turbine casing for turbochargers having a turbine wheel, comprising:

(a) a first radially inward casing wall having an appended integral centrally positioned partition wall extending radially inward therefrom, said casing wall with said partition wall being formed to establish a first radially inward partially divided scroll surrounding substantially half of the periphery of the turbine wheel for service as first and second side-by-side exhaust passages in the axial direction of the shaft of said turbine wheel so that separate flows of exhaust gases from an engine may be directed through respective said passages to the portion of said turbine wheel surrounded by said first scroll;

(b) a second radially outward casing wall formed integral with and surrounding the entirety of said first casing wall, said second casing wall being formed to establish a second scroll located radially outward from said first scroll and utilizing said first casing wall as a portion of the boundary thereof, said second scroll being separated from and surrounding a major portion of said first scroll and having a terminal portion surrounding a further minor portion of the periphery of said turbine wheel additional to the portion surrounded by said first scroll, said second scroll thereby being adapted for service as a third exhaust passage surrounding and separated from said first and second exhaust passages so that a separate flow of exhaust gases from an engine may be directed through said third passage to said minor portion of said turbine wheel surrounded by said second scroll;

(c) casing structure formed integral with said first and second casing walls and providing a common inlet to said first and second scrolls for exhaust gases from an engine; and

(d) control valve means for selectively controlling the flow of the exhaust gases from said inlet to said second scroll while maintaining the flow of such gases to said first scroll.

4,389,846

AIR SUPPLY AND FUEL VOLUME CONTROL ARRANGEMENT FOR AN AUXILIARY COMBUSTION CHAMBER OF A SUPERCHARGED INTERNAL COMBUSTION ENGINE

Franz Butscher, Friedrichshafen, Fed. Rep. of Germany, assignor to Motor-und Turbinen-Union GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 86,679, Oct. 19, 1979, abandoned. This application Nov. 5, 1981, Ser. No. 318,369
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1978, 2848199
Int. Cl.³ F02C *6/12*
U.S. Cl. 60—606 **7 Claims**

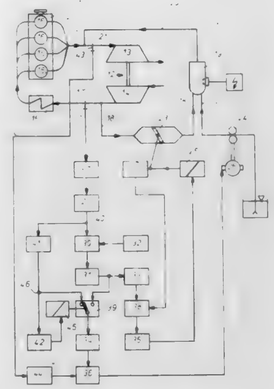
1. In an arrangement for an internal combustion engine having a means for supercharging the engine comprising an exhaust gas turbine and a compressor,

a control mechanism comprising

an auxiliary combustion chamber for supplying additional exhaust gas to the exhaust gas turbine.

means for metering fuel into the auxiliary combustion chamber, valve means for supplying supercharged air from said means for supercharging to said auxiliary combustion chamber,

means for comparing a signal representing a pressure of



supercharged air from said means for supercharging with a signal representing a guide parameter to produce a resultant signal,

means for controlling the valve means in response to the resultant signal,

further means for controlling the means for metering in response to the resultant signal,

means for generating an output signal upon the pressure of said supercharged air passing a limit value of pressure, and

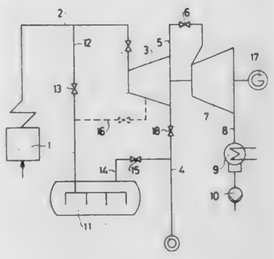
means for interrupting the operation of the further means in response to said output signal.

4,389,847

METHOD FOR THE RAPID INCREASE IN OUTPUT OF A STEAM TURBINE PLANT

Rolf Kehlhofer, Dielsdorf, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 30, 1980, Ser. No. 192,474
Claims priority, application Switzerland, Oct. 5, 1979, 9000/79
Int. Cl.³ F01K *3/00*
U.S. Cl. 60—659 **3 Claims**



1. Method for the rapid increase in output of a steam turbine plant using process steam, and in particular of a steam turbine plant connected with an electro-generator, comprising:

drawing off, during normal operations, the necessary process steam from a bleeder of one turbine;

simultaneously filling, or maintaining full, with steam from at least one drawing-off point of the high-pressure component of a turbine and/or with live steam, a steam accumulator; and,

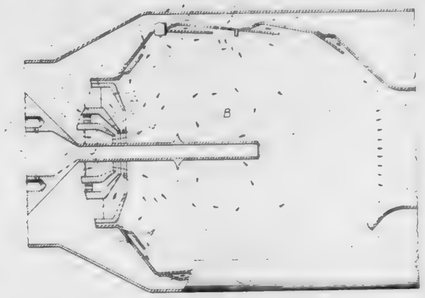
interrupting the drawing off of the process steam from the turbine and replacing the interrupted turbine process steam with process steam from the steam accumulator, for the purpose of rapidly increasing the output of the steam turbine plant so that the condensing component of the turbine or a condensing turbine, respectively, immediately receives an increased flow of steam.

4,389,848

BURNER CONSTRUCTION FOR GAS TURBINES

Stanley J. Markowski, East Hartford; Ronald A. Jeroszko, Hebron, and Robert P. Lohmann, South Windsor, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jan. 12, 1981, Ser. No. 224,408
Int. Cl.³ F02C *7/22*
U.S. Cl. 60—738 **8 Claims**



6. A burner construction including:

an inlet end cap;

a central secondary fuel and air nozzle in said end cap having a discharge end spaced from the end cap and located within the burner;

an annular primary fuel nozzle surrounding said secondary fuel nozzle, said primary nozzle including swirling discharge means for mixing with the fuel and causing the mixture to be discharged in a wide angled spray;

sidewalls extending downstream from the edges of the end cap;

said sidewalls having a row of relatively large holes therein at a point and upstream of the discharge end of the secondary nozzle for introducing conbustion/dilution air substantially radially of the burner and substantially to the secondary nozzle; and

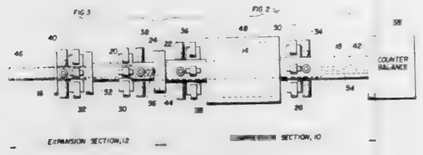
a trip on and surrounding the secondary nozzle at a point upstream of said row of holes, said trip serving to enhance the outward movement of the mixture of primary fuel and air with the dilution air to improve the recirculation adjacent the end cap and to enhance recirculation of the dilution air that is directed in an upstream direction as it impinges on the tube.

4,389,849

STIRLING CYCLE CRYOGENIC COOLER

Max G. Gasser, Rockville, Md.; Allan Sherman, Lanham, Md.; Philip A. Studer, Silver Spring, Md.; Alexander Daniels, Briarcliff Manor, and Michael P. Goldowsky, Valhalla, both of N.Y. Assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 2, 1981, Ser. No. 308,204
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **30 Claims**



5. Cooling apparatus, comprising in combination:

a reciprocally operable compressor piston (**14**) located in a generally cylindrical compressor section housing (**18**) and including a working fluid compression space (**44**) at one end thereof, said compression space being variable in accordance with the position of the piston in said housing;

a reciprocally operable displacer (**16**) located in a generally cylindrical expansion section housing (**20**) and including a working fluid expansion space (**46**) at one end thereof, said expansion space being variable in accordance with the position of said displacer;

said housings (**18**, **20**) being interconnected and including a working fluid and having means (**95**, **98**, **100**, **101**, **102**, **103**, **104**, **105**, **106**) for the flow of working fluid between said compression space (**44**) and said expansion space (**46**);

drive motor means (**48**, **52**) coupled to said compressor piston (**14**) and said displacer (**16**) and being operable to provide mutual reciprocation of said piston and said displacer in a controlled phase relationship to effect a predetermined cooling cycle by the compression and expansion of said working fluid;

non-contacting bearing means (**26**, **28**, **30**, **32**) located on said housings (**18**, **20**) and being operable to radially center said piston (**14**) and said displacer (**16**) in their respective said housings; and

non-contacting seal means (**84**, **108**) for restricting undesired flow of said working fluid around said piston (**14**) and said displacer (**16**);

said non-contacting bearing means and said non-contacting seal means being operable to eliminate physical contact between said piston (**14**) and its respective housing (**18**) and said displacer (**16**) and its respective housing (**20**), thereby providing long operational life and non-contamination of the working fluid.

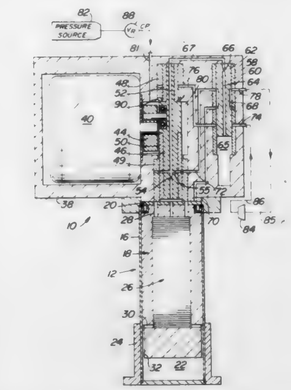
4,389,850

HYBRID CRYOGENIC REFRIGERATOR

Domenico S. Sarcia, Carlisle, Mass., assignor to CVI Incorporated, Columbus, Ohio

Filed Apr. 19, 1982, Ser. No. 369,862
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **11 Claims**

1. In a cryogenic refrigerator in which a movable displacer means defines within an enclosure first and second chambers of variable volume, and in which a refrigerant fluid is circulated in a fluid flow path between said first chamber and said second chamber by the movement of said displacer means controlled in part through the introduction of high-pressure fluid and the discharge of low-pressure fluid, the improvement comprising chamber means for guiding a slide connected to the displacer means, said slide having an axial passage communicating with one end of said chamber means remote from the displacer means, a motor coupled to said slide for controlling movement of the displacer means adjacent top dead center and bottom dead center positions thereof, a fluid reaction surface on said slide intermediate its ends, means for applying pressure to said surface for overriding said motor when the slide is spaced from top dead center, said passage in said slide having a restriction,



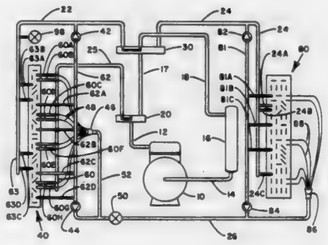
a valve having a spool valve member for controlling flow of the high and low pressure fluid, means including a conduit communicating one end of said spool valve member with said one end of said chamber means for introducing high fluid pressure into the conduit to shift the spool valve member when the displacer means is at one of the extremities of its movement.

4,389,851

METHOD FOR DEFROSTING A HEAT EXCHANGER OF A REFRIGERATION CIRCUIT

Ronald F. Chrostowski, Liverpool; Rudy C. Bussjager, Syracuse, and James J. Del Toro, North Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 112,876, Jan. 17, 1980, Pat. No. 4,313,313. This application Aug. 3, 1981, Ser. No. 289,342
Int. Cl.³ F25D *21/06*
U.S. Cl. 62—81 **5 Claims**



1. A method of defrosting a refrigeration system having a closed refrigeration circuit including a first heat exchanger, a second heat exchanger, an expansion device, a compressor and interconnecting lines which comprises the steps of:

sensing a frost accumulation on the second heat exchanger;

diverting in response to a need for defrost being sensed hot gaseous refrigerant from the compressor to the second heat exchanger bypassing the first heat exchanger;

preventing the refrigerant in the first heat exchanger from flowing to the second heat exchanger during the step of diverting;

discontinuing the steps of diverting and preventing after a predetermined time interval or upon the step of sensing detecting no further need for defrost; and

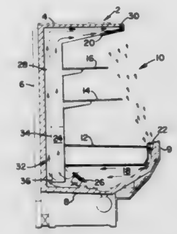
switching the reversing valve to change the mode of operation of the refrigeration circuit simultaneously with or after the step of discontinuing if the predetermined time period has elapsed and the step of sensing continues to detect a need for defrost.

4,389,852

ONE AND A HALF BAND REFRIGERATED DISPLAY CASE

Fayez F. Abraham, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 76,669, Sep. 18, 1979, which is a continuation-in-part of Ser. No. 60,459, Jul. 25, 1979, and Ser. No. 70,882, Aug. 29, 1979. This application Feb. 25, 1980, Ser. No. 124,544
Int. Cl.³ A47F *3/04*
U.S. Cl. 62—82 **38 Claims**



1. A refrigerated display case for displaying refrigerated products, said display case comprising:

a cabinet having an interior display space and an access opening for enabling access to refrigerated products within said display case;

a first air conduit extending around said cabinet so as to have an inlet opening at one end of said access opening and an outlet opening at the other end of said access opening, said inlet and outlet openings being aligned so that air leaving said outlet opening is directed across said access opening and received by said inlet opening;

refrigeration means arranged within said first air conduit for refrigerating air passing through said first air conduit by contact with refrigeration coils located therein;

air circulating means arranged within said first air conduit for circulating air through said first air conduit in a forward direction during a refrigeration cycle or operation so that air is expelled from said outlet opening, travels across said access opening and returns into said first air conduit through said inlet opening;

a second air conduit extending partially around said cabinet in a position lying outlwardly from said first air conduit, said second air conduit having an outlet opening arranged adjacent to the outlet opening of said first air conduit;

said refrigeration means having a lower part of the refrigeration coils thereof located in an upstream air flow position to the inner portion of said second air conduit; and

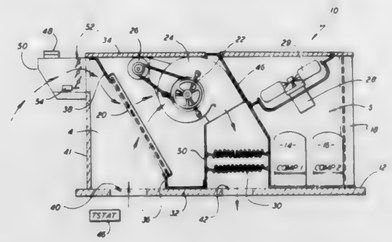
said second air conduit having an air inlet opening located downstream from said lower part of said refrigeration coils so that during a refrigeration cycle of operation such inlet opening receives two portions of air passing through said first air conduit with only a first inner portion of such air having passed over said lower refrigeration coils part of said refrigeration means and with a second outer portion of air flowing directly from said first air conduit into said second air conduit without passage through said lower refrigeration coils so that the air flowing out of said second conduit and across said second opening at a distance spaced below said outlet opening of said second air conduit has a temperature gradient with the inner portion of such air flow being substantially colder than the outer portion and being at a lower temperature than in the absence of contact with said lower part of said refrigeration coils.

4,389,853

METHOD AND APPARATUS FOR CONTROLLING AN AIR CONDITIONING UNIT WITH MULTI-SPEED FAN AND ECONOMIZER

James R. Hile, Kirkville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 17, 1981, Ser. No. 293,057
Int. Cl.³ F25D *17/06*
U.S. Cl. 62—89 **13 Claims**



1. A method of controlling the operation of an air conditioning unit including an adjustable volume air handling means for supplying air to an enclosure to be conditioned and an economizer having adjustable dampers in addition to a refrigeration circuit which comprises the steps of:

sensing the temperature of the enclosure to be conditioned;

generating a signal indicative of the difference between the desired temperature for the enclosure and the temperature sensed;

sensing ambient air conditions;

positioning the dampers of the economizer to allow ambient air to enter the unit when the ambient air conditions warrant circulating outside air to the enclosure to effect cooling of the enclosure;

energizing the air handling means in response to the signal at a reduced volume flow rate if ambient air conditions do not warrant economizer operation; and

energizing the air handling means in response to the signal at an increased volume flow rate if ambient air conditions warrant economizer operation.

4,389,854

HIGH SPEED FREEZING SYSTEM FOR A REFRIGERATOR

Yasuhiro Ogita, Kyoto; Kazuya Kawasaki, Ibaraki; Kouichi Nagao, Ibaraki, and Naoki Mori, Ibaraki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 29, 1981, Ser. No. 306,642
Claims priority, application Japan, Oct. 3, 1980, 55-139126
Int. Cl.³ G05D *23/32*; F25D *29/00*
U.S. Cl. 62—157 **13 Claims**

1. A freezing apparatus for a refrigerator having a cold chamber and a freezing chamber, comprising:

(a) first and second cooling means respectively disposed in said cold and freezing chambers for cooling the inner spaces of said cold and freezing chambers, respectively, said first and second cooling means being coupled in series between both ends of a series arrangement of a compressor and a condenser, said compressor being intermittently operated for delivering a refrigerant;

(b) electromagnetic valve means coupled in parallel to said first

cooling means, which is operated to selectively form a first flow mode and a second flow mode, said first flow mode permitting said refrigerant to flow to both said first and second cooling means and said second flow mode permitting said refrigerant to flow only to said second cooling means;

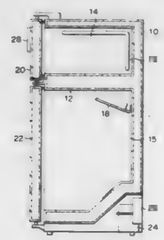
(c) signal generating means for generating a first electrical signal for designating said second flow mode to start rapid freezing, said signal generating means including a rapid freezing switch having a switch knob protruding at least partially from the outer surface of said refrigerator to allow for manual operation by an operator;

(d) detecting means connected to said compressor for detecting an operating condition of said compressor, for generating a first detection signal of high level during refrigerant delivering operation of said compressor and for generating a second detection signal of low level while said compressor is stopped;

(e) flip-flop circuit means connected to said signal generating means, for generating a rapid freezing initiating signal in response to said first electrical signal;

(f) switching means connected to said flip-flop circuit means, said compressor and said valve means, for performing a switching operation to control power supply to said compressor and valve means in response to said rapid freezing initiating signal;

(g) start failure preventing circuit means connected to said detecting means for alternately receiving said first and second detection signals, for detecting a signal level change from high to low, which is caused when said compressor



stops, for generating a second electrical signal of low level until a predetermined time passes from the time when said signal level change occurs and for generating a third electrical signal of high level after said predetermined time passes, said start failure preventing circuit means comprising delay circuit means and a diode, said delay circuit means being connected between said detecting means and gate means and including an inverter which receives said first and second detection signals alternately supplied from said detecting means to convert the potential levels of said first and second detection signals and a delay circuit which starts charging when receiving a high level voltage signal from said inverter, generates said second electrical signal during a charging period and discharges at a time constant corresponding to said predetermined time to generate said third electrical signal, and said diode being connected in parallel to said delay circuit for passing therethrough said first detection signal and generating said first detection signal as said second electrical signal when receiving said first detection signal from said detecting means;

(h) gate means, connected to said flip-flop circuit means and said start failure preventing means and having a first input for receiving said rapid freezing initiating signal and a second input for receiving said second and third electrical signals, for allowing said rapid freezing initiating signal to pass therethrough while receiving said third electrical signal from said start failure preventing circuit means and for preventing said rapid freezing initiating signal from passing therethrough while receiving said second electrical signal; and

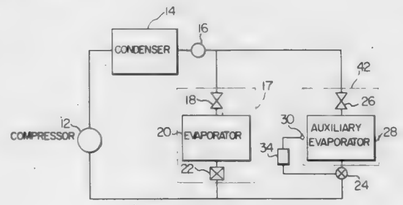
(i) switching means connected to said gate means, compressor and valve means, for receiving said rapid freezing initiating signal through said gate means and for controlling power supply to said compressor and valve means in response to said rapid freezing initiating signal, whereby even when said flip-flop circuit means generates said rapid freezing initiating signal before said predetermined time passes from the time when said compressor stops said refrigerant delivering operation, said rapid freezing initiating signal cannot be transmitted to said switching means so that said compressor is prevented from restarting.

4,389,855

DUAL AIR-CONDITIONER FOR MOTOR-CARS

Toshimichi Ueda; Akira Tezuka, both of Katsuta; Seiichi Wakairo, Kasama; Moriyuki Sakuma, Katsuta, and Masashi Mochizuki, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 5, 1981, Ser. No. 290,107
Claims priority, application Japan, Aug. 8, 1980, 55-108292
Int. Cl.³ F25B *5/00*
U.S. Cl. 62—200 **4 Claims**



1. A dual air-conditioner comprising:

compressor means for compressing and exhausting a refrigerant gas for a refrigerating cycle;

condenser means for liquidizing the compressed refrigerant gas from said compressor;

expansion means for subjecting the refrigerant liquid from said condenser to adiabatic expansion so as to cause the refrigerant liquid to be in the form of mist;

evaporator means for subjecting the refrigerant in the form of mist from said expansion means to heat exchange with air so as to cool the air and for returning the refrigerant gas having experienced the heat exchange to said compressor means;

said evaporator means including a main evaporator and an auxiliary evaporator connected by piping in parallel with each other;

said expansion means including a first expansion unit provided in a first upstream piping of said main evaporator and a second expansion unit provided in a second upstream piping of said auxiliary evaporator, said second expansion unit being an expansion valve of an internal pressure balancing type;

an electromagnetic valve provided in a first downstream piping of said auxiliary evaporator at a portion of said first downstream piping between said first auxiliary evaporator and a junction between said first downstream piping and a second downstream piping of said main evaporator; and

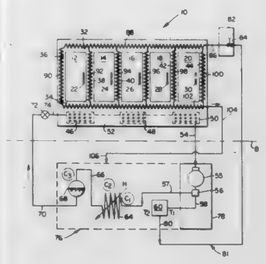
means for controlling the opening of said electromagnetic valve in accordance with the operation state in the refrigerating cycle so as to control balancing pressure acting on said internal pressure balancing type expansion valve to thereby control the flow rate of the refrigerant flowing into said auxiliary evaporator, said controlling means comprises a temperature sensor for detecting the temperature of blow-off cooled air from said auxiliary evaporator, a control circuit for controlling an opening and closing of said electromagnetic valve in accordance with an output of said temperature sensor including difference setting means for setting a predetermined difference for the open and close operation of the electromagnetic valve and for adjusting output characteristics of said temperature sensor.

4,389,856

REFRIGERANT GAS HEATER SYSTEM FOR DISPLAY CABINETS

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 162,203, Jun. 23, 1980, abandoned. This application Aug. 27, 1981, Ser. No. 296,625
Int. Cl.³ A47F *3/04;* **F25B** *47/00*
U.S. Cl. 62—248 **50 Claims**



19. A display cabinet refrigeration and heater system comprising:

refrigeration means associated with a portion of the structure of said cabinet and including an expansion valve and evaporation coils; said refrigeration means serially connected within a refrigeration circuit; said circuit containing a compressor for enabling refrigerant flow and energy input and a condenser located at a remote position from said cabinet; a refrigerant gas heater system having an auxiliary refrigerant gas flow line located in heat exchange contact with a cooled portion of said cabinet structure; said auxiliary gas flow line connected by a first portion thereof to said refrigeration circuit at a refrigerant gas sourcing point downstream from said compressor and at an upstream position from said condenser; a desuperheating means connected to said first portion of said flow line for lowering the temperature of said gas; an inlet end of said gas flow line containing desuperheated refrigerant gas at a temperature within the range of about 80° F. to 130° F. and a pressure at least equivalent to the equilibrium saturated vapor pressure at 50° F., said gas flow line providing heat for the contacted portion of said cabinet structure by transfer of sensible heat and the latent heat of condensation thereof, and said auxiliary gas flow line connected by the outlet end thereof to said refrigerant circuit at a position downstream from said gas sourcing point.

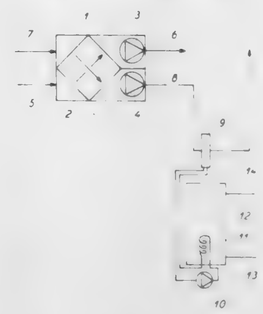
4,389,857

HEAT EXCHANGER

Biarne R. Svendsen, Copenhagen, Denmark, assignor to Genyex Energiteknik A/S, Denmark

PCT No. PCT/DK80/00049, § 371 Date Apr. 21, 1981, § 102(e) Date Apr. 14, 1981, PCT Pub. No. WO81/00616, PCT Pub. Date Mar. 5, 1981
PCT Filed Aug. 21, 1980, Ser. No. 253,934
Claims priority, application Denmark, Aug. 21, 1979, 3482/79
Int. Cl.³ F25B *29/00*
U.S. Cl. 62—325 **6 Claims**

1. A heat exchanger system in a house arranged for the transfer of heat from exhaust air into fresh air to be supplied to the house or the transfer of heat in the opposite manner comprising means for creating a flow of exhaust air from the interior of the house, means for further creating a flow of fresh air from the outside to the interior of the house, means arranged to receive said exhaust flow and create a heat exchange relationship with the flow of fresh air, means connected downstream of said heat exchanger means for further cooling the flow of exhaust air exiting therefrom said further cooling means includes a heat pump circuit, said heat pump circuit having an evaporator being arranged in the flow of the exhaust air from said heat exchanger means and a condenser operatively connected to said evaporator and wholly submerged in the water of a water tank which is a tank holding hot tap water for the house, said condenser heating the tap water of the tank in response to the action of said condenser cooling the flow of exhaust air.

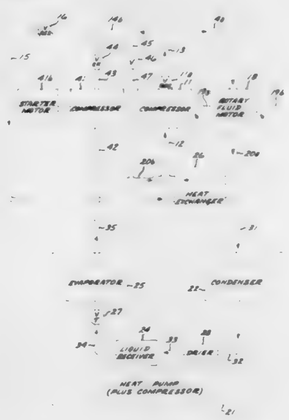


4,389,858

HEAT ENGINE

Henry E. Jepsen, 10360 Santa Gertudes #36, Whittier, Calif. 90603

Filed Dec. 3, 1981, Ser. No. 304,071
Int. Cl.³ F25B *1/00*
U.S. Cl. 62—498 **9 Claims**



1. A heat-activated refrigeration system for performing shaft-work comprising:

a rotary fluid motor having an inlet for a refrigerant gas, an outlet for said refrigerant and a power take-off shaft to obtain work from said rotary fluid motor;

a refrigerant compressor means having an inlet for said

refrigerant, an outlet for said refrigerant and a rotatably mounted shaft by which said compressor may be driven;

connecting means between said shaft of said compressor and said shaft of said rotary fluid motor by which said compressor is driven by said rotary fluid motor;

heat pump means to absorb heat from an ambient source;

a refrigerant flowing through said heat pump, said compressor and said rotary fluid motor;

connecting means by which refrigerant flow from said heat pump and the outlet of said rotary fluid motor are connected to the inlet of said compressor; and

connecting means by which the inlet of said heat pump and the inlet port of said fluid motor are connected to the outlet port of said compressor whereby the flow rate of said refrigerant is regulated.

4,389,859

KNITTING MACHINE

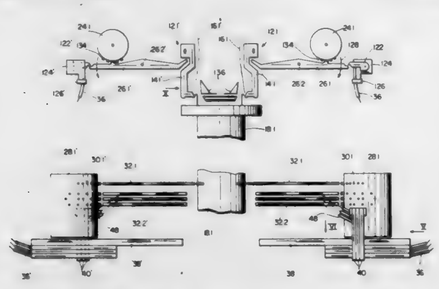
Herbert F. Huisl, Tableview, South Africa, assignor to Colosio Cesare, Botticino Sera, Italy

Filed Aug. 4, 1980, Ser. No. 174,909

Claims priority, application South Africa, Aug. 6, 1979, 79/4062; Sep. 7, 1979, 79/4727

Int. Cl.³ D04B *9/28, 15/60*

U.S. Cl. 66—224 **5 Claims**



1. A knitting machine for knitting tubular knitted wear such as socks, which includes a rotatable needle knitting cylinder; a number of pattern drums each drum capable of mounting pattern pins; a number of needle selector bars adapted to be operated by the pattern drums and in turn being adapted to operate needles in the knitting cylinder; a number of yarn feeder control drums controlled from a timing chain; yarn feeders for each yarn feeder control drum which yarn feeders are adapted to supply yarn to the needle knitting cylinder; the machine further including an additional yarn feeder control arrangement which includes a control member for controlling each yarn feeder separately from the said corresponding yarn feeder control drum; movement means adapted to be moved by the associated pattern drum of the yarn feeders; and coupling means adapted to be operated by the movement means and being adapted to transmit movement of the movement means to the control member for causing a particular control to be effected on its associated yarn feeder; the movement means including a first lever for each yarn feeder to be controlled, the lever being adapted to be moved by pins provided on the pattern drum, the first lever being adapted to pivot a slidable lever into an operative position; the slidable lever being adapted to be moved by means of the rotation of the needle knitting cylinder for causing movement of the control member via the coupling means.

4,389,860

WARP KNITTING MACHINE FOR THE PRODUCTION OF JACQUARD-PATTERNED PILE-KNIT FABRICS

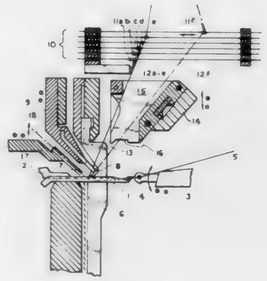
Manfred Schneider, Karl-Marx-Stadt, German Democratic Rep., assignor to Textima VEB Wirkmaschinenbau Karl-Marx-Stadt Kombinat Textima, Karl-Marx-Stadt, German Democratic Rep.

Continuation-in-part of Ser. No. 40,051, May 17, 1979. This application Apr. 15, 1981, Ser. No. 254,392

Claims priority, application German Democratic Rep., Jun. 8, 1978, 205858

Int. Cl.³ D04B *23/06*

U.S. Cl. 66—84 R **15 Claims**



1. Warp knitting machine for the production of Jacquard patterned knit-pile fabrics, comprising a row of slide needles each having a needle stem and a needle hook; a guide bar including knitting yarn carriers; a plurality of pile yarn carriers assigned to each needle; means for the selection of the respective pattern forming pile yarn; means for tucking the non-selected pile yarns; means for inserting the selected pattern forming pile yarn into a needle hook; pile sinkers for holding the pile loop formed between successive rows of stitches; said pile yarn carriers being movable relative to each other so that the selected pattern forming pile yarn forms with the non-selected pile yarns a shed, the tip of which is located at the knock-over point in the plane of respective needle stems; and a guide reed having sinkers provided respectively with an insertion edge, extending in parallel to said needles, said reed being arranged between said pile yarn carriers and said pile sinkers to cross said shed and to perform a lateral racking movement so that said edge overlays said pattern forming pile yarn.

4,389,861

MACHINE ADAPTED FOR USE IN THE MANUFACTURE OF SHOES

Alan M. Peck, Beverly, Mass.; Kingsley J. Tutt, Birstall, and Graham J. Mansfield, Oadby, both of England, assignors to USM Corporation, Farmington, Conn.

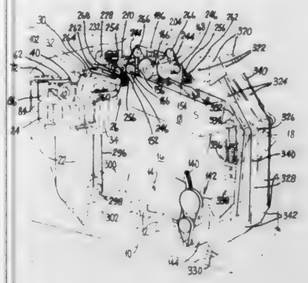
Filed Jun. 8, 1981, Ser. No. 271,586

Int. Cl.³ C14B *1/44*

U.S. Cl. 69—6.5 **6 Claims**

1. In a machine for performing marginal roughing and toe scouring operations on shoe bottoms comprising a shoe support for supporting a shoe, bottom uppermost, roughing tool supporting means for supporting a roughing tool, between which shoe support and roughing tool supporting means relative movement can take place, lengthwise, widthwise and heightwise of the bottom of a shoe supported by the shoe support, whereby a roughing tool supported by the roughing tool supporting means is caused to operate progressively along marginal portions of the shoe bottom, and toe scouring tool supporting means between which and the shoe support relative lengthwise and heightwise movement can be effected thus to cause the toe end portion of the bottom of a shoe supported by the shoe support to be scoured: the improvement in that a first

stepping motor is provided for effecting relative lengthwise movement between the shoe support and the scouring tool supporting means, a further stepping motor is provided for effecting relative heightwise movement therebetween, and computer control means is provided by which drive signals are generated and supplied to said stepping motors in accordance



with a programmed instruction, so that a scouring tool supported by the scouring tool supporting means is caused to follow a pre-determined path lengthwise and heightwise of the shoe bottom, whereby to control the amount of material remaining after the scouring operation has been effected on the shoe bottom.

4,389,862

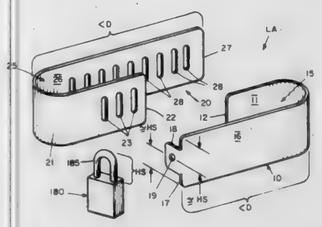
HIGH SECURITY LOCKING ASSEMBLY FOR LOCKRODS TYPE REAR-END CLOSURES OF CARGO VEHICLES

Thomas M. Hastings, 9708 Valaretta Dr., Gretna, Nebr. 68028

Filed Sep. 23, 1980, Ser. No. 189,762

Int. Cl.³ E05B *63/14, 65/16;* **E05C** *19/08, 19/18*

U.S. Cl. 70—2 **9 Claims**



1. In removable combination with a cargo carrying vehicle wherein the closure therefor comprises a pair of upright lockrods having a finite lateral-spacing at closed condition, the lockrods being relatively laterally movable whereby entrance into the cargo compartment is attainable only by moving one lockrod laterally away from the other lockrod, a high security locking assembly for said cargo compartment closure and comprising:

A. an upright primary J-hook member including a relatively long leg attached to a parallel and directionally transversely separated relatively short leg attached at a curved bight for snugly removably engaging one of said lockrods, the longer leg remote of the bight carrying an upright apertured staple extending directionally transversely toward the shorter leg;

B. an upright secondary J-hook member including a relatively long leg attached to a parallel and directionally transversely separated relatively short leg attached at a curved bight for snugly removably engaging the other lockrod, at least one of the legs of the secondary member being provided with a plurality of regularly spaced upright slots, one of which receives therethrough the apertured staple of the primary member; and

C. a padlock of the type comprising a body and a U-shaped shackle and a body, said padlock is activated condition having its shackle extending through the aperture of the staple with the member legs in substantially parallel assembled relation, whereby said padlock maintains the primary and secondary J-hook members and their engaged lockrods in arrested relationship and whereby the padlock is protectably shielded by the removably associated primary and secondary J-hook members.

4,389,863

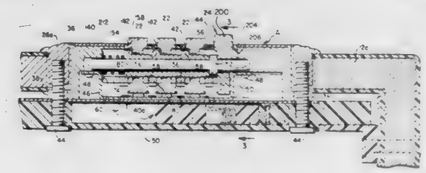
COMBINATION LOCKS

Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock, Inc., Garfield, N.J.

Filed Mar. 5, 1981, Ser. No. 240,849

Int. Cl.³ E05B *37/02*

U.S. Cl. 70—312 **6 Claims**



1. A combination lock including a plurality of combination elements disposed coaxially on a shaft in a lock casing for axial movement in unison out of coupling engagement with cooperating combination components in order to change the combination of the lock, and a shift member mounted on said shaft adjacent a terminal one of said combination elements, said shift member including an elongate opening receiving said shaft, a manual actuating portion projecting through an opening in a wall forming part of the lock casing, and means guiding said shift member for translatory movement substantially transversely to the axis of said shaft and in a direction substantially parallel to said wall responsive to corresponding transverse movement of said actuating portion in said opening, said shift member further including a cam surface for moving said elements axially responsive to translatory movement of the shift member.

4,389,864

KEY HOLDER

Minoru Toyoda, Nagoya, Japan, assignor to Aisin Seiki Company, Limited, Kariya, Japan

Division of Ser. No. 68,568, Aug. 22, 1979. This application Dec. 5, 1980, Ser. No. 213,562

Claims priority, application Japan, Sep. 8, 1978, 53-110845; Feb. 6, 1979, 54-13025; Feb. 6, 1979, 54-13026; Feb. 6, 1979, 54-13027; Feb. 6, 1979, 54-13028; Feb. 6, 1979, 54-13029

Int. Cl.³ A47G *29/10*

U.S. Cl. 70—456 R **8 Claims**

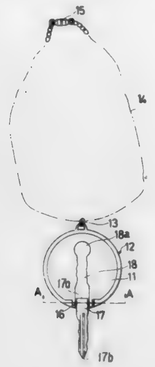
1. A pendant type key holder comprising:

a body including a concave portion having the configuration of said key, said concave portion including a serrated portion conforming to the serrations of said key, said concave portion further including a depressed circular portion having a depth greater than said concave portion, said depressed portion being located at the part of said concave portion corresponding to the tip of said key;

said key pivotably mounted on said body and movable between an operating position in which the key is disposed outside said body and a non-operating position in which the key is housed within said concave portion; and

biasing means connected to said body for maintaining said

key at the operating position thereof or the non-operating position thereof,



whereby said key forms an ornamental portion of said key holder when in said non-operating position.

4,389,865

DRIVE SYSTEM FOR EDGER MILL

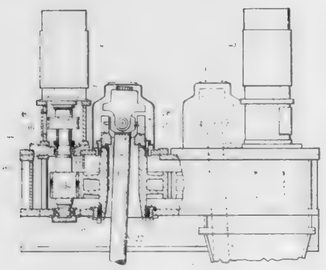
Kenneth W. Davies, Beaconsfield, Canada, assignor to Dominion Engineering Works, Ltd., Montreal, Canada

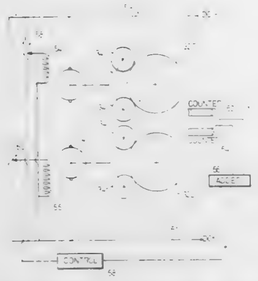
Filed Nov. 6, 1980, Ser. No. 204,447

Claims priority, application Canada, Nov. 27, 1979, 340687

Int. Cl.³ B21B *35/12, 35/04*

U.S. Cl. 72—29 **8 Claims**





1. A convertible edger mill having a pair of spaced apart edger rolls positioned in adjustable spaced apart relation, each said roll having an elongated shaft, coupled in driving relation therewith, the improvement comprising a bull gear connected with each said shaft, said bull gears being rotatably mounted in a pair of separate housings in adjustable mutually spaced relation to permit selective positioning of the bull gears in a meshing or a non-meshing relation, each bull gear having a plurality of pinions connected in driving relation therewith, each pinion having an electrical motor in driving relation therewith, and speed control means to maintain said one edger roll within predetermined driving limits relative to the other said roll when said bull gears are positioned in said non-meshing relation.

4,389,866

APPARATUS FOR FORMING AN ENLARGED FLANGED HOLE IN A CURVED SURFACE

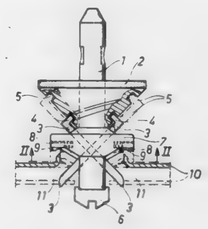
Leo Larikka, Vaasa, Finland, assignor to G. A. Serlachius Oy, Manta, Finland

Filed Jan. 21, 1981, Ser. No. 226,869

Claims priority, application Finland, Jan. 30, 1980, 800278

Int. Cl.³ B21D *19/00;* **B23B** *41/06, 51/08*

U.S. Cl. 72—71 **8 Claims**



1. A flange forming drill mechanism for drilling a hole in a curved wall of a pipe or the like and for forming a flange surrounding said hole, said mechanism comprising a drill rod adapted to be attached to a rotating power source; a first drill bit for drilling an initial hole in said curved wall mounted adjacent a lower end of said rod; a second bit for enlarging said hole into elliptical shape including bit elements which are supported from said drill rod on the opposite sides thereof and have cutting edges defining a generally conical cutting path; and flange forming means supported from said drill rod for forming an upturned flange surrounding said hole.

4,389,867

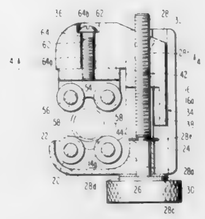
TOOL FOR RESTORING ROUNDNESS TO METAL TUBING

Dallas M. Whitlock, Catlettsburg, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Apr. 17, 1981, Ser. No. 255,014

Int. Cl.³ B21B *19/12*

U.S. Cl. 72—126 **7 Claims**



1. A tool for restoring roundness to soft metal tubing, said tool comprising:

a frame member,

said frame member including at least an underlying, horizontal base and a vertical sidewall,

a head overlying said base,

said tool being open to one side to permit sidewise positioning of a soft metal tube between said head and said base,

a pair of lower rollers mounted to said base for rotation about parallel, horizontal axes, in side by side fashion at fixed axle positions,

an upper roller assembly movably mounted to said frame member, overlying said base and bearing a pair of rollers mounted for rotation about spaced, parallel horizontal axes, in side by side fashion, and at fixed axle positions on said upper roller assembly, with said upper rollers generally overlying respective lower rollers, and

means for threadably driving said upper roller assembly downwardly relative to said lower rollers to effect positive drive spacing between the upper and lower pairs of rollers with the peripheries of all four rollers in light contact with the periphery of said tube after tubular insertion into the opening such that rotation of said tube about its axis and shifting of said tube axially causes said tool to restore roundness of said tube by local deformation at areas of tube out of roundness or flatness.

4,389,868

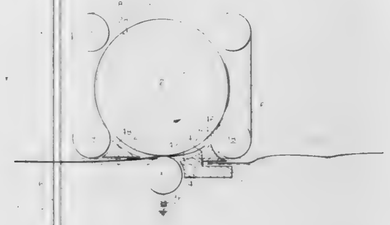
APPARATUS FOR SHEARING AND COILING STRIP MATERIAL

Robert B. Strout, Pembroke, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 135,795, Mar. 31, 1980, abandoned. This application Aug. 10, 1981, Ser. No. 291,771

Int. Cl.³ B21C *47/10;* **B65H** *19/28*

U.S. Cl. 72—132 **3 Claims**



1. Apparatus for shearing and coiling strip material, said apparatus comprising a mandrel rotatable about its axis and adapted to receive said strip material on a peripheral portion thereof, first cutter means disposed proximate said mandrel in a fixed position, said first cutter means having a first guide surface thereon, and second cutter means having a first position further removed from said mandrel then said first cutter means, said second cutter means being movable to a second position adjacent said first cutter means to effect a cutting operation, said second cutter means having a second guide surface thereon, said first and second guide surfaces forming a substantially continuous entry surface when said second cutting means is in said second position, said entry surface being adapted to urge a cut end of said strip material into engagement with said peripheral portion of said mandrel.

4,389,869

SHEET METAL BENDING BRAKE

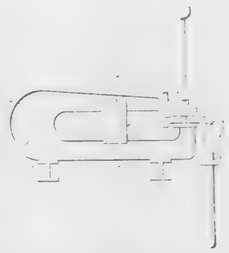
Eugene H. Van Cleave, Orchard Lake, Mich., assignor to Van Mark Products Corporation, Farmington Hills, Mich.

Filed Nov. 18, 1980, Ser. No. 207,944

Int. Cl.³ B21D *5/04*

U.S. Cl. 72—319 **17 Claims**

2. A sheet material bending brake comprising a plurality of "C"-shaped castings, means retaining said castings in parallel array so that each casting is perpendicular to a bending plane, clamping and bending means located at the free cantilevered ends of said castings to retain a sheet of material in bending position with a portion of the sheet projecting into the throat of the castings so that the remainder of the sheet can be bent along said plane, each casting having a pair of horizontal surfaces adjacent its throat on either side thereof, individual rigid substantially "C"-shaped clamps slidably engaging said surfaces and spanning the throat of each casting to resist spread of the castings under the clamping and bending loads imposed thereon, said "C"-shaped clamp being slidably movable toward and away from said clamping and bending means, and means carried by each clamp and engagable with the associated casting to retain said clamp in slidably adjusted position thereon.



4,389,870

FORMING ENGAGEMENT GROOVES IN A TOOL SHANK

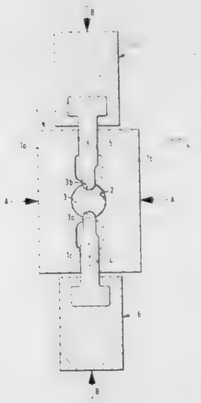
Hans Boeni, Buchs, Switzerland; Beda Meier, Schaanwald, and Gabor Szacsvay, Triesen, both of Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Apr. 23, 1981, Ser. No. 257,421

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1980, 3015893

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—354 **1 Claim**



1. Device for the formation of engagement grooves in the shank of a tool for use in a hammer drill or chipping hammer, comprising a matrix having an axially elongated bore therethrough for receiving and holding the solid shank of the tool during the punching operation, said matrix is divided along a single junction plane into completely separate matrix parts each forming a coextensive axially elongated part of the bore with each axially extending bore part opening to the single

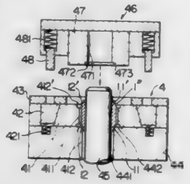
junction plane and being closed in the angular direction around the axis between the intersection of the junction plane with the bore, said separate matrix parts combining to form punching die guide openings located in the single junction plane and spaced angularly apart about the axis of the matrix bore, and a punching die insertable into each of the punching die guide openings for applying punching pressure to the shank of the tool held in the matrix bore with the punching pressure being applied in the single junction plane between the matrix parts, said matrix being divided into two symmetrically shaped matrix halves and with the single junction plane formed there between dividing the matrix bore into two axially extending symmetrical bore halves, and means for applying closing pressure to said matrix halves for holding the shank of the tool in the matrix bore with the closing pressure being applied perpendicularly to the junction plane located between said matrix halves.

4,389,871

METHOD OF PRODUCING YOKE OF ROTARY ELECTRIC MACHINE

Hidetsugu Takeuchi, Kariya; Tsuyoshi Muramatsu, and Shozo Kato, both of Toyoake, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 12, 1980, Ser. No. 206,180
Claims priority, application Japan, Nov. 23, 1979, 54-152302
Int. Cl.³ B21D *22/02*
U.S. Cl. 72—356 **2 Claims**



1. A method of producing a yoke for a rotary electric machine having a cylindrical shape and formed with abutting surfaces on opposite axial ends thereof to be positioned against frames of the machine, said method comprising the steps of:

forming a cylindrical blank by extrusion forming into a semi-finished article having said abutting surfaces formed on its axially opposite ends; and

coining said abutting surfaces while said semi-finished article is on a mandrel to prevent radially inward deformation of said article but causing radially outward deformation thereof at the article ends axially inward from but adjacent said abutting surfaces while pressing inwardly on the outer periphery of said semi-finished article between said ends thereof to prevent any radially outward expansion deformation of said article between said ends while said coining causes said two abutting surfaces to have a spacing interval of high accuracy and to be square relative to said mandrel and parallel to each other.

4,389,872

TUBE BENDER CONSTRUCTION

Leonard J. Kowal, Prospect Heights, Ill., assignor to Imperial Clevite Inc., Rolling Meadows, Ill.

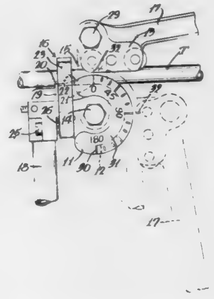
Filed Jan. 30, 1981, Ser. No. 229,862
Int. Cl.³ B21D *7/02*
U.S. Cl. 72—388 **13 Claims**

1. In a manually operable tube bender having a mandrel defining an arcuate tube-receiving bending groove extending arcuately about a bend axis from a bend start position, a forming member mounted to said mandrel to swing about said bend axis for urging a tube to be bent into said bending groove, and means for holding the tube against longitudinal displacement in said bending groove during a tube bending operation, the improvement comprising:

a support carried by the mandrel;

positioning means comprising a flat plate carried by the support defining a planar stop spaced from the bending groove bend start position at any one of a plurality of accurately preselected distances for abutment by selectively providing (a) a distal end of a straight tube portion to be bent therewith to accurately cause the bend to be spaced accurately from said distal end portion, and (b) by a bent end portion of a previously bent tube to be provided with a further bend spaced from said bent end end portion;

first scale means comprising a distance scale carried by said support;



second scale means comprising angular indicia means on said stop for indicating angular positions about the axis of the portion of the tube to be bent at said bend start position, whereby said bent end portion may be concurrently positioned in abutment with said stop and disposed in preselected angular relationship to the arcuate extent of the bending groove;

third scale means on said mandrel for indicating angular distances about said bend axis measured from said bend start position; and

fourth scale means on the mandrel differing from said third scale means for indicating angular distances about said bend axis measured from said bend start position, said mandrel defining a front face and a rear face, said first scale means being provided on said front face and said second scale means being provided on said rear face.

4,389,873

TUBE BENDER CONSTRUCTION

Albert J. Schwarz, Lincolnwood, and Leonard J. Kowal, Prospect Heights, both of Ill., assignors to Imperial Clevite Inc., Rolling Meadows, Ill.

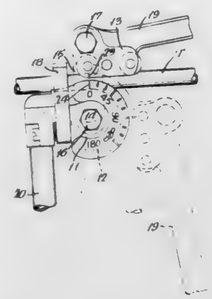
Filed Mar. 11, 1981, Ser. No. 242,598
Int. Cl.³ B21D *7/02*
U.S. Cl. 72—388 **23 Claims**

1. In a tube bender havng a form wheel defining a tube-receiving bending groove extending arcuately about a bend axis, and means for holding the tube to be bent against longitudinal movement in the bending groove during a tube bending operation, the improvement comprising:

a forming member defining a concave tube-engaging surface; and

adjustable mounting means for operatively mounting the forming member to the form wheel to swing about said bend axis outwardly adjacent said bending groove including means for adjustably moving the forming member radially of said bend axis toward said bend start point into

engagement with a tube to be bent in the bending groove thereat to have desired bending force transfer engagement



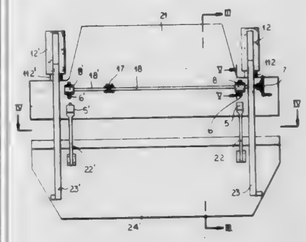
with each tube to be bent seriatim thereby notwithstanding differences in the diameters of the different tubes.

4,389,874

BENDING BRAKE

Renato Riboldi, Albiate, Italy, assignor to Officine Mecchaniche Mario Riboldi S.N.C. di Renato, Carlo Riboldi & C., Albiate, Italy

Filed Mar. 19, 1981, Ser. No. 245,711
Claims priority, application Italy, Mar. 21, 1980, 20828 A/80
Int. Cl.³ B21D *7/06*
U.S. Cl. 72—389 **11 Claims**



1. In a bending brake comprising a pair of complementary elongate sheet-deforming tools, a fixed bed carrying one of said tools in a substantially horizontal position, a vertically movable carrier for the other of said tools, support means rising from said bed, a pair of hydraulic cylinders symmetrically mounted on said support means above opposite extremities of said carrier, said cylinders being provided with vertically reciprocable pistons rigidly secured to opposite ends of said carrier for holding same substantially horizontally above said one of said tools, a source of hydraulic fluid, and flow-control means for simultaneously directing hydraulic fluid from said source to corresponding ports of said cylinders to reciprocate said pistons and said carrier between a top position and a bottom position with resulting deformation of a workpiece of sheet material inserted between said tools,

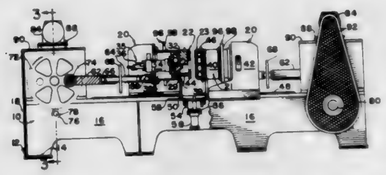
the improvement wherein said flow-control means comprises a pair of shut-off valves mounted on said bed adjacent said extremities in respective flow paths leading from said source to the corresponding cylinders, a pair of reversing valves in said flow paths jointly controlled by said shut-off valves for initiating a rising motion of both pistons only upon arrival of both shut-off valves in the closed position thereof, and a pair of actuators in line with said shut-off valves on said carrier for operating each shut-off valve to cut off the supply of hydraulic fluid to the corresponding cylinder upon arrival of the respective piston in a predetermined position of closest approach to said bed, said shut-off valves being normally biased into an open position and being mechanically displaceable by said actuators into a closed position.

4,389,875

METHOD AND APPARATUS FOR MAKING BEADS ON DRUMS

Carl C. Grotnes, II, Roswell, Ga., assignor to Atlanta Grotnes Machine Company, Atlanta, Ga.

Filed Dec. 29, 1980, Ser. No. 220,708
Int. Cl.³ B21D *17/02, 15/06*
U.S. Cl. 72—393 **28 Claims**



1. In a machine for forming a bead on a drum:

a machine frame,

opposed heads mounted for movement on said machine frame toward and away from each other,

bead forming means on each of said heads for movement thereon to engage the interior of a drum and to form a bead circumferentially thereon,

said bead forming means being independently operable on each of said heads to engage said drum to form a bead thereon,

crank means on each of said heads for driving said respective head in and out of said drum, said crank means being actuated independently of said bead forming means,

drive means for said crank means, said drive means and said crank means being operated independently of said bead forming means whereby said crank means drives said heads in a smooth motion independently of said bead forming means,

bead forming drive means independent of said drive means for said crank means,

brake means for stopping said crank means and said drive means for said crank means to cause said heads to pause inside said drums,

means for timing said crank means and said crank drive means to synchronize with said bead forming means so that said opposed heads pause inside said drum while said bead forming means form beads during which said bead forming means is operated independently of said crank means and crank drive means whereby said bead forming means is not driven by or from said crank drive means or said crank means.

4,389,876

TEMPERATURE SENSOR AND DETECTOR CELL UTILIZING THE SAME

Eugene L. Szonntagh, Flourtown, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 26, 1980, Ser. No. 181,488
Int. Cl.³ G01N *31/00;* **G01F** *1/68;* **H01C** *7/10*
U.S. Cl. 73—27 R **6 Claims**

1. A temperature detector cell comprising

an electrically insulating and thermally insulating substrate,

a thermistor element means deposited on said substrate,

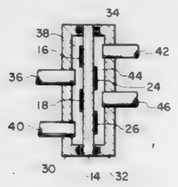
a first electrical connector means deposited on said substrate and connected to one end of said element means,

a second electrical connector means deposited on said substrate, and connected to the other end of said element means,

cell housing means enclosing said thermistor element means within a volume defined by said housing means,

electrical connection means connected to said first and second electrical connector means and extending out from said housing means and

fluid passage means in said housing means for providing a fluid passage to said volume through said housing means, wherein said substrate is arranged to divide said volume into a first fluid flow path, and a second fluid flow path which is fluid isolated from said first fluid flow path and said thermistor element means includes a first thermistor element deposited on a first side of said substrate and a second thermistor element deposited on a second side of said substrate whereby said first and second thermistor elements are exposed to



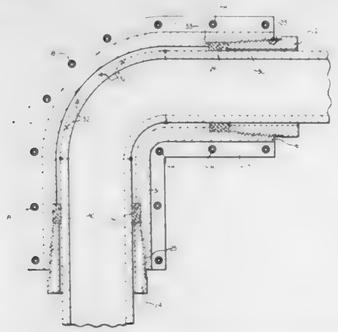
respective ones of said first and second fluid flow paths and said first electrical connector means including a first electrical connector connected to one end of said first thermistor element and a second electrical connector connected to one end of said second thermistor and said second electrical connector means including a third electrical connector connected to the other end of said first thermistor element and a fourth electrical connector connected to the other end of said second thermistor element and said fluid passage means including a first fluid inlet and a first outlet for admitting a fluid to said first fluid flow path and a second fluid inlet and a second fluid outlet for admitting a fluid to said second fluid flow path.

4,389,877

PIPING EROSION MONITORING SYSTEM

Walter J. Lacey, P.O. Box 59, Patterson, La. 70392

Filed Mar. 27, 1981, Ser. No. 248,552
Int. Cl.³ G01N *17/00*; G01M *3/02*
U.S. Cl. 73—37 **10 Claims**



1. A system for monitoring reduction in wall thickness in piping due to erosion or corrosion, which system comprises:

a. at least one point of reduced strength in said pipe in the area anticipated to undergo the highest rate of reduction in wall thickness;

b. hollow casing means encircling at least a portion of said pipe and positioned to overlie and encompass said point, said hollow casing means having its inside wall spaced outwardly from the outside pipe wall at least at said point;

c. sealing means for achieving a fluid seal between said pipe casing, said sealing means providing a fluid seal zone encompassing said point; and

d. an aperture through said hollow casing extending to said zone and having conduit means attached thereto for communicating fluid pressure changes in said zone to a sensory means in fluid pressure communication with said aperture, wherein said point of reduced strength is a notch formed into the outside wall of said pipe to a preselected depth whereby the remaining pipe wall thickness at the site of said notch is sufficient to contain the fluid pressure in said pipe until a predetermined amount of said pipe wall at said notch has been reduced in thickness by erosion or corrosion.

4,389,878

DYNAMIC GAS TRANSMISSION MEASURING APPARATUS

Otter L. Manzie, Jr., Saginaw, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 1, 1981, Ser. No. 259,768
Int. Cl.³ G01N *15/08*
U.S. Cl. 73—38 **4 Claims**



1. Dynamic technique for determining the rate of transmission of a given gas (including vapor(s)) by and through a sample of a given plastic material whose gas permeation characteristic is being measured which comprises, as Steps of the technique:

(I) taking a sample of given plan-view surface area subject to facially-transgressing permeation thereacross by the given gas of a given plastic material whose gas permeation rate characteristic is being determined;

(II) mounting said sample in a confined and retained manner in such a way that it can be exposed within controlling confines to gas under a given maximum test pressure to be applied against the upstream side of the sample to be thereby and thereto exposed with a reduced or zero gas pressure effective on the opposing, downstream side face; then,

(III) at constant given temperature, constantly applying for a given time period involved and utilized in the test the gas at said maximum pressure against the exposed upstream face of said sample;

(IV) permitting the gas during said test time period to permeate and transgress said sample;

(V) measuring continuously or from time-to-time within said test time period the dynamically changing pressure drop from upstream to downstream side faces of and across said sample undergoing test;

(VI) Noting and collecting the critical involved time(s), temperature(s) and pressure(s) data gatherable from the system, and finally

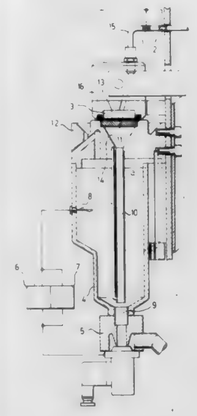
(VII) calculating from the collected data the particularly-involved gas transmission rate of and for said plastic material, including the step of taking a generally circular, relatively dish-shaped and curvilinear sample from plastic tubing for the sample involved in said Steps (I) and (II).

4,389,879

METHOD AND APPARATUS FOR DETERMINING THE COLLOID INDEX IN LIQUIDS

Dieter Bach, Lilienweg 43, D-7014 Kornwestheim; Heiner G. Jäckle, Rotenwaldstrasse 179, D-7000 Stuttgart, and Kurt Marquardt, Eschelbacher Weg 33, D-7031 Holzgerlingen, all of Fed. Rep. of Germany

Filed Mar. 6, 1981, Ser. No. 241,035
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1980, 3009130
Int. Cl.³ G01N *15/00*
U.S. Cl. 73—61 R **9 Claims**



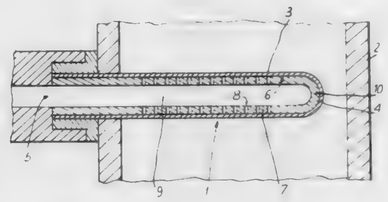
1. Apparatus for determining the colloid index of a liquid, comprising: conduit means for supplying measuring liquid from a body of liquid for the purposes of performing a colloid measuring operation on said measuring liquid; a measuring filter for filtering the measuring liquid supplied by the conduit means; below the measuring filter, a collecting and measuring container for collecting liquid which is passed through the filter; above the measuring filter a pressure means including a pressure chamber for pressing measuring liquid through the filter; an inlet valve on said conduit means for controlling the flow of measuring liquid into the pressure chamber; an outlet valve at the outlet of the container, for controlling the discharge of measuring liquid therefrom; means for measuring the volume of liquid in the container; and a time control means operable to control the opening and closing of the inlet and outlet valves and adapted to open the inlet valve and close the outlet valve to cause measuring liquid to flow through the measuring filter and be collected in said container, and adapted to open the outlet valve after measuring liquid has passed into said container for a given period of time and to hold the outlet valve open for a test period, and the time control means being further adapted to close the outlet valve for a given period of time after expiry of the test period, and to close the inlet valve after the expiry of said given period of time for which the outlet valve is closed.

4,389,880

RAPIDLY ERODIBLE SONDE

Alain Robinet, Muret, France, assignor to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Apr. 21, 1981, Ser. No. 256,236
Claims priority, application France, Apr. 21, 1980, 80 08882
Int. Cl.³ G01L *19/12*; G01N *15/07*
U.S. Cl. 73—86 **3 Claims**



1. A device for rapidly detecting the intrusion of sand in fluid conveyed in a pipeline under pressure, said device comprising, a tubular sonde comprised of a closed outer end and an inner end in fluid communication with the interior of the outer end, said outer end comprising an envelope of thin metal foil, means for mounting said sonde with said inner end outside said pipeline and with said envelope within the pipeline in the path of fluids flowing through the pipeline and exposed to the pressure in the pipeline, duct means for connecting the interior of the sonde to detecting means for detecting a pressure variation in the interior of the sonde, a support within said outer end in contact with and supporting said envelope to prevent collapse of the thin metal of the envelope as a result of pressure in the pipeline, said support having a plurality of discontinuities therein between the envelope and the interior of the sonde, said envelope of thin metal foil normally isolating the interior of the sonde from the pressure in the pipeline, but being rapidly erodable by sand entrained in the fluids flowing through the pipeline, so that the envelope is rapidly erodable upon intrusion of sand in fluid flowing through the pipeline, and the resulting pressure increase from the pipeline to the interior of the sonde, through the discontinuities of the support, is sensed by the detecting means to thereby rapidly detect the intrusion of sand.

4,389,881

METHOD OF MEASURING AN AIR TO FUEL RATIO

James W. Butler, Dearborn Heights, and Alex D. Colvin, Oak Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 31, 1981, Ser. No. 288,874
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—116 **7 Claims**



1. A method of measuring the air to fuel ratio of an air/fuel mixture being supplied to a combustion process which comprises the steps of:

establishing an oxygen sensor station at which said sensor senses the difference in oxygen partial pressure from a first

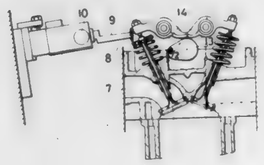
reference side thereof to a second oxygen measurement side thereof;
maintaining said oxygen sensor at a predetermined temperature and a predetermined pressure below atmospheric pressure;
calibrating said oxygen sensor so that the measurement thereby of an EMF between said first reference side thereof and said second oxygen measurement side thereof is indicative of the oxygen partial pressure in a gas stream passing by said oxygen measurement side thereof;
drawing at said predetermined pressure, a sample gas stream across said oxygen measurement side of said oxygen sensor, said predetermined pressure being one which allows said sample gas stream to be drawn at a constant flow rate independent of that predetermined pressure;
adding a fixed amount of oxygen to said sample gas stream;
reacting said oxygen in said sample gas stream with oxidizable species contained in said sample gas stream prior to passing said sample gas stream across said second oxygen measuring side of said oxygen sensor;
measuring said predetermined pressure; and
determining the air to fuel ratio of the air/fuel mixture from the EMF measured by said oxygen sensor, the predetermined pressure of said sample gas stream and the known oxygen addition rate.

4,389,882

METHOD AND APPARATUS FOR DETERMINING AN ABNORMALITY IN A VALVE ACTUATING SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Shuhei Noro, Aichi, and Tadashi Naito, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 19, 1981, Ser. No. 265,071
Claims priority, application Japan, Jun. 5, 1980, 55-75846
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118 **7 Claims**



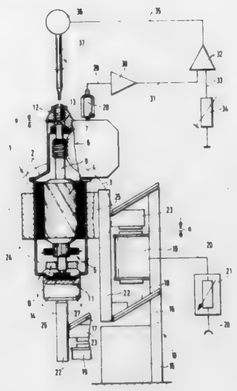
1. A method of determining an abnormality in a valve actuating system of an internal combustion engine, said method comprising the steps of
measuring a valve lift of a correctly assemblied reference engine at at least two crank angles;
memorizing the relationship between each measured valve lift and crank angle in an arithmatic unit;
thereafter indexing a crank shaft of an engine having a valve actuating system to be checked at said crank angles and measuring the valve lifts at said crank angles of said crank shaft; and
delivering the values of the measured valve lifts of the system to be checked to said arithmetic unit to determine any abnormality in said system to be checked.

4,389,883

METHOD OF AND ARRANGEMENT FOR DETERMINING THE AXIAL PLAY BETWEEN THE STATOR AND THE ROTOR OF AN ELECTRIC MOTOR

Manfred Köder, Gerlingen, and Günther Schmid, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 298,165
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1980, 3044417
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—119 R **25 Claims**



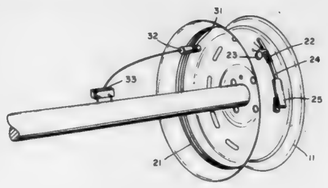
1. A method of determining the extent of axial play between the rotor and two axially spaced axial bearings mounted on the stator of an electric motor, especially of a small-size electric motor, comprising the steps of applying to the electric motor forces of such orientation and duration that the rotor conducts axial movement relative to the stator and abuts at least one of the bearings with an impact force indicative of the extent of the axial play; and sensing the magnitude of the impact force for use in determining the extent of the axial play.

4,389,884

REMOTE TIRE PRESSURE INDICATOR

Gianluigi Agulia, 30, Viale Japigia, 73100, Lecce, Italy

Filed Jun. 15, 1981, Ser. No. 273,348
Int. Cl.³ B60C *23/02*
U.S. Cl. 73—146.5 **1 Claim**



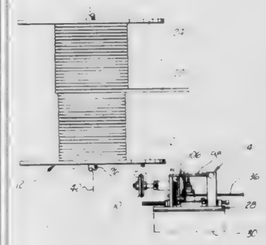
1. A remote system for indicating tire pressure for use in combination with a pressure transducer which is disposed inside a pneumatic tire where the tire is mounted on a wheel rim, said remote system comprising:
a. a ferrite rod which is mechanically coupled to the pressure transducer and which is disposed within the pneumatic tire;
b. a passive circuit including a first coil which is mechanically coupled to the wheel rim, a second coil which is electromagnetically coupled to said ferrite rod which is slidably coupled to said second coil and a capacitor, all of which are electrically coupled in series to form a tuned circuit which resonates at a particular frequency which is dependent on the position of the ferrite rod;
c. an oscillating circuit having a third coil of several turns on a rod of highly permeable material which is disposed adjacent to said first coil of said passive circuit on said wheel rim whereby said passive circuit receives energy from said oscillating circuit and the linear movement of said ferrite rod produces a change in the frequency at which said passive circuit resonates thereby producing a voltage across said third coil of said oscillating circuit which is linearly proportional to the change of pressure in the pneumatic tire;
d. amplifying means for amplifying the voltage which is electrically coupled to said oscillating circuit; and
e. displaying means for displaying the amplified voltage which is electrically coupled to said amplifying means.

4,389,885

SIGNAL GENERATOR FOR A PENETRATION RATE MEASURING APPARATUS

T. Edward Martin, Oklahoma City, Okla., assignor to Arthur J. Connelly, Farmington, N. Mex.

Filed Mar. 30, 1981, Ser. No. 248,957
Int. Cl.³ E21B *45/00*
U.S. Cl. 73—151.5 **11 Claims**



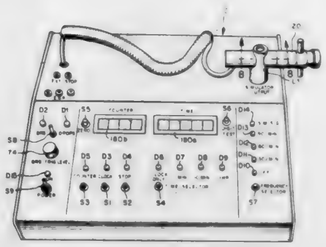
1. An apparatus for generating depth indicator signals indicative of the depth of penetration of a drill string which is lowered by a cable wound on a drum, comprising:
a friction wheel positioned adjacent one side of the drum and engageable therewith so as to be turned by the drum as the drum is turned to lower the drill string;
means for selectively engaging the friction wheel with the side of the drum;
signal production means, connected to the friction wheel, for producing a depth indicator signal each time the friction wheel is turned through a preselected angle of rotation; and
shift means, supporting the friction wheel for movement substantially radially of the drum and connected to the signal production means so as to receive the depth indicator signals produced thereby, for cyclically shifting the friction wheel a preselected distance toward the axis of the drum in response to reception by the shift means of a preselected first number of depth indicator signals and shifting the friction wheel an equal distance away from the axis of the drum in response to reception by the shift means of an additional preselected second number of depth indicator signals.

4,389,886

CALIBRATING UNIT

Roman L. Korczak, Des Plaines, Ill., assignor to Lutheran General Hospital, Inc., Park Ridge, Ill.

Filed Mar. 2, 1981, Ser. No. 239,338
Int. Cl.³ G01M *19/00*
U.S. Cl. 73—168 **12 Claims**



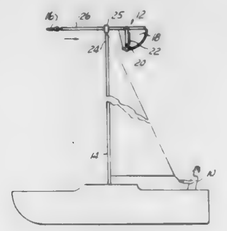
1. An automatic calibrating unit comprising:
sensor means for generating a train of pulses in response to the passage of a series of drops of a fluid;
counter means, responsive to the train of pulses, for maintaining a count representative of the total number of drops passing the sensor means during a counting interval such that the counting means automatically stops the count at the end of the counting interval;
means for manually designating a selected one of a plurality of measurement intervals, said plurality of measurement intervals including a first predetermined measurement interval which is at least ten times longer in duration than a second predetermined measurement interval;
means for setting the counting interval to correspond to the selected one of the plurality of measurement intervals; and
means for displaying the count;
said automatic calibrating unit operating automatically to count and then to display and hold the number of drops detected by the sensor means during the counting interval.

4,389,887

WIND VELOCITY GAGE FOR SAILBOATS

John L. Howlett, 1717 Ashtan, Walled Lake, Mich. 48088

Filed Jun. 8, 1981, Ser. No. 271,639
Int. Cl.³ G01F *1/28;* **G01W** *1/02*
U.S. Cl. 73—189 **8 Claims**



1. A wind velocity gage for a sailboat, comprising:
a vertical shaft mounted on the upper end of the sailboat mast;
a horizontal shaft pivotally mounted at the upper end of said vertical shaft, said horizontal shaft having a weight adjustment means at its forward end and a vertical arcuately formed fin at its rearward end;
a wind velocity pointer pivotally mounted on said fin and having a pair of vertical side fins; and
a visual readout sector peripherally formed on an extended

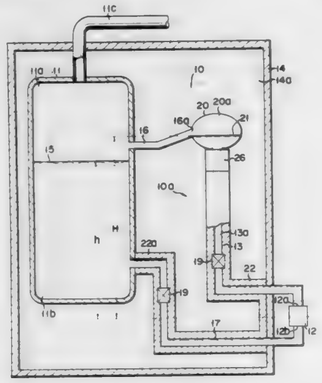
edge of said fin arcuate surface and having a downwardly facing indicating surface for providing a wind velocity indication responsive to the pivotal movement of said pointer.

4,389,888

LEVEL METER

Shinichi Morooka, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 12, 1980, Ser. No. 215,661
Claims priority, application Japan, Dec. 21, 1979, 54-165499; Dec. 6, 1980, 55-12445
Int. Cl.³ G01F *23/14*
U.S. Cl. 73—299 **1 Claim**



1. A level meter comprising:
a container having water at its lower portion and steam at its upper portion;
a reference chamber containing water at a level higher than the water level inside said container and containing steam over said water;
a differential pressure detector having two pressure inlet ports and disposed in a position below the water level inside said container, whereby the difference between two pressures separately applied to said pressure inlet ports is detected;
a vertical pipe connecting the bottom end of said chamber with one of said pressure inlet ports of said differential pressure detector and being filled with water;
a lower pipe connecting the water containing portion of said container with the other pressure inlet port of said differential pressure detector and being filled with water;
an upper pipe connecting the steam containing portion of said container with the steam containing portion of said chamber, thereby maintaining the surface of the water in said chamber at a fixed high-level position relative to said differential pressure detector and maintaining the respective steam containing portions of said container and said reference chamber at the same pressure; and
an adiabatic jacket covering the periphery of said vertical pipe, except for an exposed portion of a predetermined length which extends from said reference chamber, whereby the heat transmission between the outer periphery and the interior of said vertical pipe caused by the temperature difference therebetween is inhibited,
so that an increase of the temperature of water inside said vertical pipe which may cause an error in measurement of the level of the water in the container, as well as boiling of said water, can be retarded even when the temperature at the outer periphery of said vertical pipe is increased suddenly, further comprising a cooler attached to said exposed portion of the vertical pipe between said adiabatic jacket and said reference chamber for cooling said portion.

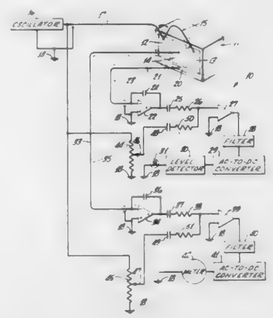
4,389,889

APPARATUS FOR DETECTING THE PRESENCE OF WATER IN A FUEL TANK

Roger G. Larson, 911 Laguna Rd., Fullerton, Calif. 92635

Filed Mar. 2, 1981, Ser. No. 239,668
Int. Cl.³ G01F *23/26*
U.S. Cl. 73—304 C **12 Claims**

1. Apparatus for determining the fuel level in a fuel tank and for detecting the presence of water in the fuel tank before such water can effect the accuracy of the fuel level determination comprising:
means for generating a first AC signal;
a first electrode coupled to said first AC signal generating means and operatively positioned relative to said fuel tank for coupling said first AC signal into a fluid in said fuel tank;
a second electrode positioned in parallel, horizontally-spaced relationship to said first electrode whereby the capacitance between said first and second electrodes increases as the fuel level in said tank increases;
circuit means coupled to said second electrode and responsive to the change in capacitance between said first and



second electrodes for providing a second signal indicative of the fuel level in said tank;
a third electrode operatively positioned adjacent the bottom of said tank and positioned to sense the presence of water therein;
means coupled to said third electrode for providing a third signal, a characteristic of which is proportional to the amount of electrical signal coupled between said first and third electrodes; and
means responsive to said third signal for indicating the presence of water in said tank when said characteristic of said third signal exceeds a predetermined value.

4,389,890

PRESSURE REGULATOR ASSEMBLY GUARD

Stephen M. Bolick, 2417 Windbreak Dr., Alexandria, Va. 22306, and John O. Vought, 9256 Sprucewood Rd., Burke, Va. 22015

Filed Apr. 24, 1981, Ser. No. 257,451
Int. Cl.³ G01D *11/24*
U.S. Cl. 73—431 **5 Claims**

1. A guage guard for use with a pressure regulating assembly, including pressure regulating valves, regulator guages and a plurality of fluid couplings operatively connecting the regulator assembly to a source of pressurized gas; where the source of pressurized gas is an elongated cylinder, having a cylindrical throat member into which one of the plurality of fluid couplings is inserted, the guard comprising;
an apertured collar comprising a plate having an enlarged centrally disposed aperture dimensioned to receive a portion of the cylinder, and having a handle member rigidly secured thereto;

a rigid framework, secured to the apertured collar, which is spaced from, and projects below, beyond and above the regulator assembly, and is dimensioned to extend beyond the regulator assembly in the vertical and horizontal planes, and comprises a rod formed into the shape of a



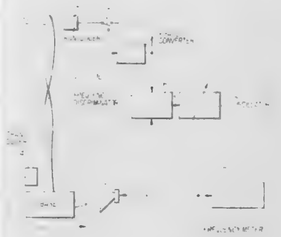
loop having two legs, which are disposed parallel to one another over a major portion of their combined length, and
locking means for attaching the apertured collar and the framework to a portion of the cylinder.

4,389,891

SYSTEM FOR MEASURING RESONANCE FREQUENCIES IN TURBINE AND COMPRESSOR VANES AND PROPELLER BLADES

Jacques M. A. Fournier, Chatillon, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.", Paris, France

Filed Jun. 24, 1981, Ser. No. 277,030
Claims priority, application France, Jun. 24, 1980, 80 13935
Int. Cl.³ G01H *13/00, 1/00*; **G01D** *1/00*
U.S. Cl. 73—579 **8 Claims**



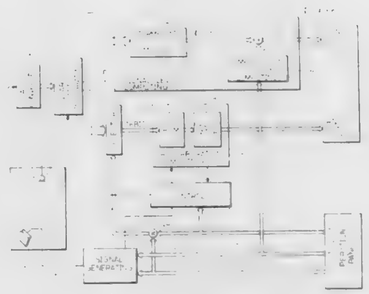
1. A system for measuring resonance frequencies in at least one rotatable blade rigidly attached at a base thereof to a base, comprising:
an exciter for generating sound waves in the vicinity of said blade;
at least one acoustic transducer placed in the vicinity of the base of said blade for generating a phase signal, the phase of which can be used as a blade excitation reference;
a displacement transducer placed in the vicinity of the tip of said blade for generating a second signal based on blade tip displacement;
a phase discriminator which receives the signals from said at least one acoustic transducer and said displacement transducer and produces an error signal based on the phase difference therebetween;
an oscillator coupled to the discriminator for producing a variable frequency output in dependence on said error signal, said variable frequency output applied to said exciter; and
a frequency meter coupled to the variable frequency output of said oscillator for measuring the oscillator frequency when the system has reached equilibrium.

4,389,892

REVERBERATION CHARACTERISTICS MEASURING DEVICE

Koji Niimi, and Fukushi Kawakami, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 20, 1981, Ser. No. 255,806
Claims priority, application Japan, Apr. 30, 1980, 55-56169; Apr. 30, 1980, 55-56170
Int. Cl.³ G01H *7/00*
U.S. Cl. 73—586 **4 Claims**



1. A reverberation characteristics measuring device comprising:
a signal generating circuit for generating a signal for a test sound;
first setting means for setting a duration of said test sound;
means for converting a reverberation signal produced by sounding of said test sound to a digital signal;
a squaring and integrating circuit for squaring and integrating said digital reverberation signal;
second setting means for setting an integration time of said squaring and integrating circuit;
a selector for selecting out a partial section of the entire output data of said squaring and integrating circuit;
selector control means coupled to said first and second setting means for determining said partial section of the entire output data to be selected by said selector;
a reverberation characteristics computing circuit for computing reverberation characteristics on the basis of the output of said selector; and
a display unit for displaying the reverberation characteristics computed by said computing circuit.

4,389,893

PRECISION ULTRASOUND ATTENUATION MEASUREMENT

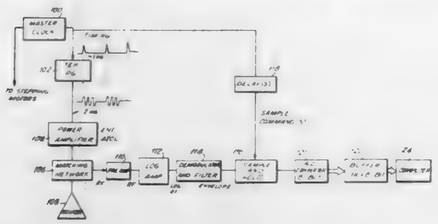
Jonathan Ophir, and Nabil F. Maklad, both of Houston, Tex., assignors to North American Philips Corporation, Tarrytown, N.Y.

Filed Jun. 1, 1981, Ser. No. 268,882
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—599 **12 Claims**

1. A method of measuring an attenuation characteristic in a region of interest comprising:
introducing pulses of ultrasound energy into the region;
detecting narrow-band signals which represent the amplitude of echoes of said pulses which are reflected from different depths along a plurality of propagation paths within said region;
accumulating a first statistically independent set of said signals which represent echoes from a first surface in said region;
accumulating a second statistically independent set of said signals which represent echoes from a second surface in said

region which is spaced at a determined distance, along said paths, from said first surface; and

calculating an attenuation characteristic in said region as the



difference between (1) a central tendency parameter of the logarithms of the signals in said first set and (2) the same central tendency parameter of the logarithms of the signals in the second set.

4,389,894

CYLINDRICAL GUIDE RAIL FOR DETECTOR

Shigeru Kajiyama, Hitachi, Japan, assignor to Hitachi Ltd. and Babcock-Hitachi Kabushiki Kaisha, both of Tokyo, Japan

Filed Jan. 30, 1981, Ser. No. 229,841
Claims priority, application Japan, Jan. 30, 1980, 55-8819
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—637 **10 Claims**



1. A cylindrical guide rail for a detector having; a split cylindrical ring, each half ring being hinged together, guide means provided circumferencially around said split ring, along which the detector being driven, a plurality of clamp shoes arranged around the inner surface of said split ring for securing said split ring in the closed position coaxially around a cylindrical object to be inspected, adjusting means for adjusting positions of said clamp shoes toward and away from the cylindrical object to be inspected, wherein the improvement comprising; jack means secured to the inner surface of said split ring and supporting said clamp shoes for adjusting the positions of said clamp shoes, force transmitting means provided circumferentially around the split ring for transmitting a force to each of said jack means, thereby the force applied is transmitted to said respective jack means and converted into a force to adjust the positions of said respective clamp shoes.

4,389,895

CAPACITANCE PRESSURE SENSOR

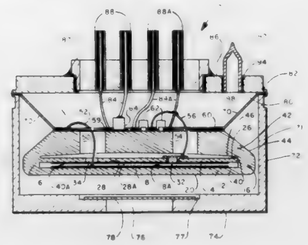
Stanley E. Rud, Jr., Eden Prairie, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Jul. 27, 1981, Ser. No. 287,307
Int. Cl.³ G01L *9/12*
U.S. Cl. 73—724 **19 Claims**

1. Apparatus for measuring pressure comprising:

diaphragm means for deflection under pressure having a first side for application of first pressure thereto, and a second side for application of a second pressure, wherein at least a portion of the diaphragm means is conductive thus forming a first capacitor electrode;

reference disc means having a passageway therethrough for communicating the first pressure to one side of the diaphragm means and having a first disc side and a second disc side, wherein at least a portion of the reference disc means is conductive thus forming a reference capacitor electrode in electrical communication with the first capacitor electrode, and



spacer means for supporting the diaphragm means adjacent its edges in a spaced relationship from the reference disc means,

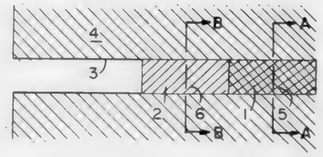
characterized in that the spacer means is formed from substantially the same material as the diaphragm means and the reference disc means and is disposed therebetween, and wherein the diaphragm means, the reference disc means and the spacer means are then fused together.

4,389,896

BOREHOLE GAUGE FOR IN-SITU MEASUREMENT OF STRESS AND OTHER PHYSICAL PROPERTIES

Clarence O. Babcock, Lakewood, Colo., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed May 27, 1981, Ser. No. 267,506
Int. Cl.³ E21B *49/00*
U.S. Cl. 73—784 **4 Claims**



1. A method for obtaining in-situ data useful in deriving the unknown state of stress and the two unknown physical constants Young's modulus and Poisson's ratio for a solid elastic mass from a length of hole previously drilled into the mass comprising the steps of:

a. placing in said drill hole, a first inclusion with known physical properties and a measuring means which can provide data from which the principal strains in said first inclusion can be derived, and

b. placing in said drill hole, a second inclusion with known but different physical properties than said first inclusion and a measuring means which can provide data from which the principal strains in said second inclusion can be derived, and

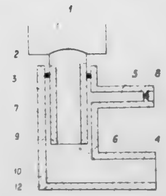
c. processing the data derived from said first and second measuring means in each inclusion to arrive at the state of stress and the physical constants for the elastic solids.

4,389,897

IMPELLER FLOW-METER PULSATION DAMPING

Stanislaw Kolodziejski; Stanislaw Dwojak, and Andrzej Grabowski, all of Warsaw, Poland, assignors to Przemyslowy Instytut Automatyki i Pomiarow "MERA-PIAP", Warsaw, Poland

Filed Apr. 8, 1981, Ser. No. 252,227
Claims priority, application Poland, Apr. 16, 1980, 223527
Int. Cl.³ G01F *1/00*
U.S. Cl. 73—861 **9 Claims**



1. In an impeller flow-meter for measuring the flow rate of a liquid impelled therethrough, including an impeller chamber for a rotary impeller, a supply pipe for the liquid and an inlet pipe to said chamber, and an offtake pipe for removing excess liquid not impelled through the meter, the flow rate of the liquid being determined by the rotational rate of the impeller, the improvement which comprises, particularly for accurately measuring the flow rate of liquid fuel in an internal combustion engine, incorporating in said flow-meter the following features:

(a) an ante-chamber (**3**) is provided connected to said supply pipe (**4**) and to said offtake pipe (**5**);

(b) said ante-chamber (**3**) has an upper portion thereof mounted externally of an coaxially with the inlet pipe (**2**) to provide an annular slot (**7**) therebetween, permitting passage of liquid between the outer wall of the inlet pipe (**2**) and the inner wall of the ante-chamber (**3**);

(c) said offtake pipe (**5**) is in communication with said slot (**7**); and

(d) said supply pipe (**4**) is in communication with a space (**6**) within said ante-chamber (**3**) below said upper portion;

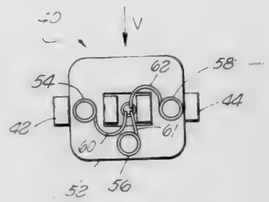
whereby pulsations in the liquid supply from the supply pipe (**4**), which would affect the rotational rate of the impeller, are damped and extinguished before the liquid reaches the impeller chamber (**1**) through the inlet pipe (**2**).

4,389,898

ELECTROMAGNETIC VELOCITY TRANSDUCER

James C. Long, 1965 8th St. #2, Los Osos, Calif. 93402, and James K. Palmer, 134 Fel Mar Dr., San Luis Obispo, Calif. 93401

Filed Dec. 4, 1980, Ser. No. 213,128
Int. Cl.³ G01F *1/58*
U.S. Cl. 73—861.12 **4 Claims**



1. A transducer for generating an electrical signal that is a function of the velocity of a flowing body of liquid having a surface comprising:

(a) a submergible body having an upper surface and a lower surface;

(b) means located within the submergible body for imposing a magnetic field transverse to the direction of flow of the liquid, said means comprising:

(1) a ferromagnetic core including two coplanar U-shaped members substantially transverse to the direction of flow and separated by a preselected distance, the U-shaped members being arranged with respect to the body so that the resultant vector of the radiated field is directed from the upper surface of the body toward the surface of the body of liquid; and

(2) A coil surrounding the inner legs of the U-shaped members and wound upon a bobbin of electrically insulative material;

(c) A pair of measuring electrodes lying along a line substantially coincident with the direction of the cross product of said magnetic field vector and said velocity;

(d) a circuit for deriving an electrical signal representing the potential difference between said measuring electrodes, whereby said electrical signal is a function of the average velocity of flow over said preselected distance; and

(e) means for conducting the electrical potential of each of said measuring electrodes to said circuit, said conducting means comprising:

(1) a first wire providing electrical connection between one of said measuring electrodes and said circuit;

(2) a second wire providing electrical connection between the other of said measuring electrodes and said circuit;

(3) said bobbin having an upper surface and a lower surface; and

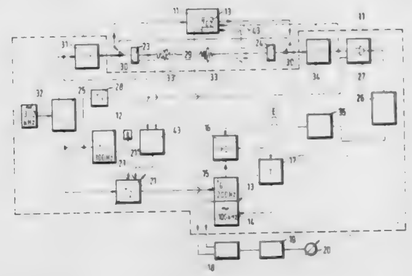
(4) portions of said first wire and of said second wire forming in combination a generally s-shaped geometry at the upper surface of said bobbin whereby oppositely directed cancelling currents are induced at a no-flow condition.

4,389,899

APPARATUS FOR MEASURING THE SPEED OF FLOW OF FLOWABLE MEDIA

Gerhard Krause, 26e Wachtelweg, 8200 Rosenheim, Fed. Rep. of Germany

Filed Oct. 24, 1980, Ser. No. 200,166
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1979, 2943810
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.28 **14 Claims**



1. Apparatus for measuring the speed of flow of flowable media by determining the transit time of sound waves therein, in which first and second transmitter-receivers in the form of electroacoustic converters are spaced apart in the direction of flow with an imaginary line joining said first and second transmitter-receivers having at least a component in the direction of the flow to be measured and in which sound pulses are sent alternately in a first direction from said first transmitter-receiver to said second transmitter-receiver and in a second direction, opposite to said first direction, from said second

transmitter-receiver to said first transmitter-receiver, there being a processing circuit for determining the speed of flow from the transit times of the sound pulses in the first and second directions, the apparatus further comprising pulse circuits which for said first and second directions have available:

(a) a pulse generator operating at a first specific frequency and connected to the associated electroacoustic converter;

(b) a frequency generator which preferably operates at a higher frequency, said frequency generator having a frequency control input and a setting or trigger input to which pulses of the pulse generator are applied, and

(c) a phase detector having first and second inputs to which received pulse signals and the output of the frequency generator are respectively applied with the output of said phase detector being passed to a mean value forming stage which is in turn connected to the frequency control input of the frequency generator and which regulates the frequency of the frequency generator to a value corresponding to the time interval between the arrival of a pulse at the setting input and the arrival of the received pulse signal at the phase detector,

and means for passing the frequencies of the frequency generators to the processing circuit.

4,389,900

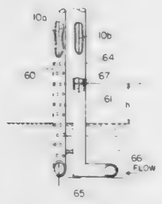
CAPACITANCE PROBE SENSOR DEVICE

Manuel Gutierrez, Golden, Colo., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation-in-part of Ser. No. 481,408, Jun. 14, 1979, abandoned. This application Dec. 24, 1980, Ser. No. 219,705

Int. Cl.³ G01F *1/34, 1/00*

U.S. Cl. 73—861.42 **3 Claims**



1. Two capacitive probes used to determine the rate of flow of a liquid comprising:

a first capacitive probe having a metallic tube with perforations to permit the passage of a liquid therethrough and a wire electrode mounted in said tube to determine the vertical level of the liquid whose rate of flow is to be determined;

a second capacitive probe attached to said first probe, said second probe having a metallic liquid retaining tube with a bent section and an open end which faces the incoming flow of the liquid, said second probe also having a wire electrode, said second probe's metallic tube permitting the liquid to reach a height therein directly related to flow rate of the liquid being measured; and

means for determining the difference in the vertical displacement of the liquids in said two probes by measuring the respective capacitance levels of the probes whereby the rate of flow of the liquid can be determined by ascertaining said difference.

4,389,901

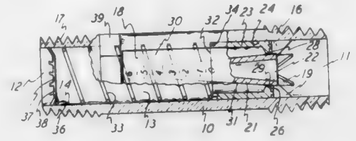
FLUID FLOW METER

Jack E. Lake, Racine, Wis., assignor to Racine Federated Inc., Racine, Wis.

Filed May 14, 1981, Ser. No. 263,680

Int. Cl.³ G01F *1/22*

U.S. Cl. 73—861.58 **12 Claims**



1. In a fluid flow meter comprising a housing of a transparent material and having a fluid inlet and a fluid outlet and having a cylindrical wall defining a hollow interior, a conical member secured on the interior of said housing, a piston movably disposed in said housing and slidable along said cylindrical wall of said housing and having a central opening piloted on said conical member for movement of said piston in accordance with the rate of flow of fluid through said housing and toward said outlet, a spring for urging said piston toward said inlet, a scale on said housing and matched with said piston for indicating the rate of flow of fluid, the improvement comprising a plurality of fins extending between said housing and said conical member adjacent said fluid inlet and in the path of the flow of fluid into said housing and toward said piston, to direct the fluid to flow in a laminar flow pattern as contrasted to a turbulent flow pattern and to direct the laminar flow onto said piston and thereby create steady flow-sensing positions for said piston.

4,389,902

FLOW RATE TRANSDUCER

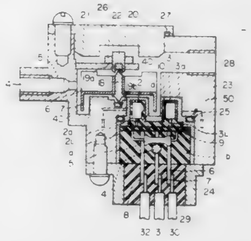
Masami Kataoka, Kariya, and Nobumasa Higo, Toyota, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 23, 1981, Ser. No. 256,831

Claims priority, application Japan, Apr. 25, 1980, 55-55739

Int. Cl.³ G01F *1/075, 15/06*

U.S. Cl. 73—861.77 **21 Claims**



1. A flow rate transducer for producing an electrical signal indicative of flow rate of fluid, comprising:

(a) a housing defining a fluid chamber which communicates with an inlet passage and with an outlet passage;

(b) a blade wheel rotatably mounted in said fluid chamber, and having a plurality of light-shielding plates;

(c) a light-emitting element arranged at one side of a given point of the locus of said light-shielding plates;

(d) a light-receiving element arranged adjacent to said light-emitting element;

(e) means for reflecting a light beam from said light-emitting element so that the reflected light beam is received by said light-receiving element;

(f) means for carrying said light-emitting element, said light-receiving element and the reflecting means thereon; and

(g) a casing having two recessed portions for respectively receiving, in the first recessed portion, said light-emitting element and said light-receiving element, and in the second recessed portion, said reflecting means, each of said recessed portions having a transparent portion so that light transmission from said light-emitting element via said reflecting means to said light-receiving element is effected therethrough, said casing being fixedly connected to the carrying means, and being embedded in a bore made in said housing.

4,389,903

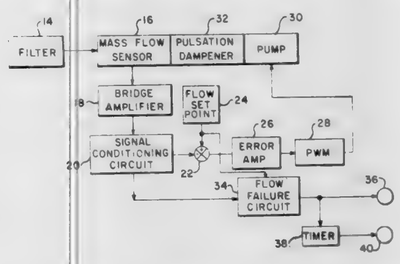
INDICATING SYSTEM FOR ATMOSPHERIC PUMP ARRANGEMENT

Gregory A. Bertone, and Clayton J. Bossart, both of Monroeville, Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed May 4, 1981, Ser. No. 260,374

Int. Cl.³ G01N *1/24*

U.S. Cl. 73—863.03 **8 Claims**



1. In an atmospheric sampling pump arrangement, the combination of a mass flow sensor for producing an output signal proportional to mass airflow of atmospheric air, means for comparing said output signal with a set-point voltage to produce a signal voltage when mass airflow drops below a predetermined limit, means for indicating the existence of said signal voltage, a counter, means for enabling said counter to count up when said signal voltage exists, and second indicating means which is actuated when said counter counts up to a predetermined value.

4,389,904

METHOD AND APPARATUS FOR SUPERCOOLING AND SOLIDIFYING SUBSTANCES

Lewis L. Lacy; Michael B. Robinson; Thomas J. Rathz; Lester Katz, all of Huntsville, Ala., and Daniel B. Nisen, Memphis, Tenn., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 23, 1981, Ser. No. 246,773

Int. Cl.³ G01N *25/04*

U.S. Cl. 73—863.11 **9 Claims**

1. A method of preparing and studying supercooled and solidified samples of materials in bulk form in a low gravity environment comprising:

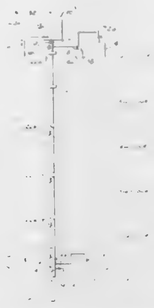
providing an enclosure;

positioning a sample specimen of said material in an environment out of contact with said enclosure;

heating said specimen to form a specimen melt;

providing a drop tube assembly having a hollow drop tube disposed at a level generally below said specimen positioned in alignment therewith having a sufficient height to facilitate supercooling of said specimen melt falling therethrough;

supercooling said specimen melt by allowing said melt to fall freely through said drop tube wherein said melt is cooled by radiation and solidifed; and



catching said solidified specimen adjacent the end of drop tube whereby said specimen may be removed for analysis.

4,389,905

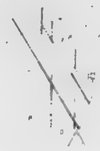
CUTTER FOR COLLECTING A REPRESENTATIVE SAMPLE

Semyon Lanin, and Vladimir Lanin, both of 330 Wadsworth Ave., Apt. 6F, New York, N.Y. 10040

Filed Jul. 27, 1981, Ser. No. 287,144

Int. Cl.³ G01N *1/20*

U.S. Cl. 73—863.54 **5 Claims**



1. A sampling cutter for a sampling machine, the cutter having a housing with a first feed opening (3) for direct sampling of material moving in the main discharge trajectory of a stream to be sampled and a chute part for diverting sampled material to a chute (7) of a sampling system, said chute part having a second feed opening (4) for sampling material moving separately from the main stream, means for supporting and moving the cutter through the stream of material to be sampled, and means for preventing arbitrary entrance of conveyed material into the chute (7) of the sampling system.

4,389,906

AUTOMATIC CROSSCUT SAMPLER

Donald O. Bartholomay, Minneapolis, Minn., assignor to Gustafson, Inc., Eden Prairie, Minn.

Filed Feb. 4, 1980, Ser. No. 117,954

Int. Cl.³ G01N *1/20*

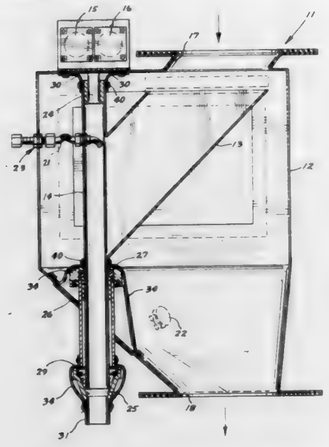
U.S. Cl. 73—863.55 **6 Claims**

1. Apparatus for drawing a representative sample of flowing particulate material from the spout of a conveying or dispensing system, comprising;

an enclosed housing with entrance and exit ports for connection into a section of the spout, the housing having an open interior with an unobstructed central flow passage permitting free flow of particulate material therethrough,

a sample collecting head mounted within the housing for

swinging movement about an axis parallel to that of the central flow passage, such that the collecting head can be swung from one side of the central flow passage to the other, passing entirely through the central flow passage, with the head having an elongate opening confronting the entrance port, and



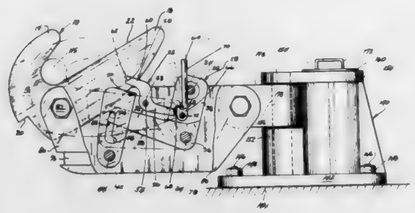
means for swinging the collecting head across the central flow passage, and said means comprises at least one rotary air cylinder secured to the sealed housing for producing such swinging.

4,389,907

RELEASABLE HOOK

Irving Epstein, 4216 Shoreclub Dr., Mercer Island, Wash. 98040

Filed Jun. 11, 1976, Ser. No. 695,119
Int. Cl.[3] B63B *23/58*; B66C *1/34*
U.S. Cl. 74—529 **25 Claims**



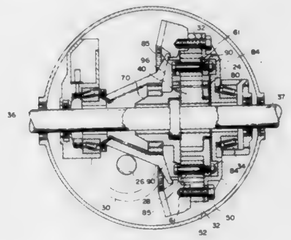
1. A locking mechanism comprising:
a. a rotatable member;
b. a stop;
c. said stop being mounted on a pawl;
d. said pawl being movable to move said stop for engagement and disengagement with said rotatable member;
e. a cam plate;
f. said cam plate being movable;
g. a cam follower on said pawl for following the movement of said cam plate;
h. a balance lever;
i. said balance lever having a bearing surface for bearing against said cam plates;
j. said balance lever being movable;
k. a release lever;
l. said release lever having a bearing surface for bearing against said balance lever;
m. said release lever being distinct and separate from said balance lever;
n. said balance lever and said release lever may move to be juxtapositioned to each other; and,
o. said release lever being movable for moving away from said balance lever to allow said balance lever to allow said cam plate to move to allow said pawl and said stop to move away from said rotatable member to allow said rotatable member to rotate.

4,389,908

PARTIALLY FLUID LOCKED DRIVE TRAIN

Harold M. Dudek, Bellevue, Wash., assignor to Astro Development Corporation, Seattle, Wash.

Filed Dec. 26, 1979, Ser. No. 106,716
Int. Cl.[3] F16H *1/44*
U.S. Cl. 74—711 **5 Claims**



1. An improved fluid locked gear drive train for a transfer case of a differential or the like comprising:
an outer fluid tight housing;
an inner housing;
a planetary gear train within said inner housing, said gear train including a sun gear, a plurality of planet gears and an internal ring gear;
plate means positioned on opposite sides of said sun, planet and internal ring gears in close relation thereto and closely surrounding the peripheries of the gears;
means freely mounting at least one of said planet gears for allowing the ends of the planet gear teeth to be moved into closer relation with the plate means surrounding said gears to increase hydrostatic drag on said gears;
said plate means including fluid inlet and outlet ports aligned with teeth of said gears but with the inlet ports being spaced around the periphery of the gears a distance upstream in the direction of fluid movement from a point of mesh between two meshing gears for delivering fluid to a point of mesh between the gear and between said closely spaced planet gear and the plate means for increasing the hydrostatic fluid pressure on the teeth in such closer relation and thereby increasing fluid resistance drag on the planet gears for partial fluid lock; and
means for delivering fluid into said inner housing and maintaining the inner housing in a generally filled condition and filling the space between the gear teeth and the plate means.

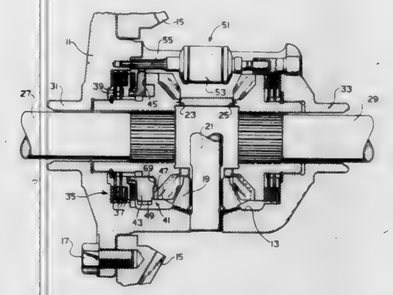
4,389,909

CAM MECHANISM FOR LIMITED SLIP OR LOCKING DIFFERENTIAL

Edward J. Goscenski, Jr., Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 26, 1981, Ser. No. 266,874
Int. Cl.[3] F16H *1/44, 53/00*
U.S. Cl. 74—711 **9 Claims**

1. A differential gear mechanism of the type including a gear case defining a gear chamber, differential gear means disposed in said gear chamber, said differential gear means including at least one input gear and first and second output gears, lock-up means for locking up said differential gear means to retard differentiating action, said lock-up means including clutch means operable between an engaged condition, effective to retard relative rotation between said gear case and said output gears, and a disengaged condition, said lock-up means further including cam means operatively associated with said clutch means and including first and second cam members, said second cam member being axially movable relative to said first cam member in response to relative rotation therebetween to



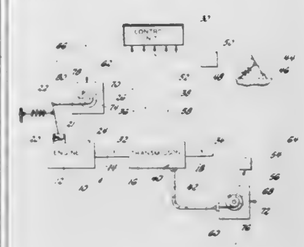
effect said engaged condition of said clutch means; the improvement comprising:
one of said first and second cam members having a cam surface including alternating rising surface portions and falling surface portions, each of said rising surface portions including a pad portion axially projecting slightly from said rising surface portion and extending over approximatey the upper half of said rising surface portion to concentrate engagement of the other of said first and second cam members with said rising surface portion on said upper half of said rising surface portion.

4,389,910

MOTOR VEHICLE POWER CONTROL MEANS

Bruce D. Lockhart, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 17, 1981, Ser. No. 234,696
Int. Cl.[3] B60K *41/04*
U.S. Cl. 74—843 **5 Claims**



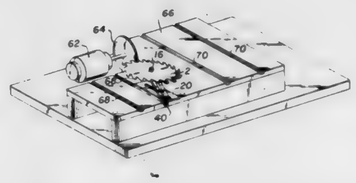
1. A method of controlling the driveline power response of a motor vehicle of the type having a throttle controlled engine and a multigear ratio automatic transmission wherein transmission gear shifting is determined according to the combination of vehicle speed and a control input applied to said transmission, said method comprising the steps of:
adjusting the engine throttle in a manner to bring a measured value of a power-related driveline parameter into correspondence with a requested value determined according to the setting of an operator controlled accelerator pedal;
adjusting said transmission control input according to a first schedule wherein said input follows the setting of said accelerator pedal or a second schedule effective when engaged to interrupt said first schedule and to adjust said control input in a manner to downshift said transmission to a lower gear;
engaging said second schedule when said engine enters a range of operation associated with reduced efficiency;
in response to the engagement of said second schedule, determining the maximum value of said driveline parameter available in a higher gear with engine operation outside said fuel inefficient range; and
disengaging said second schedule when said maximum value exceeds said requested value whereby said engine and transmission are controlled in a manner to deliver a driveline response corresponding to the position of said accelerator pedal while avoiding engine operation under conditions of reduced efficiency.

4,389,911

CIRCULAR SAW SHARPENING ATTACHMENT

John K. Winning, 152 -1133 Pipeline Rd., Port Coquitlam, British Columbia, Canada

Filed Nov. 10, 1980, Ser. No. 205,213
Int. Cl.[3] B23D *63/14*
U.S. Cl. 76—74 **9 Claims**



1. A holder for a circular saw blade to permit sharpening of the blade on a sharpener having a sharpening surface rotatable in a fixed plane, the holder comprising:
a bed to receive a saw blade;
means to position the blade on the bed;
a first slot in the bed;
a table to support the bed and having a first surface to support the bed and a second surface, a first edge and a second edge;
a second slot in the table;
means extending through the first and second slots to releasably attach the table and the bed to allow pivoting of the bed relative to the table and locking of the bed and the table at a predetermined relative position;
a projection formed on the second surface of the table, at the first edge, whereby when the holder is placed on a level surface the table inclines downwardly from the first edge to the second edge to define the angle of presentation of the blade on the holder to said fixed plane in which the sharpening surface of the sharpener is rotatable with the length of the first edge of the table being at a uniform distance from said level surface.

4,389,912

TWEEZERS FOR REMOVAL OF DUAL IN-LINE PIN (DIP) COMPONENTS

Robert E. Dallons, Agoura, and William S. Fortune, Malibu, both of Calif., assignors to Edsyn, Inc., Van Nuys, Calif.

Filed Feb. 23, 1981, Ser. No. 237,330
Int. Cl.[3] B25B *9/02, 27/14*
U.S. Cl. 81—43 **11 Claims**

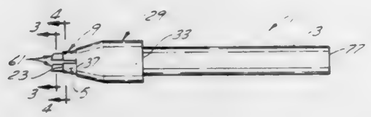
1. A pair of tweezers for removing a DIP component from a circuit board comprising:
(a) a pair of tweezer legs of identical shape, each of said legs having an upper portion which is substantially straight, followed by an inwardly curved, convex portion and followed, in turn, by an oppositely curved portion;

(b) each of said legs having a sharply inwardly bent end portion formed into claws for gripping a DIP component, and a circular aperture near the inwardly curved end portion;
(c) means for securing the uppermost portions of said legs together; and
(d) a sliding clamp having two parallel portions for sliding along the upper portion of said legs and interconnected to form a U-shaped structure, said clamp being rotatable with respect to said legs when disposed at the uppermost portion of said legs, each of said parallel portions being



provided with a centrally located elongated slit, and means on said upper portions of said legs and extending through an opening for securing said clamp in a desired position along said slit with respect to said legs, to space said claws a desired distance apart for gripping a particular DIP component, whereby a row of pins of a DIP component may be straightened out by placing it between the upper portions of said legs when said clamp is rotated away from said legs and thereafter squeezing said legs together by said clamp, and whereby the space between said claws is adjustable by sliding said clamp up or down.

4,389,913
SCREW EXTRACTOR
Gilbert Drouin, 47 St. Andre, St-Luc, Quebec, Canada (JOJ 2AO); Jean Lacoste, 1530 Ouest Bl. Dernard, Apt. 14, Outremont, Quebec, Canada (H2V 1W8), and Gilles Tremblay, 354 Redfern, Westmount, Quebec, Canada (H3Z 2G5)
Filed Mar. 3, 1981, Ser. No. 239,987
Int. Cl.³ B25B *13/50*
U.S. Cl. 81—53.2 **3 Claims**



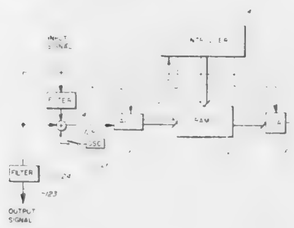
1. A tool for use in extracting a broken fastener, the tool comprising a main body, a tubular-shaped extension comprised of a plurality of slightly spaced apart, flexible curved fingers projecting from one end of the body, size-reducing means for radially reducing the size of a free end of the fingers, cutting means projecting axially from said free end of the fingers, said cutting means being radially movable by action of said size-reducing means such that said cutting means can be sized to cut around the broken fastener, gripping means comprising a plurality of teeth extending inwardly from said fingers, said gripping means being radially movable to grip the broken fastener subsequent to operation of said cutting means, each of said teeth having one side extending radially and the other side extending generally tangentially so as to securely grip the broken fastener upon a slight rotation of the body, the tangential side leading when the tool is rotated in the direction in which the fastener was rotated to fasten.

4,389,914
CHORD IDENTIFICATION SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENTS
Dale M. Uetrecht, Colerain Township, Hamilton County, Ohio, and Carlton J. Simmons, Jr., Florence, Ky., assignors to Baldwin Piano & Organ Company, Cincinnati, Ohio
Filed Jun. 18, 1981, Ser. No. 275,082
Int. Cl.³ G10H *1/38, 7/00*
U.S. Cl. 84—1.01 **6 Claims**



1. A process for identifying the chord type and root represented by the actuation of one or more playing keys of a musical instrument keyboard capable of representing a group of chord types based on a group of roots, each of the playing keys corresponding to one note, said process employing a switch matrix and multiple-location memory and comprising the steps of:
scanning said switch matrix and comparing the state of the switches therein to the state of corresponding bits in said multiple-location memory;
selectively enabling a means for chord identification;
determining the chord type and the root of the chord being played by selectively iteratively transposing said chord whereby said chord is identifiable by the number of notes contained therein and the interval relationship thereof; and
storing in said multiple-location memory said chord type and said root for processing, whereby said processing generates a signal for the synthesis of music which is compatible with the chord being played.

4,389,915
MUSICAL INSTRUMENT INCLUDING ELECTRONIC SOUND REVERBERATION
Angelo A. Bione, Elmhurst, Ill., assignor to Marmon Company, Chicago, Ill.
Filed Dec. 18, 1980, Ser. No. 217,911
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.24 **6 Claims**



1. An electronic musical instrument having circuitry for generating a tone signal representative of a musical tone and a reverberation circuit for receiving said tone signal and producing a reverberated tone signal, said reverberation circuit comprising:
first converter means receiving an analog input and providing a digital data word output;

a random access memory receiving said digital data word output from said first converter means, providing a digital output signal and having a plurality of addressable memory locations froming at least a first channel and a second channel, each of said channels being separate and individual from said other channels and each comprising a different number of memory locations, each of said memory locations stores a digital data word output from said first converter;
second converter means receiving said digital output signal from said random access memory and providing an analog delay output;
addressing means comprising at least first and second counter circuits, said first counter circuit generating first address signals connected to said random access memory and defining said first separate and individual channel in said random access memory and said second counter circuit generating second address signals connected to said random access memory and defining said second separate and individual channel in said random access memory;
first control means having a first control output signal connected to said second converter means for transferring a data word from a predetermined memory location in said random access memory to said second converter whereby said analog delay signal output is generated by said second converter in response to said data word;
a mixer circuit for receiving said analog delay signal of said second converter and said tone signal and combining a portion of said analog delay signal of said second converter with said tone signal and providing a mixed signal as said analog input to said first converter;
second control means having a second control output signal connected to said first converter for enabling said first converter to generate said digital data word output in response to said mixed signal;
third control means having a third control output signal connected to said random access memory for transferring said digital data word generated in response to said mixed signal to said input of said random access memory and into said predetermined memory location from which the original digital data was transferred by said first control means;
Sequencer means having a plurality of sequence output signals at least one of which is connected to each of said first, second and third control means and said addressing means for providing data words from said random access memory with one individual word being transferred from each of said separate and individual channels in repeated channel sequence and with each of said individual data words being transferred from each of said separate and individual channels sequentially; and
an output circuit for receiving, filtering and intergrating said analog delay signal from said second converter means and for generating said reverberated tone signal.

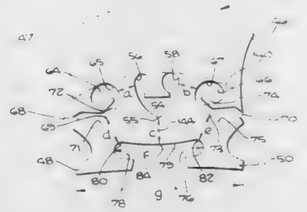
4,389,916
VIOLIN SUPPORT
Olof J. J. Ruthström, Djurgardsvägen 144, S-115 21 Stockholm, Sweden
PCT No. PCT/SE80/00139, § 371 Date Jan. 14, 1981, § 102(e) Date Jan. 14, 1981, PCT Pub. No. WO80/02617, PCT Pub. Date Nov. 27, 1980
PCT Filed May 13, 1980, Ser. No. 232,045
Claims priority, application Sweden, May 14, 1979, 7904223
Int. Cl.³ G10G *5/00*
U.S. Cl. 84—278 **3 Claims**

1. A support assembly for a string instrument of the violin family, said string instrument having a chin rest, a stringholder with a saddle, a stringholder cord and a button for securing the stringholder cord located on a side wall of the instrument which, when played upon, is kept in a position between a jaw bone and a collar bone, comprising:
(a) a bendable bow member adapted to be bent to conform to the player's body, said bow member having one end adapted to rest on the chest of the player and a second end adapted to rest on the back of the player;
(b) a support structure movably mounted on said bow member, said support structure adapted to be positioned on said bow member to rest on the collar bone of the player;
(c) a pivot part mounted on said support structure and extending upwardly therefrom transverse of the plane of the instrument body;
(d) a mounting plate having a wedge shaped part adapted to



be positioned between said stringholder cord and said side wall in the horizontal direction and between said button and said saddle in the vertical direction, said mounting plate having a means connected thereto for receiving said pivot part;
(e) said pivot part and said receiving means including adjustable means for constraining pivotal movement therebetween; and
(f) flexible means for removably securing said mounting plate and said bow member together.

4,389,917
VIOLIN AND VIOLA BRIDGE
Ralph H. Tiebout, III, 2527 Hyler Ave., Los Angeles, Calif. 90041
Filed Jul. 24, 1981, Ser. No. 286,580
Int. Cl.³ G10D *3/04*
U.S. Cl. 84—309 **79 Claims**



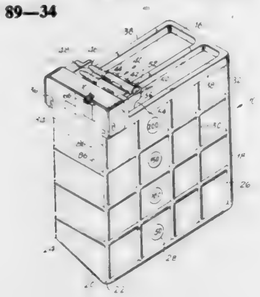
1. An improved bridge for a violin of the type comprising an integrally formed member adapted to rest upon the belly of the violin and extend transversely beneath the strings with a convexly curved upper surface for supporting the strings, characterized in that it has a central opening and a pair of lateral edge openings for increasing its flexibility and hence sound transmitting and amplifying capability with the upper boundary of the three openings lying along a curved path that is substantially parallel to the curved upper end of said bridge and further characterized in that its bottom end has feet on its lateral edges with a bottom channel therebetween, the upper extremity of the channel being formed by a slightly downwardly convex surface of the bridge.

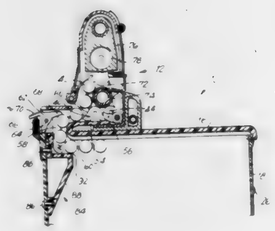
4,389,918

AMMUNITION BELT FEED MAGAZINE SYSTEM

John H. Peck, Fountain Valley, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 26, 1981, Ser. No. 267,126
Int. Cl.³ F41C *25/00*
U.S. Cl. 89—34 **1 Claim**





1. A feed magazine for feeding linked rounds into a feed mechanism of an automatic weapon, comprising:

a container having at least two generally parallel sides, two ends, a top and a bottom;

said sides having means for sliding engagement under said weapon for mounting said container in a generally linear travel;

a delivery slot in said top for delivery of said linked rounds to said automatic weapon; and

means for retaining at least one leading round in a position external to said container from which position said leading round can be engaged by said feed mechanism and fed to said automatic weapon upon completion of said mounting; wherein said bottom is sloped from one of said sides to the other thereof whereby, when said container is substantially full of linked rounds, a top layer of said rounds is permitted to lie substantially parallel to said top.

4,389,919

FIRING PIN BLOCK FOR FIREARM WITH A ROTARY BREECH BOLT

Jack L. Kast, Ilion; Albert R. Eddy, Frankfort, and Merle F. Carter, Mohawk, all of N.Y., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Continuation of Ser. No. 121,437, Feb. 14, 1980, abandoned. This application May 3, 1982, Ser. No. 374,156
Int. Cl.³ F41D *3/06, 11/16*
U.S. Cl. 89—185 **6 Claims**

1. A firearm having a receiver, and a barrel secured to said receiver and having a rearwardly-open breech formed with locking lugs;

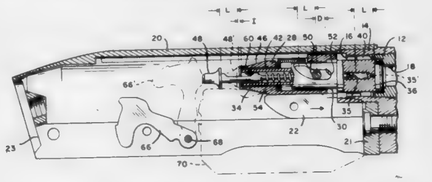
a bolt carrier reciprocable in said receiver along a longitudinal axis but restrained against rotation thereabout, said bolt carrier having a rearward extension;

a breech bolt having a front face adapted to close said breech, being formed with locking lugs engageable by rotation of said bolt to lock said bolt to said breech lugs, and being reciprocable and rotatable in said bolt carrier with respect to said axis;

a firing pin having a flat formed thereon, and received in said bolt for sliding movement along said axis between a position retracted behind said face and a position protruding therefrom, and having an enlarged abutment formed rearwardly thereon, said abutment being aligned with said rearward extension of said bolt carrier along said axis so that the extreme forward displacement of said firing pin with respect to said bolt carrier is limited by direct engagement of said abutment with said rearward extension;

cam means drivingly connecting said bolt with said bolt carrier, said cam means comprising a cam slot in said bolt and a cooperating cam pin secured to said bolt carrier and slidable in said cam slot; said cam slot having a curved rear section extending along said axis and through an angle thereabout, and having a longitudinal forward section extending substantially parallel to said axis;

said cam means being constructed and arranged: for effecting a forward longitudinal movement of said bolt to close



said face against said breech, in response to an initial forward movement of said bolt carrier; for effecting movement of said cam pin through said curved rear cam section to rotate said bolt and said lugs into locking engagement with said breech, in response to a further forward movement of said bolt carrier; and for allowing movement of said cam pin through said longitudinal forward cam section while restraining said bolt against rotation with respect to said breech, in response to a continued forward movement of said bolt carrier;

said rearward extension of said bolt carrier extending rearwardly to a length sufficient to block said firing pin against displacement into said protruding position during movement of said cam pin throughout said rear cam section, and to be displaced forwardly to a position enabling said firing pin to be moved into said protruding position only after entry of said cam pin into said longitudinal forward section of said cam slot;

and a retaining pin received in said flat for free sliding movement of said firing pin along said axis within limits defined by the length of said flat, said retaining pin being secured in said bolt whereby, upon completion of said forward longitudinal movement of said bolt against said breech, forward movement of said firing pin from said retracted position is restricted solely by said rearward extension of said bolt carrier.

4,389,920

SEMIAUTOMATIC FIREARM

Joseph H. Dufour, Sr., 848 Castlewood Dr., Baton Rouge, La. 70815

Filed Feb. 20, 1981, Ser. No. 236,493
Int. Cl.³ F41D *5/04*
U.S. Cl. 89—190 **29 Claims**

1. In a semiautomatic firearm having (i) a receiver, (ii) a barrel mounted to said receiver, (iii) a magazine positioned adjacent to said barrel, (iv) a bolt assembly reciprocally

mounted in said receiver, said bolt assembly having locking structure for locking said bolt assembly in the battery position, and unlocking structure for unlocking the lock achieved by said locking structure, the improvement which features a gas operated system which comprises:

a. gas powered means in association with said barrel and said magazine, said gas powered means being actuated by expanding gas to provide powered movement by at least a portion of said gas powered means towards said receiver;

b. at least one gas channel extending from the interior of said barrel to said gas powered means to communicate said expanding gas to said gas powered means when said firearm is fired;

c. drive means having its proximate end in association with



said gas powered means whereby said powered movement by said at least portion of said gas powered means imparts movement to said drive means towards the receiver, said drive means having at its distal end a rod means adjacent but not connected to said unlocking structure, whereby said movement of said drive means operatingly engages said rod means with only said unlocking structure to unlock said lock structure so that said bolt assembly is free to move away from said battery position; and

d. return means in contact with said drive means for preventing impacting of said drive means with said receiver and for returning said drive means and said rod means to their original prior position so that said bolt assembly is free to return to the battery position and said locking structure can re-attain its locking of said bolt assembly.

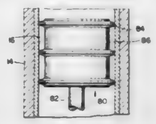
4,389,921

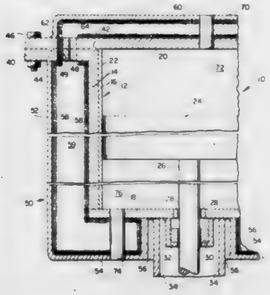
EXPANSIBLE CHAMBER APPARATUS AND ITS OPERATION

Vannevar Bush, Belmont, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 824,189, Aug. 12, 1977, Pat. No. 4,250,953, which is a continuation of Ser. No. 623,108, Oct. 16, 1975, abandoned, which is a continuation of Ser. No. 78,902, Oct. 7, 1970, abandoned. This application Jul. 18, 1980, Ser. No. 170,231
Int. Cl.³ F01B *29/04;* F16J *11/02*
U.S. Cl. 92—59 **4 Claims**

1. Expansible chamber apparatus comprising a cylinder, a ceramic lining internally mounted on the cylinder side walls, heat controlling means connected to the expansible chamber apparatus for controlling operating temperature of the cylinder, a shaping piston having a projection peripherally extending from the outer radial surface of said shaping piston into engagment with the ceramic lining, reciprocating means connected to the shaping piston for reciprocating the shaping piston in the cylinder whereby the lining of the apparatus conforms to outer dimensions of the projection when the operating temperature is reached, and further comprising a substitute piston comprising a permanent piston having an outer dimension commensurate with the outer dimension of the projection, and wherein the reciprocating means comprises detachable connecting means connected to the shaping piston for allowing detachment of the shaping piston from the reciprocating means and for allowing attachment of the permanent





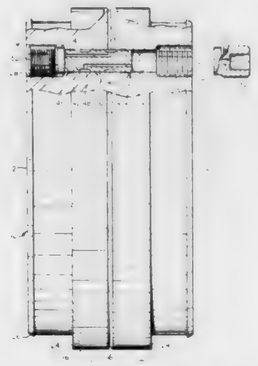
piston, whereby the permanent piston may be mounted within the cylinder.

4,389,922

REVERSING LOW PRESSURE LUBRICATING VALVE

Ronald Tatters; John E. Dolman, both of Victoria, Canada, and Donald R. Howell, deceased, late of Victoria, Canada (by June E. Howell, executrix), assignors to Her Majesty the Queen in right of Canada as represented by the Minister of Defence, Ottawa, Canada

Filed Mar. 20, 1981, Ser. No. 294,545
Claims priority, application Canada, Sep. 26, 1980, 361479
Int. Cl.³ F01B *31/10*
U.S. Cl. 92—156 **9 Claims**



1. A lubricating valve for use in a moveable piston having an internal chamber extending through the same, the piston also having a supply groove extending peripherally thereof and an internal channel which interconnects the chamber with the supply groove, said lubricating valve comprising:

(a) a body adapted to be closely received in said internal chamber and slidably moveable therein responsive to pressure changes in said internal chamber, said body including two oppositely disposed end faces, said internal chamber, in operation, having alternatively a low pressure side and a high pressure side;

(b) a plurality of distribution channels extending peripherally of the body; and

(c) a plurality of feed holes in said body corresponding to the distribution channels, each feed hole functioning to interconnect a related one of said distribution channels with one of said end faces and a portion of the internal chamber adjacent to it; such that a high pressure on one or other side of the piston causes said valve to be moved within said internal chamber in the direction of lower pressure while said distribution channels enable a lubricant to be conducted from the low pressure side of said internal chamber to the peripheral supply groove to lubricate the walls of a cylinder in which said piston is moveable.

4,389,923

EXHAUST APPARATUS FOR REMOVING POLLUTANTS

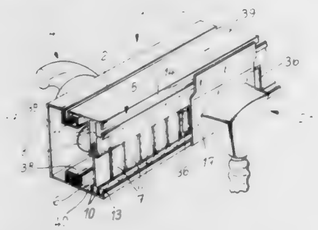
Horst Ludscheidt, Westfälische Str. 171, 4600 Dortmund, Fed. Rep. of Germany

Filed Apr. 16, 1981, Ser. No. 254,768

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1980, 3015129; Sep. 17, 1980, 3035052; Nov. 3, 1980, 3041350

Int. Cl.³ F23J *15/00*

U.S. Cl. 98—115 VM **26 Claims**



26. Apparatus for removing pollutants, particularly automotive exhaust gases, from work areas or the like comprising elongate stationary duct means for exhausting pollutants therethrough, elongate movable duct means, first bearing bracket means longitudinally movable along said stationary duct means connecting said movable duct means with said stationary duct means, first displaceable sealing means on said stationary duct means adapted to be moved by said first bearing bracket means between a position sealing said stationary duct means and a position allowing said movable duct means to be placed in flow communication with said stationary duct means as said first bearing bracket means is moved along said stationary duct means, exhaust hose means adapted to receive pollutants operatively connected with said movable duct means, second bearing bracket means longitudinally movable along said movable duct means connecting said exhaust hose means with said movable duct means, and second displaceable sealing means on said movable duct adapted to be moved by said second bearing bracket means between a position sealing said movable duct means and a position allowing said exhaust hose means to be placed in flow communication with said movable duct means as said second bearing bracket means is moved along said movable duct means, said first and said second displaceable sealing means comprising sealing elements constructed in the form of link elements connected with each other and movable relative to each other.

4,389,924

COFFEE MACHINE

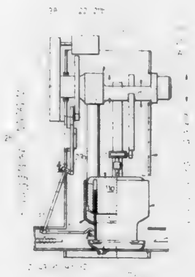
Helmut Hoesselbarth, Weilheim, Fed. Rep. of Germany, assignor to Wurttembergische Metallwarenfabrik, Fed. Rep. of Germany

Filed Apr. 14, 1981, Ser. No. 254,183

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014452

Int. Cl.³ A47J *31/36*

U.S. Cl. 99—289 R **35 Claims**



1. A coffee machine of the type including a horizontal guide track means and a brewing unit mounted for reciprocal movement on said guide track between predefined rest and brewing positions, said machine comprising:

first and second slide means mounted for sliding movement on said track means;

a straining unit mounted to said slide means for movement therewith;

a brewing chamber with an open bottom mounted above said straining unit to said second slide means for movement therewith, said brewing chamber being movable into a predefined loading position in alignment with said straining unit, said first and second slide means having cooperating means for moving said brewing chamber into said brewing position together with said straining unit, and into an emptying position at which it is horizontally displaced with respect to said straining unit;

a cylinder joined with said brewing chamber and extending thereabove, said cylinder forming a structural unit with said brewing chamber and being moved together therewith along said guide track means; and

plunger means mounted for axial movement at said brewing position in a direction generally perpendicular to the movement of said structural unit, whereby said plunger means is axially movable into and out of said cylinder when the same is in the brewing position, for forcing into said brewing chamber brewing water which is provided to said cylinder.

4,389,925

BEVERAGE EXTRACTING AND DISPENSING MACHINE

Giuseppe S. Piana, Milan, Italy, assignor to UNOPER S.r.l., Attinara, Italy

Filed Jun. 10, 1981, Ser. No. 272,240

Claims priority, application Italy, Jun. 11, 1980, 22723 A/80

Int. Cl.³ A47J *31/30*

U.S. Cl. 99—289 R **8 Claims**

1. A beverage extracting and dispensing machine for use with cartridges having an imperforate substantially cylindrical sidewall and upper and lower permeable substantially flat walls and containing a brewable product from which a beverage can be obtained by flowing hot water under pressure therethrough, said machine including:

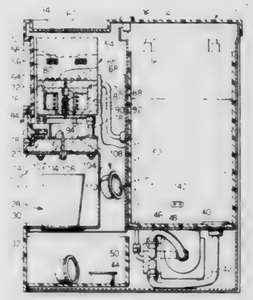
a lower support defining a sliding horizontal path on which the cartridge is adapted to rest and to slide with its lower wall, said sliding path having a leading section adapted to receive a new cartridge to be used, an intermediate brewing station and a trailing edge over which an old cartridge may be dumped after use,

an upper presser plate movable to and from said sliding path above said brewing station, said presser plate, when in a lowered position, being adapted to tightly engage the upper wall of a cartridge in the brewing station, and when in a raised position being disengaged from the cartridge, said presser plate having an inlet passage therethrough which opens to the upper permeable wall of the cartridge in the brewing station;

means for lowering the presser plate into engagement with the cartridge in the brewing station,

means for forcing hot water under pressure through said inlet passage and through said cartridge in the brewing station,

a filling station underlying said support and adapted to receive a container for the beverage, said support having a lower outlet nozzle which communicates with the brewing station through an outlet passage in the support to fill the container in the filling station with the beverage flowing from the lower wall of a cartridge in the brewing station,



a pair of movable clamping jaws mounted on said support, one on each side of said sliding path, said clamping jaws having respective concave surfaces adapted to closely embrace the sidewall of a cartridge in the brewing station, and respective bevelled cam surfaces turned towards said leading section of the sliding path and defining therebetween an entrance gap leading to the brewing station, said jaws being resiliently biassed towards each other to a cartridge clamping position and being adapted to be spread apart by the co-operation of the sidewall of a new cartridge with the bevelled cam surfaces when the cartridge is pushed from said leading section to the brewing station through the entrance gap, and said jaws, when spread apart, being adapted to allow an old cartridge to be pushed away from the brewing station and to be dumped over the trailing edge under the thrust of the new cartridge which is pushed to the brewing station,

control means operable to control a brewing cycle which includes the successive steps of lowering said presser plate to the lowered position and onto the cartridge in the brewing station, forcing a predetermined amount of hot water under pressure through said cartridge and dispensing a corresponding amount of beverage from said nozzle, and allowing said presser plate to return to the raised position,

and sensing means to sense the spread apart condition of said jaws for starting the operation of said control means to accomplish the brewing cycle.

4,389,926

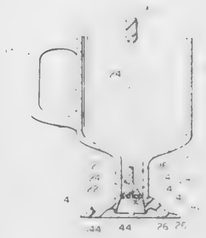
STOCK/SAUCE SEPARATOR

Auvin H. Joyner, 43-39 39th Pl., Apt. 43, Sunnyside, N.Y. 11104

Filed Jun. 15, 1981, Ser. No. 273,433

Int. Cl.³ A47J *43/28*

U.S. Cl. 99—495 **13 Claims**



1. A cooking utensil for separating oil and fats from liquids comprising: a storage vessel for storing therein a liquid which is to be separated from oil and fat at the top of the liquid, said storage vessel comprising a main body portion, and a secondary portion extending from said main body portion having an opening formed therein through which the liquid is removed from said main body portion; and valve means positioned within said secondary portion for controlling the outflow of the liquid through said second portion, said valve means comprising a shaft reciprocally movable within said secondary portion, a flexible element affixed to said shaft for movement therewith, said flexible element being movable along at least a portion of the length of said opening formed in said secondary portion to control the outflow of the liquid therethrough, and means for attaching said flexible element to said shaft; said opening having a first elongated straight portion extending from said main body portion, and a second portion extending from the end of said first portion not connected to said main body portion, said second portion being outwardly tapering in a direction away from said first portion along the length thereof, said flexible element having a diametrical cross-sectional area approximately equal to the diametrical cross sectional area defined within said first portion of said opening, to thereby restrict positioning of said flexible element to the junction between said first and second portions or within said second portion, whereby when said flexible element is positioned at said junction the liquid within said storage vessel is prevented from flowing through said opening, and when said flexible element is positioned within said second portion of said opening the liquid is allowed to flow outwardly therethrough, support means extending from said secondary portion for supporting said storage vessel onto a support surface, and foot means depending from said flexible element and extending through said support means, the length of said foot means being such as to just reach the bottom of said support means when said flexible element is positioned at said junction, whereby when said storage vessel is placed on a support surface said flexible element is retained at said junction.

4,389,927

METHOD AND APPARATUS FOR SEPARATING APRICOT KERNELS FROM HUSKS

Alan W. Crompton, 13 The Crescent, Marryatville, South Australia, Australia, assignor to Alan Woodhouse Crompton, Marryatville, Australia

Filed May 11, 1981, Ser. No. 262,291

Int. Cl.³ A23N *5/00*

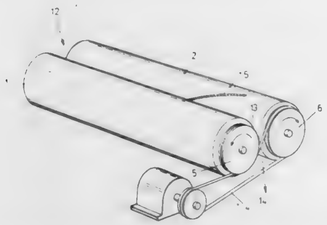
U.S. Cl. 99—575 **3 Claims**

1. Apparatus for finally separating kernels from partial shells of apricot stones wherein said apricot stones have been previously processed to medially fracture each of said shells creat-

ing a partial shell with said kernel therein, said apparatus including:

a pair of rollers for separating said kernel from said partial shell each spaced one from the other and supported for rotation and each having an outer surface and an input end and output end, and said rollers inclined with said input end elevated above said output end;

motive means connected to said rollers for clockwise rotation of one of said pair of rollers and counterclockwise rotation of the other of said pair of rollers whereby said medially fractured shell will be tumbled causing the release of some of



said kernels therefrom and pass said shells downward to be discharged from said outlet end;

means associated with said pair of rollers to adjust the space between rollers whereby only said kernels may pass between said rollers; and

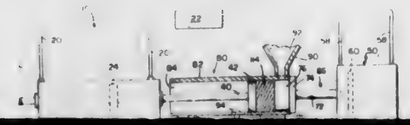
kernel dislodgment means projecting from at least one of said rollers of a height no greater than the space between said rollers and located toward the outlet end of said rollers, whereby tumbled partial shells still containing said kernels will be impacted and said kernels will be dislodged and fall through said space between said rollers.

4,389,928

METHOD FOR PRODUCING AND COLLECTING A LIQUID EXTRACT AND A DRY BY-PRODUCT FROM A MASH

Kermit H. Burgin, R.R. 1, Box 334, Whitestown, Ind. 46075

Division of Ser. No. 135,922, Mar. 31, 1980, Pat. No. 4,343,233.
This application Apr. 14, 1982, Ser. No. 368,215
Int. Cl.³ B30B *13/00*
U.S. Cl. 100—37 **4 Claims**



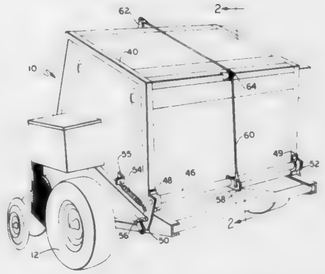
tract, expelling the dry by-product from the extraction chamber by moving the first and second plungers in the second direction to open the open end and discharge the dry by-product, and collecting the dry by-product.

4,389,929

LATCHING MECHANISM FOR A ROUND BALER

Leroy Kluver, Celina, and John Arnold, Coldwater, both of Ohio, assignors to The Paul Revere Corporation, Greenwich, Conn.

Filed Jul. 13, 1981, Ser. No. 282,548
Int. Cl.³ B30B *5/06*
U.S. Cl. 100—88 **8 Claims**



1. A latching mechanism for use with a baler comprising:

a bale forming cavity defined by peripheral elements having at least one wall member that can move relative to another when actuated by the pressure of a bale acting on said moveable wall member;

a pin secured to one of said wall members;

a latch plate containing a groove which engages said pin to secure the moveable wall members to one another, the latch plate being moveable relative to said pin;

means for enabling the partial disengagement of said latch plate and said pin in response to a predetermined pressure of the bale on said moveable wall member;

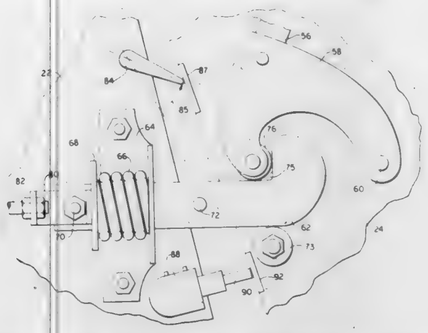
means for preventing the total disengagement of said latch plate and pin following said partial disengagement;

means responsive to the partial disengagement of said latch plate and pin for sensing and signaling that said predetermined pressure has been reached; and

means for totally disengaging said latch plate and pin for disconnecting said two members from each other.

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means responsive to said partial disengagement to signal that the predetermined pressure has been achieved; and



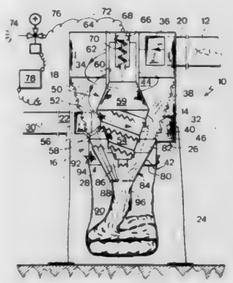
means for totally disengaging said latch members to permit said cavity members to move relative to one another.

4,389,931

APPARATUS FOR THE COMPACTION OF FIBERS

Hanspeter Sutter, Uster, Switzerland, assignor to Luwa AG, Zurich, Switzerland

Filed Jul. 20, 1981, Ser. No. 284,972
Claims priority, application Switzerland, Aug. 5, 1980, 5921/80
Int. Cl.³ B30B *9/00*
U.S. Cl. 100—90 **10 Claims**



1. An apparatus for the compaction of fibers comprising:

a housing;

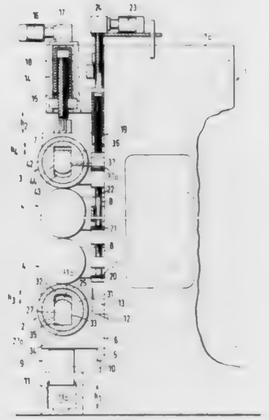
means defining a fiber outlet arranged at one side of said housing;

4,389,932

CALENDER WITH COMPOSITE OUTERMOST ROLLS

Josef Pav, Krefeld, Fed. Rep. of Germany, assignor to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,672
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3004913
Int. Cl.³ B30B *3/04*
U.S. Cl. 100—162 B **9 Claims**

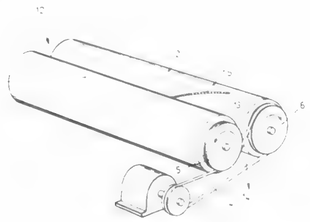


1. In a calender, the combination of a stand having upright guide means; a roll train mounted in said stand and including a plurality of rolls which comprise a first outermost roll constituting the lowermost roll and a second outermost roll constituting the uppermost roll of said train, each roll of said train being movable up and down relative to said stand, each of said outermost rolls comprising an elongated horizontal nonrotatable carrier and wherein at least some of said rolls are subject to treatment for removal of material from their peripheries whereby the diameters of the thus treated rolls are reduced; a rotary sleeve surrounding each carrier and movable with respect thereto radially of the corresponding outermost roll; hydrostatic displacing means installed in each sleeve and arranged to urge the sleeve toward the nearest roll of said train; and bearing means for the respective carrier, said bearing means being movable along said guide means with each of said sleeves being movable relative to the corresponding carrier to and from an end position, the sleeve and the carrier of one of said outermost rolls having cooperating limiting means for holding the sleeve of said one outermost roll against movement beyond the respective end position under the action of the

ing a partial shell with said kernel therein, said apparatus including:

a pair of rollers for separating said kernel from said partial shell each spaced one from the other and supported for rotation and each having an outer surface and an input end and output end, and said rollers inclined with said input end elevated above said output end;

motive means connected to said rollers for clockwise rotation of one of said pair of rollers and counterclockwise rotation of the other of said pair of rollers whereby said medially fractured shell will be tumbled causing the release of some of



said kernels therefrom and pass said shells downward to be discharged from said outlet end;

means associated with said pair of rollers to adjust the space between rollers whereby only said kernels may pass between said rollers; and

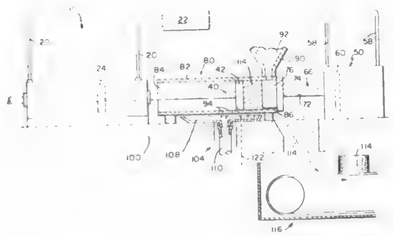
kernel dislodgment means projecting from at least one of said rollers of a height no greater than the space between said rollers and located toward the outlet end of said rollers, whereby tumbled partial shells still containing said kernels will be impacted and said kernels will be dislodged and fall through said space between said rollers.

4,389,928

METHOD FOR PRODUCING AND COLLECTING A LIQUID EXTRACT AND A DRY BY-PRODUCT FROM A MASH

Kermit H. Burgin, R.R. 1, Box 334, Whitestown, Ind. 46075

Division of Ser. No. 135,922, Mar. 31, 1980, Pat. No. 4,343,233.
This application Apr. 14, 1982, Ser. No. 368,215
Int. Cl.³ B30B *13/00*
U.S. Cl. 100—37 **4 Claims**



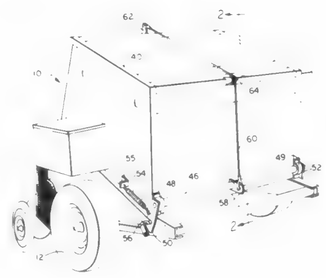
1. A method for producing and collecting a liquid extract and a dry by-product from a mash, comprising the steps of moving a first plunger in a first direction to close an open end of an extraction chamber, moving a second plunger in the first direction within the chamber to open a filler opening in the chamber in proximity to the open end to allow the chamber to be filled with mash, further moving the first plunger in the first direction in the chamber to close the filler opening, moving the second plunger in a second direction opposite to the first direction in the chamber to compress the mash between the first and second plungers thereby to extract the liquid and form a pressed dry by-product therefrom, collecting the liquid extract, expelling the dry by-product from the extraction chamber by moving the first and second plungers in the second direction to open the open end and discharge the dry by-product, and collecting the dry by-product.

4,389,929

LATCHING MECHANISM FOR A ROUND BALER

Leroy Kluver, Celina, and John Arnold, Coldwater, both of Ohio, assignors to The Paul Revere Corporation, Greenwich, Conn.

Filed Jul. 13, 1981, Ser. No. 282,548
Int. Cl.³ B30B *5/06*
U.S. Cl. 100—88 **8 Claims**



1. A latching mechanism for use with a baler comprising:

a bale forming cavity defined by peripheral elements having at least one wall member that can move relative to another when actuated by the pressure of a bale acting on said moveable wall member;

a pin secured to one of said wall members;

a latch plate containing a groove which engages said pin to secure the moveable wall members to one another, the latch plate being moveable relative to said pin;

means for enabling the partial disengagement of said latch plate and said pin in response to a predetermined pressure of the bale on said moveable wall member;

means for preventing the total disengagement of said latch plate and pin following said partial disengagement;

means responsive to the partial disengagement of said latch plate and pin for sensing and signaling that said predetermined pressure has been reached; and

means for totally disengaging said latch plate and pin for disconnecting said two members from each other.

4,389,930

PRESSURE SENSING LATCH FOR A ROUND BALER

Paul C. Rutschilling, Coldwater, Ohio, assignor to The Paul Revere Corporation, Greenwich, Conn.

Filed Jul. 13, 1981, Ser. No. 283,045
Int. Cl.³ B30B *5/06;* **A01D** *39/00*
U.S. Cl. 100—88 **9 Claims**

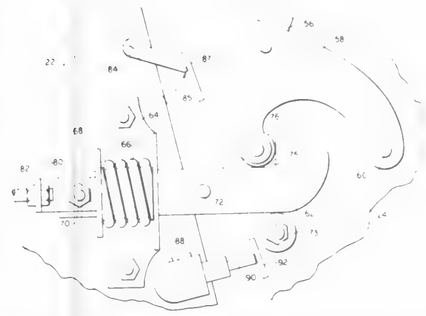
1. A latching mechanism for use with a baler comprising:

a bale forming cavity defined by peripheral elements having at least one wall member that can move relative to another;

a latching assembly having a first latch member secured to said moveable wall member and a second latch member secured to the other, the first latch member and second latch member being engageable to secure the moveable wall member from moving relative to another;

means associated with said latching assembly for enabling said latch members to partially disengage in response to a predetermined pressure on said moveable wall member;

means responsive to said partial disengagement to signal that the predetermined pressure has been achieved; and



means for totally disengaging said latch members to permit said cavity members to move relative to one another.

4,389,931

APPARATUS FOR THE COMPACTION OF FIBERS

Hanspeter Sutter, Uster, Switzerland, assignor to Luwa AG, Zurich, Switzerland

Filed Jul. 20, 1981, Ser. No. 284,972
Claims priority, application Switzerland, Aug. 5, 1980, 5921/80
Int. Cl.³ B30B *9/00*
U.S. Cl. 100—90 **10 Claims**

1. An apparatus for the compaction of fibers comprising:

a housing;

means defining a fiber outlet arranged at one side of said housing;

a yieldable and expandable diaphragm means operatively associated with the fiber outlet;

a driveable plunger arranged in said housing and directed towards said fiber outlet;

means for moving said driveable plunger between a retracted terminal position and an advanced terminal position;

said means providing said fiber outlet forming a fiber chute which decreases in cross-section in a fiber outlet direction;

said fiber chute having an end portion located at an outlet side of said fiber chute;

at least said end portion of said fiber chute being formed by said diaphragm means;

said plunger, in its advanced terminal postion, directly penetrating into said diaphragm means; and

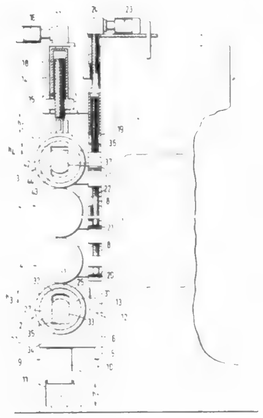
said diaphragm means being predominantly resilient in a direction transverse to said fiber outlet direction.

4,389,932

CALENDER WITH COMPOSITE OUTERMOST ROLLS

Josef Pav, Krefeld, Fed. Rep. of Germany, assignor to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,672
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3004913
Int. Cl.³ B30B *3/04*
U.S. Cl. 100—162 B **9 Claims**



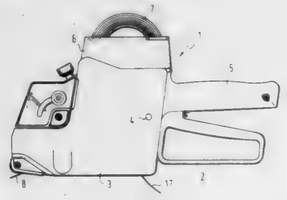
1. In a calender, the combination of a stand having upright guide means; a roll train mounted in said stand and including a plurality of rolls which comprise a first outermost roll constituting the lowermost roll and a second outermost roll constituting the uppermost roll of said train, each roll of said train being movable up and down relative to said stand, each of said outermost rolls comprising an elongated horizontal nonrotatable carrier and wherein at least some of said rolls are subject to treatment for removal of material from their peripheries whereby the diameters of the thus treated rolls are reduced; a rotary sleeve surrounding each carrier and movable with respect thereto radially of the corresponding outermost roll; hydrostatic displacing means installed in each sleeve and arranged to urge the sleeve toward the nearest roll of said train; and bearing means for the respective carrier, said bearing means being movable along said guide means with each of said sleeves being movable relative to the corresponding carrier to and from an end position, the sleeve and the carrier of one of said outermost rolls having cooperating limiting means for holding the sleeve of said one outermost roll against movement beyond the respective end position under the action of the corresponding displacing means, wherein the extent of radial movement of the sleeve of said one outermost roll plus the extent of movement of the bearings of said one outermost roll relative to said guide means suffices to allow for removal of any selected roll of said train from said stand; and means for moving at least one of said bearing means including means for shifting said bearing means for the carrier of said uppermost roll lengthwise of said guide means so as to compensate for the reduction of diameters of the treated rolls, and hydrostatic motor moving means for moving the carrier of said lowermost roll upwardly relative to said guide means, said shifting means being arranged to perform strokes having a length which at least equals the anticipated maximum combined reduction of diameters of said rolls, said stand having stationary stop means and wherein the bearing means of said lowermost roll has at least one portion normally abutting against said stop means under the action of said motor.

4,389,933
CALENDER
Josef Pav, Krefeld, Fed. Rep. of Germany, assignor to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany
Filed Feb. 6, 1981, Ser. No. 232,197
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3004915
Int. Cl.³ B30B 3/04
U.S. Cl. 100—162 B 20 Claims



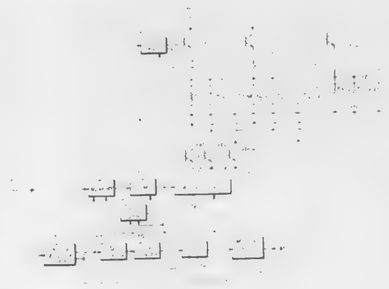
1. In a calendar, the combination of a stand having a pair of spaced apart upright guide means; a train of superimposed rolls in said stand, said rolls including an uppermost roll and a lowermost roll, said lowermost roll including a carrier non-rotatably mounted in said stand and a rotary sleeve surrounding said carrier and movable thereon radially toward and away from an upper end position, said carrier having first and second end portions respectively adjacent said first and second guide means and further comprising first and second bearings for the respective end portions of said carrier, said bearings being movable up and down along the corresponding guide means, said sleeve and said carrier having cooperating abutment means engaging each other in the upper end position of said sleeve; fluid-operated displacing means provided in said sleeve and operative to normally urge said sleeve to said upper end position; and means for biasing said uppermost roll toward said sleeve.

4,389,934
HAND LABELLING APPARATUS
Günter Holland-Letz, Hirschhorn, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Jul. 17, 1981, Ser. No. 284,203
Int. Cl.³ B41L 47/46
U.S. Cl. 101—92 12 Claims



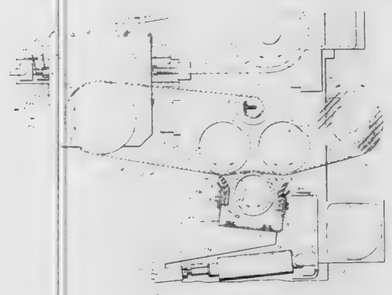
1. A hand labelling apparatus for printing and dispensing labels from a label strip including a carrier tape and said labels adhered to said tape, said apparatus comprising
a label strip supply roll;
a peel edge disposed downstream of said supply roll;
a tape feed mechanism disposed downstream of said peel edge and engaging said carrier tape to stepwise feed the label strip in a forward direction to said peel edge at which point the carrier tape is deflected around the peel edge and the labels are substantially separated from the carrier tape;
a printing mechanism disposed upstream of the peel edge having changeable type and movable from a non-printing position to a printing zone for printing predetermined information on successive labels, the distance between the printing zone and peel edge exceeding the length of each of said labels so that one of said labels will be disposed between the peel edge and the printing zone after each stepwise feeding of the label strip to said peel edge by the tape feeding mechanism;
return means for feeding the label strip in a return direction opposite to said forward direction;
an operating lever pivotable between a rest position and a working position,
means for connecting said operating lever to said return means and said tape feed and printing mechanisms so that (a) during movement of the operating lever from the rest position to the working position, said return means feeds said one label in said return direction to said print zone, (b) said one label is then printed by said printing mechanism, and (c) during movement of the operating lever from its working position to its rest position, the printed label is fed in the forward direction by the tape feed means to the peel edge where it is substantially separated from the carrier tape;
return stop means for disabling the return means for a predetermined portion of the movement of the operating lever between its rest and working positions so that the label strip movement in the forward direction in response to movement of said operating lever from the working position to the rest position exceeds that in the return direction by an amount equal to the length of one label
whereby in response to the movement of the operating lever to its rest position the last printed label is moved past said peel edge and no printed labels remain in said labelling apparatus even though the distance between said peel edge and the printing zone exceeds the length of each label.

4,389,935
METHOD AND APPARATUS FOR CONTROLLING A PRINTER
Kiyoshi Arai, Higashikurume, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 2, 1981, Ser. No. 317,055
Claims priority, application Japan, Nov. 5, 1980, 55-155541
Int. Cl.³ B41J 7/92, 7/70
U.S. Cl. 101—93.01 13 Claims



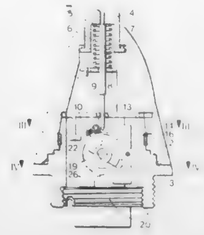
1. Apparatus for controlling a printer of the type having plural print heads each being selectively energizable to print an indicium whose relative intensity is represented by a data level and is determined by the duration of energization of that print head, such that an indicium of uniform intensity is printed by a respective print head in response to a predetermined data level regardless of the number of print heads that are energized concurrently, said apparatus comprising storage means for storing data representing the intensity of the indicia to be printed by said print heads; intensity level signal generating means for generating successive, progressively increasing intensity level signals, each signal representing a respective intensity of an indicium to be printed; read-out means for reading out at a read-out rate the data stored in said storage means; comparison means for comparing the data read out for each print head to the intensity level signal then being generated, to produce a respective energizing signal if the intensity level represented by said data exceeds the intensity represented by said generated intensity level signal; energizing means for energizing those print heads for which energizing signals have been produced and maintaining the energization of those print heads until said energizing signals terminate; detecting means for detecting the number of print heads for which energizing signals are produced when a respective intensity level signal is produced; and varying means for varying the rate at which said intensity level signals are generated and the read-out rate at which said data is read out of said storage means as a function of said detected number and thereby vary the duration that said energizing means energizes said print heads as a function of the number of print heads which are energized concurrently.

4,389,936
CLEANING ATTACHMENT FOR SCREEN PRINTER
David Jaffa, and Sandor Szarka, both of Franklin Lakes, N.J., assignors to Precision Screen Machines, Inc., Hawthorne, N.J.
Filed Nov. 18, 1980, Ser. No. 207,884
Int. Cl.³ B41F 35/00; B41L 41/00
U.S. Cl. 101—123 15 Claims



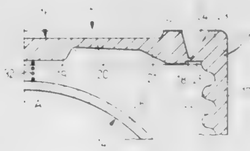
1. A printing apparatus for printing on a surface of a workpiece comprising:
a support frame,
screen printing means mounted on said support frame,
said screen printing means having an upper and a lower surface, and
cleaning means mounted on said support frame being positionally disposed adjacent said screen and adapted to clean said lower surface of said screen printing means with movement of said workpiece outwardly from under the printing screen means, wherein the cleaning means is a belt which has a portion thereof extended into contact with the underside of the screen printing means from said adjacent position and retracted back after cleaning.

4,389,937
FUZE FOR NON-SPINNING PROJECTILES
Jean-Pierre Golay, Viry, and Jean-Louis Uberti, Ferney-Voltaire, both of France, assignors to Mefina S.A., Fribourg, Switzerland
Filed Jan. 16, 1981, Ser. No. 225,601
Claims priority, application Switzerland, Jan. 29, 1980, 691/80
Int. Cl.³ F42C 9/02, 15/04, 15/34
U.S. Cl. 102—249 5 Claims



1. A fuze for a non-spinning projectile including a body (1) a cap (2) rotatably mounted on said body, a hammer (5) in said cap, a detonator (20) in said body, a detonator safety device and a muzzle safety device, said fuze comprising pivot means (21) within said body, a rotor (11) mounted on said pivot means between a safety position and an armed position around an axis transverse to the axis of said fuze, a detonator primer (19) carried by said rotor, an inertia mass (10) mounted on said pivot means (21), a support (8) disposed in front of said rotor (11), a first spring (9) connecting said inertia mass (10) to said support (8), retaining means (22) secured to said cap (2) to prevent said inertia mass (10) from pivoting against the action of said spring (9), clutch means (12) rotatably secured to said pivot means (21), said clutch means (12) meshing with said fuze body (1) to prevent rotation of said rotor (11) whereby immobilizing of said rotor in an inclined position with respect to the axis of the fuze places said detonator primer (19) out of reach of said hammer (5) and away from the detonator (20) to provide detonator safety.

4,389,938
ILLUMINATING ROCKET POSSESSING A CYLINDRICAL CONTAINER
Hugo Sigrist, Hinwil, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland
Filed Mar. 30, 1981, Ser. No. 249,214
Claims priority, application Switzerland, Apr. 22, 1980, 3087/80
Int. Cl.³ F42B 4/28
U.S. Cl. 102—337 4 Claims



1. A flare rocket arrangement comprising:
a substantially cylindrical container having a front portion and a rear portion;
means defining an end wall for closing said front portion;
a removable cover member provided at the rear portion;
a flare rocket arranged within said container;

said container being rupturable at said end wall at said front portion when the flare rocket is ignited;

said container and flare rocket being arranged such that between the container and flare rocket there is provided an acceleration path, so that the flare rocket, when ignited, develops sufficient kinetic energy for rupturing the container;

the front end wall of the container being constructed to be resiliently yielding and can be bent-through by an amount corresponding to said accleration path due to the action of thrust forces of the ignited flare rocket;

said front end wall of the container possesses a substantially ring-shaped reference fracture location and a substantially disk-shaped inner portion;

said reference fracture location delimiting said ring-shaped inner portion;

the diameter of said inner portion being selected such that after rupturing said disk-shaped inner portion of said front end wall the ignited flare rocket can depart from said container;

said means defining said end wall comprises a threadable cover member provided for said container;

said threadable cover member being subdivided by said reference fracture location into said disk-shaped inner portion and said ring-shaped outer portion; and

said reference fracture location comprises a front substantially ring-shaped groove of substantially V-shaped configuration in cross-section and a rear, substantially ring-shaped groove of substantially rectangular shape in cross-section.

4,389,939

SHOTGUN CARTRIDGE

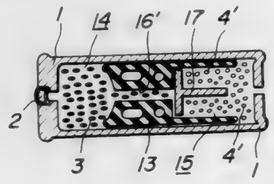
Hiroshi Ofuji, 21-14, Togoshi 6-chome, Shinagawa-ku, Tokyo, Japan

Filed Aug. 25, 1980, Ser. No. 181,236

Claims priority, application Japan, Mar. 28, 1980, 55-40160[U]

Int. Cl.³ F42B *7/02*

U.S. Cl. 102—458 **6 Claims**



1. A shotgun cartridge comprising

a hollow cylindrical shell having first and second ends and a longitudinal axis;

a charge of shot;

a plastic wad located intermediate the first and second ends of said shell, said plastic wad having an opening therein extending along said longitudinal axis and including a shot cup projecting from one end thereof, the other end of said plastic wad forming a first space between the first end of said shell and said wad for receiving gun powder, said shot cup and the second end of said shell defining a second space for receiving said charge of shot, said opening connecting said first space with said second space;

an identifying agent coating each shot in said charge, said identifying agent being ignitable to produce a visible trace; and

a solid firing device consisting solely of a combustible material located entirely within said second space, said solid firing device comprising a disc portion having first and second parallel surfaces with diameters greater than that of said opening and a projection having one of a cylindrical and rectangular shape extending from the first surface of said disc portion into said second space, the second surface of said disc facing the opening in said plastic wad and the projection of said solid firing device and the first surface of said disc being in physical contact with at least some of said shot, the igniting of said powder causing a flame to propagate through the opening in said plastic wad to ignite said firing device which in turn ignites the identifying agent coating said shot, the spread of said shot after ejection from said shell thereby being made visible by the burning of said identifying agent.

4,389,940

ANTIPERSONNEL MINE

Gray C. Trembly, Arlington; Ernest Goldberg, Westford, and Edward B. Dragun, Sudbury, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 2, 1976, Ser. No. 673,018

Int. Cl.³ F42B *13/50;* **F42C** *15/34*

U.S. Cl. 102—489 **2 Claims**



1. In an antipersonnel mine for delivery by a round of artillery having an explosive lead for a main charge, such lead being mounted in a slide interposed between such charge and an explosive detonator within such mine, the slide having a safe position wherein such detonator is inhibited from exploding such lead and an operating position wherein such detonator is allowed to explode such lead, the improvement comprising:

(a) means actuated by the slide to provide a visible indication outside such mine of the position of the slide and of such lead;

(b) a sear spring disposed within the mine in contact with the slide when the slide is in its safe condition; and

(c) a pressure-actuated latch disposed within the mine, such latch normally being in contact with the slide to lock the slide in its safe condition, such latch being disengaged by explosion of the round of artillery.

4,389,941

DRIVERLESS VEHICLE CONVEYOR SYSTEM

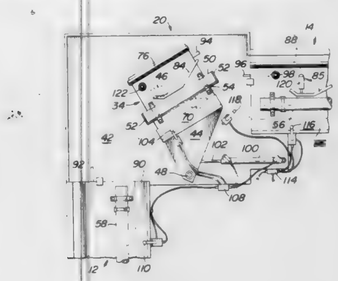
Donald M. Berk, Easton; Charles E. Jacoby, Bethlehem, and Larry Reagan, Wind Gap, all of Pa., assignors to SI Handling Systems Inc., Easton, Pa.

Filed Nov. 21, 1980, Ser. No. 209,243

Int. Cl.³ B61J *1/10;* **B61B** *13/12*

U.S. Cl. 104—49 **11 Claims**

1. In a driverless vehicle system wherein a driverless vehicle has support wheels which ride on tracks, comprising two straight non-parallel sections of track having adjacent ends spaced from one another by a gap, a drive shaft parallel to the tracks in each of said straight sections, a transfer vehicle in said gap for supporting and transferring driverless vehicles across the gap from one straight section to the other, a drive shaft on said transfer vehicle, said transfer vehicle being mounted for oscillation along an arc about an upright axis from a receiving position adjacent one end of the gap to a discharge position adjacent the other end of the gap, said upright axis being located within the included angle defined by an extension of the axes of said drive shafts in said straight sections, motor means



connected to said transfer vehicle for oscillating said transfer vehicle, means for causing the rotation of one drive shaft associated with one of said straight sections to transfer a driverless vehicle onto the transfer vehicle and for using rotation of the drive shaft associated with the other straight section to discharge a driverless vehicle off the transfer vehicle, means for accumulating a driverless vehicle on one end of said straight sections of track when said transfer vehicle is not in its receiving position, limit stop means on the transfer vehicle for restraining a vehicle from discharging off the transfer vehicle, and means for releasing the last mentioned limit stop means when the transfer vehicle is in its discharge position.

4,389,942

SWITCH FOR A CARRIAGE OF A TWO TRACK SUSPENSION RAILROAD

Hans-Jürgen Düll, Langensendelbach, and Adolf Hillmer, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,639

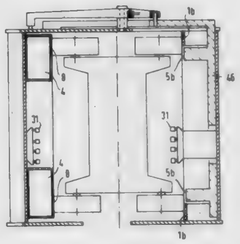
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949978

Int. Cl.³ B61B *3/00*

U.S. Cl. 104—103 **4 Claims**

1. In a switch for the carriage of a two track suspension railroad, in which two running surfaces for support wheels and, approximately perpendicularly thereto, parallel guide surfaces for lateral guide rollers are provided and in which, at the fork point of the inner guide surfaces, a central switch point pivoted about a vertical axis with guide surfaces on both long sides is linked onto the guide surfaces, the improvement comprising, the central switch point being made of one piece and two additional switch points in the region of its free end forming parallel guide surfaces, said additional switch points arranged in recesses of fixed guide surfaces and supported to be swung between the fixed guide surfaces and the central switch point, said guide rollers arranged in such a manner that they extend over the recess in the fixed guide surfaces and only one-half of their width cooperates with the fixed guide surfaces





on the one side, and on the other side with one of the additional switch points.

4,389,943

TRANSFER TRUCK

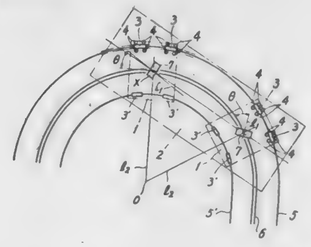
Minoru Watatani, Chiba, Japan, assignor to S. I. Handling Systems, Inc., Easton, Pa.

Filed Dec. 5, 1980, Ser. No. 213,422

Claims priority, application Japan, Dec. 12, 1979, 54-172716[U]

Int. Cl.³ B61B *13/12*

U.S. Cl. 104—166 **3 Claims**



3. A driverless transfer truck system comprising rails, a chassis having support wheels for riding said rails, a drive shaft rotatable about its axis disposed parallel to and between said rails, at least two drive wheels supported by the truck chassis for engagement with said drive shaft at the 12 o'clock position thereon so that a propelling force is produced by friction engagement with the drive shaft, means for enabling the truck

chassis to negotiate turns at a uniform speed, said means including a pair of bogies pivotably mounted to said chassis and located below the chassis, one of said drive wheels being centrally supported by each of said bogies, each bogie supporting two sets of said support wheels, said support wheels and drive wheels being at substantially the same elevation.

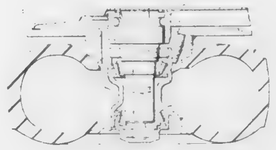
4,389,944
CONVEYOR CONTROL MEANS
Leon Linton, and David B. Kiss, both of Memphis, Tenn., assignors to Southern Systems, Inc., Memphis, Tenn.
Filed Mar. 30, 1981, Ser. No. 249,221
Int. Cl.³ B61B *10/02*
U.S. Cl. 104—172 S **5 Claims**





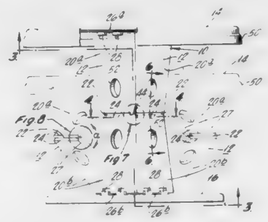
4. Control means for a conveyor system which includes a trolley member selectively driven by a pusher member to move a load from one location to another, said control means comprising: a dog means attached to said trolley member for movement between a first position in engagement with said pusher member and a second position out of engagement with said pusher member; a first drive means for moving said dog means from said second position to said first position; a second drive means for moving said dog means from said first position to said second position, said dog means staying in either of said first or second positions until moved to the other of said first or second positions by said first or second drive means; drivable means attached to said trolley member for being moved between first and second positions by said first and second drive means; pivot means for pivotally attaching said drivable means to said trolley member; and linkage means for causing said dog means to move to said first position when said drivable means is moved to said first position and to move to said second position when said drivable means is moved to said second position; said linkage means including a first link member having a first end attached to said drivable means for pivotal movement therewith and having a second end, including a second link member having a first end pivotally attached to said dog means and having a second end, and including a pivot member for pivotally attaching said second ends of said first and second link members to one another, the axis of said pivot member being located on one side of the axis of said pivot means when said dog means is in said first position and being located on the other side of the axis of said pivot means when said dog means is in said second position.

4,389,945
TRANSVERSE GUIDE ROLLER ARRANGEMENT FOR A TRACK GUIDED VEHICLE
Friedrich Bährle, Kernen-Rommelshausen; Hellmuth Binder; Wolfram Meyer, both of Stuttgart, and Helmut Wulf, Ostfildern, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Filed Sep. 2, 1980, Ser. No. 183,101
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935386
Int. Cl.³ B61B *12/02*; **B61F** *9/00*
U.S. Cl. 104—247 **35 Claims**



1. A transverse guide arrangement for a vehicle adapted to be mechanically guided along a guide track, the arrangement including at least one support arm means adapted to be mounted at a wheel of the vehicle, at least one transverse guide roller means having a rim and a hub, the hub being rotatably supported on a journal adapted to be attached to an end of the supporting arm means, means for enabling an exchangeable mounting of the journal to the supporting arm means, a rubber tire adapted to be mounted on the rim, characterized in that the hub and the rim are constructionally joined to form a hollow spool-shaped body which, with its interior side, forms the hub and, with its exterior side, forms the rim.

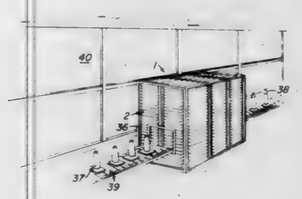
4,389,946
FOLDING FURNITURE PIECE
Sung T. Hwang, Flat 5, 4th Floor, 6 Tin Heung St., Kowloon, Hong Kong
Continuation of Ser. No. 900,193, Apr. 26, 1978, abandoned.
This application Apr. 2, 1980, Ser. No. 136,516
Claims priority, application Taiwan, Nov. 15, 1977, 6623505
Int. Cl.³ A47B *3/00*
U.S. Cl. 108—115 **2 Claims**



1. A folding table, stool or like support device comprising a top, a base and collapsible column means interconnecting the top and the base, the column means comprising more than two articulated support elements each comprising a first member having two spaced side edges and being pivotally connected at an upper end to the top and a second member having two spaced side edges and being pivotally connected at a lower end to the base, the first and second members being hingedly interconnected for pivoting outwardly with respect to a central axis

extending through the top and the base to a collapsed position with the top adjacent the base and for pivoting inwardly with respect to the central axis to an over-center upright position in which the side edges of each articulated support element are in engagement over a major part, including at the hinge portion, of the length of the articulated support elements thereby to provide mutual support to maintain them in the upright position, wherein each member of each articulated support element has a beveled side edge and a side edge provided with a flange configured to mate with the beveled side edge of an adjacent member of an adjacent articulated support element, the flange on the first member being aligned with the flange on the second member of an adjacent articulated support element when the articulated support members are in the upright position and wherein the flange of the first member is provided adjacent its hinge connection with a downwardly extending projection and the flange of the second member of an adjacent articulated support element is provided adjacent its hinge connection with an upwardly extending projection, the projections being engageable when the articulated support elements are in the upright position and being resiliently deformable releasably to lock the articulated support elements in the upright position.

4,389,947
BLAST SUPPRESSIVE SHIELDING
Paul V. King, Joppatowne; Albert F. Becher, Fallston, and Wilmer P. Henderson, Bel Air, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Division of Ser. No. 699,738, Jun. 24, 1976, abandoned, which is a continuation of Ser. No. 495,177, Aug. 6, 1974, abandoned.
This application Sep. 24, 1979, Ser. No. 78,348
Int. Cl.³ F41H *5/00*
U.S. Cl. 109—1 S **5 Claims**



1. A blast hazard control system for the manufacture of hazardous items including munitions, explosives, propellants and pyrotechnics, comprising:

a building structure;

an assembly line in said structure for conveying and performing operations on said items; and

a blast suppressive shield enclosing at least one area of said assembly line in which hazardous operations are performed on said items,

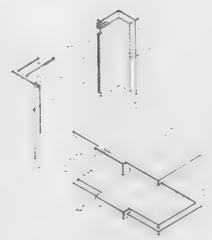
wherein said blast suppressive shield comprises a multiplayer metal or metal-like composite which includes, in combination:

a first apertured plate in the form of a louvered plate suitable for slowing or confining blast debris and fragments;

a second apertured plate in the form of a perforated plate defining a plurality of gas flow apertures suitable for attenuating blast overpressure; and

means for mounting said first and second apertured plates in spaced apart and substantially fixed position relative to each other.

4,389,948
SECURITY ENCLOSURES
Raymond L. Sands, Solihull, and Geoffrey M. Ward, Wombourne, both of England, assignors to Chubb & Son's Lock and Safe Company Limited, London, England
Filed Jul. 17, 1981, Ser. No. 284,293
Claims priority, application United Kingdom, Jul. 18, 1980, 8023615
Int. Cl.³ E04B *2/02*
U.S. Cl. 109—82 **16 Claims**



1. A security enclosure constructed by assembling together in demountable fashion a plurality of separate, pre-fabricated panels, wherein each perpendicular corner of the assembled enclosure is provided in at least one panel which extends integrally from the respective corner to define significant portions of both of the adjacent sides of the enclosure, and wherein at least each such corner panel is provided with a penetration-resistant barrier consisting essentially of a fibre-reinforced concrete material.

4,389,949
METHOD OF AND ARRANGEMENT FOR SUPPLYING A FUEL TO A PLURALITY OF BURNERS OF A FURNACE
Dieter Heep, Bergatreute, Fed. Rep. of Germany, assignor to Waeschle Machinenfabrik GmbH, Ravensburg, Fed. Rep. of Germany
Filed Oct. 28, 1981, Ser. No. 315,995
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1980, 3042661
Int. Cl.³ F23K *3/02*
U.S. Cl. 110—101 CF **20 Claims**



1. A method of supplying a fuel to a plurality of burners of a heating installation, comprising the steps of providing a plurality of dosing elements arranged to individually dose a fuel to a plurality of burners and having an excessive available amount of the fuel; withdrawing from the dosing elements an unused amount of the fuel; determining a difference between the available amount and the nonused amount of the fuel to obtain an actual consumed amount of the fuel; comparing the thus obtained actual consumed amount of the fuel with a desired consumption amount of the fuel; and controlling the

dosing of the fuel to each of the burners in dependence upon the results of said comparing step.

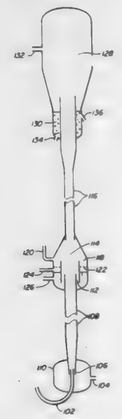
5. An arrangement for supplying a fuel to a plurality of burners of a heating installation, comprising a plurality of dosing elements arranged to individually dose a fuel to a plurality of burners and having an excessive available amount of the fuel; means for withdrawing from said dosing elements a nonused amount of the fuel; means for determining a difference between the available amount and the nonused amount of the fuel to obtain an actual consumed amount of the fuel; and means for comparing the thus obtained actual consumed amount of the fuel with a desired consumption amount of the fuel and controlling the dosing of the fuel to each of the burners in dependence upon said comparison.

4,389,950

PROCESS FOR BURNING RETORTED OIL SHALE AND IMPROVED COMBUSTOR

Corey A. Bertelsen, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 246,555, Mar. 23, 1981, Pat. No. 4,336,126.
This application Feb. 19, 1982, Ser. No. 349,957
Int. Cl.³ B09B *3/00*; **C10G** *1/00*
U.S. Cl. 110—235 **2 Claims**



1. A combustion device for burning particulate retorted oil shale separated into a fine particulate feedstream and coarse particulate feedstream which comprises:

(a) a generally vertical main combustion chamber having an upper zone closed at the top, a middle zone, and a lower zone open at the bottom, said lower zone having means for pneumatically entraining solids entering said lower zone, said middle zone being an elongate tubular zone adapted for the combustion of entrained particulate solids, said upper zone being adapted for the disengagement of entrained coarse particles and for the collection and removal of the disengaged coarse particles, said upper zone further having an outlet for the removal of combustion gases and fine entrained particles;

(b) a generally vertical tubular fine solids combustion chamber adapted for burning pneumatically entrained fine solids, said fine solids combustion chamber having an open upper end communicating with the lower zone of the main combustion chamber, said fine solids combustion chamber further having a lower end having an inlet for the introduction of the fine particulate feedstream and means for pneumatically entraining the fine particulate material and conveying it the length of the fine solids combustion chamber;

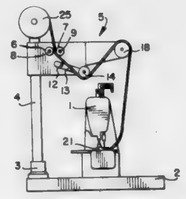
(c) a coarse solids preburning chamber having an inlet for the introduction of the coarse particulate feedstream, means for fluidizing a burning bed of the coarse particulate material, and means for communication with the lower zone of the main combustion chamber.

4,389,951

MATERIAL DISPENSING MEANS FOR SEWING MACHINES

Wolf R. von Hagen, Hemmingen, Fed. Rep. of Germany, assignor to Union Special G.m.b.H., Stuttgart, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 238,773
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007652
Int. Cl.³ D05B *23/00*
U.S. Cl. 112—121.27 **11 Claims**



1. In combination with a machine capable of having a strip-like material fed therethrough, a mechanism suited for use in supplying strip like material from a source thereof to said machine, said mechanism comprising:

means adapted to feed the strip-like material to said machine at a rate which is function of the machine speed;

means for automatically controlling the feed means in response to a control signal having a selective premeasurable value proportional to the speed of the machine; and

means responsive to variations in the speed of said machine and the feed rate of the feed means for controlling the amount of material being fed to the machine.

2. A device for automatically delivering tape from a supply roll to a sewing machine in accordance with the operational demands of the latter, comprising, in combination:

operative means responsive to the operative speed of the machine and arranged proximate thereto for withdrawing tape from the supply roll and delivering it to said machine;

means adapted to selectively control the withdrawal rate of the operative means as a function of machine speed; and

comparator means for varying the withdrawal rate of the operative means relative to the demands of the sewing machine as a function of the amount of tape between the withdrawing means and said sewing machine.

5. An apparatus suited for use in supplying tape from a source thereof to a machine, comprising:

tape dispensing means coupled to a closed loop control means, said closed loop control means including motor means for operating said tape dispensing means in response to machine speed, means coupled to said motor means for producing a command signal controlling the operation of the tape dispensing means, and comparator means which operatively measures the advance rate of the tape dispensing means against machine use requirements and effects the tape advancement as a resultant of that measurement.

4,389,952

NEEDLE BAR OPERATED TRIMMER

Ernst Dreier, Steckborn, Switzerland, and Richard Höss, Singen, Fed. Rep. of Germany, assignors to Fritz Gegauf Aktiengesellschaft Bernina-Machmaschinenfabrik, Steckborn, Switzerland

Filed Jun. 25, 1981, Ser. No. 277,388
Claims priority, application Switzerland, Jun. 30, 1980, 5007/80
Int. Cl.³ D05B *65/02*
U.S. Cl. 112—128 R **9 Claims**



1. An attachment for use with a sewing machine for cutting the edges of material, said sewing machine containing a needle bar and a presser bar, which comprises,

a fixed blade containing a cutting edge and a movable blade, said movable blade being driven by said needle bar of the sewing machine,

a holding means for mounting the fixed blade thereto, said holding means being, in turn, detachably mounted at one end to said presser bar of the sewing machine and provided at the other end thereof with a foot plate,

a presser foot sole operatively connected to said foot plate in a pendulating fashion and said movable blade being pivotable connected to said holding means, and

an intermediate articulated lever system supported by said holding means, said intermediate articulated lever system providing driving connection between the needle bar and the movable blade wherein said movable blade is a double-armed lever, one arm being provided with a cutting edge which cooperate with the cutting edge of the fixed blade to provide a scissor-like action and the other arm thereof being pivotally connected by slot means to said needle bar through said intermediate articulated lever system.

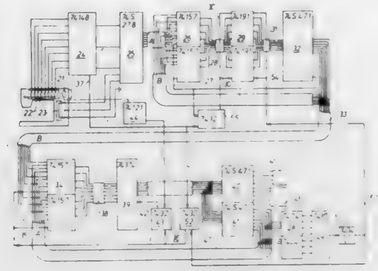
4,389,953

SEWING MACHINE FOR SEWING FANCY SEAMS

Bengt A. Bergvall, Huskvarna, Sweden, assignor to Husqvarna, Huskvarna, Sweden

PCT No. PCT/SE80/00173, § 371 Date Dec. 24, 1980, § 102(e) Date Dec. 24, 1980, PCT Pub. No. WO80/02851, PCT Pub. Date Dec. 24, 1980
PCT Filed Jun. 13, 1980, Ser. No. 227,043
Claims priority, application Sweden, Jun. 20, 1979, 7905423
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **10 Claims**

1. In a sewing machine for sewing fancy seams and including mechanisms for mechanically positioning the needle and/or a cloth feeder of the machine for every stitch and a memory unit controlling said mechanisms, wherein stitch code words representing at least one specific fancy seam are selected from said unit by means of a pattern selector and said code words are applied to the mechanism in synchronism with a pulse generator driven by the mechanical drive system of the machine, the improvememt wherein said memory unit comprises a stitch memory for storing stitch codes for groups of stitches which comprise seam elements, each said group including at least one stitch, said fancy seam comprising predetermined combinations of said seam elements, and comprising a seam instruction list for storing the seam instruction code of the predetermined combination of seam elements of the fancy seams and connected to successively apply start words for each of the seam elements to said stitch memory.

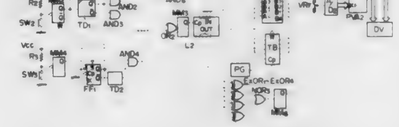


4,389,954

ELECTRONIC SEWING MACHINE

Hachiro Makabe, Kanagawa, and Haruhiko Tanaka, Mitaka, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Oct. 26, 1981, Ser. No. 315,209
Claims priority, application Japan, Oct. 31, 1980, 55/152265
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **1 Claim**



1. An electronic sewing machine comprising: a first memory storing stitch control data for different stitch patterns to be selectively produced, pattern selecting means including a number of pattern selecting switches which are selectively operated to produce a pattern signal designating the corresponding one of the patterns stored in the first memory, pattern memory control means operated to determine a combination of different patterns, a second memory operated in response to the operation of the pattern selecting means and of the pattern memory control means to memorize the combination of different patterns in a predetermined sequence, needle swing adjusting means operated to adjust the swinging amplitude of the needle with a common variation rate with respect to each of the stitch control data read out from the first memory in response to the designation of the pattern signals memorized in the second memory, a third memory storing basic needle position designating signals each specific to the patterns stored in the first memory, basic needle position control means operated in reponse to the operation of the pattern memory control means to memorize a specific one of the basic needle position designating signals of the third memory to control the stitches of the designated combined patterns with a common basic needle position, calculating means operated in response to the output signal of the basic needle control means, the stitch control signal of the first memory and the output signal of the needle swing adjusting means to adjust the swinging amplitude

of the needle with a common variation rate with respect to each of the stitches of the combined patterns, and to set a common basic needle position for the patterns, and stitch forming means operated in response to the output of the calculating means to produce the stitches of the combined patterns.

4,389,955

THREAD HOLDING FINGER FOR BOBBIN WINDING MECHANISM OF A SEWING MACHINE

Robert H. Larsen, Middletown, N.J., and Anthony Giaimo, Staten Island, N.Y., assignors to The Singer Company, Stamford, Conn.

Filed May 20, 1981, Ser. No. 265,506
Int. Cl.³ D05B *59/00*
U.S. Cl. 112—184 **7 Claims**



1. In a lockstitch sewing machine, a cup-shaped circular moving looptaker including a peripheral rim formed with a thread seizing beak, a non-rotatable bobbin case supported in the looptaker, a rotatable bobbin within the bobbin case, an endwise reciprocable needle movable into a position for presenting a loop of needle thread to the looptaker beak for seizure, a thread tensioning device carried by the bobbin case and including an arm forming a thread entering slot for said device with a shoulder on the bobbin case, a finger disposable in a position wherein an end portion projects under the arm of the tensioning device and serves to guide a limb of a seized loop of needle thread into said slot thereby providing for the passage of the thread into the tensioning device, thread pick up means on the bobbin, and means for rotating the bobbin to cause the bobbin to pick up and wind thread extending through the tensioning device onto the bobbin, said finger having a thread engageable edge formed at least in part with a predetermined curvature extending to the said end portion of the finger and along which the movement of thread toward the slot is delayed to prevent the thread from leaving the finger at least until the thread is carried in said throat to a point which is substantially defined by the intersection of the path of thread on the looptaker beak and a line perpendicular to a radius extending from the looptaker axis to the finger.

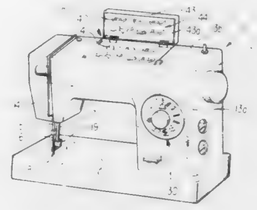
4,389,956

COLOR CODED PRESSER FOOT ASSEMBLY

Hideo Nawa, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation-in-part of Ser. No. 3,420, Jan. 15, 1979, abandoned. This application Nov. 26, 1980, Ser. No. 210,800
Claims priority, application Japan, Jan. 18, 1978, 53-4245
Int. Cl.³ D05B *29/12*
U.S. Cl. 112—240 **21 Claims**

1. A sewing machine comprising:
a bed including a throat plate;
an overhanging arm extending from said bed and terminating in a head;
a needle bar reciprocably positioned in said head;
a needle carried by said needle bar;
a presser bar movable vertically between a raised and depressed position in said head;
a pattern selecting mechanism operatively associated with said arm;
pattern indicating means operatively connected to said pattern selecting mechanism and representing a desired stitch pattern in shape and color;
presser means including a plurality of presser foot members each being detachably mountable to said presser bar directly rearwardly of said needle in accordance with said color wherein each of said plurality of presser foot members has a color indication means thereon corresponding to one of the colors of said pattern indicating means for indication of stitch pattern, and wherein said pattern indication means further comprises:
a shaft rotatably passed through a front side of said arm;



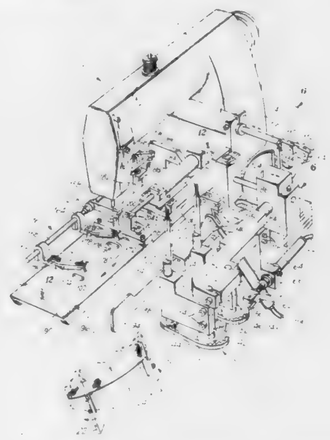
a dial connected to one end portion of said shaft at a front position of said arm for rotating said shaft;
a first disc rotatable together with said shaft;
a plurality of representations for indicating a desired stitch pattern by shapes provided on said first disc on the circumference thereof;
a plurality of color sectors corresponding to said representations for indicating a desired stitch pattern by colors provided on said first disc on the circumference thereof; and
marking means for pointing out one of said color sectors.

4,389,957

BELT LOOP SETTING SYSTEM

Charles Block, North Bellmore, and Leon Mintz, Syosset, both of N.Y., assignors to Joseph Galkin Corporation, Hicksville, N.Y.

Filed Nov. 14, 1980, Ser. No. 206,790
Int. Cl.³ D05B *3/12, 23/00, 97/00*
U.S. Cl. 112—262.3 **2 Claims**



1. A loop setting system comprising, in combination: a first pair of pin members extending substantially in a first direction a predetermined distance from a first reference axis, a second pair of pin members spaced from said first pair of pin members

and extending substantially parallel with respect to said first direction a predetermined distance from a second reference axis, said first and second pairs of pin members each defining respective first and second slots therebetween capable of receiving therein relatively remote portions of material to be manipulated to form a folded configuration capable of joinder with other material, means for arcuately moving said first and second pairs of pin members about said respective first and second axes, thereby accomplishing said folding manipulation and positioning the formed configuration with respect to a reference plane, said first pair of pin members being disposed such that all points along a line joining said first pair of pin members are spaced a pre-determined distance from said first axis, said system further comprising means for arcuately moving said pin members about an axis substantially perpendicular with respect to said first axis to a joining position, means for withdrawing said pin members from the material prior to a step of joining, means for joining said material to other material, and means for causing a return of said pin members to their original position.

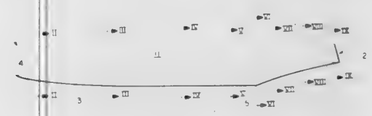
2. A method of repeatedly forming loop-like configurations incorporating lengths of material such as, without limitation, folded belt loop segments to be joined to apparel, or the like, comprising the steps of: receiving relatively remote portions of a length of material within a pair of first and second spaced pairs of pin members, rotating said first and second pairs of pin members about first and second axes which are, respectively, disposed a pre-determined distance from all points along a line joining respective pin members of each said pin, said step of rotating causing a folding of at least one end of said material backwardly upon itself, said method further comprising the steps of arcuately moving said pin members about an axis substantially perpendicular with respect to said first axis to a joining position, withdrawing said pin members from the material prior to a step of joining, joining said material to other material, and causing a return of said pin members to their original position.

4,389,958

HULL FOR MULTIHULLED SAILING VESSELS

Rodney C. March, P.O. 57 The Leas, Minister, Isle of Sheppey, Kent, England

Continuation-in-part of Ser. No. 13,692, Feb. 21, 1979, abandoned, which is a continuation of Ser. No. 862,547, Dec. 20, 1977, abandoned, which is a continuation of Ser. No. 719,517, Sep. 1, 1976, abandoned. This application Apr. 2, 1980, Ser. No. 136,480
Claims priority, application United Kingdom, Sep. 3, 1975, 36236/75
Int. Cl.³ B63B *3/00*
U.S. Cl. 114—39 **8 Claims**



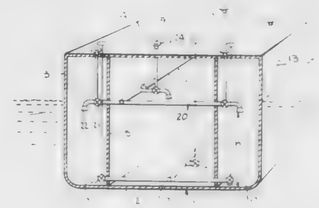
1. A multihulled sailing vessel, at least one hull of said vessel comprising a shallow draft hull form characterized by,
A. a keel line profile configuration having a discontinuity abaft midships and wherein said keel line profile is convex relative to the design waterline from the forward intersection of said design waterline and said keel line profile to said discontinuity and wherein said keel line profile is substantially straight or concave relative to the design waterline from said discontinuity aft to the after intersection of said design waterline and said keel line profile;
B. said discontinuity being not less than 90 percent of the deepest point of draft relative to said design waterline of said hull, excluding appendages;
C. station sections forward of said discontinuity having a substantially veed form and station sections aft of said discontinuity having a substantially semicircular or U-form;
D. said hull providing sufficient lateral hydrodynamic lift to provide good windward performance without reliance upon hydrodynamic fins or appendages;
E. said hull form being adapted to generate a high hydrodynamic lift-to-drag ratio and high hydrodynamic lift when operating at leeway angles greater than zero and up to about eight degrees, and low drag when operating at leeway angles of substantially zero;
whereby said vessel is capable of performance at speed-length ratios greater than 1.5.

4,389,959

CARGO HANDLING SYSTEM FOR TANKER VESSELS

Charles S. Conway, Featherbed La., New Vernon, N.J. 07976

Continuation-in-part of Ser. No. 913,956, Jun. 9, 1978, Pat. No. 4,241,683, which is a continuation-in-part of Ser. No. 809,395, Jun. 23, 1977, abandoned. This application Aug. 21, 1980, Ser. No. 180,046
Int. Cl.³ B63B *25/12*
U.S. Cl. 114—74 R **8 Claims**



1. In a tanker vessel for carrying a plurality of liquid cargoes each having a specific gravity which is less than that of sea water, said vessel including a hull comprising a bottom and sides, a top deck, at least one cargo compartment disposed between said top deck and said hull bottom for storing said liquid cargo, and main liquid cargo charging and discharging means coupled to said cargo compartment for charging and discharging said compartment, the improvement comprising additional liquid cargo charging and discharging means coupled to said cargo compartment, said additional liquid cargo charging and discharging means including pipe means longitudinally disposed in said vessel, transversely disposed valved branch line means coupled to said pipe means, said branch line means including a suction opening disposed in and opening into said cargo compartment at a distance above said hull bottom which is approximately equal to $H(S_w/S_c)-0.10H$, where H represents the distance from the bottom of said vessel to its waterline, S_w represents the specific gravity of sea water, and S_c represents the specific gravity of the heaviest liquid cargo which said vessel is adapted to carry.

4,389,960

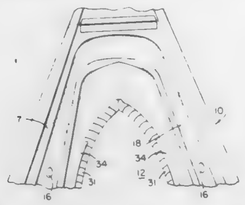
BARGE

Edwin H. Fletcher, Marathon, Fla., assignor to Transway International Corporation, New York, N.Y.

Filed Mar. 17, 1978, Ser. No. 887,664
Int. Cl.³ B63B *21/56*
U.S. Cl. 114—248 **4 Claims**

1. A barge comprising:
a barge bottom and a deck mounted on the barge bottom, said barge bottom and deck at the stern of the barge including a well open at its bottom and rear for receiving the bow of a craft for pushing the barge; and
a flexible sealing means having one end connected to the

barge bottom below the water line and the other end free for movement into sealing engagement with a craft for propelling the barge, said flexible sealing means being positioned around the perimeter of the well and extending over a substantial portion thereof, said flexible sealing means extending rearwardly into the well a distance



whereby the well bottom is open in the absence of a craft and whereby said flexible sealing means is maintained in sealing engagement with the bow portion of a craft received in the well during propulsion of the barge by the craft to define with the craft a closure for the bottom of the well to thereby reduce water resistance during propulsion.

4,389,961

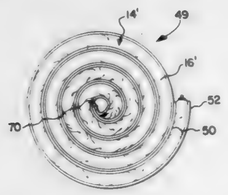
SELF-COLLAPSIBLE, INFLATABLE DEVICE

John R. Parish, 2543 Evermur Dr., Dayton, Ohio 45414

Filed Dec. 15, 1980, Ser. No. 216,408

Int. Cl.³ B63B *7/08*

U.S. Cl. 114—345 **12 Claims**



1. A self-collapsible, inflatable device comprising:

a sheet made of a thermoplastic material having a memory set such that it forms into a coil when unrestrained;

at least one inflatable member, semi-rigid when inflated and becoming flaccid and capable of being coiled when deflated, said inflatable member including valve means which may be opened for selectively allowing the entrance or egress of a gas or a fluid to inflate or deflate said inflatable member;

means for attaching said inflatable member to said sheet such that inflation of said inflatable member is sufficient to overcome said memory set and force said sheet and said inflatable member to assume a substantially uncoiled position and deflation of said inflatable member permits said memory set to cause said sheet and said inflatable member to assume a coiled position; and

said memory set being sufficient to promote deflation of said inflatable member when said valve means is opened.

4,389,962

OPTICAL DISPLAY UNIT FOR PNEUMATIC SYSTEMS

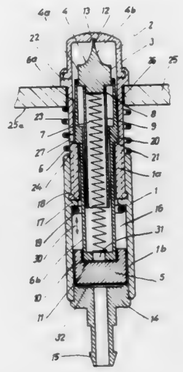
Kurt Stoll, Lenzhalde 72, 73 Esslingen/N., Fed. Rep. of Germany

Filed Mar. 24, 1981, Ser. No. 246,964

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 3012265

Int. Cl.³ G01D *5/28;* **G01L** *19/12;* **G08B** *5/18*

U.S. Cl. 116—272 **13 Claims**



1. In an optical display unit having a fixed mirror part visible to the outside of said unit and a sleeve means movable in relation to said mirror part for altering the appearance of said mirror part by selectively cutting off light therefrom when said unit is acted upon by an input pressure signal, said unit comprising a hollow guide stem having a transparent cover through which said mirror part is made visible to an observer of said display unit, a fixed inner part to which said mirror part is secured, said sleeve means including a sleeve, a piston movably mounted in said hollow guide stem for movement backwards and forwards in said guide stem, the improvement comprising wherein said guide stem is composed of two halves and includes connecting means for facilitating a connection to one another, one half terminating at said transparent cover and the other half terminating at an end wall having a pipe connection thereon for facilitating a connection of the pressure signal to a space whose pressure condition is to be monitored and displayed, whereby said piston is driven upwardly in response to said input pressure signal, and wherein said piston is reciprocally mounted in said other half between said end wall and a stop means intermediate said one half and said end wall, said piston further being free of a fixed connection to said sleeve but drivingly joined to said sleeve to facilitate assembly.

4,389,963

APPARATUS AND METHOD FOR MONITORING PERIODIC DISPENSATION OF PILLS

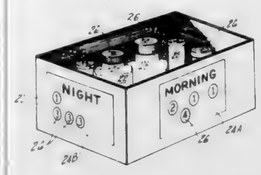
Richard W. Pearson, Ridge Rd., Chester, Conn. 06412

Filed Mar. 26, 1981, Ser. No. 247,806

Int. Cl.³ A61J *7/00;* **G09F** *7/18*

U.S. Cl. 116—308 **8 Claims**

1. Apparatus for monitoring the periodic dispensation of a plurality of articles contained in vessels, comprising a receptacle for receiving said vessels introduced along a vertical axis, the receptacle having sides and being adapted for selective rotation manually about the vertical axis, said sides having at least two designations of different time periods corresponding with the desired time of periodic dispensation of articles, the designations spaced apart so that by selective rotation of the receptacle only one of said designations may be made principally viewable from a lateral position for enabling periodic dispensation of articles, and said vessels contained within the receptacle, the vessels holding articles to be dispensed at one of the designated time periods on the side of the receptacle the vessels having individual marking tags which are different



from each other, said individual marking tags also being affixed to the sides of the receptacle at the locations where the time designations appear.

4,389,964

APPARATUS FOR APPLYING A PROTECTIVE COATING TO THE SEAM OF WELDED CAN SLEEVES

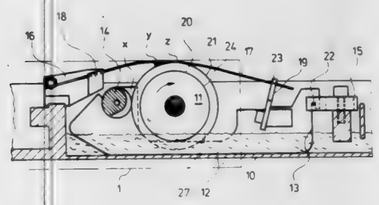
Siegfried Frei, St. Gallen, Switzerland, assignor to Frei AG Maschinenbau, Wittenbach, Switzerland

Filed Nov. 17, 1981, Ser. No. 322,235

Claims priority, application Switzerland, Dec. 3, 1980, 8916/80; May 6, 1981, 2942/81

Int. Cl.³ B05C *1/02, 7/08*

U.S. Cl. 118—66 **16 Claims**



1. In an apparatus for applying a protective substance to a welding seam of a metallic sleeve, including a frame, a container disposed within said frame holding a protective substance, a drivable applicator roller disposed in said container at least in part contact with said protective substance and applying the protective substance to the seam of said metallic sleeve within a substance transfer region, and wherein said sleeve moves towards, past and away from said applicator roller.

comprising in combination therewith

stripping means disposed within said transfer region abutting the periphery of said applicator roller and adapted for removing any excess substance leaking away laterally from said seam.

4,389,965

TENSION WIRE METER FOR IMPREGNATING FOAM WITH LIQUID FABRIC CONDITIONER

Rolf E. Christensen, Wallingford, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Division of Ser. No. 788,778, Apr. 19, 1977, Pat. No. 4,109,035. This application Feb. 27, 1978, Ser. No. 881,245

Int. Cl.³ B05C *1/06, 1/08, 11/02*

U.S. Cl. 118—261 **6 Claims**

1. An apparatus for applying a liquid to a substrate comprising:

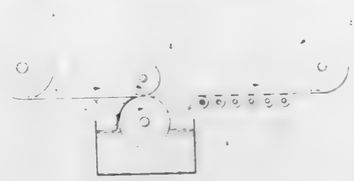
a first rotatable cylinder;

a second rotatable cylinder positioned below the first cylinder to form a nip between the first cylinder and the second cylinder;

means for feeding the substrate to the nip;

means for applying a quantity of the liquid onto said lower cylinder said quantity including an excess portion;

a tension wire doctor cooperating with the second cylinder



for forming a film of the liquid on the second cylinder and for removing said excess portion from said second cylinder; and

means for removing said substrate from said nip.

4,389,966

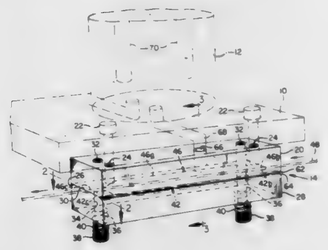
APPARATUS FOR APPLYING HOT-MELT TO THREAD

John L. Getz, Blachly, Oreg., assignor to Industrial Adhesive, Inc., Eugene, Oreg.

Filed Dec. 14, 1981, Ser. No. 330,372

Int. Cl.³ B05C *3/12*

U.S. Cl. 118—405 **8 Claims**



1. A device for heating an elongate string by reason of the string moving through a heated pool of liquid comprising:

a plate assembly including first and second heat-conductive elongate plates, each having a contacting face extending therealong, and means mounting the plates with their contacting faces abutting and opposite each other;

a channel extending along the contacting face of the first plate and another channel extending along the contacting face of the second plate, said channels being opposite and opening to each other and together defining a string-receiving passage extending between the plates with ends of the passage opening to opposite extremities of the plate, said passage being bounded on opposite sides by said contacting faces,

the means mounting the plates including biasing means yieldably maintaining said contacting faces in pressure contact and accommodating relative movement of the plates away from each other whereby their contacting faces spread apart,

a beveled entry formed in at least one plate leading to the abutting faces of the plates

said channels between their ends having elongate expanses with cross-sectional areas substantially greater than the cross-sectional area of the remainder of the channels, said expanses being opposite and in complementary registration with each other and together forming an elongate chamber for holding a heated pool of liquid which chamber is closed on opposite sides by reason of said contacting faces being resiliently held in pressure contact, and

heater means for applying heat to at least one plate which is effective to heat the pool of liquid inside the chamber by reason of the heat conductive nature of the plates and the pressure contact of said faces.

4,389,967

BOAT FOR CARRYING SEMICONDUCTOR SUBSTRATES

Haruo Shimoda, Tama, and Kaoru Tanabe, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

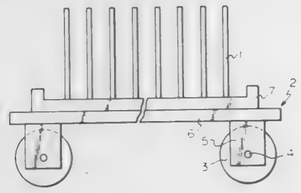
PCT No. PCT/JP80/00099, § 371 Date Jan. 11, 1981, § 102(e) Date Dec. 31, 1980, PCT Pub. No. WO80/02622, PCT Pub. Date Nov. 27, 1980

PCT Filed May 9, 1980, Ser. No. 227,075

Claims priority, application Japan, May 11, 1979, 54-62674

Int. Cl.³ B61B *13/00*

U.S. Cl. 118—500 **8 Claims**



1. A boat for carrying semiconductor substrates, comprising:
holding means for holding the semiconductor substrates thereon;
an axle;
bearing means for bearing the axle, said bearing means being fixed to said holding means and including a bearing portion through which said axle rotatably extends;
a wheel fixed to said axle; and
a silicon nitride film formed on the surface of at least one of said axle and said bearing portion,
wherein the holding means, wheel, axle and bearing means of said boat are made from the group consisting of quartz and polycrystalline silicon.

4. A system for carrying semiconductor substrates during high-temperature processing in a tube, comprising:
a support;
a plurality of wheels;
means mounting the wheels for rolling the support within the tube, said means being made substantially from the group consisting of quartz and polycrystalline silicon; and
silicon nitride separating the sliding surfaces within the means mounting the wheels.

4,389,968

TONER REGENERATING DEVICE

Hiroshi Satomura, Hatogaya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

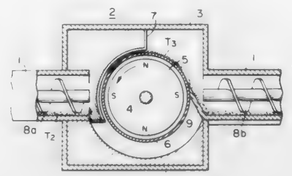
Filed May 19, 1981, Ser. No. 265,164

Claims priority, application Japan, May 26, 1980, 55-69841; Oct. 30, 1980, 55-152760

Int. Cl.³ G03G *21/00*

U.S. Cl. 118—652 **13 Claims**

1. A toner regenerating device comprising:
cleaning means for removing magnetic toner remaining on an image bearing body;
a mesh member;
means for guiding and supplying the toner removed by said cleaning means to said mesh member;
magnetic field imparting means provided adjacent to said mesh member at a location opposite to the side where toner is supplied by said guiding and supplying means;
non-magnetic toner carrying means provided between said magnetic field imparting means and said mesh member for bearing the toner which passes through said mesh member; and
collecting means for collecting the toner born on said carrying means;
wherein said carrying means and magnetic field imparting means are relatively movable to carry onto and along said



mesh member only a certain amount of the toner in accordance with the magnetic force imparted by said magnetic field imparting means from the total amount of the toner supplied by said cleaning means so that non-magnetic components are separated from the supplied toner and toner from which the non-magnetic components have been removed is born on said carrying means and collected.

4,389,969

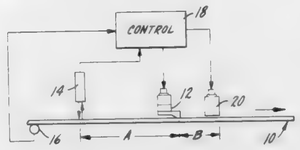
GLUE DETECTOR

Keith R. Johnson, Orland Park, Ill., assignor to Copar Corporation, Oak Lawn, Ill.

Filed Jun. 22, 1981, Ser. No. 275,997

Int. Cl.³ B05C *5/02, 11/00*

U.S. Cl. 118—665 **8 Claims**



1. Means for detecting the application of glue to a defined area of a moving box blank including a capacitance device, one plate of which is formed by a sensing surface positioned adjacent the path of box blank movement, said sensing plate including a guard element, electrically isolated from said sensing plate, the other plate of said capacitance device being formed by the defined area of the box blank and the applied glue, means for applying an electrical signal to said sensing surface and guard element, with the signal applied to the guard element eliminating the effects of stray circuit capacitance on variations in said signal, and means for sensing variations in said signal caused by the presence or absence of glue.

4,389,970

APPARATUS FOR REGULATING SUBSTRATE TEMPERATURE IN A CONTINUOUS PLASMA DEPOSITION PROCESS

Robert F. Edgerton, Pontiac, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

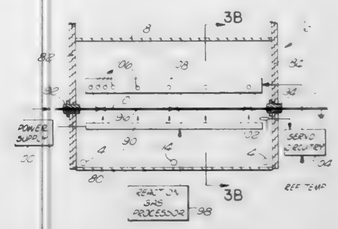
Filed Mar. 16, 1981, Ser. No. 244,389

Int. Cl.³ C23C *13/10*

U.S. Cl. 118—666 **4 Claims**

1. Apparatus for heating a continuous substrate to a predetermined deposition temperature as it travels through at least one glow discharge chamber, said apparatus comprising:
a heater, said heater including a plurality of heater lamps within said glow discharge chamber spaced along the direction of travel of said substrate, the spacing between adjacent lamps increasing along said direction of travel so

that the temperature of said continuous substrate is rapidly heated to and maintained at said predetermined deposition temperature as if travels through said chamber;
a detector for monitoring the temperature of said substrate, said detector including means responsive to infrared radiation of about 5 microns in wavelength; and



a feedback control circuit coupled to said detector for adjusting the intensity of said lamps in response to the temperature of said substrate, said circuit being responsive to the output of said detector to produce a signal to control the intensity of each of said lamps.

4,389,971

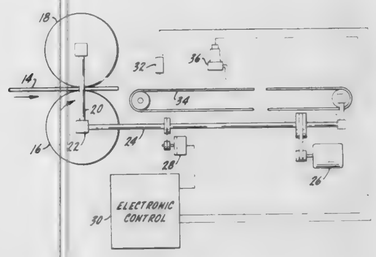
MEANS FOR CONTROLLING THE APPLICATION OF GLUE TO A DEFINED AREA

Robert W. Schmidt, Oak Lawn, Ill., assignor to Copar Corporation, Oak Lawn, Ill.

Filed Apr. 16, 1979, Ser. No. 30,469

Int. Cl.³ B05C *5/00*

U.S. Cl. 118—669 **2 Claims**



1. A control for regulating the application of glue to a defined area of a moving paper board box blank including a sensor for detecting the presence of the leading and trailing edges of a moving defined glue application area, a glue applicator spaced a fixed distance from the sensor, means for generating electrical pulses representing length of travel of the glue application area, a first counter connected to said pulse generating means, sensor and glue applicator, a second counter connected to said pulse generating means, sensor and glue applicator, said sensor initiating a counting action in said first counter at detection of the leading edge of a glue application area, said first counter initiating a glue application after a predetermined number of counted pulses representative of movement of the application area through said fixed sensor to glue applicator distance, said sensor initiating a second counting action in said second counter at detection of the trailing edge of a glue application area, said second counter stopping glue application after a predetermined number of counted pulses representative of movement of the application area through said fixed sensor to glue applicator distance.

4,389,972

TONER CONCENTRATION CONTROL APPARATUS

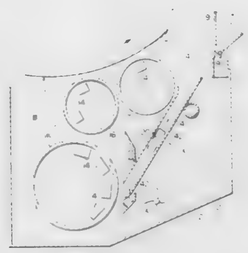
Koji Hirakura, Yokohama; Yasuo Sawada, Sayama; Kenta Watase, Tokyo, and Takeshi Iijima, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Jul. 25, 1980, Ser. No. 172,240

Claims priority, application Japan, Aug. 4, 1979, 54-99635; Nov. 14, 1979, 54-147545

Int. Cl.³ B05C *19/00;* **G03G** *15/09*

U.S. Cl. 118—691 **4 Claims**



1. A toner concentration control apparatus for controlling the concentration of toner in developer comprising at least toner and carrier particles of different reflectivities for use in electrophotographic copying apparatus comprising:
chute means capable of causing the passage of developer in a packed state therethrough;
a viewing window of transparent material disposed within a portion of the body of the chute means;
a light source;
photosensing means, a first portion of which is capable of sensing light reflected by the developer as it passes the viewing window in the chute means and is illuminated by the light source and producing a first signal corresponding to the value of said reflected light, and a second portion of which is capable of sensing a reference light from the light source and producing a second signal corresponding to the value of said reference light;
rigid support means attachable to or integral with the chute means capable of supporting and enclosing the light source and the photosensing means at a predetermined position in the vicinity of the viewing window, and forming a multi-channel light path for the light from the light source therein, which light path and the light source and photosensing means and external surface of the viewing window are substantially sealed from the surrounding environment by said support means including at all points of contact between said support means and chute member;
comparator means for comparing said first and second signals produced by the photosensing means and producing an output signal;
decision means for evaluating the output signal of the comparator in comparison with a predetermined reference indicating the desired toner concentration and producing a decision signal;
dispensing means capable of dispensing toner into the developer supply; and
drive means for activating and deactivating said dispensing means in accordance with the decision signal of the decision means;
wherein said first portion of said photosensing means and said second portion of said photosensing means are independently sensitive portions of a single photosensor;
said single photosensor being positioned so as to receive the light beam reflected by said developer and the light beam from said reference light;
which said two light beams follow separate optical paths so as to strike said respective portions;

and said apparatus includes reflector means to reflect the light beam of said reference light to said second portion of said single photosensor.

4,389,973

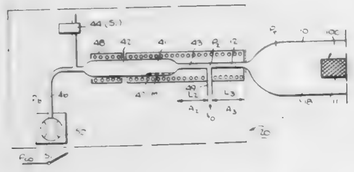
APPARATUS FOR PERFORMING GROWTH OF COMPOUND THIN FILMS

Tuomo S. Suntola; Arto J. Pakkala, and Sven G. Lindfors, all of Espoo, Finland, assignors to Oy Lohja AB, Virkkala, Finland

Continuation of Ser. No. 131,496, Mar. 18, 1980, abandoned, which is a division of Ser. No. 50,606, Jun. 21, 1979. This application Dec. 11, 1981, Ser. No. 330,014

Int. Cl.³ C23C *13/08*

U.S. Cl. 118—725 **2 Claims**



1. Apparatus for growing a compound thin film of different elements on a stationary substrate surface, wherein said film is formed by alternate surface reactions of different substances respectively containing said different elements, comprising:

a single chamber for receiving a substrate;

vacuum means coupled to said chamber;

heating means for heating the substrate within said chamber;

a plurality of vapor sources having outputs coupled to said chamber for separately supplying vapors of said different substances from said vapor sources to said chamber;

a gas phase medium including a source of gas coupled to said chamber and to each of said vapor source outputs; and

means for controlling a flow of said gas phase medium through said chamber from said gas source to said vacuum means, for supplying said gas phase medium at least at the conclusion of the separate supply of one of said vapors and prior to the separate supply of another said vapor, and for selectively controlling a flow of said gas phase medium at said source outputs to direct said medium in an upstream direction to said vapor sources, for alternately stopping the supply of vapor from said sources, for alternately stopping the supply of vapor from said sources, and to direct said medium in a downstream direction toward said chamber to isolate each said source from the other, wherein said chamber is substantially cleared of said vapors between each said alternate surface reaction in the growing of said compound thin film on said substrate, and wherein self-saturating surface reactions thereby occur during each separate supply of a vapor source, and said supply of gas prevents reactions between said sources as said compound film of different elements is grown on said substrate surface.

4,389,974

APPARATUS AND METHOD FOR REARING SHRIMP

Charles Dugan, Goulds, and Timothy Dugan, Homestead, both of Fla., assignors to Farm Fresh Shrimp Corporation, Fort Lauderdale, Fla.

Division of Ser. No. 925,793, Jul. 18, 1978, Pat. No. 4,249,480. This application Oct. 21, 1980, Ser. No. 199,237

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—2 **2 Claims**

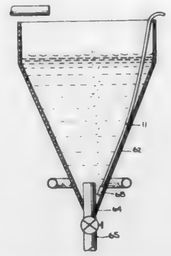
1. An Artemia tank for use in rearing Artemia comprising:

an upper portion;

a bottom conical portion extending from said upper portion and having an aperture at its apex;

means for draining said tank, said draining means including conduit means disposed in said bottom portion and extending upwardly from around said aperture;

debris collecting means formed by the outer surface of said conduit means and the inner sidewall of said bottom portion adjacent said conduit means; and



an annular light source positioned exteriorly to said bottom portion in surrounding relationship to the region of said bottom portion above said debris collecting means, said region being formed of a light transmissive material so as to permit passage of light from said light source into the portion of the interior of the tank surrounded by said region.

4,389,975

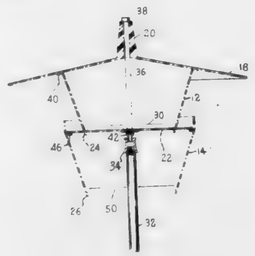
DUAL PURPOSE BIRD FEEDER

James B. Fisher, Jr., 2 Graybridge La., St. Louis, Mo. 63124

Continuation-in-part of Ser. No. 110,459, Jan. 8, 1980, abandoned. This application Dec. 22, 1980, Ser. No. 218,621

Int. Cl.³ A01K *39/01*

U.S. Cl. 119—51 R **11 Claims**



1. A bird feeder comprising a feeder housing supported upon a base tray having a peripheral portion extending beyond a bottom portion of said housing means for connecting said housing to a vertical support post and a squirrel barrier baffle member connected to an outermost peripheral portion of said tray and extending downwardly in spaced relation to said post, said baffle member extending downwardly a sufficient distance and being spaced from said post a sufficient distance to prevent a post climbing squirrel from reaching said tray, said baffle member being comprised of a downwardly tapering hollow inverted frusto-conical member, said frusto-conical member extending from a reduced diameter bottom edge spaced from said post to an enlarged diameter upper edge underlying the outer periphery of said tray to provide a sufficient outward and upward slope to prevent a squirrel from climbing thereon, said feeder housing comprising a hollow inverted frusto-conical member interchangeable with the baffle member.

4,389,976

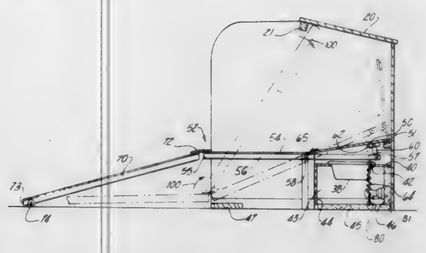
ANIMAL FEEDING APPARATUS

Thaddeus Novak, 5037 Curtis, Dearborn, Mich. 48126

Filed Apr. 24, 1981, Ser. No. 257,494

Int. Cl.³ A01K *5/00*

U.S. Cl. 119—62 **13 Claims**



1. An animal feeding apparatus for holding and protecting bowls of food comprising:

a housing having two side walls, a back wall and a top wall extending from said back wall;

a shelf and means for stationarily securing said shelf adjacent said back wall and under said top wall, said shelf including means for supporting at least one food bowl in said shelf;

a cover overlying said shelf;

means for pivoting said cover between a first position in which said cover overlays said shelf and a second position in which said cover is spaced apart from and thus exposes said shelf; and

treadle means for actuating said pivoting means, said treadle means comprising a floor panel pivotally secured about an axis substantially at the end of said panel, a flat ramp and hinge means for securing an end of said ramp to an end of said floor panel so that upon depression of said treadle means said ramp moves from a first inclined position extending outwardly from the housing to a second depressed position thereby moving said end of said ramp towards said housing, said ramp being manually pivotable about said hinge means to a third position substantially within said housing.

4,389,977

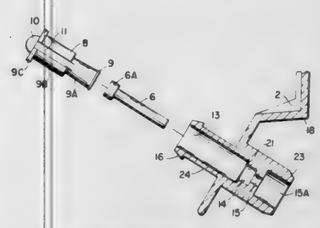
WATERING VALVE-BRACKET FOR RABBITS AND SMALL FUR BEARING ANIMALS

Josef Borak, 34985 Hallert Rd., Matsqui, B.C. V0X 1S0, Canada

Filed Aug. 5, 1981, Ser. No. 290,327

Int. Cl.³ A01K *7/06;* **F16K** *1/12*

U.S. Cl. 119—72.5 **6 Claims**



1. A watering valve-bracket comprising

a valve body including a first cavity and an opening and a valve hanger bracket, said valve bracket and said valve body being formed as one piece,

said valve body including a first and a second internal shoulder,

said first shoulder providing a mounting seat for an enlarged head portion of an actuating pin located at a bottom portion of the valve body and extending through said opening, a flexible retainer plug adapted to substantially fit inside said first cavity having a top end and a bottom end and including a first and a second portion, said first portion being substantially uniform in diameter, said second portion having a generally conical shape, said second portion having a first diameter less than said diameter of said first portion and extending away from said first portion to an enlarged flexible base portion having a second diameter larger than said first diameter,

said retainer plug sized to frictionally engage the inside walls of said first cavity and said enlarged base portion engaging said second shoulder spaced above said first shoulder in a top portion of said valve body, said retainer plug further including at least one fluid passage extending axially along the circumferential surface of said top end,

whereby when an upward force is applied against said pin, said pin engages and unseats said base portion allowing fluid flow through said at least one fluid passage.

4,389,978

GRATES

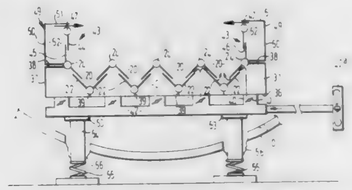
Reginald D. Northcote, Lower Penn, England, assignor to Parkinson Cowan GWB Limited, Dudlay, England

Filed Jun. 9, 1981, Ser. No. 272,035

Claims priority, application United Kingdom, Jun. 10, 1980, 8019015

Int. Cl.³ F22B *1/00*

U.S. Cl. 122—4 D **13 Claims**



1. A grate having a fuel supporting and conveying surface comprising a plurality of elongate longitudinally-oriented channels, each of said channels having an open mouth and a bottom and being longitudinally stepless and having a transverse cross-section which decreases in width in a direction extending away from the open mouth towards the bottom of the channel, said channels being arranged side-by-side transversely of the grate, a plurality of air feed openings each being provided to permit the interior of a respective one of the channels, in use, to be fed with air from an air supply at least in the region of the bottom of that channel, a plurality of adjustment means each being provided to permit adjustment of a respective one of said air feed openings to adjust the air supply transversely of the grate across the entire width of the grate, and means mounting said channels being provided to permit said channels to be vibrated, in use, to cause fuel to be conveyed along one or more of said channels and longitudinally of the grate, wherein the grate is provided in a shell-type boiler comprising an outer shell within which is contained a steam water space of the boiler and a furnace, said grate being provided within said furnace to fire the furnace, and said broiler having an apparatus for feeding solid fuel onto the grate.

4. A water cooled grate having a fuel supporting and conveying surface comprising a plurality of elongate longitudinally-oriented channels, each of said channels including upper water cooling pipes, a lower water cooling pipe which forms a base part of the channel and a pair of spaced apart side walls connected at their lower ends to said base part and connected at their upper ends to a respective one of said upper pipes, the walls of each channel being provided with a plurality of air feed perforations, each said channel having an open mouth and a bottom and being longitudinally stepless, said channels being

arranged side-by-side transversely of the grate; a plurality of air feed chambers each having a peripheral wall disposed beneath the side walls of the respective channels, at least one air feed opening provided in each peripheral wall to permit the interior of each channel, in use, to be fed with air from an air supply in the region of the bottom of that channel; a plurality of adjustment means each being provided to permit adjustment of a respective one of said air feed openings to adjust the air supply transversely of the grate across the entire width of the grate; baffle means being provided in each chamber and extending transversely to said at least one air feed opening to prevent egress of fuel through each such air feed opening; and means mounting said channels being provided to permit said channels to be vibrated, in use, to cause fuel to be conveyed along one or more of said channels and longitudinally of the grate.

4,389,979

METHOD AND APPARATUS FOR THE OPERATION OF A BOILER INSTALLATION WITH STOKER FIRING

Oddmund Saxlund, Heidberg 1, D-3040 Soltau-Harber, Fed. Rep. of Germany

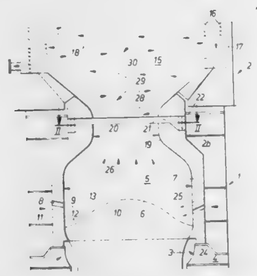
PCT No. PCT/DE80/00127, § 371 Date May 1, 1981, § 102(e) Date May 1, 1981

PCT Filed Sep. 3, 1980, Ser. No. 261,191

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1979, 2935494

Int. Cl.³ F23G *7/00;* **F22B** *5/00*

U.S. Cl. 122—15 **11 Claims**



1. A method for the operation of a boiler installation with stoker firing having a stoker chamber with a burner grating for supporting combustion material and for the passage of the primary air, introducing secondary air through nozzles distributed over the periphery, and a tubular boiler placed coaxially adjacent to the stoker chamber with an approximately circular inner chamber having pipe means associating therewith and annular gas extraction means, said method comprising the steps of:

supplying the stoker chamber with primary and secondary air sufficient only for a partial combustion of said combustion material and producing a mixture of combustion gases and unburned gases ascending in said stoker chamber;

substantially reducing the cross-section of the flow from said stoker chamber of said combustion gases and unburned gases to provide a nozzle-like constricted flow as said gases are discharging from the stoker chamber into the boiler chamber and to generate a pressure at said constricted flow reduced with respect to the ambient pressure;

introducing tertiary air sufficient for complete combustion tangentially at the narrowest point of the constricted flow at a pressure increased with regard to the ambient pressure;

rotating the flow of the combustion gases and unburned gases discharging from the stoker chamber and mixing said discharging gases with said tertiary air;

initiating after-burning of the unburned gases at the narrowest point of the constricted flow;

substantially increasing the cross-section of the entire flow again by flaring the rotating flow outwardly upon its entry into said boiler chamber;

directing the rotating flow upwardly toward the ceiling of the boiler chamber and transferring heat from combustion gases to said pipe means;

annularly extracting part of the upwardly flowing gases by means of said boiler extraction means;

redirecting part of the flow downwardly back toward the constriction from the ceiling of the boiler in a central core-type current flow to re-mix with the gases flowing upwardly from the constriction;

whereby complete combustion occurs in said boiler chamber and partial combustion occurs in said stoker chamber.

3. A combustion apparatus comprising a stoker chamber with a burner grating for supporting combustion material and primary air ducts associated with the grating for the supply of fresh air, air supply nozzles distributed over the periphery of said stoker chamber for the supply of secondary air;

said primary air ducts and secondary air supply nozzles being controlled to provide less than sufficient air for complete combustion in the stoker chamber whereby during operation both combusted and uncombusted gases ascend in said stoker chamber;

a tubular boiler placed coaxially adjacent to the stoker chamber having an inner chamber with upper ceiling means, and annular gas extraction means;

means connecting the stoker chamber to the inner chamber of the boiler forming a nozzle-like constriction for receiving said ascending gases;

said tubular boiler flaring outwardly from said constriction; and

a generally annular system to provide a tangential supply of pressurized tertiary air, sufficient for complete combustion, into said apparatus at the narrowest point of said nozzle-like constriction and being capable of placing ascending gases from said stoker chamber into rotation at said constriction and facilitate mixing with said tertiary air whereby after-burning of uncombusted gases initiates at said nozzle-like constriction and continues upwardly therefrom into said boiler inner chamber, and whereby said rotating gases flare outwardly and move upwardly from said constriction toward the ceiling means;

said annular system and boiler inner chamber being cooperative to facilitate flowing said rotating gases upwardly toward said ceiling means wherein a part of said upward flow is redirected at said ceiling means in a central downward core-type flow back toward said constriction to meet ascending gases from said stoker chamber and wherein part of said upwardly flowing gases is extracted at said extraction means;

pipe means associated with said boiler inner chamber capable of being heated by combusted gases; and,

wherein complete burning of combustion gases is obtained in the boiler and part of the combustion occurs in the stoker chamber whereby said stoker chamber receives a reduced thermal charge permitting temperatures to be maintained below critical values.

4,389,980

BOILER FOR USE WITH CHARGES OF WOOD FUEL

Richard P. Marcotte, and John W. Dumont, Jr., both of Monmouth, Me., assignors to Dumont Industries, Monmouth, Me.

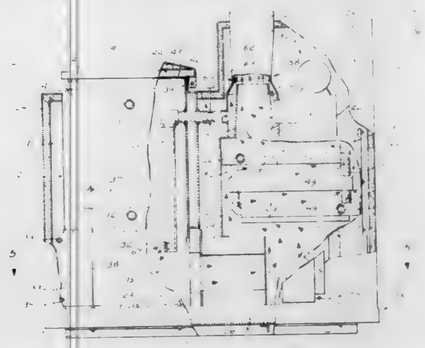
Continuation-in-part of Ser. No. 114,227, Jan. 22, 1980, abandoned. This application Oct. 21, 1980, Ser. No. 199,333

Int. Cl.³ F22B *9/02*

U.S. Cl. 122—114 **17 Claims**

15. A boiler for use with a charge of wood as fuel and including a base provided with a fire brick layer, a first chamber that is normally closed and substantially air tight and has a lower portion resting on said fire brick and establishing therewith a

combustion zone, an upper portion that is a water jacket, an intermediate flat ring resting on the upper end of the lower chamber portion, said upper portion including a depending flange that is a fit inside the upper end of the lower portion, and means connecting said upper portion to said base and clamping said portions against said ring and said lower portion against said base to provide leakproof joints, said chamber dimensioned to accommodate a charge of wood consisting of pieces of wood of a length such that with the ends resting on the fire brick, the pieces extending more or less vertically into the upper chamber portion or a stack of shorter sections that may



lay crosswise of the chamber, in either case the major portion of the charge in the upper portion and the charge free to settle as combustion progresses, a second chamber in communication with the combustion zone, a heat exchanger supported by the second chamber to receive hot gases therefrom and provided with a flue for exciting gases, means to induce the flow of hot gases through the heat exchanger, and means to deliver air into the lower portion of the first chamber as a turbulent cross draft, said cross draft and the cooling effect of said water jacket functioning to confine the burning of the charge to said combustion zone.

4,389,981

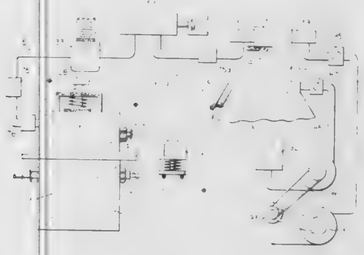
HYDROGEN GAS INJECTOR SYSTEM FOR INTERNAL COMBUSTION ENGINE

Stanley A. Meyer, 3792 Broadway Blvd., Grove City, Ohio 43123

Filed Feb. 17, 1982, Ser. No. 349,185

Int. Cl.³ F02M *23/04*

U.S. Cl. 123—3 **19 Claims**



1. A combustion system comprising:

a hydrogen/oxygen generator,

a housing having a water reservoir for retaining natural water therein and a gas collection chamber maintaining a preset volume of gas under pressure,

a pair of similar non-oxidizing plates positioned in said water reservoir,

a direct current voltage source connected to said plates to disassociate the hydrogen atoms and oxygen atoms from said water molecules; and

a gas mixing chamber,

means connecting the hydrogen gas from said hydrogen source to said mixing chamber,

a fuel linear control valve in said hydrogen gas connecting means for regulating the hydrogen gas flow to said mixing means,

said fuel linear control valve including a port and a linear element in said port regulating the opening therein,

a source of non-volatile gas;

means connecting the non-volatile gas from said non-volatile source to said mixing chamber,

ambient air intake means connected to the input of said mixing chamber for combining air with said hydrogen gas and said non-volatile gasses,

a gas burner having said controlled amount of hydrogen gas combined with said non-volatile gas and ambient air from said air-intake means fed thereto.

4,389,982

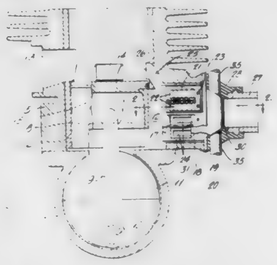
INTERNAL COMBUSTION ENGINE FUEL SUPPLY SYSTEM

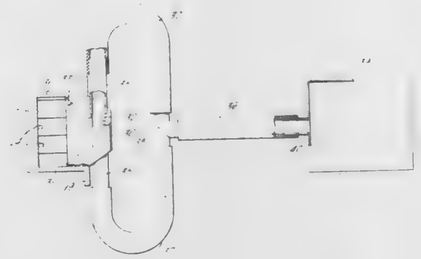
Eyvind Boyesen, Kempton, Pa., assignor to Performance Industries, Inc., Kempton, Pa.

Filed Oct. 20, 1981, Ser. No. 313,212

Int. Cl.³ F02M *35/10;* **F02B** *33/04*

U.S. Cl. 123—73 R **7 Claims**





1. An internal combustion engine having a piston working in a cylinder and with a fuel intake channel for delivery of fuel to the cylinder under the influence of pressure changes effected by motion of the piston, valve means in the intake channel for controlling the flow of fuel through the intake channel, walls defining the intake channel upstream of the valve means with portions of such walls at different distances from each other in different regions upstream and downstream of the intake channel thereby providing different cross-sectional areas within said walls in said different regions, an element positioned in the intake channel upstream of the valve means and spaced from said walls and proportioned to reduce the difference in cross-

sectional flow areas in said different regions, a passage within said element and having an orifice presented downstream of the intake channel, and a vessel positioned externally of the intake channel and having a connection communicating with the passage within said element.

4,389,983

PRECHAMBER CATALYTIC IGNITION SYSTEM

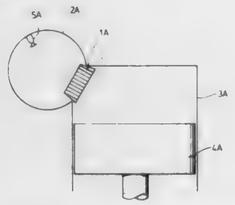
Bernard E. Enga, Maidenhead, and Christopher Prasad, Sonning Common, Near Reading, both of England, assignors to Johnson, Matthey & Co., Limited, London, England

Continuation of Ser. No. 109,907, Jan. 7, 1980, abandoned. This application Dec. 14, 1981, Ser. No. 330,590

Claims priority, application United Kingdom, Jan. 10, 1979, 7900874

Int. Cl.³ F02B *75/12, 23/00;* **F02P** *1/00*

U.S. Cl. 123—143 B **15 Claims**



1. A catalytic engine for producing power by the combustion of fuel comprising at least one cylinder, each cylinder having an associated piston and a port disposed near the top of the cylinder and in communication with a precombustion chamber which is located outside the cylinder, a fuel injector located in the precombustion chamber for injecting fuel into the precombustion chamber at a point spaced from said port, and a catalytic unit disposed in and across the port for catalytically igniting the resulting injected fuel/air mixture to thereby operate said piston, the catalytic unit including a thermally stable and oxidation resistant member having a multiplicity of flow paths, the surfaces of which possess catalytic activity.

4,389,984

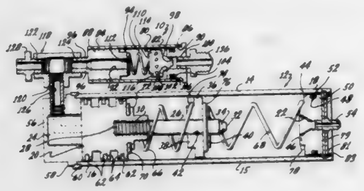
POST-SHUTDOWN COOLANT-SUPPLY DEVICE

Terry G. Destrampe, P. O. Box 372, Maricopa, Calif. 93252

Filed Mar. 26, 1981, Ser. No. 247,900

Int. Cl.³ F15B *1/04;* **F16N** *7/14;* **F01M** *1/04;* **F01B** *31/00*

U.S. Cl. 123—196 S **6 Claims**



1. In combination with a post-shutdown cooling system for an apparatus receiving coolant under pressure from an engine including a coolant reservoir and a pump drawing coolant from the reservoir and supplying it to said apparatus during normal engine operation, said post-shutdown cooling system including a coolant accumulator comprising a cylinder having an upstream end and a downstream end, a piston reciprocably mounted in said cylinder, means mounted in said cylinder for biasing said piston toward said upstream end, a first conduit for supplying coolant from said pump to said upstream end of said cylinder for moving said piston toward said downstream end of said cylinder to load said biasing means and a second conduit for supplying fluid from said accumulator to said apparatus, the improvement which comprises:

means connecting said downstream end of said cylinder to said coolant reservoir for returning any coolant passing downstream of said piston to said reservoir; and

valve means provided in said accumulator in fluid communication with said connecting means for controlling flow of coolant from said downstream end of said cylinder to said reservoir.

4,389,985

APPARATUS FOR ESTABLISHING AND TERMINATING CONNECTIONS BETWEEN CRANKSHAFTS

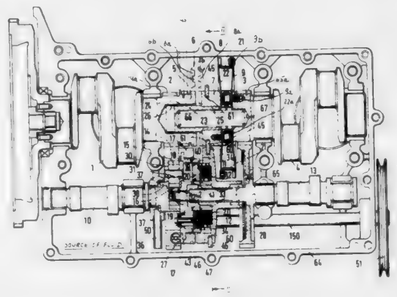
Lothar Huber, Bühl-Altschweier, and Oswald Friedmann, Lichtenau, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Feb. 12, 1981, Ser. No. 233,952

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 2005369

Int. Cl.³ F02B *75/18*

U.S. Cl. 123—198 F **42 Claims**



1. Apparatus for connecting and disconnecting first and second sections of an internal combustion engine, comprising coaxial first and second rotary crankshafts having end portions which are adjacent to each other, said first and second crankshafts respectively forming part of said first and second sections; accelerating means operable to raise the speed of said second crankshaft to at least approximate the speed of said first crankshaft; and clutch means operative to positively couple said crankshafts to each other upon completed acceleration of said second crankshaft, said clutch means comprising a first clutch member driven by the end portion of said first crankshaft and having a first profile facing said second crankshaft, a second clutch member driven by the end portion of said second crankshaft and having a second profile complementary to said first profile, means for axially movably securing at least one of said clutch members to the respective crankshaft so that the profile of said one clutch member can move into and from positive engagement with the profile of the other of said clutch members in response to axial movement of said one clutch member relative to said crankshafts, and control means for moving said one clutch member toward said other clutch member to thereby positively engage said profiles in response to completed acceleration of said second crankshaft.

4,389,986

DIRECT INJECTION TYPE INTERNAL COMBUSTION ENGINE WITH A LOW PRESSURE FUEL INJECTOR

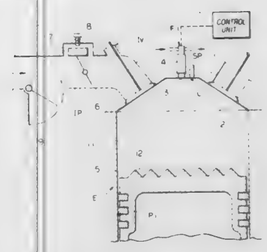
Yasusi Tanasawa, Nagoya, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkyusho, Noyoya, Japan

Filed Jun. 17, 1980, Ser. No. 160,283

Claims priority, application Japan, Jun. 30, 1979, 54-83293

Int. Cl.³ F02B *3/02*

U.S. Cl. 123—298 **15 Claims**



1. A direct injection type internal combustion engine having a crankshaft, an intake pipe, an exhaust pipe, and a low pressure fuel injector comprising:

a cylinder block having at least one cylinder, said cylinder having a central axis;

a cylinder head mounted on said cylinder block;

a piston having a large top surface area and a high heat transfer ability and reciprocally movable within said cylinder for effecting rotational motions to said crankshaft;

a combustion chamber having an upper wall, said combustion chamber being formed by said piston, said cylinder and said cylinder head;

an intake valve mechanism for opening and closing said intake pipe to be communicated with said combustion chamber;

igniting means having an igniting portion facing said combustion chamber;

said low pressure fuel injector having an injection port for injecting a low pressure fuel in a cone shape pattern across a wide injection angle through said at least one cylinder and being disposed at a central portion of said upper wall in said combustion chamber;

said injection port being directed toward said top surface area of said piston and parallel with said central cylinder axis in order to completely vaporize said low pressure fuel on said top surface area of said piston during a suction stroke of said engine;

exhaust valve means for opening and closing said exhaust pipe to be communicated with said combustion chamber; and

means for instantly vaporizing substantially all of said low pressure fuel upon contact with said large top surface area of said piston during said suction stroke.

4,389,987

CONTROL MEMBER FOR FUEL INJECTION DEVICES

Gerhard Fränkle, Remshalden, and Friedrich-Wilhelm Hase, Stuttgart, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

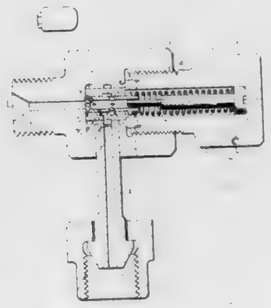
Filed Mar. 24, 1980, Ser. No. 133,410

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1979, 2911447

Int. Cl.³ F02M *45/06*

U.S. Cl. 123—300 **15 Claims**

1. A control member for regulating a flow of fuel to fuel injection means for an air-compressing internal combustion engine, the control member is adapted to be arranged in one of a zone of an injection valve or within the injection valve, the control member includes a flow controlling axially movable control means having an axial bore, spring means for urging the control means into an end position preventing a full flow of fuel through the control member, a spring chamber means for accommodating the spring means, a throttle means arranged in an end face of the control means facing an intake line means of the control member, the throttle means is arranged so as to communicate the inlet line means with the spring chamber means through the axial bore when the control means is in the end position, and means provided in the control member for enabling fuel from the intake line means to flow through the axial bore to an outlet duct leading to an injection valve upon a predetermined axial displacement of the control means in a working stroke direction against a force of the spring means during each injection cycle, characterized in that means are provided for minimizing an open volume of the spring chamber means, at least one first bore means is provided in the



control means for selectively communicating the axial bore with the outlet duct, a control edge means is provided for controlling an opening and closing of the first bore means, the control edge means is arranged so as to close the first bore means after the control means is axially displaced over a predetermined portion of the working stroke, at least one further throttle bore means in communication with the axial bore is provided in the control means at a position offset in a longitudinal direction of the control means with respect to the first bore means, and in that at least one second bore means is provided in the control means at a position offset in a longitudinal direction of the control means with respect to the further throttle bore means in a direction toward the end face of the control means.

4,389,988

INTAKE PORT FOR AN INTERNAL COMBUSTION ENGINE

Siak H. Ong, 2210 Wilshire Blvd., #577, Santa Monica, Calif. 90403

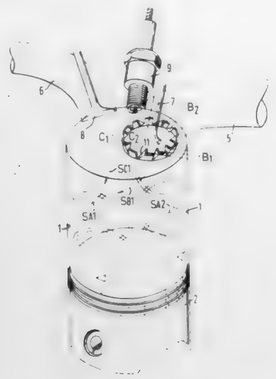
Filed Apr. 6, 1981, Ser. No. 251,289

Int. Cl.³ F02B *31/00*

U.S. Cl. 123—306 **5 Claims**

1. An intake port for an internal combustion engine having a cylinder, a piston reciprocally operating therein to form a combustion chamber, an exhaust port for the combustion chamber, an exhaust valve and seat operably mounted in the exhaust port, an inlet port delivering a fuel air mixture to the combustion chamber, an inlet valve and seat operatively mounted in the inlet port, and a spark plug for igniting the fuel-air mixture in the combustion chamber, comprising a plurality of fins disposed in the intake port for controlling the flow of fuel-air mixture into the combustion chamber, said fins being formed into a plurality of groups each of which directs the flow of fuel-air mixture in substantially opposite directions

with respect to the other as it enters the combustion chamber to thereby produce counter-rotating swirls of fuel-air mixture



within the combustion chamber at least during the intake cycle of the engine.

4,389,989

ELECTRONIC ARRANGEMENT FOR IDLING STABILIZATION

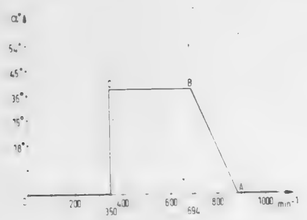
F. Gunter Hartig, Karlsruhe, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 1, 1981, Ser. No. 279,668

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1980, 3026192

Int. Cl.[3] **F02D** *5/04*

U.S. Cl. 123—339 **4 Claims**



1. In an electronic arrangement for idling stabilization between a signal transmitter for ignition spark formation and an ignition device for internal combustion engines, in which for a falling engine rotational speed the ignition timepoint is advanced below a first engine rotational speed (A) at the high end of a stabilization range until a second intermediate engine rotational speed (B) in the stabilization range is reached, said advance in ignition being attained by a delay circuit supplying a constant delay signal between said first and second engine rotational speeds, and then the ignition timepoint is maintained constant until a third engine rotational speed (C) at the low end of the stabilization range is reached, said constant ignition timepoint being attained by said delay circuit supplying an increased delay signal between said second and third engine rotational speeds, and wherein undelayed pulses are generated outside of the stabilization range, said delay circuit including a sawtooth generator triggered by an edge of a pulse from said signal transmitter, said sawtooth generator being coupled at the output side thereof to a storage means and an amplifier, coupled parallel to said storage means, having an element non-linear with respect to voltage in the feedback branch of the amplifier, a comparator means coupled to the outputs of said amplifier and said storage means, for detecting when the signal from said amplifier exceeds the value stored in said storage means and generating a signal which is coupled to said ignition device.

4,389,990

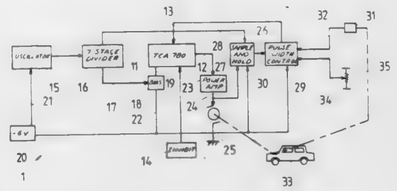
SERVO APPARATUS FOR AN AUTOMATIC SPEED CONTROL OF VEHICLES

Alan B. Murray, Forest Hills, South Africa, assignor to Control Logic (Proprietary) Limited, Durban, South Africa

Filed Sep. 24, 1981, Ser. No. 305,353

Int. Cl.[3] **F02D** *11/10*

U.S. Cl. 123—353 **14 Claims**



1. Servo apparatus for automatic control of an engine throttle in accordance with an error signal, comprising:

an electric motor, adapted to have a direct linkage on its shaft which is connectable to a vehicle engine throttle to open the throttle against a biasing force by shaft rotation in one direction, and to release the throttle by rotation in the other direction;

a sampling circuit for sampling stable motor back emf values;

a pulsed waveform signal generator having its output connected to drive the motor, and an input for a control signal in accordance with which the pulsed waveform signal is variable to vary the motor torque in the direction of rotation of throttle opening;

a control unit having its output connected to the generator control signal input, and having an error signal input, and a further input connected to receive values from the sampling circuit, the unit being adapted to vary the pulsed waveform signal to rotate the shaft in accordance with the error signal and open the throttle in a controlled manner, to use the sampling circuit input in addition to the error signal to vary the pulsed waveform signal to allow the shaft to rotate and release the throttle under the biasing force, and, to maintain the motor in a stalled condition.

4,389,991

ROTATION SENSITIVE PRESSURE REGULATOR

Dennis H. Gibson, Edelstein, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01168, § 371 Date Sep. 11, 1980, § 102(e) Date Sep. 11, 1980, PCT Pub. No. WO82/01036, PCT Pub. Date Apr. 1, 1982

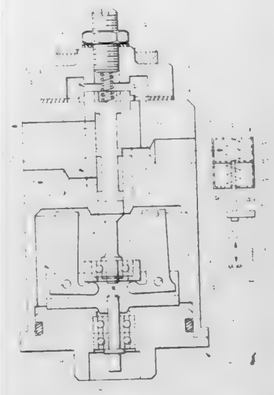
PCT Filed Sep. 11, 1980, Ser. No. 261,097

Int. Cl.[3] **F02D** *7/00*

U.S. Cl. 123—383 **7 Claims**

1. A rotation sensitive pressure regulator (**7**) having an inlet (**26**), an outlet (**29**), valve means (**21**) for regulating fluid pressure from the inlet (**29**), the valve means (**21**) including a reciprocal spool valve (**21***a*), fly-weight means (**13**) for moving the spool valve (**21***a*) in a first direction in response to rotation thereof to communicate the inlet (**26**) with the outlet (**29**), means (**32**) for urging the spool valve (**21***a*) in a second direction opposite to the first direction in response to fluid pressure in the outlet (**29**), including pressure chamber means (**34**) for exposing fluid pressure to an end of the spool valve (**21***a*),

passage means (**38**) for communicating fluid pressure from the outlet (**29**) to the pressure chamber means (**34**), and compression spring means (**40**) for biasing the spool valve (**21***a*) in the second direction, means (**39**) for selectively adjusting the compression of the spring means (**40**) for establishing a balanced condition in the regulator (**7**) wherein the force applied to the spool valve (**21***a*) by the fly-weight means (**13**) at least approximately equals and opposes the combined forces of the spring means (**40**) and the predetermined pressure in the pressure chamber means (**34**), means (**24**) for modulating the fluid pressure in the outlet (**29**) in response to the position of the spool valve (**21***a*), and vent means (**28**) for venting fluid pressure in the outlet (**29**) in response to preselected movement of the spool valve (**21***a*), in the second direction.



4,389,992

IGNITION TIMING CONTROL METHOD AND SYSTEM THEREFOR

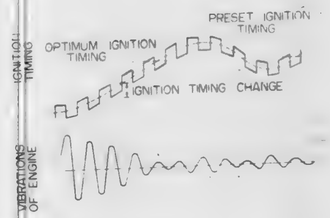
Takashi Shigematsu, and Tomoyuki Watanabe, both of Shizuoka, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 18, 1981, Ser. No. 235,724

Claims priority, application Japan, Feb. 19, 1980, 55-19590

Int. Cl.[3] **B60K** *27/06;* **F02P** *5/14;* **G01L** *23/22;* **F02P** *5/04*

U.S. Cl. 123—419 **7 Claims**



1. An ignition timing control method in an internal combustion engine, comprising:

alternately advancing and delaying an ignition timing from a reference ignition timing at a predetermined frequency, to thereby vibrate the engine;

detecting an amplitude of the engine vibrations substantially at said predetermined frequency; and

adjusting said reference ignition timing so that said amplitude can be decreased in response to the detected result.

4,389,993

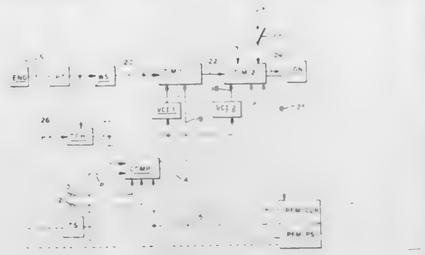
ELECTRONIC IGNITION SYSTEM

Emile D. Long, and Keith C. Richardson, both of Elmira, N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 889,996, Mar. 24, 1978, abandoned. This application Jun. 11, 1980, Ser. No. 158,439

Int. Cl.[3] **F02P** *5/04;* **F02B** *3/00;* **G06F** *7/38*

U.S. Cl. 123—421 **33 Claims**



1. A system for controlling the timing of an internal combustion engine having a rotatable power shaft and an ignition pulse generating means producing a recurring ignition pulse, comprising:

timing means for producing a timing signal recurring at a timing rate proportional to the rotational speed of said power shaft, and at a predetermined rotational angle of said power shaft,

temperature sensing means producing a signal indicative of the temperature of said engine over a temperature range, said temperature range having an upper limit and a lower limit and said temperature sensing means producing a heat signal proportional to the temperature within said range;

an advance means connected to said heat signal and said timing signal, said advance means including means for combining said timing signal and said heat signal to produce an ignition pulse, the rotational angle difference between said timing signal and has ignition pulse being proportional to the difference between said heat signal and one of said temperature range limits and wherein said advance means varies the rotational angle difference between said ignition pulse and said timing signal proportionally to the change in temperature of the engine relative to one of said temperature range limits;

load sensing means producing a load signal having a magnitude varying in response to the load upon said engine, said advance means including control means responsive to said load and heat signals for controlling the occurrence of said ignition pulse in response to load upon said engine and in response to temperature of said engine and

speed sensing means producing a speed signal having a magnitude response to the rotational speed of said power shaft, said control means being operative to advance the occurrence of said ignition pulse in response to increased rotational speed of said power shaft,

wherein said control means comprises a load clamp means having an output circuit and operable to translate said load signal to said output circuit and limit said load signal between a first and second voltage level, a voltage reference source, and a combining means for combining the output of said load clamp with said speed signal and said voltage reference to produce said control signal, said voltage reference having a magnitude such that upon starting of said engine, said control signal has a magnitude of at least that corresponding to production of said ignition pulse in synchronism with said timing signal, said clamp means comprising:

a first means for producing an output in response to said load signal, said first means biased to produce a limit output of

a first magnitude upon said load signal signifying a load on said power shaft exceeding a first amount; and

a second means driven by a first amplifier and biased for producing a limit output of a second magnitude in response to said first means producing an output signifying a load on said power shaft of less than a second amount, so that said second means produces a continuously varying signal in response to changes in the load upon said power shaft which are within a range of said first to said second amount and is limited outside.

4,389,994

INTERNAL COMBUSTION ENGINE CONTROL SYSTEM FOR USE WITH TURBO-CHARGED ENGINE, AND METHOD

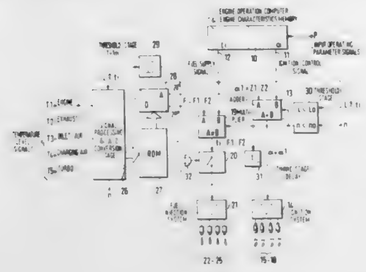
Helmut Denz, Stuttgart; Hans-Peter Stumm, Hemmingen, and Martin Zechnall, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 5, 1981, Ser. No. 270,964

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022427

Int. Cl.[3] **G05B** *15/02;* **F02D** *5/00;* **F02B** *3/10;* **F02D** *21/04*

U.S. Cl. 123—478 **15 Claims**



1. Internal combustion engine (IC) control system, for an IC engine having a turbocharger

to control the admission and combustion of a fuel-air mixture being supplied to the engine comprising

means for supplying a fuel-air mixture to the engine having a controlled fuel-air ratio;

means (**T1**) for providing an engine operating temperature signal representative of at least one of: engine temperature (**T1**); exhaust gas temperature (**T2**); inlet or induction air temperature (**T3**); turbo charging air temperatures (**T4**); turbo charger temperature (**T5**) arising in the operation of the engine;

means to prevent knocking of the engine which comprises

control means (**26, 27, 30**) including memory means (**27**) storing engine operating characteristics as a function of engine operating temperature,

said control means having said engine operating temperature signal applied thereto and furnishing an output signal to said fuel-air mixture supply means upon change of the operating temperature signal, indicative of increased operating temperature, above a predetermined level,

to increase the proportion of fuel to air to thereby enrich the fuel-air mixture being supplied to the engine.

4,389,995

ELECTRONICALLY CONTROLLED FUEL INJECTION METHOD AND APPARATUS

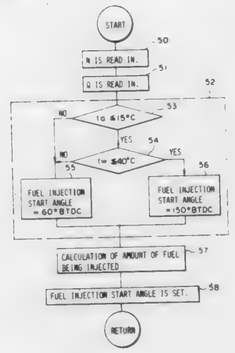
Toshikazu Koide, Susono, and Takehisa Yaegashi, Mishima, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 15, 1980, Ser. No. 216,433

Claims priority, application Japan, Oct. 13, 1980, 55-141969

Int. Cl.[3] **F02D** *5/02*

U.S. Cl. 123—491 **19 Claims**



1. A method of electronically controlling fuel injection in an engine comprising the steps of:

controlling the amount of fuel supplied to said engine by generating an electric signal for operating a fuel injection valve in an intake system of said engine; and

advancing the time at which fuel injection begins with respect to the time that an intake valve of said engine opens when said engine is at a low temperature as compared to when said engine is at a high temperature, said advancing occurring only when a temperature of intake air is below a predetermined value.

4,389,996

METHOD AND APPARATUS FOR ELECTRONICALLY CONTROLLING FUEL INJECTION

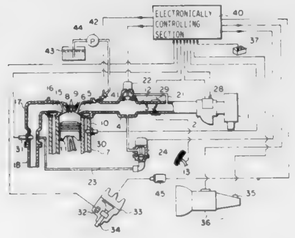
Takehisa Yaegashi, Mishima, and Yukio Kinugasa, Susono, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 5, 1981, Ser. No. 260,844

Claims priority, application Japan, Dec. 9, 1980, 55-172630

Int. Cl.[3] **F02D** *9/02;* **G05B** *15/02;* **F02D** *1/04;* **F02M** *25/06*

U.S. Cl. 123—491 **16 Claims**



1. A method of electronically controlling fuel injection in an engine, said engine including an intake passage; a throttle valve disposed in said passage; a fuel injection valve controlled by electric pulses for injecting fuel into said intake passage; a bypass line running in parallel to a portion of said intake passage in which said throttle valve is disposed; a control valve for controlling the effective cross sectional area of said bypass line; and an electronic controlling section for calculating from operational parameters of said engine an amount of fuel to be injected as well as a flow rate of intake air through said bypass line, thereby controlling said fuel injection valve and said control valve, said method comprising the steps of:

storing a value related to one of a mean value of an intake air flow rate while said engine is operating under first conditions in which the temperature of said engine is higher than a predetermined value, said engine is idling and the opening of said control valve is being calculated by using the rotational speed of said engine as a parameter, and a mean value of the amount of fuel that has been injected while said engine is operating under said first conditions; and

calculating, by using said stored value as a parameter, an amount of fuel to be injected during at least one of the following second conditions: said engine is restarted, the temperature of said engine is lower than a predetermined value, and said engine is lower than a predetermined value, and said engine is accelerating while the temperature of said engine is lower than a predetermined value.

4,389,997

ELECTRONICALLY CONTROLLED METHOD AND APPARATUS FOR VARYING THE AMOUNT OF FUEL INJECTED INTO AN INTERNAL COMBUSTION ENGINE WITH ACCELERATION PEDAL MOVEMENT AND ENGINE TEMPERATURE

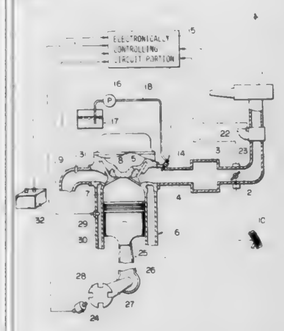
Jiro Nakano, and Hideo Miyagi, both of Okazaki, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 22, 1980, Ser. No. 171,031

Claims priority, application Japan, Apr. 28, 1980, 55-55415

Int. Cl.[3] **F02B** *3/00*

U.S. Cl. 123—492 **30 Claims**



1. An electronically controlled fuel injection method for an internal combustion engine, wherein a fuel injection valve for injecting fuel into an intake system is controlled by electric signals comprising the steps of:

generating an acceleration signal comprised of pulses in association with both a speed of movement of an acceleration pedal and an engine temperature; and

transmitting to the fuel injection valve, asynchronously with the running of the engine, an increasing number of pulses for increasing a rate of fuel being injected from said fuel injection valve in response to at least one of the speed of movement of the acceleration pedal being increased and the engine temperature being lowered.

16. An apparatus for electronically controlling a fuel injection valve for injecting fuel into an intake system of an internal combustion engine, comprising:

means for producing throttle signals representative of the speed of movement of an acceleration pedal;

means for producing a temperature signal representative of the engine temperature;

means for generating an acceleration signal comprised of pulses related to both said throttle and temperature signals; and

means for transmitting to the fuel injection valve, asynchronously with the running of the engine, an increasing number of pulses for increasing the rate of fuel being injected from said fuel injection valve in response to at least one of the speed of movement of the acceleration pedal being increased and the engine temperature being lowered.

4,389,998

DISTRIBUTION TYPE FUEL INJECTION PUMP

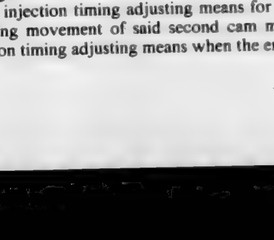
Hachiro Aoki; Hitoshi Tomita, both of Higashimatsuyama, and Kiyoshi Nagamata, Kohnan, all of Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1980, Ser. No. 199,528

Claims priority, application Japan, Oct. 24, 1979, 54-146251[U]

Int. Cl.[3] **F02M** *59/20*

U.S. Cl. 123—502 **4 Claims**



1. A fuel injection pump for use in a fuel injection combustion engine, comprising:

a housing having a fuel chamber therein;

a plunger movably mounted in said housing and forming a plunger chamber between a head of said plunger and said housing;

first cam means fixedly mounted on said plunger;

second cam means turnably mounted on said housing and cooperating with said first cam means so as to cause reciprocal motion of said plunger along the axis thereof during plunger rotation with respect to said second cam means, said second cam means being capable of taking one of a plurality of angular positions thereof;

fuel supply for introducing fuel into said plunger during a suction stroke of said plunger;

a delivery port for feeding fuel to the engine from said plunger chamber during a delivery stroke of said plunger;

a leak port formed in said plunger and connected to said plunger chamber;

a control sleeve slidably mounted on said plunger for normally closing said leak port and for connecting said leak port to said fuel chamber at the end of the delivery stroke to terminate the fuel injection;

a governor device actuating said control sleeve for controlling the quantity of fuel to be injected;

injection timing control means for controlling the angular position of said second cam means in response to the engine speed;

injection timing adjusting means for providing an adjusted movement of said second cam means toward a determined angular position so as to advance the injection timing under a preselected operating condition of said engine at the engine start;

auxiliary injection timing adjusting means for releasing the adjusting movement of said second cam means by said injection timing adjusting means when the engine temper-

ature is elevated over a predetermined level to effect the controlling of the angular position of said second cam means in response to the engine speed by said injection timing control means;

said injection timing adjusting means including:

a first cylinder and a second cylinder both mounted on said housing;

a first piston slidably mounted in said first cylinder and connected to said second cam means, said first piston forming a pressure chamber over a pressure receiving area A_1 thereof and being effected by fuel pressure, in response to the engine speed, introduced into said pressure chamber to move said second cam means toward injection timing advancing;

a first spring urging said first piston toward injection timing retarding, said first piston moving in accordance with the difference between an elasticity of said first spring and said pressure in said pressure chamber,

a second piston slidably mounted in said second cylinder coaxially with an axial line of said first piston and having a pressure receiving area A_2 facing said pressure chamber, said area A_2 being larger than said pressure receiving area A_1 of said first piston;

a second spring urging said second piston toward said pressure chamber for causing an end surface to fall in abutting contact with a portion of the end surface of said first piston, by the abutment between said first piston and said second piston, said first piston being adjusted in axial position thereof to a predetermined position where the injection timing is advanced, said second piston moving in accordance with the difference between the elasticity of said second spring and the fuel pressure in said pressure chamber, said second spring having a higher elasticity F_2 than elasticity F_1 of said first spring, said areas A_1 and A_2 as well as elasticity F_1 and F_2 satisfying the following inequality,

$$F_1/A_1 > F_2/A_2;$$

and a seal ring being attached to the end surface of said second cylinder facing to said pressure chamber for partitioning said pressure chamber into a central pressure chamber formed between end surfaces of said pistons and an auxiliary pressure chamber between end surfaces of said second piston and said second cylinder when said seal ring is engaged with the end surface of said second piston facing to said pressure chamber, said pressure chamber communicated with said fuel chamber in said housing;

said auxiliary injection timing adjusting means comprising:

a communicating passage formed in said second cylinder for communicating said control pressure chamber with said auxiliary peripheral chamber, and

a valve means which opens said communicating passage only when the engine temperature is elevated above a predetermined level.

4,389,999

ULTRASONIC CHECK VALVE AND DIESEL FUEL INJECTOR

Vance W. Jaqua, Canoga Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 179,325, Aug. 18, 1982, abandoned. This application May 17, 1982, Ser. No. 378,544

Int. Cl.³ F02M *47/00;* **F02B** *7/00*

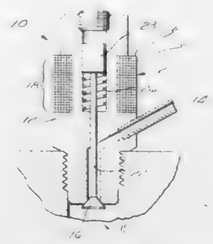
U.S. Cl. 123—536 **5 Claims**

1. An ultrasonic fuel injector suitable for use in a diesel, comprising:

an injector body,

conduit means for allowing a flow of fuel to pass through said injector body, and

a check valve comprising a valve seat at a point along said conduit means, a check valve head engageable with said valve seat to close-off said conduit means, said check valve head being moveable to a disengaged position with respect to said valve seat, biasing means for urging said check valve head to return to engagement with said valve seat after passage of said flow of fuel, means for connecting said check



valve body to said biasing means and means for applying ultrasonic vibration to said check valve head through said connecting means while said check valve head is in said disengaged position, so that said flow of fuel is atomized.

4,390,000

AIR-FUEL MIXTURE HEATING DEVICE FOR INTERNAL COMBUSTION ENGINE

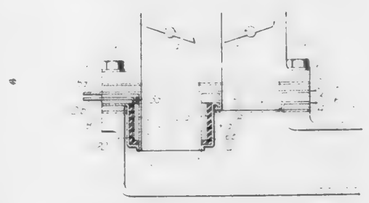
Toshihiko Igashira, Toyokawa; Ken Nomura, Okazaki; Seiko Abe, Kariya, and Yasuhiko Ishida, Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Mar. 27, 1981, Ser. No. 248,285

Claims priority, application Japan, Mar. 28, 1980, 55-42084[U]; Dec. 5, 1980, 55-172233

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—549 **7 Claims**



1. An air-fuel mixture heating device for an internal combustion engine, adapted to be disposed between fuel supply means and a suction pipe for the engine, for promoting vaporization of a fuel, comprising:

a first metal member including a planar portion, and a pipe portion of minor diameter extending from said planar portion to define a passage for a fuel-air mixture;

a second metal member including a planar portion, and a pipe portion of major diameter extending from said planar portion and arranged outside said pipe portion of minor diameter of said first metal member concentrically therewith, said pipe portions of said first metal member and said second metal member being joined to each other at the end to define a cylindrical space therebetween and said planar portions being adapted to be held between the fuel supply means and the suction pipe;

three flat plates of insulating material holding said members, one between said planar portions and two for clamping the same;

a ceramic heater of positive temperature coefficient characteristic having a specific Curie point mounted in said cylindrical space; and

an insulator between said heater and one of said pipe portions.

4,390,001

EXHAUST GAS RECIRCULATION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Misao Fujimoto, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Oct. 19, 1981, Ser. No. 312,747

Claims priority, application Japan, Oct. 20, 1980, 55-147272

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—571 **6 Claims**



1. An internal combustion engine comprising combustion chamber means, intake passage means leading to said combustion chamber means for providing a supply of intake gas, exhaust passage means leading from said combustion chamber means for exhausting combustion gas therefrom, an exhaust gas recirculation system including exhaust gas recirculation passage means leading from said exhaust passage means to said intake passage means, recirculating gas control valve means provided in said recirculation passage means for controlling recirculated gas flow through said recirculation passage means, means for detecting engine operating conditions and providing an engine operating condition signal, restriction means provided in said recirculation passage means, pressure drop sensing means for detecting a pressure drop across the restriction means, memory means having memories of optimum values of pressure drop under various engine operating conditions, control means for adjusting said control valve means so that the pressure drop detected by the sensing means conforms to the memorized optimum value under a specific engine operating condition, said restriction means comprising restriction valve means of which opening can be varied, means for controlling said restriction valve means so that the opening is increased as the recirculated gas flow is increased.

4,390,002

HINGE FOR COVER OF KETTLE COOKER

Virgil W. Daily, III, Paris, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Aug. 14, 1981, Ser. No. 292,920

Int. Cl.³ A47J *37/07;* **E05D** *11/06*

U.S. Cl. 126—25 R **15 Claims**

1. A covered kettle cooker barbecue grill comprising a hinge for attaching a cover to a kettle to permit moving the cover between closed and open positions,

(a) the kettle being a generally hemispherical barbecue grill kettle;

(b) the cover being a generally circular dome-shaped cover for said kettle, said cover having a rim; and

(c) the hinge being for attaching said cover to said kettle, said hinge being disposed within said grill and including:

(i) two spaced legs joined by a bight to form an inverted U-shaped member, each of said legs being shaped to be disposed adjacent to the rim along the underside of said dome-shaped kettle cooker cover, and to conform generally to the shape of said rim, when said cover is in the closed position upon said kettle, said legs being free of any braces connecting said legs to each other, said U-shaped member having fully closed, partially open, and fully opened positions;

(ii) means pivotally securing the lower end of each of said legs to the inner wall of said kettle at opposite sides of the kettle, the locations at which the lower ends of said spaced legs are pivotally secured to said kettle lying in a first pair of adjacent quadrants of said kettle; and



(iii) means pivotally securing the bight which is at the upper end of said inverted U-shaped member, to the inner wall of said cover at a location that is adjacent the outer perimeter of said dome-shaped cover, and is directly above the other two quadrants of said kettle when said cover and said inverted U-shaped member are in their closed positions, said means pivotally securing the bight extending an opposite sides of the vertical plane that divides said other two quadrants of said kettle.

said bight lying outside said kettle when said inverted U-shaped member is in the fully open position.

4,390,003

PETROLEUM COMBUSTION DEVICE

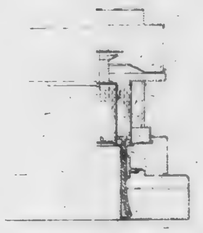
Kazuharu Nakamura, Nagoya; Yoshio Mito, Gifu; Yutaka Nakanishi, Konan, and Toshihiko Yamada, Toyoake, all of Japan, assignors to Toyotomi Kogyo Co., Ltd., Nagoya, Japan

Filed May 19, 1981, Ser. No. 265,068

Claims priority, application Japan, Jun. 11, 1980, 55-82168[U]; Jun. 11, 1980, 55-82169[U]

Int. Cl.³ F24C *5/04*

U.S. Cl. 126—96 **5 Claims**



1. A petroleum combustion device comprising a primary combustion chamber composed of a combustion cylinder including an inner flame cylinder, outer flame cylinder and an outer cylinder; a secondary combustion chamber having a base plate and disposed on said primary combustion chamber and provided at that portion of its base plate which is outside said outer cylinder of said primary combustion chamber with means forming an air path, said secondary combustion chamber including an upper flame cylinder located above said air

a first piston slidably mounted in said first cylinder and connected to said second cam means, said first piston forming a pressure chamber over a pressure receiving area A_1 thereof and being effected by fuel pressure, in response to the engine speed, introduced into said pressure chamber to move said second cam means toward injection timing advancing;

a first spring urging said first piston toward injection timing retarding, said first piston moving in accordance with the difference between an elasticity of said first spring and said pressure in said pressure chamber,

a second piston slidably mounted in said second cylinder coaxially with an axial line of said first piston and having a pressure receiving area A_2 facing said pressure chamber, said area A_2 being larger than said pressure receiving area A_1 of said first piston;

a second spring urging said second piston toward said pressure chamber for causing an end surface to fall in abutting contact with a portion of the end surface of said first piston, by the abutment between said first piston and said second piston, said first piston being adjusted in axial position thereof to a predetermined position where the injection timing is advanced, said second piston moving in accordance with the difference between the elasticity of said second spring and the fuel pressure in said pressure chamber, said second spring having a higher elasticity F_2 than elasticity F_1 of said first spring, said areas A_1 and A_2 as well as elasticity F_1 and F_2 satisfying the following inequality,

$$F_1/A_1 > F_2/A_2;$$

and a seal ring being attached to the end surface of said second cylinder facing to said pressure chamber for partitioning said pressure chamber into a central pressure chamber formed between end surfaces of said pistons and an auxiliary pressure chamber between end surfaces of said second piston and said second cylinder when said seal ring is engaged with the end surface of said second piston facing to said pressure chamber, said pressure chamber communicated with said fuel chamber in said housing;

said auxiliary injection timing adjusting means comprising:

a communicating passage formed in said second cylinder for communicating said control pressure chamber with said auxiliary peripheral chamber, and

a valve means which opens said communicating passage only when the engine temperature is elevated above a predetermined level.

4,389,999

ULTRASONIC CHECK VALVE AND DIESEL FUEL INJECTOR

Vance W. Jaqua, Canoga Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 179,325, Aug. 18, 1982, abandoned. This application May 17, 1982, Ser. No. 378,544

Int. Cl.³ F02M *47/00*; **F02B** *7/00*

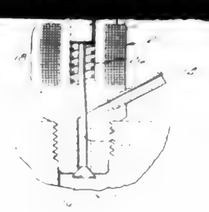
U.S. Cl. 123—536 **5 Claims**

1. An ultrasonic fuel injector suitable for use in a diesel, comprising:

an injector body,

conduit means for allowing a flow of fuel to pass through said injector body, and

a check valve comprising a valve seat at a point along said conduit means, a check valve head engageable with said valve seat to close-off said conduit means, said check valve head being moveable to a disengaged position with respect



valve body to said biasing means and means for applying ultrasonic vibration to said check valve head through said connecting means while said check valve head is in said disengaged position, so that said flow of fuel is atomized.

4,390,000

AIR-FUEL MIXTURE HEATING DEVICE FOR INTERNAL COMBUSTION ENGINE

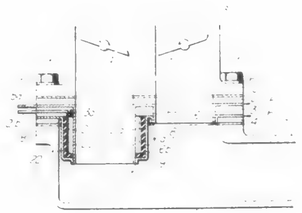
Toshihiko Igashira, Toyokawa; Ken Nomura, Okazaki; Seiko Abe, Kariya, and Yasuhiko Ishida, Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Mar. 27, 1981, Ser. No. 248,285

Claims priority, application Japan, Mar. 28, 1980, 55-42084[U]; Dec. 5, 1980, 55-172233

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—549 **7 Claims**



1. An air-fuel mixture heating device for an internal combustion engine, adapted to be disposed between fuel supply means and a suction pipe for the engine, for promoting vaporization of a fuel, comprising:

a first metal member including a planar portion, and a pipe portion of minor diameter extending from said planar portion to define a passage for a fuel-air mixture;

a second metal member including a planar portion, and a pipe portion of major diameter extending from said planar portion and arranged outside said pipe portion of minor diameter of said first metal member concentrically therewith, said pipe portions of said first metal member and said second metal member being joined to each other at the end to define a cylindrical space therebetween and said planar portions being adapted to be held between the fuel supply means and the suction pipe;

three flat plates of insulating material holding said members, one between said planar portions and two for clamping the same;

a ceramic heater of positive temperature coefficient characteristic having a specific Curie point mounted in said cylindrical space; and

Ltd., Hiroshima, Japan

Filed Oct. 19, 1981, Ser. No. 312,747

Claims priority, application Japan, Oct. 20, 1980, 55-147272

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—571 **6 Claims**



1. An internal combustion engine comprising combustion chamber means, intake passage means leading to said combustion chamber means for providing a supply of intake gas, exhaust passage means leading from said combustion chamber means for exhausting combustion gas therefrom, an exhaust gas recirculation system including exhaust gas recirculation passage means leading from said exhaust passage means to said intake passage means, recirculating gas control valve means provided in said recirculation passage means for controlling recirculated gas flow through said recirculation passage means, means for detecting engine operating conditions and providing an engine operating condition signal, restriction means provided in said recirculation passage means, pressure drop sensing means for detecting a pressure drop across the restriction means, memory means having memories of optimum values of pressure drop under various engine operating conditions, control means for adjusting said control valve means so that the pressure drop detected by the sensing means conforms to the memorized optimum value under a specific engine operating condition, said restriction means comprising restriction valve means of which opening can be varied, means for controlling said restriction valve means so that the opening is increased as the recirculated gas flow is increased.

4,390,002

HINGE FOR COVER OF KETTLE COOKER

Virgil W. Daily, III, Paris, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Aug. 14, 1981, Ser. No. 292,920

Int. Cl.³ A47J *37/07*; **E05D** *11/06*

U.S. Cl. 126—25 R **15 Claims**

1. A covered kettle cooker barbecue grill comprising a hinge for attaching a cover to a kettle to permit moving the cover between closed and open positions,

(a) the kettle being a generally hemispherical barbecue grill kettle;

(b) the cover being a generally circular dome-shaped cover for said kettle, said cover having a rim; and

(c) the hinge being for attaching said cover to said kettle, said hinge being disposed within said grill and including:

(i) two spaced legs joined by a bight to form an inverted U-shaped member, each of said legs being shaped to be

(ii) means pivotally securing the lower end of each of said legs to the inner wall of said kettle at opposite sides of the kettle, the locations at which the lower ends of said spaced legs are pivotally secured to said kettle lying in a first pair of adjacent quadrants of said kettle; and



(iii) means pivotally securing the bight which is at the upper end of said inverted U-shaped member, to the inner wall of said cover at a location that is adjacent the outer perimeter of said dome-shaped cover, and is directly above the other two quadrants of said kettle when said cover and said inverted U-shaped member are in their closed positions, said means pivotally securing the bight extending an opposite sides of the vertical plane that divides said other two quadrants of said kettle,

said bight lying outside said kettle when said inverted U-shaped member is in the fully open position

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4,390,003

PETROLEUM COMBUSTION DEVICE

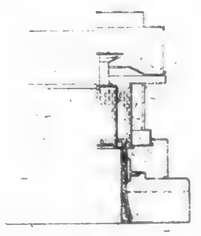
Kazuharu Nakamura, Nagoya; Yoshio Mito, Gifu; Yutaka Nakanishi, Konan, and Toshihiko Yamada, Toyoake, all of Japan, assignors to Toyotomi Kogyo Co., Ltd., Nagoya, Japan

Filed May 19, 1981, Ser. No. 265,068

Claims priority, application Japan, Jun. 11, 1980, 55-82168[U]; Jun. 11, 1980, 55-82169[U]

Int. Cl.³ F24C *5/04*

U.S. Cl. 126—96 **5 Claims**



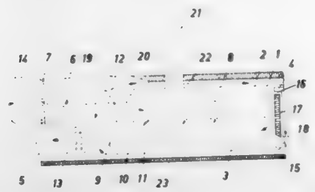
1. A petroleum combustion device comprising a primary combustion chamber composed of a combustion cylinder including an inner flame cylinder, outer flame cylinder and an outer cylinder; a secondary combustion chamber having a base plate and disposed on said primary combustion chamber and provided at that portion of its base plate which is outside said outer cylinder of said primary combustion chamber with means forming an air path, said secondary combustion chamber including an upper flame cylinder located above said air

path; and a flame extension device arranged in said secondary combustion chamber and communicated with the upper portion of said inner flame cylinder of said primary combustion chamber; said outer cylinder of said primary combustion chamber being formed by a transparent or translucent heat resistant heat ray tranmission substance.

4,390,004
UNIVERSAL FURNACE

Karl Kardos, Mölnlycke; Bertil Mattsson, Gothenburg, and Olle Westermark, Falköping, all of Sweden, assignors to Produktutvecklingscentrum i Goteborg, Gothenburg, Sweden

PCT No. PCT/SE80/00131, § 371 Date Jan. 7, 1981, § 102(e) Date Dec. 31, 1980, PCT Pub. No. WO80/02454, PCT Pub. Date Nov. 13, 1980
PCT Filed May 6, 1980, Ser. No. 221,548
Claims priority, application Sweden, May 7, 1979, 7903968
Int. Cl.³ F24H *3/06*
U.S. Cl. 126—104 A **7 Claims**



1. In a furnace for producing hot air with solid or liquid fuels and incorporating a double-shelled combustion chamber having a fuel intake door at one end thereof and a smoke funnel, at least one blower having an inlet and an outlet arranged at the end opposite to said fuel intake door and adapted to force air to be heated through the blower outlet and into the space between said double shells, an outlet for heated air being arranged at the end of the furnace provided with said blower, the improvement comprising substantially horizontally arranged partition members in the space between said double shells to subdivide said space into an upper and a lower zone, said zones being directly adjacent the combustion chamber, and said zones taken together enclosing the combustion chamber, the outlet from said blower being arranged to communicate with said upper zone, and an opening in said partition members situated adjacent the fuel intake end of the furnace, so that the air from the blower outlet passes first through said upper zone to cool the upper part of the combustion chamber wall and thereafter through said lower zone to cool the lower part of the combustion chamber wall.

4,390,005
FAN ACCESSORY FOR HEATER

Donald G. Porter, 8620 Wilkinson Blvd., Charlotte, N.C. 28208

Filed Apr. 5, 1982, Ser. No. 365,594
Int. Cl.³ F24H *3/02*
U.S. Cl. 126—110 B **2 Claims**

2. A fan accessory for recovering heated air generated by a heater and comprising:

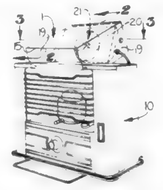
housing means for directing air flow and having an upper wall, a rear wall defining an ambient air inlet, a lower wall defining a heated air inlet, and a front portion defining an air outlet for ambient and heated air,

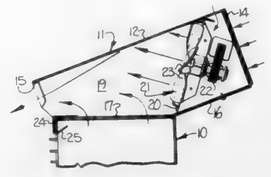
the upper and lower walls of said housing means being convergingly arranged relative to each other toward said air outlet in the direction of air flow to cause the air flow through said outlet to move more rapidly therethrough,

fan means mounted within said housing means for inducing ambient and heated air to enter said inlets and flow through said housing means and out of said air outlet,

said fan means comprising variable speed control means for varying the rate of flow of ambient and heated air through said inlets and out of said outlet,

said fan means being angularly mounted within said housing means so as to cause the air flow through the housing to be





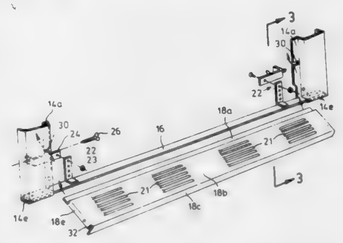
impingingly engaged with the upper wall of the housing, and

heater engaging means on said housing means for positioning the housing to receive through said heated air inlet heated air generated by a heater.

4,390,006
FIREPLACE DOOR ASSEMBLY

Ronald Kowk, Weston, Canada, assignor to Ruth C. Kowk, Weston, Canada

Filed Jan. 23, 1981, Ser. No. 227,592
Int. Cl.³ F24C *15/10*
U.S. Cl. 126—140 **2 Claims**



1. A fireplace door assembly comprising,

(a) a fabricated frame shaped corresponding to the shape of the periphery of a fireplace door opening and defining a door opening,

(b) a door mounted in said frame for opening and closing said door opening, said door having a lower edge,

(c) said frame comprising,

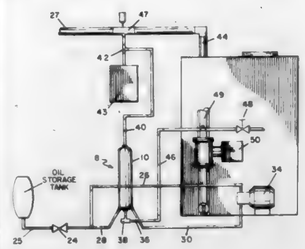
(i) a pair of jambs, a header and a fixed sill which are secured to one another to form said frame, said fixed sill extending transversely between the lower ends of the jambs so as to extend in close proximity to the hearth of the fireplace in association with which it is to be used, said fixed sill being sufficiently short in height that it does not form a significant barrier inhibiting the removal of ash or the like from the hearth, and

(ii) a removable sill adapted to be releasably mounted on said frame in a position extending upwardly from said fixed sill to said lower edge of said door, said removable sill having a substantially greater height than said fixed sill.

4,390,007
FUEL PREHEATER

Gerard A. Paquette, 195 Pool St., Biddeford, Me. 04005

Filed Jun. 30, 1980, Ser. No. 164,887
Int. Cl.³ F24H *1/00*
U.S. Cl. 126—350 R **1 Claim**



1. An oil preheater for use in a heating system of the type where the oil before being preheated is stored in a tank and is preheated at a point in the system while being piped to an oil burner which burns said oil in a furnace having a hot water heating system of the type with hot water exiting from said furnace by means of a hot water feed pipe and re-entering said furnace through a return line pipe, said hot water feed pipe having an air vent and expansion tank thereon, and said return line pipe having a cold water feed for entry of additional water into said hot water heating system at times when additional water is needed to replace any water lost from the system, comprising:

a cannister having a water inlet and a water outlet, an oil inlet and an oil outlet;

a double-coiled tube member located within said cannister having a first and second end, said first end being connected to said oil outlet and said second end being connected to said oil inlet;

a hot water entry pipe extending from said hot water feed pipe between said air vent and expansion tank to said water inlet of said cannister;

a hot water drain pipe extending from said water outlet of said cannister to said return line pipe of said hot water heating system;

first pipe means to provide oil from said oil tank into said cannister's oil inlet;

a second pipe means to deliver oil from said cannister's oil outlet to said oil burner;

a two-stage pump interconnected to said second pipe means adapted to pump a portion of said oil to said oil burner;

a check valve on said first pipe means providing oil into said cannister to prevent backflow of oil to said oil tank;

a third pipe means extending from said two-stage pump carrying the portion of said oil not pumped into said oil burner back to said first pipe means between said check valve and said oil inlet of said cannister to be recirculated through said cannister to said second pipe means;

whereby the hot water passes through said hot water heating system and also through said cannister to heat said oil-carrying double-coiled tube member and the oil circulating therein and the oil so heated is carried to said oil burner at a higher temperature than unheated oil with any oil that is not burned in said oil burner being recirculated through said double-coiled tube member to maintain its higher temperature.

4,390,008
HOT WATER TANK FOR USE WITH A COMBINATION OF SOLAR ENERGY AND HEAT-PUMP DESUPERHEATING

John W. Andrews, Sag Harbor, N.Y., assignor to The United Stated of America as represented by the Department of Energy, Washington, D.C.

Filed Jun. 26, 1980, Ser. No. 163,449
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—427 **10 Claims**

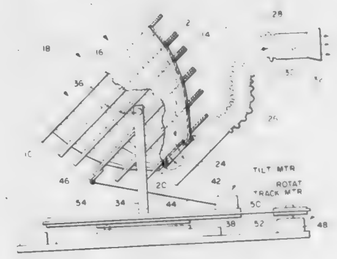


7. A hot water system comprising a hot water storage tank, a baffle displaceably disposed within said tank forming a moving barrier between the volume of cold water entering said tank and the heated water in said tank, a first heat exchanger in the form of a solar collector connected in circuit with said tank, said solar collector having an inlet connected to one end of the tank and an outlet connected to the other end of the tank whereby cold water from below said baffle is circulated from said tank through said collector and back to said tank above said baffle, and a second heat exchanger in the form of a desuperheater connected in circuit with said tank, said desuperheater having an inlet connected intermediate to the ends of said tank and an outlet connected to said one end of the tank whereby, depending upon the position of said baffle relative to said desuperheater inlet, cold water from below said baffle or solar preheated water from above said baffle is circulated from said tank to said desuperheater to be further heated thereby, and an electric resistance heater operatively connected to said tank as a back-up heater for the water in said tank.

4,390,009
SOLAR BOILER

Arthur Consilvio, 65 Poplar Ave., Bronx, N.Y. 10465

Filed May 17, 1982, Ser. No. 379,185
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—439 **6 Claims**

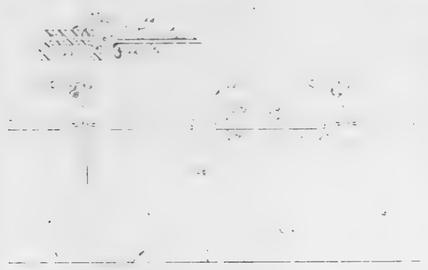


1. A solar boiler comprising:

a solar reflector;

reflector sections constituting the periphery of said solar reflector;
mirror supports defining the longitudinal boundaries of said reflector sections;
mirrors mounted on the inner surfaces of said mirror supports;
a disc located at the central point of said solar reflector;
a plurality of holes in said disc;
a receiving box adjacent to said disc;
a means for causing said reflector to continuously track the sun's rays and focus said rays on said disk, whereby said disk is heated;
a fluid distribution hose attached to said receiving box;
a means for moving a fluid through said fluid distribution hose from said disk to a diffuser attached to the other end of said fluid distribution hose, whereby said fluid will transfer heat from said disk to the ambient into which said diffuser discharges said fluid, wherein said solar reflector is attached to vertical supports at a pivot point and said vertical supports are fixed to a revolving base which is further attached to a mounting base; and
wherein said means for causing said reflector to continuously tract the sun's rays, is a first motor for tilting said reflector with respect to said vertical supports, a rod attached to said first motor, a hinged point which is fixed to end of said rod, a second motor for revolving said solar reflector with respect to said mounting base, a first pulley mounted to said second motor, a second pulley secured to said mounting base, and a pulley belt connecting said first pulley to said second pulley.

4,390,010
SOLAR ENERGY COLLECTING APPARATUS AND ROLL-FORMED METAL BUILDING
Dale N. Skillman, P.O. Box 1311, Rapid City, S. Dak. 57709
Filed Mar. 12, 1981, Ser. No. 243,264
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **14 Claims**



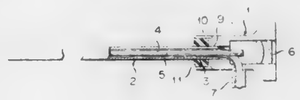
1. In solar energy collecting apparatus, the combination comprising a solar energy collecting assembly including:
a load supporting structure of a building in the form of a plurality of panels connected side by side at a seam joining means;
a one-piece collector panel having a substantially flat collector plate with an absorber surface provided by an intermediate wall portion of the collector panel for collecting solar energy, said collector plate forming an imperforate weather membrane and forming an airflow passage above said supporting structure using said supporting structure to define a lower portion of said passage, said passage carrying air heated by said collector plate, said collector panel having upper side edge flanges for connecting together adjacent collector plates at continuous seam structure that is seamed to said seam joining means; and
a solar energy transmissive cover mounted on the associated opposed sidewall portions above each collector plate to provide an air space between said cover and associated collector plate, each cover mounting including a side edge connecting member connected along each of the opposite side edges of each cover for fastening said opposite side edges of the cover to the sidewall portions of the associated collector panel at said upper side edge flanges to form an air space above each associated collector plate.

4,390,011
ADJUSTABLE SURGICAL ARM REST AND INSTRUMENT PLATFORM
Daniel R. Evans, 2005 Valparaiso, Valparaiso, Ind. 46383
Filed May 6, 1981, Ser. No. 260,891
Int. Cl.³ A61B *19/00*; **A47F** *5/10*
U.S. Cl. 128—1 R **11 Claims**



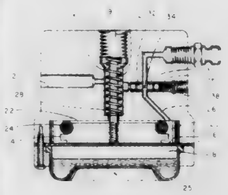
1. An arm and hand rest device for performing surgery on a patient lying on an operating table, comprising a horizontally disposed board for insertion between the patient's body and the operating table, a pedestal connected to said board and having a platform at the top thereof for positioning near the head of the patient lying on the board, said pedestal having an angular adjustment mechanism for varying the angular position of the platform relative to the board, including a support member rigidly secured to said board, a bracket member attached to the platform and connected to said support member, a shaft about which the bracket member is pivotally disposed for releasably securing said support member and bracket member in adjusted positions, and a latching means including a pin extending through one of said members and received by holes in the other of said members for selecting various angular positions for said platform relative to the patient's head, and said support member and bracket member include contacting surfaces rotatable about said shaft and said shaft includes a threaded means for drawing said contacting surfaces into firm engagement with one another to assist in retaining said platform in a rigid position with respect to said pedestal.

4,390,012
RIGID TYPE ENDOSCOPE
Morihide Mizumoto, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Apr. 14, 1980, Ser. No. 139,724
Claims priority, application Japan, Apr. 17, 1979, 54-46813
Int. Cl.³ A61B *1/00*
U.S. Cl. 128—4 **14 Claims**



1. In a rigid type endoscope comprising
an ocular having a distal end;
a hollow substantially rigid connecting member connected to said distal end of said ocular and having an inner peripheral face; and
a rigid cylindrical optic tube having a proximal end portion inserted in said connecting member, said connecting member surrounding said proximal end portion of said rigid cylindrical optic tube;
the improvement comprising:
elastic holding means disposed between said connecting member and said proximal end portion of said rigid cylindrical optic tube, said elastic holding means being elastically fixed to said rigid cylindrical optic tube and being supported by said connecting member, and making a close, elastic, area-to-area contact with both the outer surface of said proximal end portion of said rigid cylindrical optic tube and with said inner peripheral face of said connecting member, for elastically holding said proximal end portion of said rigid cylindrical optic tube, whereby bending stress applied to said rigid cylindrical optic tube is widely distributed along said area-to-area contact surfaces.

4,390,013
PERCUSSOR ASSEMBLY
Victor L. Bartholomew, Hemet, Calif., assignor to Hudson Oxygen Therapy Sales Company, Temecula, Calif.
Filed Dec. 29, 1980, Ser. No. 220,274
Int. Cl.³ A61H *7/00*
U.S. Cl. 128—55 **7 Claims**



1. In a percussor assembly having a gas inlet passageway, a first gas chamber communicating therewith, a gas outlet passageway, and movable gas sealing means for providing a gas-tight seal between said first gas chamber and said gas outlet passageway, whereby increased gas pressure in said first gas chamber moves said gas sealing means and breaks said gas-tight seal resulting in said increased gas pressure in said gas pressure chamber being relieved through said gas outlet passageway, the improvement comprising
valve means cooperating between said gas inlet passageway and said gas outlet passageway for closing said gas inlet passageway in response to said gas pressure being relieved through said gas outlet passageway.

4,390,014
SELF-RETAINING RIB BELT
Everett W. Forman, 31 Harper St., Stamford, N.Y. 12167
Filed Oct. 13, 1981, Ser. No. 310,889
Int. Cl.³ A61F *5/02*
U.S. Cl. 128—78 **1 Claim**

1. A self-retaining rib belt comprising the combination of a flexible non-elastic elongate member of bandage material with adjustable closure means and a longitudinally attached outer elastic means, said elastic means unstretched length being shorter than the adjacent longitudinal portion of said elongate member whereby for various sized chests the elongate member obtains finite restriction of chest expansion during inhalation



yet the contracting elastic means prevents slippage of the belt when the chest diminishes in size during exhalation.

4,390,015
THIGH SUPPORT BRACE
C. Dale Clements, 9662 Gurdon, Boise, Id. 83702
Filed Jan. 8, 1981, Ser. No. 223,254
Int. Cl.³ A61F *3/00*, *13/00*
U.S. Cl. 128—80 R **4 Claims**



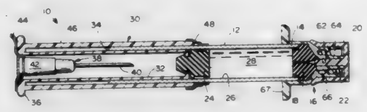
1. Support brace apparatus for supporting the thighs of a user, comprising, in combination:
base plate means, including
a bottom plate portion having a portion thereof curved toward the user's torso, and
a center plate portion remote from the curved bottom portion extending from said bottom plate portion;
thigh support means pivotally attached to the base plate means, including
a first thigh support,
an arcuately extending first slot in the first thigh support,
means extending through the arcuately extending first slot for securing the first thigh support to the bottom plate portion,
a second thigh support,
an arcuately extending second slot in the second thigh support, and
means extending through the arcuately extending second slot for securing the second thigh support to the center plate portion;
a first hinge secured to the first thigh support and pivotally secured to the center plate;
a second high secured to the second thigh support and pivotally secured to the center plate in juxtaposed relation to said first hinge; and
means for securing the thigh support means to the thighs of a user to secure the user to the support brace apparatus.

4,390,016

PREFILLABLE HYPODERMIC SYRINGE AND METHOD OF ASSEMBLING THE SYRINGE

Gordon S. Riess, Beverly Hills, Calif., assignor to Temp-Trak Inc., Beverly Hills, Calif.

Filed Oct. 23, 1981, Ser. No. 314,188
Int. Cl.³ A61M 5/00
U.S. Cl. 604—236 **7 Claims**



1. A prefillable hypodermic syringe assembly, comprising:
(a) an open ended barrel having opposite front and back ends;
(b) a resilient sealing bung disengagably connected with and closing the front end of said barrel, said bung including an opening therethrough for the passage of liquid medication from within said barrel;
(c) cap means for closing said opening until said assembly is used, at which time said cap means can be removed, said cap means including means for engaging the front end of said bung so as to cause the latter to collapse upon itself sufficient to close said opening whereby to prevent any liquid medication within said chamber from coming in contact with said cap means;
(d) a hollow syringe needle;
(e) means for supporting said needle in fluid communication with the front end of said bung opening during use of the assembly;
(f) a resilient plunger disposed within said barrel and spaced rearwardly of said bung at a predetermined storage position, whereby to define a medication chamber therebetween; and
(g) means disposed partially within and partially outside said barrel and engagable with said plunger for moving the latter from its storage position to a position adjacent said bung, whereby to cause liquid medication within said chamber to be forced through said bung opening and said needle when the latter is supported in fluid communication with said opening.

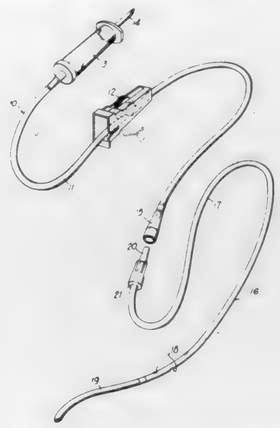
4,390,017

ENTERAL FEEDING SYSTEM

Eugene O. Harrison, 1372 Fairview Rd., NE., Atlanta, Ga. 30306; David J. Martin, 3531 Tewksbury Dr., Snellville, Ga. 30278, and Martin L. Olson, 340 Blvd., NE, Atlanta, Ga. 30312

Filed Aug. 7, 1981, Ser. No. 290,820
Int. Cl.³ A61J 7/00
U.S. Cl. 604—270 **10 Claims**

1. An enteral feeding system comprising a feeding tube assembly having a feeding tube body containing perforations near one end thereof and having a tapered connector element on its other end adapted for coupling with a mating connector element of an administration set, and said feeding tube assembly removably receiving therein a semi-rigid guide wire having an attached double-ended tapered adapter which can be coupled with said tapered connector element and with the nozzle of an irrigation syringe.

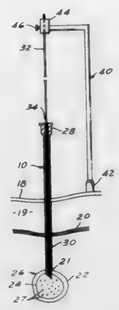


4,390,018

METHOD FOR PREVENTING LOSS OF SPINAL FLUID AFTER SPINAL TAP

Henry J. Zukowski, 72 N. Deeplands Rd., Grosse Pointe Shores, Mich. 48236

Division of Ser. No. 187,354, Sep. 15, 1980, abandoned. This application May 17, 1982, Ser. No. 379,109
Int. Cl.³ A61B 17/00
U.S. Cl. 128—303 R **7 Claims**



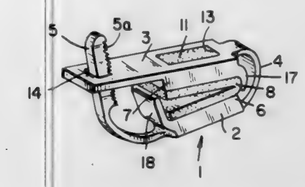
1. A method of sealing a hole in the spinal canal of a patient made by a needle used to make a spinal tap, comprising inserting a member, capable of swelling on contact with body fluid, into the lumen of the needle before removing the needle from the patient after making a spinal tap and while the tip of the needle remains disposed in the hole in the spinal canal formed during penetration thereof by the needle, advancing said member to the tip of the needle, and thereafter withdrawing the tip of the needle without withdrawing said member so that said member will remain in situ in the hole as a plug and will swell by reason of contact with body fluid to effectively seal the hole.

4,390,019

BLOOD VESSEL CLAMP

Harry H. LeVeen, 800 Poly Pl., Brooklyn, N.Y. 11209, and Eric G. LeVeen, 333 East 49th St., New York, N.Y. 10017

Filed Feb. 28, 1979, Ser. No. 15,969
Int. Cl.³ A61B 17/12
U.S. Cl. 128—325 **6 Claims**



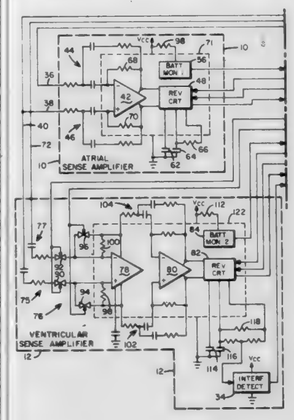
1. A surgical clamp comprising a pair of arms, each arm being interconnected at one end to one end of the other arm by a flexible, resilient member urging said arms apart and each said arm having an end opposite to said one end thereof, said member permitting said arms to be moved toward each other until they are generally parallel, one of said arms having an intermediate, part engaging clamping portion facing the other of said arms and the other of said arms having an intermediate, part engaging, clamping portion facing the clamping portion of said one arm, a layer of resilient material on each of the facing surfaces of said clamping portions, said material being softer than the material of said clamping portions, and releasable ratchet means at the opposite end of one of said arms and extending toward and being engageable with the other of said arms adjacent the opposite end of the last-mentioned other arm, when the arms are moved toward each other, for holding said arms in fixed relative positions.

4,390,020

IMPLANTABLE MEDICAL DEVICE AND POWER SOURCE DEPLETION CONTROL THEREFOR

Lodewijk-Jozef Herpers, Kerkrade-West, Netherlands, assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 17, 1983, Ser. No. 235,069
Int. Cl.³ D61N 1/36
U.S. Cl. 128—419 PG **30 Claims**



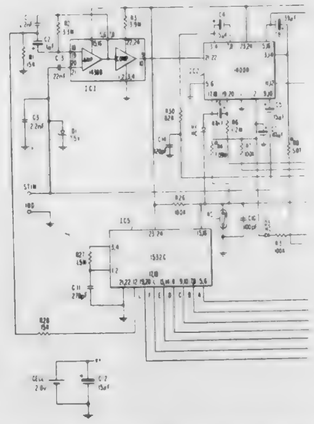
1. A programmable medical device having programmable means responsive to externally applied programming signals for programming the operation of the medical device in one of a plurality of operating modes and operating rates comprising:
a depletable power source for powering said medical device;
power source energy detecting means coupled to said power source for providing a first end-of-life signal at a first depletion level and a second end-of-life signal at a second depletion level lower than said first depletion level;
first rate and mode switching means coupled to said programmable means and said detecting means and responsive to an externally applied testing signal for operating said medical device in a first predetermined mode and at the programmed rate when neither a first nor a second end-of-life signal is present;
second rate and mode switching means coupled to said programmable means and said detecting means and responsive to said testing signal for operating said medical device in the first predetermined mode and at a first predetermined rate when said first end-of-life signal is present; and
third rate and mode switching means coupled to said programmable means and said detecting means and responsive to said testing signal for operating said medical device in a second predetermined mode and rate when said second end-of-life signal is present.

4,390,021

TWO PULSE TACHYCARDIA CONTROL PACER

Roworth A. J. Spurrell, London, England; Tibor A. Nappholz, Drummoyne, and Stephen J. Swift, Hornsby, both of Australia, assignors to Telectronics Pty. Ltd., Lane Cove, Australia

Filed Mar. 19, 1981, Ser. No. 245,215
Int. Cl.³ A61N 1/36
U.S. Cl. 128—419 PG **109 Claims**



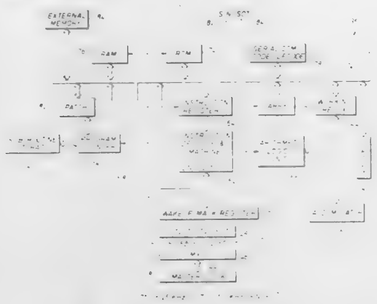
1. A tachycardia control pacer comprising means for confirming tachycardia; means responsive to said confirming means for generating and applying to the heart of a patient a pair of heart-stimulating pulses, the first of said pulses being generated at the end of an initial delay which follows operation of said confirming means, and the second of said pulses being generated at the end of a coupled interval which follows said first pulse; and means for scanning both said initial delay and said coupled interval during successive cycles of operation of said pulse generating means, said pulse generating means generating the second pulse in each pair independent of the effect of the respective first pulse on the patient's heart.

4,390,022

IMPLANTABLE DEVICE WITH MICROPROCESSOR CONTROL

Richard V. Calfee, Houston, Tex., and Jay Miner, Mountain View, Calif., assignors to Intermedics, Inc., Freeport, Tex.

Filed May 18, 1981, Ser. No. 264,600
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **6 Claims**



1. A programmable implantable body function assistance device comprising:

a microprocessor for executing stored instructions in a sequence directed by a program counter,

ROM means for providing a fixed set of instructions to said microprocessor,

RAM means for providing a programmable set of instructions, and

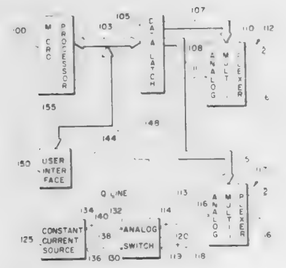
programmable patch register means interconnecting said microprocessor, said program counter and said RAM means for causing instructions stored in said RAM means to be executed when said program counter corresponds to a programmed count in said patch register.

4,390,023

PATTERNED ELECTRICAL TISSUE STIMULATOR

Mark T. Rise, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 30, 1981, Ser. No. 259,099
Int. Cl.³ A61N *1/32*
U.S. Cl. 128—421 **5 Claims**



1. A portable automatically controlled electrical tissue stimulator comprising:

means for producing electrical stimulation current, the polarity of said current controllable by a current control signal;

a plurality of electrodes for attachment in an array to a patient to be treated;

multiplexing means operatively connected between said current means and said electrodes, and responsive to a multiplexing signal for selectively connecting any pair of electrodes to said current means; and

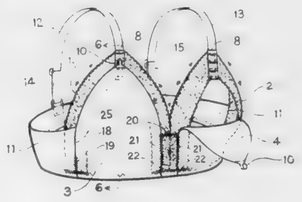
presettable automatic control means including memory means for storing presettable digitally encoded information indicative of a desired sequence of electrode pair connections and a desired number of current pulses to be applied to each of the pairs connected in the sequence and further including means responsive to said information stored in said memory means to produce said multiplexing signal and said current control signal to cause said electrodes to be sequentially connected to said current means automatically and stimulation current pulses of alternating polarity to be delivered to said pairs of said electrodes automatically.

4,390,024

MATERNITY BRASSIERE

Marguerite R. Williams, 443 W. 44th St., New York, N.Y. 10036

Filed Feb. 5, 1982, Ser. No. 346,391
Int. Cl.³ A41C *3/04*
U.S. Cl. 128—460 **4 Claims**



1. In a maternity brassiere, inner breast-supporting cups joined together in the bottom center area of the brassiere and also joined in abutting relation to each of the side portions of a partially body-encircling band having lateral adjustable means in the rear,

said inner cups overlaying the inward portion of wide stretchable bands which cover the periphery of the upper portion of each breast,

said inner cups and said wide stretchable bands acting in concert in such manner as to expand or contract in conformance with the expansion or contraction of the breasts of the wearer during pregnancy and after birth, said wide stretchable bands being affixed to the bottom region of the brassiere at the sides and in the center thereof,

a pair of shoulder straps connected in the rear to said partially body-encircling band and in the front to the apices of said wide stretchable bands.

4,390,025

ULTRASONIC DISPLAY APPARATUS HAVING MEANS FOR DETECTING THE POSITION OF AN ULTRASONIC PROBE

Yasuhiko Takemura, Tochigi, and Kazuyoshi Saito, Yaita, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

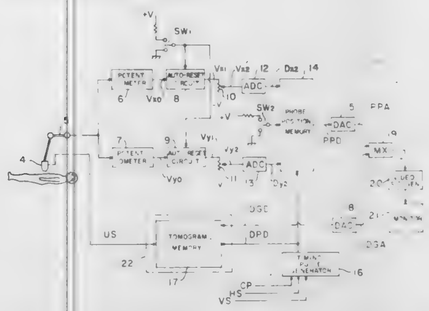
Filed Apr. 17, 1981, Ser. No. 255,178
Claims priority, application Japan, Apr. 24, 1980, 55-53482
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—660 **7 Claims**

1. An ultrasonic diagnosis apparatus including an ultrasonic probe, wherein an ultrasonic tomogram and a planar symbolized pattern of a human body are simultaneously displayed on the screen of a monitor, said ultrasonic diagnosis apparatus comprising:

means for detecting a predetermined number of positions of the ultrasonic probe in a two-dimensional plane relative to a reference point in the plane, and for generating signals identifying said position, said position-detecting means including auto-reset circuit means for generating a predetermined standard voltage identifying said reference point regardless of the position of said ultrasonic probe;

first memory means for storing said symbolized pattern, said reference point and said predetermined positions with respect to said symbolized pattern, and said signals generated by said position detecting apparatus;

second memory means for storing ultrasonic tomogram signals received by said ultrasonic probe relative to said predetermined positions;



timing pulse generating apparatus for simultaneously reading out said stored information from said first and second memory means as to the detected positions of said probe; and

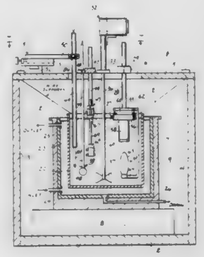
means for simultaneously displaying on said screen the position of said probe relative to said symbolized pattern and the tomogram relative to the probe position reflecting said read-out information.

4,390,026

ULTRASONIC THERAPY APPLICATOR THAT MEASURES DOSAGE

Chris L. Christman, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed May 22, 1981, Ser. No. 266,379
Int. Cl.³ A61B *6/00*
U.S. Cl. 128—660 **17 Claims**



1. An apparatus for measuring the integral dose ϵ applied for a time period t to a body of living tissue undergoing exposure to ultrasonic wave energy comprising a reverberation tank containing liquid, transducer means coupled to said liquid, a hydrophone mounted so as to be immersed in the liquid, circuit means to drive the transducer means to generate ultrasonic wave energy, means to create a diffuse field in the liquid in the tank, means to expose the living tissue to the liquid, means to measure the total power P absorbed within the tank, and circuit means connected to said hydrophone to measure the decay rates D_s and D_f of ultrasonic wave energy pulses respectively with the tissue in the liquid and with the tissue removed from the liquid, whereby the integral dose ϵ can be computed according to the equation:

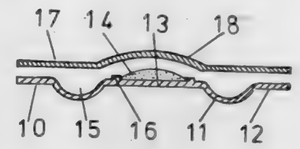
$$\epsilon = P(D_2 - D_f)/D_s .$$

4,390,027

APPLICATION UNIT FOR EPICUTANEOUS TESTING OR TREATMENT

Safwat D. Alani, Wiesdorfer Platz 52, and Milhim D. Sellman, Postfach 10 11 66, both of D-5090 Leverkusen 1, Fed. Rep. of Germany

PCT No. PCT/SE80/00191, § 371 Date Mar. 19, 1981, § 102(e) Date Mar. 19, 1981, PCT Pub. No. WO81/00199, PCT Pub. Date Feb. 5, 1981
PCT Filed Jul. 18, 1980, Ser. No. 245,644
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—743 **8 Claims**



1. An application unit comprising:

(a) a substantially planar carrier with an adhesive surface and at least one application device and

(b) a covering layer substantially coextensive with the carrier, each application device consisting of a durable sheet made of nonabsorbent, impermeable material and

(c) an application surface for one substance in substantially the same plane as that of the carrier and

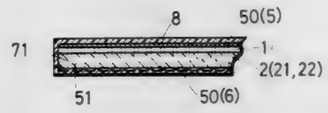
(d) an annular groove surrounding and extending from the application surface in a direction opposite that of the adhesive surface; the covering layer being substantially planar, but having an elevated area corresponding to each application surface and projecting in a direction opposite that of the annular groove.

4,390,028

OCCLUSION PRESSURE SENSOR

Michiaki Okano, Uji, and Shuhei Furuichi, Shiga, both of Japan, assignors to Kabushiki Kaisha Moritn Seisakusho, Kyoto, Japan

Filed Mar. 25, 1981, Ser. No. 247,272
Claims priority, application Japan, Mar. 24, 1980, 55-37778
Int. Cl.³ A61B *5/10*
U.S. Cl. 128—777 **8 Claims**



1. A sensor for occlusion pressure comprising:

a complex pressure sensitive element including a rectifying layer and a pressure sensitive layer;

said element changing electric characteristic thereof in response to occlusion pressure by detecting the occlusion pressure of the teeth;

an upside electrode and an underside electrode;

said electrodes being constructed by arranging thin strip pieces or segments in such manner that said strip pieces or segments are arranged in regularly crossing or coordinated relation vertically of said pressure sensitive element on the upside and underside of the element so as to form a plurality of pressure sensitive blocks marked off from one another on the pressure sensitive element; and

an insulating film, said film surrounding and covering said

upside and underside electrodes and said complex pressure sensitive element;

whereby said sensor is constructed to detect an electric signal responsive to occluding points and occlusion pressure from said pressure sensitive blocks by successively electrically scanning the blocks.

4,390,029

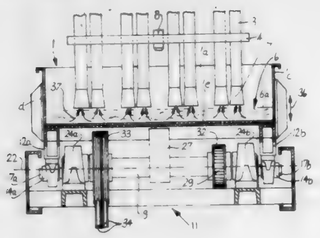
APPARATUS FOR STORING AND TRANSPORTING COMMINUTED TOBACCO OR THE LIKE

Uwe Leckband, Hamburg; Willi Thiele; Klaus Hagenah, both of Geesthacht, and Hans Förster, Hamburg, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 125,230, Feb. 27, 1980, abandoned. This application Mar. 17, 1980, Ser. No. 130,620

Int. Cl.³ A24C *5/02*

U.S. Cl. 131—109 AB **42 Claims**



1. Apparatus for supplying comminuted tobacco or similar particulate material to several consuming machines, especially for supplying shredded tobacco to a plurality of cigarette rod making machines, comprising a storage reservoir; means for feeding comminuted tobacco into said reservoir; means for converting at least the major part of tobacco in said reservoir into a fluidized bed, including means for imparting substantially vertical up-and-down movements to comminuted tobacco in said reservoir; means for pneumatically conveying comminuted tobacco directly from the fluidized bed to selected consuming machines; and means for monitoring the quantity of tobacco in said reservoir, including means for starting said feeding means when the quantity of tobacco in said reservoir drops below a predetermined value.

4,390,030

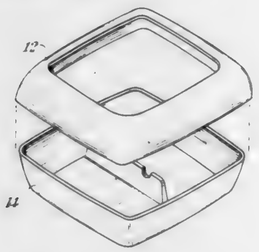
ASHTRAY

Forest S. Tibbetts, 16 SW. 13 St., Ft. Lauderdale, Fla.

Continuation-in-part of Ser. No. 125,215, Feb. 27, 1980, abandoned. This application Dec. 9, 1981, Ser. No. 328,855

Int. Cl.³ A24F *19/00*

U.S. Cl. 131—231 **2 Claims**



1. An ashtray comprising:

a hollow body, said hollow body having an intermediate portion and a lower portion;

said intermediate portion having an upper opening means, said intermediate portion sized and shaped with a cross-sectional area larger than the cross-sectional area of said upper opening,

a holding means sized for completely holding a cigarette below said upper opening means to prevent movement of cigarette out of the ashtray, said holding means connected to said body and positioned below said upper opening means, said upper opening means sized to receive a cigarette completely within said hollow body below said upper opening means;

said upper opening means sized for easy access to a cigarette in said holding means;

said intermediate portion of said hollow body having generally downwardly and outwardly projecting sides, and said lower portion having upwardly and outwardly projecting sides, such that the mid-section of said body has a larger perimeter than any other portion of said body, whereby ashes are prevented from being blown directly out of said ashtray by airflow over said upper opening means.

4,390,031

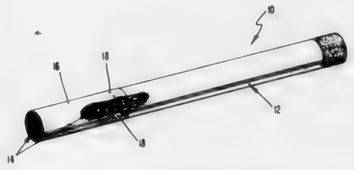
TOBACCO FILTER

Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 96,538, Nov. 21, 1979, abandoned. This application Aug. 25, 1981, Ser. No. 296,121

Int. Cl.³ A24D *3/04*

U.S. Cl. 131—336 **9 Claims**



1. A smoke filter including a porous, dimensionally stable, axially elongated, generally cylindrical filter element comprising a continuous filamentary tow of substantially continuous thermoplastic fibers bonded together throughout to be self-sustaining, said fibers being oriented within said filter element in an adjacent and overlapping relation to one another in generally successive layers extending generally transverse to the longitudinal axis of said filter element, the periphery of said element comprising a smooth surface formed from outer edges of said fibers bent about respective axes extending substantially perpendicular to the longitudinal dimension of said element to overlap one another, said filter element having a substantially uniform cross-sectional diameter of approximately 8 mm.

4,390,032

CIGARETTE VENTILATION CONTROL

Francis A. M. Labbe, Neuilly-sur-Seine, France, and Edward G. Preston, London, England, assignors to Molins Limited, London, England

Filed Nov. 26, 1980, Ser. No. 210,814

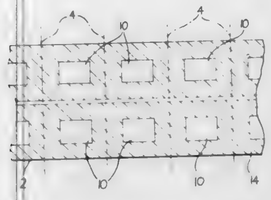
Claims priority, application United Kingdom, Nov. 29, 1979, 7941158

Int. Cl.³ A24C *5/60*

U.S. Cl. 131—281 **27 Claims**

13. Apparatus for manufacturing ventilated cigarettes, including a perforator for producing a group of perforations in cigarettes, means for measuring the resultant dilution of the finished cigarettes, means for generating a signal indicative of

the resultant dilution, and means responsive to said signal for controlling the perforator to alter the distance of the resultant



group of perforations from the mouth end of the cigarette so as to achieve the desired level of dilution.

4,390,033

STABLE HAIR RELAXER

Ezzat N. Khalil, Oak Park, and Ali N. Syed, Hazel Crest, both of Ill., assignors to Johnson Products Co., Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 202,736, Oct. 31, 1980, abandoned, which is a continuation-in-part of Ser. No. 78,593, Sep. 14, 1979, Pat. No. 4,237,910, which is a continuation-in-part of Ser. No. 34,933, Apr. 30, 1979, abandoned. This application Aug. 25, 1981, Ser. No. 294,911

Int. Cl.³ A45D *7/00*

U.S. Cl. 132—7 **21 Claims**

1. In a no base hair relaxer composition comprising a continuous water phase having dispersed therein about 3 to about 50 weight percent oleaginous material, about 7 to about 25 percent by weight emulsifier and containing a water soluble organic base in sufficient quantity to provide a pH of said composition at about 12–14, wherein the improvement comprises said composition being stabilized against phase separation by about 2 to about 30 weight percent lipophilic, organically modified hectorite clay gellant comprised of hectorite modified with a quaternized nitrogen-containing compound containing at least one C_8–C_{20} long chain substituent on the quaternary nitrogen atom, propylene carbonate and an organic liquid, said weight percents being based upon the total weight of the composition, said oleaginous material, emulsifier and gellant together comprising no more than about 65 percent by weight of the composition.

4,390,034

UNCLOGGING AND RECOVERING DEVICE FOR SLUDGE DEPOSITED ON THE TUBE PLATE OF A STEAM GENERATOR

Louis Bes, Noisy-le-Grand, France, assignor to Framatome, Courbevoie, France

Filed Jun. 30, 1981, Ser. No. 279,284

Claims priority, application France, Jul. 18, 1980, 80 15901

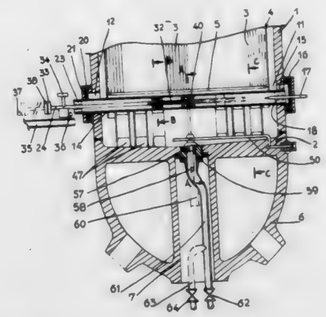
Int. Cl.³ B08B *3/02, 9/02*

U.S. Cl. 134—104 **7 Claims**

1. Device for unclogging and recovering sludge deposited on the tube plate of a steam generator comprising, in a cylindrical vessel with a vertical axis, a vertical bundle of tubes bent into a U connected at each of their lower ends to a horizontal tube plate fast to the vessel of said steam generator and supported at its central part by a vertical hollow column fast to the lower end of said steam generator, a high temperature fluid being brought to the tubes of said bundle beneath said tube plate, to provide the heat enabling vaporization of the feedwater introduced into the upper part of said steam generator in contact with the tubes of said bundle, this feed water causing the deposit of sludge on said tube plate, said device comprising:

(a) a ramp for unclogging by high pressure jets fixed permanently to the inside of said steam generator horizontally and above said tube plate, in a direction diametric to the latter, supplied with water under pressure through a distributor movable inside said ramp in the longitudinal direction of the latter, for the constitution of high pressure jets directed towards said tube plate, at different places according to the length of said ramp;

(b) means for driving towards the center of said tube plate



sludge which is formed during operation and which is stirred up by said water jets; and

(c) a discharge valve for the sludge arranged above an orifice passing through said tube plate at its central part and opening into said hollow central column.

4,390,035

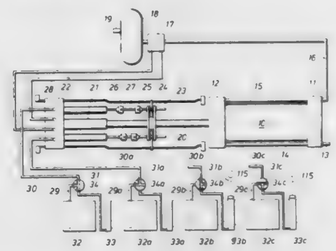
LIQUID MIXING SYSTEMS

Raymond G. Hill, Hill Rd., Victoria, Tex. 77901

Filed Apr. 22, 1981, Ser. No. 256,527

Int. Cl.³ F16K *19/00*

U.S. Cl. 137—99 **8 Claims**



1. A system for mixing liquids in a proportional relationship comprising:

hydraulic motor means having a piston mounted for reciprocation in a cylinder between two longitudinal positions, said piston having a piston rod connected thereto and extending outwardly from said cylinder;

input fluid passage means coupled to an input valve means at each of said longitudinal positions;

output fluid passage means coupled to an output valve means at each of said longitudinal positions;

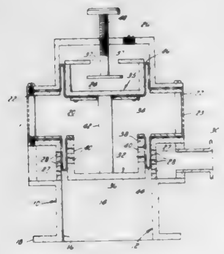
valve actuating means in said cylinder responsive to the position of said piston in said cylinder at each of said longitudinal positions for actuating said input and an output valve means;

means coupling said valve actuating means in said cylinder to said valve means at each of said longitudinal positions whereby actuation of a pair of input and output valve means by said piston at one longitudinal position also actuates the other pair of input and output valve means located at the other longitudinal position;

pump means having an input fluid means adapted for coupling to a source of mixing liquid and to an output fluid

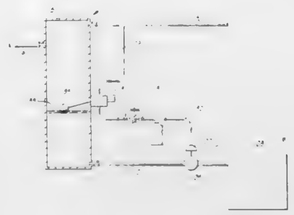
means, said pump means having a reciprocating means for pumping a mixing liquid from said pump means as a function of the stroke of said reciprocating means;
coupling means for interconnecting said piston rod to said reciprocating means of said pump means; and
means for interconnecting the output fluid means of said pump means with the output fluid passage means for mixing the fluid outputs with one another.

4,390,036
ROLLING DIAPHRAGM VACUUM CONTROL
Christos Athanassiu, Medford, and Wilfred H. St. Laurent, Jr., Marblehead, both of Mass., assignors to Bellofram Corporation, Burlington, Mass.
Filed Apr. 6, 1981, Ser. No. 251,470
Int. Cl.³ F16K *7/02, 31/126*
U.S. Cl. 137—116.5 **15 Claims**



1. A pressure controller for maintaining a defined vacuum pressure to a remote location, comprising:
a. a housing defining a cavity;
b. means for connecting said cavity to said remote location;
c. means for connecting said cavity to a high vacuum;
d. means for connecting said cavity to a control signal pressure;
e. a first plunger, comprising a side wall and a bottom wall, said first plunger defining an opening through its side wall and being adapted to reciprocate inside said cavity;
f. means for sealing between said first plunger and said housing so as to define first and second chambers in said cavity;
g. first valving means for opening and closing fluid communication between said first and second chambers through said opening in said first plunger; and
h. second valving means for opening and closing fluid communication between said second chamber and said high vacuum, said sealing means and first and second valving means comprising a flexible diaphragm attached to said housing and to said first plunger such that movement of said first plunger toward said first chamber causes said diaphragm to seal against said side wall of said first plunger, thereby closing fluid communication through said opening in said plunger while opening fluid communication between said second chamber and said high vacuum, and movement of said first plunger toward said second chamber opens fluid communication through said plunger opening and closes fluid communication between said second chamber and said high vacuum by sealing against said housing.

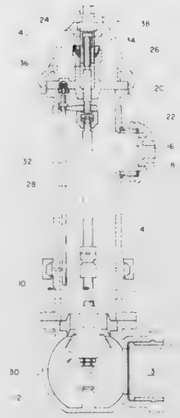
4,390,037
GAS REGULATION DEVICE FOR GAS ACTUATED VALVES
Lawrence B. Perkins, Woodward, Okla., assignor to W. T. Fail, Inc., Shawnee, Okla., a part interest
Continuation of Ser. No. 103,843, Dec. 14, 1979, abandoned. This application Apr. 23, 1982, Ser. No. 371,242
Int. Cl.³ B08B *9/02;* **F16K** *31/18*
U.S. Cl. 137—240 **3 Claims**



1. A gas and liquid separator comprising:
a separator tank for receiving and holding separated liquid and pressurized gas from a gas and liquid source;
a dump line conduit connecting said separator tank to a liquid reservoir for conveying accumulated liquid from said separator tank to said liquid reservoir;
a gas actuated dump line valve for regulating the flow of liquid through said dump line conduit;
a gas conduit and valve means connected to said dump line valve for actuating said dump line valve by supplying pressurized gas from a pressurized gas source to said dump line valve and relieving pressurized gas from said dump line valve responsive to the liquid level in said separator tank; and
gas conveyance timing means for delaying closing of said dump line valve such that liquid in said dump line conduit is purged by pressurized gas from said separator tank after said dump line valve is opened responsive to said gas conduit and valve means and after the liquid from said separator tank has passed to said liquid reservoir and before said dump line valve is closed responsive to said gas conduit and valve means, said gas conveyance timing means comprising a gas flow limitation device connected to said gas conduit and valve means for limiting gas flow such that gas passes through said gas conduit and valve means for a predetermined time in the process of a gas conveyance which closes said dump line valve.

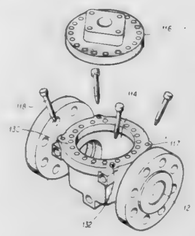
4,390,038
MAGNETICALLY LOCKED VALVE
Guido A. Salvato, 944 Cathedral Ave., Franklin Square, N.Y. 11010
Filed Feb. 12, 1982, Ser. No. 348,423
Int. Cl.³ F16K *35/06, 35/16, 31/08*
U.S. Cl. 137—296 **6 Claims**

1. A magnetically locked fluid valve, comprising:
a. a valve, including a valve seat, and a valve element movable relative to the valve seat between an open position in which the valve element is separated from the valve seat to allow fluid to flow through the valve, and a closed position in which the valve element is closed against the valve seat to prevent fluid from flowing therethrough;
b. a rotatably mounted valve actuator shaft coupled to said valve element and having an externally accessible and visible operating nut as a portion thereof to allow the valve to be opened and closed when the actuator shaft is coupled to said valve element; and
c. a magnetic locking means positioned below said operating nut and being concealed internally of the magnetically locked valve such that it is not externally visible and being positioned between; an upper actuator shaft section having said operating nut at the upper end thereof and a lower actuator shaft section coupled to said valve element, for coupling said upper and lower actuator shaft sections to enable said valve element to be opened or closed by said



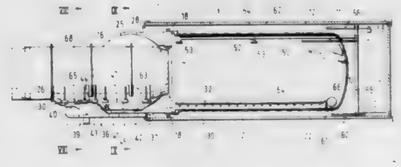
operating nut when a shaped magnet is properly positioned relative to the upper actuator shaft section, and for decoupling said upper and lower actuator shaft section to prevent unauthorized actuation of said valve element when the shaped magnet is removed fom the upper actuator shaft section.

4,390,039
VALVE ASSEMBLY AND DISASSEMBLY DEVICE
David A. Johnson, Shrewsbury; Joseph B. Wright, Northboro, and Michael Pashoogian, Worcester, all of Mass., assignors to Jamesbury Corporation, Worcester, Mass.
Continuation-in-part of Ser. No. 336,686, Jan. 4, 1982. This application Sep. 20, 1982, Ser. No. 420,382
Int. Cl.³ F16K *43/00, 25/00*
U.S. Cl. 137—315 **6 Claims**



1. A valve having a retractable valve seat, including a valve body having an inlet port, an outlet port and an upper opening in a first surface intermediate said inlet and output ports, a cover for closing the upper opening, a valve member for controlling the flow of fluid between the inlet port and outlet port, said valve seat being in contact with the valve member and a central chamber between said inlet port and said outlet port for receiving said valve member, said valve further comprising:
means for retracting said valve seat, said means for retraction being formed of an elongated main section, a forward section and a rear section, said forward section including a camming surface for contacting said valve seat and having a variable diameter as well as a constant diameter portion, said rear section being formed for receiving a force for moving the means for retraction; and
said first surface having holes formed therein for receiving said means for retraction, said holes being formed in a portion of said first surface which is not sealingly covered by said cover, whereby said means for retraction may be inserted in said holes without removing said cover;
wherein said movement of the means for retraction causes the point of said contact of said camming surface to change to a point having said constant diameter, forcing said seat to retract and remain retracted in a locked position by said constant diameter.

4,390,040
APPARATUS FOR ACCOMMODATING A SUBSTANCE TO BE SHIELDED FROM THE ENVIRONMENT
Heinrich Beyen, Wesseling, Fed. Rep. of Germany, assignor to Reederei und Spedition "Braunkohle" GmbH, Cologne, Fed. Rep. of Germany
Filed Oct. 30, 1980, Ser. No. 202,147
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1979, 2944734
Int. Cl.³ B65D *87/12, 87/24*
U.S. Cl. 137—340 **20 Claims**

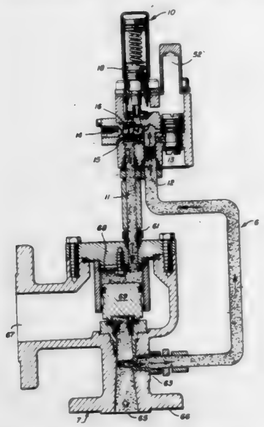


6. A transportable apparatus for accommodating a receptacle containing a substance to be shielded from the environment, comprising: a container, a substantially cylindrical pressure vessel mounted in said container and having an opening provided at one end, means for sealingly closing said opening, first guide means disposed within said vessel and extending from the opening into said vessel, a carriage for receiving said receptacle and movable on the guide means, and means for locking the carriage in position in said vessel.

4,390,041
PILOT OPERATED RELIEF VALVE
Raymond G. Reip, Clarendon Hills, Ill., assignor to Vapor Corporation, Chicago, Ill.
Continuation of Ser. No. 943,377, Sep. 18, 1978, abandoned. This application Feb. 17, 1981, Ser. No. 233,860
Int. Cl.³ F16K *31/12*
U.S. Cl. 137—488 **4 Claims**

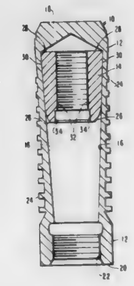
1. A pressure sensitive pilot valve for operating a main pressure relief valve to relieve excess product vapor pressure, having first and second stages in cascade, comprising;
a valve body containing said stages and having first and second inlet ports for sensing product and main valve head pressure, respectively, exhaust and test ports;
a first seat in said body in fluid communication with said first inlet port;
a first stage poppet having first and second positions seated on and restricting flow through said first seat for said first poppet position, below a predetermined value of product pressure and allowing flow therethrough for said second poppet position;
second and third seats in said body;
a second stage plunger, having upper and lower ends, reciprocating in said housing, said upper end responsive to first stage flow and movable between said second and third seats for first and second poppet positions respectively;

means fluid communicating said first seat and plunger upper end for said second poppet position;
means communicating said first inlet port and second seat for a first plunger position;
means communicating said second inlet port, exhaust port, and third seat for a second plunger position;
guide means intermediate said first inlet and test port;



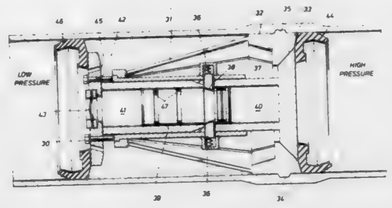
a flow sensitive closure member contained in said guide means for reciprocal movement therein, said member sealing said test port or communicating means at either end of said motion;
wherein fluid admitted to said test port and reaching a pressure greater than said product pressure isolates said first seat.

4,390,042
TUBE PLUG
Harvey D. Kucherer, Monroeville; Ralph W. Kugler; Stuart L. Rieben, both of Mt. Lebanon; John J. Wilhelm, New Kensington, and Mark E. Wylie, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jul. 30, 1980, Ser. No. 173,550
Int. Cl.³ F16L *55/12*
U.S. Cl. 138—89 **10 Claims**



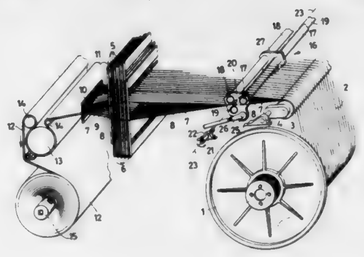
1. A tube plug for preventing flow through tubes comprising:
a substantially cylindrical shell having one closed end and one open end with said shell having a substantially uniform wall thickness throughout the portion of said shell that contacts said tube and throughout the portion of said tube that is expanded and having a conical inner surface with said conical inner surface having a smaller inside diameter near said open end and having a larger inside diameter near said closed end;
an expander member having a conical outer surface and slidably disposed in said shell with the smaller end of said expander member being arranged nearer said open end of said shell such that said expander member is captured within said shell for expanding said shell when said expander member is moved toward said open end of said shell; and
a plurality of lands formed on the outside surface of said shell with said lands all having approximately the same outside diameter and with said lands increasing in height from said closed end to said open end for contacting the inside surface of said tube when said shell is expanded by said expander member thereby establishing a seal between said tube and said shell.

4,390,043
INTERNAL PIPELINE PLUG FOR DEEP SUBSEA OPERATIONS
John M. Ward, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.
Filed Jun. 30, 1981, Ser. No. 278,937
Int. Cl.³ F16L *55/10, 1/04*
U.S. Cl. 138—89 **4 Claims**



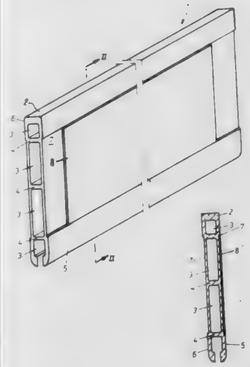
1. An internal pipeline plug functionable to seal, release and be pumped out of a pipeline comprising, means for sealing the plug in the pipeline to prevent fluid passage around the plug, means for gripping the pipe wall to fix the position of the plug in the pipeline, and pressure release means operable at a set pressure to permit fluid passage into the plug to actuate an axially movable piston operable to release the gripping means from the pipe wall.

4,390,044
RECIPROCATING DEVICE FOR INCREASING THE WEFT DENSITY IN CLOTH WEAVE FABRICS
Luciano Corain, Venice, Italy, assignor to Nuovo Pignone S.p.A., Florence, Italy
Filed Nov. 5, 1980, Ser. No. 204,230
Claims priority, application Italy, Nov. 26, 1979, 27545 A/79
Int. Cl.³ D03D *49/00*
U.S. Cl. 139—98 **2 Claims**



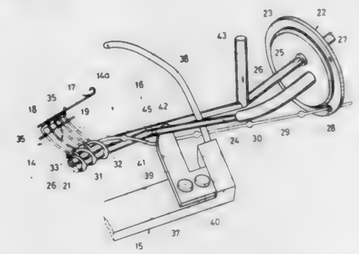
1. In a loom construction in which the warp yarns originating from a beam disposed in the rear part of the loom construction are divided by the heddle frames into two equal sets and which at their front form a shed into which a weft yarn is inserted and is subsequently beaten by a reed, the improvement of a mechanical device for increasing the weft density in cloth weave fabrics produced by said loom construction, said device being mounted in the rear part of the loom construction between said heddle frames and said beam and comprising a pair of parallel forward rollers spaced one above the other in a horizontally disposed relationship and a rear parallel roller rearwardly spaced in a horizontally disposed relationship at the vertices of a triangle formed by the three rollers, said rear roller separating the two equal sets of warp yarns and the pair of forward rollers being positioned in close relationship to one another and function as an outlet guide for the two equal sets of warp yarns, each of said three rollers being rigidly connected at their respective ends to laterally-spaced vertically disposed support plate means, rotational pin means horizontally connected to said loom construction and to support plates to permit the support plate means and the three rollers to rotate about a horizontal axis of rotation, said pin means being connected to said support plates at a point equidistant from the two forward rollers and between the two forward rollers and the rear roller, and drive means connected to said support plate means to reciprocate said support means and said three rollers about the horizontal axis of rotation formed by said pin means.

4,390,045
HEDDLE FRAME STAVE
Hans Baumann, Horgen, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland
Filed Sep. 8, 1980, Ser. No. 184,783
Claims priority, application Switzerland, Sep. 26, 1979, 8671/79
Int. Cl.³ D03D *9/00*
U.S. Cl. 139—91 **6 Claims**



1. A heddle frame stave, comprising a light metal, longitudinally extending hollow profile stave of closed cross-section having parallel and substantially flat opposed side walls, at least one of said side walls having a predetermined thickness and an outwardly open recess extending between opposite end walls of said stave and being inwardly spaced from opposite longitudinal walls of said stave, a flat, steel, vibration dampening band being attached by means of a layer of visco-elastic glue to said one side wall within said recess, the width of said band, which extends perpendicularly to said longitudinal walls being substantially the same as the width of said recess which likewise extends perpendicularly to said longitudinal walls, said band covering at least about 60% of the surface of said side wall and having a thickness of less than half said predetermined thickness of said one side wall, and the depth of said recess being substantially equal to said band thickness, whereby any vibration of the heddle frame during operation is substantially dampened together with any noise development.

4,390,046
APPARATUS FOR MANUFACTURING WOVEN SLIDE FASTENER STRINGERS
Muchiji Shimono, Namerikawa, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Mar. 4, 1981, Ser. No. 240,584
Claims priority, application Japan, Mar. 25, 1980, 55-39388[U]
Int. Cl.³ D03D *47/00*
U.S. Cl. 139—442 **3 Claims**



1. An apparatus for manufacturing woven slide fastener stringers, comprising:
(a) means for forming successive sheds with a plurality of warp threads;
(b) a coiling mechanism including a mandrel for extending substantially along the warp threads on one side thereof and a rotor for revolving a monofilament of synthetic resin around said mandrel in a conical orbit to form a series of coiled coupling elements; and
(c) a weft inserter disposed on said one side of the warp threads and reciprocable across the conical orbit and one of the sheds at a time for inserting a weft thread into the shed, by which the coiled coupling elements can be woven into a stringer tape along a longitudinal edge thereof as the tape is woven of the warp and weft threads, said weft inserter including an arm movable upon weft insertion in between said mandrel and the monofilament and engageable with the monofilament being coiled to displace the latter out of the path of insertion of the weft thread for allowing the latter to be inserted unobstructedly.

4,390,047
TOOL FOR STRAP TENSIONING AND CUTTING
Hogara Kaneko, 3-2-302, Zengyo Danchi, Fujisawa City, Japan
Filed Sep. 11, 1980, Ser. No. 185,780
Claims priority, application Japan, Sep. 29, 1979, 54-125509
Int. Cl.³ B21F *9/02*
U.S. Cl. 140—93.2 **5 Claims**

1. A tool for tensioning a bundling strap about a bundle of wires comprising:
a hollow body having an inner surface functioning as a first plate defining a major axis including a hollow grip dependent therefrom and integral therewith at a rear portion of said body;
a second plate attached adjacent said body including a forward bent portion having a strap insertion slit therein, and a rest cam at a middle portion thereof;
a third plate carried by said second plate, said third plate being supported on said rest cam for sliding motion relative thereto and along said major axis, said third plate including hook means at a forward end thereof normally positioned rearwardly of said second plate bent portion, and a return projection at a middle portion thereof;

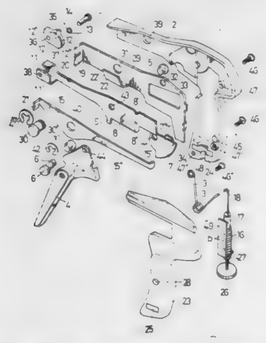
a fourth plate pivotably mounted at a middle portion thereof to said body, the forward portion of said fourth plate including a cutting edge, said fourth plate being disposed adjacent said third plate with said cutting edge being located rearwardly of said second plate bent portion;

a nipping member pivotally carried by said third plate hook means and being biased toward said bent portion for coaction with said hook means to grasp said bundling strap therebetween;

a handle pivotably attached at its upper end to said body;

an actuator member engaging an intermediate portion of said handle, said actuator member being pivotally attached to said third plate with said return projection of said third plate being arranged for contacting said handle and said actuator member arranged for coaction with said fourth plate;

first spring means normally biasing said third plate forwardly and developing a predetermined first force;



second spring means having one end engaging the rear portion of said fourth plate, normally biasing said cutting edge into a raised position relative to said strap insertion slit in said second plate and normally developing a second predetermined force acting substantially normal to said first force;

so that upon insertion of a cable strap in said second plate slit and pivoting of said handle toward the grip of said body, the third plate slides rearwardly in opposition to said first predetermined force, and the nipping member rotates to hold the strap against the hook means and tighten it around the bundle of wire, so that when the strap is fully tightened aout the bundle, the third plate ceases its movement so that further pivoting of the handle causes the actuator to rotate into engagement with the fourth plate thereby causing the fourth plate to rotate against the second predetermined force until the cutting edge cuts the strap and releases the third plate for renewed rearward movement.

4,390,048

METHOD AND DEVICE FOR RECOVERING AN INERT GAS

Felix Zelder, Langenlonsheim, Fed. Rep. of Germany, assignor to Seitz-Werke GmbH, Bad Kreuznach, Fed. Rep. of Germany

Filed Jun. 26, 1981, Ser. No. 277,717

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024099

Int. Cl.³ B65B *55/24;* **B67C** *3/06*

U.S. Cl. 141—6 **36 Claims**

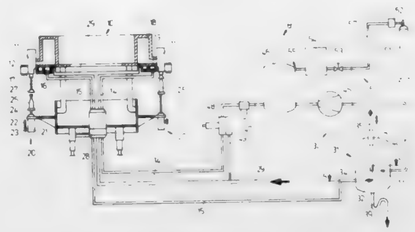
1. A method of recovering inert gas used during a filling process for pressurizing containers which are to be filled with a liquid, said method including the steps of:

expelling the air found in a container, and pressurizing said container, with a mixture of air and heavy inert gas;

filling said container with said liquid and thus expelling said pressurizing gas mixture;

centrally collecting said expelled gas mixture from a plurality of containers and conveying said mixture to at least one accumulator;

subjecting said pressurizing gas mixture in said at least one accumulator to at least one gravity effect for partially



separating off the lighter gas components and producing a mixture of predominantly inert gas;

adding additional inert gas to said mixture of predominantly inert gas; and

returning the resulting mixture to said filling process, at least as a pressurizing gas mixture, for use with subsequent containers which are to be filled.

4,390,049

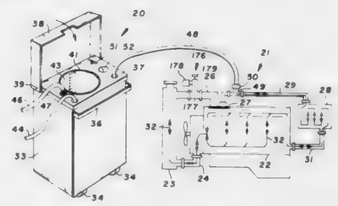
APPARATUS FOR RECIPROCATING LIQUID IN A COOLING SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Robert V. Albertson, 2100 Shadywood Rd., Wayzata, Minn. 55391

Division of Ser. No. 908,273, May 22, 1978, Pat. No. 4,276,914. This application Dec. 11, 1980, Ser. No. 215,365

Int. Cl.³ B65B *3/12;* **B08B** *9/00*

U.S. Cl. 141—92 **31 Claims**



17. An apparatus for sequentially delivering forward and reverse moving liquid to a structure accommodating a liquid comprising: pump means operable to move a liquid sequentially in forward and reverse directions, first means having a first chamber, a second chamber, and a one-way valve allowing liquid to flow in a forward direction from the first chamber to the second chamber, second means connected to the pump means and first means for carrying liquid from the pump means to the first chamber of the first means, third means connected to the first means for receiving liquid from the second chamber adapted to be connected to the structure accommodating a liquid to deliver said liquid to the structure, and fourth means connected to the first means in liquid communication with the first and second chambers to carry liquid from the second chamber to the first chamber by-passing said one-way valve, whereby operation of the pump means causes sequential movement of the liquid in forward and reverse directions in the structure accommodating a liquid.

4,390,050

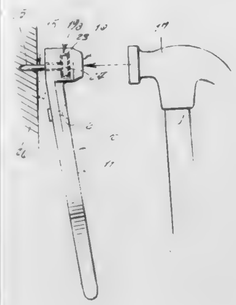
TACK PLIERS

LeRoy E. Whitney, Rt. 2, Box 590, Newcastle, Wyo. 82701

Filed Aug. 5, 1981, Ser. No. 290,158

Int. Cl.³ B25C *3/00*

U.S. Cl. 145—46 **1 Claim**



1. A tack pliers, comprising: an elongated pair of crossing levers; a rivet located at the crossing point of said levers and forming a pivot therebetween; cooperative handles formed at one end of said levers, and cooperating jaws formed at the other end of said levers, each jaw comprising a semicylindrical body member, a flat top surface, a parallel flat bottom surface, and a flat diametric surface interconnecting said top and bottom surfaces and substantially perpendicular thereto, a first semicylindrical hole coaxial with said body member formed into said diametric surface at a location between said bottom and top surfaces, a second semicylindrical hole coaxial with said body member formed into said diametric surface commencing at said bottom surface and terminating into said first semicylindrical hole, said second semicylindrical hole being smaller than said first semicylindrical hole, both said jaws being substantially identical such that once said diametric surfaces are brought into abutting relationship a generally cylindrical assembly is formed, said second cylindrical holes mating to form a cylindrical aperture for receiving the shank portion of a nail, said first semicylindrical holes mating to form a cylindrical groove for receiving the head portion of a nail, said top surfaces meeting to form a coplanar end wall which can be struck by a hammer, said bottom surfaces meeting to form a coplanar lower wall, said jaws being substantially short with respect to the length of said levers, the axis of said formed cylindrical assembly being substantially perpendicular to said levers, and wherein said handles bend away from the plane of said lower wall.

4,390,051

SECURING A LINER WITHIN A FLEXIBLE CONTAINER

Bruce Cuthbertson, Macon, Ga., assignor to Bonar Industries Inc., Macon, Ga.

Filed Apr. 3, 1981, Ser. No. 250,605

Int. Cl.³ B65D *90/04, 90/08, 90/20*

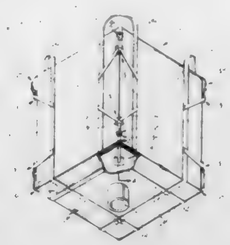
U.S. Cl. 150—1 **12 Claims**

1. For use in an intermediate bulk container including at least side walls having upper and lower peripheries respectively and a bottom wall, the improvement in releasably mounting a liner internally of said container comprising:

a plurality of first attachment means secured externally to the side walls of the container adjacent the upper and lower peripheries thereof, and spaced uniformly around said container;

a plurality of first openings through said container adjacent said bottom wall, there being one opening associated with each first attachment means adjacent said lower periphery; and

a plurality of second attachment means secured to said liner adjacent the top and bottom thereof, there being one second attachment means for each first attachment means; whereby, with said liner located within said container each



of said second attachment means can extend from the interior of the container to the exterior thereof and can be releasably secured to a corresponding one of said first attachment means.

4,390,052

MOTORCYCLE TIRE

Joseph V. Mendiola, Ravenna, and David E. Smith, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 17, 1981, Ser. No. 255,010

Int. Cl.³ B60C *9/18, 9/04*

U.S. Cl. 152—356 R **8 Claims**



1. A bias-belted motorcycle tire comprising: a pair of beads; a carcass extending between the beads, said carcass comprising two or more plies of reinforcing cords which extend at a cord angle, relative to and at the mid-circumferential plane of the tire, which is not greater than about 75 degrees, the cords of one ply extending at the same angle but in an opposed direction to the cords of the other ply; a tread disposed outwardly of the carcass, said tread having tread edges; a pair of sidewalls extending from the tread edges to the respective beads; two or more belts disposed between the tread and the carcass plies to provide a restricting force on the carcass plies, said belts comprising reinforcing cords which extend at a cord angle, relative to and at the mid-circumferential plane of the tire, which is at least 2 degrees less than the cord angle of the reinforcing cords of the plies of said carcass, the reinforcing cords of said belts extending at equal but opposed cord angles; and a sidewall stiffening means extending from each bead and terminating in the respective sidewall a distance from the respective bead equal to between about 40 and about 60 percent of the section height of the tire, and at least one of said belts extending across the width of said tread and terminating at a location which is spaced in the radial direction from the radially outermost portion of said sidewall stiffening means a distance which is equal to at least about one-half inch, but not more than about one inch, to provide a flex zone wherein the sidewalls are

devoid of any reinforcement other than the reinforcement provided by the carcass.

4,390,053

ANTI-SLIP CHAIN FOR VEHICLE TIRES

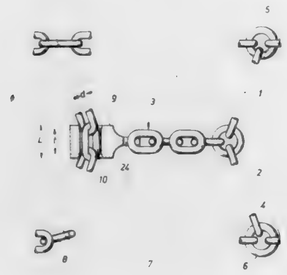
Hansjörg Rieger, Aalen, and Dietmar Holzwarth, Schwäbisch-Gmünd, both of Fed. Rep. of Germany, assignors to RUD-Kettenfabrik Rieger 6 Dietz GmbH u. Co., Aalen, Fed. Rep. of Germany

Filed Aug. 9, 1981, Ser. No. 301,758

Claims priority, application Switzerland, Sep. 18, 1980, 7020/80

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—213 A **12 Claims**



1. In an anti-slip chain for vehicle tires of the type having a running net including track pieces formed by chain strands connected to cross-chains extending at an angle to the direction of rotation, said cross-chains being held by an inner and an outer holding device, and in which a tensioning chain strand being attached to one end of the inner holding device and serving to tension said inner holding device is led from the inner holding device at an angle to the direction of rotation over the tread to the outer holding device, said tensioning chain strand passing through a guide element attached to one end of a track piece, the other end of said track piece being connected to said cross-chains,

the improvement comprising:

said guide element being formed by a sliding sleeve (9;11) the length of which is greater than the difference of the pitch t of the links (10) of the tensioning chain strand (7) and the link wire diameter d of these links.

4,390,054

APPARATUS FOR OPENING AND CLOSING A FLEXIBLE SCREEN IN A GREENHOUSE OR THE LIKE

Kenji Niibori, and Toshio Ishihama, both of Oyama, Japan, assignors to Seiwa Kagaku Kabushiki Kaisha, Japan

Filed Jul. 8, 1981, Ser. No. 281,409

Claims priority, application Japan, Jul. 9, 1980, 55-96769[U]; Oct. 23, 1980, 55-151292[U]

Int. Cl.³ A47H *1/00*

U.S. Cl. 160—265 **4 Claims**

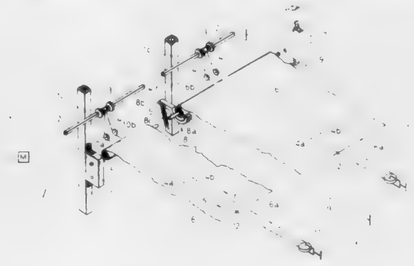
1. Apparatus for opening and closing a flexible screen of a greenhouse or the like of the type wherein an end edge of the flexible screen is fixed to a winding rod and wherein the screen is opened or closed by winding the screen onto the winding rod or unwinding the screen from the winding rod respectively, comprising:

an elongated winding rod mounted for rotation about a fixed axis of rotation, said elongated winding rod having alternating large diameter and reduced diameter portions;

an elongated flexible screen fixed at an end edge thereof to said winding rod and windable thereon to form a rolled screen;

rolled screen supporting means for supporting the rolled screen wound on said winding rod including a casing defining an opening for receiving said rolled screen and a screen delivering slit, a plurality of rolled screen supporting rollers rotatably supported in said casing and arranged to support said rolled screen in said opening along the periphery thereof, and rollers provided in the region of said screen delivering slit for guiding said screen which passes therethrough;

traction means operatively connected to the other end edge of said flexible screen for selectively pulling said flexible screen in either one of opening and closing directions, said traction means including an elongated driving shaft mounted for rotation about a fixed axis of rotation, second driving means for selectively rotating said driving shaft in either one of normal and reverse directions, elongated flexible members each of which has its two ends secured to said driving shaft with respective end portions thereof being coiled on said driving shaft opposite to each other,



guide means for guiding two portions of each of said flexible members over a predetermined path of travel, and wherein each of said flexible members is operatively connected at one of said two portions thereof to said flexible screen; and

first driving means for constantly applying a substantially constant restoring force to said winding rod tending to rotate the same about its fixed axis of rotation in a direction such that said flexible screen would be wound onto said winding rod, said first driving means including a casing, a constant-restoring-force spring housed in said casing, an output shaft rotatably supported in said casing, said spring being coiled thereon with an end of said spring being fixed to said output shaft, and a main shaft rotatably supported in said casing and having coiled thereon the other free end of said spring, and wherein at least one end of said winding rod is operatively connected to said output shaft.

4,390,055

DRAPERY CARRIER

Joel S. Fenley, Union Lake, Mich., assignor to Saf-T-Trac Company, Detroit, Mich.

Filed Aug. 6, 1980, Ser. No. 175,782

Int. Cl.³ A47H *13/14*

U.S. Cl. 160—348 **2 Claims**

1. A drapery system comprising:

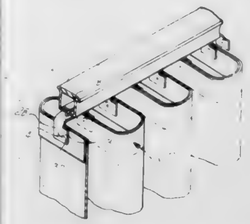
a sheet of flexible drapery material;

a narrow elongated strip formed of a resilient sheet material secured to an elongated edge of the drapery material;

spaced pairs of separable fasteners of a first form secured at spaced intervals along the strip;

an elongated drapery rod;

a plurality of carriers each having a first section adapted to be slidably supported on the rod and a second section depending below the rod, each second section supporting a pair of separate separable fasteners of a second form, complementary to the first form, spaced relative to one another along a line parallel to the length of the rod, the distance between the pair of separable fasteners secured to the second section of each carrier being less than the distance between the two members of each pair of separable fasteners of the first form which are secured to the strip, the lower section of each carrier including a pair of substantially planar surfaces each extending normally to the axis of the rod, the two surfaces being spaced from one another along the axis of the rod, the two planar surfaces formed on the lower section of each carrier being formed by a pair of plates having their upper edges secured to the bottom of the upper sections of each carrier so that the plates project downwardly therefrom to define a downwardly opening passage therebetween, and the two separable fastener sections of the first form being supported one on each of said planar surfaces, whereby the drapery sections carrying said separable fasteners of the first form will be supported laterally to the axis of the rod;



whereby each pair of separable fasteners formed on the strip may be joined to the pair of separable fasteners formed on the second section of a carrier so that the section of the strip between each pair of separable fasteners forms a curved section extending laterally in a first direction from the carrier and the sections of the strip between adjacent carriers extend laterally from the carriers in a second direction to form a roll pleat, said separable fastener of the second form being formed in said plates so as to allow attachment of the fasteners of the first form to either side of the plate.

4,390,056

METHOD AND APPARATUS FOR PRODUCING ONE OR MORE HOLLOW SAND CORES SUITABLE FOR CASTING MOULDS

Morgens W. Grove, Bronshoj, and Carl-Erik Eriksen, Ballerup, both of Denmark, assignors to Dansk Industri Syndikat A/S, Herlev, Denmark

Continuation of Ser. No. 946,618, Sep. 28, 1978, abandoned, which is a continuation of Ser. No. 700,598, Jun. 28, 1976, abandoned. This application Jul. 30, 1980, Ser. No. 173,753

Claims priority, application Denmark, Jul. 27, 1975, 2920/75

Int. Cl.³ B22C *13/08, 13/12*

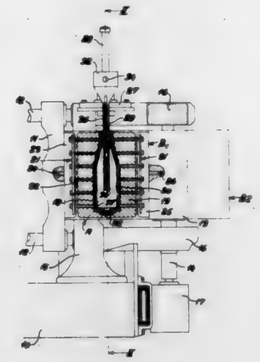
U.S. Cl. 164—7.1 **6 Claims**

1. A method for producing one or more hollow sand cores suitable for casting moulds by means of a bipartite core box (A, B) defining a mould cavity having an interior with bottom and side surfaces into which sand, binder, and catalyst or a curing agent are introduced comprising the steps of:

(1) establishing a pressure gradient which decreases from the interior to the exterior of a non-heated core box (A, B) of porous material, at least a portion of the porous material being coarse so that the pressure gradient is readily transmitted through walls of the core box,

(2) introducing sand, binder, and a catalyst or a curing agent into the mould cavity defined by said non-heated core box (A, B), the sand being introduced into the mould cavity as a layer of sand on the outside of a porous pipe and being retained thereon by means of vacuum maintained in the interior of the pipe,

(3) directing the introduced sand, binder, and catalyst or curing agent against the side surfaces of the interior of the non-heated core box (A, B) which step of directing, at least in part, is obtained by the pressure gradient established between the interior and exterior of the non-heated core box (A, B), and by abruptly replacing the vacuum in the pipe by an overpressure whereupon the sand is blown



against the interior surface of the non-heated core box, and

(4) using the pressure gradient to hold the introduced sand, binder, and catalyst or curing agent against the side surfaces of the interior while they solidify to form the hollow sand core.

4,390,057

CURVED CONTINUOUS-CASTING MOLD AND METHOD OF REESTABLISHING THE INTERNAL DIMENSIONS THEREOF

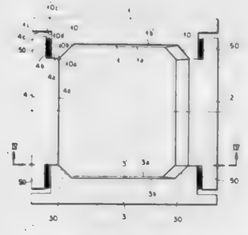
Hans-Josef Reuter, Kürten-Biesfeld, Fed. Rep. of Germany, assignor to Mecan Arbed S.A., Luxembourg, Luxembourg

Continuation-in-part of Ser. No. 215,153, Dec. 11, 1980, abandoned. This application Apr. 30, 1981, Ser. No. 259,093

Claims priority, application Luxembourg, Dec. 11, 1979, 81982

Int. Cl.³ B22D *11/00*

U.S. Cl. 164—459 **5 Claims**



1. A mold for curved-mold continuous casting comprising mold plates defining a mold channel curving and converging in a casting direction, each of said plates being formed with a recessed edge portion interfitting with a respective portion of an angularly adjoining plate at a corner of the channel wherein each pair of angularly adjoining plates have abutment surfaces in contact with one another over the length of the mold and defining joints between the plates of each pair, said each pair of angularly adjoining plates further having a first and a second pairs of confronting flange surfaces spaced from one another, said plates including a first pair of mutually opposite plates having substantially flat inner surfaces extending in said direc-

tion, and a second pair of opposite plates with curved inner surfaces, the plates of one of said first and second pairs being formed along their edges with internal bevels, said bevels and the inner surfaces of said plates imparting an octagonal cross-section to said channel, progressively reducing in the casting direction, a plurality of shims being disposed between the first pair of said confronting flange surfaces of each pair of angularly adjoining plates externally of said channel to position edges of the respective abutment sufaces flush with one another at the respective joint.

5. A method of restoring an original configuration and dimension of a channel of a mold defined by inner surfaces of pairs of opposite plates having abutment surfaces adjoining each other at corners and confronting flange surfaces interposed by groups of shims, some of said plates having internal bevels, said method comprising the steps of:

removing material of a thickness "a" from the inner surfaces and abutment surfaces of the plates provided with said bevels and of a thickness a·cos α from said bevels, where α is the bevel angle;

removing material of a thickness "b" from the inner surfaces of the plates which are not provided with said bevels; and

withdrawing shims at each corner with a total thickness "b", where "b" can be the same or different from "a"; and

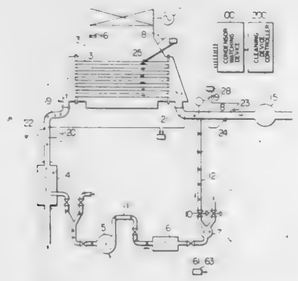
bringing the plates into mutual contact until the respective abutment surfaces flush with one another at a respective joint.

4,390,058

METHOD OF MONITORING CONDENSER PERFORMANCE AND SYSTEM THEREFOR

Katsumoto Otake, Hitachi; Masahiko Miyai, Mito; Yasuteru Mukai, and Isao Okouchi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 213,095
Claims priority, application Japan, Dec. 5, 1979, 54-156907
Int. Cl.³ F28G *13/00;* **F28F** *27/00;* **F28B** *9/00, 11/00*
U.S. Cl. 165—1 **32 Claims**



1. A method of monitoring the performance of a condenser comprising the steps of:

sensing the operating conditions of the condenser and obtaining values representing the operating conditions;

calculating the cleanness of cooling water tubes of the condenser based on at least one of the variables of the overall condenser heat transmission coefficient and a heat transfer rate according to the values obtained in the first step; and

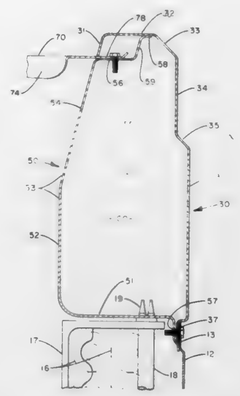
controlling the performance of the condenser with special reference to the values representing the cleanness of the cooling water tubes.

4,390,059

HEAT EXCHANGER AND FAN AND METHOD OF ASSEMBLY

Rudy E. Haas, East Syracuse; Michael E. Smorol, Syracuse; Curtis L. Tobin, Chittenango, all of N.Y., and James J. Walker, Jr., Merrimack, N.H., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 3, 1980, Ser. No. 202,981
Int. Cl.³ F28F *9/24*
U.S. Cl. 165—76 **5 Claims**



1. A heat exchange unit having a heat exchanger and a fan for circulating air in heat exchange relation with the heat exchanger which comprises:

an annular fan orifice defining a top discharge air flow path through a portion of the heat exchange unit, said orifice including a grille support ledge and a top cover support ledge;

a grille adapted to cover the air flow path through the fan orifice, said grille including an annular solid edge portion which mates with the grille support ledge of the fan orifice to secure the grille relative to the fan orifice; and

a top cover adapted to encase the fan orifice, said top cover including a top portion which defines a top surface of the heat exchange unit and mates with the top cover support ledge of the fan orifice to affix the top cover relative to the fan orifice and which includes a securing flange for covering a part of the edge portion of the grille.

4,390,060

AIR-CIRCULATING ASSEMBLY

Nelson A. Reinke, 10300 Cathleen Dr., and B. G. Ulch, 287 Oak St., both of Harrison, Mich. 48625

Filed Jul. 20, 1981, Ser. No. 285,430
Int. Cl.³ F28F *7/00*
U.S. Cl. 165—76 **10 Claims**



1. An air-circulating assembly (**10**) comprising; fan means (**12**), shroud means (**14**) for supporting said fan means (**12**), and

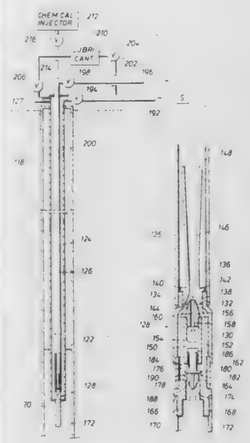
said assembly characterized by support means for extending about and engaging an existing stove pipe (**16**) for removably attaching said shroud means (**14**) to the exterior of the stove pipe (**16**) for moving ambient air past the stove pipe (**16**) to heat the ambient air from the stove pipe (**16**), and said support means including a cradle (**20**) for engaging one side of the stove pipe (**16**) and at least one flexible member (**22**) attached to said cradle (**20**) and extending around the remainder of the pipe (**16**) to hold said cradle (**20**) against the pipe (**16**).

4,390,061

APPARATUS FOR PRODUCTION OF LIQUID FROM WELLS

Charles Short, P.O. Box 629, Humble, Tex. 77338

Filed Dec. 31, 1980, Ser. No. 221,534
Int. Cl.³ E21B *43/00, 43/34;* **F04F** *5/12, 5/44*
U.S. Cl. 166—53 **18 Claims**



1. Apparatus for production of liquid from a subsurface formation intersected by a well bore said apparatus comprising:

a string of production tubing extending into said well bore and into liquid standing within said well bore;

aspirator means being interconnected with said production tubing and being positioned below the level of liquid standing within said well, said aspirator means defining an aspirator housing secured to said production tubing, said aspirator housing defining a gas injection section in communication with said gas supply means, said gas injection section defining a liquid flow path in communication with liquid standing within said well and a gas flow path, said gas injection further defining a valve retainer;

a valve housing being interconnected with said aspirator housing and defining a valve seat;

a valve element being movably received by said valve retainer and being movable to open and closed positions responsive to conditions of liquid flow within said liquid path, said valve element being at least partially receivable within said valve seat, said valve retainer and valve housing providing guiding support for said valve element;

an upwardly directed nozzle being defined by said aspirator means and defining a restricted gas jet passage being the terminal portion of said gas flow path;

gas supply means communicating a pressurized gaseous medium from a gas supply source to said gas flow path; and

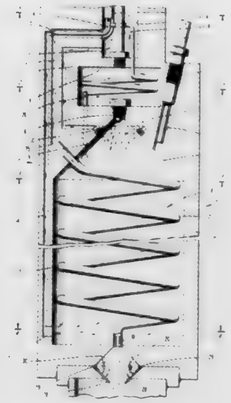
venturi means being defined within said aspirator means and being in communication with said liquid flow path, said gas jet passage and said liquid flow passage means having confluence with said venturi means and terminating within said venturi means, said gas jet passage directing a jet of compressed gas upwardly through said venturi means and causing liquid within said liquid flow path to flow upwardly into said venturi means and become aspirated and thus transported upwardly through said production tubing for production at the surface.

4,390,062

DOWNHOLE STEAM GENERATOR USING LOW PRESSURE FUEL AND AIR SUPPLY

Ronald L. Fox, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 7, 1981, Ser. No. 222,863
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—59 **4 Claims**



1. An apparatus for generation of steam in a borehole for penetration into an earth formation, comprising

an oxidant supply means;

a fuel supply means for supplying fuel;

an igniter means for igniting the fuel and oxidant mixture;

a water supply means for providing water to be converted to superheated water by the heat of combustion;

a combustor assembly having oxidant inlet means, fuel inlet means, a combustion chamber for generating hot combustion gases, a heat exchanger in said combustion chamber for at least superheating the water while maintaining separation between said water and the hot combustion gases, and nozzle means connected to said heat exchanger for converting the superheated water into steam and ejecting the steam into the borehole;

exhaust means connected to said combustion chamber for venting the hot gases of combustion out of the combustor assembly wherein said exhaust means includes an exhaust pipe, and said water supply means includes a water line, said exhaust pipe being mounted in said water line thereby serving to preheat the water before entry into said heat exchanger.

4,390,063

GEOTHERMAL WELLHEAD PACKING ASSEMBLY

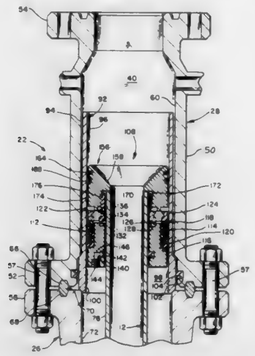
Frederic D. Wells, Jr., Shreveport, La., assignor to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed May 20, 1981, Ser. No. 265,310
Int. Cl.³ E21B *33/03;* **F16L** *17/02, 21/04, 27/12*
U.S. Cl. 166—84 **30 Claims**

1. In a wellhead assembly having a casing head, an inner casing within the casing head, the inner casing having a restrained lower end portion and an unrestrained upper end portion extending above the casing head, and an expansion

spool mounted on the upper end of the casing head and receiving the upper end portion of the inner casing:

an expansion sleeve fitting within the expansion spool, the outer surface of the expansion sleeve being adjacent the inner surface of the expansion spool and defining an annular space between the inner surface of the expansion sleeve and the outer surface of the inner casing;



and a packing assembly mounted within the annular space on the upper end portion of the inner casing and extending in sealing relation between the inner casing and the expansion sleeve, said packing assembly being movable with the upper end portion of the inner casing relative to the expansion spool and expansion sleeve as the inner casing moves longitudinally in response to temperature changes within the wellhead assembly.

4,390,064

JUNK BASKET

Jack Enen, Jr., Dallas, and Wayne M. Sullivan, Houston, both of Tex., assignors to Enen Machine Tool & Equipment Co., Dallas, Tex.

Filed Oct. 17, 1980, Ser. No. 197,862

Int. Cl.³ E21B *31/08*

U.S. Cl. 166—99 **5 Claims**



1. A junk basket for collecting junk from a well bore and adapted for connection to a well drilling string comprising,

an elongate body having an annular interior for attachment to the exterior of a portion of a drilling string,

said body including an upwardly directed cavity for receiving junk from the well bore,

drain holes through the body adjacent the bottom of the cavity for draining fluids from the cavity,

ribs in the cavity connected to the body and adapted to engage the exterior of the drilling string for reinforcing the body,

tapered guide means extending upwardly from the top of the ribs for preventing the top of the body from catching on downwardly facing shoulders in the well bore,

means connected to the body for releasably connecting the body to the exterior of the drilling string including,

a downwardly facing annular shoulder in the interior of the body,

a resilient male split ring positioned in the interior of the body against the shoulder,

a resilient female split ring positioned in the interior of the body against the male ring,

said male and female split rings having coacting conical surfaces whereby axial movement of the rings toward each other causes the male ring to clamp on the exterior of the drilling string, and

an end cap threadedly connected to the body, said end cap interlocked with the female split ring whereby rotational movement of the cap relative to the body causes axial movement of the rings relative to each other.

4,390,065

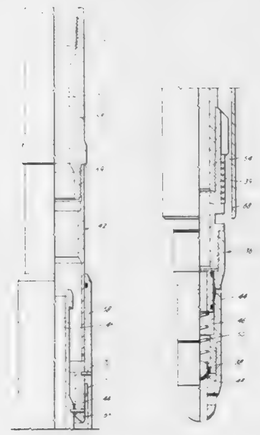
APPARATUS FOR WELL TREATING

Charles N. Richardson, New London, Tex., assignor to Tri-State Oil Tool Industries, Inc., Bossier City, La.

Division of Ser. No. 179,487, Aug. 19, 1980, Pat. No. 4,314,608, which is a continuation-in-part of Ser. No. 158,889, Jun. 12, 1980, abandoned. This application Sep. 17, 1981, Ser. No. 303,191

Int. Cl.³ E21B *33/12, 33/14*

U.S. Cl. 166—181 **2 Claims**



1. An apparatus for performing well treating operations comprising:

a retrievable fluid plug comprising,

a generally cylindrical body having a fluid passageway extending vertically therethrough,

check valve means in said passageway for preventing fluid flow downwardly therethrough, while permitting fluid flow upwardly therethrough,

latch engaging means formed on the upper end of said body for selective engagement by the latch means of a valve retrieving mechanism,

seal means disposed about the outside of said cylindrical body and adapted to engage the bore of a packer, and

pressure equalizing means for selectively permitting fluid in said fluid passageway to bypass said check valve means to thereby equalize the pressure above and below said retrievable fluid plug; and

a seating mechanism releasably attached to said retrievable fluid plug, said seating mechanism comprising,

a generally cylindrical body having a bore extending vetically therethrough and having a threaded connection at the upper end thereof for threadedly attaching said seating mechanim to a tubing string, and

means for releasably attaching said seating mechanism to said retrievable fluid plug means.

4,390,066

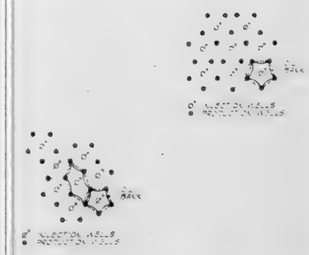
WELL LOCATION PATTERN FOR SECONDARY AND TERTIARY RECOVERY

J. Scott Moore, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Feb. 5, 1981, Ser. No. 231,814

Int. Cl.³ E21B *43/30*

U.S. Cl. 166—245 **6 Claims**



1. A method of producing hydrocarbons from a subterranean formation comprising:

penetrating said formation with a plurality of wells arranged in a pattern defining a series of replicating regular pentagons with an injection well at the center of each pentagon and production wells at the corners of each pentagon;

injecting a fluid into said formation by way of the injection wells whereby hydrocarbons contained in said formation are displaced from the injection wells toward the production wells in said pattern; and

producing said hydrocarbons by way of said production wells.

4,390,067

METHOD OF TREATING RESERVOIRS CONTAINING VERY VISCOUS CRUDE OIL OR BITUMEN

Bertram T. Willman, Calgary, Canada, assignor to Exxon Production Research Co., Houston, Tex.

Filed Apr. 6, 1981, Ser. No. 251,587

Int. Cl.³ E21B *43/24*

U.S. Cl. 166—245 **21 Claims**

1. A method for treating a field having a reservoir containing viscous oil or bitumen comprising the steps of:

providing at least two boreholes extending downward from the surface at least into the reservoir,

providing at least one generally horizontal borehole within the reservoir connecting at least two boreholes extending from the surface,

introducing a heated fluid into said horizontal borehole in an amount sufficient to at least soften said viscous oil or bitumen for a distance substantially along said at least one generally horizontal borehole within the reservoir,

substantially plugging said at least one horizontal borehole within the reservoir,

introducing a heated displacement fluid into at least one borehole extending downward from the surface within the reservoir at the juncture between the plugged borehole said downwardly extending borehole, and



withdrawing said viscous oil or bitumen from a borehole extending downward from the surface at a point remote from the displacement fluid introduction point.

4,390,068

CARBON DIOXIDE STIMULATED OIL RECOVERY PROCESS

John T. Patton, Las Cruces, N. Mex., and Carl M. Canfield, Littleton, Colo., assignors to Champlin Petroleum Company, Wilmington, Calif.

Filed Apr. 3, 1981, Ser. No. 250,894

Int. Cl.³ E21B *43/22, 43/40*

U.S. Cl. 166—267 **18 Claims**

1. A process of stimulating oil recovery comprising introducing carbon dioxide in the liquid state into an underground formation containing crude oil, permitting said carbon dioxide to be absorbed by said crude oil, and maintaining a back pressure in the range of from atmospheric to approximately 300 psi on said formation while withdrawing said crude oil containing carbon dioxide absorbed therein.

4,390,069

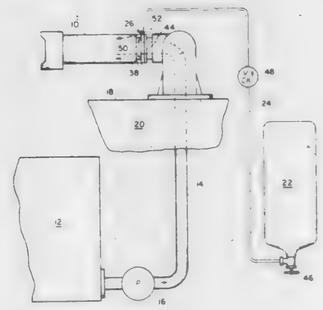
TRIFLUOROBROMOMETHANE FOAM FIRE FIGHTING SYSTEM

George R. Rose, Jr., East Patchogue, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation of Ser. No. 80,446, Oct. 1, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 280,693

Int. Cl.³ A62C *35/02, 5/04*

U.S. Cl. 169—15 **1 Claim**



1. Apparatus for fighting fires comprising, in combination:

means for supplying an aqueous liquid under pressure to a discharge opening;

nozzle means at said discharge opening, said nozzle means having a discharge orifice and, upstream therefrom, an air induction opening around the periphery of said nozzle means;

metering means supported around said air induction opening, said metering means comprising an annular metering collar having spaced around the annulus thereof a plurality of metering nozzles whose output is directed into said air induction opening, said metering means passing a trifluorobromomethane (CF_3Br) compound from a supply receptacle under pressure into said aqueous liquid such that said mixed liquid and said compound are projected as a foam onto a fire from said nozzle means, the trifluorobromomethane compound mixed in said liquid expanding upon passage through said nozzle means to generate a gas in the bubbles of said foam whereby said compound is carried in said bubbles to said fire by said foam such that the subsequent bursting of said bubbles releases said compound to act on said fire and thereby further the fire extinguishing action of said foam.

4,390,070

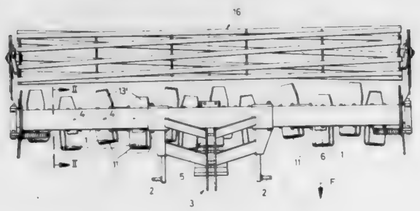
SOIL WORKING MACHINE

Bruno Barlage, Riesenbeck, Fed. Rep. of Germany, assignor to H. Niemeyer Sohne GmbH & Co. KG, Riesenbeck, Fed. Rep. of Germany

Continuation of Ser. No. 81,993, Oct. 4, 1979, abandoned. This application May 26, 1981, Ser. No. 266,864

Int. Cl.³ A01B *19/06*

U.S. Cl. 172—54.5 **1 Claim**



1. A machine movable in a given direction of travel for cultivating soil, comprising; a main beam extending substantially horizontally and transversely with respect to the direction of travel of a machine, a drive shaft mounted parallel to and spaced below the beam; a plurality of wobble bearings disposed spaced apart side-by-side on the drive shaft; a plurality of tool holders each supported on one of the wobble bearings and each comprising a lever guided for a rocking movement transversely of the direction of travel, at least one tine for each tool holder and means mounting the tines to the levers for sweeping a virtually continuous area extending over substantially the entire width of the main beam thereby coacting to form an impenetrable wall which exercises a downward deflecting action on stones or clods of earth at the surface of the soil to bring same into the range of the tines, the mounting means comprising a plurality of substantially U-shaped elements of spring metal each having its arch pointing in the direction of travel with the lower free limb connected to a tine and the upper free limb connected to a lever and configured at the arched portion to have a width which is about half the width of the swept area such that in their transverse rocking movement the forward portions of the elements in the direction of travel sweep a virtually continuous area extending over substantially the entire width of the main beam and wherein the lower free limb of each element has a rearward portion which tapers in width in a decreasing manner in a direction opposite to the direction of travel.

4,390,071

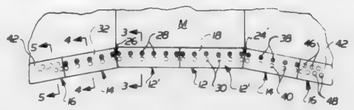
REPLACEABLE CUTTING BLADE ASSEMBLY FOR DOZERS

Richard E. Wright, Bucyrus, Ohio, assignor to Paper, Calmenson & Co., Saint Paul, Minn.

Filed Nov. 23, 1979, Ser. No. 96,892

Int. Cl.³ E02F *9/28*

U.S. Cl. 172—701.3 **15 Claims**



1. A replaceable cutting blade assembly for a U-dozer blade adapted for adjustable securement to a moldboard up to four times in four different configurations during the service life of said blade assembly to provide four positions of adjustment therefor, said assembly comprising a center section blade having a face with a longitudinal centerline thereacross and being bounded by first and second longitudinal working edges and opposing, mitered transverse edges having outwardly projecting miter tips, said center section blade further including at least one longitudinal row of bolt holes formed therein for securement thereof to said moldboard; wherein each of said miter tips is offset along said transverse edge intermediate said longitudinal centerline and one of said longitudinal working edges.

4,390,072

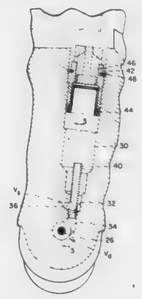
DRILL BIT LUBRICANT CIRCULATION SYSTEM

Charles M. Phelan, Fort Worth, Tex., assignor to Globe Oil Tools, Inc., Fort Worth, Tex.

Filed May 4, 1981, Ser. No. 259,860

Int. Cl.³ E21B *10/24*

U.S. Cl. 175—229 **8 Claims**



1. A lubricant circulating system of each rotary cone cutter of a rotary drilling bit comprising:

(a) a sealed bearing lubricating space defined between said rotary cone cutter and a journal shaft extending from the body of said bit with said cutter and said shaft co-acting during use of said bit to cause repeated changes in volume of said lubricating space;

(b) said body defining a lubricant reservoir in communication with said lubricating space through an inlet passageway and an outlet passageway;

(c) at least one of said passageways including connection with a substantially cylindrical chamber;

(d) the centerline of said one passageway being disposed substantially tangential with the cylindrical wall of said chamber to define a vortex flow passage providing flow restriction from said passageway into said cylindrical chamber and less restrictive return flow; and

(e) said vortex flow passage co-acting with repeated volume variations in said lubricating space to cause lubricant flow circulation in the direction of least flow restriction.

4,390,073

BLOOD COLLECTION BAG WEIGHING DEVICE

Evan W. Rosen, Tucson, Ariz., assignor to Engineering & Research Associates, Inc., Tucson, Ariz.

Continuation of Ser. No. 81,164, Oct. 2, 1979, abandoned. This application Nov. 9, 1981, Ser. No. 319,573

Int. Cl.³ G01G *13/02*

U.S. Cl. 177—118 **8 Claims**



1. A blood collection bag weighing device for filling a blood collection bag with a predetermined weight of blood flowing from a tube extending from the vascular system of a donor, said device comprising in combination:

(a) means for clamping the tubing, said clamping means including a member for embodying stored potential energy when positioned in a retained state and for clamping the tube when positioned in a clamping state, said member including a planar surface and means for exerting a first magnitude of force against retention in the retained state and a second magnitude of force for clamping the tubing in the clamped state, which second magnitude of force is substantially greater than the first magnitude of force;

(b) a permanent magnet for overcoming the first magnitude of force to magnetically capture and retain said member in the retained state, said magnet including a straight edge and movable mounting means for accommodating realignment of said magnet to position said straight edge of said magnet in aligned contacting relationship with said planar surface of said member and maximize the magnetic coupling therebetween;

(c) means for momentarily disrupting the magnetic field of said magnet to a value insufficient to overcome the first magnitude of force and independent of the magnitude of the second magnitude of force and permit repositioning of said member from the retained state to the clamping state in response to said exerting means;

(d) means for sensing achievement of the predetermined weight by the blood collection bag during the filling of the blood collection bag; and

(e) means for generating an electrical signal in response to said sensing means to energize said disrupting means;

whereby, the energy level of said magnet and of said generated electrical signal may be unrelated to the level of energy of the second magnitude of force to clamp the tubing.

4,390,074

OPERATING KEY FOR ELECTRICAL SCALES

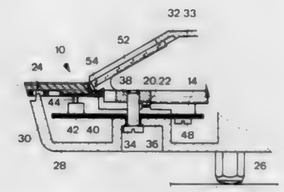
Karl Vogel, Greifensee, Switzerland, assignor to Mettler Instruments AG, Greifensee-Zurich, Switzerland

Filed Nov. 18, 1981, Ser. No. 322,473

Claims priority, application Switzerland, Feb. 6, 1981, 801/81

Int. Cl.³ G01G *23/30, 23/14*

U.S. Cl. 177—177 **10 Claims**



1. A device for manual operation of an electrical scale having control circuit means responsive to a control signal, comprising

a first and second control switch arranged at a predetermined distance from each other and electrically connected to said control circuit so that activation of either of said switches furnishes said control signal to said control circuit;

an elongated activating member mounted relative to said first and second switch so that a force applied to said activating member at any point thereof operates at least one of said switches.

4,390,075

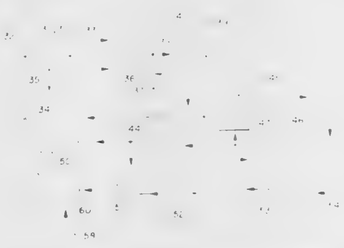
LOAD WEIGHING AND ACCUMULATING SYSTEM AND METHOD

Edwin deS. Snead, Box 798, Georgetown, Tex. 78626

Division of Ser. No. 945,075, Sep. 22, 1978, Pat. No. 4,230,196, which is a continuation of Ser. No. 841,383, Oct. 12, 1977, abandoned. This application Oct. 24, 1980, Ser. No. 200,327

Int. Cl.³ G01G *3/14*

U.S. Cl. 177—210 FP **12 Claims**



1. A system for measuring and indicating the weight of a load including; a load supporting means; weighing means comprising transducer means operatively connected to said load supporting means for producing an instantaneous electric analog signal proportional to the supported weight; converter means coupled to the output of said transducer means for converting said analog signal to a frequency signal consisting of pulses generated at a frequency proportional to said analog signal; characterized by

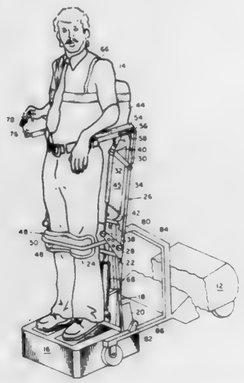
a counter for counting and displaying output pulses from said converter;

gate means coupling said counter to said converter means, for controlling the passing of converter output pulses to said counter;

clock means coupled to said gate means for providing periodic

gate-open intervals of preselected uniform time, whereby the passed pulses are representative of the supported load;
and actuator means coupled to said gate means for initiating a single gate-open interval, whereby said counter functions as an accumulator counter for successive supported loads responsive to successive operations of said actuator means.

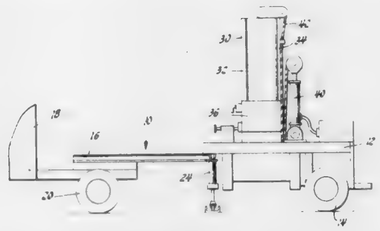
4,390,076
INTEGRATED WHEELCHAIR AND AMBULATOR
John P. Wier, and Robert A. Garrett, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Division of Ser. No. 62,835, Aug. 1, 1979. This application Jan. 26, 1981, Ser. No. 228,503
Int. Cl.³ B62D *51/00*
U.S. Cl. 180—11 **4 Claims**



1. An integrated separable ambulator and wheelchair comprising:
the ambulator including:
a base which is capable of resting on a floor and supporting a person's feet;
a seat;
a framework of articulated linkage mounted on the base for supporting the seat between horizontal and vertical positions;
means for selectively moving the seat between the horizontal and vertical positions so that a person can be supported between sitting and standing positions respectively;
said ambulator and wheelchair having mating connecting means when the seat is in a vertical position; and
means for lifting the base clear of the floor when the ambulator and wheelchair are mated so as to enable the wheelchair to be maneuvered with the ambulator supported thereon.

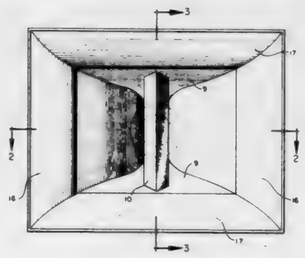
4,390,077
APPARATUS HAVING PUSH/PULL ACTUATED BOOM FOR GENERATING WAVES IN THE GROUND
Earl Fulkerson, 4111 9th St. East, Bradenton, Fla. 33508
Continuation-in-part of Ser. No. 112,394, Jan. 15, 1980, Pat. No. 4,291,780, and Ser. No. 11,875, Feb. 13, 1979, Pat. No. 4,244,437. This application Oct. 20, 1980, Ser. No. 198,530
Int. Cl.³ G01V *1/147*
U.S. Cl. 181—121 **4 Claims**

1. Apparatus for generating waves in the ground comprising:
a frame;
an elongated, linear, rigid boom movably mounted on the frame in a first boom position;
a hammer mounted on the boom for movement therealong;
means mounted on the boom and connected to the hammer for raising it to a first elevated position, and for dropping it from said first elevated position;
an anvil having a first impact surface and a second impact surface, the anvil being mounted on the ground beneath the frame in a position such that the first impact surface is aligned with the path of motion of the hammer as it is being dropped from said first elevated position, the second impact surface being spaced from the first impact surface;



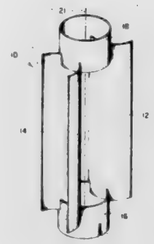
positioning means mounted on the frame and connected to the boom for pivoting it from said first boom position to a second boom position to guide the hammer for a downward motion from a second elevated position toward the anvil to strike the second impact surface, the second elevated position of the hammer being horizontally spaced from said first elevated position;
whereby the hammer is operative to generate a wave in the ground by a downward motion from either said first elevated position or said second elevated position without repositioning either the frame or the anvil with respect to the ground.

4,390,078
LOUDSPEAKER HORN
Bruce Howze, Springfield, and Clifford Henrickson, Wallingford, both of Pa., assignors to Community Light & Sound, Inc., Philadelphia, Pa.
Filed Feb. 23, 1982, Ser. No. 351,439
Int. Cl.³ G10K *11/00*
U.S. Cl. 181—185 **10 Claims**



1. A loudspeaker horn for use with an electro-acoustical driver, the horn comprising:
a throat section joined to the driver and having an entrance aperture matched to the driver, the throat section then blending to a rectangular cross-section having top and bottom walls which are substantially planar and diverge at a first angle and having side walls which are curved to maintain an exponential expansion rate of cross-section;
a transition section joined to the throat section and having substantially planar top and bottom walls that diverge at a second angle and having curving side walls;
a central vane having a leading portion extending from the top wall of the transition section to the bottom wall thereof, forming two air channels which expand in cross-section at an exponential rate and diverge from one another at a third angle, the air channels having a rectangular cross-section, the horizontal dimension thereof being substantially smaller than the vertical dimension; and,
a wave-guide section joined to the air channels of the transition section, having planar top and bottom walls that diverge at the second angle and having said walls that are planar, blend smoothly with the side walls of the transition section and diverge outwardly at a fourth angle such that the conical expansion of the wave-guide section is nowhere more rapid than the exponential expansion rate of the transition section, a continuation and termination portion of the vertical vane being disposed in the transition section, rejoining the two air channels into one air channel of rectangular cross-section, whereby the loudspeaker horn projects acoustical energy over a substantially constant coverage angle and over a wide frequency range, properly loading the driver at all operating frequencies.

4,390,079
MUFFLER AND EXHAUST EXTRACTOR
Robert Brill, 815 Nile St., Golden, Colo. 80401
Continuation-in-part of Ser. No. 73,532, Sep. 7, 1979, abandoned. This application Nov. 21, 1980, Ser. No. 209,192
Int. Cl.³ F01N *7/08, 1/14*
U.S. Cl. 181—227 **4 Claims**



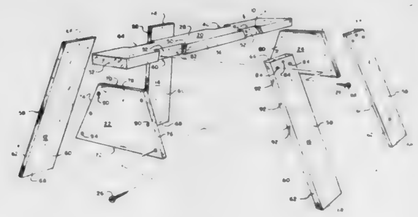
1. An exhaust pipe attachment for internal combustion powered vehicles comprising:
first and second curved airfoils mounted parallel to and spaced from one another and to a longitudinal axis generally perpendicular to the direction of movement of the vehicle to form an open ended converging diverging passageway for accelerating airflow therethrough to produce a low pressure area;
means for mounting the first and second airfoils in the airstream produced by moving the vehicle generally perpendicular to the direction of flow of the airstream with the open ended converging diverging passageway adjacent to and in communication with an exhaust outlet of the vehicle such that the exhaust gases flow into the low pressure area and such that turbulent air is produced on either side of the airfoils for dissipating the sound waves formed by the exhausting gases.

4,390,080
PORTABLE LIFT WITH LADDER
Sherman W. Bushnell, Jr., 1214 E. Hamlin St., Seattle, Wash. 98102
Filed Jan. 26, 1981, Ser. No. 228,679
Int. Cl.³ E06C *5/20*
U.S. Cl. 182—115 **12 Claims**



1. A lift comprising:
a base,
a multistage extensible mast mounted on the base, said mast having a top stage, and intermediate stage, and a bottom stage,
a platform on the mast,
a multi-sectioned extensible ladder to give access to said platform, said ladder having a top sloped section fixed to said top stage, an intermediate sloped section having a sliding fit at the upper end with said top section, and a bottom sloped section having a sliding fit at its upper end with said intermediate section, said bottom section being pivotally connected at its lower end to said base, and said intermediate section being pivotally mounted at its lower end to a brace connected to said intermediate stage of the mast,
means for extending said mast, and
means for extending said ladder responsive to extension of said mast.

4,390,081
SAWHORSE AND SAWHORSE KIT AND METHOD OF PACKAGING THEREOF
James H. Olmsted, Boulder, Colo., assignor to McCoy Industries, Inc., Denver, Colo.
Filed Dec. 1, 1980, Ser. No. 211,625
Int. Cl.³ B27B *21/00;* **F16M** *11/00;* **B65B** *3/04*
U.S. Cl. 182—151 **5 Claims**



1. A sawhorse kit, comprising;
four leg members, each having a rectangular cross-sectional configuration and being defined by relatively broad width, parallel outside and inside side surfaces, relatively

narrow-width, parallel edge surfaces, and parallel top and bottom surfaces;

an elongated top piece having a rectangular cross-sectional configuration defined by relatively broad width top and bottom surfaces adapted to be oriented generally parallel to a generally planar support surface for the sawhorse, relatively narrow height, elongated side surfaces, and relatively narrow height end surfaces, the top piece having two channels defined in each side surface, each channel being defined by two opposed side abutment surfaces and by an interconnecting abutment surface, each channel being adapted to receive and seat a top end portion of one of the leg members so that the side and interconnecting abutment surfaces of the channel are in abutting engagement with a portion of the two edge surfaces and one of the side surfaces, respectively, of one of the leg members with the leg member extending downwardly and outwardly from a vertical plane including the longitudinal axis of the top piece and downwardly and outwardly from a vertical plane transverse to the longitudinal axis of the top piece and bisecting the top piece, the channels being spaced from the ends of the top piece a sufficient distance to provide a work space on portions of the top surface of the top piece extending longitudinally outward from the channels to the end surfaces of the top piece, the top piece having a longitudinal length about the same as, or longer than, the combined longitudinal length of one edge surface of a leg member plus the longitudinal length of a bottom surface of a brace member;

at least two brace members adapted to be placed in abutting engagement with the bottom surface of the top piece with each brace member extending between the outside side surfaces of opposing leg members on opposite sides of the top piece, the brace members having a perpendicular height from the bottom surfaces to the top surfaces thereof about the same height as, or slightly higher than, the width of the side surfaces of the leg members and the width of the top and bottom surfaces of the top piece;

fastener means adapted to securely fasten the brace members to the leg members and the leg members to the top piece;

the top and bottom surfaces of the leg members being inclined such that when when each leg member is received and seated in a channel, the top surface of each leg member is parallel to and falls in a plane including the top surface of the top piece while the bottom surfaces of the leg members are substantially coplanar so as to provide stable support for the sawhorse on a generally planar sawhorse support surface; and

package means for containing the leg members, top piece, brace members, and fastener means in unassembled form, the package means having a length slightly longer than the longitudinal length of the top piece, a width slightly wider than the perpendicular height of one of the brace members, and a heigth slightly higher than the combined stack height of the leg members, the top piece and the brace members when the leg members, top piece and brace members are vertically stacked in five separate layers in a generally hexhedronal peripheral configuration with two layers each comprising one leg member and one brace member arranged in end to end relationship, two layers each comprising one leg member and one layer comprising the top piece, the package means being adapted to receive and enclose the sawhorse kit.

4,390,082

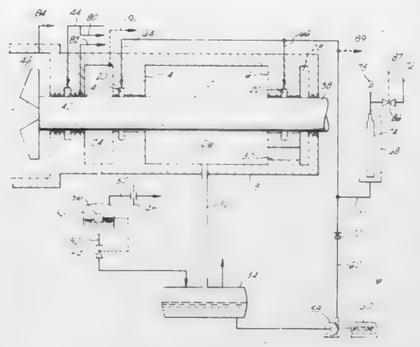
RESERVE LUBRICANT SUPPLY SYSTEM

Judson S. Swearingen, Malibu, Calif., assignor to Rotoflow Corporation, Los Angeles, Calif.

Filed Dec. 18, 1980, Ser. No. 217,572
Int. Cl.³ F02C *7/06*; F01M *1/16*
U.S. Cl. 184—6.4 **14 Claims**

10. In a rotary mounting system for an impeller and having a lubricated bearing and a pressurized main lubricant supply system, a reserve lubricant supply system comprising

a reserve lubricant reservoir, a passage between said reserve lubricant reservoir and the pressurized supply of the main



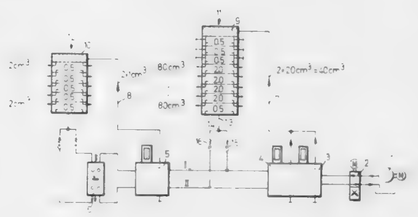
lubricant supply system, a gas pressurized chamber having an expansible wall common to said reservoir and a gas pressure source line in communication with said gas pressurized chamber, said source line receiving pressure from the adjacent impeller.

4,390,083

DOUBLE-CONDUIT CENTRAL LUBRICATING SYSTEM

Horst Saretzky, Ennepetal, Fed. Rep. of Germany, assignor to De Limon Fluhme GmbH & Co., Düsseldorf, Fed. Rep. of Germany

Filed Apr. 10, 1981, Ser. No. 252,758
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014502
Int. Cl.³ F16N *25/02*
U.S. Cl. 184—7 F **5 Claims**



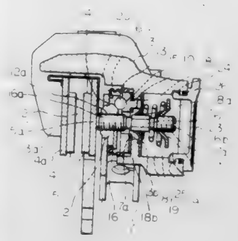
1. A double-conduit central lubricating system having two feed conduits supplied by a pump via a switch device which operates as a function of pressure difference and via a control valve, at least one double-conduit lubricant distributor being connected to said feed conduits, characterized by the fact that a control chamber (**9, 10**) of a progressive distributor (**11, 12**) is connected to an outlet of the double-conduit lubricant distributor (**3, 4, 5**) via a control conduit (**7, 8**) the pressure inlet, constituting a pressure connection, of said progressive distributor in the initial segment being connected with both feed conduits (**I, II**), the control chamber (**9, 10**) of the progressive distributor (**11, 12**) having no direct connection to the pressure connection of the initial segment.

4,390,084

MECHANICAL DISC BRAKE

Tetsuo Haraikawa, Funabashi, and Koichi Tamura, Tokyo, both of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Feb. 9, 1981, Ser. No. 233,077
Claims priority, application Japan, Feb. 18, 1980, 55-18805
Int. Cl.³ F16D *65/38*
U.S. Cl. 188—71.7. **5 Claims**



1. A disc brake comprising:

a disc, having opposite first and second sides, rotatable about an axis of rotation;

first and second friction pads respectively disposed on said first and second sides of said disc;

a stationary member;

a caliper supported on said stationary member to slide in a direction parallel said axis of rotation, said caliper straddling the circumference of said disc to define first and second limb portions respectively on said first and second sides of said disc, said first limb portion engaging said first friction pad for pressing said second friction pad against said first side of said disc, said second limb portion having an opening therein extending in an axial direction parallel said axis of rotation,

a threaded rod, threaded with a first pitch, and extending along a line in said axial direction through said opening, one end of said rod abutting said second friction pad;

force converting means, engaging said second limb portion and threadingly engaging said threaded rod and including means for rotating said rod about said line, for pressing said one end of said rod against said second friction pad to press said second friction pad against said second side of said disc;

a spring retainer having a seating surface, threadingly engaging said rod so as to be screwably movable along said rod relative to said force converting means;

a coil spring comprising a coil extending in said axial direction, disposed between said spring retainer and said second limb portion so as to bias said rod in said axial direction away from said second friction pad; and

a projection provided on said seating surface of said spring retainer for engaging the end of the coil adjacent thereto in the circumferential direction of said coil, to control the rotation of said spring retainer around said rod so as to bias said spring retainer against rotation in a loosening direction.

4,390,085

AUTOMATIC MECHANICAL BRAKE ADJUSTER

Terry R. Downing; John M. Zorns, both of Glenwood, and Winfred C. Croft, Park Forest South, all of Ill., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Aug. 24, 1981, Ser. No. 295,321
Int. Cl.³ F16D *55/08, 65/52*
U.S. Cl. 188—72.9 **2 Claims**

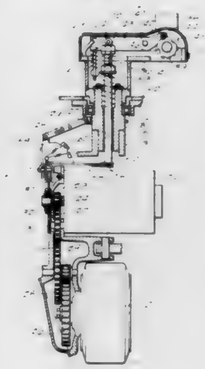
1. In a vehicle having a wheel rotatably mounted on a support which, in turn, is rotatably mounted on a frame portion of said vehicle for steering movement about a generally vertical axis and including a rotatable brake disk which rotates whenever the wheel rotates, a braking mechanism characterized by

a brake shoe in confronting relation to an axial face of said disk,

an operator-controlled brake operating linkage operable to transmit brake engaging force when moved in one direction,

spring means biasing said linkage in said one direction,

a lever mounted on said support for pivotal movement between a brake engaged position and a brake disengaged position, said lever including relatively rotatable parts and a ratchet mechanism therebetween one of said relatively rotatable parts being in operating relationship with said shoe, and



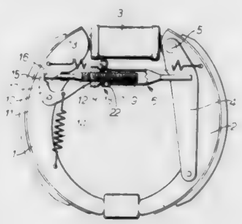
back-off distance limiting means including an adjustable link extensible upon being subjected to predetermined elongating force, opposite ends of said link being secured to said support and said one part by pivot connections, one of said pivot connections being a lost-motion connection which determines the back-off distance for said brake shoe.

4,390,086

AUTOMATIC ADJUSTERS FOR DRUM BRAKES

Willibrod Conrad, Octendunig, Fed. Rep. of Germany, assignor to Lucas Industries Limited, Birmingham, England

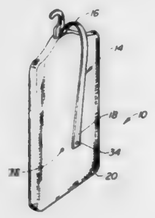
Filed May 19, 1980, Ser. No. 151,298
Claims priority, application United Kingdom, May 21, 1979, 7917628
Int. Cl.³ F16D *65/40*
U.S. Cl. 188—79.5 B **6 Claims**



1. An automatically adjustable internal shoe drum brake having a brake drum, at least one brake shoe, a hydraulic actuator for moving the at least one brake shoe outwardly into engagement with the brake drum, a mechanical actuator operable independently of the hydraulic actuator to move the at least one brake shoe outwardly into engagement with the brake drum, spring means biasing the at least one brake shoe inwardly away from the brake drum, a strut for limiting inward

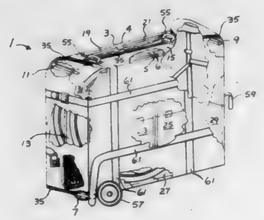
movement of the at least one brake shoe under the influence of the spring means, the strut comprising first and second telescopically arranged parts having opposing abutment surfaces, a bimetallic element having an aperture through which at least one of said parts of the strut passes and having first and second abutment surfaces which engage the first and second abutment surfaces of the strut respectively, the bimetallic element being effective upon being subjected to an elevated temperature to move the abutment surfaces of the strut away from each other to increase the length of the strut, and an adjuster automatically operable as the at least one brake shoe wears to increase the effective length of the strut.

4,390,087
GARMENT CARRYING DEVICE
Paul Goldfinger, 4243 Howe St., Oakland, Calif. 94611
Filed Sep. 8, 1981, Ser. No. 299,725
Int. Cl.³ A45C *13/00, 13/26*
U.S. Cl. 190—41 B **5 Claims**



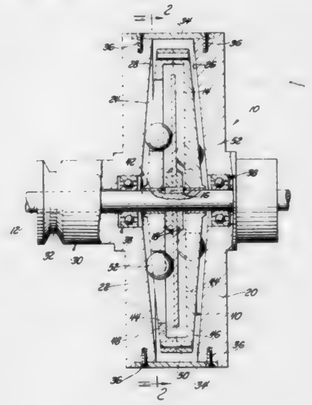
1. A hanging garment carrying device comprising:
a. a frame member defined to extend along the direction in which the garment hangs, said frame member having an upper portion and a lower portion;
b. a strap having a first end portion and a second end portion;
c. an enclosure for covering at least a portion of the garment and said frame;
d. means for holding said first end portion of said strap to said upper portion of said frame member;
e. means for holding said second end portion of said strap to said lower portion of said frame member;
f. a hook connected to said frame member and extending outwardly from said enclosure; and
g. an arm connected to said frame and connected hook, said arm being capable of extending there from within said enclosure.

4,390,088
CONTAINER BAG SYSTEM FOR BICYCLES
Richard K. Brenner, 2338 18th Ave., Forest Grove, Oreg. 97116
Continuation-in-part of Ser. No. 17,370, Mar. 5, 1979, abandoned. This application Feb. 6, 1981, Ser. No. 232,233
Int. Cl.³ A45C *13/02*
U.S. Cl. 190—51 **18 Claims**



1. A bicycle transporting container system comprising:
a first bicycle bag defining an inner pocket;
a second bicycle transporting container bag insertable in the inner pocket of the first bag;
means for reinforcing the sides of the second bicycle transporting container bag,
said reinforcing means comprising a rigid panel,
said rigid panel being hinged to permit folding;
and a detachable luggage style container operatively connected to the first bag.

4,390,089
TORQUE CONVERTER
Peirce E. Dalrymple, 1671 Bedford Sq., Rochester, Mich. 48063
Filed Mar. 5, 1981, Ser. No. 240,907
Int. Cl.³ F16D *43/14*
U.S. Cl. 192—105 B **13 Claims**

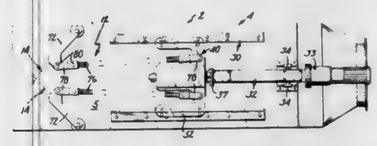


1. A torque converter assembly (10) comprising: distortable input means (14) rotatable about an axis, output means (20, 22) freely rotatably about said axis relative to said input means (14) in a deactuated condition and variably rotatable relative to said input means (14) between said deactuated condition and a fully actuated condition at which said output means (20, 22) rotates at the same speed as said input means (14) and characterized by at least one roller means (52) disposed between said input means (14) and said output means (20, 22) and radially movable under the influence of centrifugal force for variably distorting a portion of said input means (14) in a wave-like fashion between said deactuated and fully actuated conditions to rotate said output means (20, 22) at a speed relative to said input means (14) in proportion to the amount of distortion of said input means (14).

4,390,090
METHOD AND APPARATUS FOR DUST FREE GRAIN LOADING
Friedrich K. O. Kossebau, Braunschweig, Fed. Rep. of Germany, assignor to Gebrueder Buehler AG, Uzwil, Switzerland
Continuation of Ser. No. 17,927, Mar. 6, 1979, abandoned. This application Nov. 18, 1980, Ser. No. 207,895
Int. Cl.³ B65G *11/20*
U.S. Cl. 193—32 **3 Claims**

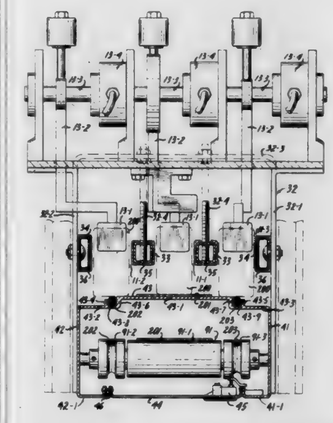
1. An improved apparatus for the dust free loading of bulk materials of the type which includes a housing adapted to be attached to the output end of a discharge chute through which a stream of bulk material flows by gravity in a downward path, and which also includes a shutoff means located adjacent to a material outlet opening of the housing for imparting an adjustable force on the bulk material stream, and wherein the improvement comprises:

retarding means carried with the housing and located in the path of the bulk material stream above the shutoff means for absorbing a portion of the kinetic energy thereof, whereby release of dust is substantially suppressed during discharge of the bulk material stream from the housing, and wherein the retarding means comprises:
(a) a hollow inverted cone mounted inside the housing for contacting and slowing the bulk material stream to form a vertical column of the bulk material, the cone having an



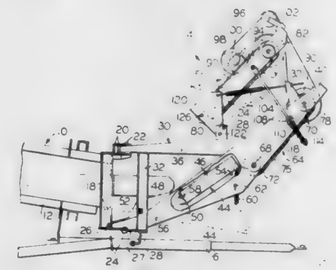
outlet opening for allowing a limited amount of the bulk material stream to flow therethrough; and
(b) a hollow, perforated tube attached to the cone and extending upwardly therefrom for confining the bulk material column, wherein the tube is smaller than the housing to define a discharge chamber for the bulk material column, whereby the remaining amount of the bulk material stream contained in the bulk material column is discharged through the perforations in the tube into the chamber.

4,390,091
MODULAR CONVEYOR GUIDE AND SYSTEM UTILIZING SAME
Hector M. Gonzalez, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.
Filed Dec. 30, 1980, Ser. No. 221,280
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—358 **43 Claims**



1. Apparatus comprising a modular conveyor guide including:
first and second spaced end walls;
a third wall connecting said first and second end walls, said third wall having a first region for guiding a first conveyor and second and third regions on opposite sides of said first region for guiding second and third conveyors;
said first region being adapted to guide a flat conveyor;
said second and third regions being adapted to guide cable conveyors;
said second region including first and second upstanding flanges spaced to receive a cable conveyor;
said third region including third and fourth upstanding flanges spaced to receive a cable conveyor;
said first, second and third walls and said first, second, third and fourth flanges forming an integral track segment formed by extrusion;
said first region having an upper flat surface for receiving said flat conveyor, said upper flat surface defining the uppermost extent of said extruded track segment between said first and second flanges and said third and fourth flanges.

4,390,092
ANTI-SLIP BALE THROWER
Harold K. Garrison, Newton, and Howard J. Ratzlaff, Hesston, both of Kans., assignors to Hesston Corporation, Hesston, Kans.
Filed Jun. 14, 1979, Ser. No. 48,342
Int. Cl.³ B65G *31/02*
U.S. Cl. 198—638 **8 Claims**

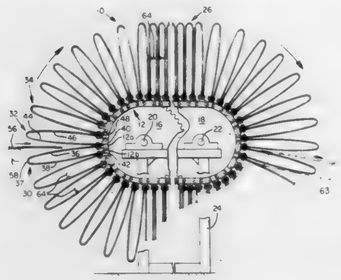


1. A bale thrower adapted for attachment to the discharge end of a baler for receiving bales successively issuing therefrom and for throwing the same in succession into a remote receptacle or the like, said thrower comprising:
a pair of opposed conveyors located on opposite sides of the normal path of travel of bales through the thrower and defining a bale entrance and a bale exit of the thrower,
said conveyors being provided with respective bale-engaging surfaces driven in directions corresponding to the direction of bale travel from said entrance to said exit; and
means mounting said conveyors for relative shifting thereof toward one another in an area that includes said entrance in response to entry of a bale into the entrance and engagement of the bale with said surfaces whereby to clamp the conveyors about the entering bale as said surfaces cooperate to propel the bale along said path of travel.

4,390,093
APPARATUS FOR CONVEYING SHEETS SUCH AS VENEER HAVING IMPROVED WICKET CONSTRUCTION
James W. Chard, Jr., and Timothy F. Corrigan, both of Vancouver, Wash., assignors to Drying Systems, Inc., Vancouver, Wash.
Filed Mar. 30, 1981, Ser. No. 248,977
Int. Cl.³ B65G *47/86*
U.S. Cl. 198—654 **10 Claims**

1. In sheet conveying apparatus including a conveyor operable for movement through an arcuate run and a substantially rectilinear run, the improvement comprising:
elongate arm means carried by the conveyor and extending outwardly therefrom for transferring conveyor movement to a sheet, said arm means including first and second, spaced-apart elongate members which flex outwardly relative to one another during movement of said arm means through the arcuate run, said elongate members being interconnected adjacent their outer ends, and

means for mounting said elongate members including first and second mounting means provided on the conveyor which angulate one relative to the other during the arcu-



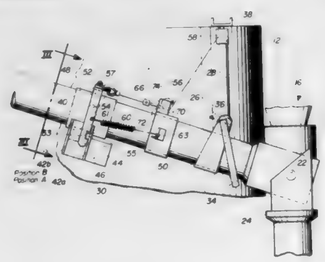
ate run and which align in the direction of conveyance during the rectilinear run, said first and second elongate members being mounted on and extending outwardly from said first and second mounting means, respectively.

4,390,094

AUTOMATIC LATCH FOR UNLOADING AUGER

Ernest A. Schoeneberger, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Feb. 18, 1981, Ser. No. 235,394
Int. Cl.³ B65G *21/10*
U.S. Cl. 198—865 **5 Claims**



1. In combination with a container having a movable unloading auger, the improvement comprising:

means for supporting said auger, said means being a support member connected to said container and extending therefrom;

a latch arm movably mounted on said auger, said latch arm having a notch formed therein;

a latch arm receiver connected to said container, said receiver being a protruding member connected to said support member for engagement with said latch arm notch;

means connected for raising and lowering said auger, said means including a cable operably connected to move said latch arm between a first position, where said notch is in engagement with said receiver protruding member, and a second position, where said notch is out of engagement with said receiver protruding member;

resilient means for urging said latch arm from said second position to said first position;

means for limiting movement of said latch arm to said second position;

said latch arm being moved from said first position to said second position when the tension in said cable overcomes the force of said resilient means; and

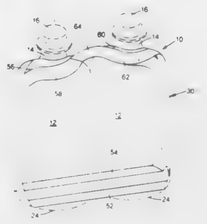
said latch arm being moved from said second position to said first position when the force of said resilient means overcomes the tension in said cable.

4,390,095

LAY FLAT TUBE MULTI-PACKAGING DEVICE FOR CONTAINERS

Ernest R. Cunningham, Libertyville, Ill., assignor to Grip-Pak, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 207,269, Nov. 17, 1980, abandoned. This application Feb. 23, 1981, Ser. No. 236,779
Int. Cl.³ B65D *71/02, 63/10, 85/62*
U.S. Cl. 206—150 **14 Claims**



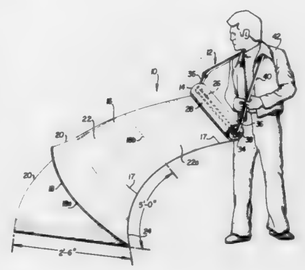
1. A one-piece generally scrapless multi-packaging device for a plurality of containers or the like each having upper ends, bottom ends and sidewalls, said multi-packaging device including a flattened band of stretchable and elastic material which is of smaller predetermined measurement than the vertical circumferential dimension of a plurality of such containers, such flattened band having an integrally continuous v...l with upper and lower band segments, the upper band segment having spaced openings therein for receiving the upper end of said containers and the lower band segment being provided for engaging the bottom ends of said containers, said flattened band being stretched from its smaller predetermined measurement into elastic gripping engagement with the upper and and bottom ends and sidewalls of said containers along the vertical circumferential dimension thereof to form a container package for gripping and transporting the containers.

4,390,096

DISPOSABLE RAIN PONCHO SYSTEM

Frank G. Goldenberg, 3700 Sherwood Pl., Lynchburg, Va. 24503

Filed Apr. 14, 1981, Ser. No. 254,023
Int. Cl.³ B65D *85/66, 85/67, 85/18*
U.S. Cl. 206—390 **7 Claims**



1. A system for dispensing disposable rain garments comprising:

a plurality of rain garments, each of said rain garments being constructed of flexible, water-resistant, material having two end edges and side edges;

said rain garments being frangibly attached at the end edges

thereof to end edges of adjacent rain garments, to form a string of attached rain garments having first and second extreme ends from which individual rain garments can be ripped, said rain garment string being wrapped into a roll with said first extreme end being exterior of said roll and said second end being inside said roll; and

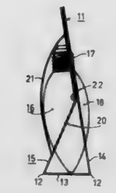
a dispenser means for mounting said rain-garment-string roll to allow access to the first-extreme-end rain garment and to allow said roll to be turned to thereby rotate the first-extreme end rain garment from said roll, so that said first-extreme-end rain garment can be ripped from said string along its frangible attachment to an adjacent rain garment, said dispenser means including a shoulder strap for allowing an individual to carry it around while walking and for allowing relatively-free unrolling of rain garments therefrom while being thusly carried by said shoulder strap.

4,390,097

PACKAGED ELECTRIC LAMP

Franciscus M. Klomp, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 4, 1...1, Ser. No. 270,665
Claims priority, application Netherlands, Jul. 14, 1980, 8004029
Int. Cl.³ B65D *85/42*
U.S. Cl. 206—418 **9 Claims**



1. An electric lamp package, which comprises a lamp envelope connected at one end to a lamp cap; an elongate packaging strip folded along parallel transversal first fold lines to form a bottom wall, a front wall and a rear wall for accommodating the lamp with its lamp cap remote from the bottom wall, the front wall and the rear wall extending above the lamp cap and engaging each other; a lengthwise extending opening formed in the front wall to provide a window for displaying at least part of the lamp cap and a part of the lamp envelope, the boundary of said opening engaging the lamp to hold the same in place; a pair of lengthwise incisions formed in the rear wall and extending beyond the lamp cap to provide two edge portions in opposite lateral edge-wise contact with the lamp envelope; and means to secure the respective edge portions to the front wall.

4,390,098

AUTOMATIC CLOSURE REJECT FROM UPSTACKING DEVICE

William D. Wilgus, and Earl L. Backes, both of Findlay, Ohio, assignors to Ball Corporation, Muncie, Ind.

Filed Nov. 6, 1980, Ser. No. 204,416
Int. Cl.³ B07C *5/342*
U.S. Cl. 209—571 **27 Claims**

1. An upstacker with reject means comprising: means to index articles through an upstacking station; a receiving means positioned above said upstacking station and having means to retain articles placed therein from said upstacking station; a variable length member capable of reciprocating motion positioned such that in the extended mode, reciprocation of said member will bring the upper end thereof into said upstacking station and push said articles upward into said receiving station, while in the contracted mode, said member will reciprocate without contacting articles indexed into said upstacking station whereby said articles will be rejected by said means to



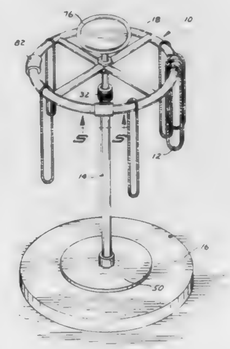
index articles through said upstacking station; and actuating means to determine the mode of said variable length member.

4,390,099

DISPLAY STAND FOR JEWELRY ARTICLES

Fred S. Trautlein, Fords, N.J., and James R. Stephens, New York, N.Y., assignors to General Mills Products Corp., Minneapolis, Minn.

Filed Nov. 3, 1980, Ser. No. 203,167
Int. Cl.³ A47F *7/02*
U.S. Cl. 211—4 **13 Claims**



1. A display member comprising a loop member, a hub, spoke means for attaching said loop member to said hub, said loop member having a substantially circular cross-sectional configuration, said loop member being formed with a plurality of gaps which separate the loop into a plurality of segments, a plurality of sleeve means movably mounted on said loop segments, said sleeve means having substantially the same arc as the loop member, each sleeve means being movable along the periphery of said loop member whereby it surrounds a gap, each said sleeve means being effectively locked with respect to said loop member by rotating it relative to said loop member, and means for mounting said display member with respect to a support structure.

4,390,100

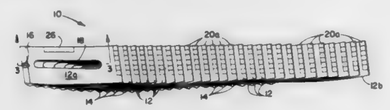
MAIL SORTER WITH AN EXPANDABLE BELLOWS BINDING

Darlene M. Petron, 16612 Park La., Wayzata, Minn. 55391

Filed Jan. 30, 1981, Ser. No. 230,403
Int. Cl.³ B42F *21/00*
U.S. Cl. 211—10 **4 Claims**

1. A device for sorting sheet material such as mail, corre-

spondence, documents or the like comprising: a plurality of superposed leaves having identical length and width dimensions, said leaves defining sorting or classifying spaces between adjacent ones of said leaves; and a flexible, bellows binding secured to a selected edge of each of said leaves, said bellows binding providing the only means of permanent attachment between adjacent leaves, said selected edge being identical for all of said leaves to thus form a flexible bellows bound sorting book of superposed leaves, which may be spread open, as by grasping the uppermost and lowermost leaves of said book, so that said leaves are disposed in staggered, stair-step, offset

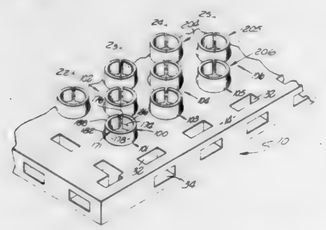


fashion to ease insertion of the material being sorted between adjacent leaves and, upon completion of a sorting operation, said leaves may be gathered together into superposed relationship to facilitate simultaneous or serial removal of the sorted documents from between the leaves of said book, said device being reversible so that either the upper or lower faces of all of said leaves will be visible when said book is spread open with said leaves disposed in stair-step, offset fashion, each of said leaves having at least one set of identifying indicia on each face of each of said leaves, said indicia on either the upper or lower faces of all of said leaves being visually perceivable when said book is spread open.

4,390,101
ARTICLE MOUNTING RACK

John A. Humphreys, 1125 Hugo Reid, Arcadia, Calif. 91006, and Michael D. P. Humphreys, 6008 N. Camellia Ave., Temple City, Calif. 91780

Filed Dec. 24, 1980, Ser. No. 219,800
Int. Cl.³ A47G *19/08*
U.S. Cl. 211—41 **13 Claims**



1. A panel for an article mounting rack comprising:
a planar member having a top surface;
a plurality of clamping pillars arranged in a matrix configuration along the top surface to define a plurality of parallel first rows of pillars and a plurality of parallel second rows of pillars, the second rows being perpendicular relative to the first rows of pillars whereby the article is selectively wedged and held between at least two of the clamping pillars in adjacent parallel ones of the first and second rows, each clamping pillar comprising an upstanding member having a support portion interconnected to the top surface and a laterally resiliently deformable portion attached to the support portion in spaced relationship to the top surface whereby the deformable portion is laterally deformed when the article is selectively wedged and held between at least two of the clamping pillars in adjacent parallel ones of the first and second rows.

4,390,102
SUPPORT UNIT FOR PACKAGED CONVENIENCE FOODS

Gerald H. Lane, 100 Cerreda Ceilo, Suisun City, Calif. 94585

Filed Jun. 19, 1980, Ser. No. 160,954
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—71 **3 Claims**

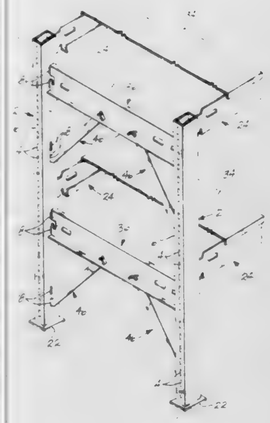


1. A suspendable mobile support for packages or containers of convenience food items such as hamburgers, french fried potatoes, beverages and the like, comprising:
an elongated standard with means for suspending same in pendulum fashion at its upper end from a support, for example a motor vehicle interior;
said standard including a central, longitudinally extending, generally planar web portion having at least two laterally spaced rows of longitudinal slot like openings extending therethrough along its length, said openings including enlarged portions;
a set of holding members for holding said packages, each holding member including a reentrant portion for engaging said packages, and a base portion arranged to be mechanically quickly interlocked with the standard without a separate fastener means;
each base portion of said holding members including a flat body portion from which protrudes an elongate rib and an enlarged head, said rib and head arranged to mechanically interlock in quick fashion with one of said slot-like openings in said web of the standard with said head extending through the opening for retaining said holding member at a single position against the web in stable fashion;
said set of holding members including at least one holding member including means for impaling and supporting the bottom edge of a hamburger package or container; at least one holding member for engaging and retaining the upper portion of a beverage container; and at least one holding member including retaining lip means for engaging and supporting the bottom portion of a beverage container adjacent the standard, said last-mentioned holding member having a depending, hook-like member disposed below said retaining lip means, said hook-like member arranged to engage and support another food package beneath a beverage container supported by said last-mentioned holding member.

4,390,103
SHELVING SYSTEM

Wallace T. Husband, West Vancouver, Canada, assignor to E-Z-Rect Metal Products Ltd., North Vancouver, Canada

Filed Jan. 23, 1981, Ser. No. 228,173
Int. Cl.³ A47F *5/14*
U.S. Cl. 211—182 **5 Claims**



1. In a frame construction including an upright, first frame member having a face wall and a second frame member having one end portion connected to the first frame member to extend transversely from the face wall, the improvement comprising:
a. a first slot formed in the first frame member face wall at a location spaced from the intersection of the first frame member with the second frame member;
b. a second slot formed in the second frame member at a location spaced from the end portion of the second frame member;
c. a diagonal brace having:
a first end portion extendable through the first slot to engage with the first frame member face wall,
an elongate intermediate portion, and
a second end portion extending transversely to the length of the brace intermediate portion, said second end portion extendable through the second slot; and including a base section and an elongate, relatively narrow locking tab section formed integrally with and nominally disposed coplanar with the base section; and
d. said locking tab section;
extending transversely outwardly from the base section in a direction generally along the length of the second frame member;
including a generally straight edge portion spaced away from the adjacent side face of the brace intermediate portion to form a clearance gap therebetween to receive portions of the second frame member; and
being bendable relative to the second end portion, base section to a location skewed from the plane of the base section to dispose the tab section edge portion over the adjacent face of the second frame member to securely lock the second frame member between the locking tab edge portion and the brace intermediate portion.

4,390,104
FLEXIBLE PLASTIC STERILE CLOSURE SYSTEM FOR CONTAINERS

Robert Cummings, Richardson, Tex., assignor to U.S. Clinical Products, Inc., Richardson, Tex.

Filed Aug. 19, 1981, Ser. No. 294,331
The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.
Int. Cl.³ B65D *41/32, 51/20*
U.S. Cl. 215—232 **5 Claims**



3. A flexible plastic multilayered cover for resealing an intravenous solution container, comprising:
a first layer of flexible plastic material forming an upper surface of the cover, said first layer being formed from a material substantially impermeable to moisture and bacteria;
a second layer of flexible plastic material bonded to said first layer of plastic material, said second layer having an orientated plastic film with a tensile strength in the direction normal to the direction the cover is pulled in removing it from a container greater than the tensile strength parallel to the direction of removal;
an area of adhesive material bonded to the surface of said second layer for adhering to the top of an IV solution container;
an adhesive free region of said second layer for aligning with the port of the container sealed by the cover, whereby the sterility of the covered portion of the IV solution container is retained by placing the sealing cover on the portion of the container top to be sealed; and
a plurality of generally T-shaped slits formed in said sealing cover to promote the separation of the cover upon its removal for forming telltale strips of material indicating the sterile seal has been broken.

4,390,105
ELECTRICAL OUTLET BOX

Howard K. Graves, Berlin, Ohio, assignor to Valen Mfg. Co., Cleveland, Ohio

Filed Jul. 31, 1981, Ser. No. 289,059
Int. Cl.³ H02G *3/08*
U.S. Cl. 220—3.6 **6 Claims**

1. An electric outlet box for mounting in a wall opening and having first mounting means adapted to abut against a front face of a support wall through an opening of which the box is adapted to extend, second mounting means adjustably secured to the exterior of said box, said second mounting means including an essentially U-shaped member having a base portion and first and second leg portions extending therefrom in the direction of the box opening, connecting means for adjustably connecting said box with said base member for varying the distance therebetween, said first and second leg members having first and second camming means extending therefrom toward the exterior side walls of said box, said box having slots for receiving said first and second camming members when said clamp is in a first position spaced from said box and camming surfaces for said camming means as said connecting means is

operated to decrease the distance between said clamp means and said box to cause said legs to bow outwardly from said box



so that the ends thereof may engage the rear face of said supporting wall so as to secure said box thereto.

4,390,106

Patent Not Issued For This Number

4,390,107

FUEL TANK CAP FOR MOTOR VEHICLE

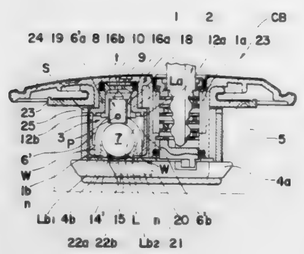
Masakazu Hukuta, Tsushima, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Continuation-in-part of Ser. No. 101,248, Dec. 7, 1979, abandoned. This application Apr. 30, 1981, Ser. No. 259,055

Claims priority, application Japan, Oct. 21, 1980, 55-150644[U]

Int. Cl.³ B65D *51/16, 55/14*

U.S. Cl. 220—202 **3 Claims**



1. A fuel tank cap for use in a motor vehicle including a cap body having a path communicating the interior of a fuel tank with the atmosphere and having incorporated therein a sensor valve unit, said sensor valve unit comprising:

a valve housing having an upper wall with a first through-opening therein open to said path for communication with the atmosphere, a peripheral wall having a second through-opening at a predetermined portion thereof and open to said path for communication with the interior of the fuel tank, and a bottom wall having a funnel shape,

a weight ball movably placed on said bottom wall for rolling motion thereover,

a plunger type valve body resting on the weight ball, and

an arm member fitted around diametrically opposite side portions of the peripheral surface of said weight ball, and pivotally connected to said valve body, said valve body being raised by said weight ball following upward movement of said weight ball during its rolling motion on said bottom wall so as to close said first through-opening in said upper wall, and being forcibly lowered by said arm member following downward movement of said weight ball during its rolling motion on said bottom wall so as to open said first through-opening.

4,390,108

COVER FOR A HOT LIQUID CONTAINER

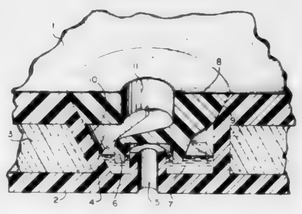
Dieter Knoll, Kronberg, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,384

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 3044845

Int. Cl.³ B65D *53/06*

U.S. Cl. 220—228 **3 Claims**



1. A cover for a hot liquid container comprising:

an upper member having a first aperture;

a lower member disposed beneath said upper member;

wall means connecting said upper member to said lower member and defining a feed chamber;

an upstanding member positioned in said feed chamber and connected to said lower members, said upstanding member defining a second aperture providing fluid communication between said feed chamber, through said upstanding member and said lower member and to said hot liquid container; and

an insert having a third aperture formed therethrough and capable of being inserted in said feed chamber through said first aperture, said third aperture forming a fluid communication from outside said cover to said second aperture of said upstanding member, said insert including a wall portion which, when said insert is inserted in said feed chamber, is disposed about at least a portion of said upstanding member of said lower member, whereas a liquid poured into said third aperture forms a liquid blocking layer in said feed chamber before the liquid travels through said second aperture to the associated hot liquid container.

4,390,109

KEEP-FRESH STORAGE CONTAINER WITH LID

Rolf-Günter Schülein, Singhofen, and Leonard Hagedorn, Niederneisen, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

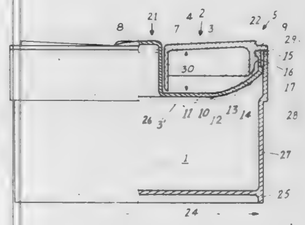
PCT No. PCT/DE81/00096, § 371 Date Mar. 3, 1982, § 102(e) Date Mar. 3, 1982, PCT Pub. No. WO82/00126, PCT Pub. Date Jan. 21, 1982

PCT Filed Jun. 24, 1981, Ser. No. 359,716

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1980, 3025200

Int. Cl.³ B65D *53/00*

U.S. Cl. 220—234 **10 Claims**



1. Keep-fresh storage container comprising a container and a detachable, elastically deformable, curved lid, which is provided in the middle with a handle and is provided with a rim, and which by alteration of the curvature of the lid can be deformed in such a manner that it can lie either with clearance or with close contact against the edge of the container, characterised in that the handle is in the form of handle webs (**4**) which merge into the rim (**5**), while a curved, deformable lid part (**3**), which is provided approximately in the centre with an operating member (**8**), acts on the rim (**5**) lying on the container edge (**29**).

4,390,110

HANDLE INTERLOCK FOR A TRASH CAN LID

Armand Pirro, Leominster, Mass., assignor to Cosco, Inc. (Tucker Housewares Div.), Leominster, Mass.

Filed Apr. 22, 1982, Ser. No. 370,679

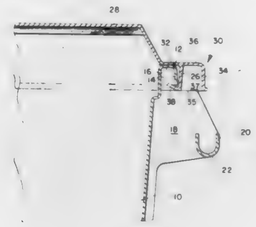
Int. Cl.³ B65D *45/00*

U.S. Cl. 220—318 **10 Claims**

1. A plastic locking lid for a plastic open top container having a peripheral rim with a downturned edge thereon, spaced from the periphery thereof, forming an inverted U-shaped channel at the edge of the container top,

said lid having a peripheral rim including an outwardly extending portion and a peripheral downwardly extending portion at its edge,

the downwardly extending lid rim portion encompassing the U-shaped edge channel of the container with the lid applied to the container,



a latch releaseably locking the lid to the container at the downturned edge thereof,

an outstanding handle on the container,

a pair of upright circumferentially spaced walls on the container encompassing the handle,

and a vertical slot at the top portion of each wall, the downwardly extending lid rim portion being engaged in the slots when the lid is locked to the container.

4,390,111

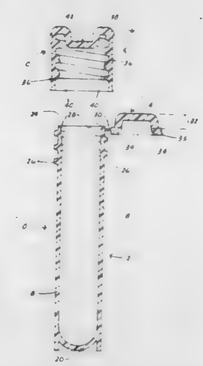
SEALABLE VIAL

Arthur J. Robbins, Mountain View; Paul B. Robbins, Palo Alto, and Dennis C. Thompson, Campbell, all of Calif., assignors to Robbins Scientific Corporation, Mt.View, Calif.

Filed Feb. 8, 1982, Ser. No. 346,488

Int. Cl.³ B65D *43/16, 43/18, 51/18*

U.S. Cl. 220—259 **15 Claims**



1. An improved sealable vial compromising:

a tubular body sealed at one end and having an aperture formed at the opposite end;

a deformable sealing insert attached to the tubular body for mating with the tubular body in the vicinity of said aperture and forming a seal therewith; and

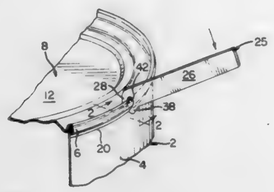
a cap for attachment to the tubular body so as to enclose the sealing insert and secure the vial in a closed mode.

4,390,112

EASY OPENING CONTAINER AND OPENER TOOL THEREFOR

Oliver J. Tysver, Flossmoor, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Oct. 23, 1981, Ser. No. 314,167
Int. Cl.³ B65D *17/36*
U.S. Cl. 220—274 **10 Claims**



1. The combination of a can having a body and an end member seamed together in a chime, a weakening score encircling said body immediately below the chime, a tool for fracturing said score and removing said end member and a portion of said body between said score and chime to open said can, said tool having a jaw with inner and outer portions embracing said chime and operative attendant to movement of said tool in one direction to fracture said score, said tool having means engageable under said chime to permit lifting of the tool to fracture the entire score and separate the can portion above the score from said body.

4,390,113

CONTAINER LID HAVING VENT MEANS

Stanford W. Bird, 745 E. 3 Fountain Cir. #36, Salt Lake City, Utah 84107

Filed Mar. 1, 1982, Ser. No. 353,217
Int. Cl.³ B65D *41/16, 41/18, 51/16*
U.S. Cl. 220—306 **1 Claim**



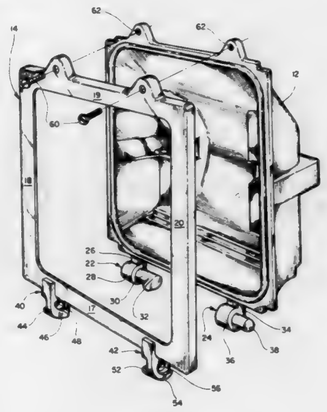
1. A one-piece lid for a container comprising
a flat closure surface;
a wall flaring outwardly from said flat closure surface whereby said flat base surface and said wall form a dish, said wall terminating in an inner flange and an outer flange spaced from but connected to said inner flange;
bead members spaced around the outer flange and projecting inwardly therefrom;
notches formed in the inner flange, said notches having a length greater than the bead members and being spaced oppositely therefrom;
a shoulder interconnecting the inner and outer flange members;
grooves formed in the shoulder interconnecting the inner and outer flange members, said grooves extending beyond the adjacent ends of the adjacent notches and bead members; and
a flared rim extending outwardly from the outer flange to provide finger gripping means for removal of the lid from a container.

4,390,114

HINGE CONSTRUCTION FOR ELECTRICAL ENCLOSURES

Nicolas N. Sviatoslavsky, Greendale, and Charles A. Kelpin, South Milwaukee, both of Wis., assignors to Appleton Electric Company, Chicago, Ill.

Filed Nov. 16, 1981, Ser. No. 321,806
Int. Cl.³ B65D *93/14, 51/04*
U.S. Cl. 220—337 **5 Claims**



1. An improved electrical enclosure, comprising:
a concave housing for containing electrical paraphernalia and a cover therefor,
each of said housing and cover having a pair of spaced apart appendages,
the pair of appendages on one of said housing and cover each including a pin both in axial alignment with the other pin and also cantilevered outwardly in the same direction as the other pin,
the pair of appendages on the other of said housing and cover each including a transverse hole therethrough in axial alignment with the other hole and of a size and shape and so positioned as to permit said pins and holes to matingly assemble together and permit said cover to pivot relative to said housing,
and means forming a part of one appendage on the housing and also forming a part of its mating appendage on the cover for captivating the cover and housing together over a substantial portion of the relative pivotal movement between cover and housing and for releasing the cover axially of said pins only over a specific and limited angle between cover and housing.

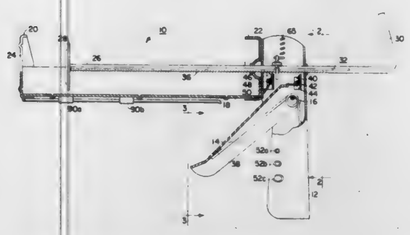
4,390,115

CAULKING GUN

Bobby J. Bigham, Arlington, Tex., assignor to James M. Peppers, Houston, Tex.

Filed Mar. 30, 1981, Ser. No. 249,112
Int. Cl.³ B67D *5/42*
U.S. Cl. 222—326 **12 Claims**

1. A hand operated caulking gun having a housing, a U-shaped handle attached with said housing, a U-shaped squeeze trigger mounted about a pivot in said handle with pawl means to ratchet a plunger rod and a displacement head into the inlet of a caulking cartridge disposed in said housing, comprising:
(a) single hand actuated release means of construction suitable for rotating said plunger rod out of engagement with said pawl means while said gun is held solely by said single hand to release any force imposed by said rod against said displacement head;
(b) a piercing blade and seal means mounted in swiveled relation about the outlet end of said housing for piercing the closure diaphram of the caulking cartridge and thereafter sealing said caulking cartridge nozzle and said diaphram to seal the cauking cartridge between the occasions that caulking compound is extruded from said cartridge through said nozzle;



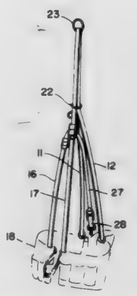
(c) a plurality of cutting holes of different size defined in said handle with said holes being generally oval in shape and having edges bevelled toward the inside to form a sharp edge on the inner side of the handle to form a sharp shear with a cooperating edge of said trigger when said trigger is depressed into said handle and with said shearing hole being oval shaped so as to receive and visually fit the round plastic caulking cartridge nozzle at an appropriate caulk dispensing angle; and
(d) said shearing edges of said cutting holes being flame hardened.

4,390,116

TOOLBAG SUSPENDERS AND HOLDER

Richard B. Fehr, P.O. Box 791, Lafayette, Calif. 94549

Filed Jun. 12, 1981, Ser. No. 273,020
Int. Cl.³ A45F *5/00;* **A45C** *13/30*
U.S. Cl. 224—209 **1 Claim**



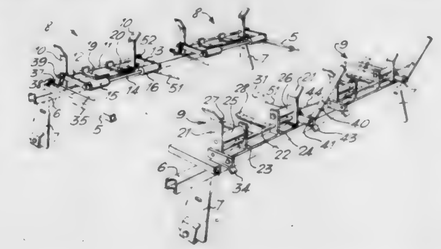
1. A suspender assembly for supporting a tool bag disposed about the waist of an individual, comprising; a pair of strap members adapted to be draped over the shoulders of the individual, said strap members including front portions extending generally vertically and joined to confronting, adjacent front portions of the tool bag, said strap members including back portions which cross and are joined to opposite adjacent back portions of the tool bag, double ring detent assembly means for adjustably determining the point of intersection of said back portions and for suspending the tool bag on said strap members in a generally horizontal, balanced fashion, said double ring detent assembly means including a first ring and a second ring of similar diameters, said strap members passing into and out of the same end of the aperture of said first ring in half-loop fashion, said second ring circumscribing both of said strap members at the half-loop portions in slidable fashion and adjustably defining said point of intersection, said first ring being slidably positionable along said strap members from a detent position in which said rings are abutting and said strap members are bound therebetween at said point of intersection to a non-detent position in which said first ring is spaced apart and disengaged from said second ring and said strap members are freely translated through said second ring to permit the tool bag to hang therefrom in balanced fashion.

4,390,117

LADDER RACK FOR VEHICLE

Michael W. Fagan, Mountain View, Kilkerly, Dundalk, County Louth, Ireland

Filed Jun. 29, 1981, Ser. No. 278,346
Claims priority, application Ireland, Jun. 30, 1980, 1375/80; Mar. 26, 1981, 683/81
Int. Cl.³ B60R *9/04*
U.S. Cl. 224—310 **9 Claims**



1. A ladder rack for a vehicle roof comprising:
a subframe having means for releasable attachment to the roof of a vehicle, and front and rear ladder support assemblies mounted on the subframe;
each of the front and rear support assemblies comprising:
at least one respective transverse roller for engaging under the stringers of a ladder spanning the two assemblies and at least one respective ladder-retaining member being manually pivotable about a respective transverse axis from a lowered inoperative position to a raised operative position wherein each said member is in a position to engage a rung of a ladder spanning the two assemblies;
said at least one roller of the front assembly further being manually pivotable about a transverse axis for raising and lowering whereby a ladder spanning the assemblies may be brought into a downwardly and rearwardly inclined orientation for on and off loading from the rear of the vehicles.

4,390,118

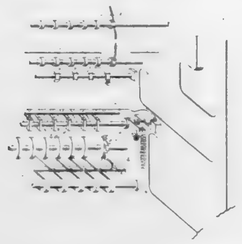
JAM PREVENTION MEANS FOR HIGH-SPEED WEB HANDLING DEVICE

Joseph J. Gardner, Jr., 18557 Bowie Mill Rd., Olney, Md. 20832

Filed Nov. 25, 1980, Ser. No. 210,189
Int. Cl.³ B65H *25/00; 7/12*
U.S. Cl. 226—25 **10 Claims**

1. A jam prevention means for high speed web handling devices comprising a conveyor surface, stripper fingers biased

towards said conveyor surface, a deflectible shaft on which said stripper fingers are mounted, means to detect a deflection



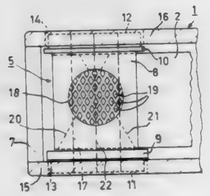
of said shaft and shut down the web handling device thereby preventing a jam.

4,390,119

TAPE GUIDE SYSTEM

Roland Smetana, and Franz Werner, both of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1981, Ser. No. 244,360
Claims priority, application Austria, Apr. 4, 1980, 1878/80
Int. Cl.³ B65H *23/04*; G03B *1/48*
U.S. Cl. 226—196 **5 Claims**



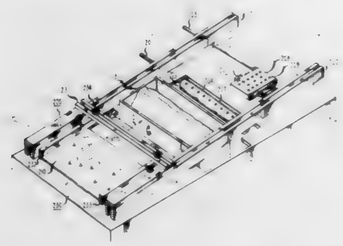
1. A tape guide having a guide surface over which surface a tape is passed, characterized in that the guide surface comprises a coherent network of ridges, said ridges bounding a multiplicity of adjacent circumferentially bounded recesses arranged in a recurrent pattern.

4,390,120

SOLDERING METHODS AND APPARATUS

Alfred P. Broyer, Hopatcong, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 15, 1980, Ser. No. 216,372
Int. Cl.³ H05K *3/34*; B23K *1/08*
U.S. Cl. 228—180 R **6 Claims**



1. In combination with means for wave soldering a printed wiring board apparatus characterized by

heat dissipation means (**200**), including a first pressurized gas, for directing said first gas to a transverse strip on the underside of said board as it exits the solder wave, and

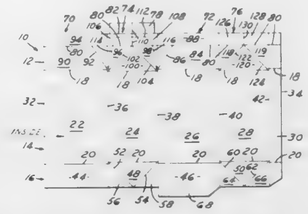
cooling means (**202**), including a second pressurized gas, for directing said second gas to a region on said underside only along substantially the centerline of said board as it exits said dissipation means.

4,390,121

CONTAINER AND BLANK FOR CONSTRUCTING SAME

Robert E. Lisiecki, Orchard Lake, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Oct. 7, 1981, Ser. No. 309,357
Int. Cl.³ B65D *5/72*
U.S. Cl. 229—17 G **13 Claims**



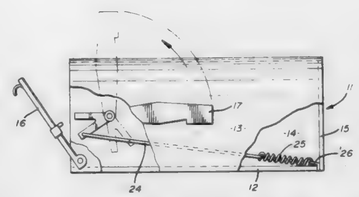
1. A plastic coated paperboard blank for a container, said blank comprising four bottom closure panels, four side panels, a pair of lower top closure panels connected to alternate said side panels, a pair of upper top closure panels terminating in aligned edges connected to said lower top closure panels, a pair of substantially triangular gable panels connected to the other alternate said side panels, a pair of substantially triangular fold-back panels flanking each of said gable panels, a pair of infold lips terminating substantially along said aligned edges connected to each of said pair of fold-back panels, a flap connected to a selected one of the four panels consisting of said pair of upper closure panels and said pair of panels each bearing a pair of infold lips, and a lateral slit formed across said selected one of the four panels for a distance beneath said flap less than the full width of said flap, and said flap having a height extending outward from said aligned edges sufficient for the flap to cover said lateral slit when folded down thereon.

4,390,122

AUTOMATIC SIGNAL FLAG ATTACHMENT FOR A MAILBOX

Michael J. Savko, 44 S. Bon Air Ave., Youngstown, Ohio 44509

Filed Jul. 9, 1981, Ser. No. 281,886
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—35 **1 Claim**



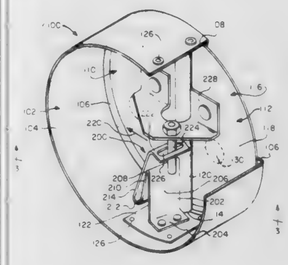
1. An automatic signal flag attachment for use on a mailbox comprises, in combination, a mailbox having an opening in one end and a hinged door therefor movable toward and away from said opening, a V-shaped lever apertured at its apex, a pivot sleeve and an apertured signal flag, said V-shaped lever, pivot sleeve and signal flag assembled in fixed relation to one another on a two part bolt positioned through an aperture in said mailbox adjacent said opening, means urging said V-shaped lever, pivot sleeve and signal flag to a first position, said means including a spring and rod assembly secured to said V-shaped lever and to said mailbox, a trigger device having a clip portion arranged for frictional attachment to said door, a member on said trigger device normally engaging said V-shaped lever between the arms of said V-shape, said V-shaped lever and said signal flag being movable to a second position in response to movement of said V-shaped lever when said trigger device is moved with said door away from said V-shaped lever.

4,390,123

THERMALLY ACTIVATED, AUTOMATIC, SINGLE BLADE DAMPER AND DAMPER OPERATOR

Francis J. McCabe, 239 Hastings Ct., Doylestown, Pa. 18901

Continuation-in-part of Ser. No. 211,914, Dec. 1, 1980, Pat. No. 4,372,485. This application Jan. 30, 1981, Ser. No. 229,829
Int. Cl.³ G05D *23/00*; F23H *3/00*
U.S. Cl. 236—16 **15 Claims**



1. For a damper having a frame and a reciprocal blade operatively associated with the frame, an improved damper operator comprising:

a. a bimetallic element, one end of which is fixedly connected to the frame; and

b. a linkage, pivotally connected to another end of the bimetallic element and attached to face portions of the blade of the damper;

so that reciprocating movement of the bimetallic element causes the blade to rotate within the damper frame.

4,390,124

HEATING AND VENTILATION SYSTEM FOR VEHICLES

Sten E. Nilsson, Vargön, Sweden, assignor to Saab-Scania Aktiebolag, Sodertalje, Sweden

Filed Feb. 23, 1981, Ser. No. 237,109
Claims priority, application Sweden, Feb. 27, 1980, 8001514
Int. Cl.³ B60H *1/02*
U.S. Cl. 237—12.3 A **5 Claims**



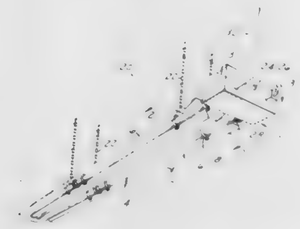
1. In a heating and ventilating system for a vehicle, a housing comprising two housing halves connected along a longitudinal plane, said housing enclosing heat exchanger means, an air inlet chamber and fan means for passing outside air into the inlet chamber; a longitudinal intermediate wall mounted between the housing halves, said wall at least partially separating the space between the housing halves into two part spaces; and in each part space: a cold air duct in communication with the inlet chamber and with a mixing chamber, a hot air duct for passing selecting portions of air from the cold air duct through the heat exchanger means to the mixing chamber, a substantially cylindrical distribution chamber in communication with the mixing chamber and with a plurality of outlets leading to different parts of the interior of the vehicle, said distribution chamber including a distribution flap disposed in a diametric plane in the distribution chamber and pivotable about the axis of the distribution chamber for selectively directing air to any of said outlets.

4,390,125

TUBE-FIRED RADIANT HEATING SYSTEM

Mario Rozzi, St. Clair Shores, Mich., assignor to Detroit Radiant Products Company, Detroit, Mich.

Filed Feb. 12, 1981, Ser. No. 233,838
Int. Cl.³ F24H *3/00*
U.S. Cl. 237—70 **7 Claims**



1. A tube-fired radiant heating system comprising an elongated radiant heating tube having an inlet end and an exhaust end, a relatively short tube of smaller diameter than said elongated tube and spaced from the inner surface thereof to define therewith a cylindrical passage for flow of air, a burner positioned within said relatively short tube, said burner having an inlet end to receive air and fuel, means for mixing air and fuel, and an exit end for emitting the air/fuel mixture for combustion closely adjacent thereto, a pressurized housing defining an air tight compartment in gaseous communication with said inlet end of the elongated tube and the inlet end of the burner, and blower means for continually forcing air into said pressurized housing and through said cylindrical passage to form a cylinder of air around burning air/fuel mixture emitted from the burner to shield said elongated tube from impingement of the flame of burning air/fuel mixture.

4,390,126

PROCESS FOR SUPPLYING PAINTING LINES WITH PAINT

Hagen Buchholz, Münster; Hans-Dieter Johannsmeier, Nottuln, and Friedrich Vock, Münster, all of Fed. Rep. of Germany, assignors to BASF Farben & Fasern A.G., Hamburg, Fed. Rep. of Germany

Filed May 30, 1980, Ser. No. 154,872
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1979, 2923906
Int. Cl.³ B05D *1/02*; B05C *21/00*; B05B *7/32*
U.S. Cl. 239—1 **15 Claims**

1. A process for supplying coating material to at least one spraying point located along a paint line, comprising:

(a) providing said paint line as a closed circuit;

(b) locating a pressurized vessel having an inlet and an outlet in said closed circuit;
(c) supplying said pressurized vessel with said coating material under pressure to maintain a liquid level in said pressurized vessel;



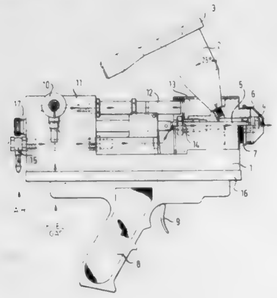
(d) supplying a pressurized gas above said liquid level in said pressurized vessel to maintain a pressure level on said coating material for paint spraying at said spraying point; and
(e) providing a pump in said closed circuit for recirculating said coating material from said spraying poiht to said pressurized vessel.

4,390,127

SPRAYING GUN FOR METAL SPRAYING

Paul Behrend, Sonnenbergstrasse 53, D-6508 Alzey 3, Fed. Rep. of Germany

Filed Mar. 19, 1981, Ser. No. 245,266
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1980, 3014177
Int. Cl.³ B05B *1/24*
U.S. Cl. 239—83 **3 Claims**



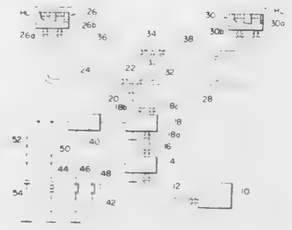
1. A metal spraying gun comprising: a unitary housing; a handle for the housing; a heat insulating layer between the housing and the handle to prevent the passage of heat from the housing to the handle; an adjustable spray nozzle having an outlet positioned at the forward end of the housing; a fuel gas burning chamber in the housing positioned above and rearwardly of the spray nozzle; a heatable container for the material to be sprayed through the nozzle, said container being carried at an angle at the forward end of the housing rearwardly of the spray nozzle and having one end thereof extending into the gas burning chamber of the housing; a gas heating device positioned in the housing rearwardly with relation to the gas burning chamber, said gas heating device including a fuel gas inlet valve at the rear of the housing connectable to a source of fuel gas and a longitudinally extending gas burner tube in communication with the fuel gas inlet valve and the gas burning chamber; a single, longitudinally extending pressurized air passageway in the housing positioned below the gas heating device for entraining material from the heatable container, said passageway being in communication with pressurized air inlet means at the rear of the housing and with a pressurized air chamber positioned in the housing rearwardly of the spray nozzle; a needle valve extending parallel to the longitudinal axis of the housing from a rear portion of the housing to the nozzle outlet for controlling the flow of material through the nozzle; a pressurized air control valve in the housing in communication with the pressurized air source and the pressurized air chamber for regulating the flow of pressurized air to the nozzle outlet and trigger means adjacent to the handle for actuating the pressurized air control valve and subsequently the longitudinally extending needle valve.

4,390,128

HEAD LAMP WASHING SYSTEM

Tadashi Fujikawa, Tokyo, and Masami Goto, Koganei, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 97,384, Nov. 26, 1979, abandoned. This application Sep. 16, 1981, Ser. No. 302,749
Claims priority, application Japan, Dec. 11, 1978, 53-153287
Int. Cl.³ B60S *1/56*
U.S. Cl. 239—284 A **3 Claims**



1. A head lamp washing system comprising:
(a) a cistern containing a liquid detergent;
(b) a pump;
(c) a solenoid valve having an inlet, and first and second outlets, said solenoid valve inlet connected through said pump to said cistern, said solenoid valve being in a position providing communication between its inlet and its first outlet when energized and in a second position providing communication between its inlet and its second outlet when de-energized;
(d) a first injector having first and second nozzles connected to said first and second outlets of said solenoid valve, respectively, said first injector disposed near a first head lamp for discharging the liquid detergent against said first head lamp;
(e) a second injector having first and second nozzles connected to said first and second outlets of said solenoid valve, respectively, said second injector disposed near a second head lamp for discharging the liquid detergent against said second head lamp; and
(f) a control circuit for periodically changing the position of said solenoid valve, said control circuit adapted to energize said solenoid valve for a predetermined period.

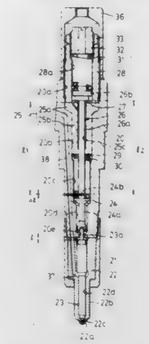
4,390,129

DOUBLE-INJECTION TYPE FUEL INJECTION VALVE

Kazuo Uchida, Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed May 18, 1982, Ser. No. 379,461
Claims priority, application Japan, May 25, 1981, 56-75337[U]
Int. Cl.³ F02M *45/08*
U.S. Cl. 239—533.5 **4 Claims**

1. A fuel injection valve comprising: an injection nozzle having a nozzle needle liftable in response to fuel pressure; a nozzle holder supporting said injeciton nozzle; a first nozzle spring and a second nozzle spring arranged within said nozzle holder; a first movable spring seat supporting said first nozzle spring; a second movable spring seat supporting said second nozzle spring, said second movable spring seat having one end disposed in facing relation to said first movable spring seat and adapted to have said one end spaced from the latter by a predetermined gap when said nozzle needle is in a seated position thereof; whereby lifting of said nozzle needle from said seated position thereof causes corresponding lifting of said first movable spring seat against the force of said first spring through a lift determined by said predetermined gap to effect an initial injection, and further lifting of said nozzle needle causes said first movable spring seat to urgingly displace said second movable spring seat against the combined force of said first and second springs to lift said second movable spring seat to effect a main injection; a spacer removably fitted in a bore formed in an end face of said nozzle holder remote from said injection nozzle, said spacer having an inner end face urgingly engaging



said first nozzle spring to impart urging force to said first movable spring seat; a hollow threaded member having an internal space and removably threadedly fitted in said nozzle holder at a location outward of said spacer and disposed in tight contact with said spacer to retain same in place; said second movable spring seat having an enlarged portion arranged within said internal space of said hollow threaded member in facing relation to an outer end face of said spacer and a rod portion extending integrally from said enlarged portion and slidably fitted through an axial through bore formed in said spacer; said second nozzle spring being arranged within said internal space of said hollow threaded member and urging said second movable spring seat toward said first movable spring seat; a first shim interposed between said spacer and said first nozzle spring for adjusting the setting load of said first nozzle spring; and a second shim interposed between said enlarged portion of said second movable spring seat and said spacer for adjusting said predetermined gap for initial injection lift between said first movable spring seat and said second movable spring seat.

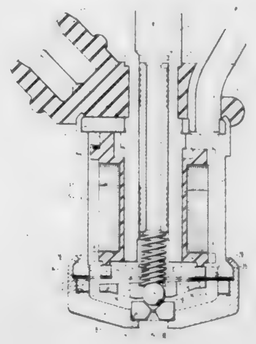
4,390,130

ELECTROMAGNETICALLY ACTUATABLE VALVE

Mathias Linssen, Schesslitz, and Jürgen Peczkowski, St. Ingbert-Oberwurzbach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 207,055
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1979, 2948874
Int. Cl.³ F16K *31/06*
U.S. Cl. 239—585 **7 Claims**

1. An electromagnetically actuatable valve for fuel injection systems of internal combustion engines, including a housing, a magnetic element in said housing, a flat armature positioned relative to said magnetic element for operation by said magnetic element, said flat armature having a side, a movable valve element and a fixed valve seat in said housing, said armature being firmly connected with said movable valve element which in turn cooperates with said fixed valve seat in said housing, a remnant air disc of nonmagnetic material fixed in said housing along an edge of said disc and disposed between said flat armature and said magnetic element, said remnant air



disc including recesses therein and a portion extending between said recesses therein that form a spring element, said spring element being fixedly attached to said side of said flat armature at only one location, said spring element being attached to said flat armature to provide a pivotal movement for said armature about said one location, and a closing spring disposed between said armature and said magnet element which produces a force counter to said pivotal movement of said armature.

4,390,131

METHOD OF AND APPARATUS FOR COMMINUTING MATERIAL

Jack D. Pickrel, 12621 W. Dakota Dr., Lakewood, Colo. 80228

Filed Feb. 9, 1981, Ser. No. 232,536
Int. Cl.³ B02C *19/00*
U.S. Cl. 241—1 **29 Claims**



1. A method of comminuting material comprising:
producing a flow of air longitudinally through a circular passage in the direction of a connected chamber which expands in size toward a connected cylindrical chamber;
producing a flow of air tangentially of said cylindrical chamber in order to produce a spiral flow in said expanding chamber, a lower pressure centrally of said expanding chamber and a higher pressure toward the periphery of said expanding chamber;

feeding material to be comminuted into said circular passage;

producing the discharge of air and material essentially tangentially from a generally annular chamber having an outer diameter exceeding the outer diameter of said cylindrical chamber, said annular chamber being connected to said cylindrical chamber;

preventing the flow of air and material through an axial, circular central portion of said cylindrical chamber; and

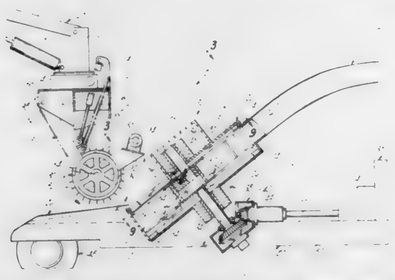
preventing the flow of air and material in a portion of said generally annular chamber beginning generally at said central circular portion of said cylindrical chamber and expanding radially in an axial direction in said generally annular chamber.

4,390,132

WOOD CHIPPER

Marvin R. Hutson, and Louis G. Dutmers, both of Remus, Mich., assignors to Omark Industries, Inc., Portland, Oreg.

Filed Feb. 9, 1981, Ser. No. 232,696
Int. Cl.³ B02C *18/16*
U.S. Cl. 241—55 **23 Claims**



1. Apparatus for reducing material such as felled trees, limbs, branches, and brush to chips comprising means underlying for carrying and guiding such material forwardly in a generally linear path to a work station, a rotor in said work station having a chipper disc with its front face lying in said feed path, means mounting said rotor to rotate about an axis such that the portion of said front face of said disc which engages such material extends across the feed path and slopes upwardly generally in the direction of the forward feed of such material at an obtuse included angle between said portion of said front face and said direction of feed in the range of about 125° to 160°, at least one knife disposed generally radially on and carried by said disc for cutting such material into chips as said chipper disc rotates, and drive means constructed and arranged to rotate said rotor in the one direction of rotation in which said knife is swept across the leading end of such material so that the leading end of such material tends to be lifted from said means for guiding such material and moved in generally the same direction in which such material is forward fed along said path toward said rotor.

4,390,133

FOOD PROCESSOR

David J. Wanat, Meriden, Conn., assignor to General Electric Company, New York, N.Y.

Filed Jun. 11, 1981, Ser. No. 272,676
Int. Cl.³ A47J *43/25*
U.S. Cl. 241—93 **5 Claims**

1. A food processor of the slicer/shredder type having an L-shaped upstanding base housing with a top and an electric motor therein, a rotatable generally horizontal shaft in the upper housing portion drivingly connected with said motor and with its axis aligned to extend centrally over the L, a separate chute offset from the upstanding base and operatively locked to extend above and long enough to substantially fill the space over the L to said base top, a cylindrical hollow cutter disposed in one end of said chute, a driving connection between said shaft and cutter, an axially aligned outlet in said chute at and adjacent said cutter, a clutch around said shaft rotatably connecting said chute and housing, said clutch comprising,

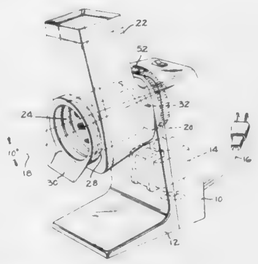
an annular collar having an inner periphery and fixed in said one chute end opposite said chute outlet,

said driving connection extending through said collar to drive said cutter,

plural segmented openings around the inner collar periphery,

one of said openings having a radial notch at one end thereof,

peripheral spaced stops on the cutter side of said collar,



a protruding ring on said base,

radial tabs including a finger for said notch disposed on said ring and dimensioned to match said segments,

control lock means connecting said chute and housing adjacent said clutch so the chute may be partly rotated in one direction from vertical whereby a stop engages one side of said finger and

said segments and tabs line up for chute removal and

the chute may be rotated in the other direction into vertical operative position and locked by said control means, and

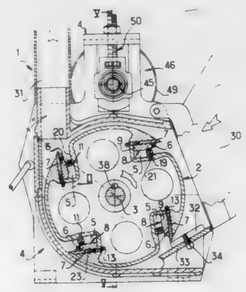
may be further rotated beyond substantially 180° from vertical whereby a stop engages the other side of said finger for aligning and locking said chute and housing together box-like for compact inoperative storage.

4,390,134

UNDERGROWTH CRUSHER

Marcel L. A. Paulve, Moulin des Serres, 83490 Le Muy, France

Filed Aug. 25, 1980, Ser. No. 180,909
Claims priority, application France, Aug. 30, 1979, 79 21797
Int. Cl.³ B02C *18/06*
U.S. Cl. 241—101.2 **6 Claims**



1. A crusher comprising a drum having a peripheral surface and mounted for rotation on a shaft supported by a crusher frame, said drum being provided on its periphery with several longitudinal slots substantially uniformly spaced from each other, said slots each having opposed lateral surfaces and forming a housing for a respective cutting device; an inlet conduit for introducing objects to be crushed; an outlet conduit for discharging the crushed objects; a drive system for rotating said drum; several cutting devices housed within respective ones of said slots, each cutting device being constituted by a blade/counter-blade assembly including a blade having a pair of opposed faces and a bevelled side forming a cutting surface and an associated counter-blade against which one of said opposed faces of said blade bears, said counter-blade being in the form of a substantially parallelepipedic block having a flange on the rear side thereof; tightening means for urging each said blade/counter-blade assembly against one of said lateral surfaces of the respective slot in which it is housed; and a respective device cooperating with each of said blade/-counter-blade assemblies for adjusting the height of each blade with respect to the counter-blade associated with it and the location of said blade/counter-blade assembly in its respective slot with respect to the peripheral surface of said drum, each of said height adjusting devices being entirely supported by said counter-blade, each of said height adjusting devices being constituted by at least two screws which extend through respective bores formed in said flange of the counter-blade so that one end of each screw abuts against the end surface of the associated blade which is opposite from its cutting surface, and wherein said tightening means are constituted by at least one screw partially threaded at one end into a threaded bore of the counter-blade and having a free other end which is pressed against the other lateral surface of said slot to urge a face of the associated blade against said one of said lateral surfaces of said slot.

frame in opposite directions to draw said bag from said article and advance it through such nipless passage; and

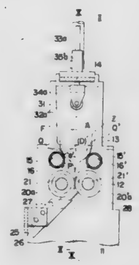
e) nip-defining roller means supported by said frame downwardly of said nipless passage and non-contiguous with respect to said article for advancing said bag from said nipless passage.

4,390,135

BAG REMOVAL APPARATUS

Atsuyuki Wakamatsu, Shimizu, and Keisuke Tonooka, Shizuoka, both of Japan, assignors to Daiwa Can Company, Limited, Tokyo, Japan

Filed Jan. 26, 1981, Ser. No. 228,085
Claims priority, application Japan, Mar. 28, 1980, 55-41017[U]
Int. Cl.³ B02C *18/16*
U.S. Cl. 241—101.2 **16 Claims**



1. Apparatus for removing an elongated bag having a longitudinal slit from an article enclosed in such bag, said apparatus comprising:

(a) a frame;

(b) a pair of elongated support rolls mounted to said frame for receiving said bag with said article therein and contiguously supporting same to preclude movement of said article beyond said rolls, said rolls being substantially horizontal and being spaced from one another to define a nipless passage therebetween;

(c) means for urging said article downwardly to engage portions of said bag with said support rolls;

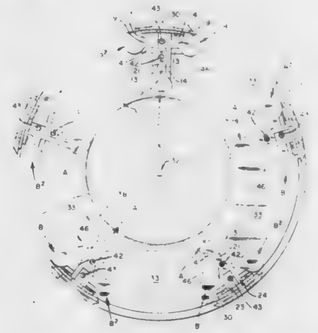
(d) means for rotating said support rolls relative to said

4,390,136

REPLACEMENT WEAR PINS AND REPLACEABLE IMPELLER ASSEMBLY FOR IMPACT CRUSHER

John H. Burk, 712 Charlton Dr., Pleasant Hill, Calif. 94523

Filed Jul. 17, 1981, Ser. No. 284,471
Int. Cl.³ B02C *19/11*
U.S. Cl. 241—275 **4 Claims**



1. In a rock crusher having an impeller assembly formed with a circumference mounted on a turntable having a rim which is connected to and driven by a vertical drive shaft comprising:

a. a plurality of replaceable metal wear pins mounted in said impeller assembly and each of said pins consists of a generally cylindrical portion formed with a projection extending therefrom and terminating in a generally planar end face and said pins terminate at both ends in generally planar end faces and each end of said projections is formed with a pair of spaced lug indents; and

b. said wear pins are positioned on a peripheral outer band of said impeller in groups of three including a head pin and two heel pins wherein said projections form a T-shape having a stem and a cross with said stem of said T located on a radial line and said cross located adjacent said circumference of said impeller, said pin located on said radial line being designated as said head pin and said pins located on said cross being designated as said heel pins.

4,390,137

FORMING A STRAND PACKAGE HAVING MULTIPLE COIL LENGTHS

Charles S. Hammond, Jr., and Henry D. Mitchell, Jr., both of Winston-Salem, N.C., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Apr. 28, 1981, Ser. No. 258,236
Int. Cl.³ B65H *75/24, 54/10, 55/04*
U.S. Cl. 242—54 R **14 Claims**

1. Apparatus for forming a strand package having multiple coil lengths, which comprises:

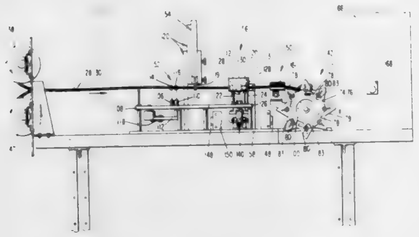
rotatable, collapsible reel means for winding a strand extending from a strand supply;

means for expanding the reel means into an expanded condition for a winding operation;

means for rotating the reel means to wind the strand from the strand supply onto the reel means;

means for causing relative shifting of the strand and the reel means to cause winding of preselected coil lengths of the

strand onto respective winding sections of the reel means in sequence, to form the strand package;
means for collapsing the reel means to facilitate removal of the formed strand package from the reel means; and
means for separating the reel means into the winding sections, the separating means being movable into an extended condition for separating the reel means into the winding sections, and into a retracted condition to facilitate removal of the strand package from the reel means, and a part of the separating means forming a part of the means for expanding and collapsing the reel means.

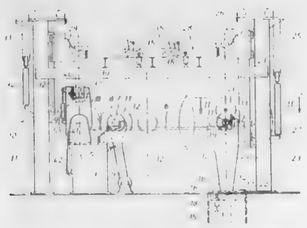


4,390,138

REELING APPARATUS FOR A WEB

Günter Rohde, Zang, and Friedrich Kuhn, Heidenheim, both of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Apr. 10, 1981, Ser. No. 252,879
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1980, 3015547
Int. Cl.³ B65H *75/02, 17/08*
U.S. Cl. 242—55 **22 Claims**



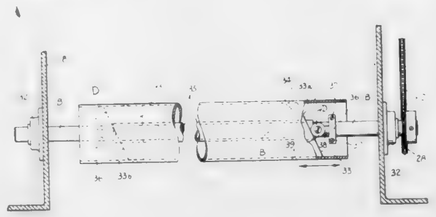
1. A reeling apparatus for reeling a web on a winding shaft having a core tube fitted over it, said reeling apparatus comprising:
an application station for winding a web onto a core tube fitted over a winding shaft to form a roll around the core tube;
first moving means for moving the roll from said application station to an extraction position for enabling extraction of the winding shaft from the core tube when the roll is at said extraction position, said first moving means comprising second moving means for raising the roll into said extraction position to enable extraction of the winding shaft, and for then moving the roll away from said extraction position; said second moving means being adapted and positioned to engage the periphery of the roll and to not engage the winding shaft and the core tube;
extraction means for extracting the winding shaft from the core tube while the roll is in said extraction position, said second moving means being adapted to maintain the roll in said extraction position while engaging the periphery of the roll, while said extraction means extracts the winding shaft from the core tube;
refitting means for fitting a new core tube on the winding shaft after the winding shaft has been extracted from the roll; and
conveyor means for returning the winding shaft to said application station.

4,390,139

OSCILLATING GUIDE ROLL ASSEMBLY FOR CLOTH WINDER

William J. Alexander, III, 41 W. Golden Strip Dr., Mauldin, S.C. 29662

Filed Aug. 6, 1981, Ser. No. 290,612
Int. Cl.³ B65H *17/08, 17/12;* **D03D** *49/20*
U.S. Cl. 242—66 **3 Claims**



1. For use in a cloth winder having a driven cloth takeup roll, an assembly including an oscillating guide roll over which said cloth passes prior to the takeup roll comprising:
a tubular roll member aligned transversely of the passage of a width of cloth in contact with the cloth as it comes to the winder;
means mounting said tubular roll for rotation responsive to said contact with the cloth and for longitudinal sliding movement between said tubular roll and said mounting means;
means driving said mounting means at a predetermined speed differential to and in the same direction of rotation of the tubular roll; and
cam means between said tubular roll and said mounting means for imparting an oscillatory movement to said tubular roll relative to said mounting means in accordance with the speed differential.

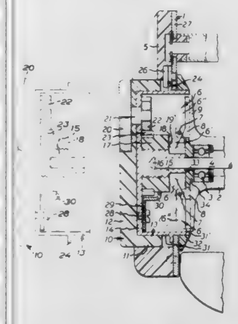
4,390,140

CENTRIFUGAL BRAKE FOR FISHING REELS

Jarding U. Karlsson, Svängsta, and Börje S. Moosberg, Mörrum, both of Sweden, assignors to ABU Aktiebolag, Sweden

Filed Mar. 11, 1981, Ser. No. 242,766
Claims priority, application Sweden, Mar. 18, 1980, 8002091
Int. Cl.³ A01K *89/02*
U.S. Cl. 242—84.52 C **3 Claims**

1. A fishing reel comprising a frame, a line spool (**2**) having opposite end walls and rotatably supported by said frame, and end wall means (**5**) supported by said frame and defining with one of said line spool end walls (**9**) a space therebetween, a centrifugally operated line spool braking device mounted for movement in said space to be centrifugally actuated by rotational movement of said line spool during casting for exerting a braking force thereon, said braking device comprising an annular braking surface (**18**) supported in said space by said end wall means (**5**) of said frame and facing said one line spool end wall (**9**), at least one braking lever (**6**) housed in said space and pivotally mounted on said line spool (**2**) outwardly of said one line spool end wall (**9**), said braking lever (**6**) having a pivot axis (**7**) which is spaced from and extends perpendicular to the rotational axis (**4**) of the line spool (**2**), and said lever (**6**) forming a double-armed pivotable braking lever having radially outer and inner arms (**6″**, **6′**), said radiallyouter arm (**6″**) forming a centrifugal weight which, in an inactive position of said braking lever, projects outwardly from said radially inner arm (**6′**) in a direction which forms an angle in relation to the rotational axis of the line spool as well as in relation to a radius extending from said rotational axis of the line spool through said pivot axis of the lever, said lever having a radially inner end portion, which portion which forms a braking member (**19**) of said braking lever, said annular braking surface (**18**) being supported by said end wall means (**5**) of said frame in a suitable position to be contacted by said braking member (**19**) when centrifugal forces acting on said radially outer arm (**6″**) tend to pivot said radially outer arm in a direction decreasing said angle between said radially outer arm and said radius from said rotational axis of the line spool through said pivot axis (**7**) of said lever, whereby said braking lever will exert a braking force on said annular braking surface in dependence on the rotational speed of said line spool, an adjusting mechanism for adjusting the axial position of said annular braking surface (**18**), said adjusting mechanism comprising a threaded first supporting member (**15**) connected to said end wall means (**5**) of said frame, said first supporting member having a threaded portion which is coaxial with said rotational axis of said line spool and also coaxial with said annular braking surface (**18**), and a second supporting member (**17**) which supports said annular braking surface (**18**) and has an inner thread, said second supporting member being mounted on said first supporting member in threading engagement therewith for axially adjusting the position of said braking surface by rotating said second supporting member (**17**) on said first supporting member (**15**), said adjusting mechanism comprising an operating member (**20**) rotatably supported by said end wall means (**5**) of said base in a position to be manually actuable from the outer side of said end wall means, a first gear (**22**) rotatably mounted to be actuated by means of said operating member (**20**), and a second gear (**23**) fixed to said second supporting member (**17**) to be operated by said first gear (**22**) for said adjustment of the axial position of said braking surface (**18**) by rotating said second supporting member (**17**), said end wall means (**5**) of said base comprising a peripheral wall member having a central opening and a lid (**10**) having means to detachably connect said lid to said wall member in a position to close said opening, said adjusting mechanism including said operating member (**20**), said first and second gears (**22**, **23**) and said first and second supporting members (**15**, **17**) being supported by said lid and assembled to form a dismountable unit therewith.



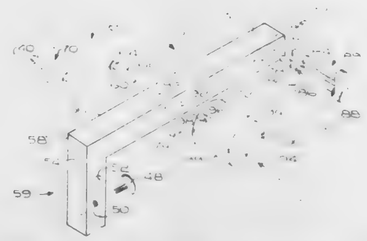
4,390,141

STRAP WINDING MECHANISM

Jerald H. Webster, 11200 Des Moines Way, S., Seattle, Wash. 98168

Filed May 26, 1981, Ser. No. 266,633
Int. Cl.³ B65H *17/46, 75/40*
U.S. Cl. 242—86.5 R **9 Claims**

1. A strap winding mechanism for use in connection with a conventional flat bed truck or the like provided with stake holes or the like along the sides thereof,
a substantially L-shaped frame having a first leg which is detachably clamped at its outer end to any selected stake hole of said truck bed;
said frame when so mounted including a second leg standing out from said first leg horizontally away from said truck bed;
said second leg having therethrough a first journal aperture arranged with its axis generally parallel to said truck bed;
a strap reel assembly comprising a reel hub and, extending therefrom, an open-ended cylindrical section on which the strap is windable and from which wound strapping is readily removable by withdrawal from the open end of such section;
a reel handle including means for detachable connection thereof to said strap reel assembly with said reel handle and said strap reel assembly arranged in said journal aperture on respectively opposite sides of said second leg, the said means for detachable connection of said reel handle to said strap reel assembly enabling ready assembly and disassembly of the reel handle, strap reel assembly and frame for storage of the mechanism when not in use.

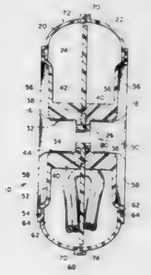


4,390,142

CORD REEL ASSEMBLY

Yue C. Cheng, Flat A, 6/F, 8 Broadcast Dr., Kowloon, Hong Kong

Filed Aug. 10, 1981, Ser. No. 291,356
Int. Cl.³ B65H *75/40*
U.S. Cl. 242—96 **8 Claims**



1. A cord reel assembly for receiving a loop of a cord through an opening in the assembly such that the loop can be wound up within the cord reel assembly, said cord reel assembly comprising first and second identical hub-forming members, each hub-forming member having a cylindrical section with an inner end facing toward the inner end of the cylindrical section of the other member and having an annular disc shaped section extending outwardly from said cylindrical section at the outer end thereof, a plate positioned between said inner ends of said cylindrical sections of said hub-forming members, first and second identical annular opposed shell members, each having a generally concave cross section in a radial direction that extends from an inner circumferential

edge thereof upwardly and inwardly toward an outer inwardly positioned circumferential edge where each such shell member abuts the opposed shell member, said disc section of each hub-forming member having an outer circumferential edge which overlaps, on the outside, said inner edge of one of said shell members, means for holding said cylindrical sections together with said plate situated between the inner ends thereof to form a hub assembly with said outer circumferential edge of each said disc section bearing against one of said shell members to hold said shell members in place with the outer circumferential inner edges thereof in abutting relationship, said shell members having means for limiting relative rotation therebetween, each shell member having a notch extending into said shell member from the outer circumferential edge thereof and adapted to register with an opposed identical notch in the opposed shell member, said plate having a radially extending slot therein adapted to be rotated into alignment with said notches when said notches are in registry with each other for forming means for receiving a loop of a cord, and manually manipulatable means on the outer surface of each disc section of each hub-forming member for enabling said hub assembly to be rotated by hand relative to said shell members after a loop of a cord has been inserted through said aligned notches and into said slot for winding up excess cord.

4,390,143

MANUALLY OPERABLE ATTACHMENT FOR THE LOCKING MECHANISM OF SAFETY BELT RETRACTOR

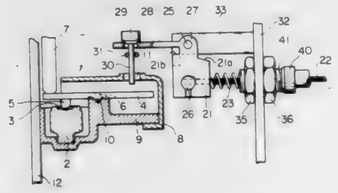
Masayuki Takagi, Fujisawa, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

Filed Apr. 8, 1981, Ser. No. 252,072

Claims priority, application Japan, Apr. 16, 1980, 55-051209[U]

Int. Cl.³ A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.4 A **7 Claims**



1. In a locking mechanism for use in a safety belt retractor which includes retractor means normally biased in the webbing-retracting direction while allowing webbing withdrawal, locking means adapted to be placed in an engaging position for preventing webbing withdrawal, sensor means for sensing a change in the speed of the vehicle, and transmitting means for actuating said locking means responsive to said sensor means;

the improvement comprising manually operated means for actuating said locking means, said manually operated actuating means comprising a vertically disposed weighted actuating member arranged to actuate said transmitting means independently of said sensor means, a tiltable member holding said actuating member in a normally raised position out of contact with said transmitting means, and means for moving said tiltable member downwardly, thereby allowing said actuating member to contact and actuate said transmitting member, said actuating member being vertically moveable with respect to said tiltable member.

4,390,144

YARN CARRIER

Rolf J. Mueller, Greenville, S.C., assignor to Textube Corporation, Greer, S.C.

Filed Feb. 2, 1981, Ser. No. 230,898

Int. Cl.³ B65H *75/10, 75/26*

U.S. Cl. 242—118.3 **11 Claims**



1. An improved yarn carrier, said carrier comprising an elongated body, said body defining an inside wall surface and an outside wall surface, said carrier being receivable on a yarn handling machine where a yarn package may be produced about said carrier body, at least a major portion of said outside wall surface having a yarn receiving and holding area therealong, said area being defined by a plurality of separated, interrelated projections that follow a helical path about said body and cooperate to produce a predetermined uninterrupted design along said area, said design including a plurality of rows of parabolic figures extending around said body whereby a yarn may be wound therearound while precluding entrapment of the yarn between individual projections and precluding sloughing of the yarn from the carrier.

4,390,145

MAGNETIC TAPE HANDLING APPARATUS

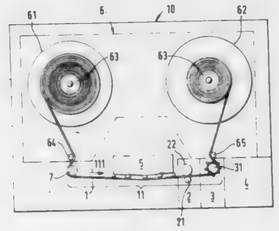
Wolfgang Giese, Hasselbrookstrasse 39a, 2000 Hamburg 76, Fed. Rep. of Germany

Filed Feb. 20, 1981, Ser. No. 236,566

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1980, 3006315

Int. Cl.³ B65H *59/38;* **G03B** *1/04;* **G11B** *15/32*

U.S. Cl. 242—186 **15 Claims**



1. An apparatus for processing perforated magnetic record tape correctly along a path in respect of time and its position, and synchronism with other video and/or audio data, said apparatus comprising:

tape-winding means;

friction drive means comprising a driven surface and means to press the tape against said surface providing the sole operative tape drive during normal operation;

measuring sprocket means associated with the path of the tape for engaging the perforations in the tape and for being rotated solely by advance of the tape for detecting the position of the tape and providing a position signal;

means providing an input tape control signal;

computer means responsive to said sprocket means position signal and said input control signal, for comparing said position signal and input control signal to provide a resulting drive control signal for controlling said friction drive means;

magnetic responsive head means adjacent the path of said tape for operatively exchanging information with said tape; and

said tape-winding means and friction driving means only moving said tape tautly stretched only along said path engaging said sprocket means without significant mechanical stressing of said tape by said sprocket means during normal operation involving said head means forwardly at low speed, and backwardly and forwardly at high speed so that the position and speed of said tape are always measured by said sprocket means.

4,390,146

APPARATUS SUITABLE FOR USE IN REMOVING OR REDUCING A CREASE OR TANGLE IN A MAGNETIC RECORDING TAPE OF A CASSETTE

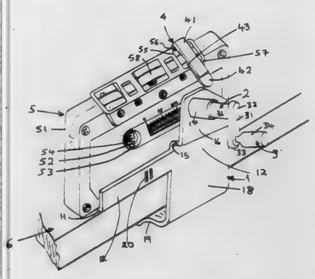
Karim Jorephani, Basra Farm, Shockerwick La., Batheaston, Bath, Avon, England

Filed Mar. 18, 1981, Ser. No. 245,050

Claims priority, application United Kingdom, Jul. 29, 1980, 8024685; Aug. 15, 1980, 8026667

Int. Cl.³ B65H *27/00;* **G03B** *1/04;* **G11B** *15/32*

U.S. Cl. 242—200 **10 Claims**



1. An apparatus suitable for use in removing or reducing a crease or tangle in a magnetic recording tape of a cassette, the cassette having a casing in which are two hubs carrying magnetic tape with a portion of the tape being exposed in an edge region of the cassette, each hub being arranged to rotate about a respective axis and the two axes being parallel to each other, the cassette being provided with two holes passing therethrough on said axes, the hubs having inwardly directed teeth which project into the respective holes, the teeth being used in driving the hubs to transfer the tape from one hub to the other, the apparatus comprising:

a holder capable of holding the cassette;

a rotatable shaft rotatably mounted with respect to the holder and having a working region in which are spaced apart teeth capable, in use, of engaging the teeth on one hub of the cassette when the cassette is correctly positioned in the holder;

rotating means capable of causing rotation of the shaft; and

a guide member which is capable of being positioned adjacent the cassette in the edge region of the latter where the tape is exposed, the guide member being provided with a slit through which the tape may be advanced when the one hub of the cassette is rotated;

the arrangement being such that, in use, with a cassette correctly positioned in the holder, with the guide member correctly positioned relative to the cassette, with the tape located in the slit of the guide member, and with the working region of the shaft engaging the teeth on the one hub, actuation of the rotating means causes the tape to be advanced through the slit thereby removing or reducing a crease or tangle in the tape.

4,390,147

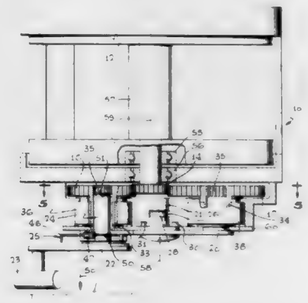
THREE SPEED DRIVE MECHANSIM FOR FISHING REEL

Stephen D. Zuckerman, 2444 Wilshire Blvd., #510, Santa Monica, Calif. 90403

Filed Aug. 24, 1981, Ser. No. 295,769

Int. Cl.³ A01K *89/00*

U.S. Cl. 242—215 **8 Claims**



1. A fishing reel adapted to be secured to a support comprising:

a frame including housing plates spaced apart substantially parallel to each other;

a spool shaft rotatably carried on said housing plates;

a gear housing mounted on one of said housing plates having a gear chamber provided therein adjacent to and closed by said one of said housing plates;

a pinion gear carried on said spool shaft within said gear chamber;

drive gears of different diameters rotatably mounted on said housing within said gear chamber and in constant mesh with said pinion gear;

crank handle means rotatably carried on said gear housing adapted to be alternatively and detachably coupled with a selected one of said drive gears to vary the speed of rotation of said shaft;

indexing means operably connected between said crank handle means and said housing for registering said crank handle means with said selected one of said drive gears; and

limiting means operably connected between said crank handle means and said housing for restricting the extent of crank handle means rotation with respect to said housing so as to align said crank handle means with said selected one of said drive gears.

4,390,148

ROTARY WING DEVICE

Patrick J. Cudmore, Duxbury, Mass., assignor to Wave-Rider, Inc., Duxbury, Mass.

Continuation of Ser. No. 672,513, Mar. 31, 1976, abandoned, which is a continuation-in-part of Ser. No. 591,835, Jun. 30, 1975, abandoned. This application Mar. 6, 1978, Ser. No. 883,653

Int. Cl.³ B64C *39/00*

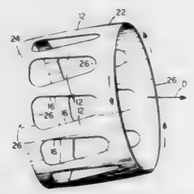
U.S. Cl. 244—19 **33 Claims**

23. An open-ended rotary wing device adapted to be rotated about its longitudinal axis and to be propelled forwardly relative to the surrounding fluid with its longitudinal axis having a small angle of attack relative to the forward flight direction in order to generate a biasing force on the device, the biasing force acting substantially perpendicularly to the longitudinal

axis and in the plane which includes both the longitudinal axis and the forward flight direction, said rotary wing device comprising:

(a) a plurality of longitudinally extending, laterally spaced-apart wing segments disposed in a hollow, open-ended, substantially cylindrical configuration, said wing segments being mounted for rotation about the longitudinal axis of said device;

(b) each said wing segment having a longitudinal dimension greater than its laterial dimension, each said wing segment having rounded streamlined lateral side edges, and each said wing segment being symmetrical in lateral cross-sec-



tion wherein one side of said wing segment is the mirror image of the other side of the said wing segment;

(c) front and rear mounting rings provided on said device for rotatably mounting said wing segments, said front and rear mounting rings engaging and stabilizing the front tips and the rear tips, respectively, of said wing segments, said front mounting ring having a greater mass than said rear mounting ring; and

(d) the center of mass of said rotary wing device being located on the longitudinal axis of said device, said device being statically and dynamically balanced relative to the longitudinal axis of said device.

4,390,149

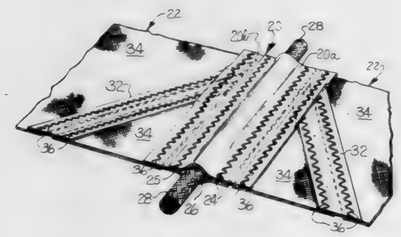
BALLOON ENVELOPE AND METHOD OF FABRICATING SAME

Tracy L. Barnes, and Christy A. Murphy, both of Statesville, N.C., assignors to The Balloon Works, Inc., Statesville, N.C.

Filed Apr. 29, 1981, Ser. No. 258,615

Int. Cl.³ B64B *1/40, 1/58*

U.S. Cl. 244—31 **9 Claims**



1. An inflatable envelope for a lighter than air balloon or the like, and characterized by the ability to limit distructive tearing thereof and comprising:

a latticework of interconnected tapes which collectively have a generally spherical configuration when extended, said latticework of tapes including a plurality of vertical tapes which divide the envelope into a plurality of vertically disposed gores, and

a plurality of laterally directed tapes which extend between the vertical tapes within each gore, said plurality of vertical tapes and laterally directed tapes collectively defining a plurality of open areas therebetween,

each of said vertical tapes being composed of a pair of like tape components having partially overlapping portions and adjacent non-overlapping portions, laterally spaced-apart seam means extending through said overlapping portion to interconnect the tape components and define a pocket therebetween and a load line extending freely through said pocket;

a plurality of panels of a relatively light weight, air impermeable sheet material, with each panel covering respective ones of said open areas, and,

means joining each side of each panel to the non-overlapping portion of the adjacent tape component in a relatively airtight manner with the adjacent sides of adjacent panels being free of any direct interconnection between the adjacent panels and one of the pair of tape components whereby a tear developing in any one panel will terminate upon reaching an adjacent tape component without progressing into the adjacent panel and any torn panel can be removed and replaced without removing load line from its pocket.

4,390,150

TANDEM WING AIRPLANE

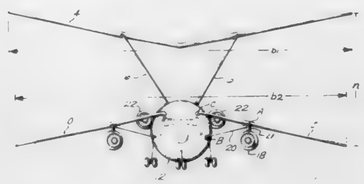
Philip C. Whitener, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 648,706, Jan. 13, 1976, abandoned. This application Jan. 26, 1979, Ser. No. 6,698

The portion of the term of this patent subsequent to Jan. 14, 1989, has been disclaimed.

Int. Cl.³ B64B *3/00*

U.S. Cl. 244—45 R **7 Claims**



1. In a tandem wing aircraft having a fuselage structure and lifting surfaces, the improvement comprising in combination: a lower forward wing having an aspect ratio greater than 8 and a higher aft wing having an aspect ratio greater than 8, each of said wings adapted to provide lift ranging from 40% to 60% of the combined total lift supporting said aircraft in flight, said wings producing said lift and providing normal aircraft pitch control without production of a downwardly acting load; said lower forward wing being located adjacent to and attached directly to said fuselage structure in its forward region; said higher aft wing being aerodynamically spaced apart from and located above said fuselage structure in its aft region; said aft wing being attached to said fuselage structure by at least one aft strut member having a length sufficient to cause the wing tips of said forward and aft wings to be vertically spaced apart by at least 25% of the span of said forward wing and at least 25% of the span of said aft wing, each of said wing tips being free of connection to any other of said wing tips.

4,390,151

AIRCRAFT SKI MOUNTING ASSEMBLY

Richard J. Schneider, 20 Malaspina Dr., Eagle River, Ark. 99577

Filed Feb. 20, 1981, Ser. No. 236,205

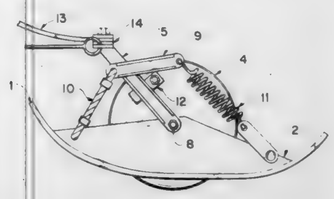
Int. Cl.³ B64C *25/52*

U.S. Cl. 244—108 **4 Claims**

1. An aircraft ski mounting assembly for an aircraft landing gear comprising:

a. a ski having toe and heel portions, a bottom surface for contact with a landing surface and a pedestal integral with and protruding from the upper surface of the ski;

b. a ski attitude control arm pivotably attached to said pedestal on an axis transverse to the ski, said arm being operably biased into a generally upright position against a stop limiting the maximum distance between the upper end of the arm and the toe of the ski; and



c. a landing gear attachment means operably secured to said arm whereby the arm may be attached to the terminal end of an aircraft landing gear in a fixed relationship, the biased pivot between arm and ski pedestal thus acting to allow accomodation of the ski to limited changes of attitude between aircraft and landing surface without the ski toe dropping to dig into the landing surface.

4,390,152

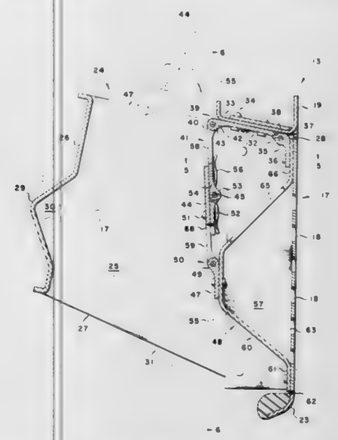
AIRCRAFT DECOMPRESSION VENT ASSEMBLY

Bernard A. Jorgensen, Chatsworth, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed May 13, 1976, Ser. No. 686,070

Int. Cl.³ B64D *25/00, 45/00*

U.S. Cl. 244—118.5 **21 Claims**



1. Apparatus for venting pressurized air through a hollow wall of a pressurized compartment of an aircraft, comprising:

a mounting structure;

an apertured return air grille hinged to said mounting structure for swinging movement from a first position in which a light flow of return air passes through the grille to a second more open position in which a greatly increased flow of vent air can enter the hollow wall past the grille, and

means forming a plenum chamber behind said grille into which said light flow of return air passes after flowing through the grille, said means including two swinging grille actuating plates forming a wall of said plenum chamber and hinges connecting said plates to the mounting structure and grille respectively at two spaced locations and to each other at an intermediate location, in a relation to swing said grille from said first position to said second position in response to a reduction in pressure at a downstream side of the plates;

there being a passage or passages through which said return air can discharge from said plenum chamber at a location downstream of the grille, so that said light flow of return air follows a path first through the grille, then through the plenum chamber, and then through said passage or passages into the interior of said hollow wall for discharge therefrom.

4,390,153

APPARATUS FOR SECURING A WING TO THE BODY OF A CRAFT

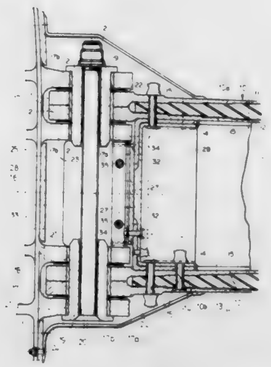
Matthias Wuermseer, Kirchseeon, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jul. 29, 1980, Ser. No. 173,667

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932667

Int. Cl.³ B64B *1/26*

U.S. Cl. 244—131 **7 Claims**



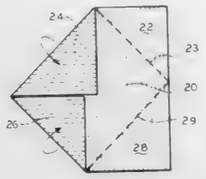
1. An apparatus for securing a fixed wing (**10**) having upper and lower fiber compound material planking means (**10***a*, **10***b*), to the body (**18**) of a craft, such as an aircraft, comprising upper and lower wing fork means each having a securing end (**11'**, **12'**) and two wing fork legs in the form of metal plates (**11**, **12**) forming a gap having surfaces with a tapering facing said wing planking means having a corresponding tapering facing the wing fork means, first means (**14**, **15**) operatively securing the metal plates of the wing fork legs (**11**, **12**) to the respective wing planking means (**10***a*, **10***b*), upper and lower forked body bracket means (**17**) arranged in pairs and rigidly secured to the body (**18**) of the craft, each of said body bracket means having forked bracket legs (**17***a*, **17***b*), said securing ends (**11'**, **12'**) of said wing fork metal plates (**11**, **12**) reaching into a space between said forked body bracket legs (**17***a*, **17***b*), second rigid securing means (**19**, **20**) extending through said body bracket means (**17**) and through the respective securing ends (**11'**, **12'**) of the corresponding wing fork means (**11**, **12**) whereby each of said first and second securing means is subject to shearing loads in two planes, wherein said wing (**10**) has a central plane extending substantially through the leading and trailing edge of the wing, and wherein said forked body bracket legs (**17***a*, **17***b*) of said upper and lower body bracket means (**17**) form four brackets (**17***a*, **17***b*) arranged so that two pairs of fork legs each are vertically aligned symmetrically above and below said central plane of the wing, whereby forces are uniformly and symmetrically introduced into the body and secondary bending of the wing structure and hence introduction of secondary bending moments into the body of the craft are avoided.

4,390,154

CORRUGATED PAPERBOARD PALLET DECK

Charles R. Ostler, and William A. Hampton, both of Anderson, Ind., assignors to Container Corporation of America, Chicago, Ill.

Filed Oct. 1, 1981, Ser. No. 307,370
Int. Cl.³ B65D *19/34*
U.S. Cl. 248—346 **1 Claim**



1. A paperboard pallet deck formed from a generally rectangular, unitary blank of corrugated paperboard which includes a layer of fluted medium having a flat, non-fluted layer of liner secured to at least one side thereof, said deck comprising:

(a) a generally rectangular main panel, located centrally of the blank with the side edges thereof disposed diagonally with respect to both the side edges of the blank and the flutes of the median layer;

(b) four generally triangular flaps located at the four corners of the blank and being foldably joined to the respective side edges of said main panel;

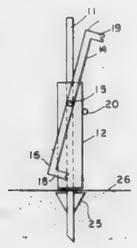
(c) said flaps each being folded inwardly 180° and secured in face-to-face relation with adjacent portions of said main panel and with their flutes extending in a direction normal to that of the main panel flutes.

4,390,155

GARBAGE CAN AND LID HOLDER

Howard Weldon, Sanford Rd., West Springfield, Pa. 16443, and James Stoker, 11763 Ridge Rd., East Springfield, Pa. 16411

Filed Nov. 17, 1980, Ser. No. 207,137
Int. Cl.³ A47B *97/00*
U.S. Cl. 248—507 **1 Claim**



1. A can holder for a container comprising:

a post adapted to be inserted into the ground, a weight slidably supported on the post for vertical movement thereon,

a pivot means on said weight,

a lever having a first end and a second end and an intermediate part,

said pivot means engaging said intermediate part,

and means on the first end to engage the lid of a first garbage can and means on said second end for engaging the lid of a second garbage can whereby said pivot means slidably supports said lever on said weight,

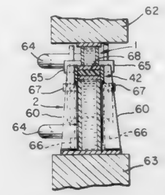
and a stop (**20**) attached to the weight to engage the lever at a position spaced from the pivot (**15**).

4,390,156

FABRICATED SHEET METAL COMPRESSION MOLD AND METHOD OF MAKING

Leonard S. Meyer, Columbia, S.C.; Michael J. Murray, Orange Lake, Fla.; Gerald G. Hayes, and Robert L. McClain, both of Gainesville, Fla., assignors to Victor United, Inc., Chicago, Ill.

Filed Jan. 23, 1981, Ser. No. 228,703
Int. Cl.³ B29C *1/02*
U.S. Cl. 249—80 **3 Claims**



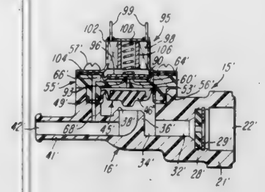
1. A compression mold apparatus comprising a plurality of individual sheet metal mold components initially individually fabricated and subsequently assembled to provide two separate cooperating elements for producing elongated compound curved articles therebetween from reinforced plastics compositions including, a punch element having a planar base plate provided with opposite first and second surfaces bounded by longitudinally extending lateral edges, a pair of substantially congruent longitudinal side plates having opposite planar and contoured edges and opposite inner and outer faces, said side plates affixed to said base plate with said planar edges abutting said first surface and said side plates laterally spaced apart to define a fluid-receiving chamber between opposed said inner faces of said plates, a forming plate including lateral edges at least partially laterally contoured to provide a variation in the width thereof and provided with an undersurface spanning said pair of side plate contoured edges and affixed thereto, said forming plate vertically curved to conform to the curvature of said side plate contoured edges, end plates affixed to opposite portions of said side, base and forming plates and enclosing said chamber in a fluid-tight manner, a cavity element having a planar base plate provided with opposite first and second surfaces bounded by longitudinally extending lateral edges, a pair of substantially congruent longitudinal support plates having opposite planar and contoured edges and opposite inner and outer faces, said support plates affixed to said base plate with said support plate planar edges abutting said cavity base plate first surface with said support plates laterally spaced apart to define a fluid-receiving chamber between opposed said inner faces of said support plates, a mold cavity plate including lateral edges at least partially laterally contoured to provide a variation in the width thereof and provided with an undersurface spanning said pair of support plate contoured edges and affixed thereto, said cavity plate vertically curved to conform to the curvature of said support plate contoured edges and the curvature of said punch forming plate, vertical side cavity plates having inner walls affixed to said cavity plate lateral edges and defining a mold cavity therebetween, end plates affixed to opposite portions of said cavity element support, base and mold cavity plates to enclose said cavity element chamber in a fluid-tight manner, said punch element forming plate lateral edges providing a close sliding fit between said side cavity plates throughout the longitudinal extent of said mold cavity, inlet and outlet means communicating with both said punch and cavity element chambers and adapted to transmit fluid through both said chambers to regulate the temperature of said punch and cavity elements and cooperating guide means on said punch and cavity elements insuring alignment during opening and closing of said cooperating punch and cavity elements.

4,390,157

PILOT OPERATED FLUID CONTROŁ VALVE

Alan F. Meckstroth, 2357 Shelterwood Dr., Dayton, Ohio 45409

Continuation-in-part of Ser. No. 11,227, Feb. 12, 1979, Pat. No. 4,248,402. This application Feb. 2, 1981, Ser. No. 230,441
Int. Cl.³ F16K *31/40*
U.S. Cl. 251—30 **4 Claims**



1. A pilot operated liquid control valve comprising a valve body including a base section and a closure section, said base section having means defining an inlet and an outlet with a valve seat therebetween, a first flexible diaphragm having an outer portion clamped between said base and closure sections of said valve body and a movable inner portion cooperating with said seat to control the flow of liquid from said inlet to said outlet, means defining a bleed hole for directing a limited flow of liquid from an inlet chamber on one side of said first diaphragm to a second chamber on the other side of said first diaphragm, said base and closure sections defining a vent passage for directing liquid from said second chamber around at least said inner portion of said first diaphragm to said outlet and providing for the release of liquid flowing through said bleed hole, a liquid impervious second flexible disphragm having an outer portion secured to said closure section and an inner portion flexible between an open position permitting the flow of liquid through said vent passage from said second chamber and a closed position blocking the flow of liquid through said vent passage, means for sealing said outer portion of said second diaphragm to said closure section to prevent the liquid within said vent passage from contacting the outer surface of said second diaphragm, an electrically operated solenoid having a disc-like armature disposed adjacent said outer surface of said second diaphragm, spring means associated with said armature for urging said inner portion of said second diaphragm towards said closed position, and means for energizing said solenoid to effect movement of said armature and said inner portion of said second diaphragm to said open position.

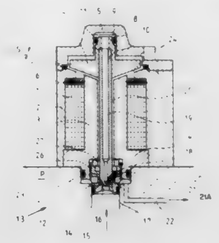
4,390,158

ELECTRO HYDRAULIC SERVO VALVE

Armin Lang, Schwaebisch Gmuend, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Oct. 14, 1980, Ser. No. 196,827
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2942886
Int. Cl.³ F16K *31/06*
U.S. Cl. 251—129 **5 Claims**

1. In a solenoid operated valve assembly including an inlet (**15**), an outlet (**22**), a solenoid (**1**), a magnetic core (**3**) having opposite end faces, an armature (**7**) disposed adjacent to one of said end faces, an operating element (**10**) connected to the armature and having opposite end portions, a piston (**8**) connected to the operating element at one of said end portions thereof, valve means (**13**) including a valve seat (**12**) and a valve head (**14**) connected to the other of the end portions of the operating element and housing means (**2, 5**) having a pressure chamber (**9**), said piston being exposed to pressure in the pressure chamber exerting a valve closing force on said valve means through the operating element; said valve means being closed when said solenoid is energized thereby cutting off flow between said inlet and outlet; the improvement comprising: passage means (**18, 19,20**) for establishing fluid communication between said outlet (**22**) and said pressure chamber (**9**) whereby outlet pressure in said chamber acts to close said valve means, said passage means having a bore (**19**) extending through said operating element, said valve head (**14**) being formed on said operating element at said other of the end portions thereof, said bore extending through the armature and opening directly into said pressure chamber, said magnetic core extending through said solenoid; said operating element extending axially completely through the magnetic core; said armature being disposed externally of said magnetic core adjacent said one of the end faces thereof and said valve head being disposed beyond the other of the end faces of said magnetic core.

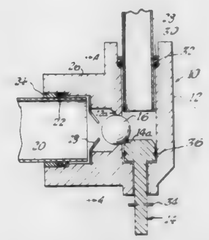


4,390,159

SNAP-ON SHUT OFF VALVE

Ronnie J. Duncan, 219 Lake Arbor, Palm Springs, Fla. 33461

Filed Apr. 27, 1981, Ser. No. 257,753
Int. Cl.³ F16K *51/00;* **F16L** *19/00*
U.S. Cl. 251—148 **1 Claim**



1. A fluid shut-off snap-on valve that can be fabricated at low cost and is readily installed in a fluid supply line comprising:

a rigid housing, said housing having a first chamber and a second chamber, and a passage disposed between said first chamber and said second chamber allowing fluid communication therebetween;

a valve member positionable within said housing passage;

means for retaining said valve member in said housing passage disposed in said housing passage;

a valve seat forming an opening between said passage and said second chamber, said valve member being engageable with said valve seat to seal said inlet passage;

means coupled through said housing for moving said valve member between a first position and a second position in said passage, said first and second positions defining closed and open positions of said valve, respectively, whereby inlet water pressure acts to force said valve member against said valve seat to said first position; and

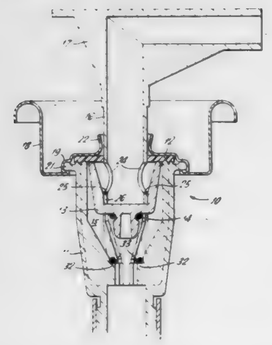
spiral-shaped means coupled in said first and second chambers for retaining a pipe end to prevent dislodging of said pipe end, once it is positioned within said first and second chamber said retaining means further including spiral-shaped retaining member having an outside diameter substantially equal to said inlet and outlet chambers, said spiral-shaped member having an internal aperture, the diameter of which is slightly smaller than the outside diameter of the pipe end to be connected, said retaining member having at least one radial slot along the inner portion of said aperture, said slot forming deformable segments for interlocking said pipe end to said valve housing.

4,390,160

VALVES FOR PRESSURIZED DISPENSING CONTAINERS

Norman L. Reed, The Wickets, Walnut Ave., West Winch, King's Lynn, Norfolk, England

Filed Jul. 2, 1980, Ser. No. 165,475
Int. Cl.[3] B65D *83/00*
U.S. Cl. 251—149.6 **6 Claims**



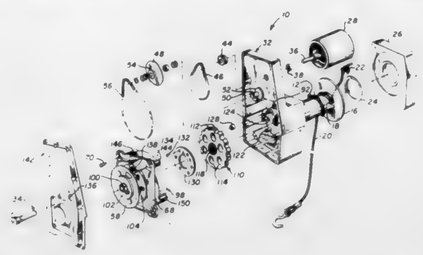
1. A valve for a pressurized dispensing container and comprising a valve housing defining a valve chamber and having at its lower end an inlet for pressurized material, an annular flexible seal clamped into position closing the upper end of the chamber, a cup-shaped valve member within the chamber, a hollow actuator stem extending in sliding, sealed relation through the seal and engaging the valve member at its lower end, and a spring urging the valve member upwardly into sealing engagement with the seal, the actuator stem being manually moveable downwardly against the action of the spring to unseat the valve member and open the valve, in which the wall of the actuator stem includes at least one radial aperture adjacent to but spaced from the lower end of the actuator stem and of a height dimension sufficiently greater than the thickness of said flexible seal that a substantial portion of a entire peripheral segment of the inner annulus of said flexible seal is not in contact with an outer surface of said stem and can expand to protrude inwardly of said aperture when said aperture and seal are in the same plane, thereby defining a lip extending along the lower portion of said aperture against which said flexible seal non-stem contacting segment is engageable upon withdrawal of said actuator stem from engagement with said valve member, the aperture placing the interior of the actuator stem in communication with the interior of the valve member and the lip portion serving to restrain the lower end of actuator stem from passing through the seal if the actuator stem is moved upwardly of the seal.

4,390,161

WINCH DRIVE AND BRAKE MECHANISM

Robert G. Nelson, Thompson, Conn., assignor to Superwinch, Inc., Putnam, Conn.

Filed Mar. 3, 1981, Ser. No. 240,096
Int. Cl.[3] B66D *1/00*
U.S. Cl. 254—356 **17 Claims**



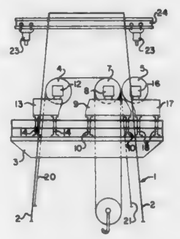
1. A winch drive and brake mechanism comprising a stationary frame, a fixed member rigidly secured to the fixed frame against both axial and angular movement relative to the stationary frame, a rotary cable drum supported on the frame for rotation, a power operated rotary drive shaft coaxially aligned with the drum and supported by the fixed member for rotary movement, a rotary speed reducer drivingly connecting the cable drum and drive shaft for rotation respectively in opposite angular directions, a first rotary brake member coaxially fixed to the drive shaft for rotation, a second rotary brake member coaxially mounted on the drive shaft between the first brake member and said fixed member, the second brake member being freely supported for rotation on the drive shaft and for movement axially of the drive shaft, the first brake member being engageable with the second brake member for axially moving it toward the fixed member into brake engaged position and releasing the second brake member for movement axially away from the fixed member toward a brake released position responsive respectively to rotation of the first brake member relative to the second brake member in opposite angular directions.

4,390,162

INFINITELY VARIABLE CROWN BLOCK POSITIONING

Joseph R. Woolslayer, Tulsa, Okla., assignor to Lee C. Moore Corporation, Tulsa, Okla.

Filed May 20, 1981, Ser. No. 265,438
Int. Cl.[3] B66D *1/82*
U.S. Cl. 254—398 **6 Claims**



1. In an oil well drilling derrick, parallel horizontal crown beams mounted in the upper part of the derrick and having end portions projecting beyond its opposite sides, a fast line sheave near one side of the derrick and a dead line sheave near the opposite side, means supporting the sheaves on said beams with their axes of rotation extending transversely of the beams for selective adjustment lengthwise of the beams to respective

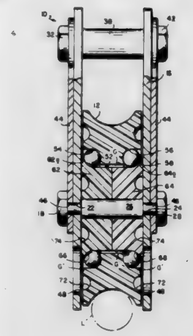
inactive positions on the projecting end portions and to active positions inboard, and a crown block mounted on the beams between said sheaves with its axis of rotation extending transversely of the beams, means supporting the crown block on said beams for adjustable movement therealong between the opposite sides of the derrick.

4,390,163

MARINE BLOCK

Carl A. Merry, Marion, Mass., assignor to Schaefer Marine, Inc., New Bedford, Mass.

Continuation of Ser. No. 297,227, Aug. 28, 1981, abandoned.
This application Jun. 14, 1982, Ser. No. 387,952
Int. Cl.[3] B66D *1/36*
U.S. Cl. 254—412 **7 Claims**



1. A marine block comprising
A. a pair of similar cheek plates,
B. first and second spacer means for maintaining the cheek plates in parallel, spaced-apart relation,
C. a sheave,
D. bearing means for rotatively mounting the sheave on said first spacer means
(1) said bearing means including at least one spaced-apart circular race, and
(2) a circular array of bearing elements engaged in each race, and
E. means defining relatively large ports in said cheek plates directly opposite the bearing means so that water streams can be directed through said ports from opposite sides of the block so as to scrub the surfaces of the bearing elements and the race free of film and dirt.

4,390,164

PRESS LOCK SYSTEM FOR RAILING CONSTRUCTION

Erden Cokelekoglu, 3685 County Rd. #42, Windsor, Ontario, Canada (N9A 6J3)

Filed Sep. 23, 1981, Ser. No. 305,026
Int. Cl.[3] E04H *17/14*
U.S. Cl. 256—65 **2 Claims**

1. The construction of railing for use on balconies and other similar installations, by means of components which snap and hold together by the application of pressure, comprising a handrail which consists of a slightly convex handrail cover, of a width to provide a hand grip, the ends of said cover being bent downwardly and at a small angle inwardly, into two opposite handrail walls, which are further bent inwardly into short horizontal bends; a handrail base which attaches to said handrail cover, consisting of a flat plate, a pair of short, vertical, cover-holding hooks attached to the upper face of said plate, facing away from each other, and each hook being located near each of the sides of said baseplate; a pair of spaced, vertical, inwardly facing hooks also attached to the upper face of said base plate, located symmetrically between the said cover-holding hooks, and extending slightly above them; a plurality of uniformly spaced holes provided in said baseplate for the passage therethrough of the upper end of each baluster; a footrail constructed substantially the same as the said handrail, with the exception that the baluster penetration holes are



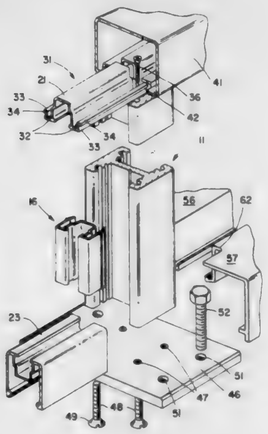
provided in the cover plate instead of the baseplate; and a plurality of vertical balusters, each having two opposite flat walls, provided with horizontal channels into which hook the baluster hooks of the baseplate.

4,390,165

DECORATIVE GLASS PANEL RAILING ASSEMBLY

Robert H. Murdock, Kensington, Calif., assignor to NEF Systems, Inc., Oakland, Calif.

Filed Nov. 24, 1980, Ser. No. 209,991
Int. Cl.[3] E04H *17/14, 17/16*
U.S. Cl. 256—24 **19 Claims**



1. A decorative glass panel railing assembly, comprising: a plurality of upwardly extending line posts disposed in generally parallel, spaced apart configuration, each of said posts including a pair of post channels extending longitudinally and disposed on opposed sides of said post; anchor means for securing said posts to the floor; a plurality of glazing inserts, each adapted to be received in one of said post channels, each glazing insert including a channel-like cavity therein and cushioning means disposed in said channel-like cavity to engage a vertical edge portion of a glass panel; detent means for retaining said glazing inserts in said post channels; first means for supporting a lower horizontal edge portion of a glass panel; second means for supporting an upper horizontal edge portion of a glass panel; and top rail means secured to said second means.

4,390,166

HOT-GUNNING METHOD FOR REPAIRING CONVERTERS

Hiroyuki Danjo; Kazuaki Takimoto, both of Okayama; Gensuke Muta, and Nobuyoshi Hiroki, both of Ibaraki, all of Japan, assignors to Shinagawa Refractories Co., Ltd., Tokyo and Sumitomo Metal Industries Co., Ltd., Osaka, both of, Japan

Continuation-in-part of Ser. No. 39,824, May 17, 1979, abandoned. This application Sep. 19, 1980, Ser. No. 188,867
Claims priority, application Japan, May 29, 1978, 53/64031
Int. Cl.³ C21C *5/44*; C04B *35/04*
U.S. Cl. 266—44 **6 Claims**

1. A hot-gunning method for repairing a converter lined with bricks which comprises the steps of:

providing a composition comprising:

(a) 8–15% by weight of water;

(b) 20–40% by weight of a pellet prepared by mixing 40–60% by weight of magnesia type refractory powder containing more than 75% by weight of MgO and having a particle size of not more than 1 mm with 60–40% by weight of molten tar and dropping the resulting mixture into water or cooled air; and

(c) the substantial balance of said composition comprising a refractory material selected from the group consisting of magnesia clinker, dolomite clinker, chrome ore and mixtures thereof, and a binder; and

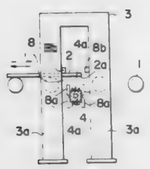
gunning said composition onto the lining of said converter at a high temperature.

4,390,167

APPARATUS FOR REMOVING TORCH-CUTTING SLAG OF SLAB

Susumu Ito; Sadayuki Saito, both of Chiba, and Kazuya Higuchi, Ichihara, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Dec. 29, 1981, Ser. No. 335,716
Int. Cl.³ B23K *7/02*
U.S. Cl. 266—48 **4 Claims**



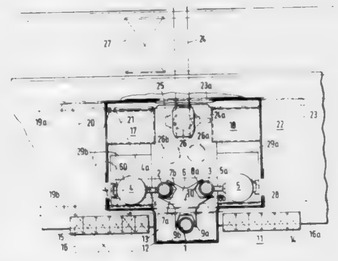
1. Apparatus for removing a torch-cutting slag of a slab, wherein in cutting tool mount vertically and rotatably controllable is transversely racked beneath a space formed between rollers disposed at desirable positions of a conveying roller table for conveying the slab fusion-cut to a predetermined length in a direction perpendicular to the conveying roller table, and cutting tools for cutting and removing the torch-cutting slag of the slab are provided at least at positions symmetrical with each other along the longitudinal outer surfaces of the cutting tool mount.

4,390,168

CRANE AND HOIST FOR STEEL MANUFACTURING MILL

Johannes Müller, Dusseldorf, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 24, 1981, Ser. No. 324,587
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1980, 3044258
Int. Cl.³ C21C *5/52*
U.S. Cl. 266—142 **2 Claims**



1. In a steel manufacturing mill comprising:

(a) a furnace hall area having at least one first movable hoisting crane riding on a first trolley;

(b) a transferral hall area separate from said furnace hall area;

(c) said transferral hall area being provided with a second movable hoisting crane riding on a second trolley;

(d) two or more smelting furnaces located in said furnace hall area;

(e) each of said furnaces being provided with a tap hole;

(f) the tap holes of said furnaces facing one another;

(g) a rotatable, turntable-type element located between said furnaces proximal to said tap holes;

(h) a plurality of casting ladles rotatively supported by said turntable-type element;

(i) said turntable-type element serving to selectively rotate said individual casting ladles from a first position proximal to one of said tap holes to a second position within said transferral hall area proximal to said second movable hoisting crane; the improvement characterized by

(j) said first movable hoisting crane riding on said first trolley being provided with a hoisting means which is stationary with respect to said first trolley yet movable with respect to said furnaces by moving with said first trolley; and

(k) the longitudinal axis of said hoisting means being in a vertical plane extending through the centers of said smelting furnaces.

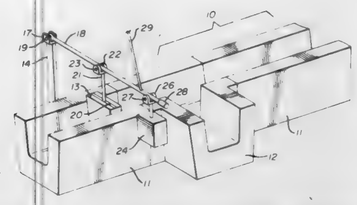
4,390,169

MODULAR UNIT BLAST FURNACE RUNNER AND HOT METAL GATE

Micheal D. LaBate, 115 Hazen Ave., Ellwood City, Pa. 16117

Filed Feb. 17, 1981, Ser. No. 234,648
Int. Cl.³ C21B *7/14*
U.S. Cl. 266—196 **6 Claims**

1. The combination of a modular unit blast furnace runner and a gate for movement into and out of said runner, said gate being of a shape and size conforming with said runner, said gate being formed of a refractory base material, elongated



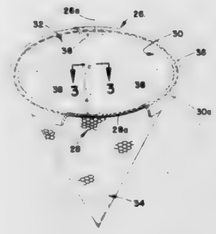
resilient stainless steel needles embedded in said refractory base material for flexibly reinforcing said gate.

4,390,170

CLOSURE PLUG FOR LADLE CAR

Louis B. Schaefer, IV, 810 Beechwood Dr., Medina, Ohio 44256, and Thomas M. Miller, 26027 Byron Dr., North Olmsted, Ohio 44070

Filed Mar. 19, 1982, Ser. No. 359,774
Int. Cl.³ C21C *5/46*
U.S. Cl. 266—272 **20 Claims**



1. A closure plug for a ladle car container having an opening thereinto through which molten metal is poured into and from the container and which container opening has an axially outer end and a peripheral edge at said outer end, said closure plug having an axis and including wall means providing said plug with an open axially outer end and a closed axially inner end, said wall means comprising lining means of fibrous insulating material and flexible support means for lining said means, said support means being open mesh screen means, said plug being received in and closing said container opening with said closed inner end spaced axially inwardly of said peripheral edge of said opening.

4,390,171

COMPRESSION SPRING CAPSULE

Bernard H. Geisow, Houston, Tex., assignor to Daniel Industries, Inc., Houston, Tex.

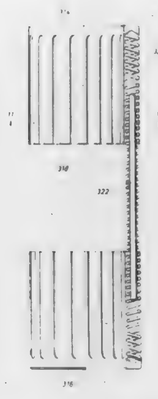
Division of Ser. No. 963,459, Nov. 24, 1978, Pat. No. 4,331,315. This application Oct. 28, 1981, Ser. No. 315,710
Int. Cl.³ F16F *3/04*
U.S. Cl. 267—169 **3 Claims**

1. A compression spring capsule comprising:

a pair of generally cylindrical tubular spring retainer bodies, each being formed to define a plurality of elongated cylindrical blind spring retainer recesses being oriented in generally parallel relation and substantially parallel to the elongated axis of said spring retainer bodies;

a plurality of helical compression springs being provided having the extremities thereof positioned within said spring retainer recesses in each of said pair of spring retainer bodies and spacing said bodies a first distance from each other when in an uncompressed state; and

inner support rods being loosely positioned within each of said plurality of compression springs with the extremities thereof receivable within said opposed spring retainer recesses, the length of each of said inner support rods exceeding said first



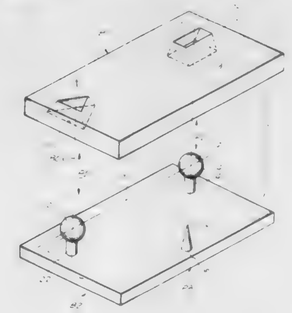
distance of said spring retainer bodies and being less than the combined length of said spring retainer recesses when said spring retainer bodies are disposed in abutment.

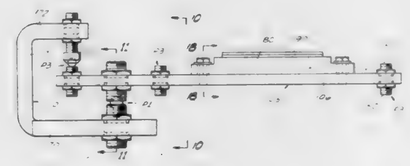
4,390,172

PRECISE QUICK-RELEASE POSITIONING MECHANISM

Alexander Gotman, Santa Monica, Calif., assignor to Presco, Inc., Irvine, Calif.

Filed Nov. 28, 1980, Ser. No. 211,105
Int. Cl.³ B23Q *1/06*
U.S. Cl. 269—56 **14 Claims**





1. A system for removably securing two rigid bodies together at three support points in a fixed and predetermined spatial relationship so that they can be quickly and easily separated and then secured together again in precisely the original relationship, said system comprising:

a first body having first and second exposed openings, said first opening being in the form of a trihedral pyramid with its widest dimension at the outward end, and said second opening being in the form of dihedral prism with its widest dimension at the outward end;

said dihedral prism of said second opening having a longitudinal axis which extends toward said first opening;

said first body also having an exposed supporting surface which lies outside an axis common to said first and second openings;

a second body having first and second protruding hemispheres which are so spaced as to be received by said first and second openings, respectively, of said first body; and

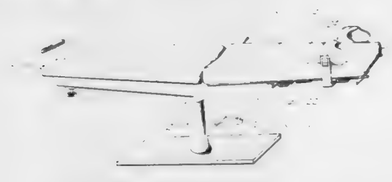
said second body also having a protrusion adapted to engage said exposed surface of said first body.

4,390,173

ADJUSTABLE ANKLE STIRRUP DEVICE FOR A CHIROPRACTIC TABLE

James E. Barnes, Fort Wayne, Ind., assignor to James M. Cox, Spencerville, Ind., a part interest

Filed Jul. 27, 1981, Ser. No. 287,413
Int. Cl.³ A61G *13/00*
U.S. Cl. 269—328 **6 Claims**



1. Chiropractic table apparatus comprising a table having top and bottom surfaces, side edges and a foot portion, a bar fixedly supported on said table to extend longitudinally thereof in spaced parallelism with said bottom surface,

a stirrup bracket having two angularly related legs with the end portion of one leg being slidably mounted on said bar and the other leg being adapted to extend upright along one end of said table, and means for disengageably supporting said bracket at a selected position longitudinally of the table with said other leg upright and for restraining movement of said bracket in a direction away from said foot portion while in said position, said means including a hook element on said table and extending beneath said bottom surface to be disposed in registry with said one leg of said bracket, said hook element having an open portion extending substantially parallel to said bar and adapted to disengageably receive said one leg in supporting relation.

4,390,174

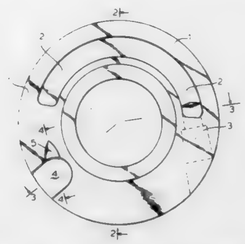
CONTROL HEAD FOR CONTROLLING THE SUCTION PATH OF A SUCTION ROLLER

Dieter Veith, Neuwied, Fed. Rep. of Germany, assignor to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co., Neuwied, Fed. Rep. of Germany

Filed Mar. 18, 1981, Ser. No. 244,835
Int. Cl.³ B65H *3/08*
U.S. Cl. 271—108 **5 Claims**

1. In a control head for controlling the suction path of a suction roller and the feeding of sheets, cut paper or the like, of the type having at least one suction conduit and at least one fresh air conduit both opening onto one side of said control head which is stationarily disposable adjacent to a rotatable suction roller having suction holes formed therein which discharge into a supply bore which, depending on the rotatable position of said suction roller, may communicate with said suction conduit or said fresh air conduit and, in turn, a vacuum source or the atmosphere, respectively, the improvement comprising:

said fresh air conduit having a leading control edge which communicates with a venting conduit opening onto said surface of said control head and positioned generally between said suction and fresh air conducts which venting conduit is so dimensioned and shaped that, during initial communication of said supply bore with said fresh air



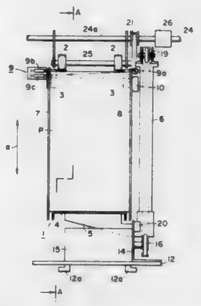
conduit, only a small free cross-sectional opening provided by said conduit is available for establishing communication between said fresh air conduit and said supply bore, so as to permit a gradual venting of said supply bore, which opening gradually increases and finally equals the full cross-sectional diameter of said fresh air conduit, when said fresh air conduit and said supply bore are in complete alignment with one another.

4,390,175

RECORDING MEDIUM FEEDING DEVICE

Yuji Takahashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1981, Ser. No. 233,097
Claims priority, application Japan, Feb. 18, 1980, 55-18823
Int. Cl.³ B65H *1/18*
U.S. Cl. 271—157 **8 Claims**



1. A recording medium feeding device usable with an image formation apparatus, comprising:

a recording medium stacking table;

feed means for feeding recording mediums from said stacking table;

drive means for raising and lowering said stacking table between a feeding position and a lower limit position; and

control means for controlling said drive means to lower said table to a stand-by position between its feeding position and its lower limit position in response to a first signal indicating that a supply of recording mediums is required on said stacking table, and to raise said stacking table to its feeding position in response to a second signal indicating that said stacking table is supplied with recording mediums.

4,390,176

SHEET CLAMPING DEVICE

Toshifumi Kato, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Oct. 23, 1980, Ser. No. 199,955
Claims priority, application Japan, Oct. 24, 1979, 54-137427
Int. Cl.³ B65H *5/12, 5/14*
U.S. Cl. 271—270 **31 Claims**



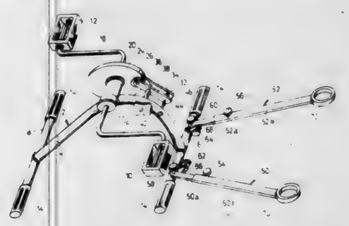
1. A sheet clamping device comprising a drum around which a sheet is to be disposed, drum drive means for driving the drum for rotation in a given direction, first swingable clamping means extending outwardly of the drum through a slit formed in the drum along a generatrix thereof and being swingable between an open and a closed position relative to the drum surface for clamping the leading end of a sheet against the drum surface, operating means for selectively driving the clamping means to its open or closed position, second swingable clamping means extending outwardly of the drum through the slit formed in the drum and swingable between an open and closed position relative to the drum surface for clamping the trailing end of the sheet against the drum surface, second operating means for selectively driving the second clamping means to its open or closed position, and sheet combing means movable toward or away from the drum surface for urging the sheet against the drum surface as the sheet is being disposed around the drum, in which the drum is associated with directing means for detecting the rotational position of the durm, and brake means for applying a braking effort to the drum as it rotates, and wherein the first clamping means is adapted to be brought to a stop at a third location which is lagging behind a first location where a sheet clamping operation for the leading end of the sheet is initiated and which leads a second location where a sheet clamping operation for the leading end of the sheet is completed.

4,390,177

FOOT-OPERATED EXERCISING DEVICE

Benjamin Biran, and Miriam Biran, both of David Pinski St. 25, Haifa, Israel

Filed Jan. 27, 1981, Ser. No. 228,760
Claims priority, application Israel, Feb. 3, 1980, 59291
Int. Cl.³ A63B *23/04*
U.S. Cl. 272—73 **9 Claims**



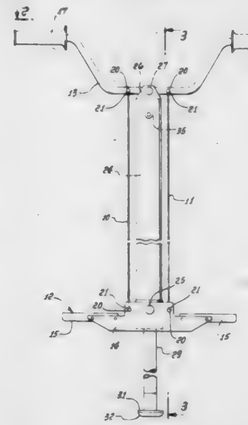
1. A foot-operated exercising device including a frame having a longitudinally-extending frame bar terminating at its opposite ends in a pair of transversely-extending frame legs for supporting the frame bar on a horizontal surface during use of the device, and a pair of foot pedals rotatably mounted on the frame bar about a horizontal, transversely-extending axis; characterized in that said device further includes a pair of variable-length arms pivotably mounted to one of said transversely-extending frame legs, each of said arms being pivotable about a respective vertical axis to said one frame leg such that said arms may be pivoted to an operable position behind said one frame leg on the side thereof opposite to the other frame leg or to a non-operable position in folded relationship with respect to said frame legs; each of said arms including means at the ends thereof for anchoring same by an external device.

4,390,178

PIVOTAL JUMPING STICK

Elliot Rudell, 5319 W. 146th St., Lawndale, Calif. 90260; Joseph Cernansky, and Harold Garner, both of Los Angeles County, Calif., assignors to Elliot Rudell, Lawndale, Calif.

Continuation of Ser. No. 161,265, Jun. 20, 1980, abandoned.
This application May 25, 1982, Ser. No. 381,838
Int. Cl.³ A63B *25/08*
U.S. Cl. 272—114 **4 Claims**



1. A jumping stick mechanism for use by a rider, including an exterior tube having an upper end and a lower end, foot means connected to the lower end of said exterior tube, impacting means slidably mounted within said exterior tube and projecting from said lower end adjacent to said foot means, spring means within said exterior tube abutting said impacting means, and handle means comprising handlebars attached to the upper end of said tube, and wherein the improvements comprise:

said foot means being pivotably mounted to said exterior tube whereby the rider can alter the angle of incidence of said foot means to said exterior tube in order to facilitate the rider shifting his body weight and position to achieve a different center of gravity to maintain balance and control of the jumping stick on uneven terrain,

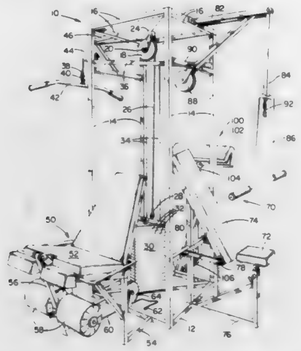
said handle means being pivotably mounted to said exterior tube whereby the rider can alter the angle of incidence of said handle means to said exterior tube in order to facilitate the rider shifting his body weight and position to achieve a different center of gravity to maintain balance and control of the jumping stick on uneven terrain.

4,390,179

MULTI-STATION EXERCISING APPARATUS

Kalman Z. Szkalak, 7631 Yukon Dr., Huntington Beach, Calif. 92648

Filed Jul. 1, 1981, Ser. No. 279,530
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—118 **12 Claims**



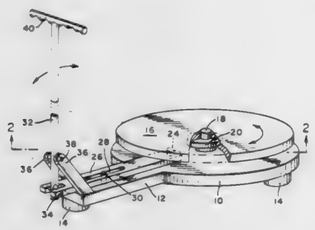
1. Apparatus for the stationing of multiple exercising machines of the type employing a pulley and cable system to lift a weight, said apparatus comprising:
a plurality of attachable exercising machines spaced apart from each other around the periphery of the apparatus;
a structural framework adapted for the attachment of said exercising machines thereto;
means on said framework adapted for the attachment of at least one fixed pulley for each of said machines; and
central pulley means pivotally mounted centrally on said framework, said central pulley means pivotable successively from one machine to another for operative connection to each of said fixed pulleys.

4,390,180

EXERCISE APPARATUS

Luther G. Simjian, 1750 S. Ocean Ln., Fort Lauderdale, Fla. 33316

Division of Ser. No. 196,849, Oct. 14, 1980, Pat. No. 4,313,603.
This application Oct. 23, 1981, Ser. No. 314,172
Int. Cl.³ A63B *23/02*
U.S. Cl. 272—126 **3 Claims**



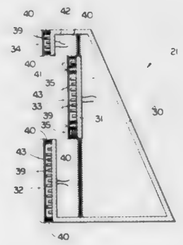
1. An exercise apparatus comprising:
a stationary support;
a turntable platform mounted upon said support for oscillating rotating motion about a centrally disposed axis of said platform and adapted to support a person in standing position;
a substantially vertically disposed post mounted forward of the perimeter of said platform and supported by said support for rotating motion about the substantially vertical axis passing through said post;
a substantially horizontally disposed handle bar affixed to the upper end of said post, and
drive means coupled between said platform and said post for causing responsive to said oscillating rotating motion of said platform said post to be driven in an oscillating rotating motion about its substantially vertical axis, whereby to cause pivotal motion of said handle bar in a substantially horizontal plane about the axis of said post.

4,390,181

PRACTICE PITCHING APPARATUS

Max M. Parish, P.O. Box 86, French Lick, Ind. 47432

Filed Apr. 8, 1980, Ser. No. 138,295
Int. Cl.³ A63B *69/40*
U.S. Cl. 273—26 A **2 Claims**



1. A practice pitching apparatus which maintains a count of balls, strikes and outs comprises:
an upright target member having a front surface arranged into a strike zone and a surrounding ball zone, said target member including a supporting frame, a plurality of spring-biased impact panels, and a plurality of switches supported by said frame and disposed directly behind said impact panels, said plurality of spring-biased impact panels including a first panel arranged to provide said strike zone and a second series of panels arranged to provide said surrounding ball zone;
a strike-counting circuit section responsive to ball impact on said first panel;
an out-counting circuit section coupled to and cooperatively arranged with said strike-counting circuit section;
a ball-counting circuit section responsive to ball impact on said second series of panels;
display means for indicating the number of strikes and the number of balls thrown;
said plurality of switches including a first group arranged in parallel and comprising a portion of said strike-counting circuit section and a second group arranged in parallel and comprising a portion of said ball-counting circuit section; and
said first group of switches is subdivided into a first subgroup of switches arranged behind said strike zone panel and a second subgroup of switches arranged behind said ball zone panels, said first subgroup operatively arranged to energize said strike-counting circuit section, said second subgroup operatively arranged to disable said strike-counting circuit section.

4,390,182

REINFORCED RACKET FRAME AND METHOD OF PRODUCING SAME

Chin-San You, No. 3, Lane 1029, Fong-Shih Rd., Weng-Tzu Li, Fong Yuan City, Taiwan

Filed Jun. 8, 1981, Ser. No. 271,131
Int. Cl.³ A63B *49/02*
U.S. Cl. 273—73 C **6 Claims**

3. A racket frame, comprising:

a plurality of elongate wooden strips laminated and fabricated to form a frame shape;
a groove formed in the mid part of said strips and extending longitudinally therethrough perpendicularly to the string plane of the racket, the groove having a cross section narrow at the center and wider at the ends;



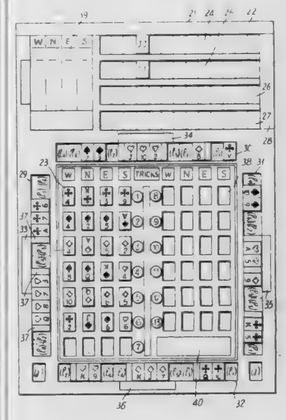
a reinforcing material in said groove extending longitudinally along the full length of said groove and substantially filling all of said groove, said reinforcing material comprising means for improving the strength of said frame shape relative to bending moment, whereby the shape of the groove bonds the reinforcing material to the wood.

4,390,183

SMALL-SIZE DEVICE FOR SIMULATING A BRIDGE GAME

Catherine Gedon, 17 rue de Sevres, 92100 Boulogne Billancourt, France

Filed Nov. 23, 1981, Ser. No. 324,176
Claims priority, application France, Nov. 24, 1980, 80 24898
Int. Cl.³ A63F *1/00*
U.S. Cl. 273—148 A **8 Claims**



1. A small-size device for simulating a bridge game, which comprises:
a small board,
means defining a first series of 52 cavities provided in said board, said first series of cavities being disposed according to four rows of thirteen cavities each, these rows being parallel to each other and in close relationship,
means defining a second series of 52 cavities provided in said board, said second series of cavities comprising four rows of thirteen cavities each disposed along the outer periphery of a substantially square game area,
a third series of 52 cavities provided in said board, said third series being disposed inside said square game area and comprising thirteen rows of four cavities each,
and 52 blocks bearing the pictures of the various symbols of bridge playing cards, each one of said blocks having a prismatic configuration and being adapted to be partially embedded into any cavity of said first to third series of cavities,
so that in said first defined series of cavities said blocks can be disposed according to their suits in a storage position, while in said second defined series of cavities said blocks can be disposed to display the four hands of any bridge deal and in said third series of cavities said blocks can be disposed to represent the thirteen tricks as they are accomplished.

4,390,184

GOLF PUTTER HEAD AND PUTTER INCORPORATING SUCH HEAD

David C. Rudell, 362 South Creek Dr., Depew, N.Y. 14043

Filed Sep. 16, 1981, Ser. No. 302,529
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—183 D **14 Claims**



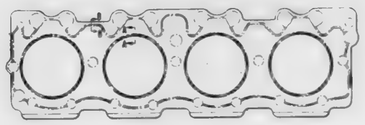
1. A golf putter comprising a handle, a head and a shaft connecting said handle and head, with the putter head having a leading side portion with a substantially vertical leading surface for putting a golf ball and three separate trailing portions extending backwardly from the leading side portion, two of which extend from end portions of the leading side portion of the putter and the third of which extends from a middle portion of said leading side portion, said third trailing portion including endwardly and downwardly sloping walls, so that a golfer, putting with the putter, can be guided by them to position his head with respect to both the putter and a ball to be putted by holding his head with respect to the putter in such position that a desired ratio of areas of the sloping sides of the middle trailing portion may be viewed by him when his head is in correct position with respect to the putter and a golf ball to be putted.

4,390,185

GASKETS

Terence P. Nicholson, Calf Hall, Muggleswick, Derwentside, County Durham, England

Filed Apr. 22, 1982, Ser. No. 370,922
Claims priority, application United Kingdom, May 1, 1981, 8113497
Int. Cl.³ F16J *15/08*
U.S. Cl. 277—235 B **1 Claim**



1. A gasket for sealing a joint between the cylinder block and

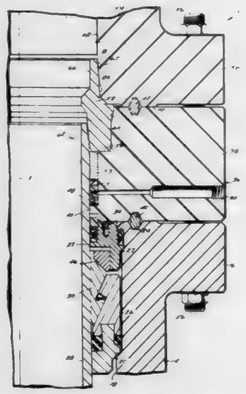
the cylinder head of a wet liner internal combustion engine comprising a pair of outer metal plates having outwardly directed corrugations formed therein away from cylinder bore openings and a composite metal spacer plate disposed between the two outer plates, the said spacer plate comprising a central soft metal layer and hard metal surface layers bonded or integral therewith and extending into proximity with the individual cylinder bore openings said metal spacer plate being formed adjacent these openings on each axial face with circumferential serrations of V-shaped radial profile, the thickness of the spacer plate measured over the peaks of the serrations, before the gasket is installed being somewhat greater than that of the remainder of the spacer plate whilst the thickness measured between the troughs of the serrations is significantly less than that of the remainder of the spacer plate.

4,390,186

METAL-TO-METAL RIBBED SEAL

John K. McGee, Houston; Harold L. Lafferty, Manvel; Charles D. Bridges, and Archie L. Smith, both of Houston, all of Tex., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 4, 1982, Ser. No. 345,797
Int. Cl.³ F16J *15/08*; E21B *33/12*
U.S. Cl. 277—236 **7 Claims**



1. A metal-to-metal seal for use in a high pressure environment typical of a wellhead assembly that is provided on a high pressure, high temperature gas well, comprising:

a tubular part having an outside circumferential surface leading to an end;

a relatively massive part having an internal chamber with an inside circumferential surface;

the tubular part being coaxially at least partially received in said internal chamber so that said inside circumferential surface of the relatively massive part surrounds said outside circumferential surface of the tubular part;

adjustable securement means associated with said tubular part and said relatively massive part for telescoping the tubular part into the internal chamber of the relatively massive part until a predetermined relative axial disposition of these parts is achieved;

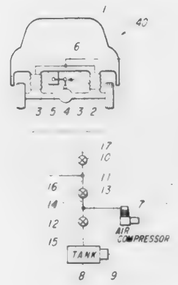
said inside circumferential surface having a taper, said outside circumferential surface being relieved so as to have a substantially complementary taper over most of the axial extent thereof, but having at least one narrow band in which a respective prominant circumferential rib is externally formed on said tubular part on and intermediate the axial extent of said outside circumferential surface, said at least one narrow band being so prominant that when said adjustable securement means is adjusted to bring said tubular part and said massive part to said predetermined relative axial disposition is achieved, said at least one rib on said tubular part is in interference fit with said tapered inside circumferential surface on said relatively massive part, with a resilient circumferential engagement essentially characterized by incomplete crushing of said at least one rib.

4,390,187

VEHICLE LEVELING SYSTEM

Koichi Maeda, Kawasaki, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Jan. 13, 1981, Ser. No. 224,740
Claims priority, application Japan, Jan. 18, 1980, 55-4721
Int. Cl.³ B60G *17/00*
U.S. Cl. 280—6 R **23 Claims**



13. A vehicle leveling system, comprising:

compression means for producing pressurized air;

means for accumulating the pressurized air produced by the compression means;

pneumatic spring means disposed between a chassis and a vehicle axle for setting the distance between the chassis and the vehicle axle by the pressurized air supplied thereto; and

means for controlling the supply of the pressurized air so that the pressurized air from the compression means is supplied only to the pneumatic spring means after a predetermined period of time has elapsed from the start of the supply of the pressurized air from said accumulating means to the pneumatic spring means until a predetermined distance is set between the chassis and the vehicle axle, the control means having a valve disposed in a conduit communicating the compression means with the accumulating means for supplying the pressurized air from the compression means to the accumulating means, a first sensor for detecting the pressure of the pressurized air in the accumulating means, a second sensor for detecting the low level of the vehicle height, and a timer for conducting the timer action in response to the signal from the timer indicating that the timer is in operation, the valve being closed by the signal from the timer indicating the end of the timer action during the actuation period of the second sensor and the valve being opened in response to the signal from the first sensor during the not-actuation period of the second sensor.

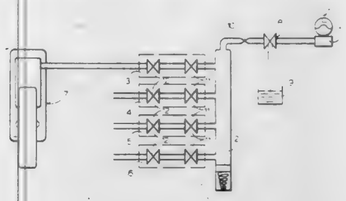
4,390,188

HIGH PRESSURE HYDRAULIC SYSTEMS

John A. Rouse, Warwickshire, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Apr. 28, 1981, Ser. No. 258,396
Claims priority, application United Kingdom, May 3, 1980, 8014937
Int. Cl.³ B62D *37/00*
U.S. Cl. 280—6.1 **15 Claims**

1. A high pressure hydraulic system comprising a slave unit, a source of hydraulic fluid for supplying said slave unit with fluid under pressure, and a control valve assembly for controlling the supply of hydraulic fluid to said slave unit, said control valve assembly comprising first and second solenoid-operated valves, and first and second solenoids for respectively operating said first and second valves, a pressure differential acting across each of said valves also to operate said valves, said valves being oppositely acting and arranged in series with said first valve located between said source and said second valve, and said second valve located between said first valve and said slave unit, each one of said valves being movable into a closed position in which fluid flow through said one valve in a direction towards the other of said valves is substantially prevented, and an open position in which fluid flow through said one valve in both directions is permitted, said solenoids and said pressure differentials across said valves controlling movement of said valves between said open and said closed position, and each one of said valves comprising a seating member having a seating portion and a valve member having a complementary seating portion for engagement with said seating portion of said seating member, said seating portion of one of said members of said second valve comprising an element of elastomeric material to provide a substantially leakproof seal when said second valve is in said closed position.

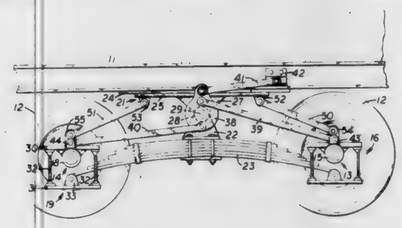


4,390,189

SELF-STEERING BOGIES FOR TRAILERS

Milo A. Kunau, Box 303, Miles, Iowa 52064

Filed Mar. 30, 1981, Ser. No. 248,922
Int. Cl.³ B62D *13/00*
U.S. Cl. 280—81 A **4 Claims**



1. A steerable bogie comprising:

An upper main frame to carry a load, a front and a rear tandem axle assembly, each of said assemblies having an axle housing and road wheels, a right and a left shackle spaced apart on each of said axle housings, each of said shackles having an upper rigid member secured across a respective one of said axle housings and a lower rigid member spaced in a normal position below said upper rigid member, and flexible supporting means secured between said respective upper and lower rigid members to permit limited relative movement of said respective rigid members from said normal position in forward and rearward directions,

pivotal means connected to the lower side of said main frame, said pivotal means having a lower pivotal plate and a central pivot in an upper central position of said bogie, said lower pivotal plate being rotatable horizontally about said central pivot over a limited range, a first suspension connected between said lower rigid members of each of said right shackles and having a respective upward extending means connected to said lower pivotal plate, a second suspension connected between said lower rigid members of each of left shackles and having a respective upward extending means connected also to said lower pivotal plate, said load being applied through said pivotal means, said suspensions, and said flexible supporting means successively to said axle housings and said road wheels,

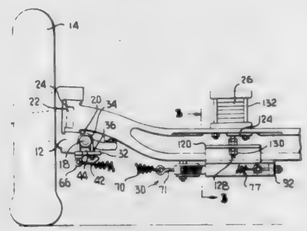
right connectors secured to each of said axle housings adjacent each of said right shackles, left connectors secured to each of said axle housings adjacent each of said left shackles, linkage-and-lever means having guiding linkage means connected to each of said right and left connectors, lever means pivotally connected to said lower pivotal plate, and steering linkage means connected between said lever means and said upper main frame to actuate said lever means in unison with rotation of said upper main frame with respect to said lower pivotal plate, said guiding linkage means being connected between said lever means and said connectors of said axle housings, said linkage-and-lever means during straight travel of said upper main frame positioning said respective upper and lower rigid members of said shackles in said normal positions for positioning said axle assemblies for straight tracking of said road wheels, and said linkage-and-lever means in response to turning of said upper main frame in either direction as desired with respect to said lower pivotal plate moving said upper rigid members of said shackles relative to said respective normal positions of said lower rigid members in the required directions for turning said axles in opposite directions as required about respective control vertical axes to facilitate turning said load in a desired direction.

4,390,190

STEERING STABILIZER STRUCTURE FOR THE FRONT WHEELS OF A VEHICLE

Doyle H. Worsham, P.O. Box 231, Boaz, Ala. 35957

Continuation-in-part of Ser. No. 102,103, Dec. 7, 1979, Pat. No. 4,313,613. This application Aug. 28, 1981, Ser. No. 297,506
Int. Cl.³ B62D *7/08*
U.S. Cl. 280—94 **14 Claims**



1. Steering stabilizer structure for the steering wheels of a vehicle designed to be affixed beneath each extremity of the axle thereof and attached to the wheel steering arms at the steering knuckles, said structure including a wheel camber plate adapted to be located adjacent the underside of the steering knuckle sleeve and disposed longitudinally of said vehicle, means for securing said camber plate to the steering arm, a recovery bar spaced inwardly of said camber plate, at least a first pair of spaced apart spring means connected between said bar and plate, said recovery bar having a fulcrum pin slightly offset from its center and adapted to underlie the vehicle axle, a mounting member having means for fixed attachment to the underside of the vehicle axle, a second pair of spring means connected between said mounting member and said recovery

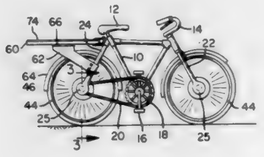
bar urging the recovery bar away from said camber plate, and guide means on said recovery bar and mounting member restraining said fulcrum pin to move rectilinearly below and parallel to the vehicle axle, whereby turning movement of the vehicle wheel will move the recovery bar away from the mounting member and toward the wheel and will be resisted by said first and second spring means.

4,390,191

BICYCLE CONSTRUCTION

Otto H. Acker, P.O. Box 2, Washougal, Wash. 98671

Filed Oct. 27, 1980, Ser. No. 201,165
Int. Cl.³ B62K *19/00*
U.S. Cl. 280—281 R **2 Claims**



1. A bicycle construction comprising
(a) a main frame having front and rear ends,
(b) a single wheel support arm depending integrally from each of said front and rear ends of the frame,
(c) said support arms being offset throughout their length from said main frame,
(d) a wheel support assembly at the lower ends of each of said arms,
(e) each of said wheel support assemblies including an integral spindle extending laterally from one side of said arms adjacent the bottom,
(f) said support arms having a second offset adjacent the bottom thereof on the side facing the wheel support assemblies,
(g) a bearing housing having rotatable support on said spindle,
(h) radially extending flange means on the exterior of said bearing housing,
(i) a wheel having a hub portion, an outer rim, and radial spokes secured at one of their ends to said rim,
(j) said hub including a vertical support wall,
(k) fastening means associated with said support wall releasably securing said hub to said flange,
(l) a sprocket wheel at said rear end secured between said radially extending flange and said support wall for operating in the area provided by said second offset,
(m) a peripheral right angle flange on said support wall of said hub secured to the other end of said spokes,
(n) and foot operated drive means connected between said frame and said sprocket wheel (assemblies) for propelling the bicycle.

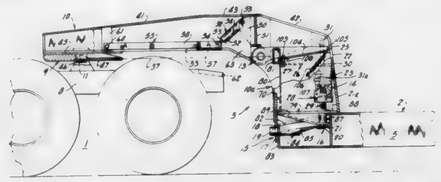
4,390,192

TRAILER GOOSENECK APPARATUS

Wilbert A. Wagner, U.S. Highway 20, Garden Prairie, Ill. 61038

Filed Dec. 16, 1980, Ser. No. 217,050
Int. Cl.³ B62D *53/06*
U.S. Cl. 280—425 A **15 Claims**

1. A gooseneck apparatus adapted for releasably connecting a truck-tractor unit to a trailer unit having trailing wheel means, said truck-tractor unit and trailer unit adapted to be locked in place to oppose relative inline movement, comprising a horizontal section having a forward tractor pivot means for releasably connection to a tractor, a vertical section depending from the trailing end of said horizontal section, a pivot support means connecting said vertical section to said horizontal section, power means connected between said horizontal section and said vertical section for relatively positioning said vertical section about said pivot support means, a vertical trailer coupling means having a first member connected to the forward end of the trailer unit and a second member connected to the bottom end of said vertical section, a horizontal coupling means having a first member connected to said vertical section and a second member connected to said trailer unit and establishing a pivotal horizontal connection, and said horizontal and vertical sections being constructed and arranged with a releas-



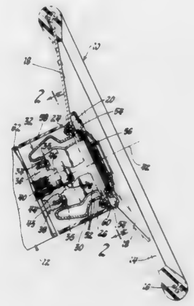
able load transmitting means and said pivot support means and said power means movable from a load transport position to a release position establishing relative pivoting movement between the horizontal and vertical sections with an essentially constant operative spacing of the tractor pivot means and the coupling means whereby said truck-tractor unit and said trailer unit may be locked in position and said gooseneck apparatus released from the trailer unit without relative in-line movement therebetween.

4,390,193

ENERGY ABSORBING STEERING WHEEL ASSEMBLY

Robert M. Strahan, Dayton; Philip W. Hopf, Centerville, both of Ohio, and Phillip G. Williams, Rochester, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 7, 1980, Ser. No. 166,549
Int. Cl.³ B60R *21/02*
U.S. Cl. 280—777 **3 Claims**



1. A steering wheel operatively interconnected to a rotatable steering shaft of a steering column and thereby being disposed at a predetermined position in a vehicle, said steering wheel comprising an outer rim and an inner hub interconnected to one another by a plurality of spokes which space said rim outwardly of said hub, an energy absorbing coupling operatively connected to an end portion of said steering shaft for yieldably supporting said steering wheel axially outwardly from the end of said steering shaft, said energy absorbing coupling being of a plastically deformable material having an annular base drivingly connected to said steering shaft and having a plurality of arcuately spaced and separate energy-absorbing legs extending upwardly from said base and surrounding the longitudinal steering axis of said steering shaft, each of said legs having a radial and inwardly extending bend therein located at a predetermined distance above said base and terminating in an outwardly extending foot portion, fastener means connecting each said foot portion to said inner hub of said steering wheel such that an inertia force of at least a predetermined magnitude directed to a lower portion of said rim will compressively load and buckle said legs of a corresponding lower portion of said coupling while tensioning said legs of an upper portion of said coupling to thereby turn said steering wheel on an axis transverse to said steering axis and from said predetermined position to a second position angularly disposed with respect to said predetermined position so that additional portions of said rim will receive said force for transmission to and subsequent compressive deformation of all of said legs for energy dissipation.

4,390,194

RECORDING MATERIAL

Atsushi Sato, Tokyo; Isoo Shimizu, and Naoya Takahashi, both of Yokohama, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed Jun. 23, 1981, Ser. No. 276,708
Claims priority, application Japan, Jun. 25, 1980, 55-86191
Int. Cl.³ B41M *5/16, 5/22*
U.S. Cl. 282—27.5 **6 Claims**

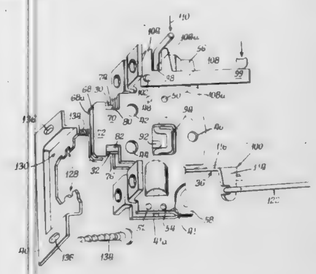
1. A recording material comprising a sheet material having thereon a layer of microcapsules containing an electron donating dye-precursor and a solvent mixture for said dye-precursor, characterized in that said solvent mixture consists essentially of 5 to 50 wt % of 1-methyl-3-phenylindane and 95 to 50 wt % of at least one diarylalkane.

4,390,195

VEHICLE LOCKING MECHANISM

Walter T. Cox, 95 Nancy Dr., and Edward F. Tannery, 14537 Iyopawa Island, both of Coldwater, Mich. 49036

Filed Feb. 23, 1981, Ser. No. 236,839
Int. Cl.³ E05C *3/22*
U.S. Cl. 292—53 **12 Claims**



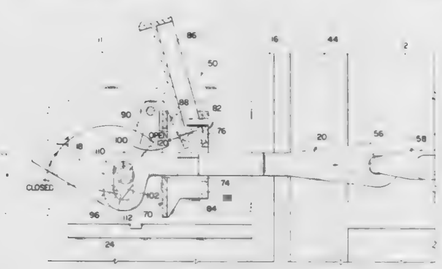
1. A locking mechanism for a vehicle door or hatch comprising:
a casing including a pair of support plates fastened together in spaced relation and having mutually facing inner, parallel surfaces defining a space therebetween;
said casing having a T-shaped tongue portion including identical, spaced, congruent, T-shaped tongues along corresponding edges of said plates adapted to extend outwardly beyond the edge of a door into a strike fastened to a vehicle frame, said tongues having congruent central stems and relatively wider congruent heads at the outer ends thereof defining a pair of strike-engageable recesses in said casing under opposite ends of the heads;
a pair of flat, blade-like bolt members pivotally connected to said support plates, disposed in side-by-side coplanar relationship in the space between said support plates and in slidable, constrained relation with said inner, parallel surfaces, said bolt members having outwardly extending latch portions disposed side-by-side between said T-shaped tongues, said bolt members being pivotally movable to a closed position in which the latch portions thereof are extended into said recesses, said bolt members further being pivotally movable to open positions in which the latch portion thereof are retracted from said recesses into the space between said stems;
means interconnecting said bolt members for simultaneous movement between said closed and open positions;
spring means biasing said bolt members toward their said closed positions;
a slide member movably supported in said casing in position to engage at least one of said bolt members and effective when moved in one direction to move said bolt members toward their open position against the bias of said spring means;
said slide member having a transversely movable portion which is movable in a direction transverse to said one direction between positions determining locked and unlocked mode positions of said slide member;
a bolt actuator member movably supported in said casing and engageable with said transversely movable portion of said slide member when the slide member is in its said unlocked mode position, and not engageable therewith when the slide member is in its said locked mode position;
whereby movement of said slide member to its said unlocked mode position enables said actuator member to move said slide member in said one direction and thereby move said bolt members to their open position; and
whereby further movement of said slide member to its said locked mode position disables said actuator from moving said slide member and said bolt members.

4,390,196

SLIDING DOOR STARTER AND CLOSER

Thorvald Madland, Arlington Heights, Ill., assignor to The Youngstown Steel Door Company, Cleveland, Ohio

Continuation of Ser. No. 32,386, Apr. 23, 1979. This application Oct. 2, 1981, Ser. No. 307,880
Int. Cl.³ E05C *11/00*
U.S. Cl. 292—66 **5 Claims**



1. In a railway house car having a door opening and a door, a structural member adjacent said door opening and a mounting member secured to said structural member; a door driver for moving said door between a first and a second position comprising: a manually operable lever having a crank arm; said lever being rotatably mounted by means of said mounting member on said structural member for rotation through an arc of 120°; a boss on said crank arm; a hasp means having an end opening for receiving said boss; said hasp means end opening having a cam surface providing mechanical advantages of different desired magnitudes within a range of approximately 8 to 1, to approximately 46 to 1, ignoring friction, for opening, closing, locking and unlocking said door depending on the direction of rotation and the angular position of said crank arm to provide an appropriate force for the particular position and direction of movement of the door; and said hasp means in selective interconnection with said boss on said crank arm

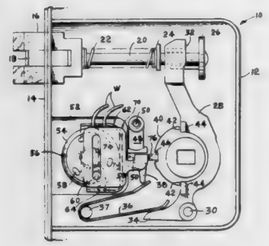
when said lever is in a vertical position thereby selectively to maintain said door in a closed and locked position in a condition of relative great mechanical advantage urging said boss in said hasp means end opening during the locking operation relative to the unlocking operation.

4,390,197

ELECTRICALLY CONTROLLED LATCH

Lawrence D. Butts, Charlotte, N.C., assignor to Scovill Inc., Waterbury, Conn.

Filed Sep. 28, 1981, Ser. No. 306,185
Int. Cl.³ E05B *47/00*
U.S. Cl. 292—144 **5 Claims**



1. A latch having electric dogging means controlling the operating means and comprising:
(a) a housing;
(b) an operating spindle hub journaled in the housing and having a dog-engaging surface thereon;
(c) a latch means in the housing;
(d) means operatively connecting the hub and the latch means; and
(e) electric dogging means comprising:
1. an electric solenoid having a rotary output plate mounting at a point spaced from its center of rotation a drive pin, the plate rotating from a first position to a second position upon activation of the solenoid;
2. a dogging slide including a flat portion disposed against the output plate but having a transverse elongate slot receiving the drive pin and a dogging blade portion adapted to engage the dogging surface in either first or second position of the plate;
3. spring means associated with the solenoid and biasing the plate toward the first position, the mounting of the solenoid and spring permitting 180° reversible disposition so that depending on that disposition, the pin is disposed respectively in opposite ends of the slot thereby either dogging the hub in solenoid activated or in solenoid deactivated condition.

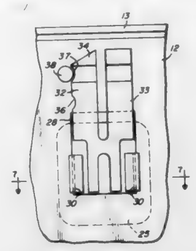
4,390,198

MOLDED MULTIFUNCTION LATCH MECHANISM

George J. Selinko, Lighthouse Point, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 27, 1980, Ser. No. 153,662
Int. Cl.³ E05C *1/04*
U.S. Cl. 292—152 **7 Claims**

1. A one-piece springless fingerlike latch mechanism for use on a portable, hand-held device having a housing and a door movable in relation thereto and wherein the door is slidable between first and second positions and has an opening therein, such latch mechanism including in combination:
an actuating portion on one side of the slidable door for operating the latch mechanism in lateral rectilinear movement;
a coupling portion connected to said actuating portion and extending through the opening in the slidable door, and said coupling portion having resilient ribs engaging the opposite side of the slidable door for holding the latch mechanism in said rectilinearly movable relation on the slidable door; and
a springless latching portion formed integrally with said



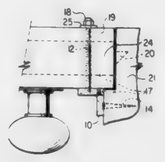
actuating portion and said coupling portion, and laterally slidable by said actuating portion between a first set released position and a second set latched position engaging the housing.

4,390,199

LATCH AND LOCK GUARD

William H. Taylor, Owen Sound, Canada, assignor to Hutch Protective Devices Ltd., Owen Sound, Canada

Filed Apr. 24, 1981, Ser. No. 257,270
Int. Cl.³ E05C *21/00*
U.S. Cl. 292—346 **9 Claims**



1. A latch and lock guard for doors comprising a pair of similar elongated bars of sufficient width and thickness for purposes of rigidity, each bar having a flat base, a series of uniform, regularly spaced teeth extending integrally from the bar sideways along one edge, the width of the spaces between the teeth being slightly greater than the width of the teeth, means to secure solidly one bar to the external side of a door over the lock area with its teeth pointing towards the adjacent door edge, and means to secure solidly the other bar to the door jamb with its teeth pointing towards the door edge, the teeth of one bar to fit within the slots between the teeth of the other, and vice versa in interlocking fashion when the door is in closed position.

4,390,200

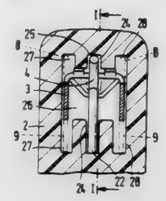
SIDE HANDLE FOR UTENSILS

Wolfgang Fischbach, Daaden, Fed. Rep. of Germany, assignor to Heinrich Baumgarten KG Eisen- und Blechwarenfabrik, Neunkirchen, Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,710
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009766; Mar. 25, 1980, 8008180[U]
Int. Cl.³ A47J *45/06*
U.S. Cl. 294—27 H **5 Claims**

1. A handle apparatus for a utensil, comprising a supporting bracket secured to a wall of said utensil and having two laterally spaced and generally parallel side walls extending away from said wall of said utensil approximately perpendicular thereto, a handle having an abutment surface engaging said

wall of said utensil and a recess in said abutment surface in which said supporting bracket is slidably received, said recess being of generally rectangular cross-sectional shape and having spaced, generally parallel side surfaces and spaced, generally parallel top and bottom surfaces extending between said side surfaces, said top and bottom surfaces each having two laterally spaced grooves therein adjacent and generally parallel to respective said side surfaces, said side walls of said supporting bracket each being substantially parallel to and adjacent a respective said side surface of said recess, and each said side wall of said supporting bracket having two portions slid-



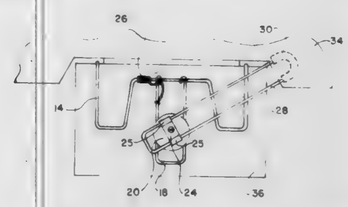
ably disposed in respective said grooves in said top and bottom surfaces of said recess, and retaining means disposed in said handle recess and cooperable with said supporting bracket for releasably securing said handle on said utensil, said retaining means resiliently urging said supporting bracket into engagement with said top surface of said recess and said abutment surface on said handle into engagement with said wall of said utensil, whereby said adjacency of said side walls of said bracket and said side surfaces of said recess and said engagement of said portions of said side walls of said bracket with said grooves in said recess substantially prevents twisting movement of said handle relative to said utensil.

4,390,201

LICENSE PLATE HOLD-OPEN DEVICE

Alton M. Saunders, 418 Seville Ave., Altamonte Springs, Fla. 32701

Filed Nov. 28, 1980, Ser. No. 211,015
Int. Cl.³ B62D *25/00*
U.S. Cl. 296—1 C **11 Claims**



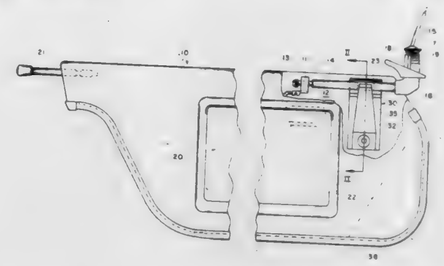
11. A device for holding a license plate of a vehicle in an open position, the license plate being attached to a backing plate connected to the vehicle and biased into a substantially vertical position, said device comprising:
a first means slidably engaged with and secured to the backing plate,
an elongated second means to engage the vehicle,
a third means hingedly connected to said first means,
said second means slidably and rotatably connected to said third means,
means biasing said third means into engagement with the backing plate upon movement of the backing plate to a generally horizontal position said second means being movable into engagement with the vehicle to hold the backing plate into a generally horizontal position.

4,390,202

VISOR CONTROL

Carl Flowerday; Konrad H. Marcus, both of Holland; Gordon Kempkers, Hamilton; Edward T. Boerema, Zeeland, and Dennis J. Fleming, Holland, all of Mich., assignors to Prince Corporation, Holland, Mich.

Filed May 26, 1981, Ser. No. 267,431
Int. Cl.³ B60J *3/02*; F16C *17/00*
U.S. Cl. 296—97 K **31 Claims**



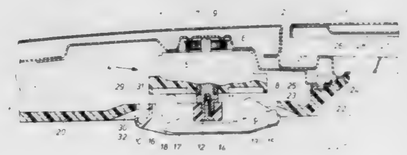
1. A visor control for a vehicle mounted visor for providing snap-up operation of the visor against the vehicle's headliner comprising:
a visor body including a cylindrical pivot rod extending therein along one edge of said body; and
a visor control member positioned in said visor body and including a bifurcated portion extending into engagement with one side of said pivot rod, and a second portion defining an elastically deformable plate extending to engage an opposite side of said pivot rod in alignment in opposed relationship between the bifurcated portion, wherein said pivot rod includes at least a flat formed in said opposite side for engagement by said plate to provide a torque to said visor body to return said visor body to a stored position adjacent the vehicle headliner as the visor is moved toward the stored position and releasably hold the visor in the stored position.

4,390,203

VEHICLE ROOF AND HEADLINING THEREFOR

Alfons Lutz, Emmering, and Georg Kohlpainter, Maisach, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Jan. 21, 1981, Ser. No. 226,825
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1980, 3002246
Int. Cl.³ B60J *7/02*
U.S. Cl. 296—223 **9 Claims**



1. An automobile roof with a roof aperture, a closure panel that is displaceable for opening and closing said aperture, said panel being interchangeably displaceable by means of a crank handle mechanism and a motorized drive mechanism, and with a roof headliner covering the underside of the roof and comprising a rigid, resilient material, said headliner having a cutout essentially corresponding in shape and position to the roof aperture, wherein the roof headliner is provided in a zone

lying, with reference to the front and rear of the vehicle, in front of a forward edge of the headliner cutout, with a substantially circular perforation into which fits a round anchor plate for a foldable crank arm constituting part of the crank handle mechanism, said crank arm, in a folded position, being received by a hiding niche formed in the round anchor plate; and wherein a shield is provided for covering the perforation when using the motorized drive mechanism in place of said crank handle mechanism.

4,390,204

PORTABLE FURNITURE

Gregg Fleishman, 6071 Hargis St., Los Angeles, Calif. 90034

Continuation-in-part of Ser. No. 866,837, Jan. 4, 1978, Pat. No. 4,202,581. This application Feb. 22, 1980, Ser. No. 123,903

Int. Cl.³ A47C *4/00*

U.S. Cl. 297—16 **11 Claims**



1. Portable furniture including at least one generally planar support member,

said planar support member comprising integral main, tab, arm and leg portions resiliently disposable in angular and curvilinear relationship to each other,

said tab portion comprising a seating surface for supporting an individual therein,

said main portion being connected to said tab portion and to said leg portions at the upper end of said tab portion,

said arm portions being connected to the opposite end of said tab portion,

said portable furniture having integral interlocking means releasably engaging said, arm, leg and main portions for maintaining said angular relationship,

said portable furniture returnable by means of its resilience to its original planar configuration when said interlocking means are disengaged.

4,390,205

CONVERTIBLE SEAT FOR A MOTOR VEHICLE

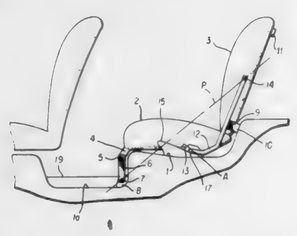
Llorente Louis, Mantes-la-Ville, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed May 28, 1981, Ser. No. 268,100

Claims priority, application France, Jun. 3, 1980, 80 12269

Int. Cl.³ A47C *13/00*

U.S. Cl. 297—129 **4 Claims**



1. A convertible seat for a motor vehicle, movable between a normal position and a folded position, and comprising:

a seat portion pivotable about a first transverse axis;

a back portion pivotable about a second transverse axis;

a link member having one end pivoting about a third transverse axis fixed to said vehicle and another end pivoting about said first transverse axis;

a connecting bar pivoted to said seat portion at a fourth transverse axis and to said back portion at a fifth transverse axis, so as to ensure simultaneous movement of said seat and back portions; and

a guide means fixed to said vehicle and contacting a portion of said connecting bar for guiding said portion of said connecting bar during movement of said seat portions;

wherein said axes are positioned such that fourth axis is below a plane containing said third and fifth axes when said seat is in said normal position, and wherein said guide means is contoured to guide said fourth axis above said plane when said seat is moved to said folded position.

4,390,206

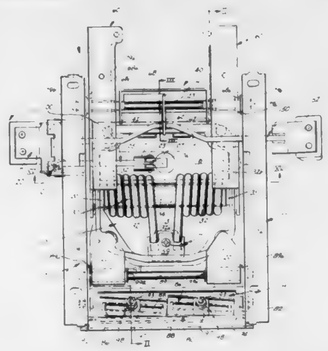
SYNCHROTILT CHAIR CONTROL

Frederick S. Faiks, Greenville; Charles C. Pergler, Grand Rapids; Ronald L. Whitwam, Caledonia; Jack R. Knoblauch, Byron Center; Duane M. Beukema, Grand Rapids, and Kenneth W. Hozeski, Grandville, all of Mich., assignors to Steelcase, Incorporated, Grand Rapids, Mich.

Filed May 1, 1980, Ser. No. 145,854

Int. Cl.³ A47C *1/032*

U.S. Cl. 297—300 **66 Claims**



1. In a synchrotilt chair control having a stationary control housing, resilient biasing means mounted in said stationary control housing, chair back support means pivotally mounted on said stationary control housing and operably interconnected with said resilient biasing means, and chair seat support means mounted on said stationary control housing and operably connected to said chair back support means for rearward tilting with said chair back support means, but at a different rate with respect thereto, against the biasing action of said resilient biasing means in response to a person leaning back in a chair to which said control is mounted, the improvement comprising; said stationary housing including track means; said seat support means being pivotally connected directly to said chair back support means and including first pivot axis means slidably mounted in said track means whereby said seat support means is free to shift relative to said stationary housing when a user tilts rearwardly in a chair mounted on such chair control; seat adjustment means including a pivot bracket pivotally mounted to said first pivot axis means and to said seat support means on a second pivot axis; whereby said seat adjustment means can be actuated to rotate said pivot bracket about said second pivot axis, thereby sliding said first pivot axis means in said track means, and changing the relative elevation of said first pivot axis means with respect thereto and thereby changing the pitch of said seat support means with respect to said stationary housing, whereby said first pivot axis means being slidably mounted in said track means not only allows said seat support means to freely shift relative to said stationary housing when a user tilts rearwardly in a chair mounted on such a chair control, but also allows said seat adjustment means to be shifted and change the pitch of said seat support means.

4,390,207

BUCKET SEAT

Jörg Resag, Plattenhardt; Walther Göldner, Ebersbach, and Horst Treiber, Stuttgart-Riedenberg, all of Fed. Rep. of Germany, assignors to Recaro GmbH & Co., Fed. Rep. of Germany

Filed Dec. 11, 1980, Ser. No. 215,521

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951645

Int. Cl.³ A47C *1/025*

U.S. Cl. 297—362 **9 Claims**



1. Bucket seat comprising:

a seat portion,

a back shell forming a backrest,

two hinge fittings supporting the back shell so as to be pivotable relative to the seat portion and being capable of locking in a selectable pivot position, said hinge fittings being arranged on the respective sides of the seat portion, and

a connecting shaft operationally connecting and extending from one hinge fitting to the other, said connecting shaft being positioned beneath the front half of the seat portion and being the pivot axis about which the back shell is pivotable for adjusting only the inclination of the backrest without adjusting the seat portion.

4,390,208

INERTIA RESPONSIVE SEAT BACK LATCHING MECHANISM

Paul Widmer, Warren, and Robert R. Mercer, Ortonville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 27, 1981, Ser. No. 257,650

Int. Cl.³ B60N *1/02*

U.S. Cl. 297—379 **4 Claims**

1. A seat assembly for an automotive vehicle comprising:

a seat cushion supported on a seat frame means which is adapted to be mounted to vehicle support structure,

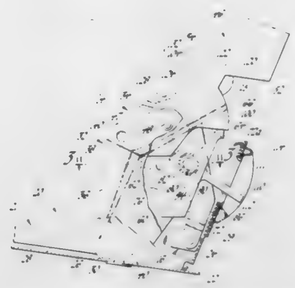
a backrest including a side hinge arm pivotally supported by said seat frame means for movement about a first pivot axis between a first position in which said backrest is generally vertically disposed and a second position in which said backrest overlies at least a portion of said seat cushion,

said hinge arm having integral spaced first and second abutments movable therewith in a path of movement concentric with said first pivot axis,

a one-piece inertia responsive latch means pivotally supported by said seat frame means for movement about a second pivot axis, said latch means comprising a U-shaped member having a pair of spaced side walls and a bight portion at one end which defines a first abutment, one of said side walls at its end remote from the bight portion having a leg portion extending transversely thereof and which defines a second abutment, the other of said side walls including a handle portion which extends through an aperture in said seat frame whereby the latch lever means can be manually manipulated, if necessary,

said latch means being gravity biased for movement toward a position in which the first abutment thereof would not be disposed within the path of movement of said first abutment of said hinge arm,

said second abutment on said hinge arm being engageable with the second abutment of said latch means when in its



first position to hold said latch means against its gravity bias in an operative position in which the first abutment thereof is disposed within the path of movement of said first abutment of said hinge arm,

said latch means due to its gravity bias being pivotally movable with the hinge arm of the backrest when the latter is slowly moved from its first position toward its second position,

said latch means, due to inertia forces, remaining in its operative position to prevent movement of said hinge arm and backrest toward its second position when said seat assembly is subjected to rapid deceleration forces.

4,390,209

PLASTIC SEAT-BACK FRAMEWORK AND METHOD FOR THE MANUFACTURE THEREOF

Sadami Izuno; Isao Kiyomitsu, and Toshihiko Tsuji, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd. and Delta Kogyo Co., Ltd., both of Hiroshima, Japan

Filed Jan. 8, 1981, Ser. No. 223,292

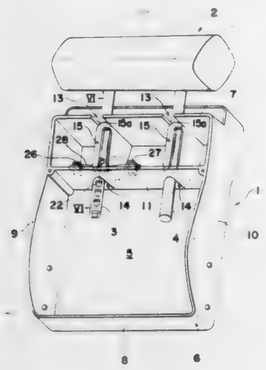
Claims priority, application Japan, Jan. 25, 1980, 55-8020; Jan. 25, 1980, 55-8021

Int. Cl.³ A47C *7/36*

U.S. Cl. 297—410 **3 Claims**

1. A plastic seat back framework of one-piece construction made of a moldable synthetic resin together with a head rest support adapted to axially adjustably support a pair of spaced legs which form a part of the head rest assembly together with a head rest, which comprises a generally rectangular body having a surrounding reinforcement frame protruding generally at right angles to and from the perimeter of the rectangular body, said reinforcement frame being constituted by upper and lower walls opposite to each other and a pair of opposite side walls, said rectangular body also having a connecting wall extending between the opposite side walls in parallel relation to the upper wall with its opposite ends integral respectively with the side walls and spaced a predetermined distance from the upper wall to define a support space therebetween, said upper wall having a pair of spaced first support notches of generally U-shaped configuration defined therein and extending transversely thereof, said connecting wall having a pair of spaced second support notches of generally U-shaped configuration defined therein and extending transversely thereof, said first and second support notches extending in the opposite

directions with respect to each other, and said head rest support comprising a pair of guide members of generally U-shaped cross-section each of said guide member having an elongated aperture extending therethrough for the support of a substantially intermediate portion of the corresponding leg, each of said guide members being integrally formed on the rectangular body and positioned within the support space with the elongated aperture aligned at one end with a portion of the corresponding first support notch and at the other end with a portion of the corresponding second support notch, the head rest assembly being adapted to be mounted on the seat back framework with the legs inserted through that portions of the first support notches, then through the apertures in the guide members and finally through that portions of the second support notches, respectively.

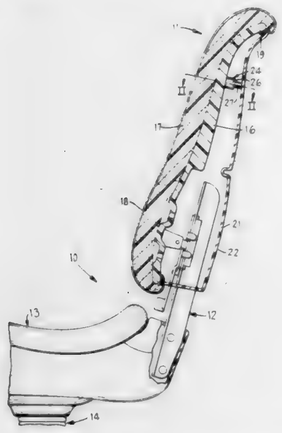


4,390,210

BLIND CONNECTING STRUCTURE FOR INNER AND OUTER SHELLS OF CHAIR BACK

Joseph M. Wisniewski, Marne, and Walter C. Mrotz, III, Comstock Park, both of Mich., assignors to Haworth Mfg., Inc., Holland, Mich.

Filed Dec. 15, 1980, Ser. No. 216,734
Int. Cl.[3] A47C *7/40*
U.S. Cl. 297—452 **2 Claims**



1. In a chair having a leg-supported seat structure and a back structure projecting upwardly from the seat structure, the back structure including an interior support panel and a cushion structure overlying the front-facing surface of the support panel, the cushion structure having edge portions which wrap around the edge portions of the interior support panel, the back structure also including a back panel which is spaced from but substantially coextensive with the interior support panel and defines the exterior rear surface of the back structure, the opposed edge portions of the interior and back panels clamping the edge portions of the cushion structure therebetween, and a plurality of hidden connecting structures disposed between and fixedly joining said interior and back panels together, the improvement wherein said connecting structures permit the spacing between the panels to vary during assembly to compensate for the interposed edge portions of the cushion structure, each said connecting structure comprising:

a sleevelike hub fixed to and projecting outwardly from one of said panels toward the other said panel, said hub defining therein a cylindrical opening which projects axially inwardly of the hub from the free end thereof, means fixedly associated with said hub for defining a substantially annular shoulder which projects radially inwardly into said opening at a location spaced axially inwardly from the free end thereof, said shoulder being directed axially toward the free end of said hub, and said opening being of a stepped configuration and including (1) a first opening portion which extends from said free end to said shoulder and (2) a second elongated opening portion which is of substantially smaller diameter and extends axially inwardly of said hub from said shoulder;

a cylindrical shaftlike projection fixed to the other panel and projecting outwardly therefrom toward said one panel, said projection having a cross section which is substantially smaller than the diameter of said second opening portion so as to enable said projection to project axially into said hub through a sufficient distance so as to pass a substantial distance axially past said shoulder with a substantial annular clearance space being defined between said projection and the boundary walls of said first and second opening portions;

said interior panel having a nonplanar contour and being molded of a plastics material, said hub being integral with and projecting rearwardly from said interior panel, said back panel having a nonplanar contour and being molded of a plastics material, said projection being integral with said back panel and projecting forwardly therefrom;

one-piece resilient fastener ring means positioned between said projection and said hub and grippingly engaging both thereof to prevent said projection from being relatively axially withdrawn from said hub while enabling the projection to be axially inserted into said hub through any selected axial extent while still permitting the projection to be axially fixed relative to the hub to thereby provide for optimum clamping of the edge portions of the cushion structure between the opposed edge portions of the interior and back panels, said ring means maintaining said hub and projection in spaced relationship wherein they are free of sliding or abutting surface engagement;

said one-piece resilient fastener ring means including a first set of spring teeth which grippingly engage a surrounding wall on said hub for preventing said ring means from being axially withdrawn from said hub through the free end thereof, said ring means also including a second set of spring teeth which grippingly engage the exterior peripheral surface of the projection for preventing the latter from being axially withdrawn from the hub through the free end thereof;

said fastener ring means comprising a substantially flat platelike washer seated on said shoulder, said first set of teeth comprising outer teeth which are fixed to the outer peripheral edge of the washer and project radially outwardly therefrom for gripping engagement with the hub wall defining said first opening portion, and the second set of teeth comprising inner teeth which are fixed to the inner peripheral edge of the washer and project radially inwardly thereof for gripping engagement with the exterior peripheral surface of the projection, said outer teeth sloping axially toward the free end of the hub as they project radially outwardly, and said inner teeth sloping axially away from the free end of the hub as they project radially inwardly, whereby the outer and inner teeth slope in axially opposite directions so that they each create a one-way gripping engagement which prevents both the fastener ring means and the projection from being moved axially relative to the hub toward the free end thereof, said fastener ring means permitting the projection to be freely axially moved relative to the hub in the other axial direction; and

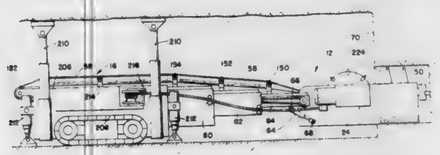
said flat platelike washer having an inner diameter which is approximately the same as the inner diameter of said annular shoulder so that said inner teeth project radially inwardly therefrom across said annular clearance space to facilitate the resilient deformation of the inner teeth and their gripping engagement with the exterior peripheral surface of said projection.

4,390,211

CONTINUOUS MINER WITH CUTTER ASSEMBLY ATTITUDE ADJUSTMENT

Thomas M. Thompson, Rte. 1-Box 122A, Beverly, W. Va. 26253

Division of Ser. No. 53,439, Jun. 29, 1979, Pat. No. 4,312,540.
This application Dec. 2, 1981, Ser. No. 326,035
Int. Cl.[3] E21C *27/24*
U.S. Cl. 299—57 **3 Claims**



1. A cutter assembly for a continuous miner comprising in combination:

a. a frame adapted to be pivotally supported by the continuous miner;

b. a pair of spaced apart generally longitudinally directed augers supported by said frame;

c. cutters disposed at the forward end of each of said longitudinally directed augers and adapted to be rotated into cutting engagement with a coal face or seam;

d. a tranverse auger extending generally between said longitudinally directed augers and rearward of said cutters;

e. a generally U-shaped pan supported by said frame and disposed below said longitudinally directed augers and said transverse auger, said pan having an upwardly sloping rear wall which permits coal to be fed upward to a receiving belt;

f. drive means to provide a rotational force to said longitudinally directed augers and said transverse auger; and,

g. means supported by the continuous miner for attitude adjustment of said cutter assembly at the pivotal interconnection of said cutter assembly and the continuous miner.

4,390,212

MACHINE FOR MINING THIN SEAMED HARD MATERIAL IN-SITU BETWEEN ADJACENT AUGER HOLES

Leonard R. Nitzberg, 1413 Buckeye La., Knoxville, Tenn. 37919

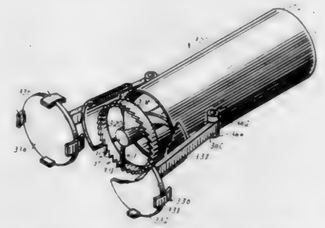
Continuation-in-part of Ser. No. 894,424, Apr. 7, 1978, Pat. No. 4,205,881. This application Jun. 2, 1980, Ser. No. 155,140
The portion of the term of this patent subsequent to Jun. 3, 1997, has been disclaimed.
Int. Cl.[3] E21C *27/24*
U.S. Cl. 299—57 **13 Claims**

1. A mining machine suitable for being drivingly connected to a conventional mining apparatus and for removing hard material in-situ between two adjacent auger holes, said machine comprising:

cutting means for mechanically contacting and dislocating hard material in-situ between two adjacent and pre-existing auger holes, said cutting means rotating about an axis substantially parallel with the longitudinal axis of said machine,

power operated means for driving said cutting means said power operated means being connected at one of its ends to said conventional mining apparatus and connected at its opposite end to said cutting means,

guide means for maintaining said cutting means in mechanical contact with said hard material in-situ between two



adjacent, pre-existing, auger holes, said guide means including one of a pair of guides for inserting into one of said auger holes and the other of said guides for inserting into the other one of said non-parallel auger holes, said pair of guide means being free to move relative to each other such that each one of said pair can advance along the length of the respective adjacent pre-existing, auger holes in which it is inserted as said mining machine is advanced during the in-cutting operation along the length of said hard material in-situ between said adjacent auger holes, and

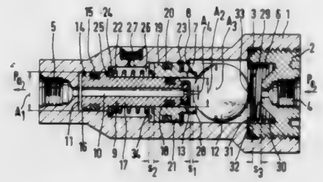
means for collecting said hard material dislocated by said cutting means.

4,390,213

DECELERATION-SENSITIVE BRAKING PRESSURE CONTROL DEVICE

Volker Berisch, Hattersheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 14, 1981, Ser. No. 263,669
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3021952
Int. Cl.[3] B60T *8/14*
U.S. Cl. 303—24 A **14 Claims**



1. A deceleration-sensitive braking pressure control device for a vehicular hydraulic brake system comprising:

a housing having a stepped bore coaxial of a longitudinal axis;

a stepped piston disposed in said bore coaxial of said axis, said piston including a first section having a relatively small active surface facing a braking pressure inlet chamber disposed in said bore and a second section sealed to

and slidable in said bore, said second section having a relatively large active surface facing a braking pressure outlet chamber disposed in said bore;

a sleeve disposed in said bore in a slidable sealed relationship therewith encircling a first portion of said first section in a slidable sealed relationship therewith;

a first spring disposed in said bore between a first step in said piston joining said first and second sections and the adjacent end of said sleeve to preload said piston;

a channel disposed in said piston coaxial of said axis enabling said inlet chamber to communicate with said outlet chamber;

a valve including a valve seat disposed adjacent said small active surface in an operative relationship with an adjacent end of said channel and a closure member disposed in said inlet chamber movable therein in an operative relationship with said valve seat in a deceleration-sensitive manner to control the communication between said inlet and outlet chambers; and

a stop for said closure member carried by the adjacent end of said sleeve to ensure that in the rest position of said piston a minimum distance is guaranteed between said closure member and said valve seat, said sleeve being displaceable by inlet pressure against the force of said first spring by an amount greater than said minimum distance.

4,390,214

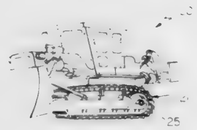
CRAWLER TRACK STRUCTURE HAVING WEAR SURFACE

Jonas L. Gunter, Canton; Doyle V. Haren, Clyde; Anatoli Hofle, and Richard D. Medford, both of Waynesville, all of N.C., assignors to Dayco Corporation, Dayton, Ohio

Continuation of Ser. No. 128,338, Mar. 7, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 340,556

Int. Cl.³ B62D *55/26*

U.S. Cl. 305—35 R **9 Claims**



1. In a track structure for a crawler track of a crawler vehicle wherein said structure has a substantially flat rectangular wear surface and means for fastening said structure on said crawler track, the improvement wherein said structure comprises an ultra high molecular weight polymeric material forming part of said wear surface and having a molecular weight of at least two million, and a plurality of rubber friction elements embedded in said polymeric material which serves as a matrix therefor, said elements each having an exposed surface comprising the remaining part of said wear surface, each of said rubber friction elements having a predetermined parallelepiped configuration, said exposed surface of each of said elements being a planar surface which is disposed coplanar with said first named part of said wear surface, said friction elements being disposed in spaced parallel relation to each other and each extending completely across said wear surface and crossing the longitudinal axis of said rectangular wear surface at angles other than right angles to said longitudinal axis of said rectangular wear surface.

4,390,215

BALL BEARING SLIDE UNIT FOR LINEAR MOTION

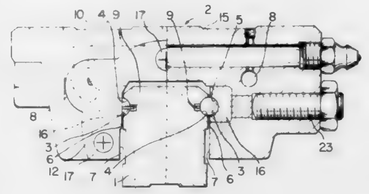
Tatsuo Mottate, Yokohama, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1981, Ser. No. 294,765

Claims priority, application Japan, Apr. 10, 1981, 56-51825[U]; Apr. 14, 1981, 56-53508[U]; Jul. 17, 1981, 56-106417[U]

Int. Cl.³ F16C *29/06*

U.S. Cl. 308—6 C **4 Claims**



4. A ball bearing slide unit for linear motion wherein said slide unit is mounted on a track rail of rectangular cross section which is provided with linear track surfaces symmetrically at the both vertical side surfaces, and is provided with track surfaces opposing said track surfaces on said track rail, with linear return holes running parallel to said track surfaces, and with direction changing paths which connect the both ends of said track surfaces and said return holes respectively, and is formed with circulating paths where groups of balls endlessly circulate supporting a load and rolling between both track surfaces, characterized in that said slide unit includes:

plastic side plates of the slide unit of ball bearing for linear motion, characterized in that said plastic side plates, are formed with direction changing paths having circular arc shape for connecting the ends of linear paths consisting of track surface which is the load zone and the return hole which is the no load zone of said circulating paths respectively, allow smooth direction change movement of the balls from the load zone to the no load zone, and are embedded with steel guide plate at the innermost peripheral surface of said direction changing paths, said steel guide plate having circular arc edge surface which is flush with said direction changing paths and being integrally molded with said plastic side plates;

track plate retainers of the slide unit of ball bearing for linear motion, characterized in that said track plate retainers, are mounted on both end surfaces of said slide unit body externally contacting both the ends of the track plates of rod shaped members having track surfaces of half cylindrical shape which are fitted symmetrically on the channel shaped inner surfaces of said slide unit body at positions opposing the track surfaces of said track rail and the ends of said return holes, are plate shaped forming part of said direction changing paths with the side plate which is further externally mounted, are formed with recess of downward facing channel shape for mounting on said track rail, said recess having resilient short claw members which are perpendicularly bent and projecting at the top ends of its both inner edges, said claw members forcing the inner ends of the track plates towards outside at immediately above the ends of the track surfaces of said track plates, are provided, at position contacting the track surface end of said track plate, with half circular shape cuts which connect to track surfaces of the load zone, thus forming part of the direction changing path, and are also provided, at position contacting the ends of said return holes, with circular holes which connect to return holes, thus forming part of direction changing path, the side surfaces of said cuts and said circular holes at the side where they contact said side plate being formed slanted so as to form spatial circular arc shaped downward surfaces, and

ball retainers of the slide unit of ball bearing for linear motion, characterized in that said ball retainers, are mounted on the slide unit opposing the track surface of the slide unit for preventing the groups of balls rolling linearly between the track surface of said track rail and the opposing track surface of the slide unit from falling out of the track surface of the slide unit, are made by thin metallic rod member, the cross section of which is such that the height is twice as large as its width, is made into a substantially flat channel shape in a plane, are formed to have a main member portion of straight rod shape, bent pieces bent perpendicularly from both ends thereof and hook shaped pieces at the tip of said bent pieces, and are engagingly hooked onto the side plates assembled on both ends at the direction of movement of the slide unit body through said bent pieces and said hook shaped pieces.

4,390,216

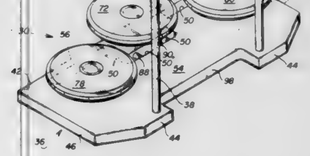
CARRIAGE HAVING INTEGRAL SPRING

Fredrick N. Mueller, and Henry C. Brown, both of Dallas, Tex., assignors to Camsco, Inc., Richardson, Tex.

Filed Sep. 16, 1981, Ser. No. 302,799

Int. Cl.³ F16C *29/00*

U.S. Cl. 308—6 R **5 Claims**



1. A carriage for slidable movement along a track having first and second parallel spaced-apart guide surfaces comprising:

a base member having first and second edges parallel to said first and second parallel spaced apart guide surfaces, said base member having an elongated slotted aperture formed therein along said first edge thereof, said aperture defining first and second portions of said base member spaced apart thereby, said first portion supported at its ends by said second portion;

first roller means mounted on said first portion of said base member for slidably engaging said first guide surface; and

second roller means mounted on said second portion of said base member for slidably engaging said second guide surface, wherein said base member forms an integral spring for compressing said first portion of said base member relative to said second portion to thereby bias said first and second roller means against said guide surfaces to maintain the carriage in said track, and for compensating for dimensional variations in said track.

4,390,217

CONTAINER FOR ARTICLES OF DAILY USE, HAVING TWO ENCLOSABLE CHAMBERS

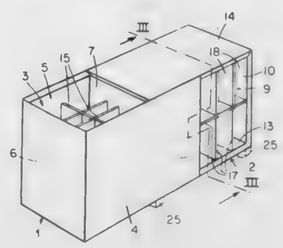
Hans-Ruedi Wagner, 25 Woodale La., Santa Barbara, Calif. 93103

Continuation-in-part of Ser. No. 140,774, filed as PCT CH79/00011, Jan. 26, 1979, published as WO79/00558, Aug. 23, 1979, § 102(e) dated Sep. 26, 1979, abandoned. This application Dec. 16, 1980, Ser. No. 216,950

Claims priority, application Switzerland, Jan. 27, 1978, 936/78

Int. Cl.³ A47B *46/00;* **B65D** *6/06, 43/20*

U.S. Cl. 312—205 **6 Claims**



1. A container for small articles of daily use, comprising

(I) a first container half comprising:

(a) a rectangular bottom wall having four edges, an upper face and an underside,

(b) foot means on the underside of said bottom wall and adapted for being placed on a horizontal base surface,

(c) a rectangular vertical rear end wall having a lower edge, an upper edge and two side edges, and having said lower edge rigidly connected to a first one of the edges of said bottom wall,

(d) an inner rectangular vertical wall having a lower edge, an upper edge and two side edges and being rigidly mounted with its lower edge on said upper face of said bottom wall in parallel with said rear end wall and in a position intermediate said first one of the edges of the bottom wall and the edge thereof opposite said first one edge,

(e) a rectangular top wall of equal size with said bottom wall and having an upper face, an underside, and four edges, said top wall being rigidly attached with a first one of its edges to said upper edge of said rear end wall and resting with its underside on the upper edge of said inner vertical wall, so as to extend parallel with said bottom wall, the edges of said bottom wall and of said top wall being of substantially equal length;

(f) said top wall, bottom wall, rear end wall and inner vertical wall enclosing on four sides a horizontally disposed first chamber of parallelepiped block shape, and

(g) subdividing wall means mounted inside said first chamber for dividing said first chamber into a plurality of horizontal compartments each of which has at least one open end and extends therefrom parallel with said rear end wall;

(II) a second container half comprising

(a) first and second vertically disposed rectangular longitudinal sidewalls, each sidewall having two upright edges of the same height as said rear end wall, and two longitudinal edges the length of each of which is equal with a respective parallel edge of said bottom and top walls, said longitudinal sidewalls of said second container half extending normal with regard to said rear end wall of said first container half,

(b) a vertical front end wall of equal size and configuration with said rear end wall of said first container half, having a lower edge, an upper edge and two side edges, one of said side edges being rigidly joined at right angle with a first upright edge of said first longitudinal sidewall, and the other side edge of said front end wall being ridgidly joined at right angle with a first upright edge of said second longitudinal sidewall,

(c) a rectangular vertical intermediate wall, of equal size and configuration as said inner vertical wall of said first container half, and disposed parallel with said front end wall, said intermediate wall having a top edge, a bottom edge, a first side edge and a second side edge, said first side edge thereof being rigidly mounted on the inner surface of said first longitudinal sidewall, and said second side edge thereof being rigidly mounted on the inner surface of said second longitudinal sidewall,

(d) said intermediate wall, front end wall and longitudinal sidewalls enclosing on four sides a vertically disposed second chamber of parallelepiped block shape,

(e) subdividing wall means mounted inside said second chamber for dividing said second chamber into a plurality of vertical compartments having open top ends,

(f) bottom wall means at the lower ends of said vertical compartments for closing the latter, said bottom wall means and lower ends of said vertical compartments being at a level, above the lower longitudinal edges of said longitudinal sidewalls, which level is above the level of the upper face of said bottom wall of said first container half when the underside of the said bottom wall is flush with said lower edges of said longitudinal sidewalls,

(g) said longitudinal sidewalls protruding with free sidewall ends beyond said intermediate wall which free sidewall ends are of a size sufficient to cover entirely the open ends of all of said horizontal compartments in said first chamber, and

(h) said top wall and bottom wall of said first container half protruding with free top and bottom wall ends, respectively, beyond said inner vertical wall, which free top and bottom wall ends are of sufficient size to cover entirely, respectively, the open top ends and the lower closed ends of said vertical compartments in said second chamber, when said two container halves are in closing engagement with each other; and

(III) guide means associated with longitudinal edges of said longitudinal sidewalls and of said top wall and bottom wall, said guide means of said longitudinal sidewalls being adapted for engaging the guide means of said top wall and bottom wall, respectively, for sliding displacement of said first and second container halves relative to one another.

4,390,218

COAXIAL TRANSMISSION LINE CONNECTOR

Jack L. Kruger, P.O. Box 215, Goffstown, N.H. 03045

Continuation-in-part of Ser. No. 19,325, Mar. 12, 1979, abandoned. This application Oct. 16, 1980, Ser. No. 197,474

Int. Cl.³ H01R *11/02*

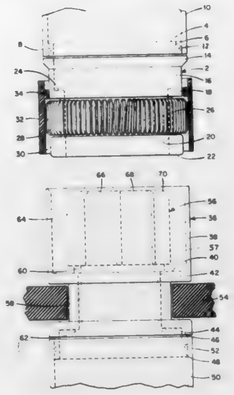
U.S. Cl. 339—9 E **12 Claims**

1. An improved connector for reducing the resistance to heat flow through the expansion joint of the inner power conductor of a coaxial transmission line, said connector comprising

a. first and second metallic cylindrical parts in which one end of said first part is positioned in telescoped relation within one end of said second part,

b. means positioned between and engaging the said telescoped ends to provide electrical continuity between said parts and to permit relative axial movement of said parts, and

c. a heat bypass member comprising a third cylindrical metallic part within the joint of said first and second parts, the exterior of one end of said third part being in continuous circular surface engagement with the circular interior



surface of the end of said first part, and the exterior of the other end of said third part being in continuous circular surface engagement with the circular interior of a section of said second part adjacent the end of said first part.

4,390,219

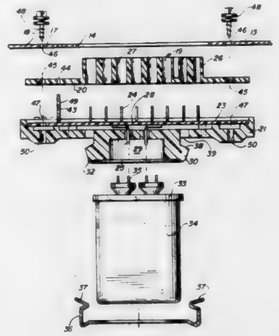
TERMINAL BLOCK AND CAPACITOR MOUNT FOR BLOWER

Richard F. Beehler, Williamson County, Tenn., assignor to Heil-Quaker Corporation, Lewisburg, Tenn.

Filed Mar. 16, 1981, Ser. No. 244,159

Int. Cl.³ H01R *4/66;* **H02K** *11/00*

U.S. Cl. 339—14 R **18 Claims**



9. An electrical connector and mount for a motor capacitor having an end wall and terminals projecting from the end wall, comprising:

electrically insulating wall means defining an outwardly opening well, and laterally projecting securing shoulder; and

a clip having an annular force-applying portion for engaging the capacitor, and a spring portion for resiliently releasable interlocked association with said securing shoulders, said force-applying portion comprising means for urging the capacitor end wall against the wall means with the terminals thereof received in said well as a result of the spring fingers being resiliently interlocked with said securing shoulders.

4,390,220

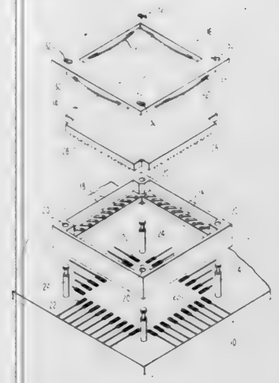
ELECTRICAL CONNECTOR ASSEMBLY FOR AN INTEGRATED CIRCUIT PACKAGE

John E. Benasutti, Lansdale, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 2, 1981, Ser. No. 250,424

Int. Cl.³ H01R *13/62*

U.S. Cl. 339—17 CF **9 Claims**



1. A connector assembly for providing electrical circuit paths between an integrated circuit package and an interconnection medium comprising:

a housing for installing said integrated circuit package therein, said housing being comprised of at least a plurality of side members and having opposed external surfaces lying in respective parallel planes orthogonal to said side members, said housing having a plurality of apertures formed in said side members and connecting said external surfaces,

a plurality of mounting pins disposed in said interconnection medium, said mounting pins entering respective ones of said plurality of apertures at one of said external surfaces of said housing, and exiting the other of said external surfaces,

a lid including a plurality of spring members affixed to one surface thereof for applying pressure to said integrated circuit package installed in said housing, said lid having a plurality of locking slots homologously positioned with respect to said mounting pins, the application of external forces to said lid in at least the direction of said integrated circuit package causing said mounting pins to protrude through said locking slots and to be captured in the latter, said connector assembly remaining held together in unitary fashion upon the subsequent termination of said forces.

4,390,221

MODULAR CONNECTOR ASSEMBLY HAVING AN ELECTRICAL CONTACT

Paul D. Niles, Bainbridge, and Richard W. Normann, Otego, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 24, 1981, Ser. No. 257,023

Int. Cl.³ H05K *3/34*

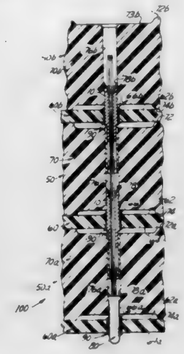
U.S. Cl. 339—17 M **4 Claims**

1. A modular connector assembly (**50**) characterized by:

a printed circuit board (**60**) comprised of a dielectric material and having top and bottom surfaces (**62**, **64**), a plurality of apertures (**66**) extending between the surfaces of the board and a circuit printed on one of the surfaces;

an interconnection device (**70**) mounted to the printed circuit board, the interconnection device comprised of a dielectric material and having top and bottom faces (**72**, **74**) and a plurality of passages (**76**) extending therethrough arranged in a predetermined pattern; and

a contact (**10**) mounted within one of the passages of said interconnection device, said contact (**10**) being of the type comprising a holder (**20**) of solderable material and a



sleeve (**40**) comprised of stainless steel, the sleeve having one end (**42**) secured to the holder and another end (**44**) extending forwardly of the holder, the sleeve and an end portion of the holder extending through the aperture (**66**), the extended portion of the holder wavesoldered to the printed circuit board.

4,390,222

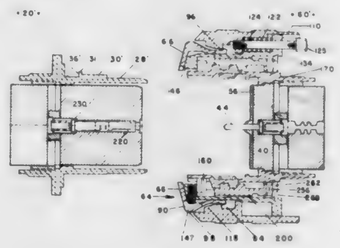
LANYARD RELEASE/UMBILICAL ELECTRICAL CONNECTOR

David P. E. Carter, Laguna Niguel, Calif., assignor to Automation Industries, Inc., Greenwich, Conn.

Continuation of Ser. No. 81,009, Oct. 1, 1979, abandoned. This application Sep. 11, 1981, Ser. No. 301,308

Int. Cl.³ H01R *13/625, 13/633*

U.S. Cl. 339—45 M **10 Claims**



1. A quick-release circular electrical connector, comprising:

a. receptacle means including
a receptacle shell provided with
a receptacle barrel and
a set of electrical contacts;

b. said receptacle barrel having positioned, circumferentially, on its exterior surface a plurality of keys, each of said keys being squared at the end farthest from the nose of said barrel, and each of said squared ends being located on a common circumference around said barrel;

c. plug means including
a set of electrical contacts, and
a plug shell means comprising,
a collet,
a coupling ring means, and
a detent shell;

d. said receptacle electrical contacts and said plug electrical

contacts being capable of mating to complete an electrical circuit and unmating to break said electrical circuit;

e. said plug shell means being capable of mating/unmating said two sets of electrical contacts through an axial movement imparted by rotational movement of said coupling ring means of substantially less than one rotation, where said mating action includes placing in a locked condition said plug means and said receptacle means through cooperation of said keys and said collet;

f. said collet having a flange-lip extending radially inward from a ring member, which ring member terminates in a base,

said flange-lip defining an opening, said opening having a diameter slightly smaller than the outside diameter of said keys,

said flange-lip having keyways corresponding to said receptacle barrel keys, and

said collet being divided into a plurality of circumferential lengths,

the flange-lip portion of each circumferential length being brought into locked, abutted relation with said squared ends of said keys through said rotational movement of said coupling ring means which is imparted to said circumferential lengths, the effective flange-lip diameter being smaller than said key outside diameter during mating/locking action;

g. said coupling ring means having a ring opening portion slightly larger in diameter to enclose said collet base, and having resilient means mechanically biasing said coupling means and permitting pull back of the coupling ring means;

h. said detent shell having an element for contacting said resilient means, and a nose portion on said coupling ring for assisting said detent shell to impart rocker motion to said collet circumferential lengths; and

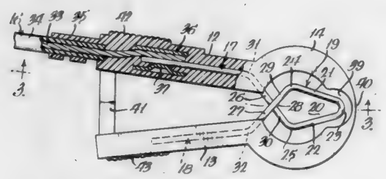
i. a quick release trigger means for withdrawing said coupling ring forcefully from contact with said ring member of said collet, thereby imparting said rocker motion to said circumferential lengths which increases the flange-lip opening diameter beyond the outside diameter of said keys to unlock said plug means from said receptacle means, and continued axial movement imparted by said trigger means unmates said plug means and said receptacle means.

4,390,223

ELECTRICAL CONNECTOR

Ilias R. Zenkich, Norridge, Ill., assignor to Zenex Corporation, Chicago, Ill.

Filed Oct. 16, 1980, Ser. No. 197,485
Int. Cl.³ H01R *13/48*
U.S. Cl. 339—61 R **6 Claims**



1. An electrical connector between a stud-provided electrode having a reduced cross-section forming a neck and a cable comprising:

a resilient wire conductor having its ends crossed to form a loop;

a pair of electrical insulating handles attached one to each of said ends and having a hinge therebetween peripheral of said loop;

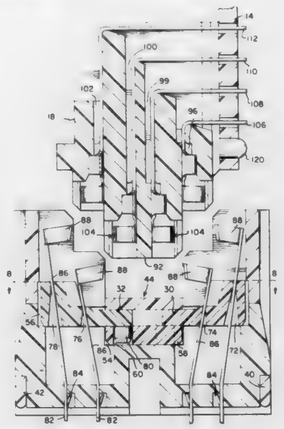
an electrical cable connected to one of said ends, whereby closure of said handles about said hinge enlarges the loop to allow the stud to pass therethrough and release of said handles causes said loop to contract about and grip said stud neck completing the electrical connection.

4,390,224

TWO PIECE ZERO INSERTION FORCE CONNECTOR

Robert L. Showman, Hershey, and Robert N. Weber, Hummelstown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 14, 1981, Ser. No. 263,661
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—75 MP **17 Claims**



1. A zero insertion force connector assembly for mounting daughter circuit boards on mother circuit boards comprising:

a receptacle having a housing defining an elongated cavity and a cam assembly movably mounted in a base portion of said cavity, a plurality of holes formed in said cam assembly in a patterned array, and a like plurality of first terminals mounted in said housing along at least one side of said cavity and extending through said holes in said cam assembly to be moved thereby in a direction normal to the longitudinal axis of said cavity, each said first terminal having a blade portion extending toward said cavity and a tail portion engaging said mother board; and

a plug having a housing with a mating profile receivable in said cavity, a plurality of second terminals mounted in said plug housing, each said second terminal having a pair of arms defining a blade receiving slot therebetween, whereby when said plug is received in said cavity of said receptacle said first terminals are moved by said cam assembly so that the blade portions of each first terminal lies between and in engagement with said arms of a respective second terminal.

4,390,225

FUSE BLOCK ASSEMBLY

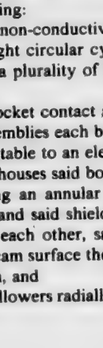
Kevin N. Coyne, Georgetown, and Hazen Curtis, III, Andover, both of Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 6, 1981, Ser. No. 290,664
Int. Cl.³ H01R *13/68*
U.S. Cl. 339—88 R **12 Claims**

1. In a fuse block assembly comprising a fuse block having at least one fuse receiving chamber (e.g. **21**), bus bars (e.g. **24,25**) in said fuse block each having a portion (e.g., **22** or **23**) which extends transversely into each of said chambers, electrical terminal means (e.g. **27**) within each of said chambers for contacting an end (e.g. **14**) of each inserted fuse and one removeable fuse cap (e.g. **11**) positioned in one of said chambers by the engagement of first and second opposing conductive lugs (e.g. **17, 18**) with said portion of said bus bars, said fuse cap being characterized by

a housing (e.g. **31**) having an aperture extending from a first end, said aperture defining first and second protuberances (e.g. **37,39**) which extend transversely into said aperture, said first protuberance being closer to said first end, said aperture incorporating a pair of opposing recesses (e.g. **38**) adjacent said first protuberance and toward said first end, said aperture also incorporating a slot (e.g. **45**) extending from said first end completely through the housing wall;

a conductive base (e.g. **48**) having a pair of opposing tabs (e.g. **51**) which maintain the position of said base adjacent



said first protuberance by the engagement of said tabs with said opposing recesses;

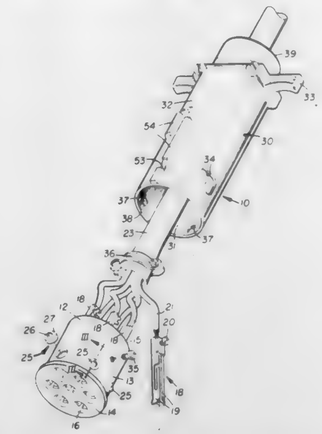
a conductive spring member (e.g. **47**) attached to said base and extending within said aperture toward said first end;

a conductive fuse holder (e.g. **46**) attached to said spring member having an opening toward said first end for receiving a second end (e.g. **16**) of each inserted fuse;

a conductive first member (e.g. **52**) attached to said base and having a portion (e.g. **53**) which engages with said slot and forms said first lug; and

a conductive second member (e.g. **40**) adjacent said second protuberance and extending transversely into said aperture, said second member also extending outwardly from said housing to form said second lug.

engaged by said cam surface of said shield to deform said resilient contact assemblies against said contact pins of



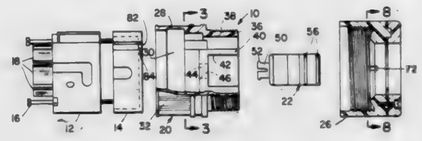
said receptacle a variable amount depending on the relative position of said body and said shield.

4,390,227

CORD GRIP FOR ELECTRICAL WIRING CONNECTOR DEVICES

Peter C. Deutsch, Novato, Calif., assignor to Marine Industries Company, Ignacio, Calif.

Filed Dec. 8, 1980, Ser. No. 214,254
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—103 C **8 Claims**



1. A cord grip assembly for an electrical wiring device, said assembly comprising:

a housing member having an opening therein for receiving an electrical cord;

a plurality of separate, flexible finger elements, each being removably secured to said housing member about said opening and extending generally parallel to its longitudinal axis, each said element having an inner end portion with means for latching it in said housing member and an outer end portion for engaging said cord;

end cover means for engaging said housing member having an opening for receiving said cord;

internal means in said cover means forming a shoulder effective to engage said finger elements and to force them together inwardly to grip said cord when said cover means is moved relative to said housing member.

4,390,226

ELECTRICAL PLUG FOR A RECEPTACLE HAVING A PLURALITY OF CONTACT PINS

Cletus R. Hohn, 4156 Eggers Dr., Fremont, Calif. 94536

Filed Jan. 19, 1981, Ser. No. 225,983
Int. Cl.³ H01R *13/629*
U.S. Cl. 339—89 M **8 Claims**

1. An electrical plug for a receptacle having a plurality of contact pins, comprising:

(a) an electrically non-conductive body having the shape generally of a right circular cylinder with a longitudinal axis and having a plurality of longitudinally aligned orifices therein;

(b) a plurality of socket contact assemblies received in said orifices, said assemblies each being resiliently deformable and each connectable to an electrical conductor;

(c) a shield which houses said body and said socket contact assemblies having an annular shape with an inner side wall, said body and said shield being relatively movable with respect to each other, said inner side wall of said shield having a cam surface thereon defining a depression of varying depth, and

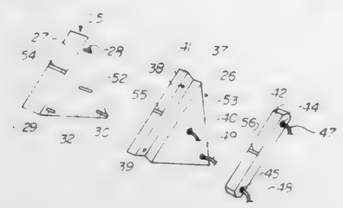
(d) a plurality of followers radially received in said body and

4,390,228

VEHICLE/TRAILER LIGHTING CONNECTOR APPARATUS

Clifford E. Schleusner, Billings, Mont., assignor to Bruce Haagenson, Billings, Mont.

Filed May 28, 1981, Ser. No. 267,684
Int. Cl.³ H01R *33/76*
U.S. Cl. 339—113 R **10 Claims**



1. Vehicle/trailer lighting connector apparatus including a first connector portion and a second connector portion engageable with said first connector portion; said first connector portion including a first base section, at least three primary connector members associated with a major face of said first base section, electrical lead wires with an end of one of said wires affixed to each of said primary connector members at a point thereon remote from said major face of said first base section, three of said primary connector members being arranged in an equilateral triangular configuration; said second connector portion including a second base section, at least three secondary connector members associated with a major face of said second base section, three of said secondary connector members being disposed in a triangular configuration with the arrangement of said secondary connector members corresponding to the arrangement of said primary connector members of said first connector portion, each of said primary connector members of said first connector portion being engageable with one of said secondary connector members of said second connector portion, said second connector portion including a section separable from said second base section, said separable section including two spaced connector members engageable with two of said secondary connector members of said second connector portion at points remote from said major face of said second base section, two electrical lead wires with an end of one of said wires affixed to each of said spaced connector members of said separable section of said second connector portion at a point thereon remote from the surface of said separable section adjoining said second base section of said second connector portion, an electrical lead wire having one end affixed to said secondary connector member of said second base section spaced from said separable section at a point on said connector member remote from said major face of said second base section; whereby connecting said separable section with said second base section in one of two reversible positions and rotating the connection of said first connector portion with respect to said second connector portion provides coordinated operation of vehicle lighting with lighting of a trailer attached to said vehicle.

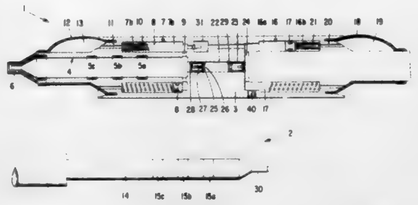
4,390,229

PLUG-IN CONNECTOR SUITABLE FOR USE IN A FLUID MEDIUM

Andre Chevalier, Pantin, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Feb. 23, 1981, Ser. No. 237,213
Claims priority, application France, Feb. 22, 1980, 80 04028
Int. Cl.³ H01R *13/44, 13/52*
U.S. Cl. 339—115 R **10 Claims**

1. A plug-in connector adapted for use in a fluid medium, comprising a socket having at least one bore; a plug provided with at least one pin for mating within said bore; a main chamber communicating with said bore and containing a protecting product and making up an assembly with said at least one bore, and the volume of said main chamber being automatically variable for filling said bore with protecting product as the pin is withdrawn from the bore; and said connector further comprising a compensation chamber filled with said protecting



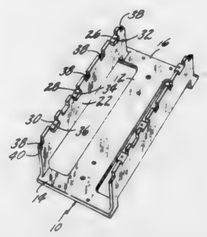
product under a pressure higher than that prevailing in said main chamber; and transfer means adapted for transferring a predetermined amount of said protecting product from said compensation chamber to said assembly formed by said main chamber and said bore of the socket to compensate for protecting product loss upon removal of said plug from said bore.

4,390,230

MODULAR BLOCK BASE AND BRACKET ASSEMBLY

Robert H. Knickerbocker, Cheshire, Conn., assignor to The Siemon Company, Watertown, Conn.

Filed Jan. 11, 1980, Ser. No. 111,311
Int. Cl.³ H01R *9/02*
U.S. Cl. 339—125 R **9 Claims**



1. A mounting bracket for terminal blocks, the bracket including:
- a rear mounting surface;
- a pair of spaced apart side walls extending from said mounting surface;
- three recesses in the top surface of each of said side walls, said recesses in each side wall being spaced apart unequally;
- three inwardly projecting tabs on each of said side walls; and
- a plurality of notches in each of said side walls, each of said notches terminating in a bevelled surface on the inner surface of the side wall.

4,390,231

BLADE TERMINAL WITH PROTECTED LATCH TANGS

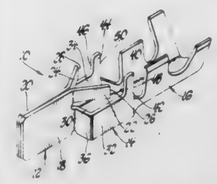
Robert G. Plyler, Vienna, and Lyle B. Suverison, Fowler, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 919,765, Jun. 28, 1978. This application Nov. 13, 1978, Ser. No. 960,490
Int. Cl.³ H01R *13/432*
U.S. Cl. 339—217 S **4 Claims**

1. A terminal having protected latch tang means for latching the terminal in a connector body comprising:

- a forward contact portion comprising a pair of separate longitudinal blades,
- an enlarged channel shaped median portion having a web and side walls of reduced width connected to respective ones of the separate longitudinal blades by separate transition portions,
- a pair of longitudinal inclined latch tangs attached to the respective rearward edges of the longitudinal blades and diverging away from each other in the rearward direction,

said pair of inclined latch tangs being adjacent the channel shaped median portion at a side opposite the web,



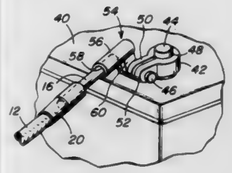
each of said inclined latch tangs being entirely within the outline of an adjacent side wall and connecting transition portion,
- a lateral extension on each side wall spaced rearwardly of the latch tangs, each lateral extension having a portion behind and in longitudinal alignment with one of the latch tangs, and
- an attachment portion attached to the web in an offset position with respect to the forward contact portion.

4,390,232

MAGNETIC ELECTRICAL CONNECTOR

George H. Jamgotchian, 2769 West Mesa, Fresno, Calif. 93711

Filed Aug. 27, 1980, Ser. No. 181,688
Int. Cl.³ H01R *11/11*
U.S. Cl. 339—224 **11 Claims**



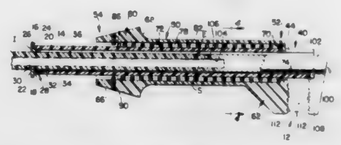
10. An electrical connection means, said electrical connection means comprising:
- an electrical energy supply means;
- conductor means attachable to said electrical energy supply means for conducting electrical energy to and from said supply means;
- magnetic connection means positionable between said electrical energy supply means and said conductor means for facilitating a connection between said conductor means and said supply means;
- connector means fixedly secured to said conductor means and being magnetically attachable to said magnetic connection means; and
- terminal connector means secured to said supply means and being magnetically attachable to said magnetic connection means, spring retention means provided on said connector means so as to provide an improved connection between said magnetic connection means and said connector means.

4,390,233

BATTERY CABLE CONNECTOR

David E. B. Sanders, Jr., 3743 Kayanne Ct., Tucker, Ga. 30084

Filed Apr. 21, 1981, Ser. No. 256,142
Int. Cl.³ H01R *11/22, 11/24*
U.S. Cl. 339—255 R **3 Claims**



1. A connector for connecting an electrical cable to a terminal comprising:
- a non-conductive sheath attached at a first end thereof to an electrical cable to surround that cable and extend at another end thereof beyond the end of that cable, said first sheath end having screw threads defined therein, an elongate slot defined therein at said another end, and a projection located near said sheath first end;
- a jam nut connecting said first end of said non-conductive sheath to said cable, said jam nut including a bore which receives said cable and external threads which cooperate with said sheath threads;
- an electrically conductive jaw portion electrically and fixedly connected to the electrical cable, said jaw portion having a body located within said non-conductive sheath;
- a non-conductive sleeve telescopingly mounted on said sheath, said sleeve including a lip on one end and a boss on another end, said lip being located within said sheath slot, said sleeve and said sheath being spaced apart to define an annulus;
- a non-conductive jaw movable portion on said sleeve and in facing opposition to said electrically conductive jaw portion;
- yieldable spring means located in said annulus and having one end seated against said sheath projection and another end seated against said sleeve lip to connect said sleeve to said sheath, said sleeve being movable with respect to the cable mounted sheath whereby a terminal is grasped between said jaw portions to electrically connect that terminal to the cable via said conductive jaw portion; and
- a set screw in said sleeve boss, said set screw abutting said sheath projection on a side of that projection opposite to the side therof on which is seated said spring one end, said set screw preventing said sleeve from separating from said sheath.

4,390,234

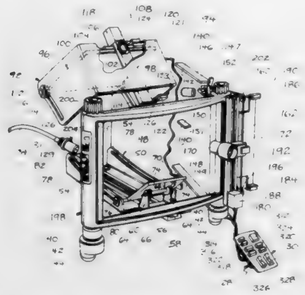
VIEWER/PROJECTOR FOR DISPLAY OF 360 DEGREE HOLOGRAPHIC FILM CASSETTES

James T. Embach, 760 Knollwood Ct., Saline, Mich. 48176

Filed Aug. 14, 1980, Ser. No. 177,943
Int. Cl.³ G03H *1/02, 1/22*
U.S. Cl. 350—3.65 **16 Claims**

1. A cassette for storage, handling and display of holographic film prerecorded in an arcuate film configuration at least partially surrounding the recorded object at a prespecified fixed radius, said cassette comprising first and second film spools, a length of said holographic film extending between said film spools, and a frame including spaced end portions mounting said spools for free rotation about spaced parallel axes on a common plane and a central portion affixed to and rigidly extending between said end portions on one side of said plane, said central portion including first means providing an arcuate film path extending between said spools at a fixed uniform radius of curvature equal to said prespecified radius,

with said radius of curvature being centered on a side of said plane opposite said path, and second means providing a



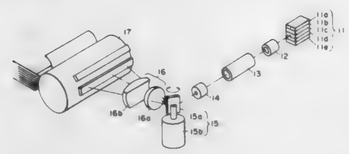
through window for illumination of film extending between said spools from a direction transverse to said path.

4,390,235

MULTIBEAM SCANNING APPARATUS PROVIDED WITH A FUNCTION OF CHANGING MAGNIFICATION

Kazuo Minoura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 10, 1981, Ser. No. 301,015
Claims priority, application Japan, Sep. 18, 1980, 55-130240
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.1 **3 Claims**



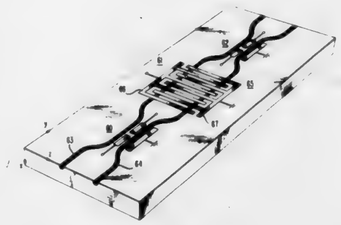
1. A scanning apparatus for scanning a surface with a plural number of beam spots independently modulated at the same time, said apparatus comprising:
- a light source for producing a plural number of light beams that are independently collimated;
- a deflector having at least one reflecting surface for deflecting said light beams from said light source part in selected directions;
- an afocal magnification changing optical system disposed between said light source part and said deflector for changing the angular magnification of said collimated beams;
- a first anamorphic optical system disposed between said magnification changing optical system and said deflector for focusing on said reflecting surface of said deflector the components of said light beams which are normal to the deflection scan plane that the light beams deflected by said deflector define with time; and
- a second anamorphic optical system for maintaining said reflecting surface of said deflector and said scanned surface in an optically conjugated relation with each other in a plane normal to said deflection scan plane and for focusing said light beams deflected by said deflector on said scanned surface.

4,390,236

TUNABLE POLARIZATION INDEPENDENT WAVELENGTH FILTER

Rodney C. Alferness, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 19, 1981, Ser. No. 245,626
Int. Cl.³ G02B *5/174*
U.S. Cl. 350—96.14 **5 Claims**



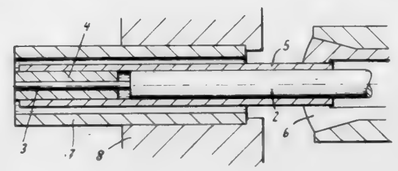
1. A wavelength filter (**10**) comprising:
- an input polarization selective coupler (**11**) for separating, in two different wavepaths (**12, 13**), orthogonally polarized wave components (TE, TM) of an arbitrarily polarized input signal;
- a wavelength selective (TE⇄TM) mode converter (**14, 15**) located in each of said wavepaths (**12, 13**);
- and an output polarization selective coupler (**16**) for combining in one output signal path (**17**) signal components centered about the wavelength of said mode converters, and for combining in a second output wavepath (**18**) the balance of said input signal.

4,390,237

COUPLING ASSEMBLY FOR LIGHT WAVE CONDUCTORS AND METHOD FOR THE PRODUCTION THEREOF

Silvio Marazzi, Cavigliano, Switzerland, assignor to Diamond S.A., Losone, Switzerland

Filed Aug. 14, 1980, Ser. No. 177,881
Claims priority, application Switzerland, Aug. 15, 1979, 7467/79
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.20 **8 Claims**



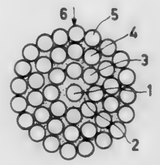
1. A method of producing a coupling assembly for light-wave conductors, comprising
- fitting an end portion of a light-wave conductor into a capillary tube so that the end thereof projects from the capillary tube and fitting the capillary tube into a holder tube so that the end of the capillary tube projects from the holder tube, and securing the conductor end portion and the capillary and holding tubes together,
- grinding a flat end face on the conductor at right angles to its axis, and
- positioning the holder tube within a centering sleeve in a first position with the flat end face of the conductor in transverse alignment with an end face of the centering sleeve, and with the conductor and centering sleeve in axial alignment, and then withdrawing the holder tube within the centering sleeve to a second position to recess the flat end face of the light-wave conductor a distance inwardly from the centering tube end face and connecting the holder tube to the centering sleeve in the second position.

4,390,238

OPTICAL TELECOMMUNICATION ELEMENT, METHOD OF MANUFACTURING SAME, AND OPTICAL TELECOMMUNICATION CABLE COMPRISING THE ELEMENT

Willem Van Der Hoek, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 20, 1980, Ser. No. 208,619
Claims priority, application Netherlands, Dec. 13, 1979, 7908966
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.23 **11 Claims**



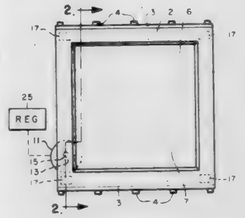
1. An optical telecommunication element comprising:
- a central optical fiber;
- a layer of a cured lacquer surrounding the optical fiber and in contact therewith; and
- a close-fitting sheath of reinforcement fibers in the layer of cured lacquer, said reinforcement fibers having a minimum elasticity modulus of 4,000 kg/mm², said sheath being spaced from the central optical fiber by a thin sub-layer of cured lacquer which fixes the optical fiber axially and radially within the sheath, said sheath and lacquer fixing the optical fiber under axial compression.

4,390,239

PROJECTION SCREEN

Erich Huber, Schönberg, Fed. Rep. of Germany, assignor to Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed May 12, 1981, Ser. No. 262,992
Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018449
Int. Cl.³ G03B *21/56*
U.S. Cl. 350—120 **28 Claims**



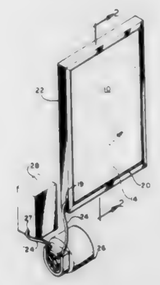
1. In a projection system of a type wherein a light image is projected for viewing on a diffusion plate, the improvement comprising:
- a projection lens positioned adjacent and in close proximity to said diffusion plate, said projection lens comprising a plurality of lenticular elements; and
- means for providing relative lateral movement between said projection lens and said diffusion plate to eliminate polychromatic shimmer of the image.

4,390,240

WINDOW MIRROR

Carl Bookbinder, 330 S. 17th St., Philadelphia, Pa. 19103

Filed Mar. 26, 1981, Ser. No. 247,860
Int. Cl.³ G02B *5/24*
U.S. Cl. 350—258 **7 Claims**



1. A window controllably operable as a light transmitting window and as a mirror, the window comprising:
- at least two substantially rigid flat panes, the panes being at least partly light transmissive;
- a spacer disposed between the panes, the spacer and panes defining a vacuum-tight cavity;
- a reservoir disposed below the cavity and in liquid communication with a lower part of the vacuum-tight cavity, whereby a liquid placed in the cavity will be drawn by gravity toward the reservoir;
- a charge of mercury to be controllably moved between the reservoir and the cavity, a vacuum remaining in the cavity when the mercury is moved to the reservoir, whereby the window is made light transmitting; and,
- a pump for moving the mercury from the reservoir to the cavity, whereby the window is made reflective.

4,390,241

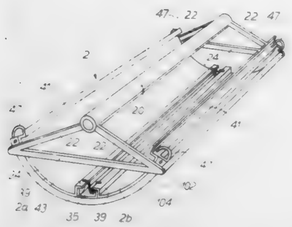
REFLECTIVE TROUGH STRUCTURE

John M. Tribey, Ringwood, Australia, assignor to Vulcan Australia Limited, Victoria, Australia

Division of Ser. No. 953,771, Oct. 19, 1978, Pat. No. 4,304,221, and Ser. No. 122,054, Feb. 15, 1980, Pat. No. 4,321,909, each is a continuation-in-part of Ser. No. 883,313, Mar. 3, 1978, Pat. No. 4,324,225, which is a continuation-in-part of Ser. No. 704,674, Jul. 12, 1976, Pat. No. 4,089,323. This application Dec. 7, 1981, Ser. No. 327,909
Claims priority, application Australia, Jul. 11, 1975, PC2334/75; Apr. 21, 1977, PC9839/77; Feb. 23, 1979, PD7808/79; Aug. 23, 1979, PE0157/79; Aug. 23, 1979, PE0158/79; Aug. 23, 1979, 0159/79
Int. Cl.³ G20B *5/10*; F23J *3/02*
U.S. Cl. 350—296 **11 Claims**

1. A trough comprising a plurality of ribs each having a concave edge and means to hold the ribs in fixed position relative to one another so that said edges lie on a common surface, and resilient sheet material one side of which is resiliently constrained into engagement with said edges and the other side of the sheet material being reflective to thereby form a reflective trough characterized said sheet material is formed with integral flanges on its lateral edges, each flange each having a first leg which is generally normal to the sheet material and a second leg which projects outwardly from the top of the first leg, and force distributing members comprising chan-

nel members and wherein the outer edges of said second legs are received within said channel members, resilient forces



being applied to the channel members to resiliently bias the sheet material into intimate contact with said ribs.

4,390,242

DETACHABLE CAMERA FILTER HOLDER CAPABLE OF BEING CONNECTED IN SERIES WITH A LIKE FILTER HOLDER

Kazutsune Tatsumi, Tokyo, Japan, assignor to Hoya Corporation, Tokyo, Japan

Filed Mar. 12, 1981, Ser. No. 243,211
Claims priority, application Japan, Mar. 26, 1980, 55-38710
Int. Cl.³ G02B *7/00*
U.S. Cl. 350—318 **5 Claims**

1. A filter holder comprising: a holder body having an aperture therein; an adapter ring for mounting said holder body on a lens of a camera; a plurality of apertured parallel plates rigidly coupled to said holder body, said plates and said holder body defining a first groove extending up and down and a second groove having a stop member at a low portion thereof; right and left side walls coupling said parallel plates to said holder body; leaf springs provided in said first and second grooves for resiliently supporting end surfaces of a filter; a cylindrical portion provided on a rear side surface of said holder body, said cylindrical portion having a greater radius than apertures of said plates; and a plurality of claws for resiliently retaining a flange of said adapter ring at an inner periphery of said cylindrical portion for rotatably, detachably and attachably mounting said adapter ring to said holder body.

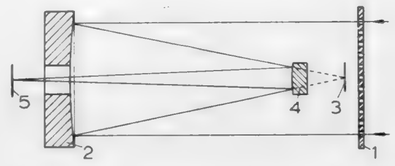
4,390,243

APERTURE SCREEN FOR THE OBSERVATION OF BRIGHT OBJECTS WITH PRESERVATION OF THE RESOLUTION

Robert H. Hammerschlag, Albert Cuyplaan 35, 3723 GK Bilthoven, Netherlands

Filed Oct. 17, 1980, Ser. No. 198,121
Int. Cl.³ G02B *5/00*
U.S. Cl. 350—319 **1 Claim**

1. An optical focusing assembly comprised of focusing optics and a plate made of an opaque material in series along an optical axis, said plate including a multiplicity of holes spaced apart about 42 μm or less, said holes extending substantially across the full aperture of said focusing optics and sized so that a substantial portion of a light beam incident along said optical axis on said plate will not pass through said plate to said focusing optics, whereby an image of reduced intensity but full resolution is achieved.



4,390,244

LIQUID CRYSTAL VISUAL DISPLAY UNIT AND TELEPHONE TERMINAL INCORPORATING SUCH A UNIT

Michel Hareng; Serge Le Berre; Pierre Leclerc, and Jean Noël Perbet, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 23, 1980, Ser. No. 171,408
Claims priority, application France, Jul. 27, 1979, 79 19426
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—333 **12 Claims**

1. A liquid crystal visual display unit of the type incorporating a liquid crystal layer which can be inscribed by the thermoelectric effect and incorporated between two plates, whereof at least one is transparent, a system of resistive lines located between one of the plates and the liquid crystal layer and making it possible to heat the liquid crystal at least up to its erasure temperature successively in accordance with each of the lines and a system of columns located between the other plate and the liquid crystal layer intersecting with the lines and making it possible to apply to the whole of this layer during the cooling of a line an electric field representing the information to be inscribed along the cooling line, wherein the thermal diffusivity of the plate supporting the resistive lines is below a value making it possible to obtain a unit which can be observed with the naked eye.

4,390,245

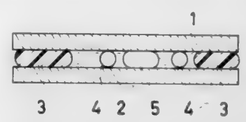
OPTICAL DISPLAY CELL OF EVEN THICKNESS USING ADHESIVE MEANS AND SEPARATE ADHESIVE-FREE SPACERS

Keiichiro Shimizu, Nara, and Wataru Horii, Yokohama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 16, 1980, Ser. No. 169,387
Claims priority, application Japan, Jul. 19, 1979, 54-91847
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—343 **17 Claims**

1. An optical display cell comprising:
a pair of substrate means at least one of which is transparent;
sealing means provided for sealing the pair of substrate means by joining the peripheral portions thereof;

adhering means provided for bonding portions of the pair of substrate means inboard of the sealing means; and



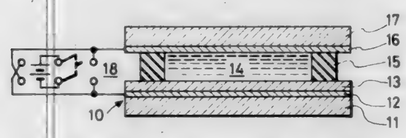
adhesive-free spacer means randomly disposed between said pair of substrate means for maintaining an approximately uniform distance between said pair of substrate means.

4,390,246

ELECTROCHROMIC DEVICE BY OBLIQUE EVAPORATION TO IMPROVE THE RESPONSE OF COLORATION AND BLEACHING

Taisuke Miyoshi, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Oct. 23, 1978, Ser. No. 953,596
Int. Cl.³ G02F *1/17*
U.S. Cl. 350—357 **14 Claims**



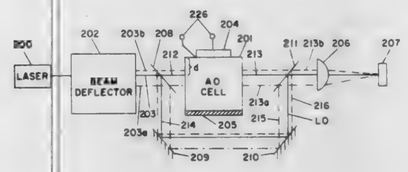
1. In an electrochromic device of the type having a substrate, a first electrode disposed on the substrate, a layer of electrochromic material disposed on the first electrode, an electrolyte disposed on the layer of electrochromic material, and a second electrode disposed on the electrolyte, the improvement comprising: said layer of electrochromic material having anisotropic topography formed by depositing by evaporation said electrochromic material such that the direction of evaporation makes an acute angle with respect to the normal to said substrate.

4,390,247

CONTINUOUSLY VARIABLE DELAY LINE

Frederick W. Freyre, Wantagh, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Jun. 17, 1981, Ser. No. 274,561
Int. Cl.³ G02F *1/11*
U.S. Cl. 350—358 **14 Claims**



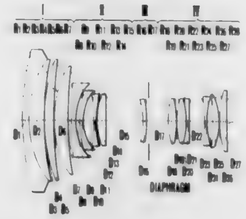
1. An apparatus for delaying a signal by a selected amount comprising:
first means for converting a supplied signal into at least one corresponding acoustic wave propagating through a medium;
second means for modulating a light beam with said acoustic wave at a given position in the medium;
third means for detecting the modulation components of said light beam, thereby developing an output signal which corresponds to said supplied signal, but delayed with respect thereto; and
fourth means for adjusting the location of the given position in the medium, thereby to control the amount of said delay.

4,390,248

WIDE ANGLE ZOOM LENS

Keiji Ikemori, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 18, 1980, Ser. No. 188,560
Claims priority, application Japan, Sep. 27, 1979, 54-124544; Dec. 7, 1979, 54-158950
Int. Cl.³ G02B *15/18*
U.S. Cl. 350—427 **5 Claims**



1. A wide angle zoom lens comprising:
a first lens group of a positive refractive power stationary during zooming but movable for focusing and consisting of four elements forming three members, said members being from front to rear, a cemented lens and two positive lenses, each of said three members being in the meniscus form of convex curvature toward the front, and said cemented lens being almost afocal with its cemented surface being divergent and convex toward the front;
a second lens group of a negative refractive power movable for changing the magnification and consisting of four elements, said members being from front to rear, two negative meniscus lenses of forward convexity, a bi-concave negative lens and a positive lens, said bi-concave negative lens and said positive lens defining an air spacing having a converging action;
a third lens group movable for maintaining a constant image plane as said second group moves to effect a change in magnification; and
a fourth lens group positioned in the rear of said third group to be stationary during zooming; wherein

$$|1/f_{21}| > |1/f_{22}|$$

$$|1/f_{21}| > |1/f_{23}|$$

where f_{21}, f_{22} and f_{23} are the focal lengths of the first, second and third negative lenses counting from the front respectively in said second group.

4,390,249

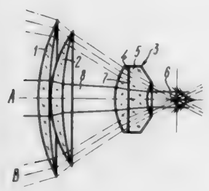
GALILEAN-TYPE TELESCOPE SYSTEM

Mikhail M. Rusinov, naberezhnaya Fontanki, 139, kv. 36; Galina N. Judova, ulitsa Avtovskaya, 2, kv. 5; Jury V. Kudryashov, prospekt Piskarevsky, 39, kv. 34, and Peisakh Y. Agurok, Grozhdansky prospekt,130, korpus 4, kv. 8, all of Leningrad, U.S.S.R.

Filed Oct. 16, 1980, Ser. No. 197,758
Int. Cl.³ G02B *23/00, 9/12*
U.S. Cl. 350—453 **8 Claims**

1. A Galilean-type telescope system having an object side and an eye side, comprising:
first, second and third optical components arranged succes-

sively along the optical axis of said system in the direction of the travel of the light beam therethrough,
said first component being a single positive meniscus,
said second component being a single positive meniscus, and
said third component being a negative concentric meniscus,
said first and said second components constituting an objective of said telescope system and said third component being an eyepiece of said telescope system,
all said three components being concave towards the eye side of said optical system,

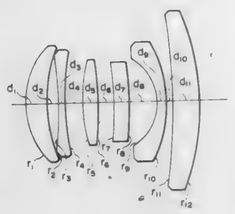


said negative concentric meniscus, representing said third component, including a lens member having cemented together two lenses with the same shape of cemented surfaces,
said lenses of said third component having substantially equal refractive indices but different dispersion, the dispersion of the lens disposed closer to said eye side of said telescope system being substantially less than that of the following lens, and
an air space separating said second component from said third component and whose thickness in the optical axis complies with the following relationship:

$$d_x = f_1\left(1 - \frac{1}{\Gamma}\right) - R_x,$$

wherein:
d_x—thickness of the air space in the optical axis of said system,
f_1—rare focal distance of said objective of said system,
Γ—magnification provided by said system;
R_x—radius of curvature of the front refractive surface of said negative concentric meniscus.

4,390,250
PHOTOGRAPHIC LENS SYSTEM
Toshihiro Imai, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jul. 15, 1981, Ser. No. 283,460
Claims priority, application Japan, Jul. 17, 1980, 55-97782
Int. Cl.³ G02B *9/60, 9/62*
U.S. Cl. 350—465 **12 Claims**



1. A photographic lens system comprising a first lens component of a positive meniscus lens with its convex surface on the object side, a second lens component of biconcave lens, a third lens component consisting of a biconvex lens and a small power positive or negative lens located adjacent the biconcave lens with an air space and having a positive refracting power as a whole, a fourth lens component of a negative meniscus lens with tis convex surface on the image side, and a fifth lens component of a positive meniscus lens with a convex surface on the image side, said lens system satisfying the following conditions:

$$1.2 < f/f_{123} < 1.8 \quad (1)$$

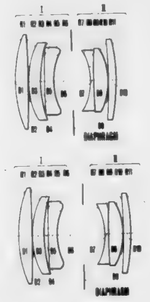
$$-1.3 < f/f_{45} < -0.35 \quad (2)$$

$$0.16 < d_{567}/f < 0.23 \quad (3)$$

$$0.09 < d_i/f < 0.14 \quad (4)$$

wherein the reference symbol f_{123} represents the composite focal length of the first, second and third lens components, the symbol f_{45} represents the composite focal length of the fourth and fifth lens component, the symbol d_{567} represents the length $(d_5+d_6+d_7)$ from the object side surface to the image side surface of the third lens component, the symbol d_8 represents the axial air space between the third and fourth lens components, and the symbol f represents the focal length of the entire lens system.

4,390,251
PHOTOGRAPHIC OBJECTIVES OF RELATIVELY LARGE APERTURE
Masatake Kato, Kunitachi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 31, 1981, Ser. No. 298,331
Claims priority, application Japan, Sep. 3, 1980, 55-122185
Int. Cl.³ G02B *9/60*
U.S. Cl. 350—467 **1 Claim**



1. An objective lens of large relative aperture comprising:
from front to rear, a first lens group having a positive refractive power and having a positive lens with its front surface convex toward the front, a positive meniscus lens of forward convexity and a negative meniscus lens of rearward concavity, and a second lens group having a positive refractive power and having a cemented lens and a positive lens, said cemented lens including a negative lens and a positive lens,
said lenses being arranged so that when focusing is effected from an infintely distant object to a close object each of said lens groups is moved axially forward while the air separation between said lens groups is widened,
taking the focal length of the entire system as unity, and letting Ri denote the radius of curvature of the i-th lens surface counting from the front, Di the i-th thickness and air separation counting from the front, and Ni and Vi the refractive index and Abbe number of the glass material of

the i-th lens element counting from the front respectively, the conditions:

$1.60 < N1 < 1.72$

$1.59 < N3 < 1.65$

$48 < (V_1+V_2+V_3)/3 < 52$

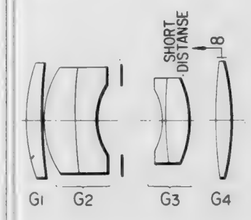
$R2 < 0$

$0.26 < |R7| < 0.30$; $R7 < 0$

$0.08 < D7+D8 < 0.11$

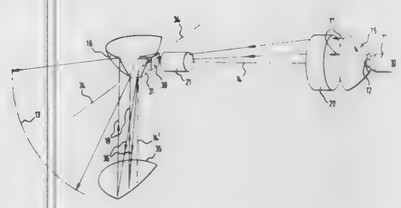
are satisfied.

4,390,252
GAUSS TYPE PHOTOGRAPHIC LENS
Ikuo Mori, Kawasaki, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan
Filed Jul. 18, 1980, Ser. No. 171,003
Claims priority, application Japan, Aug. 10, 1979, 54-101976
Int. Cl.³ G02B *9/36*
U.S. Cl. 350—471 **5 Claims**



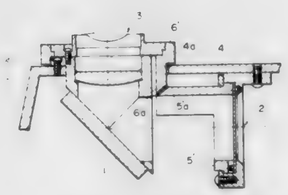
1. A Gauss type photographic lens comprising, in succession from the object side, a first group including a positive lens component, a second group including a positive lens and a negative lens and having a negative refractive power as a whole, a third group including a meniscus lens component comprising a negative lens and a positive lens cemented together and having its concave surface facing the object side, and a fourth group including a positive lens component comprising a biconvex positive lens and a negative meniscus lens having its convex surface facing the image side, focusing being effected by movement along the optical axis of either both said biconvex positive lens and said negative meniscus lens or by movement of only said biconvex positive lens.

4,390,253
PITCH AND ROLL MOTION OPTICAL SYSTEM FOR WIDE ANGLE DISPLAY
Daniel R. Lobb, Chislehurst, England, assignor to Redifon Simulation Limited, Sussex, England
Filed Jul. 14, 1981, Ser. No. 283,141
Int. Cl.³ G02B *17/08, 27/18*; G03B *21/28*; G09B *9/08*
U.S. Cl. 350—505 **5 Claims**



1. Optical apparatus for receiving radiation from a wide-angle input field, and transmitting the radiation into a wide-angle output field, said transmission being such that the output field is an image of the input field formed substantially at unit magnification, and for providing rotation at the output field with respect to the input field, said optical apparatus comprising a concave axially-symmetric aspheric mirror and a convex axially-symmetric aspheric mirror having complementary reflecting surface shapes, approximately paraboloids, at the foci of which the entrance and exit pupils of the system are located, and an optical system in the radiation path between the two mirrors comprising reflecting prisms and two imaging systems of equal focal length and complementary distortion located such that their inner focal surfaces coincide at an intermediate pupil image and their outer focal surfaces are respectively near the two aspheric mirrors such that the surfaces of the two aspheric mirrors are imaged one onto the other at substantially unit magnification and without distortion, the optical axes of the two aspheric mirrors and of all elements of the two imaging systems being imaged onto a common line by reflection in the reflecting prisms, the reflecting prisms being rotatable provide deflection of reflected radiation and of the optical axes of elements in the path of reflected radiation, so that radiation received from an input field at a first of the two aspheric mirrors is transmitted to the second of the two aspheric mirrors and reflected from it into an output field formed substantially at unit magnification and so that the output field is rotatable with respect to the input field.

4,390,254
FIELD STOP OPERATING MECHANISM FOR MICROSCOPES
Makoto Yoshinaga, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Nov. 7, 1980, Ser. No. 204,904
Claims priority, application Japan, Nov. 13, 1979, 54-157344[U]
Int. Cl.³ G02B *21/06*
U.S. Cl. 350—523 **2 Claims**



1. A field stop operating mechanism for microscopes comprising a field stop arranged in the inside of a base of a microscope, a window lens means attached to said base to restrict the light passed through said field stop, a reflecting mirror located between said field stop and window lens means in the inside of said base to deflect the optical axis, a rotating ring arranged adjacent to said field stop to open and stop down said field stop, and an operating ring rotatably mounted around said window lens means and operatively connected with said rotating ring to rotate said rotating ring.

4,390,255

EYE-REFRACTOMETER DEVICE

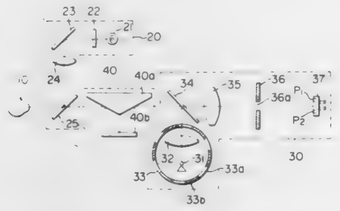
Masao Nohda, Yokohama; Izumi Umemura, Kawasaki, and Toshiyuki Arai, Yokohama, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 104,834, Dec. 18, 1979, abandoned. This application May 6, 1982, Ser. No. 375,677

Claims priority, application Japan, Dec. 22, 1978, 53/158846

Int. Cl.³ A61B *3/10*

U.S. Cl. 351—212 **5 Claims**



1. An eye-refractometer device for measuring the refractive power of an eye to be examined comprising:

a first beam splitter;

a second beam splitter disposed on that side of said first beam splitter which is adjacent to the eye;

a projection optical system provided in one light path of said first beam splitter for projecting a slit-like light beam into the pupil of an eye to be examined by way of said first beam splitter and scanning said slit-like light beam in a direction perpendicular to the lengthwise direction of said slit-like beam;

a condenser optical system provided in the other light path of said first beam splitter for receiving the reflected light from the retina of said eye by way of said first beam splitter, said condenser optical system including a fixed condenser lens, a diaphragm member fixedly disposed substantially at a focus position of said condenser lens, and a light-receiving member fixedly disposed rearwardly of said diaphragm member, said diaphragm member having a slit-like opening parallel to the lengthwise direction of said projected slit-like beam, and said light receiving member having two light-receiving elements fixedly disposed off the optic axis of said condenser lens and symmetrical with respect to the optic axis in a direction coincident with the scanning direction of said slit-like beam;

a signal processing system for processing the signal from said light-receiving member and having phase difference detecting means for detecting the phase difference between the output signals from said two light-receiving elements and having averaging means for generating the average value signal of the plurality of signals from said phase difference detecting means;

a target optical system for directing the target light to the eye by way of said second beam splitter; and

light beam rotating means disposed between said first beam splitter and said second beam splitter for rotating said light beam about the center of the light path, whereby the scanning direction of the slit-like light beam supplied by said projection optical system is rotated at the eye by means of said light beam rotating means, while the scanning direction of the slit-like beam which is reflected by the fundus of the eye, passes again through said light beam rotating means and reaches said condenser optical system, is kept constant without being subject to the rotation by said light beam rotating means, and whereby all members constituting said condenser optical system are kept fixed and no servo system is needed, thus precise and quick refractive power of the eye being measured.

4,390,256

PAD OF HIGH ELASTICITY

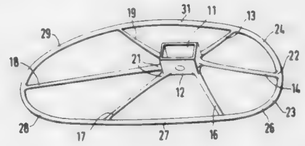
Walter Bononi, Zeppelinstrasse 9, 7012 Fellbach-Schmiden, Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 243,795

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1980, 3010735

Int. Cl.³ G03B *3/00, 29/00, 19/18*

U.S. Cl. 351—139 **8 Claims**



1. A pad of high elasticity for eyeglass frames having pad levers which attach the pads to the eyeglass frames,

said pad having

a thin, kidney-shaped outer edge portion,

a soft, pliant front side, for contacting the eyeglass wearer,

a back, and

stable means on said back for receiving a pad lever,

wherein the improvement comprises:

thin, flexible members radiating integrally from said stable receiving means, having outer ends terminating at said kidney-shaped outer edge portion,

a foil-like membrane having an outer edge portion and a convex surface according to the shape of the front contact side of the pad,

said kidney-shaped outer edge portion having an outer area to receive said membrane and said membrane having a curved surface at its outer edge portion which engages with said outer area on said kidney-shaped outer edge portion.

4,390,257

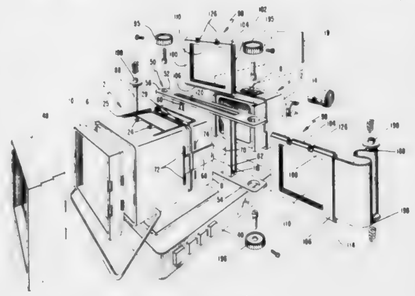
HAND HELD VIEWER FOR VARIOUS SIZE FILMS

Robert W. Fernekes, and Murray V. Tesser, both of Martinez, Ga., assignors to Senscom Corporation, Evans, Ga.

Filed Feb. 23, 1981, Ser. No. 237,084

Int. Cl.³ G03B *1/50*

U.S. Cl. 353—95 **17 Claims**



1. A hand-held filmstrip viewer comprising:

(a) a case defining a light path, said case including a slot which is in a plane perpendicular to said light path and is open on three sides of said case;

(b) means for introducing light to one end of said light path;

(c) means for viewing said light at the other end of said light path;

(d) means for mounting a filmstrip to intersect said light path, said means for mounting including:

(1) film channel means having first and second parallel walls and having a film strip receiving first passage therebetween, said first passage being open at both ends through which said filmstrip may slidably pass, said first and second walls having openings therein aligned with each other to permit visual access to said filmstrip within said first passage; and

(ii) channel guide means, mounted to said case and having a second passage dimensioned to slidably receive said film channel means, for removably mounting said film channel means in said case to allow said light to pass through said filmstrip when said filmstrip is located in said first passage of said film channel means and said film channel means is located in said second passage of said channel guide means, and wherein said channel guide means includes a case receiving opening and said case is positioned within said opening with said second passage of said channel guide means lying in said plane of said slot.

4,390,258

PHOTOMERIC CIRCUIT FOR CAMERA

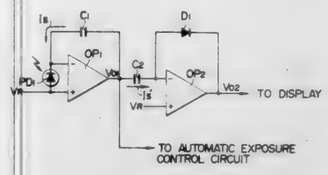
Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Nov. 30, 1981, Ser. No. 325,728

Claims priority, application Japan, Dec. 15, 1980, 55-176762; Dec. 18, 1980, 55-180064

Int. Cl.³ G03B *7/083, 17/18;* **G01J** *1/46*

U.S. Cl. 354—24 **16 Claims**



1. A photometric circuit for a camera including a photoelectric transducer element which is used for photometry by producing a photocurrent, and an integrating circuit including an integrating capacitor which directly integrates the photocurrent to provide an integrated output of photocurrent, characterized by a differentiator arranged in cascade connection with the integrating circuit to produce a photocurrent, output by differentiating the integrated output.

4,390,259

FLASH OUTPUT CONTROL APPARATUS FOR CAMERA

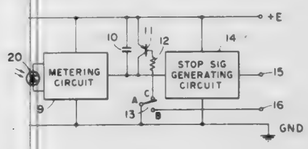
Mikio Takemae, Yokohama, and Yuji Ohkubo, Ohmiya, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,584

Claims priority, application Japan, Sep. 18, 1980, 55/128606

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—34 **5 Claims**



1. In a camera capable of flash light photographing employing a flash device comprising a flash tube which is made flashing in synchronism with a full opening of the exposure aperture by a shutter device and the quantity of flash light emitted from which is controlled by a flash output control circuit, improvements in the apparatus for controlling the operation of said flash device comprising:

(a) switch means including a first and a second electrical contact and a movable contact segment, said movable contact segment being able to move between said first and second electrical contacts in link with the full opening of the aperture by said shutter device in such manner that said segment moves away from said first contact and then comes into contact with said second contact; and

(b) control means for bringing said flash output control circuit into operation at the time when said movable contact segment leaves said first electrical contact toward said second one and for making said flash tube start flashing at the time when said segment comes into contact with said second electrical contact.

4,390,260

PLAY CONTROL FOR A THREADED DRIVE

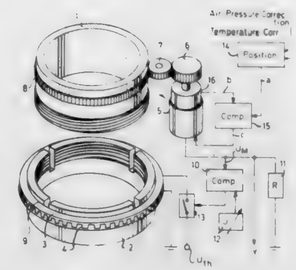
Reinhard Prinz, Aalen, Fed. Rep. of Germany, assignor to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Jul. 27, 1981, Ser. No. 287,046

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1980, 3030549

Int. Cl.³ G03B *3/00;* **G02B** *7/04;* **H02P** *7/04*

U.S. Cl. 354—65 **13 Claims**



5. A precisely adjustable threaded mechanism, comprising inner and outer threaded members which are normally in circumferentially continuous radially stressed play-free engagement to the extent of requiring a characteristic maximum torque for their rotary adjustment, one with respect to the other of said members being circumferentially continuously excitable to so change its circumferential extent with respect to the circumferential-extent of the other of said members that their characteristic engagement torque is reduced from said maximum, and means for thus exciting said one member to reduce said engagement torque and for imparting thread-advancing rotary drive torque to one with respect to the other of said members, said rotary-drive torque exceeding the reduced level of engagement torque in a period of such excitation.

4,390,261

FLASH CAMERA WITH PHOTOGRAPHIC MODE SELECTOR

Hiroshi Yamamoto, and Masanori Uchidoi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,597

Claims priority, application Japan, Sep. 10, 1980, 55-125491

Int. Cl.³ G03B *1/12*

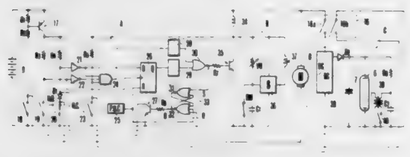
U.S. Cl. 354—173 **7 Claims**

1. A camera operable with an automatic film winder and a rechargeable electronic flash means settable into an operable condition, comprising:

a shutter button;

photographic mode change over means for changing from a continuous photographic mode in which successive pho-

tography is maintained as long as the shutter button is depressed to a single photographic mode in which ordinary single photography is achieved every time the shutter button is depressed, and for changing over to said single photographic mode in response to the flash means being set in the operable condition,



said change over means comprising first means manually operable for changing over to said both modes respectively and second means arranged in parallel with the first means, said second means being arranged for changing to said single photographic mode irrespective of the changing over of the first means for setting said camera to the single photographic mode when said rechargeable electronic flash means are set in the operable condition.

4,390,262

ELECTROMAGNETICALLY OPERATED DIAPHRAGM SHUTTER

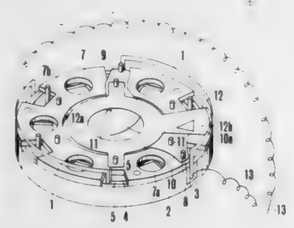
Michio Hirohata, Inagi; Yukio Ogawa, and Tetsuya Taguchi, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 86,523, Oct. 19, 1979, abandoned. This application Sep. 23, 1981, Ser. No. 304,936

Claims priority, application Japan, Oct. 23, 1978, 53-130829; Dec. 1, 1978, 53-148677

Int. Cl.³ G03B *9/08*

U.S. Cl. 354—230 **56 Claims**



1. An electromagnetically operated diaphragm shutter including:

(a) a plurality of shutter blades;

(b) a sector ring drivingly connected to said shutter blades and operative upon rotation thereof to actuate said shutter blades to block and unblock a photo-taking light path;

(c) permanent magnet members oriented relative to said sector ring to form a magnetic field having a direction parallel to the optical axis of an objective lens;

(d) electrically conductive members fixedly mounted on said sector ring and arranged upon supply of a current thereto to effect movement of said ring;

(e) aperture means provided through the wall of said sector ring to form a light metering optical path, said aperture means being located out of axial alignment with said conductive members on said sector ring; and

(f) diaphragm means positioned in the light metering optical path, with at least one of said shutter blades serving as said diaphragm means, and with the size of an opening defined by said diaphragm means being correlated to the size of an aperture opening defined at any time by said shutter blades.

4,390,263

MOUNT MEMBER FOR OPTICAL APPARATUS

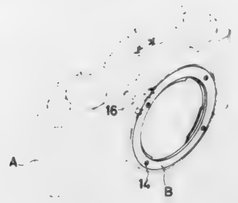
Toru Sumita, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 4, 1981, Ser. No. 260,134

Claims priority, application Japan, May 10, 1980, 55-62047

Int. Cl.³ G03B *17/00*

U.S. Cl. 354—286 **10 Claims**



1. In a mount by which two desired components of an optical apparatus are attached to or detached from each other by being moved relative to each other in sliding contact, a mount member characterized in that the mount member has a mount surface formed on the component and is made of an oil-impregnated sintered stainless steel at least at the mount surface.

4,390,264

ELECTROSTATIC COPYING APPARATUS

Naoaki Murata, Takarazuka; Masahiro Yoshioka, Matsubara; Kiyoshi Hayashi, Takatsuki, and Yasusuke Tohi, Sakai, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

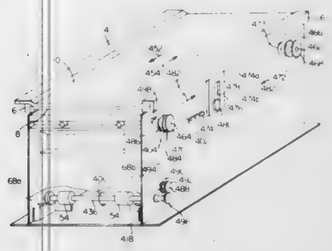
Division of Ser. No. 99,720, Dec. 3, 1979, Pat. No. 4,325,626. This application Aug. 25, 1981, Ser. No. 296,056

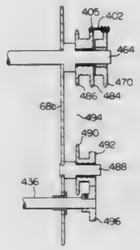
Claims priority, application Japan, Dec. 13, 1978, 53-153203; Feb. 2, 1979, 54-10304; Mar. 29, 1979, 54-41643; Apr. 5, 1979, 54-40302; May 25, 1979, 54-70992; May 25, 1979, 54-70993; May 25, 1979, 54-70994; May 25, 1979, 54-70995

Int. Cl.³ G03G *15/00, 15/04*

U.S. Cl. 355—8 **3 Claims**

1. An electrostatic copying apparatus of the type in which an original to be copied is scanned and exposed to light, comprising an original-support means having a transparent plate for placing the original thereon, an optical system movable relative to the original-support means, and paper feed rollers rotated in regard to the movement of one of said original-support means and said optical system thereby supplying a copying paper, and a drive mechanism for reciprocating one of said original-support means and said optical system having a driven wheel and an idle wheel rotatably disposed in a spaced-apart relation to each other and a winding power transmission system wound about these wheels and drivingly connected to one of said original-support means and said optical system, a synchronizing wheel rotatably disposed adjacent to, and coaxially with, one of said driven wheel and said idle wheel of said drive mechanism, an engaging protrusion fixed to said winding power transmission system, a plurality of engaging portions capable of cooperating with said engaging protrusion formed on the peripheral edge portion of said synchronizing wheel, and said paper feed rollers being fixed to a support shaft mounted rotatably and drivingly connected to said synchronizing wheel, whereby when said drive mechanism is operated to move said winding power transmission system, said engaging protrusion engages with one of said plurality of engaging





portions to rotate said synchronizing wheel and thus rotating the paper feed rollers.

4,390,265

IMAGE FORMING APPARATUS

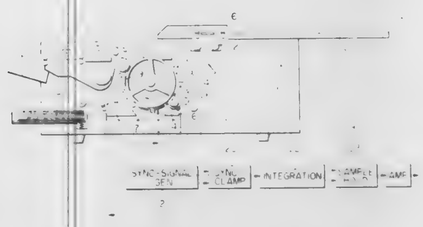
Koji Suzuki, Yokohama; Tsuneki Inuzuka, Machida, and Kenji Kurita, Mitaka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 969,885, Dec. 15, 1978, abandoned. This application Oct. 8, 1980, Ser. No. 194,985

Claims priority, application Japan, Dec. 21, 1977, 53-7839

Int. Cl.³ G03G *15/06, 15/10*

U.S. Cl. 355—14 D **12 Claims**



1. An image forming apparatus comprising:

a photosensitive member on which an electrostatic image may be repeatedly formed;

image forming process means including charging means for electrostatically charging the surface of said photosensitive member, exposure means for exposing said photosensitive member to a light image for forming an electrostatic latent image corresponding to said light image, and developing means for developing said latent image with a developer;

means for setting a light quantity level of said exposure means which is variable inclusively within a range extending between a lower limit and an upper limit;

means for detecting a state of the surface of said photosensitive member during a non-imaging period before start of the latent image formation, wherein said photosensitive member is exposed to the light of a predetermined quantity corresponding to a quantity which is not less than the lower limit but less than the upper limit during the non-imaging period, and is exposed to the light of the quantity set by said setting means during imaging; and

control means for controlling at least one of said image forming process means in accordance with an output of said detecting means.

4,390,266

EXPOSURE APPARATUS FOR ELECTRONIC DUPLICATOR

Kohachi Uchida, Sagamihara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 6, 1981, Ser. No. 232,219

Claims priority, application Japan, Feb. 7, 1980, 55-13855

Int. Cl.³ G03G *15/04*

U.S. Cl. 355—14 E **4 Claims**



1. An image density detecting element for use in an image forming apparatus of the type in which an image exposure is achieved by illuminating a document and guiding light reflected therefrom to a photosensitive medium to form an image of the document thereon, comprising:

optical fiber light receiving means having a light-receiving surface of a size corresponding to an illuminated area of the document for receiving light reflected therefrom, said light receiving means comprising a plurality of optical fibers each having first and second ends, all of said first ends being aligned in a row along said light receiving surface, said second ends being gathered into a bundle that is substantially perpendicular to said light receiving surface; and

light detecting means, optically coupled to said bundled second ends of said optical fibers for receiving light from each of said second ends and generating a single electrical signal related to the total light received from all of said second ends.

4,390,267

BI-MODAL ILLUMINATION APPARATUS

James C. Minor, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 22, 1982, Ser. No. 350,651

Int. Cl.³ G03G *15/00*

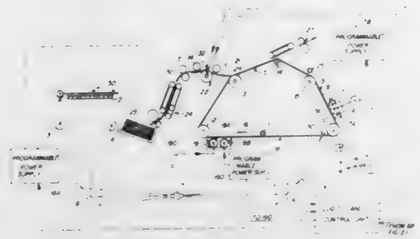
U.S. Cl. 355—14 E **2 Claims**

1. In apparatus having a photosensitive element, an exposure platen for receiving a document to be illuminated, an opaque cover movable between a closed position for covering a document at said exposure platen and an open position to accommodate at the platen a three-dimensional object such as a magazine or book which includes such a document and lamp means effective when energized for producing light which is reflected off a document at said exposure platen to expose said photosensitive element, the improvement comprising:

(a) switch means responsive to said cover when in said closed position for producing a first signal and responsive

to said cover when in said second position for producing a second signal; and

(b) illumination control means responsive to said first signal for energizing said lamp means to illuminate a document





at said exposure platen with light of relatively high-peak intensity and short duration and responsive to said second signal for energizing said lamp means to illuminate a document at said exposure platen with light of longer duration and lower peak intensity than said first illumination.

4,390,268

CLEANING DEVICE FOR TRANSFERRING SYSTEM WET TYPE COPYING MACHINE

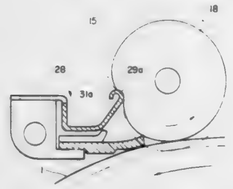
Masayoshi Furuichi; Takeshi Honjo, and Nobuo Akiba, all of Mitaka, Japan, assignors to Copyer Co., Ltd. and Canon Inc., both of Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 182,940

Claims priority, application Japan, Sep. 14, 1979, 54-118416; Sep. 19, 1979, 54-121267; Sep. 19, 1979, 54-121268

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **27 Claims**



1. In an image-forming apparatus in which an image is formed on a surface of an image-carrying member by a developing solution and is transferred onto a transferring member, a cleaning device for cleaning the surface of the image-carrying member, comprising:

a cleaning roller for cleaning the surface of the image-carrying member, said cleaning roller being disposed in contact with the surface of the image-carrying member;

a blade member for collecting the developing solution on the surface of the image-carrying member, said blade member being disposed in slidable contact with the surface of the image-carrying member and where one end portion of the blade member is in sliding contact with the outer wall of the cleaning roller;

squeezing means for squeezing the developing solution from said cleaning roller; and

discharging means for discharging the developing solution squeezed out by the squeezing means.

4,390,269

COPYING MACHINE

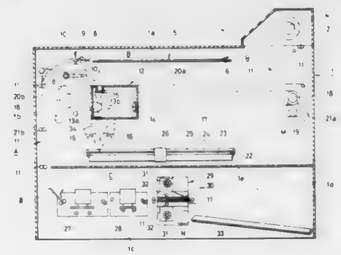
Kojiro Henmi, and Kiyosi Takenaka, both of Hikone, Japan, assignors to Dainippon Screen Manufacturing Co., Ltd., Kyoto, Japan

Filed Jul. 2, 1981, Ser. No. 279,949

Claims priority, application Japan, Jul. 10, 1980, 55-97460[U]

Int. Cl.³ G03B *27/32, 27/52*

U.S. Cl. 355—27 **7 Claims**



1. A copying machine comprising:

transfer means for transferring a sensitive material first along a ceiling surface of a box-shaped body of said copying machine in a substantially horizontal direction, then along a side wall in a substantially vertical direction, and finally along a bottom surface in a substantially horizontal direction,

a photographing zone arranged within an upper space in said machine body,

a development zone arranged within a bottom space in said machine body, and

a magazine mounted on the ceiling of the machine body for therein housing a rolled-up sensitive material,

wherein said photographing zone includes an exposure zone positioned substantially horizontally so as to oppose said sensitive material transferred along said ceiling surface of the machine body, an original picture stand positioned immediately below and parallel to said exposure zone, and a slit exposure scanner arranged between said exposure zone and said original picture stand so as to make reciprocatory movements in a lateral direction therebetween for forming images on the photosensitive surface of said sensitive material, said images transferred into said exposure zone from an original picture set on said original picture stand, and

said development zone comprises a development tank and a stabilizer tank arranged successively and horizontally through which said exposed material passes to be developed.

4,390,270

PHOTOGRAPHIC COPIER

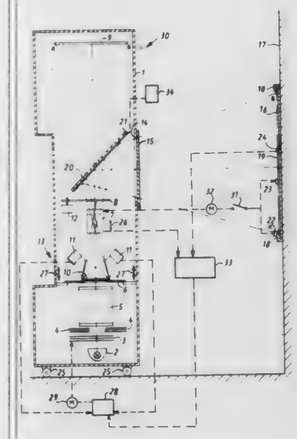
Ernst Biedermann, Taufkirchen; Günter Findeis, Sauerlach; Klaus Weber, Leverkusen, and Wolfgang Zahn, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 28, 1981, Ser. No. 287,571

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1980, 3028676

Int. Cl.³ G03B *27/44*

U.S. Cl. 355—46 **13 Claims**



1. A copying installation, particularly a photographic copying installation comprising:

(a) supporting means for an original to be copied;

(b) projecting means for projecting an image of the original to a first location at which the image has a first size, said projecting means comprising a lens;

(c) reflecting means for reflecting the image of the original to a second location at which the image has a second size, said reflecting means being arranged between said lens and said first location and being mounted for pivotable movement between an operative position in which it reflects the image of the original and an inoperative position; and

(d) a housing for said supporting means, projecting means and reflecting means, wherein said first location is inside said housing and said second location is outside said housing, said housing having an opening to permit travel of the image to said second location.

4,390,271

PROCESS FOR PRODUCING ORTHOGRAPHIC PROJECTION IMAGE OF COMPLEX TERRAIN/TARGETS FROM AN AUTOMATIC SYSTEM USING TWO PHOTOGRAPHS

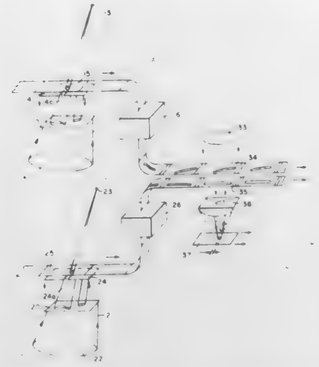
James L. Smith, Grand Prairie, Tex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 14, 1981, Ser. No. 330,117

Int. Cl.³ G03B *27/32*

U.S. Cl. 355—77 **4 Claims**

1. A system for producing an edge-enhanced, darkfield, orthographic projection image of complexed terrain/target configuration comprising making two different photographs of the complex terrain/target, utilizing the photographs to produce edge-enhanced, darkfield transparencies, utilizing said transparencies to expose recording frames, developing said recording frames to produce positive transparencies, superimposing said positive transparencies one over the other, passing collimated light from a light source through transparent portions of the positive transparencies to a focusing lens that focuses the light transmitted through said positive transparencies to one line on a recording plate which, when containing an



ensemble of such lines, produces an edge-enhanced, orthographic projection of the terrain/target configuration on the recording plate.

4,390,272

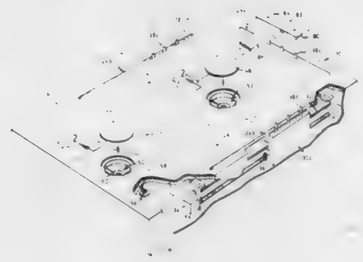
PHOTOGRAPHIC DISTORTION METHOD AND APPARATUS

James Anderson, 12 East Rd., Scarborough, Ontario, Canada (M1N 2A1)

Filed Jul. 29, 1981, Ser. No. 288,049

Int. Cl.³ G03B *27/10*

U.S. Cl. 355—84 **10 Claims**



1. A method of obtaining a distorted photographic reproduction from a negative photographic image, comprising the steps of:

attaching a sheet of photosensitive printing paper to a planar surface;

locating the negative photographic image over the sheet of printing paper;

positioning a mask with an exposure slit transversely over the negative photographic image; and

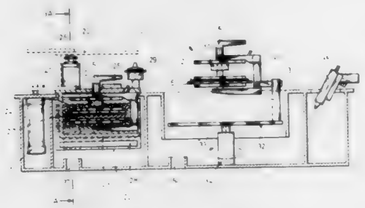
moving the negative laterally with respect to the paper and simultaneously moving the mask and slit laterally with respect to the negative image while exposing the mask and slit to a light source.

4,390,273

PROJECTION MASK AS WELL AS A METHOD AND APPARATUS FOR THE EMBEDDING THEREOF AND PROJECTION PRINTING SYSTEM

Ernst W. Loebach, Eschen, and Harry L. Sawatzki, Vaduz, both of Liechtenstein, assignors to Censor Patent-und Versuchsanstalt, Vaduz, Liechtenstein

Filed Feb. 17, 1981, Ser. No. 235,319
Int. Cl.³ G03B *27/28*
U.S. Cl. 355—125 **17 Claims**



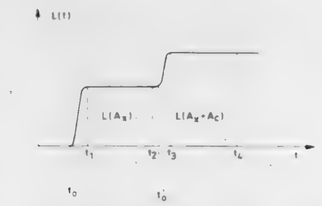
1. A projection mask, comprising
a substrate glass carrying a mask pattern thereon,
a cover glass covering said mask pattern and defining a space between said cover glass and said substrate glass carrying said mask pattern, said cover glass being sealed to said substrate glass exclusively at peripheral edges of at least one of said glasses,
a substantially particle-free transparent non-solid fluid in said space such that lateral forces are not transmittable thereby.

4,390,274

USE OF A METHOD, PARTICULARLY AN AUTOMATIC METHOD, FOR MEASURING LIGHT AS WELL AS IMPROVEMENTS AND APPARATUSES FOR CARRYING OUT THE SAME

Fritz Berthold, Engelsbranderstrasse 12, 754 Neuenbürg, Fed. Rep. of Germany; Seppo Kolehmainen, Ganzenstraat 11, Zolder, Belgium, and Veikko Tarkkanen, Breulsweg 1, Wijlre, Netherlands

Filed Jan. 10, 1980, Ser. No. 111,000
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1979, 2901919
Int. Cl.³ G01N *1/00, 21/00;* C12Q *1/66*
U.S. Cl. 356—36 **38 Claims**



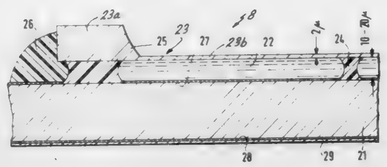
1. In a method for photometrically measuring a reaction process in which a sample has been transferred to a darkened measuring station, the sample containing an unknown quantity of a substance which acts as a reaction partner with a reagent, a first photometric measurement is taken at the darkened measuring station during the course of a reaction between a first reagent and a reaction partner which is present in the sample, and said first measurement is used for computation, the improvement comprising:
adding to the sample prior to its transfer to said darkened measuring station said first reagent;
after said first photometric measurement, adding to the sample at said darkening measuring station at least one additional reagent which is different from the first reagent, and which constitutes an additional reaction partner;
conducting a photometric measurement of the sample after the addition of each said additional reagent and during the course of a reaction between reaction partners then present in the sample; and
determining from the values determined during all of the measurements, the unknown quantity of the substance present in the sample.

4,390,275

MEASURING MINUTE, LOCAL TEMPERATURE DIFFERENCES

Lothar Schilf, Achim, and Ingo H. Giese, Bremen, both of Fed. Rep. of Germany, assignors to Erno-Raumfahrttechnik GmbH, Bremen, Fed. Rep. of Germany

Filed Dec. 15, 1980, Ser. No. 216,182
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950047
Int. Cl.³ G01J *5/00;* G02F *1/13*
U.S. Cl. 356—43 **16 Claims**



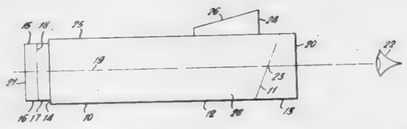
1. An object carrier for use in equipment measuring local temperature differences, comprising:
a first carrier plate;
a liquid crystal layer on the first carrier; and
a second plate on the crystal layer having a thickness of a few micrometers, being considerably less than the thickness of the liquid crystal layer.

4,390,276

COLLIMATOR GUNSIGHT

Raymond G. Budden, Havant, and Fraser Scott, Guildford, both of England, assignors to Ring Sights Limited, Surrey, England

Filed May 13, 1981, Ser. No. 263,068
Claims priority, application United Kingdom, May 14, 1980, 8015977
Int. Cl.³ G02B *23/10*
U.S. Cl. 356—251 **6 Claims**



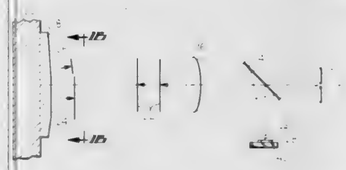
3. A collimator gun sight which comprises a block of solid, transparent material which has a substantially uniform reflective index, the block providing a line of sight therethrough by which a target can be viewed in substantially undeviated form, the block including
a body through which the line of sight passes, the body including a first planar end surface which forms the proximal end of the gun sight, an opposite, second planar end surface which forms the distal end of the gun sight, and a side surface, the first and second end surfaces being parallel to one another,
means within the body near the second planar end surface thereof defining a partially reflecting transparent concave surface being symmetrical about its optical axis which is aligned in parallel with the line of sight,
one or more flat reflecting surfaces located within the body in one or more parallel planes which are oriented at an acute angle to the optical axis of the partially reflecting transparent concave surface and provide a graticule pattern, a virtual image of which can be provided in the partially reflecting transparent concave surface by reflected light, the graticule pattern forming an aiming mark superimposed on the target being viewed along the line of sight, the graticule pattern defined by the reflecting surfaces to be sufficiently fine that the virtual image thereof and the target can be seen therethrough, and
prism means cemented to the side of the body at a point between the reflecting surface(s) and the partially reflecting transparent concave surface in the body, the prism means deflecting ambient light from a predetermined sector external of the gun sight into the body and towards the reflecting surface(s) so as to be reflected thereby and into the partially reflecting transparent concave surface and provide a virtual image of the graticule pattern thereon.

4,390,277

FLAT SHEET SCATTEROMETER

Bernard W. Quinn, Rancho Palos Verdes, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jul. 31, 1980, Ser. No. 174,194
Int. Cl.³ G01B *11/30*
U.S. Cl. 356—371 **25 Claims**



1. A flat sheet scatterometer for determining surface variations of a planar surface comprising:
a monochromatic light source;
light controlling and directing means adapted to control and direct light produced by said source;
light collimating means adapted to receive light from said controlling means;
light directing means adapted to receive light from said collimating means, direct said light to an object, receive light reflected by said object and reflect it back to said collimating means;
a beam splitter adapted to receive said reflected light from said collimating means and separate said light from non-reflected light, said beam splitter being rotatable about two axes;
coplanar light sensing means positioned at the focal plane of the reflected light exiting said collimating means and adapted to produce electrical signals responsive to the amount of light in said reflected beam and the amount of light scattered by the reflective surface; and
means for indicating the RMS scattering of said reflected light.

4,390,278

METHOD OF AND APPARATUS FOR INSPECTING THE ACCURACY OF A MACHINED CONTOUR IN A WORKPIECE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Oct. 8, 1980, Ser. No. 194,947
Claims priority, application Japan, Oct. 9, 1979, 54-130302
Int. Cl.³ G01B *9/08, 11/00*
U.S. Cl. 356—392 **7 Claims**



1. A method of inspecting the accuracy of a machined contour in a workpiece with respect to a desired contour, comprising the steps of:
focusing a light beam from a light source on a focal area on said workpiece;
guiding a reflection from said focal area to project an optical image therefrom on a display screen having predetermined indicia;
positioning said workpiece to locate a portion of said machined contour in said focal area in a predetermined coordinate system;
displacing said workpiece in said predetermined coordinate system so that said focal area effectively moves on said workpiece along a path of said desired contour, thereby scanning said machined contour; and
monitoring on said display screen said projected image representing said machined contour with reference to said indicia to determine a deviation of said machined contour from said desired contour one portion after another.

4,390,279

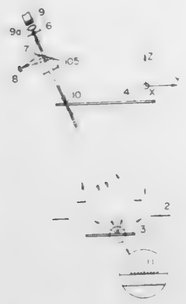
ALIGNMENT DEVICE IN AN IC PROJECTION EXPOSURE APPARATUS

Kyoichi Suwa, Kawasaki, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 166,794
Claims priority, application Japan, Jul. 12, 1979, 54-87460; Jul. 12, 1979, 54-87461; Jul. 12, 1979, 54-87462
Int. Cl.³ G01B *11/00*
U.S. Cl. 356—401 **6 Claims**

1. In an alignment device including a projection lens system for forming an image of a light source on a wafer surface through a mask, the wafer surface having a first reference mark thereon comprising a periodic pattern structure having a predetermined period in a first direction and the mask having a second reference mark on a surface thereof which is to be aligned with the first reference mark, the wafer surface regularly reflecting the light from locations thereon at which the first reference mark is not present and reflecting zero primary and higher order components of diffracted light from a location at which the first reference mark is present, and including an observation optical system having means for detecting light reflected from the wafer surface and passed through the projection lens system, the improvement comprising:
means for selecting a predetermined one of the diffracted light components reflected from the wafer surface and for directing said predetermined component to the observa-

tion optical system, said means including a light-intercepting member positioned near a pupil of the observation optical system and formed with a light-transmitting opening extending in a second direction orthogonal to the first direction, the light-transmitting opening being formed to



pass substantially all of the light reflected from locations on the wafer surface at which the first reference mark is not present, and being formed to pass only the zero order component of diffracted light reflected from the location on the wafer surface at which the first reference mark is present.

4,390,280

ILLUMINATION CONTROL FOR A DENSITOMETER AND DENSITY MEASURING DEVICE HAVING SUCH CONTROL

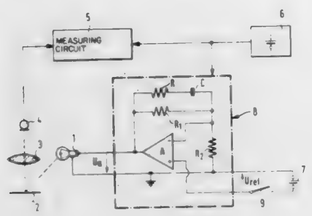
Tino Celio, Ambri, and Hans Ott, Regensdorf, both of Switzerland, assignors to GRETAG Aktiengesellschaft, Regensdorf, Switzerland

Filed Sep. 25, 1980, Ser. No. 190,572

Claims priority, application Switzerland, Sep. 28, 1979, 8792/79

Int. Cl.³ G01N *21/01;* **H05B** *37/02, 39/02*

U.S. Cl. 356—445 **7 Claims**



1. An illumination control system for measuring instruments of the type that measure a property of an object under test with the aid of light derived via the object from an incandescent electric lamp as a source of measuring light, comprising:

a control stage for supplying energizing voltage to the lamp;

means for supplying the control stage with a reference voltage to set the energizing voltage at a given, constant, final value; switch means connected to the control stage for switching on and off the supply of energizing voltage thereby;

wherein said control stage includes means which sets the relationship of the energizing voltage to the reference voltage such that, upon said switch being turned to the "on" position, the energizing voltage assumes a value 1–2% less than said given, constant, final value and then rises to said given, constant, final value over a period of about 1 to 3 seconds.

4,390,281

SLURRY GUN

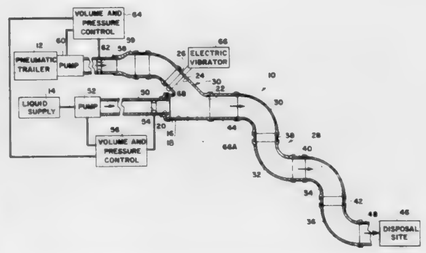
William F. Scriminger, Muskogee, Okla., assignor to Muskogee Environmental Conservation Co., Muskogee, Okla.

Continuation-in-part of Ser. No. 32,165, Apr. 23, 1979, Pat. No. 4,295,744. This application Aug. 18, 1980, Ser. No. 179,015

The portion of the term of this patent subsequent to Oct. 19, 1999, has been disclaimed.

Int. Cl.³ B28C *5/06*

U.S. Cl. 366—3 **11 Claims**



1. A slurry gun for the mixing of aerated fly ash and a wetting agent comprising

(a) an elongated horizontal housing disposed in a vertical plane, open at both ends to create a material introduction chamber;

(b) a horizontal wetting agent inlet port in the vertical plane of said housing communicating with a first open end of said housing for the horizontal longitudinal introduction of a wetting agent into the housing under pressure;

(c) an aerated fly ash inlet port disposed in the vertical plane of said housing and connected to the top of the housing in communication with the interior of the housing intermediate the ends thereof, said fly ash inlet port being disposed at an acute angle with respect to the wetting agent inlet port for the introduction of aerated fly ash therein under pressure; and

(d) a mixing apparatus operably secured to the second end of said horizontally disposed housing and comprising a contorted passageway having a plurality of closely connected right angle bends providing portions extending in vertical planes within and parallel said vertical plane of said housing and portions extending perpendicularly to said vertical plane of said housing in at least one horizontal plane for creating a turbulent descending path for the material; and

(e) a slurry outlet port disposed at a lower elevation than that of the housing and of the contorted passageway.

8. A method for mixing a slurry of fly ash and a wetting agent comprising the steps of

(a) introducing the wetting agent horizontally into a material introduction chamber disposed in a vertical plane under pressure and at a controlled volume;

(b) introducing aerated fly ash into the introduction chamber downwardly in said chamber vertical plane and outwardly at an acute angle with respect to the flow of wetting agent at a controlled volume of fly ash and pressure of air and

(c) creating turbulence downstream of the introduction chamber by passing the fly ash and wetting agent through a contorted path defined by a series of right angle paths some of which are in the vertical plane of the material introduction chamber and in planes parallel such plane and some of which right angle paths are in at least one horizontal plane perpendicular the vertical plane of the material introduction chamber for thoroughly mixing the fly ash and the wetting agent into a slurry.

4,390,282

CONTAINER

Willem J. H. Bake, c/o R. A. Marriner, Aries Corp., 1225 Hodges Rd., Lake Charles, La. 70601

Continuation-in-part of Ser. No. 2,089, Jan. 9, 1979, abandoned, which is a division of Ser. No. 3,612, Jan. 15, 1979, Pat. No. 4,189,237, which is a continuation of Ser. No. 758,795, Jan. 12, 1977, abandoned. This application Aug. 21, 1980, Ser. No. 180,104

Claims priority, application Netherlands, Jul. 6, 1976, 7607466

Int. Cl.³ B01F *15/02;* **B28C** *7/04*

U.S. Cl. 366—40 **7 Claims**



1. A self-discharging container comprising, in combination:

a plurality of container portions movably associated with each other for relative movement between a contents-containing closed position and a contents-discharging open position; and

auxiliary support means operatively associated with said container portions for automatically effecting said relative movement to said contents-discharging position in response to at least partial support of said container weight by said auxiliary support means.

4,390,283

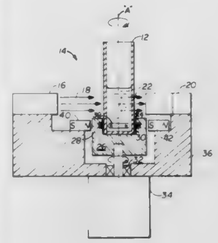
MAGNETIC STIRRER FOR SAMPLE CONTAINER

Richard C. Meyer, La Habra, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 71,812, Sep. 4, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 280,428

Int. Cl.³ B01F *13/08, 15/00*

U.S. Cl. 366—142 **5 Claims**



1. In apparatus of the type having a sample container for holding sample material to be assayed and a stirring element within the container for stirring material therein, said stirring element separate from said container to allow relative movement of said container with respect to said stirring element, the improvement comprising:

means for rotatably supporting the sample container;

means for rotating the sample container to cause corresponding rotational movement of material therein; and

magnetic means external to the container and magnetically coupled to the separate stirring element therein in a manner retaining the separate stirring element in a fixed relative position during rotation of the sample container whereby stirring of the sample material is achieved during said rotation by the rotational motion of the sample material around and past the fixed stirring element.

4,390,284

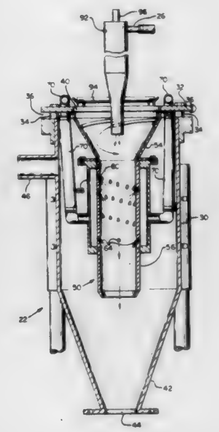
METHOD AND APPARATUS FOR WETTING POWDER

Paul E. Hyde, Corvallis, and John A. Rowell, Albany, both of Oreg., assignors to Neptune Microfloc, Inc., Corvallis, Oreg.

Filed Jan. 25, 1980, Ser. No. 115,295

Int. Cl.³ B01F *5/20*

U.S. Cl. 366—165 **16 Claims**



8. An apparatus for wetting a particulate material to form a homogeneous solution and/or mixture comprising:

a generally vertical wetter column;

a plurality of nozzles located on the interior of said column and arranged generally in a single helix array, each nozzle being adapted to produce an inwardly directed, fan-shaped wetting jet;

means for providing pressurized liquid to said nozzles; and

feed means for feeding particulate material to be wetted into the top of said column.

4,390,285

METHOD AND APPARATUS FOR MIXING SOLIDS WITH LIQUIDS, IN PARTICULAR FOR GLUING WOOD CHIPS

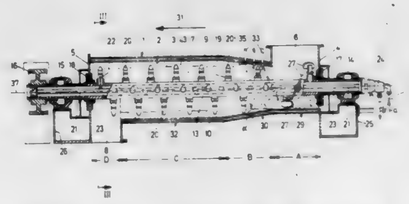
Herbert Dürr, Viernheim; Werner Christen, and Helmut Müller, both of Mannheim, all of Fed. Rep. of Germany, assignors to Draiswerke GmbH, Mannheim, Fed. Rep. of Germany

Filed Aug. 12, 1981, Ser. No. 292,213

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1980, 3032039; Sep. 26, 1980, 3036346; Feb. 16, 1981, 3105549

Int. Cl.³ B01F *5/04, 7/04*

U.S. Cl. 366—168 **14 Claims**



1. A method for mixing of particulate solids with liquids, in particular for gluing wood chips or the like, wherein there is an

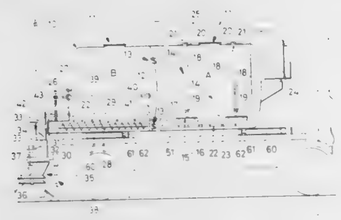
intensive movement of the solids during the addition of the liquid and a subsequent thorough mixing of the liquid and the solids in a ring of material to be mixed, characterized in that the solids are steadily accelerated out of an axial motion via a centrifugal and helical motion and the addition of liquid is effected during this acceleration, and that the acceleration to the velocity of the ring of material to be mixed takes place only following the addition of the liquid.

4,390,286

PLANT COMPOSED OF MULTI-FUNCTIONAL APPARATUS FOR DELIVERING SUBSTANCES FOR TREATING ROADWAYS OR THE LAND, AND WHICH CAN BE SELF-LOADED FROM THE GROUND ON TO THE PLATFORM OF A TRANSPORTER VEHICLE, AND VICE VERSA

Pietro Regaldo, C.so Agnelli, 81, Torino, Italy

Filed Mar. 4, 1982, Ser. No. 354,881
Claims priority, application Italy, Jul. 29, 1981, 68054 A/81
Int. Cl.³ B01F *15/02, 7/26*
U.S. Cl. 366—186 **5 Claims**



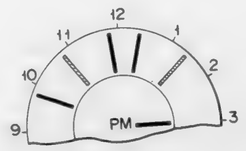
1. A plant composed of multi-functional apparatus for delivering substances for the treatment of roadways or the land, characterised by comprising a tank divided by a wall into two separate chambers each accessible through a manhole, and which can be connected together by opening valves provided in the wall, one of said chambers comprising agitator means for a liquid and a solute contained in said chamber so as to form a complete solution of the solute in the liquid, motor means being provided for withdrawing and delivering the solution, the second chamber comprising second agitator means for solid material contained in the chamber, and means for withdrawing it and feeding it to distributor means therefor, said second agitator and withdrawal means being extractable from the chamber through an aperture which can be closed by means of a suitable cover; the tank being supported by a rigid quadrilateral frame provided with legs which can extend under hydraulic control and are each provided with orthogonal shafts which are inserted into the cross members of the frame in order to define, by the use of locking means, respective horizontal and vertical positions of the legs in which they lie against or are distant from the frame, each shaft having a length greater than one half the length of the cross member into which it is inserted, and a diameter different from the shaft opposite which is also inserted into the cross member, so that one shaft can be inserted into the other when the legs lie against the frame.

4,390,287

ELECTRONIC DEVICE HAVING TIME DISPLAY FUNCTION

Morio Morishige, Hachioji, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1980, Ser. No. 210,036
Claims priority, application Japan, Dec. 5, 1979, 54-157911
Int. Cl.³ G04C *19/00*
U.S. Cl. 368—240 **7 Claims**



1. An electronic device having a timing display function comprising:

present time counting means for counting reference signals to obtain present time data comprised of at least hour unit data and minute unit data;

analog display means including at least 60 optical indicators for causing the present time data obtained at the present time counting means to be displayed by the display position of selected indicators of said at least 60 optical indicators;

time data storing means for storing a plurality of time data different from the present time data obtained at the present time counting means, said time data stored in said time data storing means comprising at least hour unit data and minute unit data;

readout means coupled to said time data storing means for selectively causing only a plurality of different time data which are of the order of hour unit data the same as hour unit data obtained at the present time counting means to be read out of said time data storing means; and

display control means coupled to said display means and to said readout means for causing at least the minute unit data of said plurality of different time data read out by said readout means to be simultaneously displayed by the display position of selected indicators of said at least 60 optical indicators.

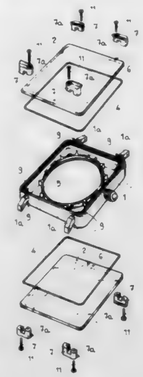
4,390,288

WATCH CASING

Jean Arnoux, Le Noirmont, Switzerland, assignor to Cesar Arnoux, S.A., Le-Noirmont, Switzerland

Filed Mar. 23, 1982, Ser. No. 361,529
Int. Cl.³ G04B *37/00*
U.S. Cl. 368—276 **10 Claims**

1. Watch casing having a casing body and comprising upper and lower elements of the casing secured to the casing body by four pairs of clamps engaging each on one of four outer protrusions of the said casing body, the tightening being ensured by screws traversing each one of the clamps in each of the respective pairs to enable the two clamps of each pair to move towards each other by slipping on the protrusion of the casing



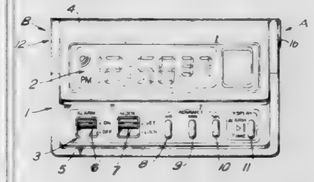
body on which they are engaged, thus securing to the casing body the respective upper and lower elements.

4,390,289

TIMEPIECE WITH MULTIFUNCTIONAL MEMBER

John T. Houlihan, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Aug. 14, 1981, Ser. No. 292,756
Int. Cl.³ G04B *37/00*
U.S. Cl. 368—286 **8 Claims**



1. In a timepiece construction having time display means disposed inside a housing, the combination of:

a housing member having a window portion through which the time display means can be viewed and an actuator-receiving portion adjacent said window portion,

first actuator means mounted in the actuator-receiving portion of the housing and connected to control selected functions of the timepiece, and

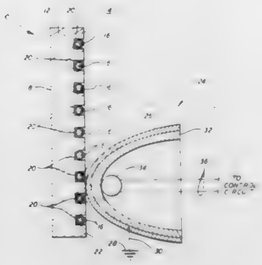
a multifunctional member defining an open portion and a cover portion adjacent thereto, said member being pivotally mounted on the housing and pivotable to a first position in front of the housing such that the cover portion overlies the first actuator means to prevent accidental actuation during carrying and the open portion accomodates the window portion to permit viewing of the time display means while the first actuator means is covered, and pivotable to a second position behind the housing such that said member functions as stand means for supporting the timepiece.

4,390,290

TEMPERATURE SENSOR FOR A RESISTANCE FURNACE

Michael J. O'Neill, Wilton, and Harold I. Hill, Fairfield, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 31, 1981, Ser. No. 249,534
Int. Cl.³ G01K *7/04, 13/00*
U.S. Cl. 374—142 **9 Claims**



1. An apparatus, in combination with a resistance furnace, comprising:

an electrically conductive member physically contacting an external wall of said furnace, said member being connected to a system ground potential via an electrically conductive ground strap;

an electrically insulating member adjacent said electrically conductive member and spaced apart from said external wall thereby; and

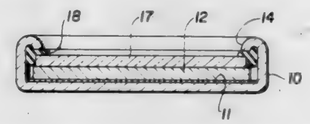
a thermocouple affixed to said electrically insulating member.

4,390,291

THERMAL INDICATOR FOR WELLS

Joseph V. Gaven, Jr., Oakton, Va., and Chan S. Bak, Newbury Park, Calif., assignors to Spectro-Systems, Incorporated, Oakton, Va.

Filed Dec. 10, 1980, Ser. No. 215,085
Int. Cl.³ G01K *1/14, 11/06, 13/02*
U.S. Cl. 374—160 **11 Claims**



1. A thermal indicator for circulation with fluid in a well and sized to pass through the fluid ports of a well drilling bit for indicating if a chosen temperature range has been encountered in the well, comprising a shallow pan-like retainer body of durable sheet material having a bottom surface portion adapted to bear a substantially permanent identifying marking and having an open top, a meltable solid metal alloy indicator component having a narrowly defined single melting temperature range chosen from the temperature spectrum 76° C. to 351° C. normally encountered in a well, said indicator component at least partially covering the bottom portion prior to melting of said component and being exposed for contact with the fluid circulated in the well, a flange-like formation on said retainer body adjacent the open top thereof, said meltable solid metal alloy indicator component extending across the bottom surface portion and beneath said flange-like formation at opposite sides of said retainer body, and said flange-like formation mechanically fixedly securing opposite sides of said component to said retainer body prior to the melting of said compo-

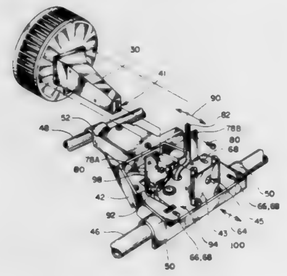
nent, whereby when the narrowly defined melting temperature range of said indicator component is encountered in the well said component melts from beneath said flange-like formation and separates from said retainer body exposing said bottom portion and is lost in the fluid in the well.

4,390,292

MEANS AND METHOD FOR COMPENSATING FOR PRINT MEDIUM THICKNESS IN LINE PRINTERS

Horst M. Krenz, St. Joseph, Mich., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Nov. 3, 1981, Ser. No. 317,810
Int. Cl.³ B41J *25/00, 29/00*
U.S. Cl. 400—59 **1 Claim**



1. For use in a line printer having a print head supported upon a carriage for traversing a path spaced from but parallel to a platen for printing dot-matrix characters through an inked ribbon onto a print medium drawn between said ribbon and said platen, print head spacing adjustment means comprising:

a bracket, having an access aperture, slidably mounted on and overlying said carriage for enabling movement of said bracket toward and away from said platen;

means extending from said bracket for mounting said print head on said bracket;

slot means disposed in said carriage;

a bracket adjusting member consisting of a lever comprising an elongated arm terminated by an offset portion pivotally seated in said carriage slot means and captivated therein by said overlying bracket and with said elongated arm extending through said bracket access aperture and communicating with the wall of said aperture to afford manual adjustment of the spacing of said print head with respect to said platen by pivotal movement of said lever;

spring-biased pointer means pivotally mounted on said carriage and having one end thereof engaging said mounting means extending from said bracket, said bracket having indicia thereon beneath the traverse of said pointer means such that bracket movement and hence print head movement is translated into pointer movement to facilitate rapid set up of said print head by providing for a gross indication by said indicia of print head location with respect to said platen;

whereby the spacing between said print head and said platen can be quickly adjusted by movement of said lever to accommodate print media of different thicknesses.

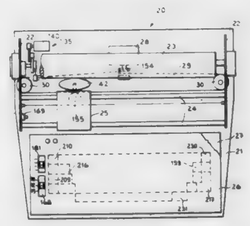
4,390,293

ELECTRONIC TYPEWRITER

Giuseppe Gubau, Ivrea; Domenico Roano, Parella, and Giovanni Quaranti, Banchette, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Dec. 12, 1980, Ser. No. 215,722
Claims priority, application Italy, Dec. 21, 1979, 69450 A/79
Int. Cl.³ B41J *1/30*
U.S. Cl. 400—144.2 **20 Claims**

1. An electronic typewriter comprising a character-carrier disc having flexible fingers, each one carrying a character, a selection motor having the rotor connectable with the disc for the rotation thereof, a digital transducer for revealing incremental rotations of said character-carrier disc and having a plurality of switching area associated with said fingers, and sensing means revealing the presence of said switching areas on a predetermined position for generating a transducer position signal, wherein said transducer position signal is representative of a coarse location of each of said fingers in front of the point of typing, a velocity servo-control circuit for the selection motor including a first means responsive to angular distances of the desired character from the coarse location for generating a corresponding desired velocity signal, second means responsive to each transducer position signal and to a preceding transducer position signal for generating an actual velocity signal, and motor actuating means responsive to said



actual velocity signal and to said desired velocity signal for causing the rotor of said selecting motor to be rotated in accordance with a predetermined law of motion, wherein said velocity servo-control means arrests the rotor when the desired character reaches said coarse location in front of the point of typing, and means for fine positioning said desired character in front of the point of typing comprising a correction wheel mounted synchronously with said character-carrier disc and provided with a series of peripheral recess means associated with said fingers, tooth means actuatable for engaging with each of said series of recess means, and correction actuating means responsive to reached coarse location of said desired character for actuating said tooth means, and wherein the engagement of said tooth means with said recess means causes fine positioning of the desired character in front of the point of typing.

4,390,294

RIBBON RE-INKING MACHINE CAPABLE OF RELOADING A VARIETY OF TYPES OF RIBBON CASSETTES

Albert J. Castro, San Gabriel, Calif., assignor to Westates Space-Era Products, Inc. dba Wespac, South El Monte, Calif.

Filed Sep. 2, 1980, Ser. No. 183,204
Int. Cl.³ B41J *33/10*
U.S. Cl. 400—196.1 **16 Claims**

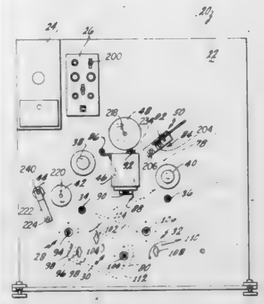
1. An improvement in a ribbon machine of the type capable of feeding a ribbon into a ribbon cassette, the cassette being of the type having a ribbon discharge opening and a ribbon feed opening, which comprises:

a support surface;

ribbon guide means associated with said support surface for guiding said ribbon over said support surface from the ribbon discharge opening to the ribbon feed opening of said cassette;

at least two cassette adapters, each adapter including cassette holding means capable of reversibly holding on said adapter at least one type of a variety of types of cassettes, and each of said cassette adapters (holders) capable of holding a different type of cassette;

a plurality of adapter positions located on said support surface, each of said adapter positions including cassette drive means and cassette adapter holding means, each of said cassette adapters capable of being held by the respective cassette adapter holding means at one of said plurality of adapter positions;



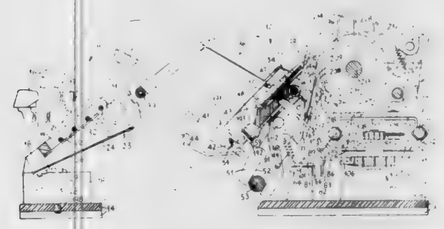
each of said cassette adapters including cassette driven means transfer means capable of allowing said cassette drive means to interact with said cassette to feed said ribbon into said cassette.

4,390,295

CARRIAGE SUPPORT FOR TYPEWRITER

Walter Albrile, Turin, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Mar. 20, 1980, Ser. No. 132,394
Claims priority, application Italy, Mar. 22, 1979, 67589 A/79
Int. Cl.³ B41J *19/00*
U.S. Cl. 400—330.1 **8 Claims**



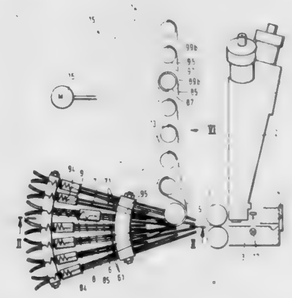
1. A typewriter of the type comprising a type bar basket having a plurality of type bars and a guiding fork for a striking type bar; a base structure mounting said type bar basket; a carriage module including a carriage transversely movable with respect to said fork, wherein said carriage module has a movable guide, a platen mounted on said movable guide, and a fixed guide for slidably supporting said movable guide; at least one spacing command member supported by said base structure and operable by the striking type bar for commanding the spacing of said platen; a carriage spacing mechanism including a draw spring connected to drive said movable guide, a rack mounted on said movable guide, a pinion in engagement with said rack, a spacing toothed wheel bodily connected with said pinion and a spacing tooth engaging with said spacing toothed wheel and wherein said spacing tooth is actuatable to release said toothed wheel and re-engage said toothed wheel for effecting the spacing of said platen; mounting means for mounting together said carriage module and said carriage spacing mechanism as a unit, wherein said unit operates to guide and space said platen with respect to said fixed guide independently from said base structure; and fixing means for exactly fixing said unit on said base structure; wherein said mounting means comprise a support plate mounting said draw spring, said fixed guide, said pinion and said spacing tooth; wherein said fixing means comprise a coupling slot on said support plate for coupling a pin member fixed on said type bar basket adjacently to said fork and locking screws locking said support plate on said base structure; and wherein said fixing means put said spacing tooth in front of said at least one spacing command member for causing said tooth to be actuated by said command member.

4,390,296

PRINTING MACHINE

Fritz Siegenthaler, Trub, Switzerland, assignor to Autelca, AG, Switzerland

Filed Sep. 10, 1981, Ser. No. 300,912
Claims priority, application Switzerland, Sep. 19, 1980, 7030/80
Int. Cl.³ B41J *15/18, 11/50*
U.S. Cl. 400—608 **8 Claims**



1. A machine for printing respectively one section of an individually selected one of a plurality of strips of printing material (**11**, **12**) and for cutting off the printed section, comprising

printing means (**2**) for printing on a respective section of one of said strips of said plurality of strips (**11**, **12**);

a plurality of flat guide channels (**6**, **7**), each for guiding one of said plurality of strips (**11**, **12**);

a pair of feed rollers (**1**) connected between said printing means (**2**) and said plurality of flat guide channels (**6**, **7**);

cutting means (**4**) connected on the opposite side of said printing means (**2**) from said pair of feed rollers (**1**) for cutting off the respective section of said one of said strips imprinted by said printing means (**2**);

said pair of feed rollers providing a nip (**5**) therebetween facing away from said printing means (**2**) and rotatable in one direction for advancing a respective one of said strips (**11**, **12**) guided in the respective flat guide channel (**6**, **7**) to said printing means (**2**) and then to said cutting means (**4**), and rotatable in the opposed direction for returning the said respective one of said strips to leave said nip (**5**);

said plurality of flat guide channels (**6**, **7**) being arranged in a fan shape and oriented towards said nip (**5**) of said feed rollers (**1**);

a plurality of gripping means (**8**, **9**) each associated with one of said flat guide channels (**6**, **7**) and having a normally gripping position gripping the strip (**11**, **12**) in the respective flat guide channel (**6**, **7**), said gripping means (**8**, **9**) being individually displaceable for advancing and returning along a path extending on a longitudinal portion of the respective flat guide channel and having a length corresponding approximately to the distance between said fan shape arrangement of said plurality of flat guide channels (**6**, **7**) and said nip (**5**) of said feed rollers (**1**);

control means (**68**,**83**) connected between said gripping means and said flat guide channels for retaining said gripping means (**8**, **9**) in a released position when at the forward end of said path of displacement; and

displacement means (**13**–**16**, **89***b*, **87**, **85**, **99***b*, **97**, **95**) connected to said plurality of gripping means (**8**, **9**) for ad-

vancing a selected one of said gripping means (**8, 9**) along said path toward said nip (**5**) of said feed rollers (**1**) in the beginning of said rotation of said feed rollers (**1**) and for returning at the end of the said rotation.

4,390,297

METHOD AND APPARATUS FOR CORRECTION OF NON-IMPACT PRINTING

Janise N. Gaitos, San Jose; Meredith D. Shattuck, Hollister, and Clayton V. Wilbur, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,197
Int. Cl.³ B41J *29/16*
U.S. Cl. 400—697.1 **5 Claims**



1. A method for correcting non-impact printed data a character at a time comprising the steps of:

printing the characters with a printing head utilizing a non-impact printing technique which deposits a detectable thickness of thermoplastic marking material on a record medium;

providing a corrective ribbon which carries a pressure transferable opaque adherent pigmented material on one surface thereof;

interposing said corrective ribbon between said record medium and said printing head;

positioning the character to be corrected into an impressing position; and

selectively producing pressure to move the corrective ribbon into intimate contact over an area registering with the incremental area of said record medium containing the printed character to be corrected, so that the opaque adherent pigmented material is transferred only to the character to be corrected.

4,390,298

UNIVERSAL WIPER PLUG FOR LIQUID COSMETIC PRODUCTS

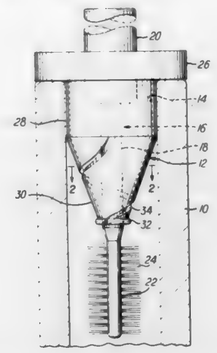
John F. Carluccio, 836 High Mountain Rd., Franklin Lakes, N.J. 07417

Filed Oct. 21, 1981, Ser. No. 313,367
Int. Cl.³ A46B *11/00*
U.S. Cl. 401—122 **4 Claims**

1. A wiper plug for liquid cosmetic products, for removing excess liquid on the rod and head of a cosmetics applicator, comprising:

a plug body having an axial opening therethrough;

a resilient wiper section extending axially from said plug body and having a lower wiper edge remote from said plug body, wherein said wiper section has at least one of a cut and slot therein extending axially from said wiper edge toward said plug body such that said wiper edge forms a radially enlargeable wiper opening adapted to be resiliently held against the rod and head of a cosmetic applicator inserted therethrough, to remove excess liquid on the rod and head when the applicator is withdrawn axially through said wiper opening, wherein said at least one of a cut and slot is helical such that the action of withdrawing a cosmetics applicator through said opening



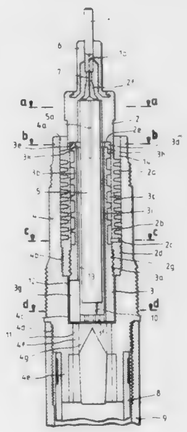
causes said lower wiper edge to be drawn in and around the rod and head of the applicator.

4,390,299

INDIA INK DRAWING IMPLEMENT

Otto Mutschler, Rudolf-Krehl-Strasse 21, Heidelberg, D-6900, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 297,739
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1980, 3037257
Int. Cl.³ B43K *5/16, 1/06, 1/10*
U.S. Cl. 401—258 **3 Claims**



1. An India ink drawing implement comprising:

(a) a retaining box having an outer end and an inner end, the retaining box having a circumference and defining an axial bore and a shoulder in the axial bore, the retaining box comprising

(1) a spiral ink collecting system extending along the circumference of the retaining box,

(b) a retainer tube for a floating weight defining an axial bore in axial alignment with the axial bore of the retaining box, the retainer tube comprising

(1) an elongated tubular portion having a circumference and extending through the retainer box bore, the tubular portion having an annular outer end engaging the shoulder and defining an annular groove and a port,

(2) another spiral ink collecting system extending along the circumference of the tubular portion, the ink collecting systems being connected by another port at an inner end thereof and the other ink collecting system having an outer end at the shoulder, the shoulder and the axial bore of the retaining box forming a duct defining an ink flow control path connected to the annular groove by the port in the outer end of the tubular portion, and

(c) a floating weight guided for axial movement in the axial bore of the retainer tube and a portion of the retaining box bore, the length of the tubular portion being sufficient to guide a major portion of the floating weight and the bottom of the retainer tube limiting the stroke of the axial movement of the floating weight,

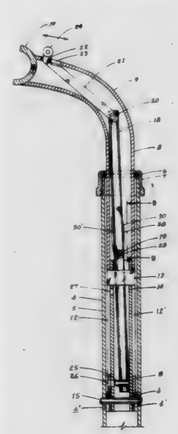
(1) the retainer tube bore having air conducting capillary passages spanning the stroke of the axial movement of the floating weight and in communication with the annular groove.

4,390,300

ADJUSTABLE BICYCLE HANDLEBAR STEM

Edwin E. Foster, 1801 Camp Craft Rd., Austin, Tex. 78746

Filed Aug. 21, 1980, Ser. No. 179,940
Int. Cl.³ B62K *21/22*
U.S. Cl. 403—24 **7 Claims**



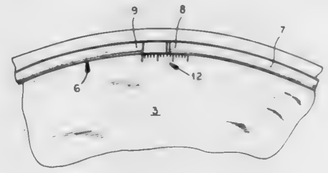
1. In a bicycle having a handlebar and a frame with a front fork tube, the improvement comprising a stem with its lower portion in said fork tube within which tube said stem is slidable, said stem having an upper portion extending above said fork tube and projecting forwardly thereof, means securing said handlebar to said stem upper portion on the forward end portion thereof, a stationary tube provided within said fork tube, means fixing said stationary tube to said fork tube for preventing relative movement of the former, said stationary tube being disposed coaxially with, and interiorly of, said stem lower portion, a lever disposed within said stem, means pivotally mounting said lever for rockable movement about an axis transverse to said stem, a latching pin carried on said lever, and at least one latch opening provided in said stationary tube for accepting said latch pin for maintaining said stem in preselected vertical relationship to said fork tube, said lever being thereby rockable between latch pin locked and unlocked condition.

4,390,301

FRICTION CONNECTION BETWEEN A WHEEL AND A SHAFT WITH FORCE INDICATOR

Werner Winckelhaus, Manteuffelstrasse 13, D-4100 Duisburg, Fed. Rep. of Germany

Filed Sep. 28, 1981, Ser. No. 306,541
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1980, 3036979
Int. Cl.³ B25G *3/00;* **F16D** *1/00;* **F16G** *11/00*
U.S. Cl. 403—27 **6 Claims**



1. A device for frictionally coupling a hub to a shaft, comprising:

an annular disk surrounding said shaft and adapted to support radial force;

wedge means including at least one axially displaceable member surrounding said shaft and shiftable for transforming axial force into radial forces which are applied to said disk tending to expand said disk and to frictionally couple said hub and said shaft;

a plurality of screws angularly equispaced about said shaft and generally parallel thereto for axially displacing said member and applying said axial forces thereto; and

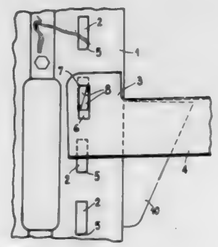
means on said disk for signaling the degree of expansion thereto, thereby indicating the radial force with which said hub is frictionally coupled with said shaft.

4,390,302

FRAMEWORK FOR FIXEDLY SUPPORTING A HORIZONTAL ARM

Jaime Sanfeliu-Marimon, Barcelona, Spain, assignor to Storage Systems and Industrial Products Ltd., Zurich, Switzerland

Filed Feb. 4, 1981, Ser. No. 231,443
Claims priority, application Spain, Feb. 5, 1980, 488925
Int. Cl.³ F16B *7/08, 9/00*
U.S. Cl. 403—187 **3 Claims**



1. A framework including a generally vertically extending elongated member for fixedly supporting a substantially horizontally extending arm from a transversely extending member at one of a plurality of locations comprising:

an extending member having a plurality of longitudinally separated rectangular openings;

an arm extending transversely to said member and having a rectangular opening aligned with one of the openings of said vertical member; and

a pair of cotter pins of right triangular cross section extend-

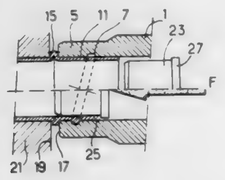
ing through said one opening and one of said openings of said member, said pins being in contact along the hypotenuses of the triangular sections and having dimensions along the other two sides less than the corresponding dimensions of said openings whereby after insertion of said pins through said openings said arm moves downward by gravity misaligning said openings by forcing said triangular members toward a superposed position in which they are wedged against each other and the surrounding surfaces of the openings and lock said arm to said member.

4,390,303

TORQUE TUBE-TO-UNIVERSAL JOINT YOKE DEFORMATION COUPLING

Bernard Mallet, Limay, France, assignor to Nadella, France

Filed Aug. 4, 1981, Ser. No. 290,019
Claims priority, application France, Aug. 6, 1980, 80 17338
Int. Cl.³ B25G *3/28*; F16G *11/00*
U.S. Cl. 403—284 **3 Claims**



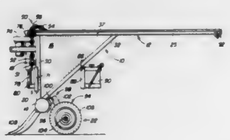
1. In a transmission device comprising a coupling including a cylindrical hub which has a longitudinal axis and defines a bore, and a tubular element which has a cylindrical end portion which is axially and circumferentially fixed in said bore and has for this purpose at least one radial boss obtained by an upsetting of the material of the tubular element and engaged in a cavity formed in the bore of the hub; the improvement wherein said cavity is constituted by a groove forming a curve which has at every point thereof a tangent which is inclined relative to the axis of the hub.

4,390,304

CRUSHED ROCK APPLICATOR MECHANISM

Carl C. Jacobson, Jr., Tempe, and Mark C. Manning, Chandler, both of Ariz., assignors to Crafco, Inc., Chandler, Ariz.

Filed Apr. 5, 1982, Ser. No. 365,198
Int. Cl.³ E01C *19/20*
U.S. Cl. 404—110 **20 Claims**



1. An applicator mechanism for applying a layer of particulate materials on a ground surface over which it is manually movable, said applicator mechanism comprising:

(a) a carriage including wheel means for manual manipulation in a forward direction along an intended movement path by an operator;

(b) an upwardly opening hopper structure supportingly mounted on said carriage for receiving a supply of particulate materials, said hopper structure having an elongated materials dispensing slot formed in the bottom thereof which is disposed to extend transversely of the intended movement path of said carriage;

(c) means on said hopper structure for selectively varying the length and width dimensions of the opening defined by the materials dispensing slot of said hopper structure to control the flow of particulate materials therethrough; and

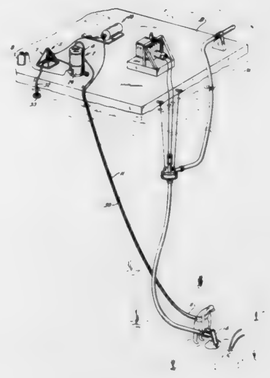
(d) said wheel means of said carriage being disposed in angularly downwardly and rearwardly spaced relationship with respect to the materials dispensing slot of said hopper and in substantially full ground surface engaging contact transversely of the intended movement path of said carriage for rolling over the materials dispensible from the materials dispensing slot when said carriage is moved forwardly along the intended movement path thereof.

4,390,305

PORTABLE HOT WATER SYSTEM FOR DIVER'S SUIT

Albert H. Sloan, 4200 Kean Rd., Fort Lauderdale, Fla. 33314

Filed Jan. 12, 1981, Ser. No. 224,007
Int. Cl.³ B63C *11/02*; A61F *7/06*
U.S. Cl. 405—186 **3 Claims**



1. A portable hot water system for a diver's suit and comprising a portable, air driven, pressure compensated, positive displacement water pump, said pump having a water inlet for receiving cold water and also having a pressurized water outlet, said portable pump being positionable adjacent said water source and having a cold water inlet conduit connected to its water inlet and for conducting cold water from a water source into said pump, an engine driven portable air compressor connected with and for driving said pump by compressed air, a portable water heater, a portable container of heating fuel which is connected with and for heating said heater, a cold water conduit between said water outlet of said pump and said water heater for supplying cold water to said heater, a hot water conduit from said hot water heater to the suit of a diver, and a thermostatic valve located in the water conduit between said water heater and said diver's suit.

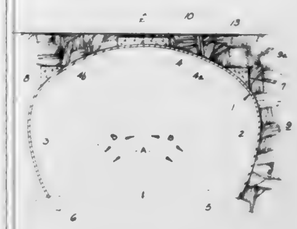
4,390,306

COMPOSITE ARCH STRUCTURE

Christopher L. Fisher, Winnipeg, Canada, assignor to Armco Inc., Middletown, Ohio

Filed Jan. 28, 1981, Ser. No. 229,079
Int. Cl.³ F16L *9/22*; E01G *5/06*; E21D *9/00*
U.S. Cl. 405—124 **20 Claims**

1. In a composite arch structure of the type comprising an elongated, relatively thin gauge liner with compacted backfill thereabout, said liner comprising first and second flexible retaining wall portions and a flexible top arch portion extending therebetween, said first and second retaining walls having longitudinally extending upper edges, said top arch portion having longitudinally extending lateral edges affixed respectively to said upper edges of said first and second retaining wall portions, the improvement comprising a stiffening and load distributing member structurally connected to said top arch portion and extending centrally and longitudinally of said top arch portion for the majority at least of the length thereof.

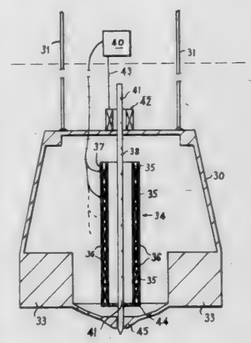


4,390,307

PILE-DRIVING APPARATUS

Alan R. Rice, 16 Falcon Ter., Wylam, Northumberland, England

Filed Aug. 15, 1980, Ser. No. 178,581
Claims priority, application United Kingdom, Aug. 17, 1979, 7928769
Int. Cl.³ E02D *7/06*; B25D *11/00*; E21B *7/26*
U.S. Cl. 405—228 **5 Claims**



1. In a non-percussive device for driving elements into soil, the improvement comprising:

(a) a linear electric motor including:

i. a motor stator comprising a stator tube provided by a plurality of coaxially arranged coils, the stator tube having a passage extending coaxially therethrough; and

ii. a motor slider, the slider itself comprising a non-percussive, non-reciprocating elongate soil penetrator element responsive to electromagnetic energy, said penetrator element, in operation of the device, extending through said passage with a clearance between the outer wall of said element and the inner wall of said stator tube which defines said passage and being slidable axially relative to said stator tube; and

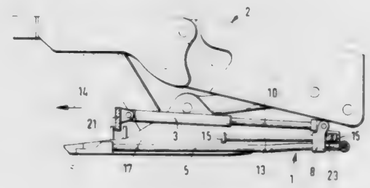
(b) continuous axially-unidirectional force-generating means for generating a magnetic wave which travels along the coils of said stator tube, undirectionally, from one end thereof to the other, for inducing electrical currents in said coil penetrator element so as to set up a magnetic field which interacts with the field of said stator tube and imparts directly to said soil penetrator element a continuous, unidirectional driving force to slidably progressively displace said penetrator element through the stator tube in one axial direction only.

4,390,308

ADVANCE MECHANISM FOR A MINE ROOF SUPPORT ASSEMBLY

Kunibert Becker, Werl; Rüdiger Kirchbrücher, Dortmund-Brackel; Günter Lagodka, and Klaus-Dieter Pohlmann, both of Lunen, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Sep. 10, 1981, Ser. No. 300,826
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034645
Int. Cl.³ E21D *23/00*
U.S. Cl. 405—299 **22 Claims**



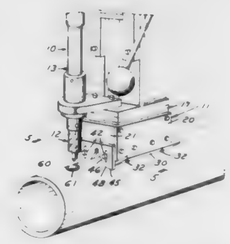
1. An advance mechanism for a roof support assembly comprising a plurality of roof support units positioned side-by-side along, for example, a longwall face of a mineral mining working, the advance mechanism comprising a pair of generally parallel hydraulic advance rams and a guide rod system including a pair of resilient, generally parallel guide rods, the guide rod system being attached, at one end, to a conveyor extending along the longwall face, the other end of each guide rod being attached to a respective slide piece which is slidably guided on a respective guide rail which is attached to a respective floor girder of a roof support unit, the slide pieces being attached to the piston rods of the hydraulic advance rams, wherein the cylinders of the hydraulic advance rams are attached to one of the adjacent floor girders, and the slide piece attached to the piston rod of one of the hydraulic advance rams is attached to the guide rod system.

4,390,309

CRADLE PIPE ADAPTOR FOR MAGNETIC DRILL

Michael D. Fangmann, Bluegrass, Iowa, assignor to Jancy Engineering Co., Davenport, Iowa

Filed May 11, 1981, Ser. No. 262,539
Int. Cl.³ B23B *41/08*, *45/14*
U.S. Cl. 408—76 **4 Claims**



1. A cradle adaptor for use with a portable drill having an electromagnetic base for magnetically adhering the drill to a convex magnetic support surface, and wherein the electromagnetic drill base is rectangularly shaped and includes a flat bottom wall, a pair of opposite parallel side walls and a pair of opposite parallel end walls, characterized in that, said cradle adaptor includes:

(a) a rectangularly shaped box including a pair of laterally

spaced side plates and a pair of longitudinally spaced apart end plates which are adapted to be seated against the sides and ends, respectively of the rectangular electromagnetic drill base;

(b) means for releasably securing the side plates of the cradle box to the end plates for clamping the box on said drill base;

(c) a pair of adjustable side plates adjustably mountable on the outer faces of the cradle box side plates by a plurality of bolts extended through slots in the adjustable side plates into threaded engagement with mating threaded holes in the cradle box side plates;

(d) a pair of adjustable end plates adjustably mounted on the outer faces of the cradle box end plates by a plurality of bolts extended through slots in the adjustable end plates into threaded engagement with mating threaded holes in the cradle box end plates; and,

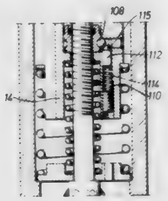
(e) means for releasably securing each of the adjustable side plates and the adjustable end plates to the adjacent respective cradle box side plates and cradle box end plates when the drill base is mounted on said convex support surface to have the adjustable side plates and adjustable end plates in magnetic line contact with the convex support surface.

4,390,310

TAPPING ATTACHMENT

Alf Eriksson, Nacka, Sweden, assignor to Aktiebolaget Svenska Precisions verktyg, Sweden

Filed Jun. 20, 1980, Ser. No. 161,259
Claims priority, application Sweden, Jun. 20, 1979, 7905456
Int. Cl.³ B23B *47/24*
U.S. Cl. 408—141 **12 Claims**



1. A tapping attachment comprising one driving and one driven unit between which are provided means for the transfer of torque permitting mutual axial displacement of the two units, between which are mounted spring elements, one of which is tensioned when the units are moved away from one another and the other when the two units are moved in the opposite direction to this, in which adjustable stop elements mounted between the spring elements are so arranged as to limit the freedom of movement of the units toward or away from one another from an initial preset position determined by the tension of the springs, characterized further including pressure devices known per se acting upon the adjustable stop elements located between the spring elements in order to increase the resistance to axial displacement of the units towards one another regardless of the initial preset position of the units.

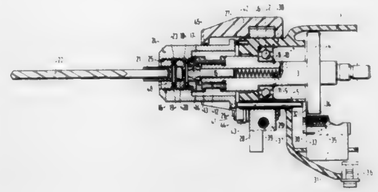
4,390,311

TOOL SUPPORT FOR TOOL MACHINES

Gerhard Kuhlmann, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 20, 1980, Ser. No. 199,108
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1979, 2943501
Int. Cl.³ B23B *5/22*
U.S. Cl. 409—232 **9 Claims**

1. In a tool support for a machine tool, particularly for use in hand tool machines having a tool drive and transmission means adapted to operate under working pressures acting in a direction of an axis of rotation, the combination comprising a housing; a rotary drive spindle having a longitudinal axial recess, an inner tool-receiving sleeve having a first end portion received in said recess, an intermediate shaped portion connected to said first end portion for rotation therewith, and a second end portion adapted to receive a tool; biasing means located within said recess and adapted to bias said first end portion; an outer sleeve mounted on said second end portion and adapted for movement in the axial direction so that its position may be axially adjusted relatively to said spindle; and mounting means connected to said spindle and having an inner shaped surface corresponding to the surface of said shaped portion and adapted to receive said shaped portion for axial movement



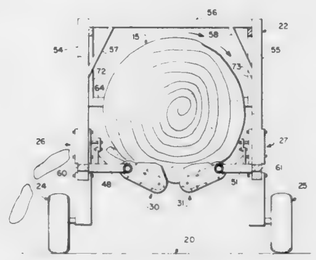
therethrough so as to engage said shaped portion to provide coupling of said mounting means and said drive spindle with said inner sleeve when said spindle is rotated and to disengage from said shaped portion to uncouple said mounting means from said inner sleeve, said first end portion having such a length that the length of coupling engagement between said first end portion and said spindle is larger than the combined length of contact of said shaped portion with said inner shaped surface and a possible path of said outer sleeve in said axial direction, whereby when the tool is separated from a work piece being machined an uncoupling movement of said shaped portion from said mounting means begins.

4,390,312

ROUND BALE TRANSPORTER AND FEEDER

Wayne B. Skeem, 1742 Targhee Dr., Twin Falls, Id. 83301

Filed Feb. 23, 1981, Ser. No. 237,088
Int. Cl.³ A01D *90/12*; B60P *1/02*
U.S. Cl. 414—24.6 **13 Claims**



11. A spirally wrapped, round bale transporter and feeder driven by a wheeled vehicle, the combination comprising:

a support frame having first and second ends and including a pair of spaced, parallel bale-supporting members;

means, located adjacent said second end of said support frame, for coupling said frame to the vehicle;

a plurality of wheels;

means for coupling said wheels to said support frame;

power means, coupled to said means for coupling said wheels to said support frame, for raising and lowering said support frame relative to said wheels to load bales onto said frame and unload bales from said frame; and

feeding means, coupled to said support frame adjacent said second end, for spirally unwrapping and feeding a round bale supported on said bale-supporting members adjacent said second end transversely of said frame and onto the ground,

said feeding means comprising a pair of endless conveyor means, each having bale-gripping devices thereon,

said feeding means further comprising means for pivotally coupling said pair of endless conveyor means to said support frame and for moving said pair of endless conveyor means between a stowed position outboard of said bale-supporting members and a feeding position inboard of said bale-supporting members,

said means for pivotally coupling and for moving said pair of endless conveyor means comprising a hydraulic power device,

said means for pivotally coupling and for moving said pair of endless conveyor means further comprising

a pair of sprockets, each rigidly coupled to one of said pair of endless conveyor means,

a chain interconnecting said pair of sprockets, and

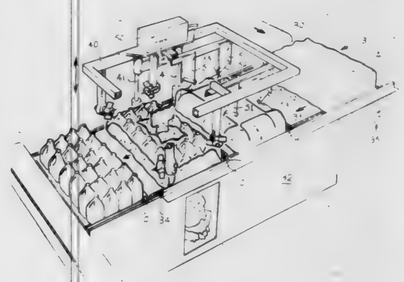
means for coupling said hydraulic power device to said chain.

4,390,313

METHOD AND APPARATUS FOR DEPACKING ARTICLES

John W. Hoehn, 7 Webb St., Middle Brighton, Victoria, Australia

Filed Mar. 25, 1981, Ser. No. 247,274
Claims priority, application Australia, Mar. 27, 1980, 2942/80
Int. Cl.³ B65B *43/26*
U.S. Cl. 414—412 **14 Claims**



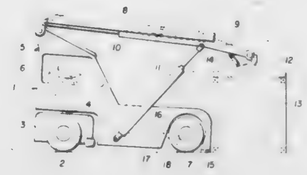
1. A method of removing articles from a package having a plurality of said articles arranged in parallel rows to provide a rectangular formation and retained within an envelope of flexible thermoplastic material, said method comprising positioning the package with the rows of articles supported on a horizontal base, forming two longitudinal and two transverse tear lines or splits extending substantially the full length and width of the package respectively, applying a force to a portion of the thermoplastic material bound by the four tear lines or splits along a line in a plane passing between two adjacent rows of articles and aligned with a slot in the base, forcing said portion of the thermoplastic material downwardly between the rows into contact with an under side region of the thermoplastics material of the package, continuing the application of said force after establishment of said contact to force a part of said portion and a part of the under side region of the package downwardly through said slot, and withdrawing all of the thermoplastic material of the package through said slot.

4,390,314

CONTAINER TRUCK FOR LIFTING AND CARRYING AWAY A CONTAINER

Lars G. Öberg, V. Frölunda, Sweden, assignor to Dynatrans AB, Hisings Backa, Sweden

PCT No. PCT/SE80/00120, § 371 Date Dec. 12, 1980, § 102(e) Date Dec. 12, 1980, PCT Pub. No. WO80/02264, PCT Pub. Date Oct. 30, 1980
PCT Filed Apr. 22, 1980, Ser. No. 220,048
Claims priority, application Sweden, Apr. 23, 1979, 7903524
Int. Cl.³ B60P *1/50*
U.S. Cl. 414—547 **1 Claim**



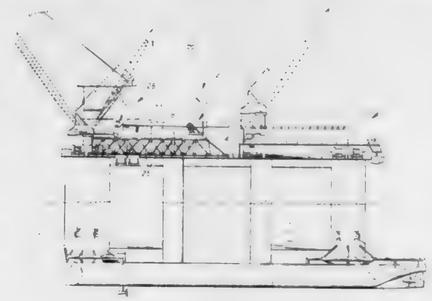
1. A four-wheeled container lift truck for lifting heavy loads onto the truck, comprising in combination, crane type means mounted on said truck for lifting up a container supported on a common surface with the truck into position on the truck body for subsequent transport, a single pair of truck wheels on an axle for supporting the truck on the surface being positioned near one end portion of the truck to be placed closely adjacent the container, and means for selectively moving an end load bearing portion of the truck at said one end adjacent to the container between said pair of wheels and the container to bear against the support surface for the truck during the lifting of the container to the transport position on the truck comprising a mechanism for lowering and raising said truck wheels to change the load supporting position between said wheel and said end portion of the truck body thereby to change the tipping center of the truck for permitting heavier containers to be lifted onto lighter weight trucks without counter weights.

4,390,315

FIRE FIGHTING BOOM ASSEMBLY FOR SERVICE VESSEL

Thomas L. Elliston, Fort Worth, Tex., assignor to Hydra Rig Incorporated, Fort Worth, Tex.

Continuation of Ser. No. 907,046, May 18, 1978, Pat. No. 4,285,629. This application Dec. 8, 1980, Ser. No. 213,778
Int. Cl.³ B66C *1/42*
U.S. Cl. 414—740 **6 Claims**



1. An extendable utility boom assembly for performing work

operations from a semi-submersible platform vessel comprising, in combination:

an extendable, elongated truss mounted for movement over the platform vessel from a stowed position to an operating position;

track means extending along the length of said truss;

a carriage assembly mounted for movement along the length of said track means;

a supporting frame pivotally mounted on the carriage assembly for angular movement in a horizontal plane;

a first linear actuator mounted on said carriage assembly and including an elongated drive assembly having teeth meshed with a circular gear secured to said supporting frame for driving said supporting frame in the horizontal plane;

a boom housing pivotally mounted on the supporting frame for angular movement in a vertical plane, said boom housing having wall portions defining a central axis passageway;

a second linear actuator interconnecting the boom housing and said supporting frame for displacing the boom housing about its axis in the vertical plane;

an elongated utility boom having a first hollow boom section telescopically coupled in the passageway of said boom housing for reciprocal movement through the boom housing and a second hollow boom section projecting axially out of the boom housing; and,

a third linear actuator interconnecting the boom housing and utility boom for reciprocating the utility boom along the axis of the boom housing.

4,390,316

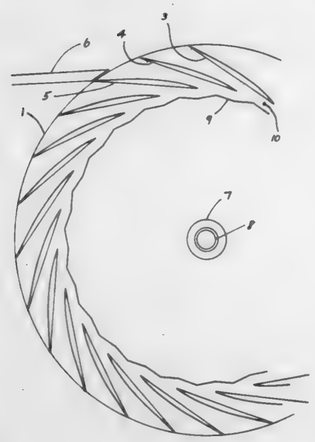
TURBINE WHEEL

John R. Alison, 4200 Massachusetts Ave., #117, NW., Washington, D.C. 20016

Filed Apr. 21, 1981, Ser. No. 256,182

Int. Cl.³ F01D *1/34*

U.S. Cl. 415—76 **40 Claims**



1. A turbine wheel with an integral fluid-dynamic multiple staging or compounding system useful for high as well as lower velocity applications, for extracting energy from at least one tangentially-entering stream of compressible or incompressible fluid, comprising:

a rotatable wheel structure closed on both sides transverse to its axis and closed on an inner circumferential periphery to form an annular passageway that is open on an outer circumferential periphery; and

a set of n blades with a fluid-dynamically-shaped profile mounted circumferentially at regular intervals one defined wheel sector apart between said transverse sides on said open outer periphery and suitably inclined and oriented so as to

(a) receive said entering stream inwardly between the blades of the wheel sectors that are spanned transiently by said stream such that the outermost segment of the leading edge of the particular one of said blades that is next in line to enter said stream during rotation becomes parallel to the first-encountered boundary of said entering stream no later than the instant that the blade makes contact with said stream, and

(b) define a discontinuous surface that will serve as an outermost effective fluidic capturing and constraining boundary of said annular passageway such that the cross-sectional area of said annular passageway is adequately large to pass said entering stream in its entirety, and

(c) vector said entering stream by the trailing surface of any blade that is receiving said stream and by the innermost leading surface of the neighboring blade, further inwardly and tangentially into said annular passageway such that the cross-sectional area of the entry passageway between this pair of adjacent blades, as transversely defined by the perpendicular distance s from the inner tip of the neighboring blade to the trailing edge of the receiving blade, to which said perpendicular can be drawn, is adequately large to pass that portion of said entering stream which is introduced between said adjacent pair of said blades, and

(d) capture and constrain said stream to continue flowing within said annular passageway by successive fluid-vectoring actions of the annular passageway trailing surfaces of said blades so long as said stream is moving faster than said blades, and

(e) receive the final vectoring force of said fluid on the outermost trailing surfaces of said blades as said fluid is exhausted radially outward by centrifugal force through said blades after losing enough velocity so said discontinuous surface no longer constitutes the outermost effective fluidic capturing and constraining boundary, and

wherein said fluid-dynamically-shaped profile of said blades is defined by

an acute angle α between the outermost segment of the leading edge of any blade and the outermost segment of the trailing edge of the blade, and

an obtuse angle δ between the outermost segment of the trailing edge and the first annular passageway segment of the trailing edge of the blade, and

wherein said first annular passageway segment spans about half of a wheel sector, and

an obtuse angle χ defining a blade peak between the first and second annular passageway segments of the blade, and

wherein said second annular passageway segment lies in the range between zero and the maximum length which does not block entry of the fluid into the annular passageway,

together with rounding of geometrically sharp surfaces to maintain durability, structural integrity, and streamline flow characteristics of the blade, and

wherein the inclination of said blades is defined by an acute angle β between the first annular passageway segment of the trailing edge of any blade and the tangential direction at the peak of the blade; and

means for fluid vectoring on said inner periphery of said annular passageway in a geometrically alternating and cooperative manner with respect to said successive fluid-vectoring actions of said blades.

4,390,317

SELF-PRIMING CENTRIFUGAL PUMP, IN PARTICULAR FOR CONVEYING LIQUIDS IN THE VICINITY OF THEIR BOILING POINT

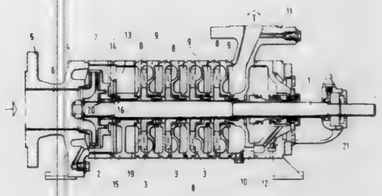
Wilfried Lehmann, Heiligenstedten, and Peter Fandrey, Glückstadt, both of Fed. Rep. of Germany, assignors to Sihi GmbH & Co. KG, Itzehoe, Fed. Rep. of Germany

Filed Jul. 31, 1981, Ser. No. 288,901

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1980, 3029604

Int. Cl.³ F04D *9/00*

U.S. Cl. 415—143 **8 Claims**



1. Centrifugal pump having a first centrifugal pump stage, which is located on the suction side and is not self-priming, and having a pump inlet nozzle, which is located axially at the level of the horizontal shaft, and having at least one centrifugal pump stage, which is located downstream and which, operating with the aid of auxiliary liquid, is self-priming, characterised in that a liquid reservoir, of sufficient size, is arranged between two pump stages, the connection from this reservoir to the preceding centrifugal pump stage being located in the geodetically upper portion of the reservoir, and a seal for closing the shaft clearance being located between the liquid reservoir and the preceding centrifugal pump stage.

4,390,318

APPARATUS FOR OPERATING SHUT-OFF MEMBERS IN GAS TURBINE ENGINES, PARTICULARLY IN TURBOJET ENGINES

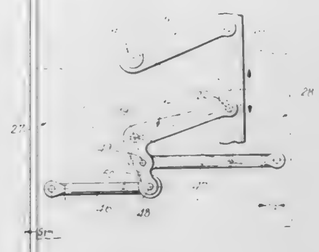
Wolfgang Weiler, Dachau, Fed. Rep. of Germany, assignor to MTU Motoren-und Turbinen-Union Muenche GmbH, Munich, Fed. Rep. of Germany

Division of Ser. No. 940,492, Sep. 7, 1978, Pat. No. 4,253,797. This application Oct. 8, 1980, Ser. No. 195,073

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740904

Int. Cl.³ F04D *29/56*

U.S. Cl. 415—145 **2 Claims**



1. Apparatus for controlling the movement of first and second shut-off members which can block and unblock gas-flow passages of a turbo engine to a selectable extent, comprising a first and a second shiftable pull rod each coupled to one of the shut-off members; a turnable actuating ring; a pair of bellcranks each having an elbow area swingable about a fixed pivot, and two free arms; means articulately connecting one of said free arms of each bellcrank to one of said rods; and means articulately connecting the other of said free arms of each bellcrank to said ring, said first and second pull rods each being connected to the respective bellcranks at different locations of the latter so that co-directional movement of the shut-off members results in different travel strokes of such members.

4,390,319

TURBINE EXHAUST HOOD

Anatoly V. Garkusha, ulitsa 23 avgusta 63, kv. 82, and Vladimir E. Dobrynin, pereulok Zernovoi, 6/4, kv. 49, both of Kharkov, U.S.S.R.

PCT No. PCT/SU80/00154, § 371 Date May 15, 1981, § 102(e) Date May 15, 1981, PCT Pub. No. WO81/00877, PCT Pub. Date Apr. 2, 1981

PCT Filed Sep. 1, 1980, Ser. No. 263,997

Claims priority, application U.S.S.R., Sep. 25, 1979, 2210400

Int. Cl.³ F01D *25/30;* **F04D** *29/56*

U.S. Cl. 415—209 **4 Claims**



1. A turbine exhaust hood with a flow passage formed by the walls of a casing and having a guide member placed at its inlet and formed as a body of revolution with the longitudinal axis thereof being in line with that of the turbine and arranged so that one end thereof is disposed in close proximity with the outside ends of the turbine last-stage blade and accommodating a deflector mounted therein for longitudinal movement along the turbine axis and intended to change the flow area of the exhaust passage, characterized in that the deflector (**8**) is formed of a resilient material and has, when in initial position, a form of a ring (**8**) provided with at least one radial slit and positioned so that its axis is substantially aligned with the turbine axis (**7**), the deflector (**8**) being moved along the turbine axis (**7**) by means of a mechanism (**10**) connected with the deflector (**8**) in at least three points so that, with the turbine operating at reduced loads, the deflector (**8**) forms, together with the guide (**6**) and the wall of the casing (**1**), a volute-shaped converging channel (**11**) having its outlet section disposed at the slit (**9**) of the ring (**8**).

4,390,320

TIP CAP FOR A ROTOR BLADE AND METHOD OF REPLACEMENT

James E. Eiswerth, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

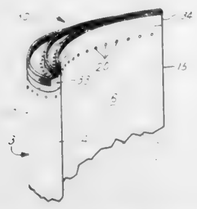
Filed May 1, 1980, Ser. No. 145,412

Int. Cl.³ F01D *5/18, 5/20*

U.S. Cl. 416—97 R **14 Claims**

9. A tip cap for a rotor blade including a radially outer end comprising a base portion for attachment with said rotor blade across said radially outer end and a plurality of ribs each extending radially outward from said base portion and including an abrasive material secured with a radially outer edge thereof, said ribs being dimensioned radially for positioning said abrasive material at varying radial distances from said base portion and beyond said radially outer end of said rotor blade for

providing said tip cap with stepped coatings of abrasive material such that as said abrasive material on each of said plurality



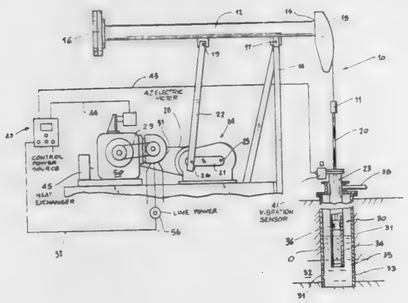
of ribs is worn away, said abrasive material on a next succeeding radially shorter rib becomes available for rubbing.

4,390,321

CONTROL APPARATUS AND METHOD FOR AN OIL-WELL PUMP ASSEMBLY

Henry J. Langlois, Detroit, Mich.; Dean W. Hart, Long Beach, Calif., and Gary J. Blazek, Livonia, Mich., assignors to American Davidson, Inc., Darborn, Mich.

Filed Oct. 14, 1980, Ser. No. 196,713
Int. Cl.³ F04B *49/10*
U.S. Cl. 417—15 **8 Claims**



1. A control apparatus for reducing oil-well pounding and preventing subsequent damage to a producing oil well and oil-well pump assembly, said control apparatus comprising:

fluid-drive means operatively coupled to said oil-well pump assembly;

a vibration-sensor means operatively coupled to said oil-well pump assembly to detect shock pulses generated during the pump cycle of said oil-well pump assembly and adapted to transmit the sensed shock pulses in the form of equivalent electrical signals to a control means which uses electric circuitry to determine the frequency of said equivalent electrical signals, and which control means transmits corresponding electrical step increase or step decrease signals as a predetermined electrical signal to an actuator means;

said control means being electrically coupled between said vibration-sensor means and said actuator means, said actuator means being operatively coupled to said fluid-drive means and being continuously responsive to said transmitted predetermined electrical signal from said control means to increase or decrease the rate of the pump stroke of the oil-well pump assembly depending upon said predetermined electrical signal received from said control means whereby optimum oil output is maintained while reducing the pounding to an acceptable level without shutting down the oil well so that subsequent damage to the operating oil well and oil-well pump assembly due to pounding is substantially eliminated.

7. A method for controlling pounding in an operating oil-well pump assembly without shutting down the oil well comprising:

sensing shock pulses generated by the oil-well pump assembly picked up by a vibration-sensor means and converting said shock pulses into equivalent electrical signals;

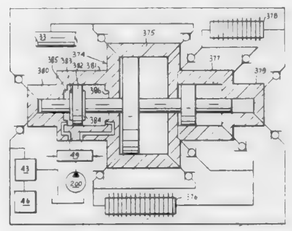
transmitting said equivalent electrical signals to a control means, determining at the control means the number of said equivalent signals received in a predetermined period of time by at least a divide by integrated circuit, converting said equivalent electrical signals to an electrical pulse of predetermined magnitude to step increase or step decrease an electrical signal and control the rate of the pump stroke by increasing or decreasing the speed of a fluid-drive means operatively coupled to said oil-well pump, and maintaining continuous and optimum oil output without an oil-well pump shutdown while reducing pounding to an acceptable level wherein subsequent damage to said oil well and oil-well pump assembly due to pounding is substantially eliminated.

4,390,322

LUBRICATION AND SEALING OF A FREE FLOATING PISTON OF HYDRAULICALLY DRIVEN GAS COMPRESSOR

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Filed Feb. 10, 1981, Ser. No. 233,217
Int. Cl.³ F04B *23/00, 3/00, 17/00*
U.S. Cl. 417—243 **7 Claims**



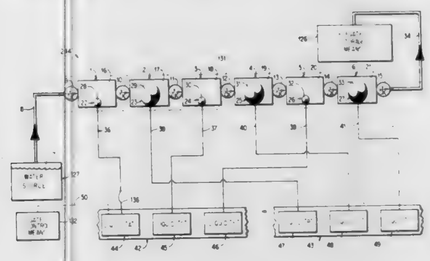
1. A double acting multicompression stage hydraulically driven gas compressor comprising a free floating piston assembly having a double acting low pressure gas compression piston means guided in first bore means defining first and second chambers each provided with gas inlet and outlet means, at least one double acting high pressure gas compression piston means guided in second bore means defining third and fourth chambers each provided with gas inlet and outlet means, and double acting hydraulic piston means guided in third bore means defining fifth and sixth chambers operable to transmit a reciprocating motion to said free floating piston assembly said fifth and sixth chambers being sequentially connected to a source of hydraulic pressure and exhaust means, first intercooler means between said gas outlet means of said first and second chambers and said gas inlet means of said third and fourth chambers, first seal means on said low pressure gas compression piston means, second seal means on said high pressure gas compression piston means and first pressure oil conducting duct means operable to conduct oil from said fifth or said sixth chamber whichever is pressurized at pressure higher than gas compression pressure in said third or fourth chamber to said second seal means, second duct means connecting said first intercooler means and said first seal means, and a gas to oil pressure translating means interposed in said second duct means.

4,390,323

MULTIPLE-STAGE SMALL TEMPERATURE DIFFERENTIAL HEAT-POWERED PUMP

Francis L. Burnham, Orangeburg, S.C., assignor to Orangeburg Technologies, Inc., Orangeburg, S.C.

Continuation of Ser. No. 242,242, Mar. 10, 1981, Pat. No. 4,347,045. This application Feb. 8, 1982, Ser. No. 347,034
The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.
Int. Cl.³ F04B *25/00*
U.S. Cl. 417—253 **7 Claims**



1. A pump system for pumping a first liquid from a source to an output facility comprising:

a. a multiple-stage pump comprising:

(1) a plurality of pumping stages; and

(2) a plurality of check valves, one of said plurality of check valves being located on the input and output of said multiple-stage pump and between each of said plurality of pumping stages;

b. each of said plurality of pumping stages comprising:

(1) a pressure chamber operable to hold said first liquid; and

(2) a flexible member within said pressure chamber operable, when expanded, to exert pressure against said first liquid and to force said first liquid from said pressure chamber through the one of said plurality of check valves between said pressure chamber and the next pressure chamber of the next subsequent pumping stage of said plurality of pumping stages or said output, if said pressure chamber is within the last of said plurality of pumping stages, when said pressure within said pressure chamber exceeds the next pressure in said next pressure chamber or said output;

c. each of said flexible members, connected to a container which is one of a plurality of containers; and

d. a plurality of vaporizable liquids, one of said plurality of vaporizable liquids contained within each one of said plurality of containers,

whereby each said container holds one of said plurality of vaporizable liquids and when said container is subjected to a hot temperature, said one of said plurality of vaporizable liquids vaporizes causing said flexible member to expand and when said container is subjected to a cold temperature, said one of said plurality of vaporizable liquids condenses causing said flexible member to contract,

wherein each said one of said plurality of vaporizable liquids which vaporizes into said flexible member has a higher pressure, when heated to said hot temperature, than the cold pressure of the next said one of said plurality of vaporizable liquids which vaporizes into the next flexible member within said next pressure chamber or to said output, if said flexible member is within said last of said plurality of pumping stages,

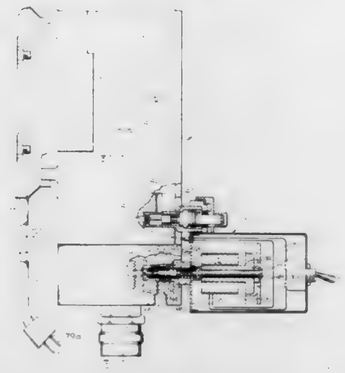
wherein connected to said plurality of pumping stages are a first heat exchanger and a second heat exchanger which utilize a hot liquid to provide said hot temperature and a cold liquid to provide said cold temperature.

4,390,324

PRESSURE RELEASE VALVE FOR PUMPS

Rudolf Karliner, Minnetonka, Minn., assignor to Wagner Spray Tech Corporation, Minneapolis, Minn.

Filed Jan. 28, 1981, Ser. No. 229,168
Int. Cl.³ F04B *49/06*
U.S. Cl. 417—282 **3 Claims**



1. A hydraulic column diaphragm pump comprising a housing containing a pumping chamber, a diaphragm dividing said chamber into a driving fluid chamber and a driven fluid chamber, a hydraulic fluid reservoir in said housing, means communicating the reservoir to the driving fluid chamber, means for loading and unloading the hydraulic fluid in the driving fluid chamber to reciprocate the diaphragm, pressure release means communicating the driving fluid chamber to the reservoir affective to release excess pressure in the driving fluid chamber by establishing communication between the driving fluid chamber and reservoir, said pressure release means being adjustable, an inlet to said driven fluid chamber, an outlet from said driven fluid chamber, said outlet from said driven fluid chamber including first passage means from said driven fluid chamber to a bore means, a second passage from said bore means to an outlet fitting, and a check valve in said bore means movable from a closed position blocking communication between said first and said second passages and an open position establishing communication between said first passage and said second passage, said check valve being normally biased to the closed position and being operable from the closed position to the open position upon the establishment of a condition in which pressure in the first passage is greater than pressure in the second passage, a third passage open to said bore means downstream of said check valve, said third passage open to second bore means through a variable orifice valve interpositioned between said third passage and said second bore means, a bypass conduit open to said second bore means downstream of said variable orifice valve, a valve actuator for said variable orifice valve, said valve actuator including a first movable member movable towards and away from a seat of said variable orifice valve, spring means urging said first movable member away from said seat, a solenoid having a second movable member, spring means interposed between said first movable member and said second movable member, urging said first movable member towards said seat, activation of said solenoid effective to move said second movable member toward said first movable member and to compress said second spring, compression of said second spring effective to overcome said first spring and cause said first movable member to block communication between said third passage and said second bore means at said seat with a closure force, said second movable member being position adjustable whereby the degree of compression of the second spring when said solenoid is actuated, is adjustable by adjustment of the position of the second movable member, adjustment of the compression of the

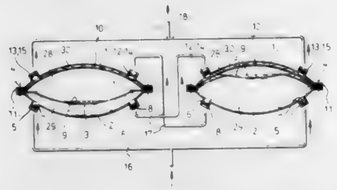
second spring effective to control said closure force, said third passage and said bypass conduit in communication through said second bore means when said variable orifice valve is open, motor means for driving said means for loading and unloading, circuit means for activating said motor means, second circuit means for activating said solenoid, said first circuit means and said second circuit means being interconnected whereby deactivation of said first circuit means deactivates said second circuit means, switch means for selectively deactivating said second circuit means independent of deactivation of said first circuit means, deactivation of said second circuit means causing movement of said second movable member away from said first movable member to a point where said first spring overcomes said second spring and opens said variable orifice valve, and said variable orifice valve being openable when said solenoid is activated by the presence of a pressure in said third passage acting against said first movable member at said seat which, combined with the force of said first spring overcomes said closure force.

4,390,325

PUMP DRIVEN BY THE RADIATION ENERGY OF THE SUN

Ari Elo, Turku, and Jorma Poikonen, Raisio, both of Finland, assignors to Elomatic Oy, Turku, Finland

Filed May 8, 1980, Ser. No. 147,733
Claims priority, application Finland, Nov. 13, 1978, 783447
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—379 **4 Claims**



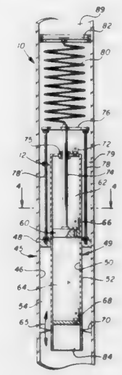
1. In a thermal pumping unit having a casing divided into two parts by an elastic membrane, one part containing a temperature sensitive evaporating-condensing fluid and the other part being a pumping space with intake and exhaust valves, the improvement of the part of the casing containing the temperature sensitive evaporating-condensing fluid being transparent to thermal radiation from the sun with the membrane having a heat absorbing surface on the side towards the transparent part of the casing such that the temperature sensitive evaporating-condensing fluid is completely subject to heat by direct and radiant sources and characterized by the addition of a cooling means, said cooling means having an input and an output, said cooling means condensing the evaporating-condensing fluid, and by the addition of a second substantially identical thermal pumping unit complete with cooling means, the exhaust valve of the first thermal pumping unit being connected to the input of said cooling means of the second thermal pumping unit and the exhaust valve of the second thermal pumping unit being connected to the input of said cooling means of the first thermal pumping unit, the matter being pumped by each unit cooling the evaporating-condensing fluid of the other unit speeding the cycling time of the thermal pumping units and substantially alternate the evaporating and condensing of their evaporating-condensing fluids.

4,390,326

DOWNHOLE PUMP HAVING A POWER PISTON AND A PRODUCTION PISTON

Jerry D. Callicoatte, 3206 W. Shandon, Midland, Tex. 79701

Filed Dec. 29, 1980, Ser. No. 220,816
Int. Cl.³ F04B *47/08*
U.S. Cl. 417—401 **10 Claims**



1. In a pumping apparatus, an inner pump barrel, an outer pump barrel, an annular piston reciprocatingly received within said outer pump barrel, an inner piston reciprocatingly received within said inner pump barrel, means by which said annular piston is directly connected to be moved concurrently with said inner piston; energy storage means connected to store energy when one of said inner and annular piston are moved in a downward direction;

a fluid conduit connected to effect fluid pressure on said annular piston; said inner piston divides said inner barrel into a lower and upper chamber, check valve means by which reciprocation of said inner piston causes fluid to flow into said lower chamber and from said lower into said upper chamber and from said upper chamber into said fluid conduit;

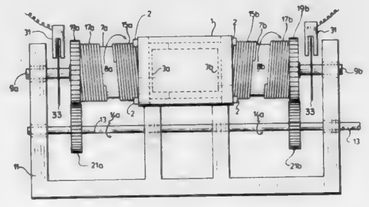
so that when fluid pressure is effected in one direction within said fluid conduit, said annular piston is forced to reciprocate and store energy, and when said fluid pressure is reduced, the stored energy forces the inner piston upwards thereby producing fluid which flows in another direction within said fluid conduit.

4,390,327

ALTERNATING ROTOR MOTOR WITH ROTOR POSITIONING SENSORS

Rudolf P. Picavet, 2629 Jane St., Downsview, Ontario, Canada

Continuation-in-part of Ser. No. 314,758, Oct. 26, 1981, Pat. No. 4,373,879. This application Apr. 19, 1982, Ser. No. 369,533
Int. Cl.³ F01C *1/063*
U.S. Cl. 418—35 **3 Claims**



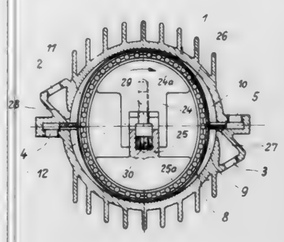
1. A rotory motor comprising a housing, first and second co-axial opposing rotors rotatable within said housing, first and second rotor shafts upon which first and second rotors are mounted respectively, a closed annular rotor chamber which is divided into power, exhaust, intake and compression regions by said rotors, ignition means for fuel combustion in the power region of said annular chamber for rotor rotation, a torque receiving shaft alternately driven by said first and second rotor shafts, a first anti-reversing spring clutch wound on said first rotor shaft and arranged to bind on said first rotor shaft for substantially preventing rotation in a first direction while allowing rotation of said first rotor shaft in a second direction opposite to said first direction, a first movable spring clutch wound around and adapted to bind on and rotate with said first rotor shaft when rotating in said second direction, a second anti-reversing spring clutch wound on said second rotor shaft and arranged to bind on said second rotor shaft for substantially preventing rotation in said first direction while allowing rotation of said second rotor shaft in said second direction, a second movable spring clutch wound around and adapted to bind on and rotate with said second rotor shaft when rotating in said second direction, drive means connecting said first and second movable spring clutches to said torque receiving shaft; said first an second rotors being adapted to alternately rotate in said second direction with said movable spring clutches providing, in turn, drive to said torque receiving shaft through each rotor shaft when rotating and providing slippage around each rotor shaft when each rotor shaft is prevented from rotating thereby enabling alternating rotation of said rotors, and sensing means for sensing position of said rotors, said sensing means comprising a pair of discs secured to said rotor shafts and being marked by a regular sequence of openings in each disc and magnetic pick-up members for magnetically picking up said openings.

4,390,328

MACHINE WITH ROTARY PISTON INCLUDING A FLEXIBLE ANNULAR MEMBER

Kurt G. Fickelscher, Frankenthal, Fed. Rep. of Germany, assignor to P. A. Rentrop, Hubbert & Wagner Fahrzeugausstattungen GmbH & Co., Stadthagen, Fed. Rep. of Germany

Filed Mar. 5, 1980, Ser. No. 127,437
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1979, 2909228
Int. Cl.³ F01C *5/02, 5/06*
U.S. Cl. 418—45 **3 Claims**



1. In a fluid-flow machine

means defining a cylinder having an internal cylidrical surface and ports in that surface respectively for the admission and exhaust of fluid,

an assembly mounted within the cylinder including

two opposed, interconnected, parts, together rotatable relatively to the cylinder, each part having a peripheral surface with complementary curvature to that of the internal cylindrical surface of the cylinder and having the same centre as that of the cylinder,

means biasing the said parts towards the cylinder wall, and

a flexible ring interposed between the opposed parts and the said internal cylindrical surface and being pressed against said surface by the parts so that rotation of the parts causes non-slip relative motion between the ring and said surface, working space for the fluid being defined between the ring and said surface, and

means mounted on the cylinder dividing the working space into a fluid suction chamber and a fluid compression chamber,

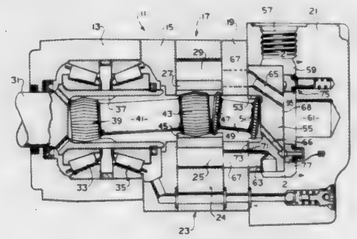
the peripheral surface of each said part of the assembly being such that as the ring moves into contact with the portion of the internal peripheral surface of the cylinder defining the ports, surface to surface contact is maintained.

4,390,329

ROTARY FLUID PRESSURE DEVICE AND VALVE-SEATING MECHANISM THEREFOR

Clayton W. Thorson, Edina, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 20, 1980, Ser. No. 179,914
Int. Cl.³ F01C *1/10, 19/08;* F16K *25/00*
U.S. Cl. 418—61 B **8 Claims**



1. A rotary fluid pressure device comprising:

(a) housing means defining fluid inlet means and fluid outlet means;

(b) fluid energy-translating displacement means defining expanding and contracting fluid volume chambers;

(c) stationary valve means defining fluid passage means in fluid communication with said expanding and contracting volume chambers and having a first valve surface;

(d) a rotary valve member defining valve passage means providing fluid communication between said inlet and outlet means and said fluid passage means and having a second valve surface in sliding, sealing engagement with said first valve surface and further having an opposite surface;

(e) a valve-seating mechanism including a generally annular balancing ring member having a transverse valve-confronting surface in engagement with said opposite surface of said rotary valve member, and a balancing surface, said balancing ring member being axially movable relative to said rotary valve member, said valve-seating mechanism including means biasing said valve-confronting surface into tight sealing engagement with said opposite surface, said balancing ring member cooperating with said housing means and said rotary valve member to define a first fluid chamber disposed radially inwardly from said ring member and a second fluid chamber disposed radially outwardly from said ring member, said fluid inlet means being in fluid communication with one of said first and second chambers and said fluid outlet means being in fluid communication with the other of said first and second chambers;

(f) said valve-seating mechanism defining balancing passage means permitting fluid communication between said valve-confronting surface and said balancing surface;

(g) said valve-confronting surface defining inner and outer sealing land means disposed to restrict fluid communication from said first and second fluid chambers, respectively, to said balancing passage means; and

(h) said valve-seating mechanism including pressure-reduc-

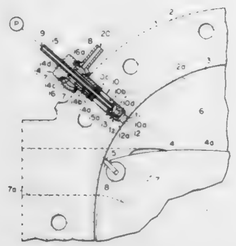
ing means operable to maintain the pressure differential between said valve-confronting surface and said balancing surface less than the equivalent force of said biasing means when fluid flow across one of said inner and outer sealing land means increases to a substantial portion of total flow from said fluid inlet means to said fluid outlet means.

4,390,330

LUBRICATING OIL SUPPLY MEANS FOR ROTARY PISTON ENGINES

Hiroshi Kodama, and Tadayuki Seto, both of Hiroshima, Japan, assignors to Toyo Kogyo Co. Ltd., Hiroshima, Japan

Filed Aug. 26, 1980, Ser. No. 181,614
Claims priority, application Japan, Aug. 27, 1979, 54-109273
Int. Cl.³ F01C *1/22, 21/04;* **F01M** *1/04*
U.S. Cl. 418—97 **13 Claims**



1. A rotary piston engine including a casing which comprises a rotor housing having a trochoidal inner wall and a pair of side housings secured to the opposite sides of the rotor housing, a substantially polygonal rotor disposed in said casing for rotation with apex portions in sliding contact with the inner wall of the rotor housing to thereby define working chambers by flanks of said rotor and said inner wall of the rotor housing, lubricating oil supply means including oil supply port means opening at the inner wall of the rotor housing, bore means having an inner wall and formed in said rotor housing so as to lead to said oil supply port means, lubricating oil supply conduit means provided in said bore means, opening means provided in said bore means and having a cross-sectional area smaller than that of the oil supply port means, said opening means being opposed to said inner wall of the bore means for directing lubricating oil supplied through the conduit means against said inner wall of the bore means, and air passage means formed in said rotor housing and communicated with said bore means so as to provide air to a region of said bore means between said lubricating oil supply conduit means and said opening means.

4,390,331

POSITIVE DISPLACEMENT FOUR LOBE IMPELLER STRUCTURE

Paul W. Nachtrieb, 6392 Park Ave., Garden Grove, Calif. 92645

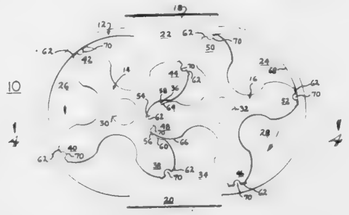
Filed Apr. 17, 1980, Ser. No. 140,450
Int. Cl.³ F04C *18/18, 27/00*
U.S. Cl. 418—141 **3 Claims**

1. A self-priming positive displacement two impeller pump, comprising:

a symmetrical generally elliptical cross-section cylindrical impeller housing having at opposite sides at least 180° arc cross-section interior walls separated by a relatively low pressure fluid inlet space coupled to a fluid entrance on the inlet side and a relatively high pressure fluid outlet space coupled to a fluid exit on the opposite exit side;

two axially parallel counter-rotating synchronously rotated cylindrical axially symmetric four lobe impellers, each impeller having a cross-section comprising four interior concave slightly elipsoid arc side walls disposed 90° apart and each elipsoid side wall forming half the base of two adjacent lobes of the four lobes, the interior arc lobe side wall connecting at an inflexion line to a convex arc cross-section tip having an arc radius equal to the impeller radius;

each impeller is 45° out of rotational phase with the other impeller and each impeller is coaxial with the axis of the at least 180° arc cross-section adjoining interior wall, has a radius incrementally less than the radius of the adjoining interior wall, such that adjacent lobes of each impeller during rotation define between themselves and the housing arc interior wall spaces which carry fluid from the fluid inlet area to the fluid outlet area, the impellers being selectively disposed apart such that the tips of each impeller fail by only an increment to touch the interior concave arc sidewall of the opposite impeller, thereby minimizing the fluid return space between the tips of each impeller and the interior concave side walls of the opposite impeller, the tips being sufficiently wide so that the exit side tip corner is maintained very close to the adjoining slightly elipsoid arc side wall during substantially all the first half of the passage past the slightly elipsoid arc side wall while the inlet side tip corner is disposed a relatively great, but



decreasing distance from the slightly elipsoid arc side wall, said distance being a function of the volume of fluid trapped in the fluid return space adjacent the slightly elipsoid arc side wall, and during substantially all of the second half of the passage the inlet side tip corner remains relatively close to the slightly elipsoid arc side wall while the exit side tip corner gradually increases its distance from the slightly elipsoid arc side wall, said distance being a function of the amount of fluid trapped in the fluid return space adjacent the slightly elipsoid arc side wall;

drive means coupled to axial shafts of the two impellers to rotate the two impellers in opposite directions;

bearings coupled to the axial shafts to reduce friction;

timing gear means coupled between the drive means and the axial shaft of the two impellers to maintain the two impellers 45° out of rotational phase with each other;

wherein each tip includes a fluid flow spoiler to increase fluid turbulence which reduces back flow by increasing sealing properties between the tip and the at least 180° arc cross-section adjoining interior wall; and

wherein the spoiler has a semi-circle concave cross-section and a diameter one-third the length of the arc which forms the tip, and the spoiler is centered at the center of the tip.

4,390,332

APPARATUS FOR INJECTION MOLDING OF PARTS FROM FOAM PLASTICS MATERIAL AND/OR FROM SOLID PLASTICS MATERIAL

James W. Hendry, Englewood, Tenn., assignor to KMMCO Structural Foam, Inc., East Detroit, Mich.

Filed Jul. 6, 1981, Ser. No. 280,598
Int. Cl.³ B29D *27/00;* **B29F** *1/05, 1/10*
U.S. Cl. 425—4 R **19 Claims**

1. An apparatus for molding during each cycle of operation (a) homogeneous plastics material and (b) foamed plastics material, the combination comprising:

a main passageway comprising a wall surrounding an extruding chamber and plasticizing means located in said main passageway for heating and plasticating a plastics material while simultaneously causing the plastics material to travel through said passageway from one end toward the other end thereof;

said main passageway having a melt zone followed by a melt and gas mixing zone;

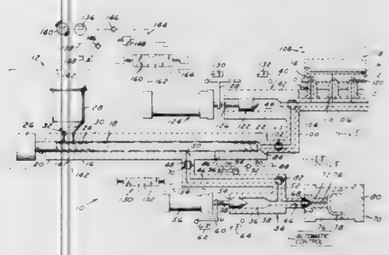
first injection means including a homogeneous plastics injection chamber;

second injection means including a foam plastics injection chamber;

first passage means connected on one end to the melt zone of said main passageway at a place upstream of said melt and gas mixing zone of said main passageway, said first passage means being connected on the other end thereof to said homogeneous plastics injection chamber;

a first flow control valve located in said first passage means, said first valve being opened during the time the homogeneous plastics injection chamber is being filled with homogeneous plastics material, and being closed after the measured amount of homogeneous plastics material has been stored in said homogeneous plastics injection chamber;

second passage means connected on one end to the melt and gas mixing zone of said main passageway downstream of the connection of said first passage means to said main passageway, said second passage means being connected on the other end thereof to said foam plastics injection chamber;



a second flow control valve located in said second passage means, said second valve being opened during the time the foam plastics injection chamber is being filled and being closed after the measured amount of foam plastics material has been stored in said foam plastics injection chamber;

means for introducing a gas or a gas emitting liquid or solid into the melt and gas mixing zone of said main passageway intermediate the connections of said first and second passage means to said main passageway where the gas mixes with the molten plastics material to form foamed plastics material;

means for energizing said plasticizing means and first directing the molten plastics material through said first passage means to said homogeneous plastics injection chamber for storing same in a measured amount generally corresponding to the molded weight of the homogeneous plastic part to be formed and second directing the molten foamed plastics material through said second passage means to said foam plastics injection chamber for storing same in a measured amount generally corresponding to the molded weight of the foamed plastic part to be foamed; and

fluid operated means for energizing said first and second injection means to discharge the plastics materials from their respective injection chambers to the corresponding molds for forming homogeneous plastics parts and foamed plastics parts;

said fluid operated means including means for operating said first and second injection means either simultaneously or sequentially to respectively direct the homogeneous and foam plastics material to the corresponding molds to make the homogeneous plastic parts and the foam plastic parts.

4,390,333

APPARATUS SUITABLE FOR USE IN CLOSING OPENINGS WITH A FOAM-EXPANDED BLADDER

Michel A. J. Dubois, Saint Pierre de Chandieu, France, assignor to Esso Societe Anonyme Francaise, Paris, France

Filed Feb. 5, 1981, Ser. No. 231,780
Claims priority, application France, Feb. 5, 1980, 80 02444
Int. Cl.³ B32B *35/00*
U.S. Cl. 425—11 **8 Claims**



1. Portable apparatus for use in closing a hole in a vessel, comprising

an expandable bladder of impervious elastic sheet material;

an elongated substantially rigid tubular rod for mounting the bladder at one end thereof so that the bladder can be manoeuvered into the hole from a distance from said hole by an operator at the other end thereof;

a source of settable foam plastic material constituents located within said one end of said tubular rod within said bladder, said source comprising at least two rupturable containers containing said constituents;

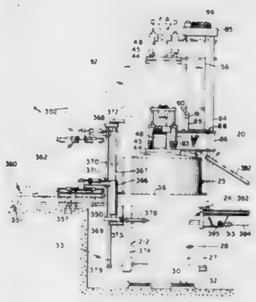
and operating means at the said other end of the rod for rupturing the said containers to allow their contents to mix and expand into a foam plastic material and thereby expand and fill the bladder within said hole.

4,390,334

HYDRAULIC TIRE PRESS

Anand P. Singh, Youngstown, Ohio, and Daniel Shichman, Trumbull, Conn., assignors to NRM Corporation, Akron, Ohio

Division of Ser. No. 138,589, Apr. 9, 1980, Pat. No. 4,332,536. This application Apr. 14, 1982, Ser. No. 368,466
Int. Cl.³ B29H *5/02*
U.S. Cl. 425—28 R **17 Claims**



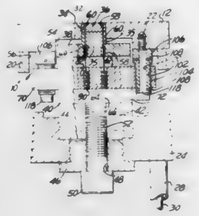
1. In a tire curing press a vertically extending sectional mold operator, means to move said operator vertically, and stroke limiting means for said operator comprising a rotatable stop ring presenting a stroke limiting physical stop for said operator, the limit of which physical stop is in response to the rotational position of the stop ring.

4,390,335

DIE, PUNCH AND CORE ROD ASSEMBLY FOR COMPACTING POWDER MATERIAL

Raymond P. DeSantis, Troy, and Herbert J. Puffer, Jr., Garden City, both of Mich., assignors to PTX-Pentronix, Inc., Lincoln Park, Mich.

Filed Feb. 23, 1982, Ser. No. 351,482
Int. Cl.³ B30B *11/02, 15/02*
U.S. Cl. 425—78 **7 Claims**



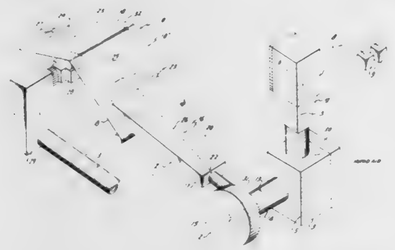
1. A punch and die assembly for a powder compacting press, said assembly comprising a stationary die plate, at least one reciprocable punch and at least one stationary core rod having an end slidably disposed in a bore through said punch, means reciprocably supporting said punch relative to said die plate, and means supporting said core rod at the other end in a stationary adjustable position relative to said die plate, said last mentioned means comprising a core rod support plate disposed below said punch, means attaching said other end of said core rod to said core rod support plate and means attaching said core rod support plate to said die plate, wherein said means attaching said core rod support plate to said die plate comprises a variable length spacer, said variable length spacer comprising a rotatable sleeve member having a peripherally threaded portion, a threaded bore in said core rod support plate accepting the peripherally threaded portion of said sleeve member, and a bolt passed through said sleeve member and threading at its end in a threaded aperture in said die plate for locking said sleeve member in position.

4,390,336

APPARATUS FOR AIR LAID FIBERGLASS MAT

B. Randall Ziegler, Freehold, N.J., assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 121,941, Feb. 15, 1980, abandoned. This application Feb. 24, 1982, Ser. No. 351,795
Int. Cl.³ B29C *13/00*
U.S. Cl. 425—82.1 **3 Claims**



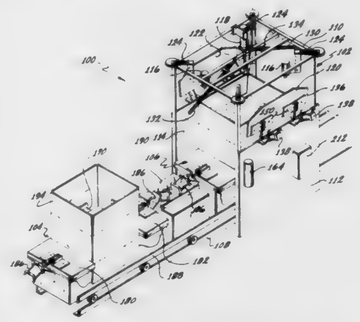
1. An apparatus for forming a fiberglass mat comprising,
means for directing chopped fiberglass strands in a moisturized air inducing means and then into the inlet and out of the exit of a blower means,
means within the blower means to partially open the chopped fiberglass strands into fiberglass partially opened strands, as well as means to direct the partially opened strands into a duct means,
the duct means being constructed to maintain a minimum uniform air velocity within the duct means for a given blower means exit velocity,
a foraminous conveyor means adjacent the duct means for the deposit of the partially opened strands in the form of a glass mat, and
means located adjacent to the foraminous conveyor means to exert a vacuum force through the conveyor to hold the partially opened strands of the glass mat on the conveyor.

4,390,337

APPARATUS HAVING AN AUTOMATIC FOAM DISPENSING SYSTEM FOR FORMING SHOCK-ABSORBING MEMBERS IN A CONTAINER

Dana R. Gately, San Clemente, Calif., assignor to Sealed Air Corporation, Fair Lawn, N.J.

Filed Nov. 24, 1981, Ser. No. 324,456
Int. Cl.³ B29D *27/04;* **B29C** *1/04, 5/00, 7/00*
U.S. Cl. 425—89 **16 Claims**



1. A system for forming shock-absorbing members of cushioning material inside a container for the cushioning of an article to be provided therein, said system comprising a booth, a mold assembly movable between a first position outside of said booth and a second position within said booth, said mold assembly having means for supporting a container having an opening therein, dispensing means within said booth at said second position for dispensing said cushioning material into said container through said opening when said mold assembly is positioned within said booth underlying said dispensing means, and means for moving said mold assembly between said first and second positions while said dispensing means remains at said second position for dispensing said cushioning material into an incoming underlying container wherein said container has formed therein said shock-absorbing members of said cushioning material.

4,390,338

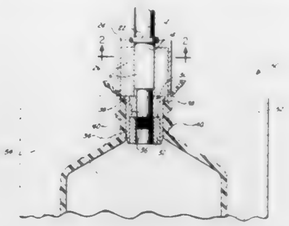
BLOW PIN ASSEMBLY

Kenneth E. Bowers, Prairie Village, Kans., and Charles E. Markley, Kansas City, Mo., assignors to Ethyl Development Corporation, Richmond, Va.

Filed Nov. 18, 1981, Ser. No. 322,422
Int. Cl.³ B29C *17/07, 17/10*
U.S. Cl. 425—525 **10 Claims**

1. A blow pin assembly for use in blow molding extruded thermoplastic parisons to form containers having a neck finish, which assembly: provides a conduit for the passage of blow air to the extruded parison captured in a blow mold; effects removal of the neck moil associated with the captured extruded parison; and which forge forms structure on the inside surface of the neck finish, said blow pin assembly comprising:

a. a hollow, elongated blow pin stem, said blow pin stem being powered for rotation about its long axis;
b. a rotation collar for gripping said neck moil, said rotation collar being mounted to said blow pin stem whereby rotation of said blow pin stem about its long axis imparts rotative motion to said rotation collar;
c. a cutter collar mounted to said blow pin stem for pinching said neck moil against an anvil carried by said blow mold; and
d. a blow pin tip, having a die for the forge formation of said forge formed structure, said blow pin tip mounted to said



blow pin stem whereby said blow pin tip is free from following said rotation of said blow pin stem.

4,390,339

METHOD FOR REMOVAL OF FUNGI FORMED ON HIDES

Tokuyuki Taniguchi, Chiba; Iwao Yashima, Funabashi; Masanori Ota, Ichikawa, and Hitoshi Sasahara, Narashino, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Mar. 24, 1982, Ser. No. 361,430

Claims priority, application Japan, Apr. 1, 1981, 56-48835; Nov. 20, 1981, 56-186454

Int. Cl.[3] **C14C** *1/00;* **D06L** *3/06*

U.S. Cl. 8—94.18 **10 Claims**

1. A method for the removal of fungi from a hide suffering from fungous growth, comprising subjecting the hide to immersion in a solution containing chlorinated isocyanuric acid or salt.

4,390,340

TANNING AGENT, ITS PREPARATION AND ITS USE FOR RETANNING

Dietrich Lach, Friedelsheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

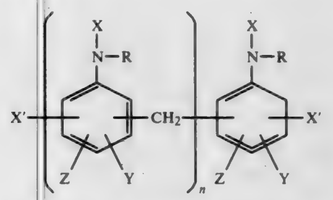
Continuation of Ser. No. 80,038, Sep. 28, 1979, abandoned. This application Jun. 30, 1981, Ser. No. 279,006

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1978, 2843233

Int. Cl.[3] **C14C** *3/18;* **C08G** *12/08;* **C14C** *3/16;* **C07C** *101/48*

U.S. Cl. 8—94.24 **14 Claims**

1. A tanning agent comprising a condensation product of an aliphatic C_1–C_4 aldehyde with an aromatic methylene sulfonic acid containing an amino group and having the formula



where X and X′ are independently H, $—CH_2—SO_3H$ or $—CH_2—OH$, Y is H or $—CO_2H$ and Z is H, CH_3, R is H or C_{1-4}-alkyl and n is from 0 to 10, with the proviso that at least one methylene sulfonic acid group is present in the molecule.

4,390,341

COMPOSITION AND PROCESS FOR PRODUCING PIGMENTATION IN HAIR OR SKIN

Merle E. Jacobs, Goshen, Ind., assignor to Board of Overseers of Goshen College, Goshen, Ind.

Filed Dec. 29, 1980, Ser. No. 220,449

Int. Cl.[3] **A61K** *7/13, 7/42, 7/021*

U.S. Cl. 8—424 **6 Claims**

1. A composition for coloring hair or skin comprising: (a) an effective amount of a tyrosyl derivative having a side chain not free for indolization, (b) an effective amount of an omega-amino acid having an aliphatic structure which includes from about three to about six carbon atoms, and (c) an effective amount of an oxidant for imparting a natural blond color to hair or a golden brown color to skin.

4. A method for imparting a natural blond color to hair comprising: (1) admixing an effective amount of a tyrosyl derivative having a side chain not free for indolization, an effective amount of an omega-amino acid having an aliphatic structure which includes from about three to about six carbon atoms, and an effective amount of an oxidant to produce an admixture capable of imparting said natural blond color to said hair; and (2) contacting said hair with an effective amount of said admixture to impart said natural blond color to said hair.

4,390,342

PROCESS FOR THE PREPARATION OF SOLID COMPOSITION OF WATER-SOLUBLE DYES

Beat Bruttel, Böckten, and Heinz Pfenninger, Lupsingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 26, 1981, Ser. No. 247,696

Claims priority, application Switzerland, Apr. 1, 1980, 2565/80

Int. Cl.[3] **C09B** *67/04, 67/54, 67/06*

U.S. Cl. 8—524 **37 Claims**

1. A process for producing a solid dye composition, which process comprises passing an aqueous solution or suspension of at least one water-soluble crude dye, to effect separation of synthesis by-products having molecular weights of below 500 and partial separation of water, through a semipermeable asymmetric membrane, containing ionic groups and the pores of which membrane having a diameter of 1 to 500 Å; subsequently drying the resulting aqueous preparation which has become more highly concentrate, wherein drying is performed in a granulating apparatus, a spray dryer or a fluidised bed apparatus; and adding a surface active agent before or after passage of the aqueous solution or suspension through the semipermeable membrane, the surface active agent being added beforehand only when it does not become separated by the membrane.

4,390,343

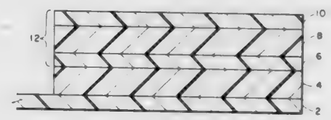
MULTILAYER ANALYTICAL ELEMENT HAVING AN IMPERMEABLE RADIATION DIFFUSING AND BLOCKING LAYER

Bert Walter, South Bend, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 280,805, Jul. 6, 1981, abandoned. This application Apr. 19, 1982, Ser. No. 369,632

Int. Cl.[3] **G01N** *33/52, 33/54*

U.S. Cl. 436—518 **29 Claims**



29. A method for detecting a ligand in or the ligand binding capacity of a liquid sample which method comprises contacting the sample with a multilayer analytical element of the type having a reagent layer incorporating reagents which are responsive to the ligand in or the ligand binding capacity of the sample to give a detectable response, a radiation diffusing and blocking layer, and a support layer, the improvement wherein the radiation diffusing and blocking layer is

(a) interposed between the reagent layer and the support layer;

(b) impermeable to the ligand, reagents of the reagent layer, and products of their interreaction; and

(c) inert to the ligand, reagents of the reagent layer, and products of their interreaction.

4,390,344

GASOHOL MAINTAINED AS A SINGLE MIXTURE BY THE ADDITION OF AN ACETAL, A KETAL OR AN ORTHOESTER

William M. Sweeney, Wappingers Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,023
Int. Cl.³ C10L 1/18
U.S. Cl. 44—56 **4 Claims**

1. The method of stabilizing a composition containing a gasoline and a water-miscible alcohol which is miscible with said gasoline whereby said composition is inhibited from separating into more than one layer on contact with water which comprises mixing (i) said composition containing a gasoline and a water-miscible alcohol which is miscible with said gasoline, (ii) as an additive, an orthoester thereby forming a stabilized composition of increased water-tolerance which remains a single phase mixture at pH below 7 in the presence of water; and recovering said stabilized composition of increased water-tolerance.

4,390,345

FUEL COMPOSITIONS AND ADDITIVE MIXTURES FOR REDUCING HYDROCARBON EMISSIONS

Gabor A. Somorjai, 665 San Luis Rd., Berkeley, Calif. 94707

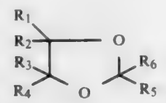
Filed Nov. 17, 1980, Ser. No. 207,371
Int. Cl.³ C10L 1/18
U.S. Cl. 44—63 **18 Claims**

1. As a composition of matter, a lead-free or substantially lead-free hydrocarbon fuel composition for use in a spark ignited internal combustion engine to reduce hydrocarbon emissions comprising

(i) a major amount of hydrocarbons boiling in the gasoline boiling range,

(ii) an antiknock amount of a cyclopentadienyl manganese tricarbonyl antiknock compound, and

(iii) an exhaust emission reducing amount of a compound having the general formula:



wherein R_1-R_6 are each independently selected from hydrogen or hydrocarbyl radicals.

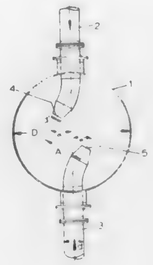
4,390,346

APPARATUS FOR MIXING AT LEAST ONE ADDITIONAL GAS INTO A MAIN FLOW OF GAS

Rudolph E. Cramer, Oudkarspel, and Johannes H. W. Ouwerkerk, Driehuis, both of Netherlands, assignors to Hoogovens Ijmuiden B.V., Netherlands

Continuation of Ser. No. 145,744, May 1, 1980, abandoned. This application Sep. 24, 1981, Ser. No. 305,200
Claims priority, application Netherlands, May 11, 1979, 7903708
Int. Cl.³ B01F 3/02
U.S. Cl. 48—180 R **7 Claims**

1. Apparatus for mixing at least one additional gas into a main flow of gas, consisting of a cylindrical conduit having a flow passage and a wall bounding the flow passage to carry said main flow and two feed conduits in a single plane initially extending radially and opening into the cylindrical conduit with each having one opening therein, for the introduction of the said additional gas into the said main flow, the two openings of said conduits being spaced from the wall of the cylindrical conduit and arranged symmetrically with respect to the axis along the length of the cylindrical conduit and in said plane, said plane being perpendicular to said axis, the axes of the said openings being spaced apart from each other by less than one half of the internal diameter of the cylindrical conduit and the said openings being adapted to direct the additional gas in respective opposite parallel directions, so that the gas



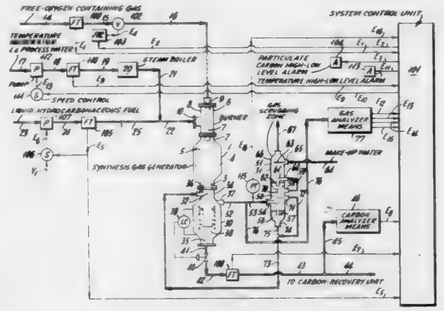
emerging from both openings tends to circulate in the same direction around the axis of the cylindrical conduit.

4,390,347

TRIM CONTROL PROCESS FOR PARTIAL OXIDATION GAS GENERATOR

Roger M. Dille, Port Arthur; Leigh R. Middleton, Beaumont, both of Tex.; Albert Brent, Huntington, N.Y., and Allen M. Robin, Anaheim, Calif., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 21, 1981, Ser. No. 333,158
Int. Cl.³ C10J 3/46
U.S. Cl. 48—197 R **17 Claims**



1. In a partial oxidation process for reacting a liquid hydrocarbonaceous fuel feedstream and a free-oxygen containing gas feedstream in the presence of a temperature moderator in the reaction zone of a refractory lined free-flow noncatalytic gas generator at a temperature in the range of about 1700° to 3000° F. and a pressure in the range of about 1 to 300 atmospheres to produce an effluent gas stream comprising H_2, CO, CH_4, CO_2, particulate carbon and at least one material from the group consisting of H_2O, H_2S, COS, N_2, and Ar; and cleaning and cooling the effluent gas stream with water in a gas quenching and cleaning zone to remove substantially all of the entrained particulate carbon as a stream of carbon-water dispersion and to produce a cooled and cleaned effluent gas stream; the improved method for controlling the amount of unconverted particulate carbon in the effluent gas stream leaving the reaction zone comprising:

(1) periodically determining the flow rate of the feedstream of liquid hydrocarbonaceous fuel and generating a liquid hydrocarbonaceous fuel flow rate signal responsive thereto;

(2) automatically computing the desired rate of production for the unconverted particulate carbon produced in the reaction zone, in accordance with the signal generated in (1) and a direct current voltage corresponding to the weight fraction of carbon in said liquid hydrocarbonaceous fuel times the desired weight fraction of carbon in the liquid hydrocarbonaceous fuel feed which is entrained as particulate carbon in the effluent gas stream leaving the reaction zone, and generating a corresponding signal responsive thereto;

(3) periodically determining the flow rate for the stream of carbon-water dispersion, and generating a corresponding carbon-water dispersion flow rate signal responsive thereto;

(4) automatically sampling and analyzing over a period of time a plurality of samples of the stream of carbon-water dispersion in succession, and generating corresponding signals responsive thereto each successive signal representing the weight fraction of particulate carbon;

(5) automatically storing and computing the average of said plurality of the signals generated in (4), and generating a corresponding signal responsive thereto representing the average weight fraction of particulate carbon;

(6) automatically computing the actual rate of production for the unconverted particulate carbon produced in the reaction zone and recovered in the carbon-water dispersion in accordance with the signals generated in (3) and (5), and generating a corresponding signal responsive thereto;

(7) automatically computing the relative difference between the actual and desired rates of production of unconverted particulate carbon in accordance with the signals generated in (2) and (6), and generating a corresponding signal responsive thereto;

(8) periodically determining the flow rate for the feedstream of free-oxygen containing gas, and generating a corresponding free-oxygen containing gas flow rate signal responsive thereto;

(9) automatically comparing the signal generated in (7) for a match with one of a plurality of direct current voltages corresponding to a series of values (+ and −) representing the relative difference between the actual and desired rates of production of unconverted particulate carbon, and responsive thereto providing a related signal corresponding to the % change to be made in the current flow rate for the free-oxygen containing gas feedstream in order to bring closer the current and desired flow rates for the free-oxygen containing gas, or alternatively providing a particulate carbon high or low level alarm signal;

(10) automatically multiplying the signal from (9) corresponding to the % change to be made in the current flow rate for the free-oxygen containing gas feedstream by a signal corresponding to the current flow rate for the free-oxygen containing gas feedstream to provide a signal to adjust the flow rate regulating means for the free-oxygen containing gas feedstream;

(11) automatically adjusting the flow rate of the free-oxygen containing gas feedstream, or alternatively actuating an alarm means in response to the signals generated in (10) or (9), respectively;

(12) stabilizing conditions in the reaction zone; and

(13) repeatedly cycling steps (1) to (12).

4,390,348

TRIM CONTROL PROCESS FOR PARTIAL OXIDATION GAS GENERATOR

Roger M. Dille, Port Arthur; Leigh R. Middleton, Beaumont, both of Tex.; Albert Brent, Huntington, N.Y., and Allen M. Robin, Anaheim, Calif., assignors to Texaco Inc., White Plains, N.Y.

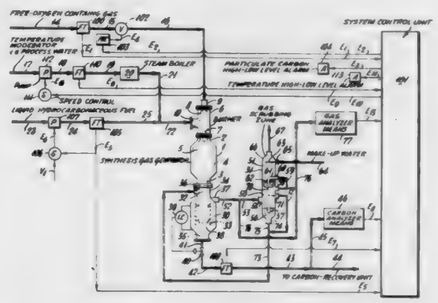
Filed Dec. 21, 1981, Ser. No. 333,159
Int. Cl.³ C10J 3/46
U.S. Cl. 48—197 R **16 Claims**

1. In a partial oxidation process for reacting a liquid hydrocarbonaceous fuel feedstream and a free-oxygen containing gas feedstream in the presence of a temperature moderator in the reaction zone of a refractory lined free-flow noncatalytic gas generator at a temperature in the range of about 1700° to 3000° F. and a pressure in the range of about 1 to 300 atmospheres to produce an effluent gas stream comprising H_2, CO, CH_4, CO_2, particulate carbon and at least one material from the group consisting of H_2O, H_2S, COS, N_2, and Ar; and cleaning and cooling the effluent gas stream with water in a gas quenching and cleaning zone to remove substantially all of the entrained particulate carbon as a stream of carbon-water dispersion and to produce a cooled and cleaned effluent gas stream; the improved method for controlling the amount of unconverted particulate carbon in the effluent gas stream leaving the reaction zone and for controlling the temperature in the reaction zone comprising:

(1) periodically determining the flow rate of the feedstream of liquid hydrocarbonaceous fuel and generating a liquid hydrocarbonaceous fuel flow rate signal responsive thereto;

(2) automatically computing the desired rate of production for the unconverted particulate carbon produced in the reaction zone, in accordance with the signal generated in (1) and a direct current voltage corresponding to the weight fraction of carbon in said liquid hydrocarbonaceous fuel times the desired weight fraction of carbon in the liquid hydrocarbonaceous fuel feed which is entrained as particulate carbon in the effluent gas stream leaving the reaction zone, and generating a corresponding signal responsive thereto;

(3) periodically determining the flow rate for the stream of carbon-water dispersion, and generating a corresponding carbon-water dispersion flow rate signal responsive thereto;



(4) automatically sampling and analyzing over a period of time a plurality of samples of the stream of carbon-water dispersion in succession, and generating corresponding signals responsive thereto each successive signal representing the weight fraction of particulate carbon;

(5) automatically storing and computing the average of said plurality of the signals generated in (4), and generating a corresponding signal responsive thereto representing the average weight fraction of particulate carbon;

(6) automatically computing the actual rate of production for the unconverted particulate carbon produced in the reaction zone and recovered in the carbon-water dispersion in accordance with the signals generated in (3) and (5), and generating a corresponding signal responsive thereto;

(7) automatically computing the relative difference between the actual and desired rates of production of unconverted particulate carbon in accordance with the signals generated in (2) and (6), and generating a corresponding signal responsive thereto;

(8) periodically determining the flow rate for the feedstream of free-oxygen containing gas, and generating a corresponding free-oxygen containing gas flow rate signal responsive thereto;

(9) automatically comparing the signal generated in (7) for a match with one of a plurality of direct current voltages corresponding to a series of values (+ and −) represent-

ing the relative difference between the actual and desired rates of production of unconverted particulate carbon, and responsive thereto providing a related signal corresponding to the % change to be made in the current flow rate for the free-oxygen containing gas feedstream in order to bring closer the current and desired flow rates for the free-oxygen containing gas, or alternatively providing a particulate carbon high or low level alarm signal;

(10) automatically multiplying the signal from (9) corresponding to the % change to be made in the current flow rate for the free-oxygen containing gas feedstream by a signal corresponding to the current flow rate for the free-oxygen containing gas feedstream to provide a signal to adjust the flow rate regulating means for the free-oxygen containing gas feedstream;

(11) automatically adjusting the flow rate of the free-oxygen containing gas feedstream, or alternatively actuating an alarm means in response to the signals generated in (10) or (9), respectively;

(12) stabilizing conditions in the reaction zone;

(13) periodically determining the current flow rate of the feedstream of temperature moderator and generating a signal responsive thereto;

(14) automatically sampling and analyzing over a period of time a plurality of samples of the cooled and cleaned effluent gas stream in succession and generating corresponding signals responsive thereto each successive signal representing the mole fraction of CH_4 (dry basis);

(15) automatically storing and computing the average of said plurality of signals generated in (14), and generating a corresponding signal responsive thereto representing the average mole fraction of CH_4 (dry basis);

(16) automatically computing a value representing the actual temperature in the reaction zone of the gas generator as a function of the methane concentration from the signal generated in (15) and direct input signals representing constants; and generating a corresponding signal responsive thereto;

(17) automatically computing the relative difference between the actual temperature as represented by the value derived in (16) and the desired temperature in the reaction zone, and generating a corresponding signal responsive thereto in accordance with the signal generated in (16) and a manual or automatically computed input signal representing the desired temperature in the reaction zone;

(18) automatically comparing the signal generated in (17) for a match with one of a plurality of direct current voltages corresponding to a series of values (+ and −) representing the relative difference between the actual temperature as represented by the value derived in (16) and the desired temperature in the reaction zone, and responsive thereto providing a related signal corresponding to the % change to be made in the current flow rate for the temperature moderator feedstream in order to bring closer the current and desired flow rates for the temperature moderator feedstream; or alternatively providing a reaction zone temperature high-low level alarm signal;

(19) automatically multiplying the signal from (18) corresponding to the % change to be made in the current flow rate for the temperature moderator feestream by a signal corresponding to the current flow rate for the temperature moderator feedstream from (13) to provide a signal to adjust the flow rate regulating means for the temperature moderator feedstream;

(20) automatically adjusting the flow rate of the temperature moderator feedstream, or alternatively actuating an alarm means in response to the signals generated in (19) and (18), respectively;

(21) stabilizing conditions in the gas generator; and

(22) repeatedly cycling the overall system control procedure as previously specified for controlling the amount of unconverted carbon in the effluent gas stream in steps (1) to (12), followed by adjusting the temperature in the reaction zone by steps (13) to (22).

4,390,349

METHOD FOR PRODUCING FUEL GAS FROM LIMESTONE

Cheng Jen-Tung, Taipei, Taiwan, assignor to Kuo-Yung Industrial Company, Taiwan

Filed Jun. 15, 1979, Ser. No. 48,815

Int. Cl.³ C10J *3/00*

U.S. Cl. 48—197 R **6 Claims**

1. A method for the production of a gaseous fuel composition from a calcium carbonate-containing solid comprising:

thermally decomposing said calcium carbonate-containing solid at a temperature within the range of about 600° C. to about 900° C. to form calcium oxide and carbon dioxide;

reacting said calcium oxide and carbon dioxide with water and carbon at a temperature within the range of about 950° C. to 1300° C. to form a gaseous mixture of hydrogen, carbon monoxide, and at least one gaseous aliphatic hydrocarbon, said calcium carbonate-containing solid, carbon and water being employed in weight ratios suitable to produce a gaseous fuel composition consisting essentially of about 48 to 72 percent by weight of carbon monoxide, about 5 to 11 percent by weight of hydrogen and about 2.8 to 9 percent by weight of gaseous lower molecular weight hydrocarbons of 1 to 3 carbon atoms.

4,390,350

STERILIZATION OF BACTERIAL CONCENTRATES

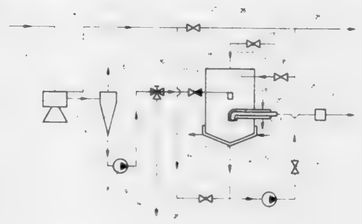
Bengt A. Palm, Genarp, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Sep. 21, 1982, Ser. No. 420,910

Claims priority, application Sweden, Sep. 22, 1981, 8105581

Int. Cl.³ B01D *19/00;* **A23P** *1/00;* **C12C** *7/18*

U.S. Cl. 55—38 **10 Claims**



1. In the treatment of a liquid containing gases, such as air and carbon dioxide, and microbes, the process which comprises subjecting a stream of said liquid to centrifuging to separate it into a microbe-enriched partial stream and a flow of microbal-exhausted liquid, subjecting said partial stream to a first degassing to remove most of the gases therefrom, then feeding said partial stream into a closed container by way of a step which finely divides the partial stream, introducing steam into said container to heat said partial stream by direct condensation of the steam, discharging a heated partial stream through a first outlet of said container while controlling the liquid level in the container, separating from the liquid in said container residual gas in said liquid, and discharging the separated residual gas through a second outlet from the container.

4,390,351

GAS-LIQUID SEPARATOR

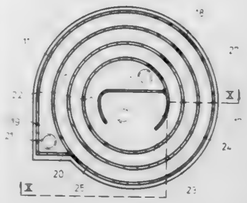
Kunio Matsui; Hiroaki Tsuchiya, both of Yokohama, and Ryushi Suzuki, Tokyo, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 117,524, Aug. 12, 1980, abandoned. This application Oct. 20, 1981, Ser. No. 312,995

Claims priority, application Japan, Aug. 16, 1979, 54-104210; Apr. 24, 1980, 55-56523

Int. Cl.³ B01D *19/00, 45/16*

U.S. Cl. 55—204 **1 Claim**



1. A centrifugal separator for separating gas bubbles from a liquid in which such bubbles are trapped comprising:

a flow structure having an inlet for admitting a liquid having entrapped gas bubbles and comprising a top plate, a bottom plate parallel thereto and a strip spirally coiled between and having the edges thereof joined to said top and bottom plates, the inner end of said strip being joined to the innermost turn of said strip so as to define between the inner and outer ends of said strip a spiral passage having inlet and outlet ends and a central axis in a single plane and being of substantially uniform rectangular cross section and for a major portion of its length being bounded by imperforate walls defined by said plates and strip and confined between parallel planes defined by said plates and parallel to said single plane, whereby to subject the liquid received through said inlet to flow pattern forming a vortex and in which flow pattern separation is achieved by the liquid of relatively high specific gravity being centrifugally forced toward and confined by radially outward portions of said passage during travel along a major portion of the length thereof enabling the said gas bubbles of relatively low specific gravity to be forced toward and confined by radially inward portions of said passage during travel along said major portion of the length thereof, said inner end of said strip comprising a radially inward portion and being partially cut out to provide an opening in said radially inward portion near the outlet end of said passage so as to form a bubble trapping compartment adjacent said opening, said compartment communicating with a first outlet for removing bubbles separated from said liquid after travel along said major portion of the length thereof, and a second outlet communicating with said outlet end of said passage for removing the liquid free of those bubbles removed at said first outlet.

4,390,352

HEAT EXCHANGER

Ingo Grün, D-4300 Essen, Fed. Rep. of Germany

Filed Mar. 19, 1981, Ser. No. 245,354

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 3012286

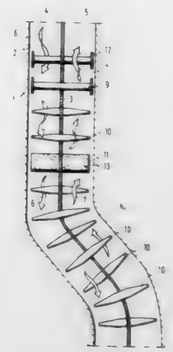
Int. Cl.³ B01D *53/04*

U.S. Cl. 55—208 **6 Claims**

2. A heat exchanger having at least two channels for the flow therethrough of fluids, comprising:

(a) a flexible wall having poor thermal conductivity characteristics;

(b) a plurality of heat conducting pins mounted in said wall, said pins extending through said wall on either side of said flexible wall, said pins being supported by said flexible wall and cooperating with said wall to form a seal, said flexible wall and said pins cooperating to preclude the transmission of heat along said flexible wall in the direction of fluid flow and facilitate heat transmission through



said flexible wall along said heat conducting pins between the channels, said pins being mounted in said flexible wall by pushing the pins through said flexible wall such that prefabricated holes adapted for receipt of the pins are unnecessary.

4,390,353

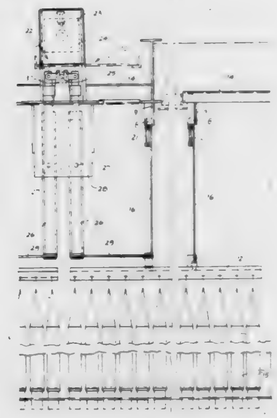
FILTER APPARATUS

Rodney W. Miljoen, Berowra Waters, Australia, assignor to James Howden Australia Pty. Limited, Australia

Filed May 14, 1981, Ser. No. 263,482

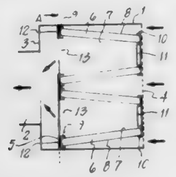
Int. Cl.³ B01D *46/04*

U.S. Cl. 55—304 **7 Claims**



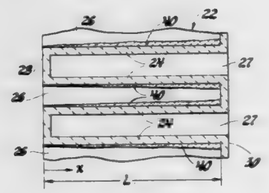
1. Filter apparatus for filtering particulate matter from a gas stream comprising a frame, a shaker rack suspended from the frame, a plurality of filter bags suspended vertically from the shaker rack, and shaker means for causing the shaker rack to move reciprocally along a path lying substantially in one plane, said shaker rack being suspended from the frame by a plurality of leaf springs which lie in parallel planes, which planes are normal to the plane containing the path of reciprocation of the shaker rack.

4,390,354
AIR FILTERS
Stanley P. Witchell, 17 Town Close Vicarage Hill, Dartmouth, South Devon, England
Continuation of Ser. No. 129,526, Mar. 12, 1980, abandoned, which is a continuation-in-part of Ser. No. 558,496, Mar. 14, 1975. This application Aug. 10, 1981, Ser. No. 291,858
Int. Cl.³ B01D *29/20, 29/24*
U.S. Cl. 55—337 **9 Claims**



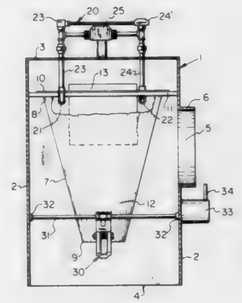
1. An air cleaner comprising at least two pleated paper filter elements each having the configuration of a frustum of a cone and mounted in side-by-side relation in a casing with their relatively wide diameter ends in sealing relation to a common, impregnable baseplate, means dividing said casing into two discrete portions, said baseplate means having openings defined therein to provide direct communication between one of said portions and the inside of said elements, impermeable means for closing the relatively narrow diameter ends of the elements, an aperture in the casing in each of said portions, and means defined by said casing to direct air entering into said casing tangential to the surface of said filters whereby in use, air entering one of said apertures can pass to the other aperture only through said filter element; said elements and means defined by said casing, being designed, positioned and dimensioned to provide maximum utilizable surface area on said elements while providing a minimum pressure drop through said casing.

4,390,355
WALL-FLOW MONOLITH FILTER
Dean C. Hammond, Jr., Birmingham, and Paul T. Vickers, Bloomfield Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 2, 1982, Ser. No. 345,005
Int. Cl.³ B01D *39/20;* **C04B** *21/06*
U.S. Cl. 55—523 **2 Claims**



1. A wall-flow diesel particulate filter for use in a diesel engine exhaust system, said filter comprising a ceramic monolith having a plurality of interlaced thin gas filtering porous internal walls defining a plurality of parallel aligned passages extending from an inlet end to an outlet end of the filter, said passages including a first group comprising inlet passages open at said inlet end and closed at said outlet end and a second group comprising outlet passages closed at said inlet end and open at said outlet end, the cross-sectional flow area of each said inlet passage substantially decreasing and the walls defining said inlet passage substantially increasing in thickness along its longitudinal length from said inlet end to said outlet end for the more uniform trapping of particulates on these walls during exhaust gas flow into said inlet passages and through said walls into associated, adjacent said outlet passages and the cross-sectional flow area of said outlet passages remaining constant.

4,390,356
APPARATUS FOR PREVENTING SNOW BUILDUP IN A CARBON DIOXIDE SNOW CYCLONE SEPARATOR
Martin D. Preiss, Chicago, and Peter A. Students, Westchester, both of Ill., assignors to Cardox Corporation, San Francisco, Calif.
Filed Oct. 2, 1981, Ser. No. 307,921
Int. Cl.³ F25J *1/00*
U.S. Cl. 62—35 **13 Claims**

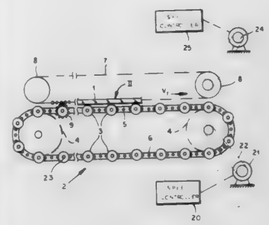


1. A cyclone separator for generating snow from liquid carbon dioxide comprising a flexible frustoconical member defining a separation chamber, said frustoconical member having a partially open upper end and an open lower end, means supporting said frustoconical member in an inverted position with its longitudinal axis oriented vertically, a plurality of injection nozzles located in the upper end of said separation chamber and radially spaced inwardly from the walls of said frustoconical member, each of said injection nozzles having an orifice for injecting liquid carbon dioxide into said separation chamber, the orifice of each of said nozzles being directed outwardly toward the walls of said frustoconical member, whereby liquid carbon dioxide injected into said separation chamber forms a mixture of snow and vapor which directly impinges against the walls of said frustoconical member to create induced vibrations therein to reduce carbon dioxide snow buildup and wherein the combined actions of centrifugal force and gravity separate snow from vapor permitting the snow and the vapor to be discharged from said open lower end of said frustoconical member.

4,390,357
METHODS OF AND SYSTEM FOR CLEAN AIR DELIVERY TO LIGHTGUIDE FIBER DRAWING APPARATUS
Daryl L. Myers, Lawrenceville, and Stanley Rice, Atlanta, both of Ga., assignors to Western Electric Company, Inc., New York, N.Y.
Filed Oct. 29, 1981, Ser. No. 316,166
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—2 **14 Claims**

7. A method of providing air having a predetermined cleanliness to drawing apparatus in which lightguide fiber is drawn from a preform, said method including the steps of:
providing a flow passage having a first end which communicates with air that is ambient to the drawing apparatus and having a second end which is adjacent to the preform and the fiber, said flow passage being arranged to direct air transversely of the fiber and the preform;
surrounding a portion of the preform and of the fiber with an enclosure which communicates with the second end of the flow passage and which has an opening that is opposite to the second end of the flow passage; and
causing ambient air to be drawn into the first end of the flow passage, moved through the flow passage into the enclosure and directed in a substantially laminar flow transversely past the portions of the fiber and preform which are surrounded by the enclosure, and then through the opening; while
filtering the air which is moved through the flow passage to remove contaminants and to cause the air that is directed past the fiber and the preform to have a predetermined cleanliness.

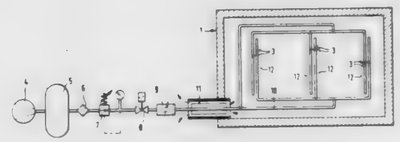
4,390,358
METHOD AND APPARATUS FOR THE TRANSPORT OF GLASS PANES
Horst Frielingsdorf, Am Meisenhort 2, 5630 Remscheid 11, Fed. Rep. of Germany
Filed Mar. 26, 1982, Ser. No. 362,124
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1981, 3113409
Int. Cl.³ C03B *25/08*
U.S. Cl. 65—111 **10 Claims**



1. In an apparatus for the treatment of glass panes wherein a heated glass pane is displaced in a transport direction through a treatment stage, the improvement which comprises:
a traveling endless grate having an upper pass adapted to support said panes and form with a multiplicity of rollers on which said panes rest;
means for displacing said grate so that said upper pass moves continuously at a velocity V_{grate};
means for imparting an angular velocity ω to said rollers such that said rollers impart a velocity component ωR to said panes, where R is the radius of said rollers so that said glass pane moves through said stage without sagging at a translatory velocity $V_{trans}=V_{grate}-\omega R$, when V_{grate} is greater than ωR and with a velocity $V_{trans}=\omega R-V_{grate}$, when ωR is larger than V_{grate}, said component ωR being in the direction opposite V_{grate}.

8. A method of operating a roller grate for the transportation of heated panes through a treatment stage, comprising the steps of:
continuously displacing said grate at a velocity V_{grate};
independently rotating said rollers at an angular velocity ω whereby said rollers impart velocity component ωR to glass panes carried by said rollers on said grate; and
controlling said velocities so that ωR is in a direction opposite V_{grate}.

4,390,359
METHOD OF AND APPARATUS FOR PREVENTING THE CURVING OF GLASS SHEETS IN THE ROLLER-EQUIPPED FURNACE OF A HORIZONTAL TEMPERING PLANT
Pauli Reunamäki, Nattari, Finland, assignor to Tamglass Oy, Tampere, Finland
Filed Sep. 8, 1981, Ser. No. 300,374
Claims priority, application Finland, Sep. 12, 1980, 802866
Int. Cl.³ C03B *27/04*
U.S. Cl. 65—114 **13 Claims**



1. A method for the prevention of curving of glass sheets in the roller-equipped furnace of a horizontal tempering plant, wherein the glass sheets are passed in a horizontal plane, by means of a conveyor consisting of horizontal rollers, through a furnace, the opposite surfaces of the glass sheet being subjected to the conduction, convection and radiation heat action produced by resistance elements, rollers and the like furnace components disposed above and below the glass sheet, characterized by the step of blasting air so as to create on the upper surface of the glass sheet a substantially turbulent air flow for intensifying the convection heat action applied to the upper surface of the glass-sheet, the air being blasted by injection action near the upper surface of the glass sheet by narrow jets spaced along the length of the furnace and being directed at certain distances against each other for the creation of short circulating flows longitudinally of the furnace.

4,390,360
CONTROL OF SICKLEPOD, SHOWY CROTALARIA, AND COFFEE SENNA WITH A FUNGAL PATHOGEN
Harrell L. Walker, Stoneville, Miss., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Mar. 10, 1982, Ser. No. 356,870
Int. Cl.³ A01N *63/04*
U.S. Cl. 71—79 **4 Claims**

1. A method for controlling multiple plant weeds of sicklepod, showy crotalaria, and coffee senna, comprising inoculating an agricultural field with an effective amount of fungus *Alternaria cassiae* to produce typical lesions in and kill said multiple weeds.

4,390,361
PROCESS FOR PREPARING FERROMAGNETIC PARTICLES COMPRISING METALLIC IRON

Toshinobu Sueyoshi, Kyoto; Shigeo Hirai, Shiga, and Masahiro Amemiya, Osaka, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Jun. 11, 1981, Ser. No. 272,722
Claims priority, application Japan, Jun. 11, 1980, 55/79417; Jun. 11, 1980, 55/79418; Jul. 11, 1980, 55/95403
Int. Cl.³ B22F *1/00*; A01F *1/02*
U.S. Cl. 75—0.5 BA **12 Claims**

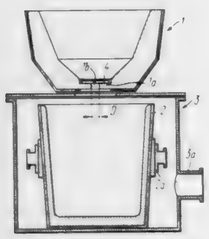
1. A process for preparing ferromagnetic iron particles comprising metallic iron as the major component by reduction of particles of an iron oxide under heating, said process comprising:
providing iron oxide particles with a first coating layer containing at least one metal compound selected from the group consisting of aluminum compounds, zinc compounds and alkaline earth metal compounds;
providing the thus prepared metal compound coated particles with a second coating layer containing at least one silicon compound; and
subjecting the thus prepared coated particles to reduction under heating.

12. A ferromagnetic iron particle comprising:
an iron oxide particle having coated thereon a first coating layer and an outer second coater layer;
said first coating layer containing at least one metal compound selected from the group consisting of aluminum compounds, zinc compounds and alkaline earth metal compounds; and
said outer second coating layer containing at least one silicon compound.

4,390,362
METHOD AND APPARATUS FOR OUT-OF-FURNACE TREATMENT OF CAST IRON

Gil D. Khusnutdinov, prospekt Vernadskogo, 81, kv. 35; Arkady V. Chernovol, ulitsa Pushkinskaya, 5, kv. 8; Vladimir S. Shumikhin, ulitsa M.Koshevogo, 24, kv. 123; Vasily T. Shulga, ulitsa Schuseva, 3, kv. 3, all of Kiev; Andrei I. Poteiko, ulitsa Zarya, 4, kv. 10; Vladimir K. Kamensky, Gorki-2, ulitsa Rikharda Zorge, 67, kv. 77, both of Kazan; Jury A. Kondakov, ulitsa Rykova, 1/23, kv. 45, and Viktor G. Shmigidin, prospekt Vernadskogo, 81, kv. 119, both of Kiev, all of U.S.S.R.

Filed Nov. 9, 1981, Ser. No. 319,613
Int. Cl.³ C21C *7/10*
U.S. Cl. 75—49 **12 Claims**

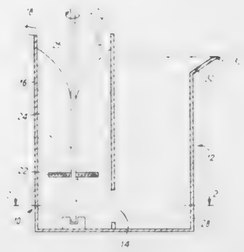


1. A process of treating molten cast iron out-of-the-furnace, comprising the steps of supplying a ladle with innoculant additives for said molten cast iron, placing said ladle within a substantially enclosed chamber, applying a continuous source of vacuum to said chamber, feeding a stream of molten cast iron to said ladle within said chamber, said stream of molten cast iron being subjected to said vacuum source prior to its interaction with the additives in said ladle, and maintaining said molten cast iron so fed to said ladle under said vacuum source for a period of 15 to 120 seconds.

4,390,363
CONTINUOUS METHOD FOR REMOVING COPPER FROM LEAD

John E. Bowers, Oxford, England, assignor to B.N.F. Metals Technology Centre, Oxfordshire, England

Filed Jun. 11, 1981, Ser. No. 272,523
Claims priority, application United Kingdom, Jun. 18, 1980, 8019930
Int. Cl.³ C22B *13/06*
U.S. Cl. 75—63 **10 Claims**

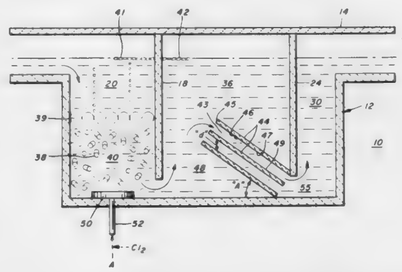


1. A continuous method of removing copper from lead by reaction of copper with sulfur in a single stirred reaction vessel in which the materials introduced into the vessel are maintained under non-homogeneous conditions, which method comprises introducing a stream of lead containing copper as an impurity to the upper end of a vertical stirred reaction vessel, feeding sulphur into the stream of lead at the upper end of the vessel, maintaining a dispersion of sulphur in the stream without substantial back-mixing for a time sufficient to effect reaction between the sulphur and the copper, recovering the stream of lead from the lower end of the vessel, and allowing the formed copper sulphide to float to the surface of the molten lead.

4,390,364
REMOVAL OF FINE PARTICLES FROM MOLTEN METAL

Ho Yu, Murrysville, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 3, 1981, Ser. No. 289,749
Int. Cl.³ C22B *21/06, 26/22*
U.S. Cl. 75—67 A **46 Claims**

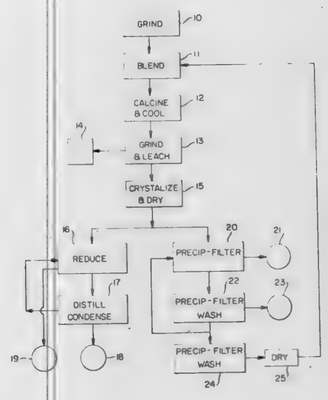


1. A method of treating molten metal containing agglomerable suspended particles of material substantially different in density than said metal but buoyantly suspended in said metal because of their fine size comprising:
(a) passing said metal containing said fine particles through a medium of submerged contacting surfaces selected to avoid introduction of unwanted contaminants into said metal, said medium having a high average void fraction and a high specific surface area so as to agglomerate portions of said particles to form agglomerated particles of larger size separable by gravity from said molten metal;
(b) carrying agglomerated particles out of said media by sufficient molten metal velocity; and
(c) moving said molten metal containing agglomerated particles through a gravity separation zone including means to separate said agglomerted particles from said molten metal by gravity.

4,390,365
PROCESS FOR MAKING TITANIUM METAL FROM TITANIUM ORE

Robert A. Hard, Laguna Beach, and Martin A. Prieto, Diamond Bar, both of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Filed Dec. 15, 1980, Ser. No. 216,058
Int. Cl.³ C01G *23/047*
U.S. Cl. 75—84.4 **34 Claims**



1. A process for the preparation of titanium metal from an ilmenite ore comprising titanium oxides and from about 14 to about 36%, by weight iron which comprises the steps of:
(a) fluorinating said ore by contacting said ore with an alkali metal fluosilicate at a temperature of from about 600° to about 1000° C. to form a fluorinated ore and thereby convert the titanium oxides to titanium fluorides, and
(b) reducing the titanium fluorides to titanium metal.

4,390,366
PROCESS FOR THE EXTRACTION OF PRECIOUS METALS FROM SOLUTIONS THEREOF

Richard K. Lea, Watford; Julian D. Edwards, Chalfont St. Peter, both of England, and D. Frederick Colton, Burlington, Canada, assignors to Inco Limited, Toronto, Canada

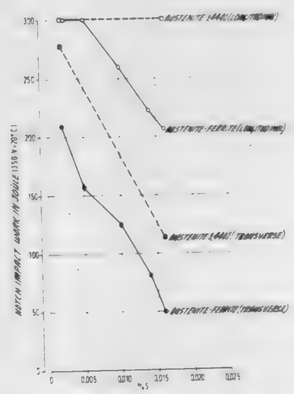
Filed Sep. 1, 1981, Ser. No. 298,355
Claims priority, application United Kingdom, Sep. 5, 1980, 8028662
Int. Cl.³ C01G *7/00, 55/00*
U.S. Cl. 75—101 BE **15 Claims**

1. A selective solvent extraction process for sequentially and selectively separating and removing gold and platinum group metal values from a chloride containing aqueous solution, the process comprising:
(a) oxidizing ruthenium and osmium to their respective tetraoxides by adding an oxidizing agent to the solution,
(b) adjusting the solution in step (a) above to about 0–2 pH units before the oxidizing agent is added and adding about 7–10 times the stoichiometric amount of the oxidizing agent required to oxidize all of ruthenium and osmium to their tetraoxides,
(c) removing the tetraoxides from the solution,
(d) selectively removing gold from the solution by solvent extraction to a residual content of less than two parts-per-million in order to avoid contamination of metals to be extracted subsequently,
(e) removing the remaining solvent in the solution and reacidifying the solution to a hydrochloric acid concentration of from 3 to 6 M,
(f) selectively removing palladium from the solution by solvent extraction with a dialkyl sulfide,
(g) reducing iridium to the trivalent state until its redox potential is about +500 mV relative to a standard colomel electrode,
(h) selectively removing platinum from the solution by solvent extraction with tributyl phosphate and then removing the solvent from the solution,
(i) reoxidizing the iridium to the tetravalent state and extracting the trivalent state from the solution by solvent extraction with tributyl phosphate, and
(j) extracting the rhodium with a reducing agent.

4,390,367
HIGH-ALLOYED STEEL BEING RESISTIVE TO CORROSION BY NATURAL GAS

Norbert Niehaus, Düsseldorf; Rolf Pöpperling, Mülheim, and Horst Bester, Krefeld, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jun. 19, 1981, Ser. No. 275,337
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3024380
Int. Cl.³ C22C *38/22, 38/38*
U.S. Cl. 75—125 **4 Claims**



1. Highly alloyed, weldable, passivatible, austenitic-ferritic steel alloy, having a tensile strength and elastic limit, comprising:
Up to 0.05% carbon
20.0 to 25.0% chromium
5.0 to 9.5% nickel
3.0 to 6.0% molybdenum
0.01 to 2.5% copper
0.1 to 1.5% silicon
0.5 to 2.5% manganese
0.05 to 0.3% nitrogen
the remainder being iron for a 50%-to-50% ratio of austenite to ferrite; and a sulphur content not exceeding 0.005% in order to obtain a high toughness transversely to a direction of principle plastic deformation.

4,390,368

FLAME SPRAY POWDER

David L. Houck, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 1, 1981, Ser. No. 250,323
Int. Cl.³ B22F 1/00
U.S. Cl. 75—251 **3 Claims**

1. A free flowing plasma spray powder of substantially spherical particles having substantially smooth surfaces, said powder having a Hall flow within the range of about 4 to about 7 seconds for about 50 grams and being substantially uniform composition consisting essentially of about 4 to about 6 percent by weight rhenium with the balance being tungsten, wherein substantially all of said particles have a size greater than about 10 microns and are melt alloyed by plasma densification to a uniform composition.

4,390,369

NATURAL WAX-CONTAINING INK JET INKS

Alfred R. Merritt; Theodore M. Cooke, both of Danbury; An-Chung R. Lin, New Town, and Richard G. Whitfield, Brookfield, all of Conn., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 17, 1981, Ser. No. 331,604
Int. Cl.³ C09D 11/12
U.S. Cl. 106—31 **19 Claims**

1. A non-aqueous, phase change ink jet ink composition consisting essentially of at least one natural wax, said wax-containing composition to be discharged in a liquid phase at an elevated temperature above ambient from an ink jet apparatus and which solidifies to a solid phase upon impact with a target.

4,390,370

METAL SILICO-PHOSPHATE BINDERS AND FOUNDRY SHAPES PRODUCED THEREFROM

Charles E. Seeney, Brazil, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Jan. 25, 1982, Ser. No. 342,308
Int. Cl.³ B28B 7/34
U.S. Cl. 106—38.3 **17 Claims**

1. A binder and composition hardener for foundry aggregates comprising, as the binder, a product obtained by reacting phosphoric acid with a mineral silicate selected from the group consisting of zeolites, nepheline syenite and olivine in a ratio of about 3–5:1 by weight at a temperature of about 70°–100° C. for a period of two hours or more and a hardening amount of a hardener selected from the group consisting of a linear alkali metal polyphosphate, a linear ammonium polyphosphate, a polyvalent metal compound selected from the group consisting of alkaline earth metal oxides, silicates and aluminates, potassium olivine phosphate, and aluminum dihydrogen phosphate or mixtures thereof.

9. A process for preparing foundry cores and molds comprising mixing a foundry aggregate with a binder and a hardener therefor wherein the binder comprises the reaction product obtained by heating phosphoric acid and olivine in a weight ratio of about 3–5:1, and the hardener is selected from the group consisting of a linear alkali metal polyphosphate, a linear ammonium polyphosphate, aluminum dihydrogen phosphate, potassium olivine phosphate and a polyvalent metal compound selected from the group consisting of alkaline earth metal oxides, silicates and aluminates packing the mixture into a core or mold box and allowing said mixture to stand for a length of time sufficient to cure the binder and form the core or mold.

4,390,371

METHOD FOR MIXING, SPRAYING AND PLACING CEMENTITIOUS MATERIALS

Charles E. Cornwell, 7104 Marlan Dr., Alexandria, Va. 22307

Filed Aug. 4, 1981, Ser. No. 289,986
Int. Cl.³ C04B 15/00
U.S. Cl. 106—88 **7 Claims**

1. A continuous process for production of cementitious compositions having controlled densities comprising the steps of simultaneously supplying separate flows of fluids and a blend of dry cement and aggregates to a common junction where the flows are intermixed into a common flow upon coming in contact; moving the common flow through static mixers containing a series of angularly disposed baffles causing a turbulence and uniform mixing of the common flow; further comprising adding a flow of preformed foam to the common flow of mixed cementitious compositions and conveying the combined flows to a discharge nozzle; further comprising injecting said fibers into the common flow after exit from the nozzle and just before placement.

4,390,372

DRY PRE-MIXED MORTAR

George E. Hardin, 3032 Market Pl., Bloomington, Ind. 47401

Filed Sep. 23, 1980, Ser. No. 189,748
Int. Cl.³ C04B 7/35
U.S. Cl. 106—90 **2 Claims**

1. A dry mix multi-purpose mortar composition comprising: 40% to 60% by weight Portland cement, 25% to 85% by weight finely divided stone, 5 to 60 grams of a surfactant per 100 pounds of dry mix, said finely divided stone having a particle size of between 50 mesh and 200 mesh and selected from the group consisting of marble flour, granite flour, stone flour and fine sand and at least about one-half gallon of a vinyl acrylic latex copolymer having solids content of about 65% by weight, said surfactant being an alkyl aryl sulfonate which is added in amounts of about 5 to 60 grams per 100 pounds of dry mix.

4,390,373

TRANSPARENT ABRASION RESISTANT FILLED ORGANO-POLYSILOXANE COATINGS CONTAINING COLLOIDAL ANTIMONY OXIDE AND COLLOIDAL SILICA

William H. White, La Puente; William C. Harbison, and Gary L. Nelson, both of Lake Forest, all of Calif., assignors to Swedlow, Inc., Garden Grove, Calif.

Filed Oct. 7, 1981, Ser. No. 309,423
Int. Cl.³ C09K 3/14; B32B 9/64
U.S. Cl. 106—287.12 **14 Claims**

1. A coating composition which forms a transparent, abrasion resistant coating upon curing, said coating composition comprising an effective abrasion resisting amount of a colloidal dispersion containing colloidal silica and an effective abrasion resistance enhancing amount of colloidal antimony oxide in a weight ratio of less than or equal to about 30:70, antimony oxide:silica, in a water-alcohol solution of the partial condensate of $RSi(OH)_3$ wherein R is an organic radical.

4,390,374

RUTILE (TiO_2) PIGMENTS COATED WITH (1) TRIGONAL ANHYDROUS ALUMINA (AL_2O_3) AND (2) CUBIC METAL ALUMINATE ($MEAL_2O_4$) (Me = Co, Ni, Cu, Zn, Mg) AND PROCESS

Luigi Balducci, Mortara, and Massimo Rustioni, Calusco D'Adda, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed May 26, 1981, Ser. No. 266,648
Claims priority, application Italy, May 28, 1980, 22355 A/80
Int. Cl.³ C09C 1/36, 3/06
U.S. Cl. 106—300 **7 Claims**

1. Inorganic pigments based on TiO_2 and metallic aluminates, characterized in that their particles consist of a TiO_2 rutile nucleus, a first adherent coating of trigonal Al_2O_3, and a second adherent coating of cubic $MeAl_2O_4$, in which Me is selected from the class consisting of Co, Ni, Cu, Zn and Mg.

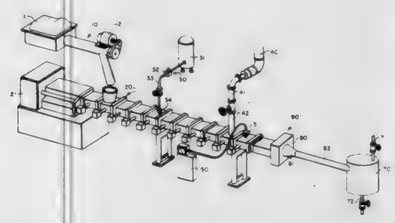
2. A process for preparing a pigment according to claim 1, characterized in that TiO_2 rutile particles coated with an adherent coating of Al_2O_3 are mixed with an oxide MeO or a Me compound capable of providing MeO in a subsequent calcining step, and the mixture is calcined in the presence of air at temperatures ranging from 750° to 1000° C.

4,390,375

PROCESS AND CONTINUOUS APPARATUS FOR CHEMICAL CONVERSION OF MATERIALS

Barry Rugg, New York, N.Y., and Robert Stanton, Ramsey, N.J., assignors to New York University, New York, N.Y.

Continuation-in-part of Ser. No. 244,244, May 18, 1981, Pat. No. 4,363,671, which is a division of Ser. No. 131,339, Mar. 18, 1980, Pat. No. 4,316,748. This application Apr. 17, 1981, Ser. No. 255,189
The portion of the term of this patent subsequent to Feb. 23, 1999, has been disclaimed.
Int. Cl.³ C13K 1/02; B01J 3/03
U.S. Cl. 127—37 **7 Claims**



1. In a process for the acid hydrolysis of waste cellulose to glucose of the type wherein waste cellulose is continuously fed into inlet port of a twin screw extruder; steam or superheated water is continuously fed into a reaction zone in the extruder, downstream of the inlet port; the cellulose is continuously reacted with water in the presence of an acid catalyst at an elevated temperature and pressure in the reaction zone while being continuously conveyed to an outlet port of the extruder having a given diameter, and the reacted cellulose is discharged from the extruder while the elevated temperature and pressure in the reaction zone is maintained, the improvement comprising maintaining an elevated pressure of 100–1000 p.s.i.g. by forming a dynamic seal zone at the upstream end of the reaction and continuously discharging the reacted material downstream of the outlet port at a volume rate of flow controlled solely by the continuous restriction of flow generated by passing the discharge through an orifice pipe having a length greater than 5 times that of the radius of said orifice pipe and having a smaller diameter than the given diameter of the outlet port, thereby to maintain the elevated temperature in the reaction zone.

4,390,376

TINE ASSEMBLY AND METHOD FOR REMOVAL OF DEBRIS FROM DOWN COTTON CLUMPS

William E. Rood, Jr., 3134 E. Fargo Cir., Mesa, Ariz. 85203

Filed Jan. 11, 1982, Ser. No. 338,219
Int. Cl.³ A01D 46/08
U.S. Cl. 134—6 **22 Claims**

1. An apparatus for removing dirt and debris from clumps of cotton that are released from slots of a group of retrieving belts as the belts pass around a rotating pulley means that causes the slots to open, said apparatus comprising in combination:

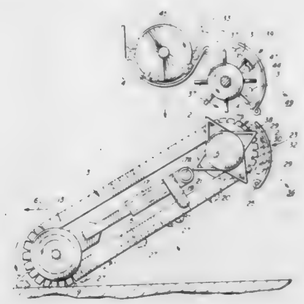
(a) first means for catching the released clumps in a lower portion of a curved region that is bounded by the portions of the belts passing around said pulley means and a first group of curved, spaced tines disposed adjacent to said portions of said belts;

(b) second means for

(i) forcing the clumps to move along said tines of said first group from the lower portion of said first region to an upper portion thereof, said forcing loosening dirt and/or debris from the clumps, the loosened dirt and/or debris falling between said tines of said first group; and

(ii) ejecting the clumps from said upper portion of said first region.

16. A method for removing dirt and debris from clumps of cotton that are released from slots of a group of retrieving belts



as the belts pass around a rotating pulley means that causes the slots to open, said method comprising the steps of:

(a) catching the released clumps in a lower portion of a first region that is bounded by the portions of the belts passing around the pulley means and a first group of curved, spaced tines disposed adjacent to said portions of the belts;

(b) forcing the clumps to move along the tines of the first group from the lower portion of the first region to an upper portion thereof, said forcing loosening dirt and/or debris from the clumps, said loosened dirt and/or debris falling between the tines of said first group; and

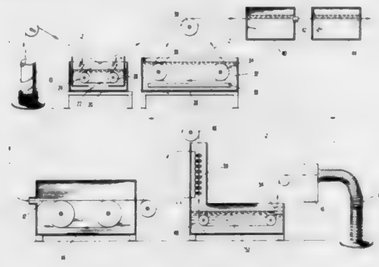
(c) ejecting the clumps from the upper portion of the first region.

4,390,377

NOVEL CONTINUOUS, HIGH SPEED METHOD OF GALVANIZING AND ANNEALING A CONTINUOUSLY TRAVELLING LOW CARBON FERROUS WIRE

James W. Hogg, 6216 Hillsboro Rd., Nashville, Tenn. 37215

Filed Jan. 12, 1981, Ser. No. 224,482
Int. Cl.³ C21D 8/06
U.S. Cl. 148—12 B **13 Claims**



1. A continuous, high speed, method of galvanizing and annealing a continuously travelling low carbon ferrous wire to provide a highly corrosion resistant, more ductile wire having a bright silvery luster comprising:

(a) passing said continuously travelling ferrous wire after it has been cleaned through a zinc electroplating bath to deposit a zinc coating on said wire,
(b) passing the zinc coated wire through a bath of molten aluminum-zinc eutectic alloy maintained at a temperature of about 734° F. to about 786° F. comprising a major portion of zinc and sufficient aluminum to provide an aluminum-zinc alloy having a melting point below that of zinc and in the range of about 734° F. to about 786° F. to provide a coating containing zinc and aluminum on the wire,
(c) drawing the coated continuously travelling ferrous wire down to a lesser cross-sectional area,
(d) continuously annealing the drawn, continuously travelling, coated ferrous wire at a temperature above the melting point of the Zn-Al-Zn coating to about 1400° F. for a short period of time sufficient to relieve the stresses imparted to the wire by the drawing step but not so long that inhibiting action of the aluminum content in the coating on the iron-zinc alloying action and oxidation is completely overcome, and
(e) thereafter quenching the annealed wire.

4,390,378

METHOD FOR PRODUCING MEDIUM SILICON STEEL ELECTRICAL LAMINATION STRIP

Prabhat K. Rastogi, Munster, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed Jul. 2, 1981, Ser. No. 279,829
Int. Cl.³ H01F *1/04*
U.S. Cl. 148—111 **11 Claims**

1. In a method for producing cold rolled steel strip for use in electric motor core laminations, the steps of:
providing a steel consisting essentially of the following composition in wt.% before cold rolling:
carbon: 0.05 max.
manganese: 0.50–0.70
silicon: 0.85–1.05
aluminum: 0.20–0.30
phosphorus: 0.08 max.
sulfur: 0.02 max.
iron: essentially the balance;
hot rolling said steel into steel strip;
coiling said hot rolled steel strip while the steel is at a coiling temperature in the range 1250°–1400° F. (682°–760° C.) and then allowing said coiled strip to cool;
cold rolling said steel strip;
continuously annealing said steel strip at a strip temperature in the range 1250°–1400° F. (682°–760° C.) for about 2–5 minutes, and then allowing said strip to cool;
and temper rolling said strip to produce a reduction of about 6–8.5%;
whereby said steel strip, after said temper rolling step, has a grain size and crystallographic orientation which, upon subsequent magnetic annealing at a temperature in the range 1400°–1550° F. (760°–843° C.) for about 1–2 hours in a decarburizing atmosphere, produces an average ferritic grain size of about 4.0–5.0 ASTM and a preponderance of crystallographic planes containing the easiest direction of magnetization.

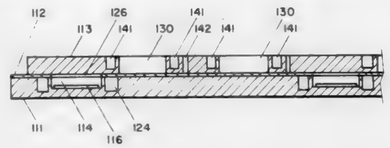
4,390,379

ELIMINATION OF EDGE GROWTH IN LIQUID PHASE EPITAXY

Suei-Yuen P. Lien, West Windsor Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jun. 25, 1981, Ser. No. 277,412
Int. Cl.³ H01L *21/208*
U.S. Cl. 148—171 **3 Claims**

1. A method of growing a semiconductor layer by liquid phase epitaxy utilizing a slide type apparatus comprising a substrate carrier having a recess for holding a substrate and a source material carrier slidably arranged over the surface of the substrate carrier and including a well around the recess, including the steps of filling said well with material selected from a thermally insulating material and a material which is



molten at the temperature of crystal growth and then cycling the temperature of the apparatus in a manner so as to form an epitaxial layer on a substrate in the recess which layer is essentially free of excess edge growth.

4,390,380

COATED AZIDE GAS GENERATING COMPOSITION

Albert T. Camp, Rte. 1, Box 1278, Welcome, Md. 20693

Continuation-in-part of Ser. No. 135,634, Mar. 31, 1980, Pat. No. 4,339,288, which is a continuation of Ser. No. 906,596, May 16, 1978, abandoned. This application Apr. 21, 1982, Ser. No. 370,586
Int. Cl.³ C06B *45/34*
U.S. Cl. 149—8 **5 Claims**

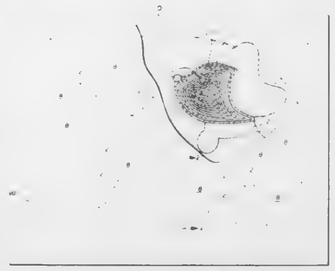
1. A gas generating composition for use in inflating automobile crash bags comprising a mixture, in pellet form, of an alkali metal azide and an oxidant, each pellet coated with a lacquer comprising pentaerythritol trinitrate acrylate polymer.

4,390,381

YARN COLORING PICTURE SET AND METHOD OF COLORING

Gary R. Lemmeyer, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Division of Ser. No. 228,871, Jan. 27, 1981, Pat. No. 4,355,722. This application May 10, 1982, Ser. No. 376,669
Int. Cl.³ B32B *31/00*; A01C *1/00*; B65D *69/00*
U.S. Cl. 156—63 **3 Claims**



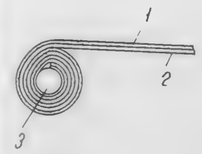
1. A method for coloring a picture with colored yarn comprising the steps of:
providing a board having an adhesive layer covered by a cover sheet;
die-cutting the outlines of picture segments through said cover sheet to form adjacent die-cut cover sheet sections;
selectively removing said cover sheet sections to expose different colored parts of the adhesive layer therebelow; and
pressing different colored yarns to said exposed parts of said adhesive layer, said yarn adhering to said adhesive layer to form a yarn colored picture wherein the step of pressing colored yarns is achieved by a manually operated yarn pencil having a housing, a spool rotatably mounted within said housing upon which yarn is wound, and an opening at one end of said pencil through which an end of the yarn is fed and pressed onto said exposed parts of said adhesive layer.

4,390,382

TONE ARM MANUFACTURING METHOD

Shunsuke Matsuda, Osaka, and Yasumasa Komatsu, Sakai, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 8, 1981, Ser. No. 281,509
Claims priority, application Japan, Jul. 8, 1980, 55-93649
Int. Cl.³ B65H *81/00*; G01B *3/10*
U.S. Cl. 156—184 **4 Claims**



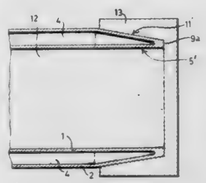
1. A method of manufacturing a tone arm, comprising:
preparing a carbon fiber prepreg;
preparing a sheet containing graphite flake particles bound with resin in such a manner that said flake particles are layered face to face, said resin being heat-hardenable under conditions similar to those for said carbon fiber prepreg;
placing said carbon fiber prepreg on said sheet to form a double layer;
winding said double layer on a core so as to form a cylindrical layered assembly on said core;
heat-hardening said cylindrical layered assembly; and
removing said core from said assembly, thereby forming a pipe-shaped tone arm.

4,390,383

METHOD OF MAKING PLASTIC PIPES HAVING WALLS WITH LENGTHWISE EXTENDING CHANNELS

Jan P. van Dongeren, Bergentheim, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Division of Ser. No. 904,218, May 9, 1978, Pat. No. 4,280,534, and a continuation of Ser. No. 728,117, Sep. 30, 1976, abandoned. This application Mar. 25, 1981, Ser. No. 247,364
Claims priority, application Netherlands, Oct. 3, 1975, 7511693
Int. Cl.³ B29C *11/00*; F16L *9/18*
U.S. Cl. 156—196 **9 Claims**



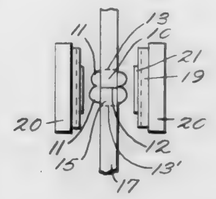
1. A method of manufacturing a pipe formed of a plastic material, said pipe comprising an inner wall and an outer wall which are interconnected by a plurality of connecting partitions extending lengthwise of said pipe, said plurality of connecting partitions forming a plurality of lengthwise extending channels, comprising the steps of:
heating one end of the pipe to a temperature above the plasticizing temperature of the plastic material; and
pressing one of said inner and outer walls against the other at said heated one end of the pipe to sealingly fuse the inner and outer walls together and thereby form a beveled edge on said one end of the pipe.

4,390,384

METHOD AND APPARATUS FOR BONDING THERMOPLASTIC MATERIALS

E. Wayne Turner, Deerfield, Mass., assignor to Hardigg Industries, Inc., South Deerfield, Mass.

Continuation of Ser. No. 63,926, Aug. 6, 1979, abandoned, which is a continuation of Ser. No. 862,559, Dec. 20, 1977, abandoned. This application Nov. 18, 1980, Ser. No. 322,580
Int. Cl.³ B29C *19/00*
U.S. Cl. 156—221 **15 Claims**



1. A method of bonding two pieces of thermoplastic material to one another to form an article, consisting essentially of the steps of:
heating at least one edge of each of said two pieces to at least about the fusion temperature of said thermoplastic material;
then butt joining said heated edges to one another under pressure to thereby form a welded junction, said pressure causing a bead of plastic material to be formed on at least one side of said welded junction; and
improving the physical and dielectric strength of the material of said welded junction by subjecting the welded junction to a reheat treatment to cause the material to beeome molten, and quenching the molten material to reduce its temperature to a temperature at least below said fusion temperature.

4,390,385

HEAT SEALABLE, MULTI-PLY POLYPROPYLENE FILM

Daniel J. Ferguson, Spartanburg; Frederick D. Stringer, Greenville, and Michael D. Esakov, Greer, all of S.C., assignors to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Division of Ser. No. 152,970, May 23, 1980, abandoned. This application Nov. 27, 1981, Ser. No. 325,161
Int. Cl.³ B32B *31/16*
U.S. Cl. 156—229 **4 Claims**

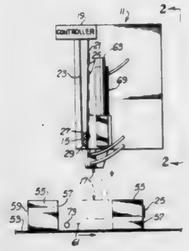
1. A method of increasing the sealing temperature range of propylene homopolymer film comprising the steps of:
(a) providing a base layer comprising propylene homopolymer;
(b) laminating a skin layer to at least one side of said propylene homopolymer film, said skin layer comprising a blend of 60% to 80% by weight of propylene-ethylene copolymer having 2% to 6% by weight of ethylene with 40% to 20% by weight of propylene homopolymer the ratio of the thickness of the base layer to the thickness of the skin layer being at least 4:1; and,
(c) biaxially stretching said laminated film to a final total film thickness in the range from 0.25 mil to 2.5 mil, said film having a sealing range of at least 20° C. thereby producing a heat sealable, heat shrinkable propylene homopolymer film.

4,390,386

LABEL APPLICATOR AND METHOD FOR LABELING THE FORWARD FACES OF ARTICLES

James C. Bartl, LaHabra, Calif., assignor to Label-Aire Inc., Fullerton, Calif.

Filed May 26, 1981, Ser. No. 267,252
Int. Cl.³ B65C *9/18, 9/28*
U.S. Cl. 156—235 **10 Claims**



1. A method of labeling comprising:
moving a plurality of articles in a row through a labeling station with each of the articles having at least one transverse face facing transversely to the direction of movement of the articles;
dispensing a label onto a labeling head with the labeling head being outside of the path of movement of the articles;
releasably retaining the label on the labeling head;
advancing the labeling head into the path of movement of the articles at the labeling station;
transferring the label from the labeling head to the transverse face of the article at the labeling station while the labeling head is in the path of movement of the articles at the labeling station; and
retracting the labeling head from the path of movement of the articles at the labeling station.

4,390,387

FLOCKED MATERIAL HAVING FIRST THERMOSETTING ADHESIVE LAYER AND SECOND THERMOPLASTIC ADHESIVE LAYER

John E. Mahn, 6154 Oakhaven, Cincinnati, Ohio 45238

Filed Jun. 16, 1981, Ser. No. 274,146
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.³ B32B *33/00*
U.S. Cl. 428—90 **11 Claims**



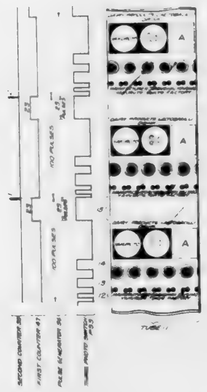
1. A combination comprising a flocked laminate of two layers including a first layer of amorphous thermoset adhesive having flock fibers permanently adhering to one surface thereof and the opposing surface of said first layer being bonded to a second layer containing an amorphous thermoplastic adhesive selected from the group consisting of a mixture of polyester and polyurethane and a mixture of polyamide and polyurethane wherein said second layer has a thickness greater than the thickness of said first layer, and said second layer becoming adhesive upon heating, said laminate being non-curling.

4,390,388

AUTOMATIC SPLICER IN TAPE FEEDER OR THE LIKE

Takao Nagata, Fujisawa, and Yoshiyuki Rokutanbo, Yokohama, both of Japan, assignors to Nippon Jidoh Seiki Kabushiki Kaisha, Yokohama, Japan

Filed May 26, 1981, Ser. No. 267,409
Claims priority, application Japan, Mar. 25, 1981, 56-043357
Int. Cl.³ B65H *19/18, 69/06*
U.S. Cl. 156—351 **7 Claims**



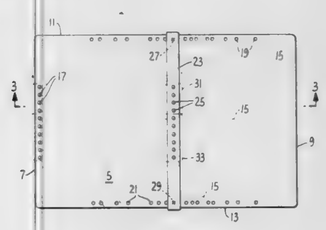
1. A tape splicer in an automatic continuous tape feeder for splicing tapes including tubular tapes, each of said tapes having patterns repeatedly printed thereon in a predetermined constant pitch and containing, in said pattern a gap of a constant length within each pitch; comprising:
a pair of paths capable of alternately feeding rolls of tapes in appropriate quantities from a pair of reels supporting thereon said rolls of tapes to a common feed roller;
first and second photoelectric conversion switches for detecting the passage of the trailing end portion of each of said tapes, each of said switches disposed in each of said paths in positions upstream of and equidistant from said feed roller;
a pair of tape holding plates disposed outside said pair of paths between said photoelectric conversion switches and said feed roller, respectively, with such a gap between them that the front surfaces thereof are opposed to each other and are capable of joining each other when they undergo displacement towards each other;
each of said tape holding plates having vacuum suction holes bored on the front surface thereof for drawing and holding said tapes thereon in a waiting state at predetermined positions in the direction of width and with predetermined positions in the longitudinal direction in order to splice the leading end portion of the succeeding tape pulled out from one of said reels to the trailing end portion of the preceding tape pulled from the other of said reels;
a third photoelectric conversion switch for detecting said patterns of said tapes, disposed between said tape holding plates and said feed roller;
a rocking roller disposed downstream of said feed roller, suspended by said tapes stretched between two guide rollers, having both axial end portions thereof disposed movably in vertical direction along guide frames and capable of rising against gravity to feed stored tape in the downstream direction when said feed roller stops rotating and tension is applied to said tape;
a driving motor for said feed roller capable of being changed over to low speed revolution upon receiving a signal generated when the trailing end portion of the preceding tape pulled out from one of said reels and fed through the one of said paths passes by said first or second photoelectric conversion switch, and returned to high speed revolution upon receiving a signal generated when said tape holding plates withdraw after the completion of tape splicing;
a pulse generator actuated upon receiving said signal generated from said first or second photoelectric conversion switch and generating pulses in such a number as to be proportional to a rotational displacement of said feed roller;
a first counter so set as to receive the number of pulses generated from said pulse generator and an ON-OFF signal detected from said third photoelectric conversion switch, and to generate one signal whenever the pulse number corresponding to the gap of said pattern is counted;
a second counter set so as to receive the signal generated from said first counter and to generate a signal instructing the stop of said feed roller and a signal to instruct the advance and joining of said pair of tape holding plates when a number of pulses equal to the number of pitches corresponding to the distance between the set position of said first or second photoelectric conversion switch and the set position of said pair of tape holding plates are counted.

4,390,389

DATA SPLICE KIT

Norman L. Bunas, and Gertrude I. Smith, both of Palo Alto, Calif., assignors to Devoke Company, Santa Clara, Calif.

Filed Jan. 11, 1982, Ser. No. 338,624
Int. Cl.³ B31F *5/06*
U.S. Cl. 156—502 **1 Claim**



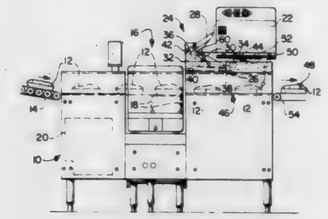
1. An adjustable splicing jig for continuous paper forms having evenly spaced perforations along each marginal edge wherein said forms may vary in width comprising in combination:
(a) a generally rectangular flat base having a plurality of upstanding pins aligned along one marginal edge of said base, the spacing of said pins being equal to the spacing of at least some of said perforations,
(b) a plurality of complementary spaced holes at both the top and bottom edges of said base,
(c) a movable member having a plurality of upstanding pins corresponding to the pins on the marginal edge of said base and having a downwardly directed pin at each end thereof to engage opposed holes at the top and bottom edges of the base whereby the upstanding pins of said movable member are maintained parallel to the upstanding pins on said base,
(d) whereby said movable member can be moved across said base and held by said downwardly directed pins in selected opposed holes to accommodate forms of various widths.

4,390,390

LABEL APPLICATOR DEVICE

Dallas A. Margraf, Spring Valley, and Fritz F. Treiber, Centerville, both of Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Apr. 30, 1981, Ser. No. 258,964
Int. Cl.³ B65C *9/00;* **B32B** *1/00;* **B65B** *61/00*
U.S. Cl. 156—566 **10 Claims**



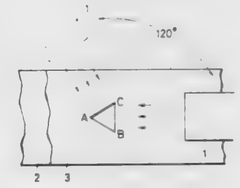
1. A label applicator device for applying a label to the surface of a substantially rectangular package in a selected orientation, comprising:
package conveyor means for presenting a package at an applicator station,
control means for selecting first or second label orientations,
applicator means, responsive to said control means, for receiving a label at a label output station and for applying said label to the surface of said package, said label being applied in a first orientation with respect to said package or in a second orientation with respect to said package, said second orientation being rotated approximately 90° with respect to said first orientation.

4,390,391

METHOD OF EXPOSURE OF CHEMICALLY MACHINABLE LIGHT-SENSITIVE GLASS

Yoshimi Fujita, Akishima, and Toshiharu Yamashita, Hachioji, both of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Jun. 1, 1982, Ser. No. 384,114
Claims priority, application Japan, Jun. 26, 1981, 56/98267
Int. Cl.³ B44C *1/22;* **C03C** *15/00, 25/06*
U.S. Cl. 156—628 **4 Claims**



1. A method for irradiating a chemically machinable light-sensitive glass plate with a parallel bundle of ultraviolet rays, comprising the steps of:
mounting a mask having a regular polygonal opening therein on a surface of said plate, said polygonal opening having n vertexes;
mounting a light source capable of generating said parallel bundle of ultraviolet rays above said mask so that said rays enter said glass at a predetermined oblique angle of incidence;
positioning said light source so that one of said n vertexes of said polygonal opening is at a longest point from a central point of said light source;

irradiating said plate with said parallel bundle of ultraviolet rays;
repositioning said glass plate, said mask and said light source by rotating either said mask, said plate, or said light source about a center axis of said polygonal opening by an angle equal to 360°/n;
re-irradiating said plate with said parallel bundle of ultraviolet rays; and
repeating said repositioning and reirradiating steps so that said glass plate is irradiated n times.

4,390,392

METHOD FOR REMOVAL OF MINUTE PHYSICAL DAMAGE TO SILICON WAFERS BY EMPLOYING LASER ANNEALING

John T. Robinson, Sherman; Olin B. Cecil, and Rajiv R. Shah, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 16, 1980, Ser. No. 187,662
Int. Cl.³ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*
U.S. Cl. 156—643 **2 Claims**



2. A process for fabrication of semiconductor wafers suitable for use in the manufacture of integrated circuits, comprising:
(a) sawing silicon crystals into thin wafers;
(b) edge grinding to remove roughness around the circumference of each said wafer;
(c) wafer lap to remove prominent damage and smooth out wafer surface;
(d) stress relief etch to remove small stress cracks from the surface of said wafer; and
(e) polish for final smoothing and damage removal from said surface of said wafer;
(f) subjecting the surface of said wafer to said laser beam to cause melting and recrystallization of said surface while said wafer is in a partial vacuum for removal of minute abrasive damage to said surface of said wafer, and for denuding surface layer of said wafer of a significant portion of the oxygen contained therein.

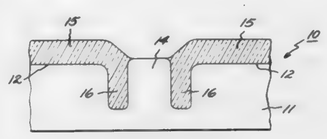
4,390,393

METHOD OF FORMING AN ISOLATION TRENCH IN A SEMICONDUCTOR SUBSTRATE

Mario Ghezzo, Ballston Lake, and Bruce F. Griffing, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,379
Int. Cl.³ H01L *21/308*
U.S. Cl. 156—643 **6 Claims**

1. A method of forming in a substrate of silicon semiconductor material having a major surface an active region adjacent said major surface surrounded by a trench in said substrate filled with silicon dioxide, said trench being surrounded by a thick layer of silicon dioxide on said major surface independent of the dimensions of said trench comprising:
providing said substrate having said major surface,
forming a thin layer of silicon dioxide on said major surface,
forming a protective layer on said layer of silicon dioxide,
forming a first film of an ion erosion-resistant material on said protective layer,
forming on said first film a layer of an etch-resistant material having a removed portion and a retained portion,
etching said first film and said protective layer through said removed portion of said etch-resistant layer to form an opening in said first film and said protective layer extending to and exposing said thin layer of silicon dioxide, said opening partially surrounding said retained portion of said etch-resistant layer and partially underlying said retained portion of said etch-resistant layer by a predetermined lateral distance,
depositing a second film of an ion erosion-resistant material on the retained portion of said etch-resistant layer and the exposed portion of said thin layer of silicon dioxide,
removing the retained portion of said etch-resistant layer with the portion of said second film thereon whereby an edge of the retained portion of said first film is laterally spaced from an adjacent edge of the retained portion of said second film deposited on said thin layer of silicon dioxide on said substrate by approximately said predetermined lateral distance,



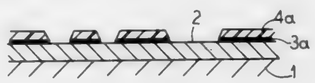
etching said substrate and said thin layer of silicon dioxide not covered with retained portions of said first and second films to form a trench in said substrate having one side extending from said edge of the retained portion of said first film and having the opposite side thereof extending from said adjacent edge of the retained portion of said second film, the depth of said trench being substantially greater than the width thereof,
removing said first and second films overlying said major surface of said substrate whereby the exposed portions of said thin layer of silicon dioxide is re-exposed,
heating said substrate in an oxidizing atmosphere to cause silicon dioxide to be grown on the walls of said trench to fill said trench with silicon dioxide and to cause silicon dioxide to be grown on the substrate underlying the exposed portion of said thin layer of silicon dioxide to form a thick layer of silicon dioxide thereon,
removing the retained portion of said protective layer overlying said active region to expose said active region of said substrate.

4,390,394

METHOD OF STRUCTURING WITH METAL OXIDE MASKS BY REACTIVE ION-BEAM ETCHING

Josef Mathuni, and Karin Unger, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 11, 1982, Ser. No. 338,605
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1981, 3102647
Int. Cl.³ C23F *1/02;* **B44C** *1/22;* **C03C** *15/00, 25/06*
U.S. Cl. 156—643 **5 Claims**



1. In a method of producing very fine structures in microelectronics with very thin photosensitive resists or resists which are electron- or x-ray-sensitive as masking, the improvement comprising:
first applying a thin metal oxide layer over a layer to be etched and structuring such oxide layer with a resist by reactive ion-beam etching so as to attain a metal oxide mask; and
dry-etching with an ion-beam the layer to be etched through said metal oxide mask.

4,390,395

PROCESS FOR THE REGENERATION OF WASTE PAPER

Jean De Ceuster, Vilvoorde, and Georges Papageorges, Rixensart, both of Belgium, assignors to Interox, Brussels, Belgium
Continuation of Ser. No. 841,994, Oct. 13, 1977, abandoned.
This application Jun. 23, 1981, Ser. No. 276,467
Claims priority, application Luxembourg, Oct. 15, 1976, 76021
Int. Cl.³ D21C *5/02*
U.S. Cl. 162—5 **33 Claims**

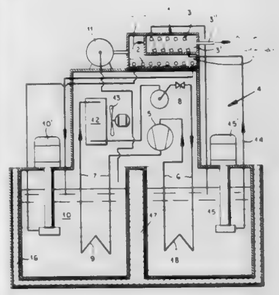
1. In a process for the regeneration of waste paper which comprises the disintegration of the waste paper in a disintegrator directly fed from dry waste paper and functioning with a pulp consistency, at the disintegrator outlet, of between 22 and 45%, in the presence of an aqueous phase, the improvement wherein at least one peroxidic bleaching agent in an amount between 0.1 and 5% by weight of the weight of the dry waste paper is introduced into the disintegrator at the same time.

4,390,396

APPARATUS FOR THE DISTILLATION OF VAPORIZABLE LIQUIDS

Heinz Koblenzer, Filderstadt, Fed. Rep. of Germany, assignor to Langbein-Pfanhauser Werke AG, Neuss, Fed. Rep. of Germany

Filed Apr. 22, 1981, Ser. No. 256,599
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1980, 3015525
Int. Cl.³ B01D *3/02*
U.S. Cl. 202—166 **3 Claims**



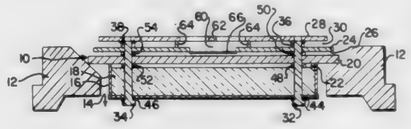
1. A distillation apparatus comprising:
a distillation chamber adapted to receive a vaporizable liquid to be distilled;
a heater in said chamber for heating said liquid to vaporize same;
a steam-generating hot-water storage tank and a cold-water storage tank;
means for circulating hot water from said hot-water storage tank through said heater to heat said liquid and produce vapor in said chamber;
a condenser connected to said chamber for receiving said vapor and condensing same;
means for circulating cold water from said cold-water storage tank through said condenser for cooling same;
a heat pump forming a closed-loop circulating path for a refrigerant having a full heat-pump circuit including a compressor, a hot branch leading from said compressor, a cold branch leading to said compressor, and a pressure reduction means between said hot and cold branches, said hot branch including a first heat exchanger forming a condenser for said refrigerant and immersed in said hot-water storage tank for heating the water therein, said cold branch including a second heat exchanger immersed in said cold-water storage tank for cooling the water therein; and
a blower for drawing steam from said hot-water storage tank and blowing said steam into said chamber.

4,390,397

HEAT DISSIPATING CHARGING HOLE COVER

Stanley T. Sczerba, McKeesport, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Dec. 28, 1981, Ser. No. 334,656
Int. Cl.³ C10B *25/20, 25/24*
U.S. Cl. 202—243 **6 Claims**



1. A coke oven charging hole cover comprising:
(a) a lower concave housing member adapted to be received within the charging hole;
(b) an insulation layer retained within said concave housing member;
(c) a first circular plate superimposed over said concave housing member so that an insulating lower air space is formed between said first circular plate and the insulation layer;
(d) a second plate superimposed over said first circular plate in parallel, spaced relation such that a first heat dissipating air space, said space being open to ambient air, is formed between said first and second plates;
(e) a third plate superimposed over said second plate in parallel, spaced relation such that a second heat dissipating air space, said space being open to ambient air, is formed between said second and third plates; and
(f) heat conducting means connecting the first circular plate with the second plate and the second plate with the third plate, such that heat is continuously removed from the first circular plate to the first and second heat dissipating air spaces.

4,390,398

MODIFIED PROCESS FOR RESIN MANUFACTURING USING A CONTINUOUS SEPARATE DISTILLATION COLUMN

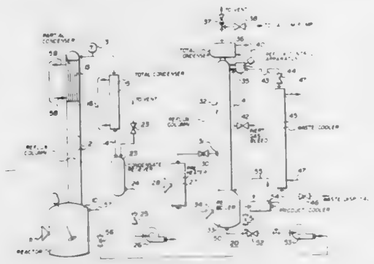
Robert J. Coker, Petrolia; Gary W. Bate, Sarnia, and Henk J. Deuzeman, Warwick Township, Ontario, all of Canada, assignors to Fiberglas Canada Limited, Toronto, Canada

Division of Ser. No. 870,519, Jan. 18, 1978, Pat. No. 4,233,267.
This application May 12, 1980, Ser. No. 148,833
Claims priority, application Canada, Jan. 18, 1977, 269956
Int. Cl.³ B01D *3/14;* **C08G** *63/02*
U.S. Cl. 203—18 **10 Claims**

1. A method of continuously separating volatile reactants from volatile by-products of a batch reaction occurring in a batch reaction zone, said reaction producing a vapor effluent that is refluxed and then condensed to produce a condensate output at variable rates and of variable reactant/by-product mix, said method comprising the steps of:
receiving the condensed output from said batch reaction zone and temporarily storing same;
heating and continuously vaporizing a predetermined amount of said stored condensate; and

feeding the vaporized condensate to distillation column means having a reboiler disposed at a low end thereof and a vapor effluent outlet at an opposite high end thereof thereby enabling the further step of:

adjusting temperature and pressure conditions in said distillation column means as a function of said variable reactant/by-product mix for continuously distilling the vaporized condensate fed into said distillation column means and separating the volatile by-products from the volatile reactants at the vapor effluent outlet of said distillation column means independently of the temperature and pressure conditions in said batch reaction zone and independently of the rate of production of said condensate from said batch reaction zone.



4,390,399

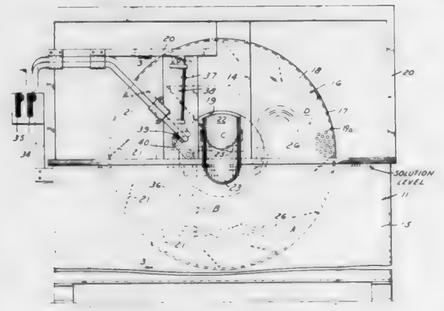
METHOD AND APPARATUS FOR PLATING ARTICLES

Robert McInnes, 1108 Fairway Dr., Linden, Mich. 48451

Filed Nov. 24, 1980, Ser. No. 209,867

Int. Cl.³ C25D *17/20*

U.S. Cl. 204—32 R **13 Claims**



1. In an apparatus for cleaning and plating articles, the combination comprising a plurality of tank assemblies comprising a plurality of containers adapted to contain liquid treating material, a barrel adapted to be at least partially submerged in liquid in each said container, each said barrel having a longitudinal axis, means for supporting each said barrel rotatably about a fixed generally horizontal axis so that a portion of the barrel is submerged in liquid in said container when liquid is in the container, each said barrel having end walls, each end wall having an opening therethrough along the longitudinal axis of the barrel, each said barrel having a plurality of circumferentially spaced baffles on the inner periphery thereof extending axially between the end walls, said baffles extending generally radially inwardly and forming an acute angle with the inner periphery of the barrel and spaced from said openings such that when the barrel is rotated in one direction, said baffles agitate the articles, and when said barrel is rotated in the opposite direction, said baffles elevate the articles and the cause them to drop, and chute means extending at an angle from the interior of one said barrel adjacent one end wall through the other end wall to the interior of the succeeding barrel such as to guide articles dropped by the baffles by gravity to the succeeding barrel, the improvement comprising

at least one anode,

at least one cathode,

means for mounting said anodes and cathodes within a barrel for movement between a first position where said anodes and cathodes are in the liquid when the barrel is rotated in one direction to agitate and plate the articles and a second position when said anodes and cathodes are out of contact with the parts and liquid when the barrel is rotated to transfer the articles, and

means for moving said anodes and cathodes between said first and second positions.

4,390,400

ALUMINUM CHLORIDE ADDITION TO ELECTROLYTIC CELLS

Wendell E. Dunn, Jr., Spearfish Canyon, S. Dak., assignor to Reynolds Metals Company, Richmond, Va.

Filed May 26, 1981, Ser. No. 266,951

Int. Cl.³ C25C *3/06, 3/18*

U.S. Cl. 204—67 **3 Claims**

1. A method for transferring aluminum chloride values from a condensation zone to an electrolytic cell for the reduction of aluminum chloride comprising the steps of:

(a) condensing gaseous aluminum chloride dimer in contact with solid depleted reduction cell melt comprising an alkali chloride to form a liquid aluminum chloride/alkali chloride complex; and

(b) transferring the liquid aluminum chloride/alkali chloride complex to the electrolytic reduction cell.

4,390,401

ACRYLATE OR METHACRYLATE ESTERS OF ALKYLENE OXIDE ADDUCTS OF ALKYL/ARYL PHENOLS AS WETTING AGENTS FOR ULTRAVIOLET CURABLE COATING COMPOSITIONS

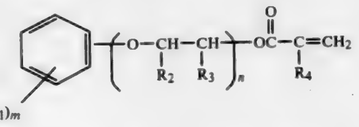
John R. Costanza, North Plainfield, N.J., assignor to Celanese Corporation, New York, N.Y. and Celanese Corporation, New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,217

Int. Cl.³ C08F *2/50, 216/16*

U.S. Cl. 204—159.24 **5 Claims**

1. An improved ultraviolet curable coating composition containing a mixture of ultraviolet photoinitiator and polyunsaturated polyacrylates or methacrylates, and containing as an additional component between about 5 and 50 weight percent, based on the total ultraviolet composition, of a composition having the formula



wherein R_1 is an alkyl group of 1–20 carbon atoms or an alkyl-/aryl group of 6–28 carbon atoms; m is a whole number integer of 1–3; R_2 and R_3 are alkyl or aryl groups or hydrogen; n is a whole number integer of from 1–36; and R_4 is hydrogen or methyl.

4,390,402

PROCESS FOR REGENERATING SPENT SEED MATERIALS USED IN MAGNETOHYDRODYNAMIC POWER GENERATION

Krishnamurthy N. Mani, Denville, and Frederick P. Chlanda, Rockaway, both of N.J., assignors to Allied Corporation, Morristown, N.J.

Filed Jan. 7, 1982, Ser. No. 337,801

Int. Cl.³ B01D *57/02*

U.S. Cl. 204—180 P **18 Claims**

1. A process for converting alkali metal sulfate compounds into the corresponding metal carbonate which comprises the steps of:

(a) introducing an aqueous solution comprising an alkali metal sulfate into the acid zone of an electrodialysis cell including one or more acid and base zone pairs, arranged in alternating fashion between an anode and a cathode, said acid zone of each of said pairs being located between a cation face of a bipolar membrane and a face of a cation permselective membrane, and said base zone of each of said pairs being located between an anion face of said bipolar membrane and a face of a cation permselective membrane;

(b) introducing an aqueous solution comprising carbon dioxide, an alkali metal carbonate, alkali metal bicarbonate or a mixture thereof into said base zone; and

(c) passing direct current through said electrodialysis cell thereby producing an aqueous solution comprising an alkali metal carbonate in said base zone, and an aqueous solution comprising an alkali metal bisulfate or sulfuric acid in said acid zone.

4,390,403

METHOD AND APPARATUS FOR DIELECTROPHORETIC MANIPULATION OF CHEMICAL SPECIES

J. Samuel Batchelder, 85 Allison Rd., Katonah, N.Y. 10536

Filed Jul. 24, 1981, Ser. No. 286,387

Int. Cl.³ B01D *57/02;* **C25B** *7/00;* **C25D** *13/00*

U.S. Cl. 204—180 R **20 Claims**

1. An apparatus for dielectrophoretic manipulation of at least one chemical species including:

a housing for containing first and second materials, said first and second materials having different dielectric constants, at least one of said first and second materials corresponding to said chemical species to be manipulated,

means for applying a non-uniform electrical field to said first and second materials for varying the relative positions of said first and second materials within said housing as a result of dielectrophoretic forces resultant from said applied non-uniform electrical field to transport said at least one chemical species to at least one predetermined location within said housing for performing a selected operation on said chemical species at said predetermined location within said housing,

whereby the position of said at least one chemical species is manipulated to said predetermined location within said housing as a result of said dielectrophoretic forces applied thereto.

4,390,404

PROCESS FOR MANUFACTURE OF THIN-FILM MAGNETIC BUBBLE DOMAIN DETECTION DEVICE

Sotaro Esho, and Hiroshi Gokan, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 36,983, May 8, 1979, Pat. No. 4,302,822. This application May 21, 1981, Ser. No. 266,105

Claims priority, application Japan, May 12, 1978, 53-56780; Feb. 14, 1979, 54-16667; Feb. 14, 1979, 54-16668

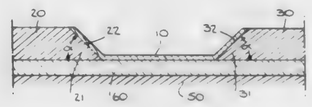
Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 E **6 Claims**

1. A process for manufacturing a thin-film magnetic bubble domain detection device comprising the steps of:

depositing a spacer and then a conductor film onto a substrate, and removing said conductor film from a predetermined region using a mask;

thereafter depositing a magnetic field sensing film onto said substrate over an area including said predetermined region without removing said mask, and then depositing a first dielectric film onto said substrate over a second area including said predetermined region, followed by the removal of said magnetic field sensing film and said first dielectric film from the portions of said first and second areas other than said predetermined region by lifting off said first mask;



delineating said conductor film for conductor leads, sid magnetic field sensing film for a sensing element, and said first dielectric film into a detection device configuration using a second mask; and

depositing a second dielectric film without removing said second mask, and then removing said second dielectric film from said conductor film, said magnetic field sensing film and said first dielectric film by lifting off said second mask.

4,390,405

OXYGEN ELECTRODE AND METHOD FOR PREPARATION THEREOF

Allen W. Hahn; Michael F. Nichols, both of Columbia; Ashok K. Sharma, Rolla, and Eckhard W. Hellmuth, Kansas City, all of Mo., assignors to Curators of the University of Missouri, Columbia, Mo.

Continuation-in-part of Ser. No. 123,091, Feb. 20, 1980, Pat. No. 4,276,144. This application Jun. 23, 1981, Ser. No. 276,713

The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.

Int. Cl.³ B05D *3/06;* **G01N** *27/30*

U.S. Cl. 204—415 **37 Claims**



1. An oxygen electrode, adapted for use in polarography, galvanometry or amperometry, that is resistant to poisoning and effective for accurate, reproducible current and voltage measurements comprising a conductive sensing member having a working surface which is comprised of a metal that catalyzes the cathodic reduction of oxygen and is adapted to communicate with an oxygen-containing environment for such reduction, a layer of an oxide of said metal at said surface, an insulating jacket covering all of said member except said surface, and a thin polymeric coating over said oxide layer and securely adhered to said surface, said coating comprising a polymer produced by glow discharge polymerization of an aliphatic hydrocarbon and having such properties as to permit reduction of oxygen at said electrode by electrons supplied at said surface through said conductive member.

21. A method for producing an oxygen electrode, adapted for use in polarography, galvanometry or amperometry, that is resistant to poisoning and effective for accurate, reproducible

current and voltage measurement, the method comprising the steps of:

generating a plasma from a gas in a low pressure chamber containing the working surface of an oxygen electrode, said electrode comprising

a conductive sensing member having a working surface which is comprised of a metal that catalyzes the cathodic reduction of oxygen and is adapted to communicate with an oxygen-containing environment for such reduction, a layer of an oxide of said metal at said surface, and an insulating jacket that covers all of said member except said working surface;

introducing an aliphatic hydrocarbon gas into said low pressure chamber;

polymerizing said hydrocarbon by action of said plasma thereon; and

depositing a thin adherent coating of said polymer over said oxide layer on said working surface.

4,390,406

REPLACEABLE OUTER JUNCTION DOUBLE JUNCTION REFERENCE ELECTRODE

Kenneth J. Kato, Export, and Dominick Frollini, Jr., Trafford, both of Pa., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 23, 1982, Ser. No. 401,257

Int. Cl.³ G01N *27/26*

U.S. Cl. 204—435 **10 Claims**

1. A double junction reference electrode comprising:

(a) an inner body enclosing an inner chamber wherein the inner body is an elongated tube with a closed top and a closed bottom;

(b) a reference element disposed within and extending through the inner body;

(c) an outer body disposed around the inner body and enclosing an outer chamber between the inner body and the outer body wherein the outer body is an elongated tube with an inner diameter larger than the outer diameter of the inner body and with an open top and a closed bottom;

(d) an inner ion path through the inner body and providing for the flow of ions between the inner chamber and the outer chamber;

(e) an outer ion path through the outer body and providing for the flow of ions between the outer chamber and the area exterior of the outer body;

(f) means for introducing an electrolyte into the inner chamber and the outer chamber; and

(g) means for releasably joining the inner body and outer body together which includes an inner cap attached to the top of the inner body, an outer cap attached to the top of the outer body, and an engagement element located on the inner cap whereby the outer cap may be disposed around the inner cap and frictionally engage the engagement element to form a unitary electrode structure.

4,390,407

ELECTROLYTIC PROCESSING DEVICE FOR BELT-SHAPED METAL PLATES

Teruo Mori; Hiroshi Shirai; Tsutomu Kakei; Masaru Watanabe, and Tsuneyasu Matsuhisa, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 24, 1981, Ser. No. 295,291

Claims priority, application Japan, Sep. 10, 1980, 55-125458

Int. Cl.³ C25D *5/02, 17/00*

U.S. Cl. 204—206 **12 Claims**

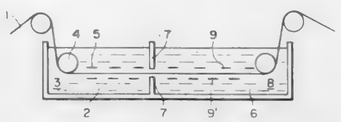
1. An electrolytic processing device comprising:

means for receiving an electrolytic solution;

means for transporting a belt-shaped metal plate through electrolytic solution in said receiving means;

first and second groups of electrodes, said first group of electrodes being positioned above a running path of said belt-shaped metal plate and said second set of electrodes being positioned below said running path of said belt-shaped metal plate; and

an electrical insulating member removably disposed between one of said groups of electrodes and said running path of said belt-shaped metal plate, wherein when said



electrical insulating member is spaced between said one of said groups of electrodes and said running path of said belt-shaped metal plate, electric current flows to only one side of said metal plate, and when said electrical insulating member is removed, electrical current flows to both sides of said metal plate.

4,390,408

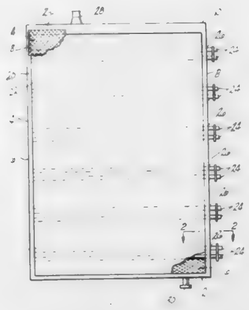
MEMBRANE ELECTRODE PACK CELLS DESIGNED FOR MEDIUM PRESSURE OPERATION

Morton S. Kircher, Clearwater, Fla., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 157,918, Jun. 6, 1980, Pat. No. 4,313,812, which is a continuation-in-part of Ser. No. 128,684, Mar. 10, 1980, abandoned, and Ser. No. 143,969, Apr. 25, 1980, Pat. No. 4,312,737. This application Jun. 29, 1981, Ser. No. 278,226

Int. Cl.³ C25B *11/03*

U.S. Cl. 204—284 **18 Claims**



1. An electrode for a filter press membrane electrolytic cell, said electrode comprising:

(a) a frame having two side members, a top member and a bottom member, said frame being generally rectangular in shape and having a predetermined tensile strength and predetermined thickness;

(b) at least two vertical planar foraminous electrode surfaces of a second predetermined tensile strength conforming in shape to said frames, said surfaces being in spaced-apart parallel relationship thereby defining a plane through each of said surfaces, each of said surfaces further having a periphery defining said shape, said periphery being reinforcingly connected to said frame such that the predetermined tensile strength of said frame is at least equal to the second predetermined tensile strength of each of said surfaces in the direction of the plane of each of said surfaces;

(c) a chamber formed between said surfaces and bounded by said frame;

(d) said foraminous electrode surfaces having a predetermined surface area such that the ratio of the predetermined surface area to the thickness of the frame is in the range of about 12.05×10^4 linear units to about 0.08×10^4 linear units;

(e) at least one process connection connected to said frame for conveying material into said chamber;

(f) at least one process connection connected to said frame for conveying material out of said chamber; and

(g) at least one conductor rod passing through one of said side members of said frame into said chamber, said conductor rod being attached to said foraminous surfaces.

4,390,409

CO-PROCESSING OF RESIDUAL OIL AND COAL

Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 5, 1981, Ser. No. 271,054

Int. Cl.³ C10G *1/00, 17/00*

U.S. Cl. 208—8 LE **13 Claims**

1. A process for the volatilization and solubilization of coal and the demetallization of residual oil which comprises:

providing coal at a temperature of about 650° to about 750° F. and a metals containing residual oil at a temperature of about 900° to about 950° F. but below the incipient coking temperature of said residual oil to a processing zone maintained under conditions effective to volatilize and solubilize said coal, demetallize said residual oil and substantially prevent coking of said residual oil whereby a first volatile hydrocarbon fraction and a first non-volatile residue are produced,

separating volatilized hydrocarbon from said first non-volatile residue,

contacting the first non-volatile residue with superheated steam at a temperature of about 1150° F. to 1250° F. under stripping conditions effective to substantially prevent coking of any remaining residual oil and to provide a second volatile hydrocarbon fraction and a second non-volatile residue comprising 1150° F.+ residual oil, metals from said residual oil and coal residue, and

fractionally distilling the first and second volatile hydrocarbon fractions to provide normally gaseous hydrocarbons, naphtha, gas oil and a bottoms product having a metals content substantially lower than the residual oil.

4,390,410

PROCESS FOR THE PRODUCTION OF FUELS AND METAL VALUES

Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 5, 1982, Ser. No. 375,077

Int. Cl.³ C10G *1/00, 51/02*

U.S. Cl. 208—8 LE **15 Claims**

1. A process for producing fuels from a reduced crude petroleum which comprises:

(i) vis-breaking the reduced crude to form a residue,

(ii) dealkylating the residue by contact with a transalkylation catalyst in the presence of an aromatic substrate, to form an alkylated aromatic compound and a dealkylated residue,

(iii) forming a mixture of dealkylated residue from (ii) and comminuted coal,

(iv) heating the mixture of product and coal to an elevated temperature to solubilize the coal in the dealkylated residue and demetallize the residue,

(v) separating the products of (iv) to form a liquid portion and a solid portion.

4,390,411

RECOVERY OF HYDROCARBON VALUES FROM LOW ORGANIC CARBON CONTENT CARBONACEOUS MATERIALS VIA HYDROGENATION AND SUPERCRITICAL EXTRACTION

James Scinta, and Peter J. Hart, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 2, 1981, Ser. No. 250,445

Int. Cl.³ C07G *1/00, 1/06*

U.S. Cl. 208—11 LE **8 Claims**

1. The process of recovering hydrocarbon values from carbonaceous materials selected from the group consisting of oil shale, and tar sands and mixtures thereof comprising:

(a) simultaneously contacting the material with hydrogen gas while extracting at least one hydrocarbon fraction with one or more organic solvents under supercritical pressure and at temperatures between the critical temperature of the solvent and about 100° C. above its critical temperature, and

(b) recovering at least one hydrocarbon fraction.

4,390,412

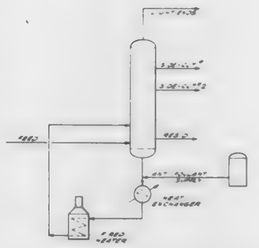
PROCESS AND COMPOSITIONS FOR REDUCING FOULING OF HEAT EXCHANGE SURFACES

Louis M. Dvoracek, Brea; Paul W. Fischer, and Milan Skripek, both of Fullerton, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 958,164, Nov. 6, 1978, Pat. No. 4,319,063. This application Sep. 29, 1981, Ser. No. 306,726

Int. Cl.³ C10G *9/16*

U.S. Cl. 208—48 R **22 Claims**



1. In a process wherein a petroleum oil is contacted with a metal surface of an elevated temperature and said surface becomes fouled by the deposit of solid materials thereon, the improvement which comprises adding to said oil an N-alkylamino-alkylbenzene sulfonate, a heterocyclic amine and phenylhydrazine in amounts sufficient to reduce said fouling when said oil is contacted with a metal surface at an elevated temperature.

4,390,413

HYDROCARBON UPGRADING PROCESS

Dennis J. O'Rear, Tiburon, and Jerome F. Mayer, San Anselmo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 107,231, Dec. 26, 1979, Pat. No. 4,251,348, which is a continuation-in-part of Ser. No. 41,209, May 21, 1979, Pat. No. 4,282,085, which is a continuation-in-part of Ser. No. 954,062, Oct. 23, 1978, Pat. No. 4,171,257. This application Oct. 6, 1980, Ser. No. 194,729

The portion of the term of this patent subsequent to Feb. 17, 1998, has been disclaimed.

Int. Cl.³ C10G *11/05, 45/02*

U.S. Cl. 208—61 **28 Claims**

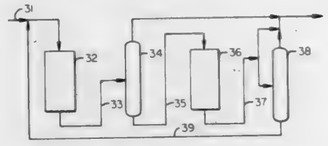
1. A process for increasing the effectiveness of hydrocarbon processing, comprising:

(a) hydrocracking a hydrocarbonaceous feedstock having a

normal boiling range above about 180° F. and below about 1200° F.;

(b) upgrading at least part of the effluent of said hydrocracking process through use of an upgrading process comprising,

(i) producing a process stream containing at least a substantial amount of C_3 to C_4 olefins by contacting said effluent part with a catalyst comprising a ZSM-5-type crystalline aluminosilicate zeolite in a form which is substantially free



of hydrogenation activity, said contacting being under conditions including (a) a temperature in the range of from about 500° F. to about 800° F.; (b) a pressure below about 13 atmospheres gauge; and (c) a liquid hourly spaced velocity in the range of from about 0.1 to 20, said effluent having a content of nitrogen-containing impurities, calculated by weight as nitrogen, below about 5 ppm; and

(c) etherating all or part of the portion of said process stream which boils below about 225° F.

4,390,414

SELECTIVE DEWAXING OF HYDROCARBON OIL USING SURFACE-MODIFIED ZEOLITES

Ian A. Cody, Sarnia, Canada, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 16, 1981, Ser. No. 331,262
Int. Cl.³ C10G *47/18*
U.S. Cl. 208—111 **23 Claims**

1. A method for selectively dewaxing a waxy hydrocarbon oil feedstock and enhancing the yield of dewaxed oil which method comprises contacting said waxy hydrocarbon oil stock in the presence of hydrogen and under conditions of pressure, temperature and flow velocity sufficient to effect the dewaxing with a silylated zeolite, which silylated zeolite is prepared from a zeolite which (1) has been modified by reaction under anhydrous conditions with an organosilane wherein the zeolite to be modified possesses reactive sites capable of reacting with the organosilane and wherein the organosilane is capable of entering into the channels of the zeolite and reacting with the reactive sites present therein as well as reacting with reactive sites present on the external surface of said zeolite and (2) has been loaded with a catalytically active hydrogenating metal component.

4,390,415

HIGH METAL CARBO-METALLIC OIL CONVERSION USING LOW INVENTORY OF CATALYST

George D. Myers, Ashland, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

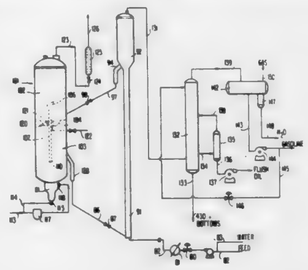
Division of Ser. No. 94,092, Nov. 14, 1979, Pat. No. 4,332,673. This application Sep. 29, 1981, Ser. No. 306,813
Int. Cl.³ C10G *11/18*
U.S. Cl. 208—113 **4 Claims**

1. A process for economically converting carbo-metallic oils to lighter products, comprising:

I. providing a converter feed containing 650° F+ material, said 650° F.+ material being characterized by a carbon residue on pyrolysis of at least about 1 and by containing at least about 4 parts per million of Nickel Equivalents of heavy metal(s);

II. bringing said converter feed together with cracking catalyst to form a stream comprising a suspension of said catalyst in said feed, causing the resultant stream to flow through a progressive flow type reactor having an elongated reaction chamber which is at least in part vertical or inclined for a predetermined vapor riser residence time in the range of about 0.5 to about 10 seconds at a temperature of about 900 to about 1400° F. and under a total pressure of about 10 to about 50 pounds per square inch absolute sufficient for causing a conversion per pass in the range of about 50% to about 90% while producing coke in amounts in the range of about 6 to about 14% by weight based on fresh feed, and laying down coke on the catalyst in amounts in the range of about 0.3 to about 3% by weight;

III. separating said catalyst from the resultant cracking products;



IV. stripping hydrocarbons from said separated catalyst;

V. regenerating said catalyst with oxygen-containing combustion-supporting gas under conditions of time, temperature and atmosphere sufficient to reduce the carbon on the catalyst to about 0.25% by weight or less, while forming gaseous combustion product gases comprising CO and/or CO_2;

VI. recycling the regenerated catalyst to the reactor for contact with fresh feed; and

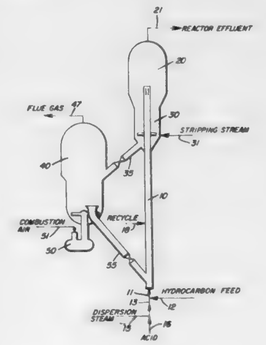
VII. maintaining the total inventory of catalyst in circulation in the process in the range of about 12 tons or less per 1000 barrels of daily plant throughput.

4,390,416

CATALYTIC CRACKING OF HYDROCARBONS

Ronald E. Ritter, Ellicott City, and Donald S. Henderson, Baltimore, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Dec. 7, 1981, Ser. No. 327,996
Int. Cl.³ C10G *11/02, 11/04*
U.S. Cl. 208—120 **9 Claims**



1. In a method for the catalytic cracking of nitrogen containing hydrocarbon feedstocks wherein the feedstock is contacted with a catalyst under catalytic cracking conditions at elevated temperatures, the improvement comprising adding to said feedstock immediately prior to contact with said catalyst an amount of acid selected from the group consisting of sulfuric, hydrochloric, nitric, phosphoric and acetic acids sufficient to neutralize a substantial portion of the basic nitrogen components contained in said feedstock.

4,390,417

METHOD FOR DEWATERING NON-AQUEOUS LIQUIDS

William M. Sweeney, Wappingers Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Jul. 20, 1981, Ser. No. 285,197
Int. Cl.³ B01D *33/04*
U.S. Cl. 208—188 **10 Claims**

1. The method for dewatering a flowing stream of non-aqueous liquid containing water therein which comprises determining the content of water in said flowing stream of non-aqueous liquid at a point adjacent to a water-sensing probe in said flowing stream, passing at least a portion of said flowing stream from said point adjacent to said water-sensing probe to the entrance of a body of acid resin catalyst, generating a signal in said water-sensing probe in accordance with the water content detected by said water-sensing probe, adding at least one dewatering chemical selected from the group consisting of ketal, acetal, and orthoester to said portion of said flowing stream in accordance with said signal, at a point between said probe and said entrance to said body of acid resin catalyst, passing said portion of said flowing stream and said added dewatering chemical into contact with said body of acid resin catalyst wherein said dewatering chemical reacts with said water and decreases the water content of said portion, and returning said portion to said flowing stream thereby forming a flowing stream of decreased water content, and recovering said flowing stream of decreased water content

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4,390,418

RECOVERY OF SOLVENT IN HYDROCARBON PROCESSING SYSTEMS

Philip B. Sherman, Orange, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed May 12, 1982, Ser. No. 377,293
Int. Cl.³ C10G *21/06, 21/20*
U.S. Cl. 208—326 **12 Claims**



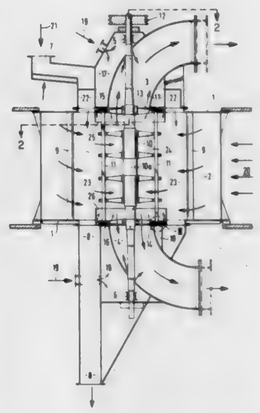
1. In a process for solvent refining a lubricating oil feedstock wherein said lubricating oil feedstock is contacted under pressure with N-methyl-2-pyrrolidone as a selective solvent for aromatic constituents of said feedstock in an extraction zone under solvent refining conditions thereby forming a raffinate phase comprising a minor amount of said solvent and an extract phase comprising extract and a major amount of said solvent, said raffinate phase is separated from said extract phase, and said solvent is removed from said extract by vaporization serially in a first solvent vaporization zone at a pressure less than that of said extraction zone and in a plurality of zones at progressively higher pressure and wherein heat from an external source is supplied only to said last high pressure vaporization zone and heat for each preceding vaporization zone is supplied by heat exchange with vapors from each succeeding vaporization zone, the improvement which comprises passing a minor portion of the vapors from said last high pressure vaporization zone into admixture with vapors from the next preceding vaporization zone to supply additional heat to said first solvent vaporization zone.

4,390,419

CENTRIFUGAL CLASSIFIER

Ulrich Barthelmess, Niederstotzingen, Fed. Rep. of Germany, assignor to OMYA GmbH, Cologne, Fed. Rep. of Germany

Filed Oct. 16, 1981, Ser. No. 312,027
Int. Cl.³ B07B *7/083*
U.S. Cl. 209—11 **7 Claims**



1. An improved centrifugal classifier, comprising:

a substantially cylindrical housing having an approximately tangential inlet for classifying air;

a vane ring arranged centrally within said housing and spaced radially inwardly from the casing thereof, said vane ring being of approximately the same axial length as said inlet for classifying air;

a classifying rotor arranged for rotation within and spaced radially inwardly from said vane ring, said rotor also being of approximately the same axial length as said inlet for classifying air and comprising a circumferentially and axially extending lamination ring defining radially extending passages leading from the outside diameter of said rotor to an axially extending interior volume in said rotor, said interior volume being open along its axial length to flow of air and fine granular material passing from said radial passages toward both ends of said interior volume and defining an inside diameter for said rotor;

an inlet for granular material to be classified, said inlet opening into a classifying area located between said vane ring and said lamination ring;

a first outlet for coarse granular material and air, said first outlet opening from said classifying area; and

second and third outlets for fine granular material and air, said second outlet being located at one end of said interior volume and said third outlet being located at the other end of said interior volume, the diameters of said second and third outlets corresponding approximately to said inside diameter of said rotor.

4,390,420

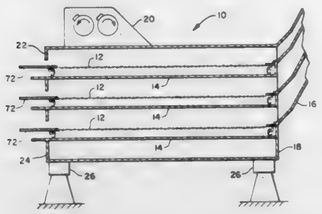
WIRE CLOTH TENSIONING APPARATUS

Peter H. Tenhaaf, St. Catherines, Canada, assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 12, 1981, Ser. No. 320,258
Int. Cl.³ B07B *1/48*
U.S. Cl. 209—403 **6 Claims**

1. In a screening apparatus, a frame, support means for attaching the screen within said frame, said support means including a folded over edge portion of the screen on at least two opposite sides along their entire edges, means for securing the folded over edge portion to the inner portion of the screen, thus forming passage means enclosed by the screen which

extends along the two opposite sides, rod means extending through the passage means on the two opposite sides of the screen, a plurality of spaced openings formed in the screen on



each said opposite side thereof, through which the rod means are exposed, and resilient means for securing the rod means to the frame at each of the spaced openings.

4,390,421

SEPARATOR FOR LOW VISCOSITY FLUIDS

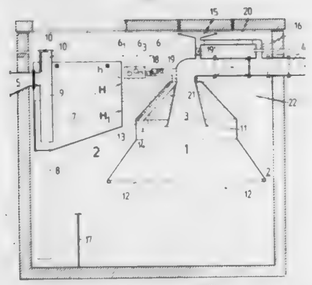
Nikolaus Hammerschmitt, Kölner Str. 138, D-5350 Euskirchen, Fed. Rep. of Germany

Filed Apr. 14, 1981, Ser. No. 253,911

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1980, 3014204; Jun. 23, 1980, 3023384

Int. Cl.³ B01D *21/10*

U.S. Cl. 210—86 **22 Claims**



1. A device for continuously separating the components of a liquid mixture of different specific weights, especially for separating a light liquid, as for instance oil or gasoline etc., from a heavy liquid, as for instance water, heavy substances or slurry, said device comprising:

a container;

a partition disposed in said container and separating the same into a separation chamber and a receiving chamber for the heavy liquid and providing a connection of the chambers in the lower container portion;

an inlet for the liquid mixture into said separation chamber;

an outlet for the heavy liquid from said heavy liquid receiving chamber and an outlet for the light liquid from the separation chamber disposed higher than the level of the heavy liquid;

said separation chamber having at least one deflecting surface providing a narrowed sectional area of flow for the liquid mixture and opening into an area with large flow section, said deflecting surface being disposed in the upper portion of said separation chamber (**1**, **1'**, **69**) to cause a substantially vertically downwardly directed liquid flow, said separation chamber having an area with large flow section disposed in the lower part (**1**, **1'**, **69**) adjacent to the connection to the receiving chamber (**2**, **70**) for the heavy liquid, said separating chamber having an area free of flow on the side of the deflecting surface opposite to the liquid flow serving as light liquid collecting chamber (**21**, **21'**) which includes the outlet (**6**) for the light liquid,

said receiving chamber (**2**, **70**) for the heavy liquid being a second separation chamber having a substantially greater volume than the first separation chamber and having a second light liquid outlet (6_1), and

said heavy liquid outlet being defined by a baffle plate in said receiving chamber substantially spaced from the first separation chamber.

4,390,422

APPARATUS FOR THE BIOLOGICAL PURIFICATION OF WATER

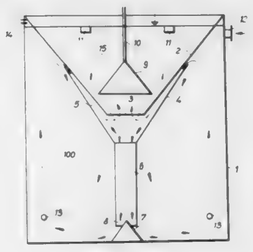
Svatopluk Mackrle, Brno; Vladimir Mackrle, Prague, and Oldrich Dracka, Brno, all of Czechoslovakia, assignors to Agrotechnika, narodni podnik, Zvolen, Czechoslovakia

Filed Jun. 15, 1979, Ser. No. 48,813

Claims priority, application Czechoslovakia, Jun. 15, 1978, 3924-78

Int. Cl.³ B01D *19/00*; **C02F** *3/22*

U.S. Cl. 210—188 **4 Claims**



1. In an apparatus for the biological purification of water with the separation of activated sludge by fluid filtration with the spontaneous returning of activated sludge into the activation area, said apparatus having a tank containing the activation area and the separation area, said separation area being arranged above the activation area, means for aerating the sludge in the activation area, means for escape of the used air from the activation area, and means providing a passage for conducting water with activated sludge from the activation area into the separation area, said passage being defined as a passage where downwards directed stream of water is turned upwards into the separation area, the improvement which comprises a bubble trap having a cavity, the lower end of which is open downwardly, said bubble trap being arranged above the upper end of the passage for the transition of water with activated sludge from the activation area into the separation area, the downwardly open lower end of the bubble trap horizontally overlapping the perpendicular projection of said passage, and means providing for the discharge of air from the upper part of the cavity in the bubble trap.

4,390,423

APPARATUS FOR MAGNETIC TREATMENT OF A FLOWING LIQUID

Eilert Sundt, Sandefjord, Norway, assignor to Olaf Fjeldsend A/S, Sandefjord, Norway

PCT No. PCT/NO80/00030, § 371 Date Jun. 19, 1981, § 102(e) Date Jun. 19, 1981, PCT Pub. No. WO81/01112, PCT Pub. Date Apr. 30, 1981

PCT Filed Oct. 28, 1980, Ser. No. 276,368

Int. Cl.³ B01D *35/06*

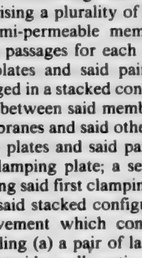
U.S. Cl. 210—222 **8 Claims**

1. An apparatus for the magnetic treatment of a flowing liquid which comprises

an elongated housing which is made at least in part of a ferromagnetic material, said housing providing a liquid flow channel therethrough having an inlet end and an outlet end,

at least one elongated permanent magnet positioned in said housing, each permanent magnet having pole surfaces on opposing sides thereof,

at least one elongated pole shoe associated with each premanent magnet, each pole shoe being positioned adjacent a pole surface of the associated permanent magnet and each



pole shoe including a least one elongated projection portion which extends away from the adjacent pole surface of the associated permanent magnet and into the flow channel so as to form an associated elongated gap through which the liquid passing along the liquid flow channel must flow, each projection portion and thus each gap extending at an acute angle with respect to the flow direction of the liquid passing along the liquid flow channel in said housing.

4,390,424

DEVICE FOR DIFFUSING MATTER BETWEEN TWO FLUIDS VIA SEMI-PERMEABLE DIAPHRAGMS

Gerhard Riede, Vellinge, Sweden, assignor to Gambro AG, Switzerland

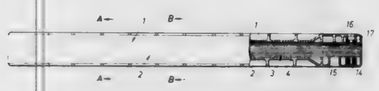
Division of Ser. No. 716,479, Aug. 23, 1976, Pat. No. 4,224,159. This application Mar. 14, 1980, Ser. No. 130,456

Claims priority, application Sweden, Sep. 11, 1975, 7510097

The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—232 **4 Claims**



1. In an apparatus for diffusing matter between two fluids, said apparatus comprising a plurality of spacing plates; a plurality of pairs of semi-permeable membranes, said spacing plates including flow passages for each of said fluids so that, when said spacing plates and said pairs of semi-permeable membranes are arranged in a stacked configuration, one of said fluids may be passed between said membranes of said pairs of semi-permeable membranes and said other fluid may be passed between said spacing plates and said pairs of semi-permeable membranes; a first clamping plate; a second clamping plate; and means for clamping said first clamping plate to said second clamping plate with said stacked configuration pressed therebetween, the improvement which comprises: (1) said first clamping plate including (a) a pair of laterally extending side walls including a first side wall section, a second side wall section, and an intermediate side wall section therebetween, wherein said second side wall section is displaced outwardly with respect to said first side wall section and wherein said intermediate side wall section obliquely connects said first side wall section and said second side wall section so that at least a portion of said second clamping plate is disposed within said second side wall sections of said laterally extending side walls of said first clamping plate when said first and second clamping plates are clamped together, and (b) a plurality of apertures in said laterally extending side walls, wherein said plurality of apertures are located in said intermediate side wall section of said laterally extending side walls of said first clamping plate, whereby the manufacture of said first clamping plate by extrusion processes is substantially simplified; and (2) said second clamping plate including a plurality of outwardly extending locking members for engaging said apertures of said side walls of said first clamping plate to said second clamping plate at a plurality of locations around the periphery of said apparatus in order to contain said stacked configuration under increased pressure therebetween.

4,390,425

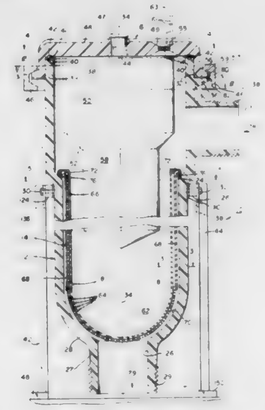
HIGH PRESSURE LIQUID FILTER VESSEL

Peter T. Tafara, 4803 Spring St., Neptune, N.J. 07753, and Warren R. Fink, 23 Arbor Way, Wayside, N.J. 07712

Filed Mar. 19, 1982, Ser. No. 359,918

Int. Cl.³ B01D *29/00*

U.S. Cl. 210—232 **14 Claims**



1. A high pressure liquid filter vessel comprising:

(a) an elongated hollow housing having an open end and a closed end, said housing being provided with an internally protruding ledge disposed away from said open end, inlet and outlet means and a circumferentially outwardly extending flange portion disposed proximate said open end, said inlet means being disposed between said ledge and said open end, said outlet means being generally centrally disposed in said closed end, said outwardly extending flange portion being provided with an upper surface generally perpendicular to the longitudinal axis of said housing and a lower surface sloped towards said flange upper surface at an acute angle from a line drawn perpendicular to said axis;

(b) a filter bag having a roll-over ringed edge;

(c) porous basket means disposed within said housing having a plurality of axially disposed and closely spaced external ribs for strengthening said basket means and positioning said basket means away from the internal wall of said housing to enhance the liquid flow and an outwardly extending flange portion for cooperating with said housing ledge and centrally positioning said basket means within said housing while simultaneously positioning and retaining said roll-over edge of said filter bag between said flange portion and said housing ledge;

(d) cover means for cooperating with said housing open end and sealing it, said cover means being provided with a

circumferentially outwardly extending flange portion and a centrally disposed extending portion adapted to be received by said filter bag and basket means, said outwardly extending flange portion being provided with a lower surface generally perpendicular to the longitudinal axis of said housing and an upper surface sloped towards said flange lower surface at an acute angle from a line drawn perpendicular to said housing axis;

(e) circular non-resilient bracket means formed in two halves and each being provided with a pair of inwardly extending sloped surfaces at the same acute angle as provided on said housing sloped surface and said cover means sloped surface and adapted to cooperate therewith; and

(f) fastening means disposed proximate the ends of each of said bracket means for positioning said bracket means in its original circular shape while retaining said housing and cover means in sealed relationship between said bracket means sloped surfaces.

4,390,426

CENTRIFUGAL SEPARATORS OF THE CYCLONE TYPE

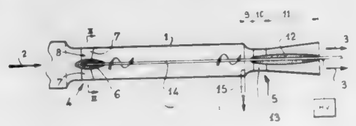
Pierre G. Vicard, Lyons, France, assignor to Societe Lab, Lyons, France

Continuation of Ser. No. 203,186, Nov. 3, 1980, abandoned. This application May 25, 1982, Ser. No. 381,981

Claims priority, application France, Nov. 8, 1979, 79 28023

Int. Cl.³ B03C *3/14, 3/36, 5/02*

U.S. Cl. 210—243 **1 Claim**



1. A cyclone separator for the centrifugal separation of solid or liquid particles suspended in a fluid wherein the fluid is whirled about an axis and displaced therealong, the separator comprising:

a tubular body surrounding said axis and having an upstream inlet end and a downstream outlet end;

an inlet device at the inlet end of the body and comprising a first insulating core surrounding said axis and supporting inlet blades extending between said core and said tubular body, the blades being disposed to impart whirling motion to fluid flowing axially through said body, said inlet blades as viewed in transverse cross section taken normal to said axis being shaped to provide on each blade convex side walls mutually converging from the core toward the body and leaving between the blades trapezoidal spaces having parallel inner and outer boundaries and concave non-parallel side boundaries which diverge outwardly from the core toward the body;

an outlet device at the outlet end of the body and comprising an upstream convergent stage, an intermediate stage coupled to the upstream stage, a divergent downstream stage coupled to the intermediate stage, a second insulating core surrounding the axis within the outlet device, and outlet blades extending from said core to said tubular body in said intermediate stage and operative to rectify the flow of the fluid to remove its whirling motion about said axis;

an electrode extending along said axis and being supported by said cores, and having an end extending beyond the outlet device into a zone where the particles have been removed and the fluid is no longer whirling;

a voltage supply generator connected to said extended end of the electrode; and

a lateral discharge extending from the tubular body adjacent to the upstream end of said outlet device and operative to discharge separated particles.

4,390,427

PLATE-TYPE FILTER

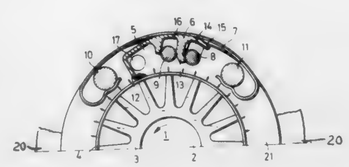
Dieter Hünten, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Sep. 11, 1981, Ser. No. 301,317

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034678

Int. Cl.³ B01B *33/02*

U.S. Cl. 210—333.01 **3 Claims**



1. A plate-type filter for filtering dirt from a medium, said filter intended for insertion in a cylindrical housing which has an inlet for dirty medium and an outlet for filtered medium, said filter comprising:

two face plates which are spaced from one another and are secured to said housing, one of said face plates being provided with a rinse-out opening which is in communication with said outlet of said housing;

a valve operatively connected to said rinse-out opening for opening and closing same;

a cylindrical filter element comprising a plate-type cylinder which has a cylindrical outer surface, said cylinder being rotatably arranged in said housing between said face plates, and being in communication with said inlet of said housing for receiving dirty medium within said cylinder;

a U-shaped piece which is open toward said rinse-out opening and spans a portion of said cylindrical outer surface of said cylinder, said U-shaped piece, when viewed in the direction of rotation of said cylinder, having a front leg and a rear leg, said rear leg forming a wiper body and being in constant engagement with an axial length of said cylindrical surface of said cylinder; and

an adjustment member associated with one of said face plates and with said U-shaped piece for lifting said front leg from said cylindrical surface of said cylinder, and for pressing said front leg against said cylindrical surface to form a rinsing channel defined by said face plates, said cylindrical surface of said cylinder, and said U-shaped piece, said rinsing channel being in communication with said rinse-out opening for receiving a partial reverse flow of filtered medium from within, and through that portion of, said cylindrical surface of said cylinder spanned by said U-shaped piece for effecting cleaning of said cylindrical surface.

4,390,428

FILTRATION APPARATUS

Jack R. Bratten, 5970 St. James Dr., West Bloomfield, Mich. 48033

Filed Nov. 6, 1981, Ser. No. 318,713

Int. Cl.³ B01D *29/02*

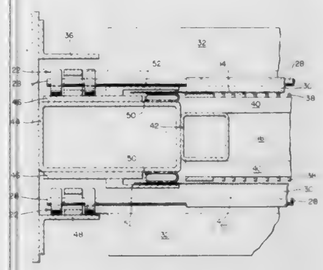
U.S. Cl. 210—400 **1 Claim**

1. In a filtering apparatus of the type wherein contaminated liquid is supplied to a tank and caused by differential pressure to flow through a submerged perforate filter means into the inlet in the top wall of a submerged filter box, filter means including an endless loop perforate filter belt which circumscribes the filter box, means for removing filtrate liquid from the filter box, a power driven conveyor comprising transverse flight bars spanning the filter belt above the upper reach of the filter belt and connected thereto at points intermediate the

longitudinal edges of the belt to selectively advance the normally stationary filter means in response to a build-up of dirt thereon to bring clean filter means into registry with the filter box inlet, the improved means for preventing leakage of unfiltered liquid around the longitudinal edges of the filter belt and into the filter box which comprises:

the longitudinally extending edges of the filter belt projecting laterally outwardly beyond the lateral edges of the filter box inlet and into a space between upper and lower continuous longitudinally extending substantially rigid members, said upper rigid member being located above said filter belt edge and beneath the flight bars;

belt sealing means comprising tubing which is resiliently collapsible in cross-section, such tubing extending longitudinally along and in abutting contact with each of said longitudinally extending edges of the upper reach of said filter belt and being normally compressed between the lower surface of said upper belt reach and said lower rigid member;



pressurizing means for selectively pressurizing the interior of the tubing thereby tending to expand said tubing to increase the compression force against said belt edges to establish a tight seal between said belt edges and said lower rigid members and to press said belt edges upward against said upper rigid members, thereby to prevent leakage around said longitudinal edges and into the filter box, said upper rigid members serving as reaction members for the compression force created by said pressurized tubing.

4,390,429

DECANTER FOR DECANTING A FLUID

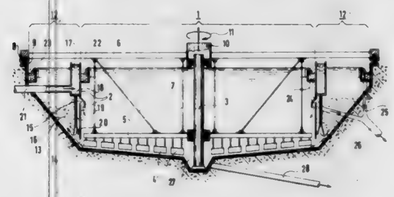
Pierre Lejeune, and Jean Serpaud, both of Grenoble, France, assignors to Societe Anonyme dite: Alstrom-Atlantique, Paris, France

Filed Nov. 17, 1981, Ser. No. 322,129

Claims priority, application France, Nov. 20, 1980, 80 24627

Int. Cl.³ B01D *21/14, 21/24*

U.S. Cl. 210—519 **4 Claims**



1. A decanter for decanting a fluid charged with solid particles, said decanter comprising:

a first circular decanting tank including a circular bottom wall inclined slightly toward the center thereof;

a sludge scraper system wholly within said first tank and mounted adjacent the circular bottom wall for scraping the sludge at the bottom of the tank and for moving said sludge toward the center of said first tank;

a second sludge bed annular tank concentrically surrounding said first tank, said annular tank being formed by an inclined wall inclining outwardly and upwardly and being connected at its bottom to said circular bottom wall of said first tank and having a vertical wall radially inwardly of said annular tank inclined wall and forming a common wall with said first tank;

an annular manifold located within said decanter, at the top of said second tank, said first and second tanks having overflow volumes to remove fluid free of solid particles from said first and second tanks;

said common wall having a first set of openings located at an intermediate level between the bottom of said second tank and the liquid surface of accumulated liquid within said first and second tanks, and a second set of openings near the bottom of said common wall for communicating said second tank to said first tank;

and wherein said manifold includes means for feeding fluid thereto including means communicating the bottom of said manifold to the bottom of said second tank in the vicinity of said second set of openings; whereby, dirty fluid fed to said annular manifold enters said second tank and passes upwardly through a sludge bed formed within said second tank to enter said first chamber through said first set of openings, while some of said dirty fluid enters said first tank through said second set of openings along with sludge which descends slowly onto the inclined bottom wall of said first tank where said sludge is conveyed by the moving scrapers towards the center of said first tank and means for removing conveyed sludge from the center of said first tank at the bottom thereof, and wherein said first set of openings permits an appreciable volume of water to pass from said second tank to said first tank to maintain the sludge bed at a constant level by allowing some sludge to pour out through said first openings with said dirty liquid.

4,390,430

APPARATUS FOR SCRAPING SLUDGE FROM THE SURFACE OF A BODY OF LIQUID

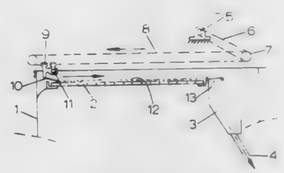
Johannes van Leeuwen, Santpoort, Netherlands, assignor to Esmil B.V., Amsterdam, Netherlands

Filed Feb. 25, 1981, Ser. No. 237,866

Claims priority, application Netherlands, Feb. 28, 1980, 8001198

Int. Cl.³ B01D *21/04*

U.S. Cl. 210—527 **7 Claims**



1. Apparatus for scraping sludge from the surface of a body of liquid on which the said sludge is floating, comprising

(a) a container for the liquid,

(b) a sludge stabilization grid mounted in the container so as to be, in use of the apparatus, adjacent the surface of the liquid so that the floating sludge protrudes upwardly through the grid,

(c) a sludge gutter extending alongside said container to receive sludge removed from the liquid surface,

(d) a knife for removing said sludge protruding through the grid having a longitudinal free edge,

(e) drive means for moving said knife in a forward move-

ment across said grid towards said gutter and in a return movement away from said gutter, and

(f) support means for said knife adapted and arranged so that (i) the knife is in a working position tilted downwardly towards said free edge during said forward movement in order to cut the sludge protruding through the grid and push it into the gutter and (ii) the knife is in a retracted position during said return movement with said free edge raised above its level adopted in said working position wherein said support means includes an electromagnet which is actuable during said return movement in order to maintain the knife in said retracted position.

4,390,431

PROCESS FOR TREATING AQUEOUS STREAMS CONTAINING ALUMINUM

Pierre Amigues, La Muladiere; Yves Chauvin, Le Pecq; Dominique Commereuc, Meudon; Jean Gaillard, Lyons, and Nhu H. Phung, Antony, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed May 8, 1981, Ser. No. 261,818

Claims priority, application France, May 8, 1980, 80 10360

Int. Cl.³ C02F *1/52*

U.S. Cl. 210—724 **8 Claims**

1. A process for removing aluminum values from a basic aqueous phase containing a water-soluble aluminum compound in solution, said basic aqueous phase resulting from the destruction of at least one of a hydrocarbon dimerization or oligomerization catalyst comprising a hydrocarbon-soluble aluminum compound and nickel by basic washing of a hydrocarbon phase containing said catalyst with an aqueous sodium hydroxide or potassium hydroxide solution, said process comprising neutralizing said aqueous phase with acid to bring it to pH of from 6 to 8.5, treating the resultant neutralized aqueous phase with an additive, said additive being an alkaline earth metal oxide, hydroxide or carbonate or a mixture thereof, at a temperature of from 90° C. to the boiling point of said aqueous phase, the molar ratio of the additive to aluminum being from 1/10 to 10/1, for a time sufficient to form an insoluble phase of precipitate, and thereafter separating the resultant aqueous phase, from the insoluble phase of precipitate.

4,390,432

METHOD OF PURIFYING WATER IN FISH KEEPING WATER TANK

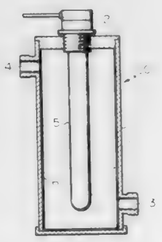
Masanobu Takeguchi, and Isao Oyobe, both of Fujisawa, Japan, assignors to Marui Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 137,269, Apr. 4, 1980, Pat. No. 4,297,222. This application Aug. 6, 1981, Ser. No. 290,565

The portion of the term of this patent subsequent to Oct. 27, 1998, has been disclaimed.

Int. Cl.³ C02B *1/38*

U.S. Cl. 210—748 **5 Claims**



1. A method of purifying water in a fish keeping water tank comprising:

(A) circulating water at a rate such that at least half the volume of water in the tank is circulated per hour;

(B) passing the water through a UV irradiation vessel providing UV radiation having a predominant wavelength of less than 280 nm, wherein the water is exposed to at least 170 μW.min/cm^2 of UV radiation at one pass through said vessel, or a given volume of water is exposed to a total of at least 1000 μW.min/cm^2 of UV radiation during a one-hour circulation of the water; and

(C) introducing the water into a purifying tank having an inlet and an outlet and which includes a support cylinder wrapped with a microorganism-growing bed of free-permeable nonwoven fabric made of synthetic resin and having a predetermined mesh size no smaller than 100μ, passing all of said water through said growing bed, to thereby bring the introduced water into contact with microorganisms deposited on said growing bed, and to separate some of said microorganisms from said growing bed, introducing said water into a space in said purifying tank downstream from said microorganism growing bed, where microorganisms separated from said growing bed are suspended and grow, to thereby bring the water into contact with such microorganisms in said space.

4,390,433

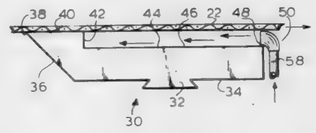
DEWATERING SYSTEM WITH WATER DECKLE

Jeffrey B. Duncan, Argyle, N.Y., assignor to Albany International Corp., Menands, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,300

Int. Cl.³ B01A *29/02*

U.S. Cl. 210—767 **18 Claims**



1. In a deliquefying system including at least one drainage device having a wear surface and connected to a source of suction open to the wear surface and means for passing a wet web of material to be deliquefied over the wear surface so that liquid is removed from the web by the drainage device, the improvement comprising; a liquid deckle including means for injecting liquid under relatively high pressure into a substantial space at each end of the drainage device in position to prevent air from entering the drainage device through the end zone and thereby restricting the flow of air to passage through the wet web into the drainage device.

4,390,434

USE OF 4-METHYL-3-CYCLOHEXENE-1-CARBOXYLIC ACID FOR ENHANCING OR AUGMENTING THE AROMA OF FABRIC SOFTENER COMPOSITIONS OR DRIER-ADDED ARTICLES

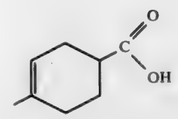
Nicholas Calderone, Laurel Hollow, N.Y.; Hugh Watkins, Lincroft, and Takao Yoshida, West Long Branch, both of N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Division of Ser. No. 229,211, Sep. 3, 1981. This application Jun. 24, 1982, Ser. No. 391,592

Int. Cl.³ D06M *13/20*

U.S. Cl. 252—8.6 **1 Claim**

1. A process for augmenting or enhancing the aroma of a fabric softener composition or drier-added fabric softener article comprising the step of adding to a fabric softener composition base or drier-added fabric softener article component, an aroma augmenting or enhancing quantity of 4-methyl-3-cyclohexene-1-carboxylic acid defined according to the structure:



4,390,435

OXOALKYL ESTERS, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

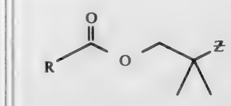
Michael Licciardello, Farmingdale; Richard M. Boden, Monmouth Beach; Hugh Watkins, Lincroft, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 307,366, Oct. 1, 1981, Pat. No. 4,368,145. This application Jul. 8, 1982, Ser. No. 396,252

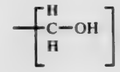
Int. Cl.³ D06M *13/12*

U.S. Cl. 252—8.6 **5 Claims**

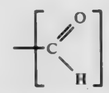
1. A process for augmenting or enhancing the aroma of a fabric softener article or a fabric softener composition comprising the step of adding to a fabric softener article component or a fabric softener base composition, an aroma augmenting or enhancing quantity of at least one oxoalkyl ester defined according to the structure:



wherein Z is a moiety selected from the group consisting of carbinol having the structure:



and carboxyaldehyde having the structure:



and R is selected from the group consisting of 3-heptanyl and phenyl.

4,390,436

AQUEOUS FILM FORMING LUBRICANT USEFUL IN A METHOD FOR DRAWING ALUMINUM AND OTHER SOFT METALS

Pablo M. Hernandez, Waukegan, Ill., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Feb. 8, 1982, Ser. No. 346,711

Int. Cl.³ C10M *1/06*

U.S. Cl. 252—49.3 **3 Claims**

1. In a method of forming containers from a soft metal comprising coating a lubricant on said metal at a coating weight of from about 10 to 40 mg. per square foot; forming a cup from said coated soft metal at a hold-down pressure of up to 2,500 psi.; drawing said cup to form a container; and removing said lubricant; the improvement which comprises using as said lubricant a composition comprising from about 1 to 10% by weight of a compound having a melt point of less than 50° C. selected from the group consisting of lanolin, petrolatum and mixtures thereof; from about 5 to 20% by weight of a wax having a melt point of less than 65° C. selected from paraffin wax, hydrogenated castor wax, bees wax and mixtures thereof; from about 1 to 10% by weight of a fatty acid; from about 0.25 to 5% by weight of an amine selected from the group consisting of morpholine, diethylamine ethanolamine, substituted morpholine and mixtures thereof; from about 0.1 to 2% by weight of a thickener and water comprising the balance.

4,390,437

LUBRICANT ANTIOXIDANTS

Richard J. Lee, Downers Grove, Ill., and Lynn M. R. Murphy, Lafayette, La., assignors to Standard Oil Company (Indiana), Chicago, Ill.

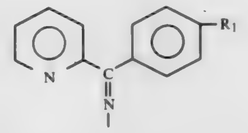
Filed Jul. 20, 1979, Ser. No. 59,246

Int. Cl.³ C10M *1/20, 1/32*; C07D *211/70, 401/00*

U.S. Cl. 252—51.5 A **6 Claims**

1. A lubricating oil composition resistant to oxidative deterioration comprising a major proportion of hydrocarbon oil and about 0.1% to 10% of an additive having the structure $A[(X)_{m-1}Y]_n$ wherein:

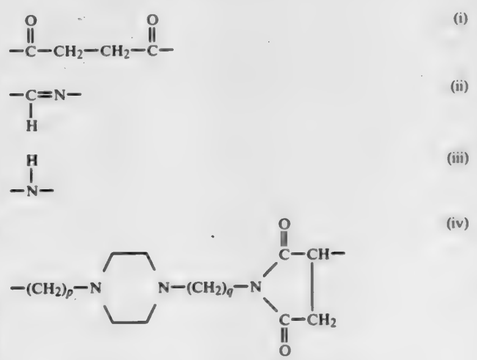
(a) A is an antioxidant functional moiety comprising pyridyl phenyl ketimine having the structure



wherein R_1 is hydrogen, alkyl, alkenyl, or aryl, and

(b) $[(X)_{m-1}Y]_n$ is an oil soluble moiety wherein

(1) X is a divalent member connected directly to A and Y respectively, and is selected from the group consisting of succinyl, imine, amino, and dialkyl piperazine succinimide having the structures



wherein p and q are whole numbers from 1 to 6,

(2) m is a whole number from 1 to 2,

(3) Y is a monovalent aliphatic chain of from 12 to 50 carbon atoms whose valence is connected directly to X when m is 2 and directly to A when m is 1,

(4) n is a whole number from 1 to 2 and corresponds to the number of free valences in A.

4,390,438

DIBASIC ACIDS TO REDUCE COEFFICIENT OF FRICTION IN ROLLING OILS

Carl S. Kennedy, Dyer, Ind., and Fred Zellmann, Evergreen Park, Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Oct. 16, 1981, Ser. No. 312,066
Int. Cl.[3] C10M *1/24*
U.S. Cl. 252—56 D 3 Claims

1. In an improved high animal fat content rolling oil formulation used in cold rolling sheet steel and steel strip for tinplate, comprising a major portion of a refined animal fat, minor portions of lubricity additives, anti-oxidants and emulsifiers, the improvement comprising the further inclusion of a friction reducing amount of at least 0.2 weight percent of a saturated dibasic acid containing from 4–14 carbon atoms.

2. The improved high content animal fat rolling oil of claim 1 wherein the saturated dibasic acid is chosen from the group consisting of adipic acid, pimelic acid, suberic acid, azelaic acid, sebacic acid, and mixtures thereof.

4,390,439

WATER-BASED HYDRAULIC FLUIDS HAVING IMPROVED LUBRICITY AND CORROSION INHIBITING PROPERTIES EMPLOYING NEODECANOIC ACID

Ellen S. Schwartz, Warren, and Cline A. Tincher, Grosse Ile, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Mar. 30, 1981, Ser. No. 249,200
Int. Cl.[3] C09K *3/00;* C10M *3/04*
U.S. Cl. 252—73 14 Claims

1. A hydraulic fluid concentrate characterized by improved anti-wear and corrosion inhibiting properties comprising water, neodecanoic acid in the amount of about 0.3 to 20.0 percent by weight of said concentrate, a polyether thickener having a molecular weight of about 1000 to about 75,000 prepared by reacting ethylene oxide or ethylene oxide and at least one lower alkylene oxide having 3 to 4 carbon atoms with at least one active hydrogen-containing polyhydric alcohol initiator and at least one α-olefin oxide having a carbon chain length of about 12 to about 18 aliphatic carbon atoms and wherein said α-olefin oxide is present in the amount of about 1 to about 20 percent by weight based upon the total weight of said polyether thickener, and conventional hydraulic fluid additives.

4,390,440

THICKENED WATER-BASED HYDRAULIC FLUIDS

Ellen S. Schwartz, Warren, and Cline A. Tichner, Grosse Ile, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jun. 8, 1981, Ser. No. 271,593
Int. Cl.[3] C10M *3/04, 3/18, 3/22*
U.S. Cl. 252—76 42 Claims

1. In a hydraulic fluid composition containing conventional hydraulic fluid additives, the improvement wherein said hydraulic fluid is characterized by improved viscosity said fluid consisting essentially of water, a carboxylic acid having about 5 to 20 carbon atoms, a thickener which is a polyether polyol having a molecular weight of about 1000 to about 40,000 prepared by reacting ethylene oxide or ethylene oxide and at least one lower alkylene oxide having 3 to 4 carbon atoms with at least one active hydrogen-containing compound and at least one alpha-olefin oxide or alcohol or glycidyl ether having a carbon chain length of about 10 to about 24 aliphatic carbon atoms wherein said alpha-olefin oxide or alcohol or glycidyl ether is present in the amount of 1 to about 20 percent by weight based upon the total weight of said thickener.

4,390,441

MACHINE DISHWASHING COMPOSITION

Stuart W. Beavan, Birkenhead, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,035
Claims priority, application United Kingdom, Apr. 11, 1980, 8012050
Int. Cl.[3] C11D *9/42*
U.S. Cl. 252—96 6 Claims

1. A machine dishwashing composition for use in a dishwashing machine provided with a source of ultra-violet light having a wavelength of between 200 nm and 400 nm to irradiate the dishes and/or the washing liquor during the wash programme, said composition comprising:

(i) 10 to 60% by weight of a builder material, which removes calcium ions from solution by sequestration, complexation precipitation or ion-exchange;

(ii) 5 to 45% by weight of a material yielding halite ions in aqueous media;

(iii) sufficient alkaline material to give the composition a pH of above 7 when dispersed at 0.5 g/l in water; and

(iv) 0 to 15% by weight of a low or non-foaming nonionic surfactant.

4,390,442

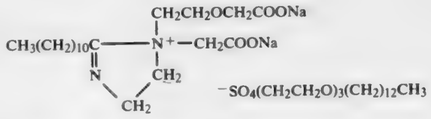
NON-STINGING EYE MAKE-UP REMOVER COMPOSITION

Timothy W. Quick, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.

Filed Apr. 27, 1981, Ser. No. 258,184
Int. Cl.[3] C11D *3/48, 1/18*
U.S. Cl. 252—106 13 Claims

12. A non-stinging composition for removing make-up from the area near the eye comprising by weight, based on the total weight of the composition:

(1) 7.5 percent



(2) 1.5 percent polysorbate 20,

(3) 1.5 percent propylene glycol,

(4) 1.3 percent boric acid,

(5) 88.1 percent water,

(6) 0.01 percent chlorhexidine digluconate, and

(7) 0.05 percent phenethyl alcohol.

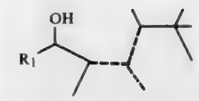
4,390,443

BRANCHED CHAIN OLEFINIC, ALCOHOLS, THIOLS, ESTERS AND ETHERS, ORGANOLEPTIC USES THEREOF, PROCESSES FOR PREPARING SAME AND INTERMEDIATES THEREFOR

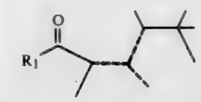
Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 252,334, Apr. 9, 1981, Pat. No. 4,336,164, which is a continuation-in-part of Ser. No. 212,887, Dec. 4, 1980, Pat. No. 4,318,934. This application Mar. 2, 1982, Ser. No. 354,388
Int. Cl.[3] A61K *7/46;* C11D *3/50, 9/44*
U.S. Cl. 252—174.11 2 Claims

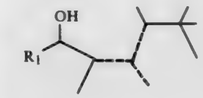
1. The process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base an aroma augmenting or enhancing quantity of at least one compound defined according to the structure:



wherein R_1 represents methyl or isopropyl and in each of the molecules of the mixture, one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represent carbon-carbon single bonds produced according to a process comprising the step of intimately admixing a ketone having the structure:

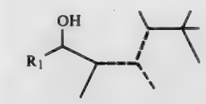


with a reducing agent selected from the group consisting of (i) an alkali metal borohydride; (ii) lithium aluminum hydride and (iii) aluminum isopropylate and then fractionally distilling the resulting reaction mixture whereby a composition of matter consisting essentially of a material having the structure:

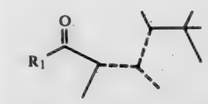


is produced.

2. The process for augmenting or enhancing the aroma or taste of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of intimately admixing with a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base a composition of matter including more than one compound defined according to the structure:



wherein R_1 represents methyl or isopropyl and in each of the molecules of the mixture, one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represent carbon-carbon single bonds produced according to a process comprising the step of intimately admixing a ketone having the structure:



with a reducing agent selected from the group consisting of (i) an alkali metal borohydride; (ii) lithium aluminum hydride and (iii) aluminum isopropylate and then fractionally distilling the resulting reaction mixture whereby a composition of matter consisting essentially of a material having the structure:



is produced.

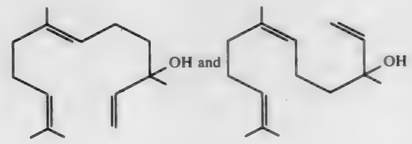
4,390,444

USE OF ISOMERIC MIXTURES OF FARNESENE FOR AUGMENTING OR ENHANCING THE AROMA OF DETERGENT COMPOSITIONS

Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Bricktown, both of N.J.; Bernard J. Chant, Rye, N.Y.; Anton V. Ouwerkerk, Livingston, N.J.; Venkatesh Kamath, Red Bank, N.J., and Cynthia J. Mussinan, Bricktown, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 292,392, Aug. 13, 1981, Pat. No. 4,376,068. This application May 6, 1982, Ser. No. 375,532
Int. Cl.[3] C11D *3/50*
U.S. Cl. 252—174.11 3 Claims

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base an aroma augmenting or enhancing quantity of a farnesene isomer mixture produced according to the process of dehydrating a nerolidol isomer mixture containing nerolidol isomers defined according to the structures:



in the presence of a catalyst selected from the group consisting of potassium acid sulfate and paratoluene sulfonic acid at a temperature in the range of from 110° C. up to 200° C. and at a pressure in the range of from 1 mm/Hg pressure up to 200 atmospheres pressure, absolute.

4,390,445

ALUMINIUM CHLORIDE COMPOSITION AND A METHOD FOR ITS MANUFACTURE

Ulla B. Gytel, Villa Linnea, Ramlösa Brunns Park S. 253 67, Helsingborg, Sweden

Filed Mar. 11, 1982, Ser. No. 357,179
Claims priority, application Sweden, Mar. 23, 1981, 8101829
Int. Cl.[3] C02F *5/02, 5/08;* C01F *7/56*
U.S. Cl. 252—175 8 Claims

1. An aluminium-chloride composition for water-purifying, sludge-dewatering retention of fiber and filler in papermaking systems, and plant-dewatering purposes, comprising a clear, stable aqueous solution of aluminium chloride containing polynuclear complexes of the kind

$$Al_m(OH)_n^{(3m-n)+}$$

where m and n are positive integers, characterized in that said composition contains ions of alkali metal and/or alkaline earth metal in an amount which stoichiometrically substantially corresponds to the OH content of the solution; and that the total aluminium content is between about 0.3 and about 2 mole per liter.

4,390,446

SOLID STATE CELL WITH ANOLYTE

Luverne H. Barnette, Derry, N.H., and Charles C. Liang, Clarence, N.Y., assignors to Duracell Inc., Bethel, Conn.

Filed May 13, 1981, Ser. No. 262,890
Int. Cl.³ H01M *6/18, 4/40*
U.S. Cl. 252—182.1 **4 Claims**

1. A method for increasing the high discharge rate capacity of a solid state cell having an active metal anode material, said method comprising the steps of admixing said active metal anode material with a solid cationic conductor, with said conductor comprising at least 50% by volume of said admixture and utilizing said admixture as the anode for said cell.

4,390,447

MANUFACTURING PROCESS FOR NICKEL (II) HYDROXIDE

August Winsel, Kelkheim, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 285,031
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1980, 3029898
Int. Cl.³ H01M *4/32*
U.S. Cl. 252—182.1 **8 Claims**

1. A process for manufacturing nickel hydroxide for use as the active component of the positive electrode mass in alkaline electrochemical cells through reaction between a water soluble nickel(II) salt and alkali hydroxide, wherein

the nickel(II) salt in powder form is reacted directly into $Ni(OH)_2$ with highly concentrated hydroxide, while suppressing a homogeneous solute phase of the Ni^{2+} ions.

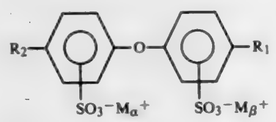
4,390,448

PERFUMED STABLE AQUEOUS HYPOCHLORITE BLEACH COMPOSITIONS CONTAINING 2-METHYL-2-OCTANOL AND THICKENED VARIATION THEREOF

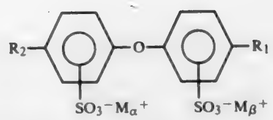
Richard M. Boden, Monmouth Beach; Michael Licciardello, Farmingdale; Joseph J. Maisano, Jr., Wanamassa, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Oct. 22, 1981, Ser. No. 313,685
Int. Cl.³ C11D *7/54, 3/395, 3/50*
U.S. Cl. 252—187.26 **8 Claims**

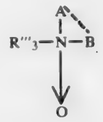
1. A perfumed aqueous alkali metal hypochlorite solution comprising as a sole detergent a composition of matter selected from the group consisting of (1) at least one substance defined according to the structure:



wherein at least one of R_1 and R_2 is C_{10}–C_{12} straight chain or branched chain alkyl; when one of R_1 or R_2 is C_{10}–C_{12} straight chain or branched chain alkyl the other of R_1 and R_2 is hydrogen; wherein M_α and M_β are the same or different and each represents alkali metal selected from the group consisting of sodium, potassium and lithium and (2) a mixture comprising a material having the structure:



and intimately admixed therewith a substance having the structure:



wherein R_3''' is straight chain alkyl; wherein more than 55% of the R_3''' moieties consist of straight chain alkyl having from 11 up to 13 carbon atoms and wherein "A" and "B" are each separately methyl up to 0.2% of one or more compatible perfume oils, said hypochlorite solution having a pH of 11 up to 14.0 and an aroma augmenting or enhancing quantity of 2-methyl-2-octanol.

4,390,449

METHOD OF PREPARING STOICHIOMETRIC ZINC SILICATE PHOSPHOR WITH IMPROVED BRIGHTNESS AND PERSISTENCE

Thomas E. Peters, Chelmsford, and James R. McColl, Concord, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 11, 1981, Ser. No. 357,013
Int. Cl.³ C09K *11/44*
U.S. Cl. 252—301.6 F **5 Claims**

1. A method of preparing a green-emitting substantially stoichiometric manganese and arsenic coactivated zinc silicate phosphor characterized by improved brightness and persistence comprising the steps of:

(a) forming a blend of zinc oxide, silicic acid, an oxide of arsenic, and a manganese compound thermally convertible to manganese oxide, wherein the amount of silicic acid present in said blend is between about 0.9 to 1 times the molar amount stoichiometrically required to react with the zinc oxide present in said blend to form Zn_2SiO_4,

(b) subjecting said blend to a first firing in air at a temperature of between about 650° C. and about 1000° C. for a period sufficient to form a pre-fired material including zinc silicate;

(c) adding to said pre-fired material an amount of ammonium chloride in excess of that required for complete reaction with any excess zinc oxide remaining in said pre-fired material subsequent to said first firing step, up to about 10 weight percent of said pre-fired mixture; and

(d) subjecting said pre-fired mixture containing ammonium chloride to a second firing step at a temperature between about 1000° C. and about 1300° C. for a period sufficient to remove said excess zinc oxide from said pre-fired material and to form a phosphor comprising substantially stoichiometric zinc silicate, said phosphor exhibiting a higher brightness than the corresponding phosphor prepared by said method and fired at a temperature greater than 1000° C. in the first firing step.

4,390,450

PROTEINACEOUS FOAMING COMPOSITIONS AND METHOD FOR PREPARING FOAMED PROTEINACEOUS PRODUCTS

Paul W. Gibson, Mt. Zion, and Frank T. Orthoefer, Decatur, both of Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Jul. 30, 1980, Ser. No. 174,307
Int. Cl.³ B01J *13/00*
U.S. Cl. 252—307 **11 Claims**

1. A proteinaceous foaming composition consisting essentially of at least one proteinaceous foaming component selected from the group consisting of a vegetable seed protein hydrolyzate, egg albumen and casein hydrolyzate; in combination with water-soluble alkaline earth salt in an amount sufficient to provide an alkaline earth ionic concentration ranging from about 0.005 to about 0.5 mole for each mole nitrogen of said proteinaceous foaming component, and water-soluble zinc salt in an amount sufficient to provide an ionic concentration ranging from about 0.002 M to about 0.1 mole for each mole nitrogen of said protein component.

7. In an improved method for preparing foamed proteinaceous products from a protein foaming composition wherein an aqueous medium containing a proteinaceous foaming component is ingested with a sufficient amount of a gas to provide a foamed product, the improvement which comprises ingesting gas into an aqueous medium containing a proteinaceous foaming composition consisting essentially of at least one proteinaceous foaming component selected from the group consisting of vegetable protein hydrolyzate, egg albumen and casein hydrolyzate, at least 0.005 mole water-soluble alkaline earth metal salt for each mole nitrogen of said protein component and at least 0.002 M water-soluble zinc salt for each mole nitrogen of said protein component said proteinaceous foaming component being further characterized as being water-soluble at a pH above or below the isoelectric point of said proteinaceous foaming component when mixed with 20° C. water at 20% by weight dry solids concentration.

4,390,451

CONCENTRATED AQUEOUS METAL ALDONATE AND/OR AMMONIUM ALDONATE COMPOSITION

Reginoldus Havinga, Schalkhaar; Reinder Torenbeek, Le Twello, and Petrus H. M. Schreurs, Deventer, all of Netherlands, assignors to AKZO N.V., Arnhem, Netherlands

Filed Jun. 16, 1981, Ser. No. 274,250
Claims priority, application Netherlands, Jun. 30, 1980, 8003771
Int. Cl.³ B01J *13/00*
U.S. Cl. 252—311 **15 Claims**

1. A concentrated aqueous composition, comprising

an aldonate of at least one member selected from the group consisting of a metal aldonate and an ammonium aldonate, part of said aldonate being present in a dissolved state and part of said aldonate being present in a suspended state; and

a colloidal gum suspending agent.

4,390,452

MICROPARTICLES WITH VISUAL IDENTIFYING MEANS

Edward J. Stevens, Lake Elmo, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

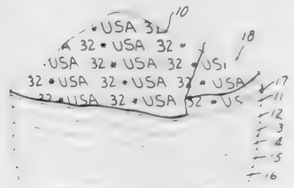
Filed Aug. 20, 1979, Ser. No. 67,931
Int. Cl.³ G01N *33/22;* **B32B** *3/00;* **C09K** *3/00;* **C09F** *3/02*
U.S. Cl. 252—408.1 **20 Claims**

1. In a batch of organic microparticles which are uniformly encoded for retrospective identification, each of the same thickness not significantly exceeding 500 micrometers and having two surfaces which are generally flat and parallel to each other across its broadest dimension, the broadest dimension of most of the microparticles being no greater than 1000 micrometers but greater than said thickness, the improvement comprising:

at least one of the flat surfaces of each microparticle bears identifying indicia selected from alphanumerics and symbols which provide a repetitive code that (a) is randomly located with respect to the edges of the microparticle, (b) can be visually interpreted under magnification, and (c) repeats in any direction within a distance less than said broadest dimension so that examination of a typical microparticle of average size should reveal said code.

12. Method of making a batch of microparticles useful for retrospective identification comprising the steps of:

(1) making an organic sheet of substantially uniform thickness not significantly exceeding 500 micrometers,



(2) forming on at least one face of the sheet identifying indicia selected from alphanumerics and symbols which provide a repetitive code that can be visually interpreted under magnification and repeats in any direction within a distance not significantly exceeding 500 micrometers, and

(3) comminuting the sheet at random into a batch of microparticles, each having two surfaces which are generally flat and parallel to each other and contain portions of said indicia, the broadest dimension of most of the microparticles being no greater than 1000 micrometers, but greater than said distance so that examination of a typical microparticle of average size should reveal said code.

17. Method of tagging a substance for retrospective identification comprising incorporating with a substance a plurality of microparticles from a batch as defined in claim 1.

4,390,453

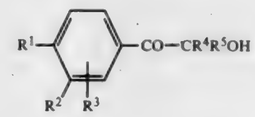
MIXTURES OF AROMATIC-ALIPHATIC KETONES AS PHOTOINITIATORS AND PHOTOPOLYMERIZABLE SYSTEMS CONTAINING THEM

Jürgen Eichler, Weiterstadt; Claus Herz, Heidelberg, and Karl-Heinz Neisius, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Mar. 12, 1981, Ser. No. 243,119
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010148
Int. Cl.³ B01J *31/02*
U.S. Cl. 252—426 **5 Claims**

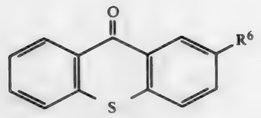
1. A composition comprising

(A) 0.1 to 99.9 weight % of at least one hydroxyalkylphenone of the formula



wherein R^1 is H, alkyl of 1–4 C atoms or chlorine, R^2 is H or methyl, R^3 is H or methyl, R^4 is alkyl of 1–6 C atoms and R^5 is alkyl of 1–6 C atoms, and

(B) 99.9 to 0.1 weight % of at least one 2-alkylthioxanthone of the formula



wherein R^6 is alkyl of 1–8 C atoms.

4,390,454

CATALYST COMPONENTS FOR POLYMERIZING OLEFINS

Illaro Cuffiani; Paolo Galli, and Umberto Zucchini, all of Ferrara, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jul. 23, 1981, Ser. No. 285,961
Claims priority, application Italy, Jul. 24, 1980, 23656 A/80
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B **8 Claims**

1. Components of catalysts for the polymerization of olefins, comprising the product which is obtained by reacting the reaction product between:

(A) a magnesium compound selected from

(1) compounds of formula $X_nMg(OR)_{2-n}$ wherein X is Cl or Br, a group —OH, an alkyl, an aryl or a cycloalkyl having 1 to 20 carbon atoms; R is an alkyl, an aryl or a cycloalkyl having 1 to 20 carbon atoms, or a group —COR′ in which R′ is a hydrocarbon radical as specified for R; $0 \leqq n \leqq 2$;

(2) MgO, $Mg(OH)_2$, XMgOH, in which X is Cl or Br; and

(B) a compound of titanium, vanadium or zirconium having at least two metal-oxygen bonds of the type Ti-OR, V-OR, or Zr-OR, in which R is an alkyl, an aryl or a cycloalkyl having 1 to 20 carbon atoms or the group

$$CH_3-\overset{|}{C}=CH-CO-CH_3,$$

with

(C) a halogenated compound of a transition metal of Groups IV, V, VI of the Periodic System of formula MO_mX_n in which M is a transition metal, X is Cl or Br, $m \geqq 0$, $n > 0$, $2m+n$ being equal to the valence of metal M.

4. Catalyst components according to claim 1, consisting of the product obtained by reacting the product of the reaction between compounds (A) and (B) with a silicium compound having a halogenating and/or reducing action and then with compound (C).

4,390,455

CATALYTIC MEMBRANES IN ARTIFICIAL ORGANS

Werner Henne, and Jürgen Scheuren, both of Wuppertal, Fed. Rep. of Germany, assignors to Akzo N.V., Arnhem, Netherlands

Filed Dec. 14, 1981, Ser. No. 330,772
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048542
Int. Cl.³ B01J *31/06*
U.S. Cl. 252—430 **2 Claims**

1. In a method for the production of membranes for artificial organs in the form of tube foils, flat foils or hollow filaments into which metals and/or metal compounds are incorporated, by introducing a metal salt solution into the membrane composed of a polymer, and then attacking the membrane with gaseous precipitating agent, and bringing it to reaction for precipitation, the improvement comprising having the introduction of the metal salt solution and the attack with gas take place in a membrane-containing module for an artificial organ.

4,390,456

SPHEROIDAL ALUMINA PARTICLES AND CATALYSTS EMPLOYING THE PARTICLES AS A SUPPORT

Moises G. Sanchez, Severna Park; Michael V. Ernest, Baltimore, and Norman R. Laine, Rockville, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 64,700, Aug. 8, 1979, Pat. No. 4,279,779, which is a continuation of Ser. No. 781,379, Mar. 25, 1977, Pat. No. 4,179,408. This application Jul. 17, 1981, Ser. No. 284,317
The portion of the term of this patent subsequent to Jul. 21, 1998, has been disclaimed.
Int. Cl.³ B01J *21/04, 23/42, 23/44, 23/46*
U.S. Cl. 252—448 **20 Claims**

1. A catalyst support comprising spheroidal alumina particles having a total pore volume of about 0.8 to about 1.7 cubic centimeters per gram, a pore volume of about 0.5 to about 1.0 cubic centimeters per gram in pores of 100 to 1000 Å. in diameter, a pore volume of about 0.1 to about 0.4 cubic centimeters per gram in pores of 1000 to 10,000 Å. in diameter, an attrition loss of less than about 5%, and a compacted bulk density of about 20 to about 36 pounds per cubic foot.

4,390,457

SYNTHESIS OF MOLECULAR SIEVES USING 2-AMINOPYRIDINE AS A TEMPLATE

Marvin R. Klotz, Batavia, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 28, 1981, Ser. No. 305,976
Int. Cl.³ C01B *33/28*; B01J *29/06*
U.S. Cl. 252—455 Z **25 Claims**

1. A method to prepare a crystalline aluminosilicate molecular sieve comprising (1) forming an aqueous mixture of an oxide of aluminum, an oxide of silicon, a cation and 2-aminopyridine as an organic template compound, (2) maintaining the pH of such mixture between about 9 and about 13.5 and (3) crystallizing such mixture.

4,390,458

ELECTRICALLY CONDUCTIVE ARTICLES

James P. McKaveney, Claremont, Calif., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation of Ser. No. 871,730, Jan. 23, 1978, Pat. No. 4,197,218, which is a continuation-in-part of Ser. No. 853,653, Nov. 21, 1977, abandoned. This application Feb. 28, 1980, Ser. No. 125,715
Int. Cl.³ H01B *1/04*
U.S. Cl. 252—503 **16 Claims**

1. An electrically conductive article comprised of a matrix of a non-conductive material containing a substantially uniform dispersion of a finely divided conductive material selected from the group consisting of ferromanganese, ferromolybdenum, ferrosilicon, ferrochrome, ferrovanadium, ferrozirconium, ferrotitanium, ferrotungsten, iron carbide, and mixtures thereof.

4,390,459

CONDUCTIVE MOLDING COMPOSITIONS COMPRISING VINYL CHLORIDE-VINYL ETHER COPOLYMERS

Marvin Koral, Warren, and Donald Goodman, Flemington, both of N.J., assignors to Tenneco Chemicals, Inc., Piscataway, N.J.

Filed Sep. 2, 1981, Ser. No. 298,832
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—511 **10 Claims**

1. In a conductive molding composition that comprises a vinyl halide resin, sufficient finely-divided conductive carbon black particles that the composition has a bulk resistivity below 500 ohm—cm. at 900 megahertz, a stabilizer component, a lubricant component, and a plasticizer and processing aid component, the improvement wherein the vinyl halide resin is a vinyl chloride-vinyl ether copolymer containing from 0.1% to 5% by weight of a vinyl ether having the structural formula

$$CH_2=CHOR$$

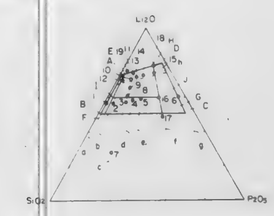
wherein R represents an alkyl, haloalkyl, aryl, or haloaryl radical having 1 to 18 carbon atoms.

4,390,460

LITHIUM OXIDE BASED AMORPHOUS MATERIAL AND PROCESS FOR PREPARATION THEREOF

Katsuki Miyauchi, Hino; Tetsu Oi, Tokyo, and Tsuneo Suganuma, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 28, 1981, Ser. No. 306,600
Claims priority, application Japan, Sep. 29, 1980, 55-134436
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—518 **9 Claims**



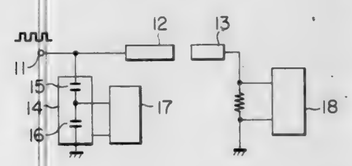
1. A lithium oxide based amorphous material which has a thickness of 0.1 to 50 μm and which has a composition included in a region defined by lines connecting points A, B, C and D to one another in a composition diagram of the ternary system of Li_2O-SiO_2-P_2O_5shown in FIG. 1 of the accompanying drawings.

4,390,461

FERRITE ELECTRODE MATERIAL

Nobuyoshi Tsukiyama, and Ryo Ichige, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 3, 1981, Ser. No. 250,666
Claims priority, application Japan, Apr. 4, 1980, 55-43477
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—519 **10 Claims**



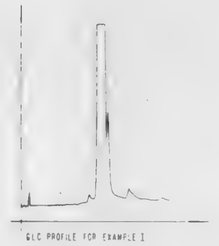
1. A ferrite electrode material consisting essentially of a calcined mixture of metal oxides of the formulation $(BaO)_n$·$(Fe_2O_3)_m$ or $(BaO)_n$·$(FeO.Fe_2O_3)_m$, wherein n is 0.6 to 1.0 and m is 0.8 to 1.2 in molar ratio.

4,390,462

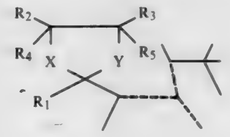
ALIPHATIC BRANCHED OLEFIN DIOXOLANES, DITHIOLANES, AND OXATHIOLANES AND USES THEREOF IN AUGMENTING OR ENHANCING THE AROMA AND/OR TASTE OF CONSUMABLE MATERIALS

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 212,993, Dec. 4, 1980, Pat. No. 4,315,952. This application Nov. 19, 1981, Ser. No. 322,726
Int. Cl.³ A61K *7/46*
U.S. Cl. 252—522 R **5 Claims**



1. A process for augmenting or enhancing the aroma of a perfume composition or a cologne comprising the ste of adding to a perfume base or a cologne base an aroma augmenting or enhancing quantity of at least one dioxolane, oxathiolane or dithiolane compound defined according to the structure:



wherein R_1 represents C_1–C_4 lower alkyl; R_2, R_3, R_4 and R_5 represent hydrogen or C_1–C_3 lower alkyl; X and Y are the same or different and each represents oxygen or sulfur and wherein one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represent carbon-carbon single bonds.

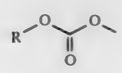
4,390,463

PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OF PERFUME COMPOSITIONS AND COLOGNES UTILIZING ALKYL, ARALKYL, AND BICYCLOALKYL METHYL CARBONATES

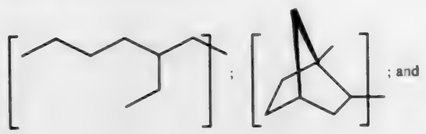
Richard M. Boden, Monmouth Beach; Michael Licciardello, Farmingdale, and Theodore J. Tyszkiewicz, Sayreville, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Nov. 19, 1981, Ser. No. 322,872
Int. Cl.³ A61K *7/46*; C11B *9/00*
U.S. Cl. 252—522 R **4 Claims**

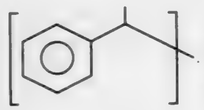
1. A process for augmenting or enhancing the aroma of a perfume composition or a cologne comprising the step of intimately admixing with a perfume composition base or a cologne base an aroma augmenting or enhancing quantity of at least one methyl carbonate derivative defined according to the structure:



wherein R is a moiety selected from the group of moieties having the structures:



; and



4,390,464

METHYL SUBSTITUTED NORBORNANE DERIVATIVES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

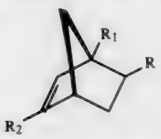
Philip T. Klemarczyk, Old Bridge; James M. Sanders, Eatontown; Manfred H. Vock, Locust; Joaquin F. Vinals, Rumson; Frederick L. Schmitt, Holmdel, and Edward J. Granda, Englishtown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 284,108, Jul. 16, 1981, Pat. No. 4,346,243, which is a continuation-in-part of Ser. No. 247,323, Mar. 25, 1981, Pat. No. 4,326,998, which is a continuation-in-part of Ser. No. 152,187, May 22, 1980, Pat. No. 4,284,824. This application Apr. 6, 1982, Ser. No. 366,091

Int. Cl.³ A61K *7/46;* **C11B** *9/00*

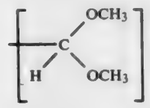
U.S. Cl. 252—522 R **1 Claim**

1. The process for augmenting or enhancing the aroma of a perfume composition or cologne comprising the step of adding to a perfume base or a cologne base at lease one compound defined according to the structure:



wherein R represents the nitrile moiety having the structure:

or the dimethoxymethyl moiety having the structure:



and wherein one of R_1, or R_2 is methyl and the other of R_1 or R_2 is hydrogen.

4,390,465

LOW TEMPERATURE COMPOSITION FOR PLATING PRETREATMENT OF FERROUS METALS

Paul Spekman, Jr., Bloomington, Minn., assignor to Fremont Industries, Inc., Shakopee, Minn.

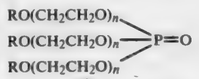
Filed Jun. 22, 1981, Ser. No. 275,800

Int. Cl.³ C11D *1/825;* **C23G** *1/14*

U.S. Cl. 252—527 **3 Claims**

1. A formulation for the treatment of the surfaces of ferrous metal parts having the following formulation:

Composition	Percent by Weight
(A) An alkaline builder including, in the composite, sodium hydroxide, sodium metasilicate, and sodium carbonate wherein the components are present as follows:	
Sodium hydroxide	15–30
Sodium metasilicate	10–30
Sodium carbonate	10–30
(B) A water conditioner including, in the composite, sodium tripolyphosphate and tetrasodium ethylenediaminetetraacetate in the concentrations:	
Sodium tripolyphosphate (determined as anhydrous)	10–15
Tetrasodium ethylene-diaminetetraacetate (determined as the tetrahydrate)	1–5
Alpha-sodium glucoheptonate (determined as the dihydrate)	5–15
(C) A surfactant, including, in the composite, the sodium salt of petroleum sulfonic acid (petroleum sulfonate)	1–10
Linear ethoxylated alcohol organic phosphate ester complex	1–10



Wherein R represents an alkyl group containing from between 8 and 10 carbon atoms and wherein "n" is an integer ranging from 1 to 6. And a modified straight chain aliphatic polyether having the structural formula as follows: 1–10

$R—O(CH_2CH_2O)_nCH_2CH_2R^1$

R—alkyl

R^1—a hydrophobic group

(D) Hexylene glycol 1–10

4,390,466

HEAVY DUTY LIQUID DETERGENT

Harold Weinberger, 309 Johnson Ave., Teaneck, N.J. 07666

Filed Apr. 30, 1981, Ser. No. 258,887

Int. Cl.³ C11D *3/32, 3/43, 1/70*

U.S. Cl. 252—548 **24 Claims**

1. An aqueous liquid detergent composition with improved penetrating, dissolving and suspending characteristics comprising about 2 to 8% by weight, 70% active, of a lower alkanolacetamide and about 2 to 5% by weight of a liquid isoparaffinic hydrocarbon.

4,390,467

LIQUID CRYSTAL COMPOSITIONS

Yutaka Mizukuchi, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1982, Ser. No. 351,433

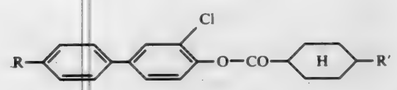
Claims priority, application Japan, Apr. 30, 1981, 56-65616

Int. Cl.³ C09K *3/34;* **C02F** *1/13*

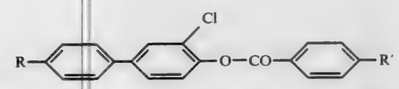
U.S. Cl. 252—299.63 **9 Claims**

1. A liquid crystal composition comprising at least two

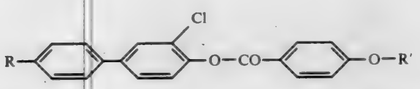
compounds selected from the group I consisting of trans-4-alkylcyclohexane-1-carboxylic acid-4′-(4″-alkylphenyl)-2′-chlorophenyl ester having the general formula:



wherein R and R′ are normal chain alkyl groups containing 2 to 7 carbon atoms, said at least two compounds making up 30 mole % or more of the total composition, and at least one compound selected from at least one of the group II consisting of 4-alkylbenzoic acid-4′-(4″-alkylphenyl)-2′-chlorophenyl ester having the general formula:



wherein R and R′ are normal chain alkyl groups containing 2 to 8 carbon atoms and the group III consisting of 4-alkoxybenzoic acid-4′-(4″-alkylphenyl)-2′-chlorophenyl ester having the general formula:



wherein R and R′ are normal chain alkyl groups containing 2 to 8 carbon atoms.

4,390,468

PREPARATION OF ANTITUMOR AGENT FROM SHELLFISH

Takuma Sasaki, Tokyo, and Kazuya Nakamichi, Sohka, both of Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

Filed Aug. 4, 1982, Ser. No. 404,971

Int. Cl.³ A23J *1/04;* **C07G** *7/00*

U.S. Cl. 260—112 R **10 Claims**

1. A process for the preparation of an antitumor agent consisting essentially of water-soluble, macromolecular glycoprotein substances having a range of molecular weights within the limits of from 10,000 to 300,000 from shellfish which comprises recovering the liquid portion which comes from cooking of raw shellfish in a hot aqueous solvent or with vapor of such solvent and which is to be discarded as waste, concentrating the liquid portion thus recovered to a smaller volume or to dryness to yield a concentrate or dry powder and isolating the water-soluble, macromolecular glycoprotein substances from the concentrate or dry powder.

10. An antitumor agent having no cytotoxicity but an immunopotentiating activity and consisting essentially of water-soluble, macromolecular glycoprotein substances which are recovered from the liquid portion which comes from cooking of shellfish with a hot aqueous solvent or with the vapor of such solvent and which have the following characteristics:

(1) Molecular weight: About 10,000 to about 300,000 as measured by gel-filtration chromatography,

(2) Ultraviolet absorption spectrum: With a characteristic absorption peak $\lambda_{max}H_2O$ at 278 nm,

(3) Infrared absorption spectrum (pelleted in KBr): With characteristic absorption peaks at 3500~3300, 1650, 1540 and 1400 cm^{-1},

(4) Solubility: Soluble easily in water but insoluble in organic solvents such as methanol, ethanol and acetone,

(5) Color reactions: Positive in biuret reaction, xanthoproteic reaction, phenolic reagent reaction, anthrone-sulfuric acid reaction and phenol-sulfuric acid reaction; but pseudo-positive in cysteine-sulfuric acid reaction,

(6) Acidic or basic nature: Amphoteric electrolyte,

(7) Substance color and appearance: White:colored solid with or without faint brown tinge,

(8) Amino acids in hydrolysate: When hydrolyzed in 6 N HCl at 105°~110° C. for 24 hours, the resulting hydrolysate contains at least the following amino acids:
aspartic acid, hydroproline, threonine, serine, glutamic acid, proline, glycine, alanine, cysteine, valine, methionine, isoleucine, leucine, tyrosine, phenylalanine, lysine, arginine, histidine, hydroxylysine,

(9) Carbohydrates in hydrolysate: When hydrolyzed in 2 N HCl at 80°~90° C. for 10 hours, followed by the removal of the amino acids from the hydrolysate by ion-exchange chromatography and further by hydrogenation of the amino acids-free hydrolysate, the hydrogenated hydrolysate contains at least the following carbohydrates:
fructose, mannose, fucose, inositol, galactose.

4,390,469

CONTROL OF RESIDUAL SOLVENT IN OAT PRODUCTS

Richard W. Oughton, Kingston, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Filed Apr. 28, 1981, Ser. No. 258,384

Claims priority, application Canada, May 15, 1980, 352012

Int. Cl.³ A23J *1/12*

U.S. Cl. 260—123.5 **11 Claims**

1. An improvement in the process for control of the amount of residual solvent in proteinaceous material selected from the group consisting of comminuted oats and matter derived therefrom, wherein the proteinaceous material is admixed with a hydrocarbon solvent selected from the group consisting of pentane, hexane, heptane and cyclohexane, and mixtures thereof, and at least a fraction of the proteinaceous material is separated from the solvent and treated for removal of residual solvent, the improvement comprising:

(a) maintaining the temperature of the mixture of proteinaceous material and solvent in the range of 0°–35° C.; and

(b) controlling the period of time of contact of solvent and proteinaceous material to less than 120 minutes, and the period of time of treatment for removal of residual solvent to a range of 5 to 500 minutes, whereby separation of a product having a level of residual solvent of less than 60 ppm may be effected.

4,390,470

TETRAKISAZO DYES CONTAINING A STILBENYLENE OR 2,2′-DISULFOSTILBENYLENE RADICAL

Heinz Wicki, Basel, Switzerland, and Claude Vogel, St. Louis, France, assignors to Sandoz Ltd., Basel, Switzerland

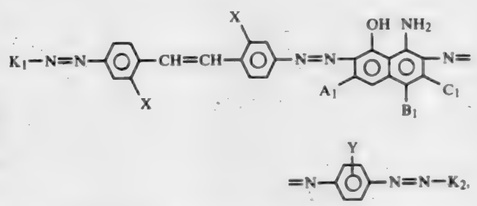
Division of Ser. No. 885,627, Mar. 13, 1978, Pat. No. 4,169,832, which is a continuation-in-part of Ser. No. 717,522, Aug. 25, 1976, abandoned. This application May 16, 1979, Ser. No. 39,254

Claims priority, application Switzerland, Sep. 5, 1975, 11590/75

Int. Cl.³ C09B *31/30, 33/18*

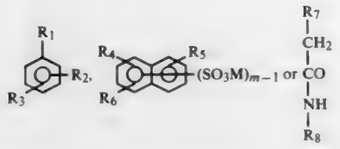
U.S. Cl. 260—166 **11 Claims**

1. A compound of the formula

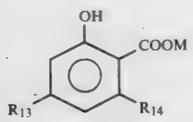


wherein each of A_1, B_1 and C_1 is independently hydrogen or $—SO_3M$, with the proviso that when A_1 is $—SO_3M$, one of B_1

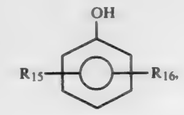
and C_1 is $—SO_3M$ and the other is hydrogen and when A_1 is hydrogen, B_1 is $—SO_3M$ and C_1 is hydrogen, each of K_1 and K_2 is independently the radical of a coupling component of the formula



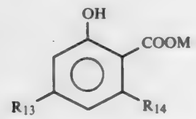
or the radical of a coupling component (fg), said coupling component (fg) being the product of the condensation, under acid conditions, of formaldehyde and (a) a compound of the formula



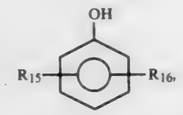
or a mixture of such compounds, (b) a compound of the formula



or a mixture of such compounds, or (c) a mixture of at least one compound of the formula



and at least one compound of the formula



with the provisos that the mol ratio of formaldehyde to the other compound(s) is at least 0.5:1 and that at least 50 mol % of the other compound(s) contain a —COOM group, wherein

R_1 is hydroxy, $—NH_2$, C_{1-4}alkylamino, di-(C_{1-4}alkyl)amino, C_{2-4}hydroxyalkylamino, di-(C_{2-4}hydroxyalkyl)amino, N-C_{1-4}alkyl-N-C_{2-4}hydroxyalkylamino, $—NHCH_2SO_3M$, arylamino, N-C_{1-4}alkyl-N-arylamino or N-C_{2-4}hydroxyalkyl-N-arylamino, wherein any aryl is phenyl; naphthyl; substituted phenyl having 1 to 3 substituents each of which is independently C_{1-4}alkyl, C_{1-4}alkoxy (not more than two), nitro (not more than two), chloro (not more than two), —COOM (not more than one) or $—SO_3M$ (not more than one); or naphthyl substituted by 1 or 2 $—SO_3M$ groups, with the proviso that the hydroxy group of any C_{2-4}hydroxyalkyl moiety is not on the α-carbon atom,

R_2 is hydrogen, hydroxy, $—NH_2$, C_{1-4}alkyl, C_{1-4}alkoxy, chloro or acylamino,

R_3 is hydrogen, C_{1-4}alkyl, $—SO_3M$ or —COOM,

R_4 is hydroxy, $—NH_2$, phenylamino or (substituted phenyl)amino wherein substituted phenyl has 1 to 3 substituents each of which is independently C_{1-4}alkyl or C_{1-4}alkoxy (not more than two),

R_5 is hydrogen, hydroxy, $—NH_2$, $—NHCH_2SO_3M$ or acylamino,

R_6 is hydrogen, C_{1-4}alkoxy or —COOM, with the proviso that R_6 must be hydrogen or C_{1-4}alkoxy when m is 2 or 3,

R_7 is acyl,

R_8 is phenyl; naphthyl; substituted phenyl having 1 to 3 substituents each of which is independently C_{1-4}alkyl, C_{1-4}alkoxy (not more than two), chloro (not more than two), acetyl (not more than one) or $—SO_3M$ (not more than one); or naphthyl substituted by 1 or 2 $—SO_3M$ groups,

each of R_{13}, R_{14}, R_{15} and R_{16} is independently hydrogen; fluoro; chloro; bromo; iodo; hydroxy; C_{1-4}alkyl; C_{1-4}alkyl substituted by fluoro, chloro, bromo, iodo, —COOM, cyano, hydroxy, C_{1-4}alkoxy or C_{1-4}hydroxyalkoxy; C_{1-4}alkoxy or C_{1-4}alkoxy substituted by fluoro, chloro, bromo, iodo, —COOM, cyano, hydroxy, C_{1-4}alkoxy or C_{1-4}hydroxyalkoxy, and

m is 1, 2 or 3, wherein each acyl and acyl moiety of acylamino is independently phenylsulfonyl, tolylsulfonyl, benzoyl, (C_{1-4}alkyl)carbonyl or acetoacetyl, with the proviso that at least one of K_1 and K_2 is the radical of a coupling component (fg),

each X is hydrogen or $—SO_3M$, with the proviso that the two X's are the same,

Y is hydrogen, C_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, fluoro, chloro, bromo, —COOM or $—SO_3M$, and

each M is hydrogen or a non-chromophoric cation.

4,390,471

IMIDAZODIAZEPINES AND PROCESSES THEREFOR

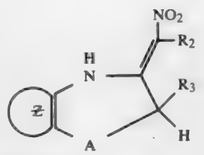
Armin Walser, West Caldwell, and Rodney I. Fryer, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 905,820, May 15, 1978, Pat. No. 4,280,957, which is a continuation of Ser. No. 663,660, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 602,691, Aug. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 504,924, Sep. 11, 1974, abandoned. This application Mar. 12, 1981, Ser. No. 243,162

Int. Cl.[3] **C07D** *487/22, 487/04;* **A61K** *31/55*

U.S. Cl. 260—244.4 **1 Claim**

1. A compound of the formula



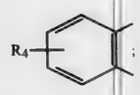
wherein A is



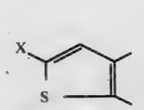
and R_3 is selected from the group consisting of hydrogen or lower alkyl; R_2 is selected from the group consisting of hydrogen or lower alkyl; R_4 is selected from the group consisting of hydrogen, halogen, nitro, cyano, trifluoromethyl, lower alkyl, C_1 to C_7 lower alkyl, phenyl, chlorophenyl or tolyl substituted amino, amino, hydroxy lower alkyl and lower alkanoyl; R_6 is selected from the group consisting of phenyl, mono-halo or mono-nitro substituted phenyl, di-halo or halo-nitro substituted phenyl, pyridyl and mono-halo or mono-nitro substituted pyridyl; and



is selected from the group consisting of

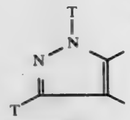


wherein X is chlorine, bromine, iodine or hydrogen



wherein X is chlorine, bromine, iodine or hydrogen

and



wherein T is hydrogen or lower alkyl

4,390,472

PROCESS FOR THE OXIDATION OF HYDROCARBONS

Jacques D. V. Hanotier; Monique J. S. Bridoux, both of Lasne-Chapelle-Saint-Lambert, and Jacques F. Dauby, Groot-Bijgaarden, all of Belgium, assignors to Labofina S.A., Brussels, Belgium

Filed Apr. 22, 1981, Ser. No. 256,255

Claims priority, application Luxembourg, Apr. 29, 1980, 82414

Int. Cl.[3] **C07C** *53/00;* **C04B** *9/02*

U.S. Cl. 260—398.6 **9 Claims**

1. Process for the partial oxidation of hydrocarbons, more particularly of petrolatum or other material having a high content in microcrystalline waxes with formation of acid products, which comprises introducing a molecular oxygen-containing gas into melted petrolatum in the presence of an oxidation catalyst and in the presence of liquid water in an amount which is maintained between about 1% to about 25% based on the weight of petrolatum during the oxidation reaction.

4,390,473

RECOVERY OF RHODIUM AND COBALT LOW PRESSURE OXO CATALYST

James L. Cooper, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 276,389, Jun. 22, 1981, abandoned. This application Jun. 21, 1982, Ser. No. 390,493

Int. Cl.[3] **C07F** *15/00*

U.S. Cl. 260—429 R **7 Claims**

1. A process for recovering rhodium and cobalt from an oxo catalyst solution containing ligandized (modified) rhodium and cobalt in a molar ratio of Rh/Co of 5/1 to 1/50, and a molar ratio of (Rh + Co)/Ligand of from about 1/1 to 1/500, organic solvent, and at least trace amounts of oxo aldehyde, which comprises contacting said catalyst solution with an oxygen containing gas in an O_2/Rh molar ratio from about 1/1 to about 10,000/1, and with sufficient aqueous formic acid to convert the rhodium and cobalt to stable formates and to form an organic phase and an aqueous phase, wherein the rhodium and cobalt formates are solubilized in said aqueous phase, and thereafter separating said phases.

4,390,474

SULFONATION PETROLEUM COMPOSITION

Marvin L. Nussbaum, Skokie, and Edward A. Knaggs, Deerfield, both of Ill., assignors to Stepan Chemical Company, Northfield, Ill.

Continuation of Ser. No. 886,344, Mar. 13, 1978, abandoned, which is a division of Ser. No. 676,470, Apr. 13, 1976, Pat. No. 4,148,821, which is a continuation-in-part of Ser. No. 515,013, Oct. 16, 1974, abandoned, which is a continuation-in-part of Ser. No. 432,439, Jan. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 9,065, Feb. 5, 1970, abandoned. This application Jun. 12, 1980, Ser. No. 158,985

Int. Cl.[3] **C07C** *143/24;* **C09K** *3/00*

U.S. Cl. 260—505 R **42 Claims**

1. A sulfonated petroleum composition which is substantially homogeneous under reaction conditions utilized to produce said composition, and comprising on a 100 organic weight percent total weight basis

(A) from about 5 to 98 weight percent of monosulfonated hydrocarbon,

(B) from about 0 to 50 weight percent of polysulfonated hydrocarbon, and

(C) from about 2 to 90 weight percent of non-sulfonated petroleum,

said composition having been prepared by contacting a liquid hydrocarbon mixture with a gaseous sulfur trioxide composition at a temperature of from about 77° to 392° F., said hydrocarbon mixture comprising initially on a 100 weight percent total weight basis

(A) from about 85 to 99.5 weight percent of a petroleum oil feed stock, and

(B) from about 0.5 to 15 weight percent of an additive, said petroleum oil feed stock being characterized by

(a_1) having an API gravity ranging from about 5° to 60° at 60° F.,

(a_2) having a boiling point (corrected atmospheric) ranging from about −20° to 1400° F., and

(a_3) containing from about 10 to 95 weight percent (100 weight percent total basis) sulfonatable components,

said additive being characterized by

(b_1) being comprised of unsulfonatable organic radical portions possessing an average molecular weight range from about 55 to 6000,

(b_2) having a boiling point in the range from about 212° to 932° F. corrected atmospheric, and

(b_3) a preponderance of such radicals each having attached at least one proton replaceable by a sulfo group and at least one moiety selected from the group consisting of an aromatic nucleus, an olefinic carbon pair, and an oxygen atom directly bonded to a carbon atom by at least one bond.

4,390,475

THIN FILM TYPE SULFONATION PROCESS OF ALKYLBENZENE

Fusao Kondo; Toshimi Terao, both of Chiba; Katsumasa Nagano, Ichikawa, and Kyozo Kitano, Chiba, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 163,162, Jun. 26, 1980. This application Sep. 28, 1981, Ser. No. 306,504

Claims priority, application Japan, Jul. 6, 1979, 54-86252

Int. Cl.[3] **C07C** *143/24*

U.S. Cl. 260—505 S **6 Claims**

1. In a process for effecting the thin film sulfonation of alkylbenzene containing small amounts of olefins as impurities, in which a feed stream of the alkylbenzene is flowed downward in the form of a thin film along a surface of a reaction wall of a sulfonation reactor and is contacted with a gaseous stream of sulfur trioxide diluted with inert gas, the improvement wherein:

2 through 20 parts by weight, based on 100 parts by weight of said alkylbenzene, of at least one member selected from the group consisting of alkylbenzene sulfonic acids having

alkyl groups of 1 through 20 carbon atoms and benzenesulfonic acid are added to the alkylbenzene prior to the contact thereof with the diluted gaseous sulfur trioxide, whereby the presence of said at least one of said alkylbenzene sulfonic acids and said benzene sulfonic acid substantially prevents the formation of deposits on the surface of the reaction wall.

4,390,476

PHOSPHONIUM COMPOUNDS, A PROCESS FOR THEIR PREPARATION AND A PROCESS FOR THE PREPARATION OF ASYMMETRICALLY SUBSTITUTED STILBENE FLUORESCENT BRIGHTENING AGENTS

Michael Märky, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 150,026, May 15, 1980, Pat. No. 4,316,860, which is a division of Ser. No. 950,902, Oct. 12, 1978, Pat. No. 4,231,957. This application Nov. 5, 1981, Ser. No. 318,647

Int. Cl.[3] **C07C** *145/00, 143/38, 63/36*

U.S. Cl. 260—505 C **13 Claims**

1. A process for the preparation of a phosphonium compound of the formula

$$(R)_3P^{\oplus}-CH_2-X'CH=CH-R_1-Y^{\ominus}$$

in which R is alkyl having 1 to 6 C atoms, cycloalkyl having 5 to 7 C atoms, aryl or the group $-NX_1X_2$, in which X_1 and X_2 independently of one another are alkyl having 1 to 4 C atoms or together with the N atom are a 5-membered or 6-membered saturated heterocyclic ring, R_1 is a mononuclear or binuclear aromatic or hetero-aromatic radical, which can contain further non-chromophoric substituents, X is phenylene, 4,4'-biphenylene or 1,4- or 2,6-naphthylene and $Y^{\ominus}$ is $SO_3^{\ominus}$, $SO_2^{\ominus}$ or $COO^{\ominus}$, which comprises reacting a phosphonium compound of the formula

$$(R)_3P^{\oplus}-CH_2-X-CH_2-P^{\oplus}(R)_3$$
$$Q^{\ominus} \qquad\qquad Q^{\ominus}$$

in which R and X are as defined above and $Q^{\ominus}$ is an anion, in the presence of a strongly basic compound and of a polar solvent with an aldehyde of the formula

$$M^{\oplus}Y^{\ominus}-R_1-CHO$$

in which R_1 and $Y^{\ominus}$ are as defined above and $M^{\oplus}$ is a cation.

7. A process for the preparation of an asymmetrical fluorescent brightening agent of the formula

$$Z-CH=CH-X-CH=CH-R_1-Y^{\ominus}M^{\oplus}$$

in which R_1 is a mononuclear or binuclear aromatic carbocyclic or heterocyclic radical which can contain further non-chromophoric substituents, X is phenylene, 4,4'-biphenylene or 1,4- or 2,6-naphthylene, Z is a mononuclear or binuclear aromatic carbocyclic or heterocyclic radical which can be substituted by non-chromophoric substituents, Z differing from the group $-R_1-Y^{\ominus}M^{\oplus}$, $Y^{\ominus}$ is $SO_3^{\ominus}$, $SO_2^{\ominus}$ or $COO^{\ominus}$ and $M^{\oplus}$ is a cation, which comprises reacting a phosphonium compound of the formula

$$(R)_3P^{\oplus}-CH_2-X-CH_2-P^{\oplus}(R)_3$$
$$Q^{\ominus} \qquad\qquad Q^{\ominus}$$

in which X is as defined above, R is alkyl having 1 to 6 C atoms, cycloalkyl having 5 to 7 C atoms, aryl or the group $-NX_1X_2$, in which X_1 and X_2 independently of one another are alkyl having 1 to 4 C atoms or together with the N atom are a 5-membered or 6-membered saturated heterocyclic ring, and $Q^{\ominus}$ is an anion, in the presence of a strongly basic compound in a polar solvent with an aldehyde of the formula

$$M^{\oplus}Y^{\ominus}-R_1-CHO$$

in which R_1, $Y^{\ominus}$ and $M^{\oplus}$ are as defined above, at temperatures between 20° and 150° C. and reacting the resulting reaction product of the formula

$$(R)_3P^{\oplus}-CH_2-X-CH=CH-R_1-Y^{\ominus}$$

after this has been isolated or directly in the reaction mixture, with an aldehyde of the formula Z—CHO at temperatures of 100° to 200° C. in the presence of a strongly basic compound in a polar solvent which boils above 100° C.

4,390,477

DIPHENYL PENTAERYTHRITOL DIPHOSPHONATE

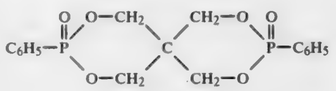
Robert J. Axelrod, Glenmont, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 831,056, Sep. 6, 1977, abandoned. This application Jun. 11, 1982, Ser. No. 387,500

Int. Cl.[3] **C08K** *5/53;* **C08F** *9/79*

U.S. Cl. 260—927 R **1 Claim**

1. A compound of the formula



4,390,478

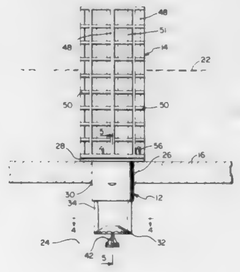
SPRAYING APPARATUS FOR WATER COOLING TOWER

Charles E. Sheperd, Houston, Tex., assignor to C. E. Shepherd Company, Inc., Houston, Tex.

Filed May 12, 1981, Ser. No. 262,990

Int. Cl.[3] **B01D** *47/08*

U.S. Cl. 261—6 **12 Claims**



1. In a cooling tower having fill elements and a substantially flat wet deck positioned above said elements, a plurality of spray assemblies extending through said wet deck over said fill elements, each spray assembly comprising:

a nozzle having a vertically oriented hollow body passing through said wet deck and having a vertical hole passing therethrough;

a dispersion plate positioned below said hole and said wet deck at a position spaced from said body for dispersing liquid passing through said hole;

an aperture formed in said dispersion plate below said hole;

a secondary dispersion surface disposed below said aperture for disrupting a flow of liquid passing through said aperture;

a generally vertical filter screen having an encircling grid-like side wall, a top wall construction and an open bottom, and said grid-like side wall having openings of a sufficient size to control debris passing to said spray nozzle by filtering out debris larger than said openings; and

means for attaching said filter screen in a position such that said side wall surrounds said hole and said filter screen rises above the plane of said wet deck, whereby debris larger than said openings will be washed past said filter screen and not clog said filter screen.

4,390,479

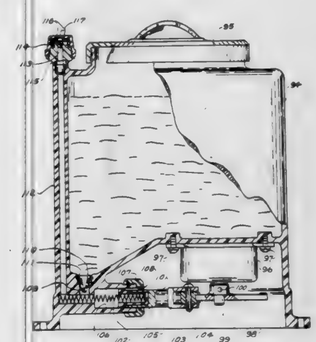
HUMIDIFYING SYSTEM FOR MOBILE VEHICLES

James T. Gates, 1611 Kirkley Rd., Columbus, Ohio 43221

Division of Ser. No. 258,642, Apr. 29, 1981, Pat. No. 4,346,048. This application Jul. 2, 1982, Ser. No. 394,518

Int. Cl.[3] **B60H** *3/02*

U.S. Cl. 261—27 **2 Claims**



1. Apparatus for controlling the humidity of the passenger compartment of a vehicle, said compartment including a conventional cigar lighter outlet comprising, in combination:

a container for holding water, said container including an upper opening for filling purposes and a lower opening for discharge purposes, when inoperative condition:

(a) the upper opening being closed by a lid which allows air to leak into the container,

(b) said lower opening being closed by an undirectional platypus intake valve having means therein to prevent water from discharging except when the pressure within the container exceeds the pressure on the other side of the valve,

(c) said lower opening leading into a passage, said passage leading to a cylinder, a reciprocal piston mounted within said cylinder and reciprocable by a motor and rotatable cam combination,

said motor being controlled by a humidity sensing device and powered by electrical current from a plug inserted into said cigar lighter outlet, said humidity sensing device being connected in series with said motor,

the motor, cam, piston combination when reciprocated in one direction causing water to be discharged from the cylinder and when reciprocated in the other direction creating a vacuum downstream of said valve which causes it to open and water to flow from the container into said cylinder,

the water which is discharged from said cylinder being delivered through a duct to a spray nozzle which sprays a vapor into the compartment.

4,390,480

CARBURETTORS WITH ACCELERATION PUMP

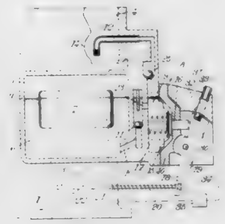
Guy Noisier, Brunoy, France, assignor to Societe Industrielle de Brevets et D'Etudes (SIBE), Neuilly sur Seine, France

Filed Jun. 2, 1981, Ser. No. 269,616

Claims priority, application France, Jun. 19, 1980, 80 13624

Int. Cl.[3] **F02M** *7/08*

U.S. Cl. 261—34 A **2 Claims**



1. A carburettor for an internal combustion engine having an acceleration pump whose variable volume chamber is connected to a float chamber through an inlet passage and to the part of the induction passage of the carburettor situated upstream of an operator operable throttle member through a delivery passage having a delivery check valve, said variable volume chamber being defined by a movable wall mechanically connected to said throttle member by a mechanical linkage and arranged to actuate said movable wall to reduce the volume of the chamber in response to opening movement of said throttle member, wherein a locking device is provided for disabling the acceleration pump as long as the engine is stopped and comprises a ball guided in a passage provided in the body of the carburettor, movable between a rest position in which it projects outside the body into a cavity provided in a lever of said mechanical linkage controlling the pump so as to secure said lever against movement and a disengaged position into which it is brought by said depression.

4,390,481

APPARATUS FOR SPRAYING TRICKLER PLATES WITH COOLING WATER

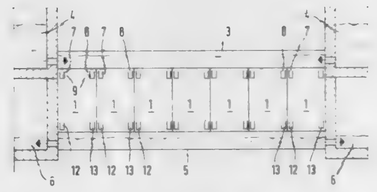
Günter Ernst, Karlsruhe, and Dieter Wurz, Pfinztal, both of Fed. Rep. of Germany, assignors to Aktiebolag Carl Munters, Sollenguna, Sweden

Filed May 28, 1981, Ser. No. 267,995

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1980, 3021202

Int. Cl.[3] **B01F** *3/04*

U.S. Cl. 261—112 **7 Claims**



1. Apparatus for spraying trickler plates with cooling water, which comprises:

a plurality of parallelly disposed trickler plates, each of which has a surface pattern formed in the upper surface thereof for uniform distribution of the water to be cooled; and

means for distributing water to be cooled, said water distri-

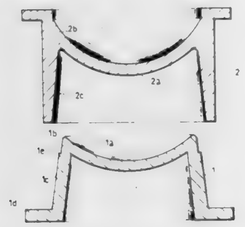
bution means including at least one water distribution channel extending above and parallel to said trickler plates, and at least one water spray channel disposed below said water distribution channel and transversely to said trickler plates, said water spray channel being formed by lugs, each of which at least partially surrounds the periphery of an opening formed in the upper portion of a respective trickler plate and extends outwardly from a surface thereof to bridge the spacing between adjacent trickler plates, said distribution channel having formed in the lower surface thereof at least one opening positioned at the intersection of said distribution channel and said spray channel, said spray channel having an open upper surface to receive water distributed by said distribution channel and gravitating through said distribution channel opening, said spray channel having a plurality of outlet openings formed in at least one lateral side thereof and directed tangentially toward said trickler plates, each outlet opening being positioned in close proximity to the upper surface of a corresponding trickler plate to provide said surface with said water to be cooled.

4,390,482

METHOD FOR MOLDING CONTACT LENSES USING MICROWAVE ENERGY

Bernard Feurer, Saint-Orens-de Gameville, France, assignor to Alcon Pharmaceuticals Limited, Cham, Switzerland

Filed Feb. 27, 1981, Ser. No. 238,963
Claims priority, application France, Feb. 28, 1980, 80 04751
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—1.4 **12 Claims**



1. A method for producing a finished contact lens comprising:

providing a mold of male and female parts substantially transparent to microwave energy within the range of about 10^6 Hz to 10^{11} Hz, said mold having a heat capacity significantly greater than the amount of the composition being molded whereby heat generated during molding may be dissipated without raising the temperature of said mold above about 40° C., each said male and female part having a unitary mold surface rigid at temperatures below about 40° C., said parts being adapted to interfit with the peripheries of said mold surfaces in contact so as to form an airtight closed mold cavity, said unitary male mold surface and said unitary female mold surface alone forming in its entirety the final undeformed shape of the lens to be molded, introducing a polymerizable lens forming monomer into said mold cavity and interfitting said mold parts so as to close said mold cavity, irradiating said monomer containing mold substantially uniformly with microwave energy at a frequency within the range of about 10^6 Hz to 10^{11} Hz and at a power density such as to keep the temperature of said mold below about 40° C. so as to polymerize said monomer without detachment of the lens material from said mold surfaces and without deformation of said mold surfaces, and removing the lens from said mold.

4,390,483

METHOD FOR MAKING UREA PRILLS AND UREA PRILLS OBTAINED BY APPLYING THIS METHOD

Michael H. Willems, and Jan W. Klok, both of Geleen, Netherlands, assignors to Unie Van Kunstmestfabrieken, B.V., Utrecht, Netherlands

Filed Mar. 27, 1981, Ser. No. 248,439
Claims priority, application Netherlands, Mar. 29, 1980, 8001876
Int. Cl.³ B01J *2/04*
U.S. Cl. 264—7 **9 Claims**



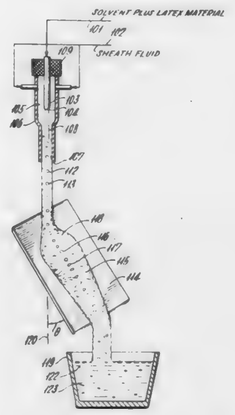
1. In a method for prilling urea wherein molten droplets of substantially water free urea are cooled to solidification by passing said droplets downwardly through a cooling zone countercurrent to a cooling gas in which a seeding material has been dispersed, the improvement comprising maintaining in at least a portion of said cooling zone a cooling gas having dispersed therein crystalline particles, which are capable of initiating urea crystallization, having dimensions of between 2 and 10 microns in a quantity of between about 8 and 25 mg/m³ of said cooling gas at ambient temperature and pressure.

4,390,484

METHODS FOR PROMOTING THE FORMATION OF MICROPARTICLES

Igino Lombardo, Sharon, and Peter J. Natale, Canton, both of Mass., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Division of Ser. No. 258,714, Apr. 29, 1981, Pat. No. 4,375,347.
This application Jul. 26, 1982, Ser. No. 401,671
Int. Cl.³ B01J *2/06*
U.S. Cl. 264—9 **4 Claims**



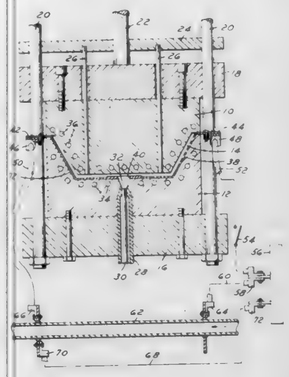
1. A method for forming microparticles from a flowing stream of a core liquid ejected from the exit of a vibrating nozzle concurrently and coaxially into a flowing stream of a sheath liquid forming a composite liquid stream having a longitudinal axis, wherein droplets formed of said liquid within said sheath liquid stream are formed into microparticles, said method of forming microparticles comprising: transferring the momentum of said droplets to a hydrophobic material for generating shear forces which slow the droplets but which do not substantially rupture the droplets to thereby promote the formation of said microparticles from said droplets.

4,390,485

METHOD OF INJECTION MOLDING A FOAMED RESIN PRODUCT HAVING A SMOOTH SURFACE INVOLVING SURFACE HEATING OF THE MOLD BY APPLYING HIGH CURRENT LOW VOLTAGE ELECTRIC POWER

Wen-Jei Yang, 3925 Waldenwood, Ann Arbor, Mich. 48104

Filed Jan. 7, 1982, Ser. No. 337,852
Int. Cl.³ B29D *27/00;* **B29F** *1/022*
U.S. Cl. 264—25 **6 Claims**



1. A process for quickly manufacturing injection molded foamed resin products with a smooth surface finish comprising the steps of:

closing the injection mold,

applying high current low voltage electric power to a heater band on the surface of the mold cavity to substantially increase the mold surface temperature within a matter of seconds or less in those portions of the mold cavity covered by the heater band,

disconnecting the high current low voltage electric power from the heater band,

injecting a molten foamable resin into the mold cavity, the foamable resin thereupon expanding against the hot heater band,

reducing the temperature of the resin in the mold cavity below the heat distortion temperature of the resin by cooling the mold and heater band, and,

opening the injection mold and removing the plastic product.

4,390,486

METHOD AND APPARATUS FOR HEATING A MOLD CAVITY UNIFORMLY

James W. Hendry, Englewood, Tenn., and Je-Chin Han, College Station, Tex., assignors to Ex-Cell-O Corporation, Troy, Mich.

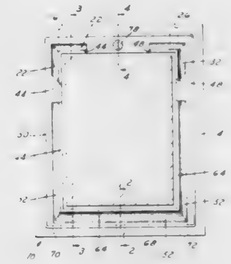
Filed Mar. 19, 1981, Ser. No. 245,563
Int. Cl.³ B29D *27/00;* **B29F** *1/00*
U.S. Cl. 264—45.5 **10 Claims**

1. A process for injection foam molding a thermoplastic plastic resin composition in an injection molding means comprising the steps of:

(a) closing said mold means;

(b) selectively closing a valve means to seal passage means interposed between sprue means and the mold cavity means;

(c) selectively flowing a condensable vapor heated above the heat distortion temperature of said resin into said cavity means along peripheral portions thereof, said valve means closing off the sprue means from the condensable vapor;



(d) selectively opening an outlet means from said cavity to vent condensate from said cavity means along other peripheral portions thereof;

(e) opening said sealing valve means and injecting foamable thermoplastic resin into said sprue means and said resin flowing through said passage means to said cavity;

(f) cooling said mold means by flowing chilled fluid through said mold means;

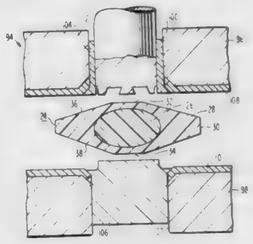
(g) opening said mold upon solidification of said resin and removing solidified part.

4,390,487

METHOD OF MAKING A LAMINATED RECORDED DISC

Kerry D. O'Mara, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 26, 1982, Ser. No. 343,016
Int. Cl.³ B29D *17/00*
U.S. Cl. 264—107 **11 Claims**



1. A method of making a laminated recorded disc which has an outer surface layer of a first thermoplastic material on opposite sides of a thermoplastic core material comprising the step of

(a) forming a preform having a surface layer of the first material completely surrounding the core material,

(b) placing said preform between the platens of a molding press,

(c) heating the platens and closing them against the preform to heat the preform to a temperature at which the materials of the preform flow radially outwardly under the

pressure of the platens until the materials fill the mold cavity provided between the platens to form the laminated disc, and then

(d) cooling the molded disc to harden the materials of the disc.

4,390,488

PRESSING METAL POWDER INTO SHAPES

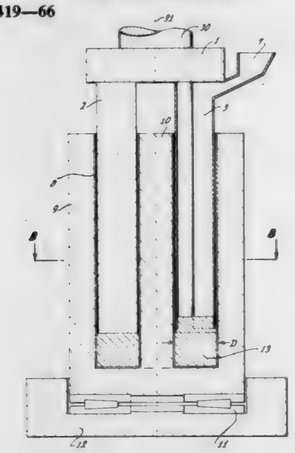
Otto Wessel, Duisburg, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Sep. 29, 1978, Ser. No. 947,099

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 2745020

Int. Cl.³ D04H *1/20*

U.S. Cl. 419—66 **3 Claims**



1. A method for pressing metal powder to form a consolidated body having an axial dimension and at least one dimension transverse to that axial dimension, comprising:

(a) Inserting a sheet metal container into a closely fitted die cavity, the container having an open, axial end and internal axial and transverse dimension, corresponding to said dimensions of said body to be formed;

(b) inserting into the said container an axially alligned press punch having an internal duct for pouring said metal powder therethrough;

(c) pouring a mass of that metal powder through said internal duct to partially fill said container to less than a full azimuthal section of that container and to a height along said axial dimension within that container not exeeding about 1.5 times that transverse dimension;

(d) lifting said press punch within said container after the pouring as per step (c);

(e) rotating said press punch about its axial dimension by less than 360° degrees;

(f) moving said press punch downwardly to compress and bond said powder portion into a consolidated mass as an initial portion of said body to be formed;

(g) lifting said press punch from said compressed mass and pouring through said duct an additional mass of said powder, upon and next to said consolidated mass in what amounts to less than a full azimuthal section and also to a height not exceeding 1.5 times that transverse dimension, following which steps (e) and (f) are repeated;

(h) repeating the steps (g), (e), and (f) to cause said formed body to grow azimuthally and in height while bonding each of the masses of added powder thereto until the final size of the body is attained; and

(i) removing said container with said final body from said die cavity.

4,390,489

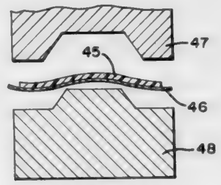
METHOD OF SHAPING THERMOPLASTIC COMPOSITIONS ON ALUMINUM FOIL SUPPORT

Leon Segal, Morristown, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 861,487, Dec. 19, 1977, abandoned, which is a continuation of Ser. No. 321,077, Jan. 4, 1973, abandoned. This application May 27, 1980, Ser. No. 153,244

Int. Cl.³ B29D *3/02;* **B29F** *5/00*

U.S. Cl. 264—126 **18 Claims**



1. A method of making stamped articles of thermoplastic composition having a removably adhering metal foil supporting layer, where the total average thickness of the thermoplastic article plus the metal foil layer is at least ten times as great as the thickness of the metal layer, comprising the steps of:

placing the thermoplastic composition on the metal foil layer prior to heating, the metal foil having a flexural modulus of less than 40×10^6 psi, the thickness of the foil being:

0.0025 inches or less when the total average thickness of the thermoplastic article plus the metal foil is less than 0.060 inches,

0.004 inches or less when the total average thickness is less than 0.125 inches, and

0.006 inches or less when the total average thickness is greater than 0.125;

preheating the metal foil and thermoplastic composition located and supported upon the metal foil to above the softening point of the thermoplastic composition;

transferring the preheated metal foil and thermoplastic composition located and supported upon the metal foil to a stamping press;

stamping the metal foil and thermoplastic composition located on the metal foil in a stamping press whereby the stamped article is formed.

4,390,490

FIBROUS CASING EXTRUSION

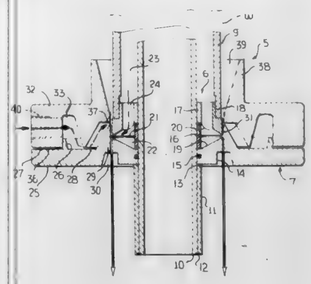
Thomas W. Martinek, Covington, Ind., and George M. Wilmsen, Danville, Ill., assignors to Teepak, Inc., Chicago, Ill.

Filed Apr. 7, 1980, Ser. No. 138,068

Int. Cl.³ B29F *3/10;* **D01F** *2/06*

U.S. Cl. 264—173 **13 Claims**

2. A method of forming sausage casing, said method comprising the steps of providing an elongated coating orifice of a size sufficient to supply coating liquid required for complete penetration of a selected fibrous web, passing the selected fibrous web in tubular form through said coating orifice, directing viscose into the coating orifice through a supply opening into the coating orifice on at least one side of the web, and said coating orifice further being sized sufficient and the volume of viscose supplied being in an amount sufficient to maintain laminar flow of the viscose through the coating orifice alongside said fibrous web whereby said web is fully and substantially instantaneously penetrated by said coating liquid.



4,390,491

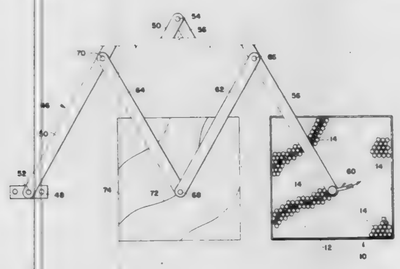
THREE DIMENSIONAL CONTOUR APPARATUS AND METHOD

Jerry D. Woodall, 2010 E. 51st, Apt. A, Tulsa, Okla. 74105

Filed Mar. 25, 1982, Ser. No. 361,593

Int. Cl.³ B29C *1/02*

U.S. Cl. 264—219 **8 Claims**



1. Apparatus for constructing a three dimensional scale model and comprising housing means having a plurality of upright side-by-side tube members disposed therein, the housing having the upper and lower ends thereof open and the lower end thereof disposed in open communication with a liquid reservoir, the lower end of each tube member being disposed in the liquid reservoir, check valve means provided in the lower end of each tube for controlling the admission of the liquid to the interior of the tube in response to selected pressure differentials between the interior of the tube and the ambient pressure acting on the surface of the surrounding liquid reservoir, pantograph type tracing means having means for tracing an original depiction and transmitting a corresponding tracing to the open upper ends of the tubes and admitting a reduced pressure condition to the interior of a tube traced thereby, a second housing means adapted to be supported above the first mentioned housing means, pin means disposed in the second housing in upright side-by-side arrangement in substantial axial alignment with the tubes disposed therebelow and slideably engagable with the respective tube for resting on the surface of any liquid contained therein, the upper ends of the pins projecting above the open upper ends of the tubes to define contours corresponding to the original depiction for receiving mold forming materials thereover, said mold conforming to a scale model of the original depiction.

8. A method of constructing a three dimensional scale model corresponding to an original depiction and comprising the steps of applying selected pressure differentials between liquid columns and a liquid reservoir for controlling the elevation of the liquid in each liquid column, supporting support members from the surface of each liquid column to define a scale model representation corresponding to the original depiction, and forming a material over the support members to provide a mold for the forming of the three dimensional scale model.

4,390,492

GLOVE MOLDING METHOD AND APPARATUS

Leonard D. Kurtz, Woodmere, N.Y., assignor to BioResearch Inc., Farmingdale, N.Y.

Filed Feb. 29, 1980, Ser. No. 125,925

Int. Cl.³ B29C *13/00*

U.S. Cl. 264—255 **3 Claims**



1. A method of manufacturing gloves comprising the steps of forming a glove mold with separate fingers having the tips of the fingers and spaces between the fingers formed as non-rounded, non-horizontal angles surfaces, heating the mold to approximately 140° F., dipping the mold cuff end first into a polymer latex bath so as to provide a polymer coating on the mold, slowly withdrawing the mold fingers first come from the polymer latex bath, cooling the mold, applying a rubber latex coating over the polymer coating, and applying a final polymer latex coating.

4,390,493

PROCESS FOR INJECTION MOLDING A POLYESTER WITH IMPROVED CRYSTALLIZATION THEREOF

Koichi Yasui, and Jinpei Hisano, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 28, 1981, Ser. No. 229,214

Int. Cl.³ B29F *1/08*

U.S. Cl. 264—328.16 **11 Claims**

1. A process for injection molding a polyester by injection molding at a pressure of 450 Kg/cm² or less and at a mold temperature of from about 80° to about 120° C. with improved crystallization thereof, comprising incorporating, prior to molding, in the polyester as a crystallization accelerator a compound containing

(1) at least one aromatic ring selected from the group consisting of a benzene ring, a naphthalene ring and an anthracene ring;

(2) at least one sulfonic acid alkali metal salt group; and

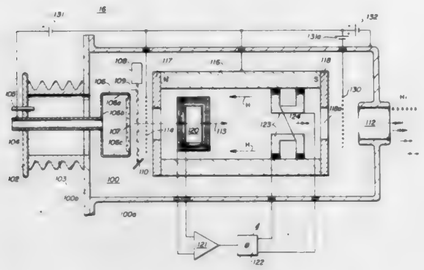
(3) at least one phenolic hydroxy alkali metal salt group in an amount of from 0.05 to 20% by weight based on the weight of the polyester.

4,390,494

DIRECTED BEAM FUSION REACTION WITH ION SPIN ALIGNMENT

Winfield W. Salisbury, Scottsdale, Ariz., assignor to Energy Profiles, Inc., Newtown Square, Pa.

Filed Apr. 7, 1980, Ser. No. 138,139
Int. Cl.³ G21B *1/00*
U.S. Cl. 376—107 **10 Claims**



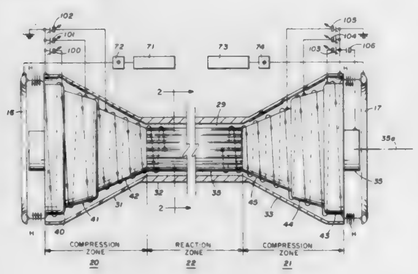
1. In a fusion reaction system where ions from two sources are forced by passage through magnetic fields to travel helically towards each other in opposite senses of rotation and directions at a common radius in a cylindrical annular reaction zone defined by two coaxial spaced apart cylindrical electrodes, the improvement comprising:
(a) establishing a low velocity beam of gaseous ions from each said source;
(b) aligning the spins of said ions while at said low velocity to produce polarized ion beams;
(c) accelerating said ions in said polarized ion beams to fusion velocities for injection into said reaction zone;
(d) applying said magnetic fields to cause opposite directional travel of said ions in said polarized ion beams;
(e) establishing a D.C. radially directed electrostatic field between said coaxial cylindrical electrodes for confining said beams to said helical paths and compressing said ion beams, said D.C. electrostatic field being applied as the confining field free of any applied magnetic field in said annular reaction zone; and
(f) injecting each of said two oppositely directed polarized ion beams into said zone.

4,390,495

CONTROL OF COLLIDING ION BEAMS

Winfield W. Salisbury, Scottsdale, Ariz., assignor to Energy Profiles, Inc., Newtown Square, Pa.

Filed Jan. 19, 1981, Ser. No. 226,453
Int. Cl.³ G21B *1/00*
U.S. Cl. 376—120 **20 Claims**



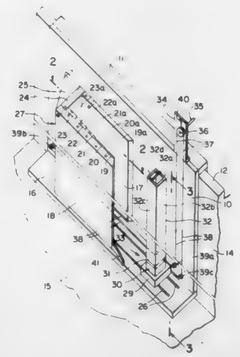
1. In a fusion reaction system where ions from two sources are to rotate about a common axis in opposite senses in orbital paths of common radii in an annular reaction zone of substantially circular symmetry at any given cross-section perpendicular to the axis of said paths and bounded by spaced apart outer and inner coaxial electrode walls for promoting collisions of ions in one beam with ions in the other beam, the improvement comprising:
(a) establishing a beam of gaseous ions from each said source;
(b) applying magnetic fields to direct opposite travel of said ions in said beams toward said orbital paths;
(c) establishing a D.C. radially directed electrostatic field between said electrodes for confining said ion beams to said orbital paths free of negatively charged particles wherein said D.C. field is applied as the confining field free of any applied magnetic confining field;
(d) injecting each of said two oppositely directed ion beams into said zone; and
(e) bunching said ions along said paths to establish a plurality of concentrations of said ions located at spaced points along said paths with said points being the same for ions from both said sources, said plurality of concentrations comprising a plurality of alternating regions of high and low concentrations corresponding to regions of high and low electric fields.

4,390,496

GAGING DEVICE

Donald R. Wozniak, El Cajon, Calif., assignor to Carpenter Technology Corporation, Reading, Pa.

Filed Oct. 31, 1980, Ser. No. 202,616
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—245 **5 Claims**



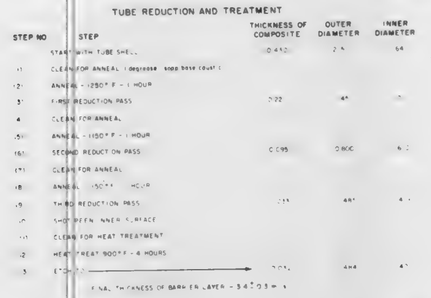
1. In a nuclear reactor having a deep water storage basin for irradiated members including fuel channels, a measuring system for measuring radiation induced fuel channel distortion while the fuel channels are under water in which a gage assembly is suspended under water in said storage basin, said gage assembly comprising a guide plate and a plurality of elongated stepped gage plates supported in juxtaposed spaced relation to said guide plate and thereby forming a plurality of graduated elongated gage spaces decreasing in width in a predetermined direction, and means for moving a fuel channel in said predetermined direction into said gage spaces and then moving it out of the same.

4,390,497

THERMAL-MECHANICAL TREATMENT OF COMPOSITE NUCLEAR FUEL ELEMENT CLADDING

Herman S. Rosenbaum, Fremont, and John H. Davies, San Jose, both of Calif., assignors to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 45,225, Jun. 4, 1979, abandoned. This application Sep. 21, 1981, Ser. No. 304,011
Int. Cl.³ G21C *3/20*
U.S. Cl. 376—414 **25 Claims**



1. A method of making an elongated composite cladding tube for containing nuclear fuel as a fuel element for a nuclear reactor, said cladding tube being formed from a cladding tube shell comprised of a zirconium alloy tube containing constituents other than zirconium in an amount greater than about 5000 parts per million and having a protective barrier layer of zirconium metal containing impurities of less than 5000 parts per million metallurgically bonded to the inside surface thereof, said protective barrier of zirconium metal being about 1 to about 30 percent of the thickness of the composite cladding tube, consisting essentially of the steps of:
(1) reducing the diameter of said cladding tube shell composed of the zirconium alloy tube with the protective zirconium metal layer bonded to the inside surface thereof by cold working in a series of reduction steps to the desired inside diameter and wall thickness;
(2) heat treating said cladding tube shell between each of said reduction steps at a temperature and for a time period sufficient to substantially fully recrystallize said zirconium alloy;
(3) heat treating said cladding tube after the final one of said reduction steps at a lower temperature and for a time period which allows substantially complete recrystallization of said zirconium metal layer and provides a fine-grained microstructure therein and which stress-relieves but does not fully recrystallize said zirconium alloy.

4,390,498

TITANIUM-BORON ADDITIVE ALLOYS

Leon A. Luyckx, 226 Hazelcroft Ave., New Castle, Pa. 16105

Continuation-in-part of Ser. No. 146,452, May 5, 1980, Pat. No. 4,311,523. This application Jul. 17, 1981, Ser. No. 284,198
The portion of the term of this patent subsequent to Jan. 19, 1999, has been disclaimed.
Int. Cl.³ C22C *14/00*
U.S. Cl. 420—420 **10 Claims**

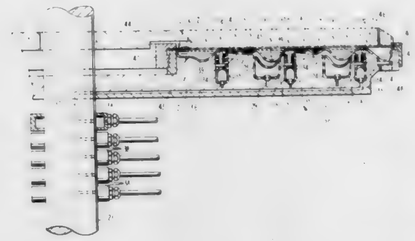
1. A high concentration titanium-boron additive alloy for addition to liquid metal such as steel comprising about 60% to 78% titanium, about 1.3% to 4.5% boron and the balance iron with usual impurities in ordinary amounts.

4,390,499

CHEMICAL ANALYSIS SYSTEM INCLUDING A TEST PACKAGE AND ROTOR COMBINATION

Huntington W. Curtis, Chelsea, N.Y.; Robert M. Kellogg, Washington Crossing, Pa.; Kerry W. Kissinger, Pennington, N.J.; Robert P. Mappes, Cranbury, N.J., and Emery J. Stephans, Plainsboro, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 13, 1981, Ser. No. 292,384
Int. Cl.³ G01N *21/07, 35/00*
U.S. Cl. 422—72 **8 Claims**



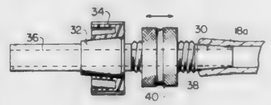
1. Chemical analysis apparatus comprising in combination a rotor having means adapted to support at least one test package therewithin,
at least one test package receivable in said rotor comprising:
a flexible sample compartment for receiving a biological fluid sample therein,
at least one flexible reagent storage compartment disposed in breakable, sealed relationship with said sample compartment,
a flexible cuvette disposed in breakable, sealed relationship with said reagent storage compartment,
said flexible cuvette being positioned outermost in said rotor, and,
means integral with said rotor for rupturing the breakable, sealed relationship between said sample compartment, said reagent storage compartment and said cuvette.

4,390,500

ROTARY EVAPORATOR SHAFT

Robert J. Miskinis, 9758 Airport Vista Rd., Santee, Calif. 92071

Filed Sep. 25, 1981, Ser. No. 305,617
Int. Cl.³ B01D *3/00*; B01L *3/08, 11/00*
U.S. Cl. 422—103 **2 Claims**



1. A joint extractor assembly for separating male to female, ground glass to polymer resin, joints having standard tapers comprising in combination:
a polymer resin hollow cylindrical member having two spaced apart end tapered male joint surfaces and an intermediate threaded portion; said tapered joints being tapered outwardly from the intermediate threaded portion respectively to engage complementary tapered female surfaces of members to be joined;
an extractor nut threadedly mounted, and axially movable in either direction, on the intermediate threaded portion of the cylindrical member;
said extractor nut being dimensioned to initially engage an end of either female member for applying an axially force

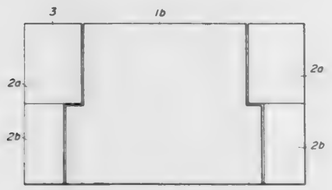
on said female members to enable the male members to be withdrawn from their respective female member.

4,390,501

HIGH TEMPERATURE GAS DISTRIBUTOR FOR FLUIDIZED BED

Kazuo Tanaami, Ebina, and Nobuo Matsuda, Kamakura, both of Japan, assignors to Director-General, Agency of Industrial Science & Technology, Tokyo, Japan

Filed Feb. 25, 1981, Ser. No. 237,942
Claims priority, application Japan, Apr. 9, 1980, 55-45619
Int. Cl.³ F27B *15/10*
U.S. Cl. 422—143 **5 Claims**



1. A high temperaature gas distributor for a fluidized bed, which comprises:

a first pair of electrocast zirconia refractory supporting bricks (**2*a***) each having a plurality of spaced elongated substantially straight grooves (**3**) formed therein at given intervals, said first pair of refractory supporting bricks (**2*a***) being positioned with a space therebetween and with said grooves (**3**) of each said supporting brick facing each other, said first pair of refractory supporting bricks having opposing sides;

a second pair of electrocast zirconia refractory supporting bricks (**2*b***) each having a plurality of spaced elongated substantially straight grooves therein at given intervals, said grooves of said second pair of refractory supporting bricks (**2*b***) being positioned so as to register with portions between the grooves of said first pair of refractory supporting bricks (**2*a***), said second pair of refractory supporting bricks (**2*b***) being positioned with a space therebetween and with said grooves thereof facing each other;

a first plurality of substantially flat generally T-shaped electrocast zirconia brick plates (**1*a***) arranged between said first pair of supporting bricks (**2*a***), a cross portion of each of said first plurality of generally T-shaped plates having substantially straight opposed ends inserted into respective substantially straight grooves (**3**) of said first pair of supporting bricks (**2*a***), said opposed ends of said cross portions of said first plurality of generally T-shaped plates being secured in said grooves of said first pair of supporting bricks (**2*a***) by mortar;

a second plurality of substantially flat generally T-shaped electrocast zirconia brick plates (**1*b***) of reverse shape relative to said first plurality of generally T-shaped electrocast zirconia brick plates (**1*a***), said second plurality of generally T-shaped plates (**1*b***) being arranged between said second pair of supporting bricks (**2*b***), a cross portion of each of said second plurality of generally T-shaped plats having substantially straight opposed ends inserted into respective substantially straight grooves (**3**) of said second pair of supporting bricks (**2*b***), said opposed ends of said cross portions of said second plurality of generally T-shaped plates being secured in said grooves of said second pair of supporting bricks (**2*b***) by mortar;

said first and second pluralities of plates (**1*a*, 1*b***) being alternately arranged adjacent and spaced from each other such that both ends of the cross portion of said T-shaped plates are inserted into respective grooves of respective refractory supporting bricks, the leg portions of said generally T-shaped plates being interposed between the cross portions of the adjacent generally T-shaped plates to provide respective gas flow paths between alternately adjacent, spaced, generally T-shaped first and second plates; and

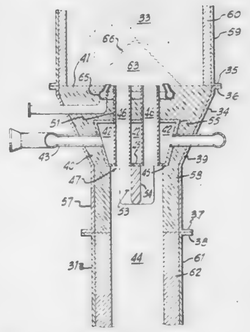
refractory holding bricks (**4**) arranged at at least one side of said at least one pair of said first and second pairs of refractory supporting bricks and adjacent at least one end of said plates in the grooves thereof for holding said refractory supporting bricks and the ends of said plates in relative position.

4,390,502

SOLIDS FEEDING DEVICE AND SYSTEM

Robert J. Gartside, Auburndale, Mass., and Herman N. Woebcke, Stamford, Conn., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Continuation of Ser. No. 165,786, Jul. 3, 1981, Pat. No. 4,352,728, which is a continuation-in-part of Ser. No. 89,951, Oct. 22, 1979, Pat. No. 4,338,187. This application Nov. 6, 1981, Ser. No. 318,926
Int. Cl.³ F27B *15/08*
U.S. Cl. 422—145 **9 Claims**



1. In a TRC apparatus having a tubular thermal cracking reactor, means for delivering hot inert particulate solids to the reactor and means for delivering hydrocarbon feed or hydrodesulfurized residual oil fluid feed to the reactor and wherein the temperature in the reaction chamber cracking zone is between 1300° and 2500° F. and wherein the hydrocarbon fluid feed or the hydrosulfurization residual oil fluid feed along with the entrained inert particulate solids and the diluent gas are passed through the cracking zone for a residence time of 0.05 to 2 seconds, the improvement comprising an apparatus for continuously feeding a regulated flow of particulate solids to the reaction chamber and for admixing the solids rapidly and intimately with the fluid feed introduced simultaneously thereto comprising:

a. an upper reservoir containing the particulate solids;

b. a conduit extending downwardly from the reservoir to the reaction chamber, said conduit being in open communication with the reservoir and the reaction chamber;

c. means for introducing a quantity of aeration gas to the upper reservoir in the vicinity above the conduit, to locally fluidize the solids proximate to the conduit causing said locally fluidized solids and a portion of the aeration gas to flow through the conduit; and

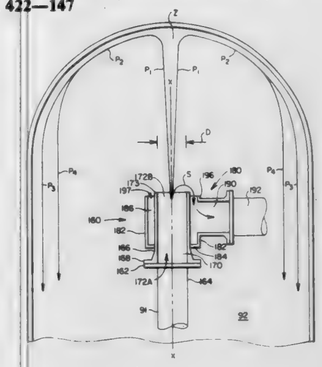
d. means for introducing the fluid feed to the reaction chamber angularly to the flow of solids such that the projected flow of feed intercepts the discharge flow of solids leaving the conduit.

4,390,503

CARBOMETALLIC OIL CONVERSION WITH BALLISTIC SEPARATION

Paul W. Walters, Ashland; Roger M. Benslay, Catlettsburg, and Dwight F. Barger, Russell, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed May 13, 1981, Ser. No. 263,394
Int. Cl.³ F27B *15/08*
U.S. Cl. 422—147 **5 Claims**

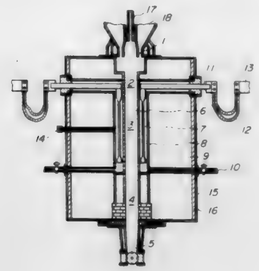


1. Apparatus means for effecting separation of gasiform material from a stream of suspended solid particles comprising in combination,

an elongated tubular riser means open in the upper end thereof,

an upper portion of said riser located within a larger disengagement chamber, the upper open end of said tubular riser means positioned below the top of said disengagement chamber, an annular chamber means open in the upper end thereof about an upper end portion of said tubular riser means, said annular chamber being in open communication in an upper portion with said open end riser means, radiating open end conduit means in open communication with said annular chamber in one end thereof and with means for attaching cyclone separating means on the opposite end thereof either within or external to said disengaging chamber means.

arranged on the outside of at least the heating zone, wherein a horizontal inner cross-sectional area of the preheating zone is



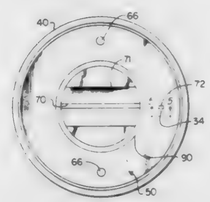
at least about 1.4 times larger than a horizontal inner cross sectional area of the heating zone.

4,390,505

CRYSTAL GROWTH APPARATUS

Aaron S. Taylor, Acton, and Vernon E. White, Needham, both of Mass., assignors to Mobil Solar Energy Corporation, Waltham, Mass.

Filed Mar. 30, 1981, Ser. No. 248,838
Int. Cl.³ C30B *15/34*
U.S. Cl. 422—246 **12 Claims**



4,390,504

APPARATUS FOR PRODUCING SILICON CARBIDE CONSISTING MAINLY OF β-TYPE CRYSTAL

Ryo Enomoto, Ohgaki; Michihiro Yoshioka, Gifu, and Takao Yokoyama, Ohgaki, all of Japan, assignors to Ibigawa Electric Industry Co. Ltd., Gifu, Japan

Continuation of Ser. No. 119,978, Feb. 8, 1980, abandoned. This application Oct. 30, 1981, Ser. No. 316,964
Claims priority, application Japan, Feb. 21, 1979, 54-18463
Int. Cl.³ B01J *19/02*
U.S. Cl. 422—166 **13 Claims**

1. An apparatus for the continuous production of silicon carbide consisting mainly of β-type crystal, the apparatus comprising a gravity-free reaction vessel having an inlet for charging starting materials by contacting said materials with effluent gases, a heating zone, a cooling zone and a closable outlet for a product, sequentially communicated in this order, the heating zone comprising a graphite cylinder, electrically indirect heating means for heating the starting materials, and a heat insulating layer composed essentially of fine powders selected from the group consisting of graphite, carbonaceous materials, and mixtures thereof, said insualting layer being

1. Apparatus for growing a crystalline ribbon-like body from a melt comprising:

a furnace enclosure,

a crucible disposed within the enclosure for containing a melt,

means for applying heat to the melt in the crucible,

a capillary die extending into the crucible and arranged for supplying melt to a meniscus formed between the die and a growing crystalline body,

a heat shield plate surrounding the upper end of the capillary die, said plate extending transversely of the die,

means supporting said heat shield plate for pivotal movement about a horizontal axis so that a portion of the heat shield plate may be raised or lowered relative to the upper end of the capillary die and the effect of movement of the heat shield plate on the thermal field surrounding the upper end of the die is greatest at the outer edge of said portion, and

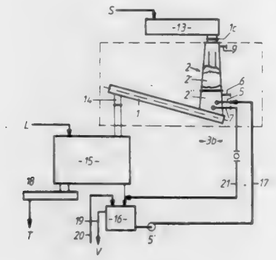
operating means for pivoting said heat shield plate, said operating means comprising actuating means disposed outside of said furnace enclosure.

4,390,506

APPARATUS FOR TROUBLE-FREE AND CONTINUOUS CHARGING OF EXTRACTORS WITH EXTRACTION FEEDSTOCK TO BE TREATED AND WITH EXTRACTANT OR SOLVENT

Heinz O. Schumacher, Höperfeld 26, D-2050 Hamburg 80, Fed. Rep. of Germany

Filed Oct. 22, 1981, Ser. No. 313,956
Int. Cl.³ B01D *11/02*
U.S. Cl. 422—273 **10 Claims**



1. Apparatus for continuous charging of extractors with extraction feedstock and extractant which comprises an extractor, a closed system upstream from the extractor and communicating therewith comprising a vertical feeding and equalizing vessel, means for feeding feedstock to said vessel, and means for feeding extractant to said vessel communicating with said extractor for recycling, and a feed screw as a mixing means for extraction feedstock and extractant communicating with said vessel at the lower region thereof having a discharge outlet to the extractor at the upper region thereof, wherein said screw is inclined with respect to the horizontal and wherein the spacing of the screw turns in the area of the feeding and equalizing vessel increases continuously in the direction towards the discharge outlet to the extractor, said feeding and equalizing vessel being mounted on the screw in a manner providing an airtight seal between the vessel and the screw and providing together with the inclination of the screw that the screw is constantly filled with extraction feedstock and extractant.

4,390,507

PROCESS FOR RECOVERING YTTRIUM AND LANTHANIDES FROM WET-PROCESS PHOSPHORIC ACID

Cornelis A. M. Weterings, Stein, and Johannes A. Janssen, Schinveld, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 24, 1981, Ser. No. 257,116
Claims priority, application Netherlands, Apr. 26, 1980, 8002462
Int. Cl.³ B01D *11/00*; C01F *17/00*; C22B *59/00*; C01B *25/16*
U.S. Cl. 423—8 **8 Claims**

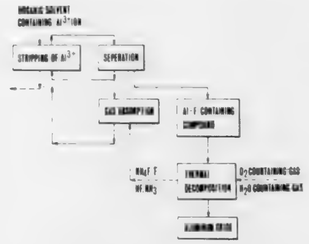
1. Process for recovering yttrium and lanthanides from wet-process phospheric acid comprising the steps of:
(a) adding a flocculant to wet-process phosphoric acid to form a precipitate;
(b) separating out the resultant precipitate;
(c) recovering yttrium and lanthanides from the separated out precipitate by:
(i) treating said precipitate with an acid to form an acid liquid; and
(ii) separating yttrium and lanthanides from the acid liquid.

4,390,508

PROCESS FOR RECOVERY OF ALUMINUM OXIDE FROM ALUMINUM COMPOUNDS CONTAINING FLUORINE

Morio Watanabe, Amagasaki; Sanji Nishimura, Kyoto, and Nobuatsu Watanabe, Nagaokakyo, all of Japan, assignors to Solex Research Corporation of Japan, Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,294
Claims priority, application Japan, Dec. 29, 1980, 55-187599
Int. Cl.³ C01F *7/02*
U.S. Cl. 423—112 **2 Claims**



1. A process for the production of aluminum oxide from $(NH_4)_3AlF_6$ or K_3AlF_6 comprising:
(1) extracting aluminum ions with an organic solvent containing one or more compounds selected from the groups of alkyl phosphoric acid, alkyl and aryl thio phosphoric acid, carboxylic acid and hydroxime together with a petroleum hydrocarbon as a diluent;
(2) preparing crystals of $(NH_4)_3AlF_6$ or K_3AlF_6 by stripping the aluminum ions in the resultant organic solvent from step (1) in contact with an aqueous solution containing one or more compounds selected from the group consisting of NH_4HF_2, NH_4F or KHF_2 and simultaneously regenerating the organic solvent;
(3) separating said crystals;
(4) producing aluminum oxide by heating the resultant crystals from step (3) in a gas stream containing oxygen, H_2O, or H_2; and
(5) recycling the gas generated during the heating of step (4) to the aqueous solution of step (2).

4,390,509

PROCESS FOR MANUFACTURING AMMONIUM PHOSPHATE UTILIZING AN OXALIC ACID ACIDULATING PROCESS

Charles W. Weston, Prarieville, and Padraic S. O'Neill, Baton Rouge, both of La., assignors to Agrico Chemical Company, Tulsa, Okla.

Continuation of Ser. No. 128,885, Mar. 10, 1980, abandoned. This application Apr. 16, 1981, Ser. No. 254,647
Int. Cl.³ C01B *15/16, 25/26*
U.S. Cl. 423—313 **10 Claims**

1. A process for manufacturing ammonium phosphate utilizing synthesis gas, air and phosphate rock comprising:
(a) separating synthesis gas into carbon monoxide and hydrogen fractions;
(b) separating air into nitrogen and oxygen fractions;
(c) reacting the carbon monoxide fraction and the oxygen fraction with water to form oxalic acid;
(d) reacting the hydrogen fraction with the nitrogen fraction to form ammonia;
(e) digesting phosphate rock with an acid solution comprising oxalic acid from step (c) and another acid for increasing the solubility of phosphate rock in the acid solution to form a slurry and thereby produce phosphoric acid and precipitated impurities including calcium oxalate;
(f) separating the precipitated impurities from the phosphoric acid formed in step (e); and

(g) reacting the phosphoric acid from step (f) with the ammonia to form ammonium phosphate.

4,390,510

PROCESS FOR TREATING SPENT SILICON-CONTAINING REACTION MASSES TO PRODUCE HALOSILANES

Alan Ritzer, City Sand Lake, N.Y.; Bakulesh Shah, Corpus Christi, Tex., and Daniel E. Sliva, Scotia, N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Feb. 16, 1982, Ser. No. 349,139
Int. Cl.³ C01B *33/08*
U.S. Cl. 423—342 **23 Claims**

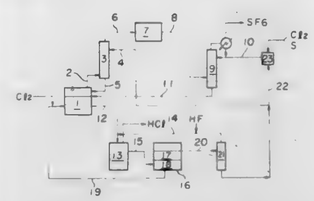
1. A process for preparing monohydrogen trihalosilane from the residual silicon obtained from the preparation of organohalosilanes by a metal-catalyzed direct process, comprising, contacting the residual silicon simultaneously with gaseous hydrogen halide and with gaseous alkyl halide to form a residual silicon contact mass and heating the residual silicon contact mass at a temperature less than the temperature at which substantial alkylation of the residual silicon contact mass occurs, whereby the residual silicon reacts at said temperature to produce reaction products containing monohydrogentrihalosilane.

4,390,511

PROCESS FOR PRODUCING SF_6 THROUGH SF_5CL

Yoshio Oda; Shinsuke Morikawa; Masaaki Ikemura; Tomio Yarita; Makoto Noshiro; Isao Gotoh, all of Yokohama; Yukio Jitsugiri, Yokosuka; Shigeaki Yonemori; Kimihiko Sato, both of Yokohama, and Keiichi Uchida, Kawasaki, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jul. 27, 1981, Ser. No. 286,887
Claims priority, application Japan, Aug. 12, 1980, 55-109809; Aug. 12, 1980, 55-109810; Sep. 26, 1980, 55-132829
Int. Cl.³ C01B *7/24, 17/45, 17/46*
U.S. Cl. 423—469 **7 Claims**



1. A process for producing SF_6 which comprises: (a) reacting a member of the group consisting of sulfur, sulfur chloride and sulfur tetrafluoride with chlorine and an amine/hydrogen fluoride complex to produce SF_5Cl; and (b) pyrolysing said SF_5Cl to produce SF_6.

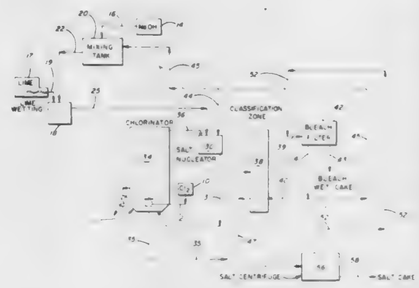
4,390,512

PROCESS FOR PRODUCING CALCIUM HYPOCHLORITE

Clifford E. Loehr, Norton; Roger A. Crawford, Wadsworth; John E. Carbaugh, Akron, and Cletus N. Welch, Clinton, all of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 269,241, Jun. 1, 1981, Pat. No. 4,328,200. This application Feb. 22, 1982, Ser. No. 350,653
The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.
Int. Cl.³ C01B *11/06*
U.S. Cl. 423—474 **22 Claims**

1. A process for preparing calcium hypochlorite which comprises,
(a) admixing with agitation in the absence of added elemental chlorine:
(1) aqueous solution substantially saturated with sodium chloride and calcium hypochlorite, and
(2) sodium hydroxide in amounts at least sufficient to react with substantially all of the calcium hypochlorite in said aqueous solution, thereby to form an aqueous slurry of precipitated lime,
(b) admixing lime with aqueous slurry obtained in step (a), thereby to form an aqueous lime slurry,
(c) adding further sodium hydroxide, when required, to said aqueous lime slurry, in amounts required to provide in combination with the sodium hydroxide added in step (a) substantially stoichiometric amounts thereof based on the calcium oxide content of the lime added in step (b),
(d) diluting aqueous lime slurry containing said substantially stoichiometric amount of sodium hydroxide with aqueous salt solution saturated with calcium ion and sodium chloride in amounts at least sufficient to dilute the sodium hydroxide therein,



(e) adding elemental chlorine to the diluted aqueous lime slurry of step (d) in the presence of a seed bed of sodium chloride crystals and neutral calcium hypochlorite crystals at temperatures at which loss of calcium hypochlorite by accelerated decomposition is avoided, thereby forming further neutral calcium hypochlorite crystals and sodium chloride crystals in aqueous chlorinator liquor, said sodium chloride crystals being significantly larger than the calcium hypochlorite crystals,
(f) segregating said larger crystals of sodium chloride from said crystals of calcium hypochlorite to form an aqueous slurry rich in crystals of calcium hypochlorite and an aqueous slurry rich in crystals of sodium chloride, and
(g) separating aqueous slurry rich in calcium hypochlorite crystals into a wet cake of calcium hypochlorite and mother liquor substantially saturated with sodium chloride and calcium hypochlorite.

4,390,513

PROCESS FOR MANUFACTURING FIBROUS POTASSIUM TITANATE

Yoshinori Fujiki, Sakura, Japan, assignor to National Institute for Researches in Inorganic Materials, Ibaraki, Japan

Filed Feb. 25, 1982, Ser. No. 352,217
Claims priority, application Japan, Oct. 16, 1981, 56-165358
Int. Cl.³ C01G *23/00*
U.S. Cl. 423—598 **2 Claims**

1. A process for manufacturing fibrous potassium titanate, which comprises heating to a temperature of 950° C. to 1300° C. potassium titanate of the general formula $K_2O.nTiO_2$ in which n is from 3 to 5, or a mixture of materials from which potassium titanate is formed, to form by decomposition a solid phase of potassium hexatitanate and a liquid phase of potassium titanate of the general formula $K_2O.nTiO_2$ ($2 \leqq n \leqq 3$), cooling said potassium hexatitanate and potassium titanate slowly to a temperature of 900° C. to 950° C., and controlling the rate of said cooling to cause a bonding of said potassium hexatitanate

and said potassium titanate to form a solid phase of potassium tetratitanate fibers, whereby potassium titanate according to said general formula in which n is from 4 to 6 is caused to grow in single crystal form.

4,390,514

METHOD OF PREPARING CHALOCOGENIDES OF GROUP VIII BY LOW TEMPERATURE PRECIPITATION FROM NONAQUEOUS SOLUTION, THE PRODUCTS PRODUCED BY SAID METHOD AND THEIR USE AS CATALYSTS

Russell R. Chianelli, North Branch, and Theresa A. Pecoraro, Middletown, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 37,390, May 9, 1979, abandoned, which is a continuation of Ser. No. 797,011, May 7, 1977, abandoned.
This application Nov. 12, 1980, Ser. No. 206,053
Int. Cl.³ C01B *17/20, 19/00;* **C01G** *1/12, 55/00;*
U.S. Cl. 423—509 **17 Claims**

1. A method for the preparation of chalcogenides of the formula MX_y wherein M is a metal selected from the group consisting of ruthenium, rhodium, iridium and osmium, X is selected from the group consisting of sulfur, selenium, tellurium and mixtures thereof, and y is a number ranging from about 0.1 to about 3, which comprises reacting neat a solution of ruthenium, rhodium, iridium or osmium with a source of sulfide, selenide or telluride ion selected from the group consisting of K_2X, KHX, Li_2X, LiHX, $(NH_4)_2X$, $(NH_4)HX$, Na_2X, NaHX, $(RNH_3)_2X$, $(R_1R'NH_2)_2X$, $(R_1R_1'R''NH)_2X$ wherein R, R′ and R″ are the same or different and are selected from the group consisting of C_1 to C_{20} alkyl and C_6 to C_{20} alkyl groups, and X is sulfur, selenium or tellurium, at a temperature of from −78° to 400° C. for a time sufficient for reaction to occur.

4,390,515

METHOD AND APPARATUS FOR RECOVERING ELEMENTAL SULFUR

Arthur L. Vincent, Monrovia, Calif., assignor to International Telephone & Telegraph, New York, N.Y.

Filed Jul. 18, 1979, Ser. No. 58,828
Int. Cl.³ C01B *17/02*
U.S. Cl. 423—573 G **5 Claims**

1. Apparatus for recovering elemental sulfur, said apparatus comprising: a first source of a first gas including hydrogen sulfide (H_2S); a sulfur recovery plant having a combustion chamber, and a reaction chamber connected from said combustion chamber; an inlet conduit connected from said first source to said combustion chamber to deliver the entire flow of said first gas from said first source to said combustion chamber; a second source of a second gas including oxygen (O_2); detector means connected from said inlet conduit to produce an output signal proportional to the total mass flow rate m_b of H_2S in said inlet conduit; and source means connected from said detector means, said source means being responsive to said output signal to cause an oxygen mass flow rate m_a from said second source independent of all outputs of said reaction chamber, said mass flow rate m_a also being such that

$$m_a = 8m_b/17,$$

the combustion of said H_2S being incomplete in that said mass flow rate m_a as defined above is only one-third of the stoichiometric rate for complete combustion, said incomplete combustion resulting in a flow of H_2S through said combustion chamber, said reaction chamber being connected from said combustion chamber to receive said unburnt H_2S passing through said combustion chamber and to receive combustion products resulting from burning only a portion of said H_2S, burning of one-third H_2S taking place in said combustion chamber according to the equation

$$H_2S + 3/2O_2 \rightarrow SO_2 + H_2O,$$

where SO_2 is sulfur dioxide, and H_2O is water, reaction of said unburnt H_2S with said SO_2 taking place in said reaction chamber according to the equation

$$2H_2S + SO_2 \rightarrow 3S + 2H_2O,$$

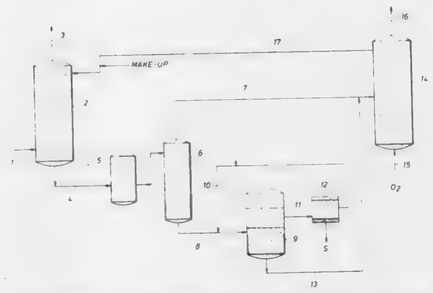
where S is elemental sulfur.

4,390,516

SULFUR SEPARATION PROCESS

George C. Blytas, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 18, 1981, Ser. No. 322,486
Int. Cl.³ C01B *17/04;* **B01D** *53/34*
U.S. Cl. 423—573 R **12 Claims**



1. A process for the removal of H_2S from a sour gaseous stream comprising:

(a) contacting the sour gaseous stream in a contacting zone with an aqueous reaction solution at a temperature below the melting point of sulfur, the mixture comprising an effective amount of an oxidizing reactant selected from the group consisting of oxidizing polyvalent metallic ions and oxidizing polyvalent metal chelate compounds, and mixtures thereof, to produce a sweet gas stream and an aqueous admixture containing sulfur and reduced reactant;

(b) removing aqueous admixture from the contacting zone;

(c) separating removed aqueous admixture into an aqueous reactant solution having reduced sulfur content and an aqueous reactant slurry containing increased sulfur content; and regenerating aqueous reactant solution having reduced sulfur content producing regenerated reaction solution, and returning regenerated reaction solution to the contacting zone;

(d) concomitantly contacting aqueous reactant slurry in an extraction zone with a composition selected from compounds having the formula $C_nH_{2n+1}OH$, wherein n is a number from 4 through 18, and mixtures thereof, in an amount sufficient to remove at least the bulk of the sulfur from said slurry and form a separate phase containing sulfur and said composition, and forming a three phase mass comprising an upper phase containing solid sulfur and said composition, and a lower phase in contact with said upper phase, said lower phase comprising aqueous admixture containing reduced reactant;

(e) separating at least a portion of the upper phase, and recovering sulfur from the portion separated;

(f) separating aqueous admixture containing reduced reactant from the lower phase, and regenerating said separated aqueous admixture in a regeneration zone to produce an aqueous admixture containing a regenerated reactant;

(g) returning aqueous admixture from the regeneration zone to the contacting zone.

4,390,517

METHOD, COMPOSITION AND KIT FOR STABILIZING RADIOLABELED COMPOUNDS

Robert E. O'Brien, Belmont, and Nathan R. Tzodikov, Milton, both of Mass., assignors to New England Nuclear Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 105,272, Dec. 19, 1979. This application Aug. 15, 1980, Ser. No. 178,609
Int. Cl.³ A61K *43/00, 49/00;* **B65D** *71/00*
U.S. Cl. 424—1 **35 Claims**

14. A method of stabilizing a solution of a radiolabeled organic compound that is subject to radiolytic degradation against such degradation during storage and shipment, of said radiolabeled organic compound, said method comprising adding to said solution a stabilizing compound, which is not radiolabeled, selected from a water soluble amine having at least one alpha hydrogen on a carbon atom adjacent a nitrogen atom selected from the group consisting of:

(a) RNH_2,
(b) RR^1NH,
(c) RR^1R^2N, and
(d) $R^3R^4N—R—NR^3R^4$,

or quaternized salts thereof, wherein:

R, R^1 and R^2 are the same or different and are alkyl, cycloalkyl, alkenyl, hydroxyalkyl, aminoalkyl, thioalkyl, carboxyalkyl or keto alkyl of one to eight carbon atoms, or R and R^1 of RR^1NH are combined to form a chain of four to six carbon atoms attached at each end to N, or one of the carbon atoms of the chain may be replaced by O or N; and

R^3 and R^4 are the same or different and are hydrogen or R, R^1, or R^2; wherein the stabilizing compound is not the unlabeled form of the radiolabeled compound;

with the proviso that when said stabilizing compound is ethylene diaminetetraacetic acid, a second stabilizing compound is added to said solution.

4,390,518

METHOD FOR THE DETERMINATION OF LEUKEMIC CELLS

Wolfgang Fischer, Darmstadt, and Renate Link, Reinheim, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Apr. 16, 1981, Ser. No. 254,723
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014563
Int. Cl.³ G01N *1/30*
U.S. Cl. 424—3 **6 Claims**

1. A supravital method for the detection and for the differential diagnostic determination of leukemic cells in a sample of leucocytes, comprising treating the leucocytes with a supravital dye, the dye being a phthalein or sulphophthalein triphenylmethane dye and evaluating the resultant different staining of healthy and leukemic cells, the healthy cells remaining colorless, while the leukemic cells are stained.

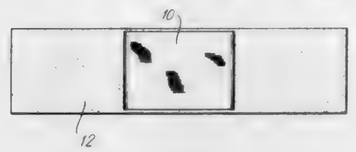
4,390,519

BANDAGE WITH HEMOSTATIC AGENT AND METHODS FOR PREPARING AND EMPLOYING THE SAME

Philip N. Sawyer, 7600 Ridge Blvd., Brooklyn, N.Y. 11209

Continuation-in-part of Ser. No. 171,191, Jul. 22, 1980, which is a continuation-in-part of Ser. No. 907,899, May 19, 1978, Pat. No. 4,238,480. This application Sep. 2, 1980, Ser. No. 182,969
The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.
Int. Cl.³ A61L *15/00*
U.S. Cl. 424—28 **6 Claims**

1. A method comprising modifying one of the group consisting of a water soluble collagen substance or a water soluble collagen-like substance by dissolving the substance in water and modifying the thusly dissolved substance to render the surface charge thereof effectively more positive than prior to modification while retaining the water solubility of the substance, and freezing and drying the thusly modified substance in a bandage.



4,390,520

ANTIPHLOGISTIC ANALGESIC ADHESIVE

Hidetaka Nagai, Hachioji; Yasushi Wada, Tachikawa; Ichiro Kobayashi, Osaka; Mitsuru Tamada, Osaka; Keiichi Ushiyama, Osaka, and Toshiyuki Yamamoto, Osaka, all of Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaki and Kawa Co., Ltd., Aichi, both of, Japan

Filed Mar. 30, 1981, Ser. No. 248,912
Claims priority, application Japan, Oct. 30, 1980, 55-153407
Int. Cl.³ A61F *13/00;* **A61K** *9/70;* **A61L** *15/00*
U.S. Cl. 424—28 **13 Claims**

1. An antiphlogistic analgesic adhesive which comprises

a flexible polymer substrate and

an indomethacin containing pressure-sensitive adhesive layer closely contacting said flexible substrate, wherein said pressure-sensitive adhesive layer comprises a mixture of

(a) indomethacin in an amount of about 5–100 mg per gram of a copolymer, where the copolymer is,

(b) a copolymer of (i) an alkyl acrylate having 4 to 11 carbon atoms in the alkyl moiety and (ii) a functional monomer having a functional group in the molecule thereof and/or a vinyl monomer, which has pressure-sensitive adhesive properties at room temperature, said copolymer having an average molecular weight of about 20,000 to 500,000, and

(c) an absorption accelerating assistant consisting of an aliphatic acid ester and polyoxyethylene glycol polyhydric alcohols, which has a solubility parameter (SP) of 11 or less and has skin diffusibility.

4,390,521

ARTIFICIAL RED CELLS

Thomas A. Davis, Scotch Plains, and William J. Asher, Fanwood, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 11, 1980, Ser. No. 139,479
Int. Cl.³ A01N *25/28;* **A61K** *9/50, 9/64;* **B01J** *13/02*
U.S. Cl. 424—36 **13 Claims**

1. Artificial red cells comprising microdroplets of hemoglobin solution encapsulated in membranes of polymerized hemoglobin, wherein said hemoglobin has been polymerized with a water soluble cross-linking agent.

4,390,522

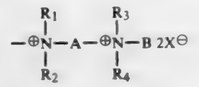
COSMETIC AGENTS BASED ON CATIONIC POLYMERS, COSMETIC COMPOSITIONS CONTAINING THE SAME AND THE USE OF SAID COSMETIC AGENTS

Bernard Jacquet, Antony; Gerard Lang, Epinay-sur-Seine; Alain Malaval, Aulnay sous Bois; Serge Forestier, Claye Souilly, and Do Le Trung, Drancy, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Dec. 17, 1980, Ser. No. 217,401
Claims priority, application France, Dec. 21, 1979, 79 31429
Int. Cl.³ A61K *7/00, 7/04, 7/06, 7/09*
U.S. Cl. 424—45 **36 Claims**

1. A cosmetic composition for application to the hair, skin or nails comprising in a cosmetic vehicle selected from the group

consisting of water, a lower alkanol and a dilute lower alkanol solution, 0.01 to 15 percent by weight of said composition of a cationic polymer having units of the formula



and having a molecular weight between 1,000 and 50,000, wherein

R_1, R_2, R_3 and R_4 each independently represent alkyl or hydroxyalkyl, wherein the alkyl of each has 1–20 carbon atoms,

A is alkylene, hydroxyalkylene, $-(CH_2)_n-Z-(CH_2)_n-$ wherein Z is oxygen and n is a whole number ranging from 2 to 10, or $-EO)_{m_1}(DO)_mD$ wherein E represents alkylene or hydroxyalkylene containing 1–10 carbon atoms, D represents a bivalent hydrocarbon containing 1 to 5 carbon atoms, m_1 represents O or 1, m represents 1–600 with the proviso that m is greater than 1 when $m_1=O$, D_1 represents E when $m_1=1$, and D_1 represents D when $m_1=O$,

B represents $-EO_{m1}(DO)_mD_1$, wherein E, D, D_1, m and m_1 are defined above, and

$X^{\ominus}$ represents a halide anion.

4,390,523

SORBOSE FOR INHIBITING FERMENTATION ACIDS IN THE MOUTH

Michel Huchette, and Patrick Leroy, both of Lestrem, France, assignors to Roquette Freres, France

Continuation of Ser. No. 838,833, Oct. 3, 1977, abandoned, which is a continuation of Ser. No. 678,236, Apr. 19, 1976, abandoned, which is a continuation of Ser. No. 534,558, Dec. 19, 1974, abandoned, which is a continuation of Ser. No. 400,017, Sep. 24, 1973, abandoned. This application Jan. 4, 1980, Ser. No. 109,512

Claims priority, application France, Sep. 26, 1972, 72.34057

Int. Cl.³ A61K *9/68, 31/70*

U.S. Cl. 424—48 **1 Claim**

1. In a method of inhibiting the production of fermentation acids in the mouth and the subsequent lowering of the pH to 5.0 to 5.5 that occurs during use of chewing gum by the fermentation of oral bacteria of sucrose contained in said chewing gum as a sweetening agent, the improvement comprising substituting sorbose for said sucrose.

4,390,524

MAKEUP COMPOSITIONS IN CAKE FORM INCLUDING FIBROIN-COATED AND OILY MATERIAL-COATED PIGMENTS

Toshihiro Nasuno, Odawara, and Kiyoshi Otoi, Nagano, both of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Mar. 11, 1981, Ser. No. 242,803

Claims priority, application Japan, Mar. 15, 1980, 55-33302

Int. Cl.³ A61K *7/02, 7/021, 7/025, 7/035*

U.S. Cl. 424—63 **19 Claims**

1. A cosmetic makeup composition consisting essentially of a homogenous mixture of from 10 to 90% by weight of finely divided, fibroin-coated, pigment particles and finely divided, oily material-coated, pigment particles, said fibroin-coated, pigment particles consisting essentially of first carrier pigment particles each substantially uniformly coated with a film of regenerated fibroin wherein the amount of said regenerated fibroin is from 2 to 100% by weight based on the weight of said first carrier pigment particles, at least 50% by weight of said regenerated fibroin consisting of hot-water-insoluble fibroin having the β-configuration, and said oily material-coated, pigment particles consisting essentially of second carrier pigment particles the surfaces of which are substantially uniformly coated with substantially water-insoluble, oily material suitable for use in cosmetics, the amount of said oily material being from 10 to 15% by weight based on the weight of said second carrier pigment particles, said composition being in the form of a compressed cake.

4,390,525

KERATIN HYDROLYZATE USEFUL AS HAIR FIXATIVES

Issei Yoshioka, Hirakata, and Yoichi Kamimura, Osaka, both of Japan, assignors to Seiwa Kasei Co., Ltd., Higashi, Japan

Division of Ser. No. 78,850, Sep. 25, 1979, Pat. No. 4,279,996. This application Jan. 6, 1981, Ser. No. 222,381

Claims priority, application Japan, Oct. 9, 1978, 53-124289; Dec. 1, 1978, 53-149279; Dec. 29, 1978, 53-163085

Int. Cl.³ A61K *7/09, 47/00, 7/11*

U.S. Cl. 424—71 **4 Claims**

1. An aqueous cosmetic composition intended for application to the hair containing a water-soluble enzymatic hydrolysis product of reduced keratin prepared by reducing keratin in an aqueous solution of a reducing agent selected from the group consisting of mercaptan and sulfides under alkaline conditions, removing the reducing agent from the resulting reduction product and then subjecting the reduction product to enzymatic hydrolysis in an aqueous medium in the presence of an enzyme capable of hydrolyzing protein, to give a water-soluble enzymatic hydrolysis product of reduced keratin having at least two mercapto groups in one molecule and having an average molecular weight of 2,000 to 20,000.

4,390,526

PHARMACEUTICAL AGENTS FOR THE TREATMENT OF SICKLE CELL DISEASE

Marian Gorecki; Clemenceau T. A. Acquaye; Meir Wilchek, all of Rehovot, Israel, and Alexander Rich, Cambridge, Mass., assignors to Yeda Research & Development Co. Ltd., Rehovot, Israel

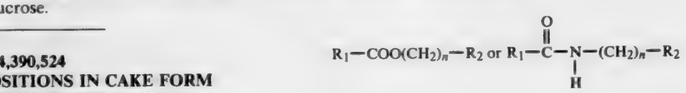
Filed Jun. 6, 1980, Ser. No. 157,107

Claims priority, application Israel, Jun. 21, 1979, 57609

Int. Cl.³ A61K *37/00*

U.S. Cl. 424—177 **5 Claims**

1. A pharmaceutical composition for preventing the sickling of erythrocytes during sickle cell crises, and for desickling of sickle cells of patients afflicted by sickle cell disease, comprising a pharmaceutical excipient, and, as active ingredient, an effective amount of the formula



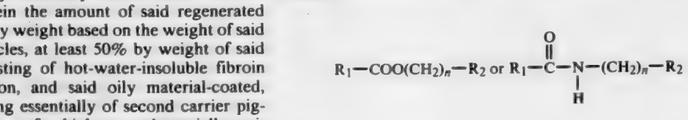
wherein

R_1 is a residue selected from the group consisting of naturally occurring and modified amino acids and from peptides containing said amino acids;

n is an integer of 1 to 5; and

R_2 is selected from the group consisting of unsubstituted thienyl, morpholine, pyridine, and pyrrolidone rings.

3. A method for preventing the sickling of erythrocytes during sickle cell crises, and for desickling of sickle cells of patients afflicted by sickle cell disease, comprising administering to such patients an effective amount of a compound of the formula



wherein

R_1 is a residue selected from the group consisting of naturally occurring and modified amino acids and from peptides containing said amino acids;

n is an integer of 1 to 5; and

R_2 is selected from the group consisting of unsubstituted para-nitro substituted phenyl, thienyl, morpholine, pyridine and pyrrolidone rings.

4,390,527

PHARMACOLOGICALLY ACTIVE PEPTIDES AND MEDICAMENTS CONTAINING THE SAME

Victor Brantl, Frauenplatz 10, 8000 München 2; Agnes Henschen, Am Klopferspitz, 8033 Martinsried; Hansjörg Teschemacher, Frankfurterstrasse 107, 6300 Giessen, and Friedrich Lottspeich, Am Klopferspitz, 8033 Martinsried, all of Fed. Rep. of Germany

PCT No. PCT/DE80/00126, § 371 Date Apr. 29, 1981, § 102(e) Date Apr. 29, 1981, PCT Pub. No. WO81/00712, PCT Pub. Date Mar. 19, 1981

Continuation-in-part of Ser. No. 229,577, Jan. 22, 1981. This PCT application Sep. 4, 1980, Ser. No. 258,617

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2936099

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **7 Claims**

1. Pharmacologically active peptides of the following formulas:

Tyr¹-X-A,

Tyr¹X-A-Pro,

Tyr¹-X-A-Pro-B,

Tyr¹-X-A-Pro-B-Pro,

Tyr¹-X-A-Pro-B-Pro-C,

Tyr¹-X-A-Pro-B-Pro-C-Pro and

Tyr¹-X-A-Pro-B-Pro-C-Pro-D

wherein X represents D-proline, D-alanine, D-threonine or D-valine; A represents phenylalanine, proline and tyrosine B represents L-glycine, proline and tyrosine, C represents L-isoleucine and D represents L-asparagine, proline and isoleucine.

4,390,528

TUFTSINYL-TUFTSIN

Victor A. Najjar, Cohasset, Mass., assignor to Research Corporation, New York, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,786

Int. Cl.³ A61K *37/02;* **C07C** *103/52*

U.S. Cl. 424—177 **12 Claims**

1. Therapeutically useful non-antigenic polypeptides selected from the group consisting of:

L-Thr-L-Lys-L-Pro-L-Arg-L-Thr-L-Lys-L-Pro-L-Arg,

D-Thr-L-Lys-L-Pro-D-Arg-D-Thr-L-Lys-L-Pro-D-Arg,

D-Thr-L-Lys-L-Pro-L-Arg-L-Thr-L-Lys-L-Pro-D-Arg

and pharmacologically acceptable salts and derivatives thereof.

4,390,529

S-(TERTIARY ALKYL) ALKYLPHOSPHONOAMIDODITHIOATES AND THEIR USE AS INSECTICIDES AND NEMATOCIDES

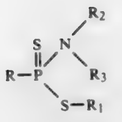
Mohamed A. Fahmy, Princeton, N.J., assignor to Rhone-Poulenc Agrochimie, Lyons, France

Filed Dec. 31, 1980, Ser. No. 221,647

Int. Cl.³ A01N *57/28;* **C07F** *9/24*

U.S. Cl. 424—220 **26 Claims**

1. A method for controlling insects or nematodes which comprises applying thereto or to their habitat, in an amount pesticidal to said insects or nematodes, a compound of the formula



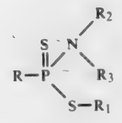
in which

R is alkyl of 1 to 8 carbon atoms, haloalkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms, haloalkenyl of 2 to 8 carbon atoms, alkynyl of 2 to 8 carbon atoms, or haloalkynyl of 2 to 8 carbon atoms;

R_1 is tertiary alkyl of 4 to 8 carbon atoms; and

R_2 and R_3, independently, are hydrogen, alkyl of 1 to 8 carbon atoms, cyclopentyl or cyclohexyl.

7. A compound of the formula



in which

R is alkyl of 1 to 8 carbon atoms, haloalkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms, haloalkenyl of 2 to 8 carbon atoms, alkynyl of 2 to 8 carbon atoms, or haloalkynyl of 2 to 8 carbon atoms;

R_1 is tertiary alkyl of 4 to 8 carbon atoms; and

R_2 and R_3, independently, are hydrogen, alkyl of 1 to 8 carbon atoms, cyclopentyl or cyclohexyl.

4,390,530

3-DEOXY-Δ^{15}-STEROIDS

Helmut Hofmeister; Rudolf Wiechert; Klaus Annen; Henry Laurent, and Sybille Beier, all of Berlin, Fed. Rep. of Germany, assignors to Schering, A.G., Berlin, Fed. Rep. of Germany

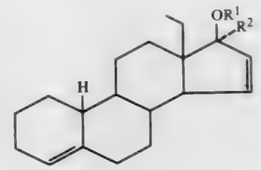
Filed Feb. 11, 1981, Ser. No. 233,350

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1980, 3005374

Int. Cl.³ A61K *31/56;* **C07J** *11/00, 17/00*

U.S. Cl. 424—238 **12 Claims**

1. A 3-deoxy-Δ^{15}-steroid of the formula



wherein

R^1 is hydrogen or an acyl group of a C_{1-15} hydrocarbon carboxylic acid, and

R^2 is ethynyl, chloroethynyl or propynyl.

12. A method of achieving contraceptive effects in a patient in need of the same comprising administering a progestationally effective amount of a compound of claim 1.

4,390,531

METHOD OF CONTRACEPTION USING PEAK PROGESTOGEN DOSAGE

Richard A. Edgren, Woodside, Calif., assignor to Syntex Pharmaceuticals International Ltd., Hamilton, Bermuda

Filed Aug. 10, 1981, Ser. No. 291,533
Int. Cl.³ A01N *45/00;* **A61K** *31/56*
U.S. Cl. 424—239 **9 Claims**

1. A method of contraception in the female human, which method comprises administering to a subject in need of, or desiring, such an effect, a daily sequence of unit dosages over a repeating cycle, which dosage sequence comprises, for one cycle:

(a) administering, as phase one, for a period of 5–8 days, daily dosages of a combination of an estrogen and a progestogen, wherein the amounts of estrogen and progestogen correspond in estrogenic activity to about 20–40 μg of ethinyl estradiol, and in progestogenic activity to about 0.3–0.8 mg of norethindrone, followed by:

(b) administering, as phase two, for a period of 7–11 days, the same dosage of estrogen and twice the dosage of progestogen each day as was administered in phase 1, followed by:

(c) administering, as phase three, for a period of 3–7 days, the same dosage of estrogen and the same dosage of progestogen each day as was administered each day in phase one, followed by;

(d) administering, as phase four, for a period of 6–8 days, no therapeutically active dosage, i.e. either no treatment or a placebo each day,

with the proviso that the total number of days in phases one through three is 21.

4,390,532

TOPICAL COMBINATIONS OF AN α-ESTRADIOL WITH A METHYL XANTHINE

Günter Stüttgen, and Hans Schaefer, both of Berlin, Fed. Rep. of Germany, assignors to Dr. Carl Hahn, G.m.b.H., Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 750,086, Dec. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 509,369, Sep. 26, 1974, abandoned. This application Mar. 8, 1978, Ser. No. 884,452
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1973, 2350315
Int. Cl.³ A61K *31/56, 31/70, 31/52*
U.S. Cl. 424—240 **12 Claims**

1. A method for treating a subject suffering from reversible androgen baldness which comprises topically applying to the baldness site of said subject a composition comprising effective combined amounts of an α-estradiol compound and a methyl xanthine compound.

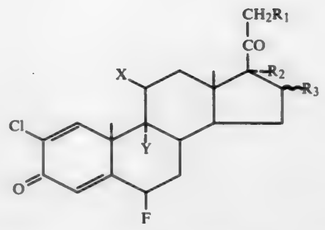
4,390,533

STEROIDS AND PROCESS FOR PREPARING THE SAME

Mario Riva, and Luciano Toscano, both of Milan, Italy, assignors to Pierrel, S.p.A., Milan, Italy

Division of Ser. No. 24,460, Mar. 27, 1979, Pat. No. 4,275,061, which is a continuation of Ser. No. 839,881, Oct. 6, 1977, abandoned, which is a continuation of Ser. No. 596,266, Jul. 16, 1975, abandoned. This application Feb. 23, 1981, Ser. No. 237,509
Claims priority, application United Kingdom, Jun. 14, 1975, 25478/75
Int. Cl.³ A61K *31/56;* **C07J** *1/00*
U.S. Cl. 424—243 **35 Claims**

1. A compound having the formula:



(A)

wherein X is Br, Cl or OQ, Y is Br, Cl, F or H, R_1 is OQ, R_2 is OQ and R_3 is H, or αOQ, and Q, which may be the same or different, is H, or acyl radicals, or OQ in the 16,17 or in the 17,21 positions may together form a cyclic ketal, cyclic acetal or cyclic alkyl orthoester, and pharmaceutically acceptable salts and esters of those compounds wherein at least one radical Q is a polycarboxylic or an inorganic acid radical.

6. A method of combatting inflammation in a patient comprising applying a compound according to claim **1** to the patient topically or or systemically in a non-toxic pharmaceutically effective amount.

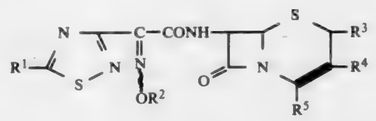
4,390,534

CEPHEM AND CEPHAM COMPOUNDS

Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Goto, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 160,904, Jun. 18, 1980, which is a continuation-in-part of Ser. No. 128,260, Mar. 7, 1980, Pat. No. 4,331,665, which is a continuation-in-part of Ser. No. 116,984, Jan. 30, 1980, Pat. No. 4,332,798, which is a continuation-in-part of Ser. No. 108,161, Dec. 28, 1979, abandoned. This application Apr. 17, 1981, Ser. No. 255,301
Claims priority, application United Kingdom, Dec. 29, 1978, 50334/78; Oct. 12, 1979, 7935538; South Africa, Oct. 1, 1980, 80/6068
The portion of the term of this patent subsequent to May 19, 1998, has been disclaimed.
Int. Cl.³ A61K *31/545;* **C07D** *501/56*
U.S. Cl. 424—246 **30 Claims**

1. 7-substituted-3-cephem and cepham-4-carboxylic acid of the formula:



where

R^1 is amino or a protected amino;

R^2 is hydrogen, lower alkylthio(lower)alkyl, halo(lower)alkyl, ar(lower)alkyl, lower alkenyl, lower alkynyl, cyclo(lower)alkyl, cyclo(lower)alkenyl, or O containing 5-membered heterocyclic group substituted with an oxo group;

R^3 is hydrogen;

R^4 is pyridinium(lower)alkyl or pyridinium(lower)alkyl substituted with carbamoyl; and

R^5 is COO^-; or

R^4 is lower alkanoyl(lower)alkanoyloxy(lower)alkyl or 2-lower alkyl-5-oxo-6-hydroxy-2,5-dihydro-1,2,4-triazinyl-thio(lower)alkyl; and R^5 is carboxy or protected carboxy; and the heavy solid line means single or double bond; and pharmaceutically acceptable salt thereof.

30. An antibacterial composition comprising an effective amount of a compound of claim **1** or pharmaceutically acceptable salt thereof in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

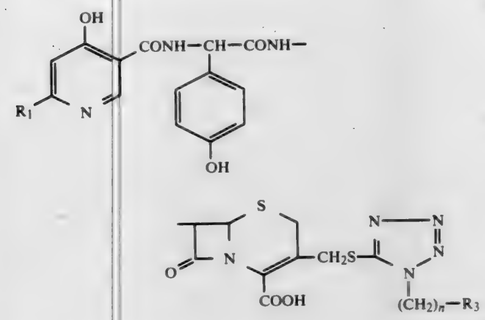
4,390,535

ANTIMICROBIAL 7-(α-ACYLAMINO-α-ARYLACETAMIDO)-3-(SUBSTITUTED METHYL)CEPHALOSPORIN COMPOUNDS

Hirotada Yamada, Nishinomiya; Kiyokazu Jimpo, Moriguchi; Takao Okuda, Toyonaka; Hiroshi Noguchi, Ashiya, and Hisao Tobiki, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Mar. 5, 1981, Ser. No. 240,666
Claims priority, application Japan, Mar. 5, 1980, 55-28536; Mar. 5, 1980, 55-28537
Int. Cl.³ A61K *31/545;* **C07D** *501/56*
U.S. Cl. 424—246 **3 Claims**

1. A compound of the formula



wherein R_1 is a methyl group, R_3 is a carboxyl group, and n is an integer of 1 to 4 and the pharmaceutically acceptable non-toxic salts thereof.

3. An antimicrobial composition comprising an antimicrobially effective amount of the compound of claim **1**, and a carrier or diluent.

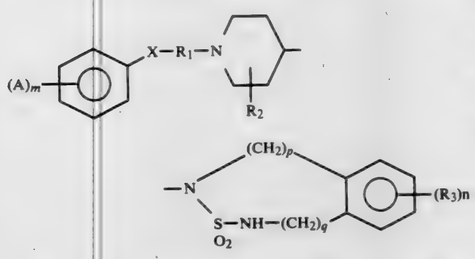
4,390,536

PIPERIDINE DERIVATIVES

Masayuki Teranishi; Hiroyuki Obase, both of Machida; Haruki Takai, Kawasaki, all of Japan; Kazuhiro Kubo, Berchem, Belgium, and Yutaka Kasuya, Komukainishi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

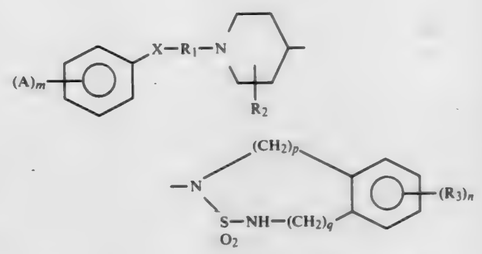
Division of Ser. No. 241,727, Mar. 9, 1981, Pat. No. 4,344,945. This application Feb. 26, 1982, Ser. No. 352,762
Claims priority, application Japan, Mar. 10, 1980, 55-29106; May 27, 1980, 55-69619
Int. Cl.³ C07D *417/04;* **A61K** *31/54*
U.S. Cl. 424—246 **7 Claims**

1. A compound represented by the formula:



wherein A is hydroxy, halogen, lower alkyl, lower alkoxy, lower alkenyloxy, lower alkinyloxy, lower alkylthio, carboxy, lower alkoxycarbonyl, nitro, amino, lower alkylamino, lower alkanoylamino, sulfamoyl, mono- or di-lower alkylaminosulfonyl, lower alkylsulfonyl, carbamoyl, cyano or trifluoromethyl, m is 0 or an integer of 1–5, and when m is 2 or more, each A is the same group or each A is a different group or two A groups may combine to form lower alkylenedioxy; X is oxygen, sulfur, carbonyl, hydroxymethylene or methylene; R_1 is straight-chain alkylene having 1–4 carbon atoms with or without lower alkyl substituent(s); R_2 is hydrogen or lower alkyl; p and q are 0 or 1 and when p is 1, q is 0 and when p is 0, q is 1; and R_3 is hydroxy, lower alkoxy, halogen, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, nitro or amino, n is 0 or an integer of 1–4, and when n is 2 or more, each R_3 is the same group or each R_3 is a different group or two R_3 groups may combine to form lower alkylenedioxy and a pharmacologically acceptable acid addition salt thereof.

7. A hypotensive composition which comprises at least one pharmaceutically acceptable carrier, and an effective amount of a compound represented by the formula:



wherein A is hydroxy, halogen, lower alkyl, lower alkoxy, lower alkenyloxy, lower alkinyloxy, lower alkylthio, carboxy, lower alkoxycarbonyl, nitro, amino, lower alkylamino, lower alkanoylamino, sulfamoyl, mono-or di-lower alkylaminosulfonyl, lower alkylsulfonyl, carbamoyl, cyano or trifluoromethyl, m is 0 or an integer of 1–5, and when m is 2 or more, each A is the same group or each A is a different group or two A groups may combine to form lower alkylenedioxy; X is oxygen, sulfur, carbonyl, hydroxymethylene or methylene; R_1 is straight-chain alkylene having 1–4 carbon atoms with or without lower alkyl substituent(s); R_2 is hydrogen or lower alkyl; p and q are 0 or 1 and when p is 1, q is 0 and when p is 0, q is 1; and R_3 is hydroxy, lower alkoxy, halogen, trifluoromethyl, trifluoromethoxy, trifluoromethylthio, nitro or amino, n is 0 or an integer of 1–4, and when n is 2 or more, each R_3 is the same group or each R_3 is a different group or two R_3 groups may combine to form lower alkylenedioxy or a pharmacologically acceptable acid addition salt thereof.

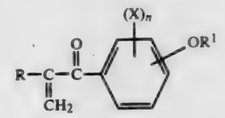
4,390,537

1-(SUBSTITUTED-AMINOALKOXYPHENYL)-2-METHYLENE-1-ALKANONES, COMPOSITIONS AND USE

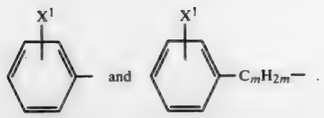
Edward J. Cragoe, Jr., Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 961,422, Nov. 16, 1978, Pat. No. 4,342,782. This application May 19, 1982, Ser. No. 379,604
Int. Cl.³ C07D *295/10;* **A61K** *31/535*
U.S. Cl. 424—248.58 **7 Claims**

1. A compound of the general formula:

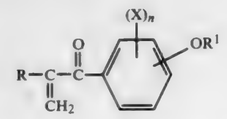


wherein R is lower alkyl, trihalomethyl substituted lower alkyl, cycloalkyl containing from 3 to 6 carbon atoms or the radicals

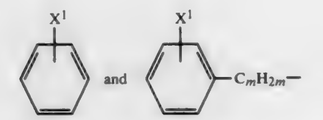


in which X^1 is hydrogen, halogen or lower alkyl and m is an integer from 1 to 5; X is hydrogen, lower alkyl, halogen or when taken together two X radicals on adjacent carbon atoms of the benzene ring to which they are attached may be joined to form the 1,3-butadienylene linkage; n is an integer from 1 to 4; and R^1 is N-alkyl substituted five-membered saturated heterocycles containing one N atom; N-alkyl substituted six-membered saturated heterocyles containing one N atom; N-alkyl substituted six-membered saturated heterocycles containing one O atom and one N atom; or nitrogen containing heterocyclicmethyl and their pharmaceutically acceptable acid addition salts.

4. A pharmaceutical composition useful in treating patients having allergic conditions which comprises as an active ingredient a compound of the formula:



wherein R is lower alkyl, trihalomethyl substituted lower alkyl, cycloalkyl containing from 3 to 6 carbon atoms, or the radicals



in which X^1 is hydrogen, halogen or lower alkyl and m is an integer from 1 to 5; X is hydrogen, lower alkyl, halogen or when taken together two X radicals on adjacent carbon atoms of the benzene ring to which they are attached may be joined to form the 1,3-butadienylene linkage; n is an integer from 1 to 4; and R^1 is N-alkyl substituted five-membered saturated heterocycles containing one N atom, N-alkyl substituted six-membered saturated heterocycles containing one N atom, N-alkyl substituted six-membered saturated heterocycles containing one O atom and one N atom, nitrogen containing heterocyclicmethyl and their pharmaceutically acceptable acid addition salts in association with a carrier.

4,390,538

PESTICIDAL TRIORGANO-TIN TRIAZINES

Wolfgang Wehner, Zwingenberg, Fed. Rep. of Germany; Saleem Farooq, Ettingen, Switzerland, and Hans-Günter Köstler, Heppenheim, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

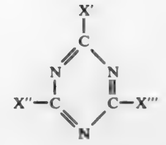
Filed Aug. 31, 1981, Ser. No. 297,884

Claims priority, application Switzerland, Sep. 12, 1980, 6882/80

Int. Cl.[3] **C07D** *251/52, 251/34, 251/38;* **A01N** *43/70*

U.S. Cl. 424—249 **12 Claims**

1. A triorgano-tin triazine compound of the formula



(I)

wherein X′ is —S—Y—COOSn(R′)$_3$, —O—Y—COOSn(R′)$_3$ or —NH—Y—COOSn(R′)$_3$, each of X″ and X‴ has the same meaning as X′ or is halogen, (C$_1$-C$_6$alkyl)$_2$N—, (C$_1$-C$_6$alkyl-)—NH—, (C$_1$-C$_6$alkyl)—O— or (C$_1$-C$_6$alkyl)—S—, Y is C$_1$-C$_6$alkylene, and the radicals R′ can be the same or different and are C$_1$-C$_6$alkyl, benzyl, phenyl or cyclohexyl, each of which is unsubstituted or substituted by halogen, C$_1$-C$_4$alkyl, C$_1$-C$_4$alkoxy or trifluoromethyl.

9. A method of controlling insects, fungi or acarids harmful to animals or plants at a locus, which comprises applying to said locus a specifically effective amount of a compound according to claim **1**.

4,390,539

METHOD FOR THE TREATMENT OF VIRAL SKIN DISEASES

George F. Sherrill, 405-39th St., Newport Beach, Calif. 92663, assignor to George F. and Irene Sherrill 1978 Trust No. 1, Newport Beach, Calif. and George F. and Irene Sherrill 1978 Trust No. 2, Newport Beach, Calif., a part interest in each

Division of Ser. No. 29,698, Apr. 13, 1979, Pat. No. 4,267,007, which is a continuation of Ser. No. 781,170, Mar. 25, 1977, abandoned. This application Feb. 2, 1981, Ser. No. 230,545

Int. Cl.[3] **A61K** *31/505, 31/44, 31/40, 31/14*

U.S. Cl. 424—251 **18 Claims**

1. A method for the treatment in humans of viral skin diseases susceptible to topical treatment comprising the topical application to infected areas of a person of an amount of a composition effective to treat said viral skin diseases wherein the composition comprises an effective amount of at least 0.1% captan and an effective amount of surface active quaternary ammonimum salt salt bactericide.

4,390,540

IMIDAZOQUINAZOLINES HAVING PHARMACEUTICAL ACTIVITY

Madhukar S. Chodnekar, Seltisberg; Ado Kaiser, Lausen, and Frank Kienzle, Flüh, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

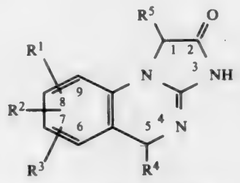
Filed Aug. 12, 1981, Ser. No. 292,315

Claims priority, application Switzerland, Aug. 15, 1980, 6192/80; May 27, 1981, 3483/81

Int. Cl.[3] **A61K** *31/505;* **C07D** *487/04*

U.S. Cl. 424—251 **12 Claims**

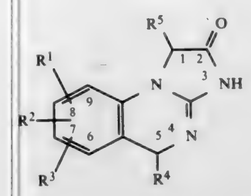
1. A compound of the formula



I

wherein R^1, R^2 and R^3 are hydrogen, halogen, C$_{1-4}$-alkyl, C$_{1-4}$-alkoxy or C$_{2-5}$-alkoxyalkyl; or two of R^1, R^2 and R^3 on adjacent carbon atoms together are methylenedioxy or ethylenedioxy; and R^4 and R^5 are hydrogen or C$_{1-4}$-alkyl, its tautomers, as well as its pharmaceutically acceptable acid addition salts.

10. A method of inhibiting blood platelet aggregation which comprises administering an effective amount of a compound of the formula



I

wherein R^1, R^2 and R^3 are hydrogen, halogen, C$_{1-4}$-alkyl, C$_{1-4}$-alkoxy or C$_{2-5}$-alkoxyalkyl; or two of R^1, R^2 and R^3 on adjacent carbon atoms together are methylenedioxy or ethylenedioxy; and R^4 and R^5 are hydrogen or C$_{1-4}$-alkyl.

4,390,541

QUINOLONE DERIVATIVES AND THEIR USE IN A METHOD OF CONTROLLING AN IMMEDIATE HYPERSENSITIVITY DISEASE

John Goldsworthy, North Ascot; William J. Ross, Lightwater, and John P. Verge, Henley-on-Thames, all of England, assignors to Lilly Industries Limited, London, England

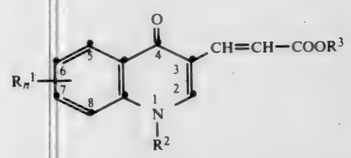
Filed Dec. 3, 1981, Ser. No. 327,146

Claims priority, application United Kingdom, Dec. 19, 1980, 8040732

Int. Cl.[3] **A61K** *31/47;* **C07D** *215/22*

U.S. Cl. 424—258 **6 Claims**

1. A compound of formula



(I)

in which n is 0,1 or 2; R^1 is C$_{1-4}$ alkyl, C$_{1-4}$ alkoxy, C$_{1-4}$ alkylthio, C$_{1-4}$ alkylsulphonyl, trifluoromethyl, halo or nitro, and R^2 and R^3 are each independently hydrogen or C$_{1-4}$ alkyl, and salts thereof.

6. A method of controlling an immediate hypersensitivity disease in an animal, including a human, which comprises administering to the animal a therapeutically effective amount of a compound of formula (I) as defined in claim **1**, or a pharmaceutically acceptable salt thereof.

4,390,542

METHOD FOR INHIBITING CONTRACTION OF OPTHALMIC WOUNDS OR INCISIONS

Ronald A. Schachar, P.O. Box 145, Denison, Tex. 75020

Filed Dec. 2, 1980, Ser. No. 212,315

Int. Cl.[3] **A61K** *31/485, 31/52, 31/445, 31/365*

U.S. Cl. 424—260 **7 Claims**

1. A method for inhibiting contraction of an ophthalmic wound or incision which comprises administering to said wound or incision a pharmaceutically acceptable composition comprising an ophthalmological carrier and an effective amount of smooth muscle relaxant to inhibit the contraction of myofibroblasts present in the wound or incision.

4,390,543

SUBSTITUTED PYRIDINE METHYL ESTERS OF 2-ISOPROPYL-2-(4-CHLOROPHENYL) ACETIC ACID AND THEIR USE AS INSECTICIDES

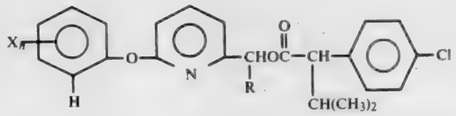
Sudarshan K. Malhotra, 2416 Belford Dr., Walnut Creek, Calif. 94598, and John C. Van Heertum, 5452 Anselmo Ct., Concord, Calif. 94521

Division of Ser. No. 62,453, Jul. 30, 1979, Pat. No. 4,228,172. This application Apr. 21, 1980, Ser. No. 142,181

Int. Cl.[3] **C07D** *213/55, 213/57;* **A01N** *43/40*

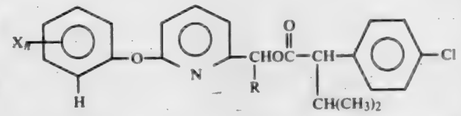
U.S. Cl. 424—263 **12 Claims**

1. A compound corresponding to the formula



wherein n represents an integer of 0 to 2; X independently represents nitro or cyano; and R represents hydrogen, cyano or ethynyl.

9. The method for the kill and control of insects which comprises contacting said insects or their habitat with a composition containing an inert carrier and as the active ingredient, an insecticidally effective amount of a compound corresponding to the formula



(I) wherein n represents an integer of 0 to 2; X independently represents nitro or cyano and R represents hydrogen, cyano or ethynyl.

4,390,544

{1-[3-(6-FLUORO-1,2-BENZISOXAZOL-3-YL)PROPYL]-4-(2-OXO-1-BENZIMIDAZOLINYL} PIPERIDINES, PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE

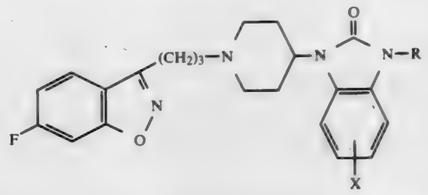
Larry Davis, Sergeantsville, and Joseph T. Klein, Somerville, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Apr. 9, 1982, Ser. No. 366,244

Int. Cl.[3] **A61K** *31/445;* **C07D** *413/14*

U.S. Cl. 424—267 **9 Claims**

1. A compound of the formula



wherein R is hydrogen or loweralkyl; X is hydrogen, loweralkyl, loweralkoxy, halogen or trifluoromethyl; the optical antipodes thereof, or pharmaceutically acceptable acid addition salts thereof.

4. A method of alleviating pain comprising administering to a mammal in need of pain alleviation a pain alleviating effective amount of a compound as defined in claim **1**.

4,390,545

COMBINATIONS OF AGENTS WHICH GIVE ENHANCED ANTI-INFLAMMATORY ACTIVITY

Adolph E. Sloboda, New City, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 322,789, Nov. 19, 1981, Pat. No. 4,350,689. This application Jul. 6, 1982, Ser. No. 395,409

Int. Cl.³ A61K *31/38*

U.S. Cl. 424—275 **8 Claims**

1. An anti-inflammatory composition of matter comprising, in additive combination, a mixture of γ-oxo-(1,1'-biphenyl)-4-butanoic acid and an anti-arthritic agent of the formula



wherein X is oxo or imino and ARYL is 2-thienyl or 3-thienyl in the proportion of the γ-oxo-(1,1'-biphenyl)-4-butanoic acid to the anti-arthritic agent of from 100:1 to 1:100 parts by weight.

4,390,546

ANTIPARASITIC MACROLIDE FROM A STRAIN OF *STREPTOMYCES HYGROSCOPICUS*

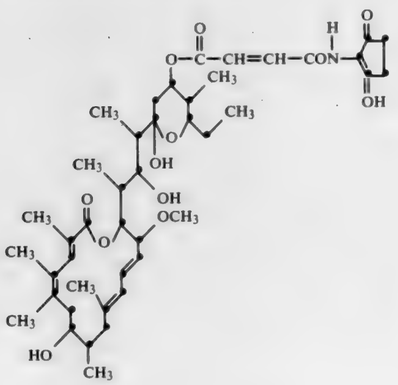
Michael A. Goetz, North Plainfield; Pamela A. McCormick, Willingboro, and Richard L. Monaghan, Somerset, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 7, 1981, Ser. No. 327,838

Int. Cl.³ C07D *313/00;* **A61K** *31/365*

U.S. Cl. 424—279 **5 Claims**

1. A compound having the formula:



4,390,547

2,2-DIMETHYL-3-(SUBSTITUTED ETHYL)CYCLOPROPANE CARBOXYLATE PESTICIDAL COMPOSITIONS AND METHODS

Yoshiaki Omura, Okayama; Fumio Mori, Kurashiki; Yoshiji Fujita, Kurashiki; Takashi Nishida, Kurashiki; Yoshin Tamai, Kurashiki; Fumio Wada, Fukuoka, and Kazuo Itoi, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

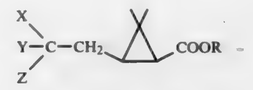
Continuation of Ser. No. 923,542, Jul. 11, 1978, abandoned. This application May 1, 1981, Ser. No. 259,507

The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

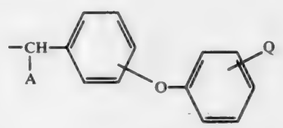
Int. Cl.³ A01N *53/00*

U.S. Cl. 424—304 **93 Claims**

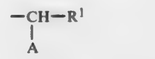
1. A method for the control of agricultural and horticultural insects, forest insects, harvested crop insects, household insects, mites, and pests of the genera Tettigoniidae, Gryllidae, Gryllotalpidae, Blattidae, Reduviidae, Pyrrhocoridae, Cimicidae, Delphacidae, Aphididae, Diaspididae, Pseudococcidae, Scarabaeidae, Dermestidae, Coccinellidae, Tenebrionidae, Chrysomelidae, Bruchidae, Tineidae, Noctuidae, Lymantriidae, Pyralidae, Culicidae, Tipulidae, Stomoxydae, Trypetidae, Muscidae, Calliphoridae, Pulicidae, Tetranychidae and Dermanyssidae, which comprises applying to the habitat of such pests a pesticidally effective amount of a cyclopropanecarboxylate having the structural formula:



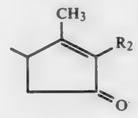
wherein X, Y and Z are the same or different and at least two of same are chlorine or bromine, with the remaining one being hydrogen, methyl, chlorine or bromine; R is a member selected from the group consisting of those of the structural formulae (1), (2) and (3):



(1)



(2)



(3)

where A is hydrogen, cyano, ethynyl or thiocarbamoyl; Q is hydrogen, chlorine, bromine, fluorine, methyl or trifluoromethyl; R^1 is 2-halogeno-3-phenyl-1-propen-1-yl, (dihalogenovinyloxy)phenyl or benzylphenyl; and R^2 is allyl, 2,4-pentadienyl, propargyl or benzyl.

4,390,548

TRANS-Δ²-PGE ALKYLSULPHONYL AMIDES

Takashi Yamato, Takatsuki; Hirofumi Endo, Fujinomiya; Kimiichiro Matsumoto, and Hajimu Miyake, both of Takatsuki, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Filed Apr. 24, 1981, Ser. No. 257,102

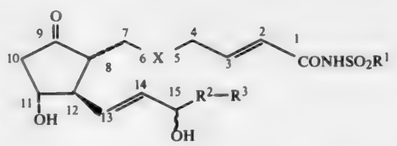
Claims priority, application Japan, Apr. 28, 1980, 55-55337

Int. Cl.³ C07C *143/75;* **A61K** *31/18*

U.S. Cl. 424—321 **11 Claims**

1. A prostaglandin analogue of the formula:

IV



(wherein R^1 represents an alkyl group containing from 1 to 4 carbon atoms, R^2 represents a single bond or an alkylene group containing from 1 to 5 carbon atoms, R^3 represents an alkyl group containing from 1 to 8 carbon atoms, X represents an ethylene group or a cis-vinylene group, the double bonds between the carbon atoms in positions 2 and 3 and between the carbon atoms in positions 13 and 14 are both in trans-configuration, and the wavy line attached to the carbon atom in position 15 represents α- or β-configuration or a mixture thereof), or a cyclodextrin clathrate thereof.

11. A method for the termination of pregnancy or induction of labour in a pregnant female mammal or for contraception or menstrual regulation in a female mammal which comprises administering an effective amount of a compound of general formula IV specified in claim **1**, or a cyclodextrin clathrate thereof.

4,390,549

N-TETRACHLOROETHYLTHIO BENZOYL ANILIDES USEFUL AS ACARICIDES AND TO CONTROL MOSQUITOES

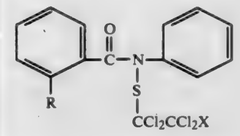
Hsiao-Ling M. Chin, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 25, 1981, Ser. No. 277,355

Int. Cl.³ A01N *37/00, 37/18*

U.S. Cl. 424—324 **5 Claims**

1. A method of killing misquitoes comprising applying thereto an insecticidally effective amount of a compound having the formula



in which R is chlorine, hydrogen, or trifluoromethyl and X is hydrogen or fluorine.

4,390,550

INTERMEDIATE MOSITURE FROZEN FOODS

Marvin L. Kahn, Williamsville, and Kuttikandathil E. Eapen, Kenmore, both of N.Y., assignors to Rich Products Corporation, Buffalo, N.Y.

Division of Ser. No. 24,128, Mar. 26, 1979, Pat. No. 4,234,611, which is a division of Ser. No. 917,379, Jun. 20, 1978, Pat. No. 4,199,604, which is a division of Ser. No. 871,995, Jan. 24, 1978, Pat. No. 4,154,863, which is a division of Ser. No. 763,613, Jan. 28, 1977, Pat. No. 4,146,652. This application May 21, 1980, Ser. No. 152,050

Int. Cl.³ A23B *7/08;* **A23L** *1/164*

U.S. Cl. 426—102 **24 Claims**

1. A method of infusing fruit with sugar solutes to reduce the water activity of said fruit which comprises the steps of:

(a) tretaing the fruit to create sites for the removal of a portion of said fruit's water content and substitution thereof by sugar solutes; followed by

(b) bathing the treated fruit in a sugar solutes-containing bath so as to induce infusion of the fruit with the sugar solutes, said bath comprising a fructose-containing corn syrup, comprising about 70 to about 80% sugar solids, wherein fructose comprises about 40 to about 90% of the total sugar content of said bath, said infused fruit having a water activity of about 0.45 to about 0.65; and

(c) incorporating said infused fruit in cereal without substantially raising the water activity of said cereal.

4,390,551

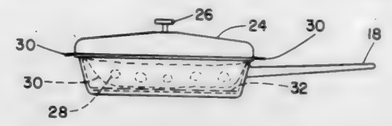
HEATING UTENSIL AND ASSOCIATED CIRCUIT COMPLETING POUCH

John S. Swartley, Westport, and Suren Der Avedisian, Norwalk, both of Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 9, 1981, Ser. No. 232,764

Int. Cl.³ B65B *29/08;* **H05B** *3/00;* **F27D** *11/00;* **B65D** *81/34*

U.S. Cl. 426—107 **1 Claim**



1. The combination of an electrical kitchen utensil and a disposable pouch for use in said utensil, said combination comprising:

a. an electrical kitchen utensil, said utensil having;

i. a lower member having a substantially horizontal top rim for supporting said disposable pouch above a bottom of said utensil;

ii. a cover for said lower member, said cover defining an opening which matches the horizontal rim of said utensil, said cover cooperating with said rim to clamp a flange portion of the disposable pouch therebetween and suspend the pouch above the bottom of the utensil;

iii. an electrical heating means incorporated in said utensil for heating the interior of the utensil and the comestible product in said disposable pouch,

iv. a first electrical contact means arranged adjacent the rim of said lower member, said contact means interrupting an electrical circuit that energizes said heating means;

b. a disposable pouch without a heating element for use with said utensil, said pouch having:

i. a first and second layer of fluid impervious flexible material, said comestible product being packaged between said layers,.

ii. a flange member extending outwardly on all sides of said pouch, said flange member having a larger perimeter than the perimeter of said utensil rim;

iii. a second electrical contact means positioned along one edge of the flange member said second contact means formed to bridge the first electrical contact means arranged adjacent the rim of the lower member to thereby close the electrical circuit and energize said heating means in the kitchen utensil.

4,390,552

HEAT-SEALING SHEET MATERIAL

Susumu Niwa, Wako, Japan, assignor to Kabushiki Kaisha Hosokawa Yoko, Tokyo, Japan

Filed Jan. 25, 1982, Ser. No. 342,704

Claims priority, application Japan, Apr. 18, 1981, 56-55997[U]

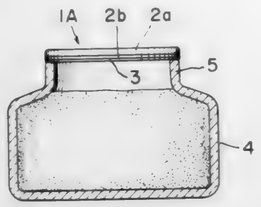
Int. Cl.³ B65D *85/00, 53/00;* **B32B** *15/08, 27/00*

U.S. Cl. 426—126 **8 Claims**

1. A heat-sealing sheet material which comprises a base sheet and a sealant layer formed on one side of the base sheet, said sealant being a graft copolymer comprising a trunk polymer of a 20 to 60% saponification product of an ethylene/vinyl acetate copolymer (EVA) of a vinyl acetate content of 15 to 45% by weight and a branch polymer of an unsaturated carboxylic acid in a proportion of 10% by weight or less of the graft-copolymer.

7. A sealed glass container which comprises a glass container containing a product and having an opening rim and a heat-sealing sheet material of claim **1** affixed on the opening rim of

said container with the sealant layer in heat-sealed contact with the opening rim.



8. A sealed glass container according to claim 7 wherein the product is a water-containing food product.

4,390,553

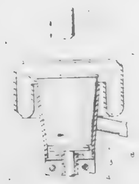
EDIBLE FOOD CONTAINERS AND THE METHOD OF COATING SAID CONTAINERS

Irving H. Rubenstein, and Herbert M. Bank, both of Owings Mills, Md., assignors to Maryland Cup Corporation, Owings Mills, Md.

Continuation-in-part of Ser. No. 175,374, Aug. 5, 1980. This application May 12, 1981, Ser. No. 263,094

Int. Cl.³ A23L *1/10;* **A23G** *3/20;* **A21D** *15/08*

U.S. Cl. 426—138 **13 Claims**



1. A method of processing an edible food container for use with a food product which comprises applying a moisture-resistant, barrier coating composition of a food grade fat material to at least the interior surface of the edible food container in an amount sufficient to produce a continuous, uniform film of said barrier coating composition on said surface, said barrier coating composition being applied by introducing an effective amount of said coating composition into the edible food container and then forcing the coating composition up the inside surface of the container by imparting relative motion to the container and coating composition to effect a rotational motion of the coating composition within the container.

4,390,554

MICROWAVE HEATING OF CERTAIN FROZEN FOODS

Melvin L. Levinson, 1 Meinzer St., Avenel, N.J. 07001

Continuation-in-part of Ser. No. 927,397, Jul. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 713,235, Aug. 6, 1976, Pat. No. 4,103,431, which is a continuation-in-part of Ser. No. 572,385, Apr. 28, 1975, abandoned. This application Mar. 11, 1980, Ser. No. 129,360

Int. Cl.³ A23L *1/00;* **B65B** *29/08, 29/00*

U.S. Cl. 426—232 **17 Claims**

1. For use in a microwave oven, a food package which comprises:

a microwave-permeable, non-liquid-absorptive inner member for covering a food,

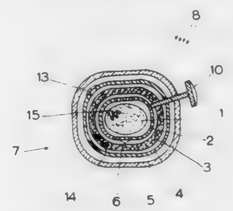
a plurality of openings, through said inner member, of sufficient size to permit liquid, food by-products to transfer across said inner member when said liquid, food by-products are in motion due to exposure of said food to microwave radiation and of sufficient size to prevent said transfer of said liquid, food by-products when said liquid, food by-products are not in motion due to exposure of said liquid, food by-products to microwave radiation,

a microwave-permeable, liquid-absorptive material in contact with, at least, a part of said inner member's ouside surface, and

an outer microwave-permeable, liquid-non-permeable, non-microwave-absorptive enclosure which forms a heating chamber and encloses said inner member and said liquid-absorptive material.

8. A method of defrosting and heating, in a microwave oven, a frozen food, the steps which include:

enclosing said food in an inner, microwave-permeable plastic film which film contains a plurality of openings of



sufficient size to permit the passage across said film of liquid-and-oil by-products of said food when under pressure due to exposing said food to microwave-radiation and of sufficient size to limit the passage across said film of said liquid-and-oil when said liquid-and-oil is not under said pressure due to said exposure to microwave radiation,

completely enclosing said food and said inner film in an outer microwave-permeable container fabricated to contain vapor, water and oil therein,

placing a water-and-oil-absorptive material between said inner film and said outer container, and

exposing said food to microwave radiation until said food defrosts and heats.

4,390,555

MICROWAVE OVEN COOKING METHOD

Melvin L. Levinson, 1 Meinzer St., Avenel, N.J. 07001

Continuation-in-part of Ser. No. 129,360, Mar. 11, 1980, which is a continuation-in-part of Ser. No. 4,324, Jan. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 927,397, Jul. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 713,235, Aug. 10, 1976, Pat. No. 4,103,431. This application Jul. 28, 1980, Ser. No. 173,006

Int. Cl.³ A23L *1/00;* **B65B** *29/00, 29/08*

U.S. Cl. 426—234 **4 Claims**



1. In a method of defrosting and heating in a microwave oven a frozen food, the steps which include:

surface-defrosting-wetting said frozen food with water to create a positive surface-to-core differential in microwave lossiness in said food,

enclosing said food in an inner, microwave-permeable member which contains a plurality of openings of sufficient size to permit the passage across said member of liquid-and-oil by-products of said food when evolved from said food due to exposing said food to microwave energy and of sufficient size to limit the passage across said member of said liquid-and-oil when said liquid-and-oil is not exposed to microwave energy,

containing said food and said inner member in an outer microwave-permeable container fabricated to contain water and oil therein, and

exposing said food to microwave radiation until said food defrosts and heats.

4,390,556

MICROBIOLOGICAL TRANSFORMATIONS OF ALPHA-IONONE

Victor Krasnobajew, Küsnacht, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 96,111, Nov. 20, 1979, Pat. No. 4,311,860. This application Aug. 28, 1981, Ser. No. 296,950

Int. Cl.³ A23L *1/226;* **C12P** *7/26, 7/02*

U.S. Cl. 426—538 **9 Claims**

1. A process for the manufacture of an odorant and/or flavoring composition which comprises fermenting α-ionone with a fungus selected from the group consisting of the genera Botryodiplodia, Botryosphaeria and Lasiodiplodia under aerobic conditions wherein

(i) the pH is between 3 and 8;

(ii) the temperature is between 15° C. and 35° C.,

(iii) the fermentation time is between 18 and 216 hours,

(iv) the concentration of the substrate is from 0.5 grams per liter to 20 grams per liter, and

(v) the fermentation product is separated from the culture by extraction.

4,390,557

MICROBIOLOGICAL TRANSFORMATIONS OF IRONE COMPOUNDS

Victor Krasnobajew, Küsnacht, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

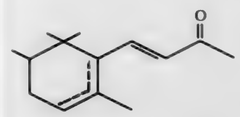
Division of Ser. No. 96,111, Nov. 20, 1979, Pat. No. 4,311,860. This application Aug. 28, 1981, Ser. No. 297,485

Claims priority, application Switzerland, Nov. 24, 1978, 12045/78

Int. Cl.³ A23L *1/226;* **C12P** *7/226, 7/02*

U.S. Cl. 426—538 **16 Claims**

1. A process for the manufacture of an odorant and/or flavoring composition which comprises fermenting a compound of the formula



wherein one of the dotted lines represents an additional bond, with a fungus selected from the group consisting of the genera *Botryodioplodia, Botryosphaeria* and *Lasiodiplodia* under aerobic conditions wherein

(i) the pH is between 3 and 8;

(ii) the temperature is between 15° C. and 35° C.,

(iii) the fermentation time is between 18 and 216 hours,

(iv) the concentration of the substrate is from 0.5 grams per liter to 20 grams per liter, and

(v) the fermentation product is separated from the culture by extraction.

4,390,558

STABILIZATION OF PLEUROMUTILIN DERIVATIVES AGAINST OXIDATION BY SODIUM HYPOCHLORITE IN AQUEOUS SOLUTION

Frank Ridgway, Birkenhead, and Richard D. G. Woolfenden, Bridgend, both of England, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

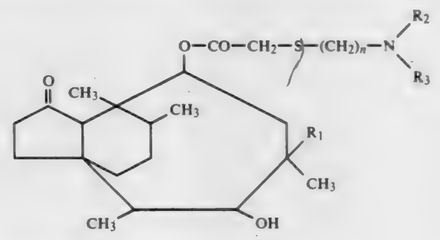
Filed Mar. 6, 1981, Ser. No. 241,167

Claims priority, application United Kingdom, Mar. 14, 1980, 8008792

Int. Cl.³ A61K *31/22*

U.S. Cl. 426—541 **3 Claims**

1. A composition for water treatment consisting essentially of a hypochlorite scavenger and from 0.0045% to 0.0125% by weight of a compound of the formula



wherein R_1 is either ethyl or vinyl;

n is an integer from 2 to 5 and each of R_2 and R_3 is an alkyl of 1 to 10 carbon atoms, and pharmaceutically acceptable salts of said compound, said hypochlorite scavenger being selected from the group consisting of sodium thiosulphate, acetone, sodium bisulphite, ascorbic acid, dithiothreitol, dithioerythritol, sodium sulphite, sodium nitrate and urea, said compound being present in a weight ratio to said hypochlorite scavenger of from about 0.1:1 to about 500:1.

4,390,559

ISOFLAVONES AND RELATED COMPOUNDS, METHODS OF PREPARING AND USING AND ANTIOXIDANT COMPOSITIONS CONTAINING SAME

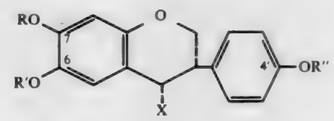
Fritz W. Zilliken, Remagen, Fed. Rep. of Germany, assignor to Z-L Limited Partnership, Janesville, Wis.

Division of Ser. No. 29,122, Apr. 11, 1979, Pat. No. 4,264,509, which is a continuation-in-part of Ser. No. 804,594, Jun. 8, 1977, Pat. No. 4,157,984. This application Jan. 12, 1981, Ser. No. 223,942

Int. Cl.³ A23D *5/04, 3/04*

U.S. Cl. 426—545 **14 Claims**

14. A method of stabilizing against oxidation an edible fat or oil or food product containing an edible fat or oil which comprises adding to or incorporating in said food product or edible fat or oil a compound having the structure:



wherein the dashed lines represent a single bond or a double fond, and wherein X may be two hydrogen atoms or oxygen, and further wherein each of R, R′ and R″ may be methyl or ethyl group or hydrogen, said compound being present in said edible fat or oil or food product in an amount effective to stabilize said edible fat or oil or food product.

4,390,560

PROCESS FOR PRODUCING A CREAM CHEESE-LIKE FOOD

Kaoru Koide; Yoshiki Yoneda, and Kenkichi Musashi, all of Higashimurayama, Japan, assignors to Meiji Milk Products Company Limited, Tokyo, Japan

Filed Jul. 6, 1981, Ser. No. 280,852
Claims priority, application Japan, Oct. 7, 1980, 55-139393
Int. Cl.³ A23C *19/00, 20/00*
U.S. Cl. 426—582 **4 Claims**

1. A process for producing a cream cheese-like food, comprising mixing casein, an oil or fat, an emulsifying agent, a calcium salt in an amount of 3–24 mg, as calcium, per gram of casein and an orthophosphate to obtain a liquid mixture, heating the resulting liquid mixture, homogenizing the heated liquid mixture, cooling the homogenized liquid mixture to obtain a liquid emulsion, adding gluconic δ-lactone and rennet to the emulsion, maintaining the mixture at 15°–55° C. to regulate the texture and to attain the equilibrium of the emulsion in the pH range of 5.3–5.9, then adding a stabilizer and gluconic δ-lactone to the emulsion, pasteurizing the mixture, and charging the pasteurized mixture into containers.

4,390,561

MARGARINE OIL PRODUCT

Daniel R. Blair; Richard B. Lomneth; Robert L. Prosise, and Bernard Y. Tao, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 4, 1981, Ser. No. 318,162
Int. Cl.³ A23D *5/00*
U.S. Cl. 426—607 **9 Claims**

1. A margarine oil product comprising from about 35% to about 70% of a structural fat consisting essentially of:
(i) from about 3% to about 9% by weight SSS triglycerides;
(ii) from about 32% to about 50% by weight SOS triglycerides;
(iii) from about 5% to about 12% by weight SSO triglycerides; and
(iv) from about 30% to about 65% by weight SOO/SLS triglycerides;
wherein S=saturated C_{16} or C_{18} fatty acid residue, O=oleic acid residue and L=linoleic acid residue; said fat having a weight ratio of P:St acid residues attached to the glycerides of about 8.5 or more and a weight ratio of O:L acid residues of about 3.5 or more, wherein P=palmitic, St=stearic, O=oleic and L=linoleic; and from about 35% to about 70% of a soft oil; said margarine oil product having:
(a) a Solid Fat Content of:
(i) from about 17% to about 54% at 50° F.;
(ii) from about 6% to about 33% at 70° F.;
(iii) from about 4% to about 16% at 80° F.;
(iv) from about 2% to about 7.5% at 92° F.; and
(v) less than 2% at 105° F.;
(b) a Fatty Acid Composition having a weight ratio of P:St acid residues attached to the glycerides of from about 3.4 to 7.5 and a weight ratio of O:L acid residues of about 0.4 to about 2.2, wherein P=palmitic, St=stearic, O=oleic and L=linoleic.

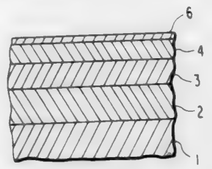
4,390,562

PROCESS OF MANUFACTURING A MAGNETIC RECORD MEMBER

Masahiro Yanagisawa, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 260,497, May 4, 1981. This application Feb. 9, 1982, Ser. No. 347,389
Claims priority, application Japan, May 6, 1980, 55/57962; May 8, 1980, 55-60898
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—11 **9 Claims**

1. A process of manufacturing a magnetic record member, comprising the steps of:
preparing an alloy disc substrate, the surface of which has a topography of not more than 50 microns in the circumferential direction and not more than 10 microns in the radial direction of the disc substrate;
coating the surface of said disc substrate with a nonmagnetic alloy film and polishing the surface of the nonmagnetic alloy film to a mirror finish;
forming a magnetic metal thin-film medium on the polished surface of the nonmagnetic alloy film;



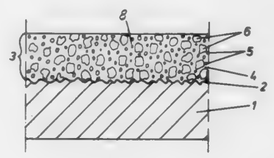
forming a protective film on the magnetic metal thin-film medium; and
spreading dry, powdered solid lubricant over the surface of said protective film and rubbing the solid lubricant powder against said protective film under pressure to form thereon a uniform thin film of solid lubricant having a thickness smaller than the particle diameter of the solid lubricant powder.

4,390,563

METHOD FOR PRODUCING TOP SURFACING LAYERS

Erich Hodes, Rosbach; Danilo Sternisa, Emmendingen, and Walter Schneider, Wetzlar, all of Fed. Rep. of Germany, assignors to Glyco-Metall-Werke Daelen & Loos GmbH, Wiesbaden, Fed. Rep. of Germany

Division of Ser. No. 160,127, Jun. 16, 1980, Pat. No. 4,309,474. This application Sep. 25, 1981, Ser. No. 305,701
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928081; Jan. 17, 1980, 3001516
Int. Cl.³ B05D *7/22*
U.S. Cl. 427—27 **25 Claims**



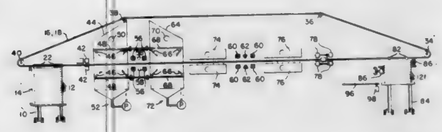
1. The method of producing an anti-friction multilayer bearing laminate comprised of a metallic carrier layer and a working surface layer bonded to said metallic carrier layer and having anti-friction and/or friction characteristics, which includes the steps of: forming a top surfacing synthetic layer by mixing together particles of pulverized polyvinylidene fluoride (PVDF) and lead-containing particles where said lead-containing particles have a size ≦40 μm and are provided in a ratio of volume of between 5% and 35% with respect to the total volume of the mixture of polyvinylidene fluoride and lead-containing particles in the top surfacing synthetic layer, applying the mixed polyvinylidene fluoride and lead-containing particles to a prepared surface of a metallic carrier layer in the form of a uniform mixture having a desired thickness to form a working surface layer on the carrier layer, and forming the said applied uniform mixture by the heating of the said metallic carrier layer and applied mixture thereon so as to melt together the particles of pulverized polyvinylidene fluoride into a matrix of said surface layer, said lead-containing particles being imbedded in said matrix and said matrix binding the said surface layer to said metallic carrier layer.

4,390,564

PROCESS AND APPARATUS FOR FINISHING DOORS

Alvin J. Kimble, 5001 Rainier Ave., Tumwater, Wash. 98501

Filed Aug. 20, 1981, Ser. No. 294,774
Int. Cl.³ B05D *1/02, 3/06*
U.S. Cl. 427—35 **35 Claims**



1. A semi-continuous or continuous process for finishing a door in a finishing machine, comprising the steps of:
(a) feeding a plurality of doors to a finishing machine;
(b) conveying each door serially along the machine by holding each door with pressure exerted on the ends of the door while performing the substeps of:
(i) staining the faces and edges of each door in a single staining operation;
(ii) at least partially drying each door;
(iii) finish-coating the faces and edges of each door in a single finish-coating operation; and
(iv) drying the finish coating; and
(c) stacking the finished doors which exit from the machine by removing the pressure exerted on the ends.

11. The process of claim 1 wherein both substeps of drying include blowing warm air around the doors.

12. The process of claim 1 or claim 11 wherein both substeps of drying include radiant heating of the faces of each door.

4,390,565

PHOTOCURABLE COMPOSITIONS FOR USE AS CERAMIC INK VEHICLES

James B. Fonda, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Aug. 26, 1982, Ser. No. 411,753
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—44 **10 Claims**

1. A radiation-curable ceramic ink composition comprising
(a) from 2 to 30 percent by weight of at least one acrylated polycaprolactone diol polyurethane having a molecular weight in the range from 600 to 3500;
(b) from 2 to 40 percent by weight of a reactive diluent system comprising at least one addition-polymerizable acrylic monomer which is copolymerizable with said acrylated polycaprolactone diol polyurethane;
(c) from 60 to 90 percent by weight of at least one ceramic frit.

10. In the process of applying a ceramic coating to a heat-resistant substrate comprising the steps of:
(a) applying a printing medium to a heat-resistant substrate, said printing medium comprising at least one ceramic frit and a fluid vehicle therefor;
(b) curing said printing medium after it has been applied to said substrate by exposure to a source of irradiation selected from the group consisting of ionizing radiation and actinic radiation; and
(c) firing said coated substrate at a temperature and for a time sufficient to burn-off the vehicle and fuse the ceramic frit to the substrate;
the improvement wherein the printing medium is a radiation-curable ceramic ink composition comprising:
(a) from 2 to 30 percent by weight of at least one acrylated polycaprolactone diol polyurethane having a molecular weight in the range from 600 to 3500;
(b) from 2 to 40 percent by weight of a reactive diluent system comprising at least one addition-polymerizable acrylic monomer which is copolymerizable with said acrylated polycaprolactone diol polyurethane; and
(c) from 60 to 90 percent by weight of at least one ceramic frit.

4,390,566

METHOD OF PRODUCING SOFT SHEET

Masao Umezawa, Shiga, and Miyoshi Okamoto, Takatsuki, both of Japan, assignors to Toray Industries, Inc., Japan

Filed Mar. 9, 1981, Ser. No. 241,634
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—198 **30 Claims**

1. A method of producing a soft sheet material containing thinned fibers or filaments and a viscoelastic substance, which method comprises:
(A) applying a mixture of a viscoelastic substance and a temporary filler to a sheet material containing thinnable fibers or filaments;
(B) thinning the thinnable fibers or filaments of said sheet material;
(C) applying a viscoelastic substance; and
(D) removing said temporary filler.

4,390,567

METHOD OF FORMING GRADED POLYMERIC COATINGS OR FILMS

Raimond Liepins, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 11, 1981, Ser. No. 242,807
Int. Cl.³ B05D *7/24;* **C23C** *11/00*
U.S. Cl. 427—214 **14 Claims**

1. A method of forming a graded metal-bearing polymeric coating on a desired substrate which comprises (a) forming on said substrate a polymeric coating susceptible to permeation by a metal, and (b) contacting said polymeric coating with a fluid containing a metal compound or mixture of metal compounds at a temperature below 150° C. for a time sufficient for such metal compound or metal compounds to sorb and diffuse into said polymeric coating.

4,390,568

LINING A STEEL PIPE INTERNALLY WITH A CEMENT MORTAR

Wilhelm Schwenk; Bruno Heinrich, both of Duisburg, and Rolf Mangen, Mülheim, all of Fed. Rep. of Germany, assignors to Mannesmannufer Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 17, 1981, Ser. No. 244,708
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1980, 3010525
Int. Cl.³ B05D *7/22, 3/12*
U.S. Cl. 427—234 **8 Claims**

1. The method of lining the interior of a steel pipe for protection against corrosions, comprising:
providing a dispersion, in water, of a synthetic polymer and of a synthetic resin being absorbed on the surface of a blend of cement and sand particles for causing such a blend to remain fluid;
providing a cement mortar which includes said dispersion and having a sand-to-cement ratio of from 1 to 3 and water-to-cement ratio of from 0.25 to 0.35, solids in the dispersion being present from 3 to 30 parts by weight per 100 parts of cement;
applying the cement mortar with dispersion as provided to the interior of the pipe; and
providing high-speed rotation to the pipe to obtain centrifugal action on the mortar as applied and to compact therewith the said mortar to obtain a dense corrosion-proof and corrosion-proofing interior lining for and on the pipe.

4,390,569

PROCESS FOR FORMING A POLYMERIC COATING ON THE OUTSIDE SURFACE OF A LENGTH OF TUBING

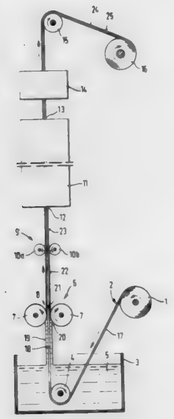
Wolfgang Heinrich, Salach; Klaus-Dieter Hammer, Mainz-Mombach, and Max Bytzek, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,944

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012064

Int. Cl.³ B05D *3/12, 1/40*

U.S. Cl. 427—366 **8 Claims**



1. A process for coating the outside surface of a length of tubing essentially consisting of cellulose hydrate suitable for use as a sausage casing comprising the steps of:

coating the outside surface of the tubing with an initial layer of coating liquid;

transporting the coated tubing issuing from said coating step along its longitudinal axis in a substantially vertically upward direction;

passing the coated tubing through a constriction of predetermined width to reduce the thickness of the initial layer and form a thin layer of desired thickness on the outside of the tubing;

levelling the thin layer without reducing the weight per unit area of the thin layer to form a layer of uniform thickness; and

exposing the tubing to heat of sufficient temperature to solidify the coating liquid and form an uninterrupted film of uniform thickness on the outside of the tubing, wherein the tubing is in a layflat state during all the process steps and wherein said coating step comprises moistening the tubing with the coating liquid, the tubing having a water-retention capacity in the range of about 120 to 140%, resulting in a water content, before the heating step, in the range of about 20 to 30% of the water retention capacity, wherein the coating liquid comprises an aqueous polymeric dispersion having a content of dispersed polymer of at least about 20% by weight relative to the total weight of the dispersion.

4,390,570

FLUID ROOF SYSTEM

Irene L. Rehberg, Strongsville, Ohio, assignor to Elastic Coating Systems, Inc., Medina, Ohio

Filed Dec. 21, 1981, Ser. No. 332,887

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—385.5 **3 Claims**

1. A method of providing a roof coating to a structure, comprising the steps of providing an aqueous fluid suspension stable at high ambient temperatures comprising (A) a polymeric emulsion composed of an unreacted mixture of (i) a first self-plasticizing acrylic emulsion polymer having a first Tg low enough that it will not become brittle at subfreezing temperatures, and (ii) a second acrylic emulsion polymer which will dry in air to a harder, higher gloss finish than the first acrylic emulsion polymer and which has a different, second Tg such that the Tg of the resulting coating is low enough that it will not become brittle in subfreezing temperatures, and (B) non-polymeric solids, said polymeric emulsion providing polymeric solids constituting at least about 25% of the total weight of said suspension, said non-polymeric solids comprising no more than about 35% of the total weight of said suspension and said polymeric and non-polymeric solids together forming at least about 50% of the total weight of the fluid suspension, applying the fluid suspension onto a roof substrate in a thickness such that it will dry in the presence of air to a thickness of at least about 20 mils, and allowing the fluid suspension to dry in the presence of air to form an elastic coating on the roof substrate, said elastic coating having at least about a 20 Shore hardness, an elongation of at least about 100%, a tensile strength of at least about 100 psi, and a Tg such that the coating will not become brittle in subfreezing temperatures.

4,390,571

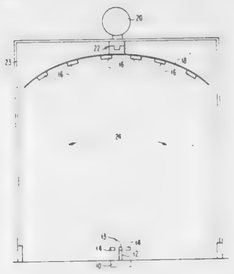
BOATLESS POINT SOURCE EVAPORATION METHOD

James F. Cosgrove, Newburgh; Gerhard P. Dahlke, Fishkill, and Charles Wurms, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1981, Ser. No. 278,932

Int. Cl.³ B05D *3/02, 3/06, 3/14, 5/12*

U.S. Cl. 427—43.1 **7 Claims**



1. A method of coating workpieces by vapor deposition comprising the steps of:

placing a workpiece in an evacuated chamber substantially in line with the top of a freestanding metal mass

heating said top of said mass without electron bombardment to form a molten spherical miniscus thereon which serves as a coating source for said workpiece, and

evaporating metal from said molten spherical miniscus portion of said freestanding metal mass whereby said workpiece is coated with said metal.

5. A method as described in claim **1**, whereby the top of said mass is radiantly heated.

4,390,572

FUR-LIKE SYNTHETIC MATERIAL AND PROCESS OF MANUFACTURING THE SAME

Miyoshi Okamoto, Takatsuki; Syusuke Yoshida, Otsu, and Nobuo Kurata, Shiga, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

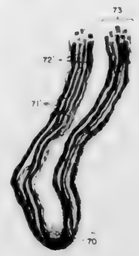
Filed Jul. 31, 1981, Ser. No. 288,818

Claims priority, application Japan, Aug. 4, 1980, 55-106407

Int. Cl.³ A01N *1/00;* **B32B** *3/02, 33/00*

U.S. Cl. 428—15 **26 Claims**

1. A fur-like synthetic material which comprises a base and a multiplicity of superfine synthetic pile fibers formed thereon, said fibers having a fineness in the range between about 0.0001–0.4 denier, said pile fibers having lengths in the range of about 4 to 30 mm, said fibers being crimped and further being formed into bundle groups, said bundle groups having thick-



nesses in the range of about 200 to 2 denier as measured at the root portion thereof, said crimps of said pile fibers being substantially in phase with each other within each group, and said superfine pile fibers being substantially free of any binders as between themselves.

4,390,573

LAMINAR THERMOPLASTIC FILM CONSTRUCTIONS

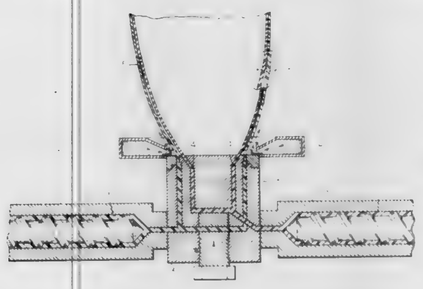
Edward M. Bullard, Rochester, and Gregory M. Smith, Palmyra, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 126,932, Mar. 3, 1980, Pat. No. 4,303,710, which is a continuation of Ser. No. 934,235, Aug. 16, 1978, abandoned. This application Aug. 31, 1981, Ser. No. 298,228

The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.

Int. Cl.³ B65D *11/00;* **B32B** *7/02, 27/08*

U.S. Cl. 428—35 **9 Claims**



6. A laminar thermoplastic bag structure comprising at least two layers, an inner layer and an outer layer, said inner layer comprising a general purpose low density polyethylene and said outer layer comprising a resinous blend of a high density polyethylene and ethylene-alpha-olefin copolymer, wherein said blend contains a major amount of said copolymer said layer of low density polyethylene having a thickness on the order of from about 65% up to about 85% of the overall thickness of said laminate.

4,390,574

FELT MATERIAL OF LAYER OF FINE DENIER FELT AND LAYER OF COARSE DENIER FELT

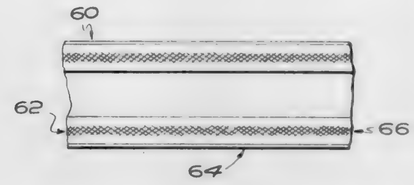
Eric Wood, Wakefield, England, assignor to Insituform International Inc., Channel Islands

Filed Jul. 31, 1981, Ser. No. 288,760

Claims priority, application United Kingdom, Jul. 31, 1980, 8025043; Feb. 19, 1981, 8105184

Int. Cl.³ B32B *5/16*

U.S. Cl. 428—36 **3 Claims**



1. A felt material comprising (a) at least one layer of felt of fine denier, (b) at least one layer of felt of coarse denier, and (c) a filling material having a specific gravity substantially the same as that of said felt.

4,390,575

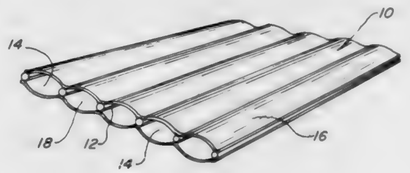
MULTICHANNELED DIFFUSION DEVICE

Clinton V. Kopp, Barrington, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 2, 1981, Ser. No. 326,740

Int. Cl.³ B01D *13/00, 13/02, 13/04, 39/16*

U.S. Cl. 428—36 **24 Claims**



1. The method of disposing a plurality of lengths of fibers into a sheet-like array with the fibers being spaced from each other to define channels therebetween, and bringing a pair of semipermeable membranes into adhering relation with opposed sides of the fibers of said sheet-like array, to form a multichanneled flow device.

16. A multichanneled flow device which comprises a plurality of lengths of fibers in sheet-like array, with the fibers being spaced from each other to define channels therebetween, and a pair of semipermeable membranes positioned in adhering relation with opposed sides of the fibers of said sheet-like array.

4,390,576

ADHESIVE ATTACHMENT ASSEMBLY

Charles G. Hutter, III, Carson City, Nev., assignor to Physical Systems, Inc., Carson City, Nev.

Division of Ser. No. 188,963, Sep. 19, 1980, Pat. No. 4,338,151, which is a continuation-in-part of Ser. No. 74,932, Sep. 13, 1979, Pat. No. 4,302,492. This application Apr. 16, 1982, Ser. No. 369,122

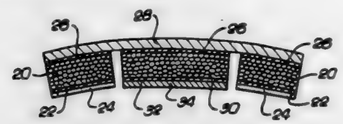
Int. Cl.³ B32B *7/06*

U.S. Cl. 428—40 **12 Claims**

1. An adhesive attachment assembly for applying an attachment to a substrate, comprising:

an attachment;

a support member including a first portion carrying said attachment, and a second portion movably supporting said first portion for movement of said attachment between a first position out of substantial bearing engagement with the substrate and a second position for bearing engagement with the substrate;



connector means for temporarily securing said second portion of said support member with respect to the substrate adjacent said attachment; and

biasing means for applying a force to said attachment to urge said attachment toward the substrate when said second portion is temporarily secured with respect to the substrate and said first portion is in said second position.

4,390,577

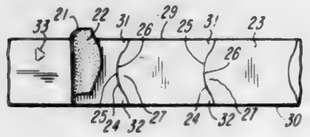
COMPOSITE LABEL WEB

Eneas E. Brister, Fairborn, and Frederick P. Williams, Kettering, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Feb. 26, 1981, Ser. No. 238,505

Int. Cl.³ B32B *3/02, 3/16*

U.S. Cl. 428—42 **11 Claims**



1. A composite label web of pressure sensitive labels adapted to be dispensed in a hand-held labeler having a label applying position adjacent a label delaminator, the composite label web comprising: a longitudinally extending carrier web, label material coextensive in width with the carrier web and releasably adhered by pressure sensitive adhesive to the carrier web, wherein the composite label web has been wound into a roll, nonrectilinear, continuous butt cuts across the label material at longitudinally spaced locations defining leading and trailing edges of labels with each label having at least three projecting portions including at least one forwardly projecting portion and at least one rearwardly projecting portion, the leading edge of each label being closer to the outer free end of the carrier web than the respective trailing edge, the leading edge of each label being immediately adjacent to and complementary with the trailing edge of the adjacent label, and the carrier web having means in a predetermined relationship to the butt cuts for registering the labels with respect to a delaminator of a labeler.

4,390,578

METHOD OF JOINING MEMBERS

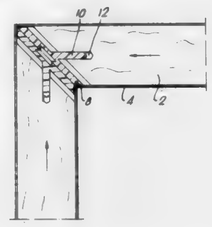
Douglas H. M. Brooks, Crowborough, England, assignor to Blacknell Buildings Limited, Farnborough, England

Filed Mar. 2, 1981, Ser. No. 239,193

Claims priority, application United Kingdom, Mar. 13, 1980, 8008605

Int. Cl.³ B32B *3/00;* **B29C** *19/00*

U.S. Cl. 428—57 **10 Claims**



1. A method of joining the proximate ends of two members, each having a heat sealable sheath projecting from the end of the member to be joined; said method comprising attaching two plates of heat sealable material respectively to the ends of the two members to be joined with the heat sealable sheaths projecting from the members into adjacent relationship with the respective plates, at least partly melting the two plates with heat, allowing the melted plates and the adjacent heat sealable sheaths to fuse together and encase the two members respectively and individually in a continuous mass of heat sealable material at the proximate ends, also pressing together the two melted plates, and retaining the two plates pressed together until the plates have cooled and solidified to effect a joint holding the members together and sealing the members individually within the respective sheaths.

4,390,579

DOPED POLYPHENYLENE ETHER LUBRICANT FOR HIGH DENSITY INFORMATION DISCS

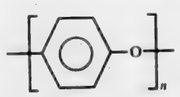
Pabitra Datta, Cranbury, and Eugene S. Poliniak, Willingboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 17, 1982, Ser. No. 389,431

Int. Cl.³ B32B *3/02;* **G11B** *3/70, 5/72*

U.S. Cl. 428—65 **10 Claims**

1. In a high density information disc adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said disc and said stylus, said disc comprising a disc whose surface is conductive and has an information track therein constituted by a surface relief pattern in said track to accommodate recovery of signals of said bandwidth upon establishment of relative motion at said rate, said disc coated with a lubricant, the improvement comprising utilizing a lubricant of the formula



wherein n is an integer, said lubricant containing one or more polar dopants substituted with a long chain alkyl group.

4,390,580

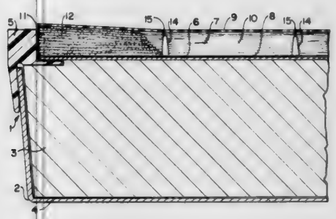
HIGH PRESSURE LAMINATE FOR ACCESS FLOOR PANELS

William J. Donovan, deceased, late of Montclair, N.J.; by A. Gerard Coppola, executor, 17 Brookside Cir., Wilbraham, Mass. 01095, and William D. Sanford, Box 98, R.D. 3, Newton, N.J. 07860

Filed Aug. 26, 1981, Ser. No. 296,498

Int. Cl.³ B32B *3/04*

U.S. Cl. 428—68 **11 Claims**



1. An access floor panel comprising a support structure having a high pressure laminate receiving surface; a high pressure laminate having a rigid, impervious melamine plastic layer laminated under high pressure to a resin paper element comprised of multiple sheets of paper impregnated with resin; and an adhesive layer adhesively securing the surface of the resin paper element opposite said melamine plastic layer to said receiving surface to form a bond line between said receiving surface and said resin paper element surface; said resin paper element having at least one groove therein of sufficient depth to cut sufficient grain lines of said resin impregnated paper layer so that, when the resin impregnated paper layer expands or contracts due to moisture absorption or evaporation thereby causing the rigid melamine layer to move outwardly or inwardly with respect to the support structure and creating a stress on said bond line, said at least one groove alleviates said stress on said bond line and thereby inhibits delamination of said high pressure laminate from said support structure.

4,390,581

MOULDING

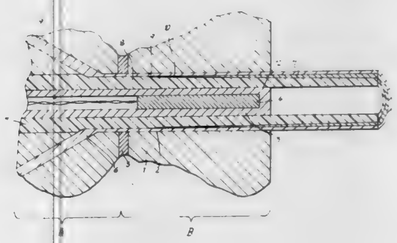
Frederic N. Cogswell, and David T. Mitchell, both of Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 24,434, Mar. 23, 1979, Pat. No. 4,327,053, which is a continuation-in-part of Ser. No. 831,668, Sep. 8, 1977, abandoned. This application Feb. 26, 1981, Ser. No. 238,662

Claims priority, application United Kingdom, Aug. 23, 1977, 35263/77; Mar. 23, 1978, 11677/78

Int. Cl.³ B29D *7/02;* **B32B** *3/14*

U.S. Cl. 428—71 **8 Claims**



1. A method for producing a shaped article which comprises extruding a thermoplastic polymeric material, initially in a molten state, through a die having a mandrel for constraining the material into a tubular shape and producing thereby a tubular extrudate having an outer surface and an inner surface; coextruding between the die and the outer surface of the polymeric material, a liquid having a freezing temperature lower than that of the polymeric material; cooling the liquid and the outer surface of the polymeric material during their passage through the die, to a temperature below the freezing temperature of the polymeric material but above the freezing temperature of the liquid, while maintaining the inner surface of the polymeric material molten; squeezing the extrudate at suitable intervals to fuse the molten inner surface together and thereby seal discrete lengths; and inflating a sealed length to conform to a surrounding mould, thereby to produce the shaped article, characterised in that the method is applied to a thermoplastic material containing a filler, the ratio of filler to thermoplastic material being at least 15:85 by weight, and that the sealed length of extrudate is moulded into an article with two closely-spaced substantially parallel walls enclosing a volume therebetween, a foamable composition is injected into the enclosed volume and the composition is allowed or caused to foam while the article is held within a constraining means constructed to prevent outward displacement of the spaced-apart walls by pressure from the foaming composition.

4,390,582

CUT PILE FABRIC WITH CARRIER AND TEXTURIZED LOOPS

Robert C. Pickens, Jr., Gurnee; Reese R. Thomas, Libertyville, and John W. Ellicson, McHenry, all of Ill., assignors to Ozite Corporation, Libertyville, Ill.

Continuation of Ser. No. 159,472, Jun. 16, 1980, abandoned. This application Dec. 10, 1981, Ser. No. 329,540

Int. Cl.³ B32B *5/00*

U.S. Cl. 428—85 **16 Claims**



1. A cut pile fabric comprising:

a needled batt of non-woven staple fibers,

a carrier member attached to one surface of said batt,

texturized loops of staple fibers needled from the batt and projecting through said carrier member, said loops defined by fibers extended selectively through the carrier member, said fibers defining the loops are needled from the batt and have fiber ends interlocked with fibers in the needled batt,

the texturized loops of fibers comprising a plurality of clusters of loops of fibers with each cluster containing a plurality of different sized loops of fibers,

backing means formed on another surface of said batt for backing said batt and for securing the fiber ends of the staple fibers of said texturized loops to said batt,

a substantial portion of said different sized loops of fibers being cut to form individual cut pile, and

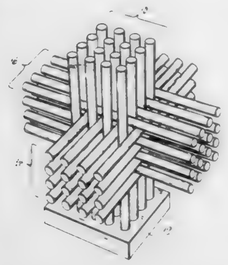
said cut pile being polished and sheared to provide a plush cut pile fabric.

4,390,583

ALUMINA-ALUMINA COMPOSITE

James P. Brazel, Berwyn, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Feb. 22, 1982, Ser. No. 350,776
Int. Cl.³ B32B *5/12*
U.S. Cl. 428—113 **10 Claims**



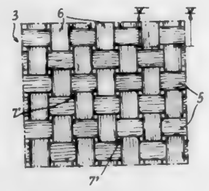
1. An alumina-alumina composite comprising:
a plurality of alumina fibers arranged parallel to at least three axial directions;
each of said fibers comprising a plurality of alumina filaments in a matrix of alumina; and
said plurality of fibers further contained in an alumina matrix.

4,390,584

PROCESS FOR MAKING A PERFORATED RIGID SHEET MATERIAL FOR SOUND ABSORBING COMPOSITE CELLULAR STRUCTURE

Guy Briens, Courbevoie, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jan. 21, 1981, Ser. No. 226,932
Claims priority, application France, Apr. 18, 1980, 80 08728
Int. Cl.³ B32B *3/12*
U.S. Cl. 428—116 **8 Claims**



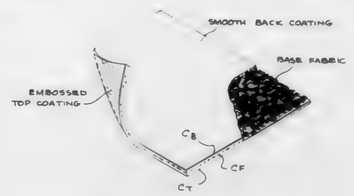
1. A process for making a light, perforated, electrically conducting rigid sheet material suitable for use as the outer surface in a sound absorbing composite cellular structure comprising the steps of:
providing a supple loosely woven fabric comprising a plurality of spaced parallel warp slivers and a plurality of spaced parallel transverse weft slivers interlaced therewith, said warp and weft slivers defining openings corresponding to a porosity greater than that desired in said rigid sheet,
each of said slivers comprising a plurality of substantially straight parallel and unconnected fibers, and a pair of electrically conducting wires arranged respectively at the opposite margins of said sliver, the marginal wires in said slivers being electrically interconnected to form an electrically conducting grid;
impregnating said fabric with a hardenable resin;
applying controlled pressure to opposite faces of said impregnated fabric to create lateral expansion of said slivers sufficient to reduce the porosity to that desired in said sheet; and
hardening said resin while maintaining said pressure, to produce a thin rigid electrically conducting sheet having said desired porosity.

4,390,585

DURABLE FLEXIBLE MEMBRANE AND METHOD OF MAKING SAME

Durrell W. Holden, Dublin, Va., assignor to Bond Cote of Virginia, Inc., Pulaski, Va.

Filed May 5, 1982, Ser. No. 375,339
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—172 **20 Claims**



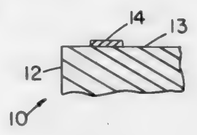
1. A durable flexible membrane comprising:
(1) a generally heavy and dense supporting and reinforcing reticular base fabric formed of thick generally loose bundles each containing a large multiplicity of individual continuous filaments of a synthetic polymer characterized by generally high dimensional stability and resistance to heat and light, said multi-filament bundles being arranged in mechanically interengaged intersecting relation with interstices therein, said base fabric having a weight of substantially about 3–12 oz/yd^2; and
(2) a solidified base coating composition completely impregnating the interstices of said base fabric and continuously coating the opposite sides thereof, which composition consists essentially of polyvinyl chloride resin and as a plasticizing agent for said resin about 35–100% by weight thereof of a trimellitate ester which exhibits high resistance to separation from said resin and imparts to the coating high flexibility at temperatures not higher than about −30° F., said coating composition being present in an amount sufficient to impregnate the interior and form continuous coating on the opposite sides of said base fabric.

4,390,586

ELECTRICAL DEVICE OF SEMI-CONDUCTING MATERIAL WITH NON-CONDUCTING AREAS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation of Ser. No. 660,800, Feb. 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 294,837, Oct. 4, 1972, abandoned, which is a continuation of Ser. No. 849,012, Aug. 11, 1969, abandoned, which is a continuation-in-part of Ser. No. 442,875, Nov. 24, 1964, Pat. No. 3,461,347, which is a continuation of Ser. No. 86,838, Dec. 27, 1960, Pat. No. 3,169,892. This application Jun. 26, 1978, Ser. No. 919,412
Int. Cl.³ B32B *3/00, 7/00*
U.S. Cl. 428—209 **4 Claims**



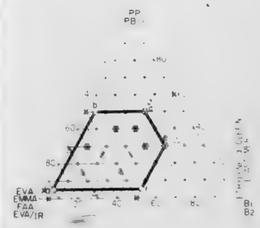
1. An electrical device comprising a device supporting substrate, a semi-conducting material on said substrate, said semi-conducting material having a portion thereof converted to its non-conducting oxide to a selected depth with non-converted semi-conducting material adjacent at least two opposed sides of said non-conducting oxide, said non-conducting oxide comprising means for restraining the flow of electrons between the separated non-converted portions of said semi-conducting material.

4,390,587

LOW-TEMPERATURE, SHRINKAGE GAS-BARRIER MULTILAYERED FILM

Isao Yoshimura, Fujisawa, and Takao Togashi, Suzuka, both of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Jun. 8, 1981, Ser. No. 271,191
Claims priority, application Japan, Jun. 16, 1980, 55-80252
Int. Cl.³ B65D *25/06;* **B32B** *27/08*
U.S. Cl. 428—215 **32 Claims**



1. A low-temperature shrinkage, gas-barrier film comprising a multilayered film having at least a three-layered construction represented by the combination of Resins D/E/D wherein:
Resin D is a mixture of 50 to 90% by weight of a Resin A which is a copolymer of ethylene and a vinyl ester or an alkyl ester of an unsaturated aliphatic carboxylic acid, 5 to 30% by weight of a Resin B which is an ethylene-α-olefin copolymer having a density of not more than 0.91 g/cm^3 and a Vicat softening point of not more than 70° C., and 5 to 30% by weight of a Resin C which is a crystalline polypropylene or crystalline polybutene-1 or a mixture of the two polymers, and
resin E is a vinylidene fluoride copolymer exhibiting a crystal melting peak at a temperature within the range of from 140° to 155° C. as measured by the DSC method and a solution viscosity of from 1.05 to 0.85 c.p., the total thickness of the multilayered film being 30 to 100μ and the resin E layer having a thickness within the range of from 5 to 25μ and accounting for a proportion within the range of from 5 to 35% of the total thickness.

4,390,588

PROCESS FOR COATING CLOTH OF METALLIZED TEXTILE FIBERS AND THEIR USE FOR THE PRODUCTION OF MICROWAVE-REFLECTING ARTICLES

Harold Ebneth, and Siegfried Klipfel, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 17, 1981, Ser. No. 255,023
Claims priority, application Fed. Rep. of Germany, May 6, 1980, 3017204
Int. Cl.³ B32B *15/14, 15/20;* **B05D** *3/02*
U.S. Cl. 428—263 **10 Claims**

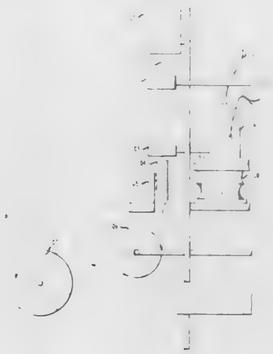
1. A process for increasing the abrasion resistance and water resistance of cloth textiles metallized by direct deposition, comprising (A) coating said cloth with a reactive polyurethane system which may be dissolved in an organic solvent, containing from 0.5 to 15% by weight, based on solids, of free isocyanate groups and optionally, (B) applying an additional coating characterized by its permeability to radar waves before said (A) coating is hardened, (C) hardening the coating in a known manner, optionally by heating and of simultaneous removal of any solvents used.
10. Coated, metallized cloth textiles produced in accordance with the process of claim 1.

4,390,589

METAL COATING OF FIBERS

Franz T. Geyling, Morristown, and Theodore J. Louzon, Bridgewater, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 26, 1982, Ser. No. 352,511
Int. Cl.³ G02B *5/14, 1/10;* **B05D** *7/70, 1/18*
U.S. Cl. 428—381 **15 Claims**



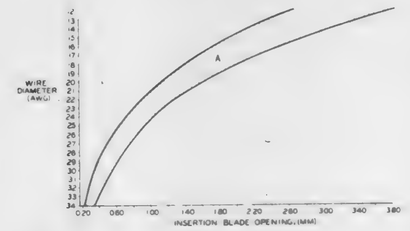
1. A method of making a metal-coated fiber characterized by radially confining around a fiber or an intermediate layer thereon a slurry comprising a multiphase alloy that is in the form of a solid phase and a liquid phase while passing said fiber axially through a slurry confinement means, and cooling said slurry to the solid state.

4,390,590

POWER INSERTABLE POLYAMIDE-IMIDE COATED MAGNET WIRE

Hollis S. Saunders; Richard V. Carmer, and Lionel J. Payette, all of Fort Wayne, Ind., assignors to Essex Group, Inc., Ft. Wayne, Ind.

Filed Oct. 19, 1981, Ser. No. 312,582
Int. Cl.³ B32B *27/00*
U.S. Cl. 428—383 **10 Claims**



1. A lubricated magnet wire comprising an electrically conducting substrate having an electrically insulating polyamide-imide outer coating, and an external lubricant coating on the polyamide-imide outer coating comprising a mixture of paraffin wax and hydrogenated triglyceride in a ratio by weight of

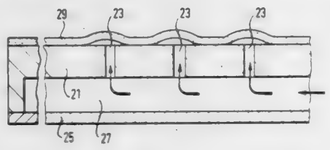
1:30 to 30:1, the coated magnet wire capable of power insertion into coil slots in its locking wire size range.

4,390,591

STABILIZED FINISH COMPOSITION

Robert M. Marshall, Chester, and Kimon C. Dardoufas, Richmond, both of Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

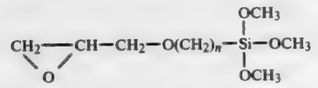
Filed Oct. 30, 1981, Ser. No. 316,583
Int. Cl.³ B32B *25/04*
U.S. Cl. 428—391 **46 Claims**



1. An oil-in-water yarn finish composition, the nonaqueous portion of which comprises:

(a) about 0.25 to 10 weight percent of an emulsion stabilizer selected from the group consisting of a salt of dialkyl sulfosuccinate neat wherein each alkyl group comprises 8 to 18 carbon atoms, a salt of dialkyl sulfosuccinate in solution or mixture wherein each alkyl group comprises 9 to 18 carbon atoms, and a mixture of a salt of dioctyl sulfosuccinate and a salt of an aromatic carboxylic acid;

(b) an adhesion promoting amount of a silane having the structural formula



wherein n=2 to 5; and

(c) the balance comprising:

about 55 to 60 weight percent of a lubricant comprising transesterified lauric oil and oleic oil, the lauric oil containing at least about 40 percent lauric groups and the oleic oil containing at least about 60 percent oleic groups;

about 15 to 28 weight percent of polyoxyalkylene castor oil;

about 4 to 15 weight percent selected from the group consisting of triglycerol monooleate, triglycerol dioleate and mixtures thereof;

about 7 to 12 weight percent selected from the group consisting of decaglycerol tetraoleate, decaglycerol pentaoleate and mixtures thereof; and

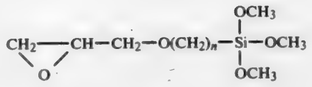
about 1 to 5 weight percent of a suitable antioxidant.

32. In a process for the production of synthetic polymer yarn, the improvement which comprises:

treating the yarn with a sufficient amount of an oil-in-water yarn finish composition to achieve a total oil-on-yarn of 0.1 to 2.0 weight percent, the nonaqueous portion of the composition comprising:

(a) about 0.25 to 10 weight percent of an emulsion stabilizer selected from the group consisting of a salt of dialkyl sulfosuccinate neat wherein each alkyl group comprises 8 to 18 carbon atoms, a salt of dialkyl sulfosuccinate in solution or mixture wherein each alkyl group comprises 9 to 18 carbon atoms, and a mixture of a salt of dioctyl sulfosuccinate and a salt of an aromatic carboxylic acid;

(b) an adhesion promoting amount of a silane having the structural formula

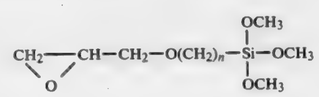


wherein n=2 to 5; and

(c) the balance comprising: about 55 to 60 weight percent of a lubricant comprising transesterified lauric oil and oleic oil, the lauric oil containing at least about 40 percent lauric groups and the oleic oil containing at least about 60 percent oleic groups; about 15 to 28 weight percent of polyoxyalkylene castor oil; about 4 to 15 weight percent selected from the group consisting of triglycerol monooleate, triglycerol dioleate and mixtures thereof; about 7 to 12 weight percent selected from the group consisting of decaglycerol tetraoleate, decaglycerol pentaoleate and mixtures thereof; and about 1 to 5 weight percent of a suitable antioxidant.

39. A method for improving the emulsion stability of an oil-in-water yarn finish composition by adding thereto the nonaqueous portion which comprises:

(a) an adhesion promoting amount of a silane having the structural formula



where n=2 to 5; and

(b) the balance comprising:

about 55 to 60 weight percent of a lubricant comprising transesterified lauric oil and oleic oil, the lauric oil containing at least about 40 percent lauric groups and the oleic oil containing at least about 60 percent oleic groups, said lubricant including about 10 to 90 percent lauric oil and

about 10 to 90 percent oleic oil;

about 15 to 28 weight percent of polyoxyalkylene castor oil;

about 4 to 15 weight percent selected from the group consisting of triglycerol monooleate, triglycerol dioleate and mixtures thereof;

about 7 to 12 weight percent selected from the group consisting of decaglycerol tetraoleate, decaglycerol pentaoleate and mixtures thereof; and

about 1 to 5 weight percent of a suitable antioxidant; said method comprising:

adding about 0.25 to 10 percent, based on the weight of the final nonaqueous portion of the composition, of an emulsion stabilizer selected from the group consisting of a salt of dialkyl sulfosuccinate neat wherein each alkyl group comprises 8 to 18 carbon atoms, a salt of dialkyl sulfosuccinate in solution or mixture wherein each alkyl group comprises 9 to 18 carbon atoms, and a mixture of a salt of dioctyl sulfosuccinate and a salt of an aromatic carboxylic acid.

4,390,592

LOW TEMPERATURE REDUCTION PROCESS FOR PHOTOMASKS

Fred M. Ernsberger, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 20, 1981, Ser. No. 323,333
Int. Cl.³ B32B *15/04;* **C03C** *21/00*
U.S. Cl. 428—410 **10 Claims**

1. In a method for producing a stain pattern in a glass substrate comprising the steps of injecting stain-producing cations into a surface of a glass substrate and heating the glass in the presence of a reducing agent to reduce and agglomerate the stain-producing cations to produce a stain pattern within the surface of the glass, the improvement which comprises utilizing hydrogen under superatmospheric pressure as the reducing agent at a temperature less than about 300° C.

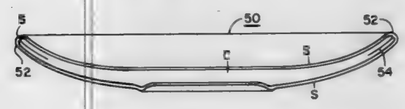
8. An article of manufacture comprising a transparent glass substrate and within said glass substrate a pattern of stain-producing metal wherein the roll-off region of the pattern edges is not more than one micron wide.

4,390,593

LAMINATED GOB FOR PRESSING GLASS ARTICLES

John H. Olson, Newport News, Va., and Robert J. Schlaufman, Elmira, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 259,395, May 1, 1981. This application Feb. 5, 1982, Ser. No. 346,027
Int. Cl.³ B32B *17/06;* **C03B** *7/14*
U.S. Cl. 428—410 **2 Claims**



1. A laminated charge of molten glass for use in forming a laminated article having a core of one glass which is completely surrounded by a substantially uniform thickness of a skin of a second glass comprising, a charge of molten glass having upper and lower surface portions and an outer circumferential peripheral portion intermediate said upper and lower surface portions, said charge having an inner central core glass portion encompassed within an outer skin glass portion, and said skin glass portion having a reentrant portion projecting radially within said core glass portion from said outer circumferential peripheral portion intermediate the upper and lower extent of said charge of molten glass.

4,390,594

PLASTICIZERS FOR POLYVINYL BUTYRAL

Daniel Dages, Les Mureaux, France, assignor to Saint Gobain Vitrage, Neuilly-sur-Seine, France

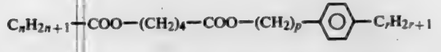
Filed Dec. 1, 1981, Ser. No. 326,230
Claims priority, application France, Dec. 2, 1980, 80 25535
Int. Cl.³ C08F *45/38;* **B32B** *17/10, 27/42*
U.S. Cl. 428—437 **20 Claims**

10. A laminated safety glass comprising two sheets of glass having between the glass surfaces an interlayer of polyvinyl butyral having a molecular weight between about 30,000 and 600,000, a 0 to 10% content by weight of residual ester groups, calculated as polyvinyl acetate and a 12 to 25% content by weight of hydroxyl groups, calculated as polyvinyl alcohol, plasticized with a plasticizer mixture of:

(a) between about 10 and 90% of at least one triethylene glycol diester of a monocarboxylic acid wherein the carbon chain comprises 7 or 8 carbon atoms; and

(b) between about 90 and 10% of at least one adipate which is:

(i) an alkyl alkylaryl adipate having the general formula;



wherein n is greater than or equal to 1 and the sum of p+r is greater than or equal to 1; or

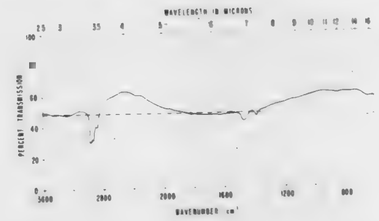
(ii) a dialkyl adipate in which the alkyl group contains from 3 to 8 carbon atoms.

4,390,595

ENVIRONMENTALLY PROTECTED IR WINDOWS

Frederick G. Yamagishi, Newbury Park, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Oct. 25, 1979, Ser. No. 88,269
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.³ B05D *3/06;* **G02B** *1/10*
U.S. Cl. 428—446 **23 Claims**



1. An environmentally protected optical element for use in infrared detection systems comprising a transparent substrate having polished optical surfaces coated with a plasma polymerized saturated short chain hydrocarbon film which increases transmission in the 8 to 12 μm region while providing protection against corrosion and abrasion of said optical surfaces.

13. A method of providing a protective barrier for the surfaces of optical elements utilized in infrared detection systems comprising:

(a) placing said element in an RF discharge reactor adapted for controllably receiving a gaseous reactant;

(b) operating said reactor at 50–200 watts as gaseous alkane monomers are passed through said reactor thereby causing said monomers to polymerize whereby thin films are formed which deposit onto the surfaces of said elements to provide a transparent protective coating which prevents corrosion and abrasion; and

(c) subsequently passing a gaseous alkene through said reactor whereby free radicals, formed from the reaction of said monomers with said plasma, are quenched prior to exposure of said film coated elements to ambient environments.

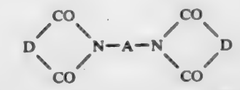
4,390,596

ENCAPSULATION OF ELECTRONIC COMPONENTS IN BIS-IMIDO POLYMER

Serge Laurent, Bron, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Nov. 3, 1980, Ser. No. 203,379
Claims priority, application France, Nov. 9, 1979, 79 28145
Int. Cl.³ B32B *27/06;* **B29C** *13/02*
U.S. Cl. 428—473.5 **17 Claims**

1. An article of manufacture which comprises an electronic component encapsulated within a bisimido polymer molding composition, said polymer comprising (i) the thermosetting prepolymer consisting essentially of the reaction product obtained upon reacting a bis-imide having the structural formula:



(I)

in which D represents a divalent organic radical containing an olefinic carbon-carbon double bond and A is a divalent organic radical containing from 2 to 30 carbon atoms, and a polyamine having the structural formula:

$R(NH_2)_x$ (II)

in which x is an integer equal to at least 2 and R represents an organic radical of valency x, the amount of bis-imide being from 0.55 to 25 mols per mol of NH_2 groups provided by the polyamine and wherein said thermosetting prepolymer has a softening point between 50° C. and 120° C., and the change in the modulus of complex rigidity thereof as a function of time, upon curing at 170° C., is such that, after 5 minutes, said modulus ranges from 3×10^4 to 10^7 N/m and that, after 15 minutes, same has increased to a value ranging from 3×10^5 to 3×10^7 N/m; and said molding composition further comprising (ii) a freeradical polymerization initiator, and (iii) filler.

11. The article of manufacture as defined by claim **1**, the bis-imido polymer having been thermoset.

17. A method for the fabrication of the article of manufacture as defined by claim **11**, comprising introducing the electronic component to be encapsulated within a mold cavity, next completely filling said mold cavity by transfer or injection molding an homogenized admixture of said molding composition about said electronic component, and thence post-curing said thermosetting molding composition.

4,390,597

INTERPOLYMER LATEX AND PROCESS FOR THE PREPARATION THEREOF

Bernard Chauvel, Ermont, France, assignor to Rhone-Poulenc Industries, Courbevoie, France

Filed Nov. 12, 1981, Ser. No. 320,302
Claims priority, application France, Nov. 19, 1980, 80 24516
Int. Cl.³ B32B *23/08*
U.S. Cl. 428—512 **13 Claims**

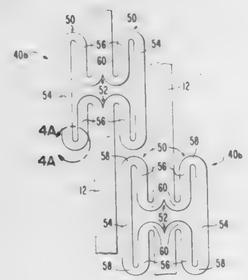
1. A latex of an interpolymer composed of a copolymer A comprising copolymerized butadiene, styrene and at least one ethylenically unsaturated carboxylic acid and a bis(2-chloroethyl)vinylphosphonate polymer B which is at least partly grafted onto copolymer A.

4,390,598

LEAD FORMAT FOR TAPE AUTOMATED BONDING

William S. Phy, Los Altos Hills, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Apr. 5, 1982, Ser. No. 365,686
Int. Cl.³ H01L *23/48*
U.S. Cl. 428—577 **16 Claims**



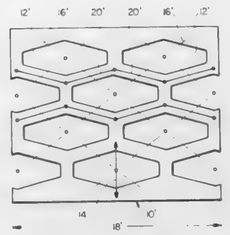
1. In an electrically conductive lead, a stretch loop including two forks which define a pair of branches, wherein each of said branches comprises a plurality of axially aligned segments connected by lateral segments which are shorter than said axially aligned segments, the sum of the lengths of said segments in each branch being greater than the distance between the forks so that the leads may be extended by applying a tensile force.

4,390,599

ENHANCED RECOVERY MEMORY METAL DEVICE

Harry C. Broyles, Sunnyvale, Calif., assignor to Raychem Corporation, Calif.

Filed Jul. 31, 1980, Ser. No. 173,948
Int. Cl.³ C22F *1/00*
U.S. Cl. 428—597 **15 Claims**



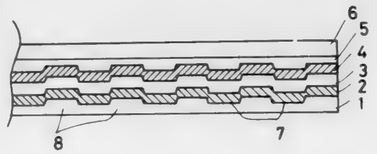
1. A device comprising a sheet of memory metal, said metal possessing a thermoelastic transition between a martensitic state and an austenitic state, said sheet being deformed dimensionally while in its martensitic state and capable of recovering to its non-deformed dimension in its austenitic state in substantially a single direction within the plane of said sheet, said sheet having a plurality of perforations, said perforations being in a particular shape and being arranged in a particular pattern, said shape and pattern enhancing the recovery of said sheet to deliver motion and force in said direction beyond the inherent recovery of the memory metal comprising said sheet if said perforations were not present.

4,390,600

MAGNETO-OPTIC MEMORY MEDIUM

Kenji Ohta, Yao, and Akira Takahashi, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 5, 1982, Ser. No. 337,132
Claims priority, application Japan, Jan. 14, 1981, 56-4090; Apr. 9, 1981, 56-54070; Apr. 10, 1981, 56-54711
Int. Cl.³ B21D *39/00*
U.S. Cl. 428—621 **7 Claims**



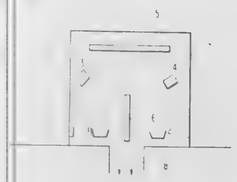
1. A magneto-optic memory medium comprising:
a substrate having strip-like grooves,
a magneto-optic magnetization film disposed on said substrate and having an axis of easy magnetization perpendicular to its surface; and
a reflective film overlying said magneto-optic magnetization film.

4,390,601

MAGNETIC RECORDING MEDIUM AND PROCESS FOR THE PRODUCTION THEREOF

Yoshihiro Ono; Akira Nabara, and Tomoaki Ikeda, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 2, 1980, Ser. No. 165,439
Claims priority, application Japan, Jul. 2, 1979, 54-82706; Jul. 2, 1979, 54-82707; Jul. 2, 1979, 54-82709; Jul. 2, 1979, 54-82710
Int. Cl.³ H01F *10/00*
U.S. Cl. 428—412 **15 Claims**



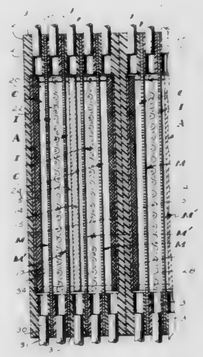
1. A magnetic recording medium comprising a non-magnetic support having thereon a vapor deposited solid film of a ferromagnetic material formed by vacuum evaporation, and on the surface of said ferromagnetic material there being further provided a vapor deposited film of an organic lubricant selected from the group consisting of a paraffin wax, a higher fatty acid, an oxyfatty acid, a fatty acid amide, a fatty acid ester, a fatty alcohol, a metal soap and a mixture thereof or a mixture of the organic lubricant and a macromolecular material.

4,390,602

FUEL CELL

Ralph C. Struthers, 39503 Calle El Fuente, Saugus, Calif. 91350

Filed Sep. 21, 1981, Ser. No. 303,728
Int. Cl.³ H01M *8/04*
U.S. Cl. 429—26 **17 Claims**



1. A fuel cell comprising an anode section including an anode terminal, an anode fuel supply and an anolyte containing negative and positive charged anolyte ions, a cathode section including a cathode terminal, an electron distributing means and a catholyte containing negative and positive charged catholyte ions, an ion exchange section between the anode and cathode sections and including an ionolyte containing negative and positive charged ionolyte ions, a first ion transfer membrane between and separating the anolyte and ionolyte and a second ion transfer membrane between and separating the ionolyte and the catholyte, an electric circuit connected with and between the anode and cathode terminals conducting electrons from the anode section and delivering electrons to the cathode section, the anolyte is such that when certain anolyte ions of one charge are removed from it, remaining anolyte ions of the other charge react with the anode fuel to generate free electrons, the catholyte is such that when electrons are added to it, certain ionolyte ions of one charge move to combine with it, the ionolyte is such that said certain anolyte ions of one charge removed from the anolyte move to and combine with it and is such that when those anolyte ions are combined with it, those certain ionolyte ions of one charge are released by it, the first membrane allows movement of said certain anolyte ions of one charge through it, the second membrane allows movement of said certain ionolyte ions of one charge through it.

4,390,603

METHANOL FUEL CELL

Hidejiro Kawana; Tatsuo Horiba; Kazuo Iwamoto, all of Hitachi; Kazunori Fujita, Tohkai, and Kohki Tamura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 21, 1982, Ser. No. 380,773
Claims priority, application Japan, Jun. 30, 1981, 56-102596; Aug. 21, 1981, 56-130292
Int. Cl.³ H01M *8/10, 8/22*
U.S. Cl. 429—30 **6 Claims**



1. A methanol fuel cell comprising:
a positive electrode which has two major surfaces, the first major surface lying in direct contact with an oxygen-containing gas;
a hydrogen ion- and/or hydronium ion-conductive solid film which has two major surfaces, the first major surface lying in close contact with the second major surface of said positive electrode, and which has a methanol permeability coefficient of at most 1×10^{-6} mol/(mol/l).min.cm^2;
a negative electrode which has two major surfaces, the first major surface lying in close contact with the second major surface of said solid film; and
methanol fuel which lies in direct contact with the second major surface of said negative electrode.

4,390,604

COMPLEX METAL SULFIDE CATHODES FOR NONAQUEOUS CELLS

William P. Evans, Rocky River, and Violeta Z. Leger, North Olmsted, both of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1981, Ser. No. 278,896
Int. Cl.³ H01M *6/14, 4/58, 4/52, 4/56*
U.S. Cl. 429—197 **12 Claims**

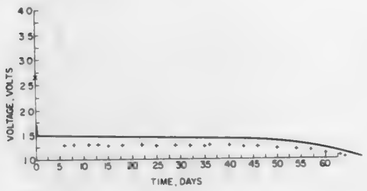
1. A solid cathode material for nonaqueous cell systems which comprises a metal sulfide selected from the group consisting of $PbFeS_2$ and a material having the formula

$$M_aFe_bS_c$$

where

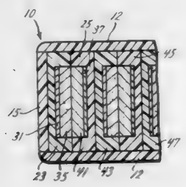
M is one or more mono- or divalent metals selected from the group consisting of Co, Ni, Sn, Mn, Zn, Cd, Hg and Ag;

Fe is divalent iron;
S is sulfur (as sulfide);



a and b are each greater than 0 with the proviso that a+b=2 when M is divalent and a+b=3 when M is monovalent; and
c=2.

4,390,605
SOURCE OF ELECTRICITY
Frank D. Marhanka, 30 Ruth Dr., Florissant, Mo. 63031
Continuation-in-part of Ser. No. 852,708, Nov. 18, 1977, abandoned, and a continuation-in-part of Ser. No. 852,925, Nov. 18, 1977, abandoned. This application Mar. 1, 1979, Ser. No. 16,360
Int. Cl.³ H01M 6/00
U.S. Cl. 429—218 **11 Claims**

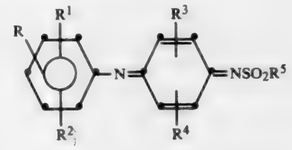


1. A source of electricity which comprises a first electrode, a second electrode that is spaced from said first electrode, said electrodes being made of metals that are spaced apart in the electromotive series, a first mass which contains particulates and liquid and which is electrically conductive, said mass abutting, and being in electrically-conducting engagement with, the inner surface of said first electrode, a second mass which contains particulates and liquid and which is electrically conductive, at least one of the particulates in said second mass being different from all of the particulates in said first mass, said second mass abutting, and being in electrically-conducting engagement with, the inner surface of said second electrode, said first mass and said second mass having confronting surfaces that abut, and are in intimate electrical engagement with, each other, one of said masses having a polarity-imparting material therein, and said polarity-imparting material and said liquids enabling said masses to cause said electrodes to supply a unidirectional flow of current through any load which is connected across them.

4,390,606
COLOR-FORMING PARA-SULFONAMIDODIPHENYLAMINE DYE PRECURSOR AND SULFONIMIDE DYE IN PHOTOGRAPHIC MATERIAL AND PROCESS
Rolf S. Gabrielsen, Webster; Patricia A. Graham, Williamson; James E. Klijanowicz, Pittsford, and Max H. Stern, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 280,626, Jul. 6, 1981, abandoned. This application Jul. 1, 1982, Ser. No. 394,349
Int. Cl.³ G03C 7/00, 1/40
U.S. Cl. 430—9 **55 Claims**

45. In an exposed and processed photographic element comprising a support having thereon a dye image, the improvement comprising:

as said dye image, a dye consisting essentially of a sulfonimide dye represented by the formula:



wherein:

R is in the meta or para position and is an electron donating substituent selected from



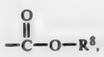
alkoxy containing 1 to 20 carbon atoms, aryloxy containing 6 to 20 carbon atoms, sulfonamido and carboxamido groups;

R^1 is in the ortho or meta position and is hydrogen, alkyl containing 1 to 3 carbon atoms, carbamoyl, alkoxy containing 1 to 3 carbon atoms, sulfonylalkyl containing 1 to 3 carbon atoms, sulfonylaryl containing 6 to 12 carbon atoms, chlorine, bromine, iodine or fluorine;

R^2 is hydrogen, alkyl containing 1 to 3 carbon atoms, carbamoyl, alkoxy containing 1 to 3 carbon atoms, sulfonylalkyl containing 1 to 5 carbon atoms, sulfonylaryl containing 6 to 12 carbon atoms, chlorine, bromine, iodine or fluorine;

R^3 is hydrogen, alkyl containing 1 to 20 carbon atoms, haloalkyl containing 1 to 3 carbon atoms, alkoxy containing 1 to 20 carbon atoms, an ester containing 1 to 20 carbon atoms, carboxy, carboxamido, chlorine, bromine, iodine, fluorine, carbamoyl, sulfonic acid, sulfamyl, sulfonylalkyl containing 1 to 5 carbon atoms, ureido or a carbocyclic group containing 5 to 12 carbon atoms;

R^4 is hydrogen, alkyl containing 1 to 3 carbon atoms, alkoxy containing 1 to 20 carbon atoms, an ester represented by the formula



carboxy, carboxamido, chlorine, bromine, iodine, fluorine, carbamoyl, sulfonic acid, sulfamyl, sulfonylalkyl containing 1 to 3 carbon atoms, uredio and a carbocyclic group containing 3 to 6 carbon atoms;

R^5 is alkyl containing 1 to 20 carbon atoms or aryl containing 6 to 20 carbon atoms;

R^6 is hydrogen, alkyl containing 1 to 20 carbon atoms,



or aryl containing 6 to 20 carbon atoms, or represents, with R^7, atoms completing a 5- or 6-member heterocyclic group;

R^7 is alkyl containing 1 to 20 carbon atoms, carbamoyl, carboxamido, or represents, with R^6, atoms completing a 5- or 6-member heterocyclic group;

R^8 is alkyl containing 1 to 4 carbon atoms; and

R^{6A} is alkyl containing 1 to 20 carbon atoms.

4,390,607
CHARGE TRANSFER IMAGING PROCESS
Hsin-hsin Chou, Woodbury, and William A. Hendrickson, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 3, 1982, Ser. No. 345,401
Int. Cl.³ G03G 13/18
U.S. Cl. 430—48 **11 Claims**

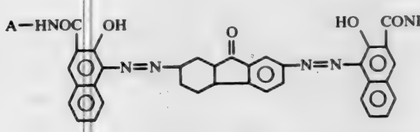
1. A process for providing an image by transferring an imagewise distributed charge from one surface to another and subsequently forming a visible image on the another surface to which said charge is transferred characterized by the fact that said transferring is effected by close proximity between two surfaces at least one of which surfaces has conductivity sites comprising discrete sites of an inorganic material, said discrete sites having an average length of between 1.0 and 20.0 nm and covering between 0.1 and 40% of said surface.

4,390,608
LAYERED CHARGE GENERATOR/TRANSPORT ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR USES BISAZO PIGMENT
Mitsuru Hashimoto, Numazu; Masaomi Sasaki, Susono; Toshio Fukagai, Numazu, all of Japan; Tatsuya Katoh, deceased, late of Yokodera, Japan (by Tazuki Katoh, heir), and by Mankichi Katoh, heir, Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Dec. 9, 1981, Ser. No. 329,083
Claims priority, application Japan, Dec. 9, 1980, 55-173692; Dec. 9, 1980, 55-173693; Dec. 9, 1980, 55-173694; Dec. 9, 1980, 55-173695; Dec. 9, 1980, 55-173696; Dec. 9, 1980, 55-173697; Dec. 9, 1980, 55-173698; Dec. 19, 1980, 55-178754; Dec. 19, 1980, 55-178764; Dec. 19, 1980, 55-178773; Dec. 19, 1980, 5 5-178774; Dec. 19, 1980, 55-178775; Dec. 19, 1980, 55-178776; Dec. 19, 1980, 55-178777; Dec. 19, 1980, 55-178778; Dec. 19, 1980, 55-178779
Int. Cl.³ G03G 5/06
U.S. Cl. 430—57 **11 Claims**

1. In a layered electrophotographic photoconductor comprising an electroconductive support material and a photoconductive double layer which consists of a charge generation layer and a charge transport layer, the improvement wherein:

a. said charge generation layer comprises a charge generating material selected from the group consisting of bisazo pigments represented by formula (1)

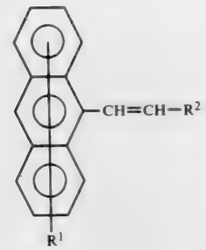
(1)



wherein A represents—C_6H_4—Cl(o), —C_6H_4—Cl(m), —C_6H_4—Br(o), —C_6H_4—Br(m), —C_6H_4—F(o), —C_6H_4—F(m), —C_6H_4—F(p), or —C_6H_4—I(m); and

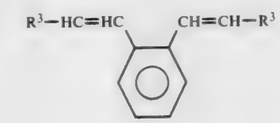
b. said charge transport layer comprises a charge transporting material selected from the group consisting of the anthracene compounds represented by formula (2) and distyrylbenzene compounds represented by formula (3)

(2)



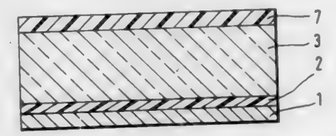
wherein R^1 represents hydrogen or halogen; and R^2 represents a substituted or unsubstituted phenyl group, a naphthyl group, an anthryl group or a carbazole group,

(3)



wherein R^3 represents a carbazoyl group, a pyridyl group, a thienyl group, an indolyl group, a furyl group, a phenyl group, a styryl group, a naphthyl group, an anthryl group, which phenyl group, styryl group, naphthyl group and anthryl group are unsubstituted or substituted with one member selected from the group consisting of a dialkylamino group, an alkyl group, an alkoxy group, a carboxyl group or an esterified carboxyl group, halogen, a cyano group, an aralkylamino group, an amino group, a hydroxy group, a nitro group and an acetylamino group.

4,390,609
ELECTROPHOTOGRAPHIC RECORDING MATERIAL WITH ABRASION RESISTANT OVERCOAT
Wolfgang Wiedemann, Geisenheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Aug. 7, 1981, Ser. No. 291,050
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1980, 3032774
Int. Cl.³ G03G 5/14
U.S. Cl. 430—58 **7 Claims**



1. An electrophotographic recording material comprising an electrically conductive support, a photoconductive layer containing at least one organic charge carrier generating compound and at least one organic charge transporting compound, and a protective transparent covering layer having a thickness in the range from about 0.5 to about 10 μm and comprising a surface abrasion resistant subsequently crosslinkable material, said abrasion resistant material being a two-component system comprising a polyisocyanate selected from the group consisting of aliphatic polyisocyanates and aromatic polyisocyanates and a cross-linking, hydroxyl group containing compound

selected from the group consisting of saturated polyesters, saturated polyethers, acrylic resins and epoxy resins.

4,390,610

LAYERED ELECTROPHOTOGRAPHIC IMAGING ELEMENT, APPARATUS AND METHOD SENSITIVE TO GALLIUM ARSENIDE LASER, THE ELEMENT INCLUDING TWO CHARGE GENERATION LAYERS AND A POLYCARBONATE ADHESIVE LAYER

Larry D. Bowden, Boulder County; Albert H. Miyashita, Boulder, and Charles I. Ravenelle, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1981, Ser. No. 316,368
Int. Cl.³ G03G *5/06*

U.S. Cl. 430—58 **8 Claims**

1. A layered electrophotographic imaging element, having a spectral sensitivity compatible with the spectral output of a gallium arsenide layer, which spectral output is maximum at about 8200 angstroms, said element comprising:

an electrically conductive layer;

a layer of polycarbonate polymer on said conductive layer and acting as an adhesive layer for

a first charge generating layer containing an active charge generating constituent selected from the group chlorodiane blue and tetramethylbenzidine, located on said polycarbonate layer;

a second charge generating layer on said first charge generating layer and containing hydroxy squarylium as its active charge generating constituent; and

a charge transport layer on said second charge generating layer.

4,390,611

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE AZO PIGMENT CONTAINING MEMBERS

Shozo Ishikawa; Kazuharu Katagiri; Katsunori Watanabe, and Makoto Kitahara, all c/o Copyer Kabushiki Kaisha, 3-3, Shimorenjaku 6-chome, Mitaka-shi, Tokyo, Japan

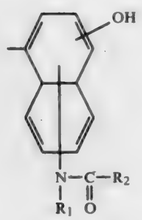
Filed Sep. 22, 1981, Ser. No. 304,564

Claims priority, application Japan, Sep. 26, 1980, 55-132965; Oct. 4, 1980, 55-138263; Oct. 4, 1980, 55-138264; Oct. 4, 1980, 55-138265; Oct. 4, 1980, 55-138266; Nov. 4, 1980, 55-153814; Nov. 28, 1980, 55-166557; Jul. 3, 1981, 56-104856; Jul. 3, 1981, 56-104857; Jul. 3, 1981, 56-104858
Int. Cl.³ G03G *5/06, 5/14*

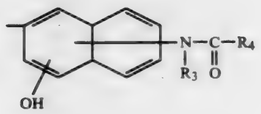
U.S. Cl. 430—59 **72 Claims**

1. An electrophotographic photosensitive member comprising a conductive support, a charge transport layer, and a charge generating layer comprising azo pigments having at least one azo group linked to a coupler residue represented by the following formula or:

Formula [1]



Formula [2]



4,390,612

COLLOID RELIEF IMAGES FORMED BY OXIDIZED DEVELOPER TRANSFER

Robert L. Rutledge, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 904,546, May 10, 1978, Pat. No. 4,363,864. This application Aug. 13, 1982, Ser. No. 407,720
Int. Cl.³ G03C *5/54*

U.S. Cl. 430—202 **8 Claims**

1. A process for forming a colloid relief image on a substrate, comprising the steps of:

a. exposing to actinic light a sheet structure comprising a substrate having coated on one surface thereof a first layer comprising a colloid material capable of being tanned when contacted by oxidized silver halide developer, and coated over said first layer a second layer comprising a photographic silver halide emulsion, said emulsion containing substituted gelatin, said substituted gelatin being substantially resistant to tanning by said oxidized silver halide developers;

b. developing said exposed sheet structure with oxidizable silver halide developers;

c. washing said sheet structure with warm water, whereby all of said second layer is removed from said sheet structure together with portions of said first layer which have not been tanned by contact with oxidized silver halide developers.

4,390,613

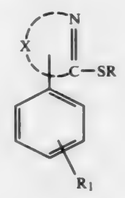
DIFFUSION TRANSFER PHOTOGRAPHIC SYSTEM UTILIZING SUBSTITUTED PHENYLMERCAPTOAZOLES

Avinash C. Mehta, Belmont; George H. Nawn, Westwood, and Lloyd D. Taylor, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 5, 1981, Ser. No. 222,502
Int. Cl.³ G03D *1/48*

U.S. Cl. 430—219 **40 Claims**

1. A photographic product for use in forming a diffusion transfer photographic image comprising a photosensitive element comprising a support carrying at least one silver halide emulsion layer having associated therewith an image dye-providing material, a second sheet-like element positioned in superposed or superposable relationship with said photosensitive element, an image receiving layer positioned in one of said elements, means for lowering the pH of an aqueous alkaline processing composition positioned in one of said elements, a rupturable container releasably holding an aqueous alkaline processing composition adapted, when distributed between a pair of predetermined layers carried by said photosensitive element and said second element, to develop said silver halide emulsion and provide a diffusion transfer image on said image receiving layer, said product including at least one compound represented by the formula



wherein X represents the nonmetallic atoms necessary to form a nucleus which completes a 5- or 6-membered heterocyclic moiety on said structure, R is H, an alkali metal or an group which is cleavable in said aqueous alkaline processing composition and R_1 is either a group which has a pKa of from about 7 to about 14 which is ionizable to an anion and wherein the silver salt of the mercaptan resulting from cleavage or ionization of —SR is more soluble in said aqueous alkaline processing composition in the pH range within which R_1 is ionized to an anion than said silver salt is below that pH range, or a precursor,

wherein said processing composition initially has a pH substantially equal to or above the pKa of R_1 and said means for lowering the pH of an aqueous alkaline processing composition is adapted to lower the pH of said aqueous alkaline processing composition below the pKa of R_1.

4,390,614

COLOR FACSIMILE PRINTING DEVICE COMPRISING PHOTOSENSITIVE INK IN PORES

Richard M. Peck, 3113 Club Dr., Allentown, Pa. 18103; Robert B. Reif, Grove City, and Loren R. Albrechtson, Columbus, both of Ohio, assignors to Richard M. Peck, Allentown, Pa.

Filed Mar. 16, 1981, Ser. No. 244,523
Int. Cl.³ G03C *11/12, 1/76, 1/40*

U.S. Cl. 430—252 **32 Claims**

1. A printing device comprising a printing element and an ink having photosensitivity and the ability to be transferred to a substrate, wherein said printing element comprises pores having openings at a printing surface of said element and said ink is disposed within said pores and is restricted from lateral movement within the element.

4,390,615

COATING COMPOSITIONS

Robert W. Courtney, 8, Greenoak Rise, Biggin Hill, Kent; Stephen J. Parker, 33 Gillmans Rd., Orpington, Kent, and Alan C. Threadgold, 23, Stuart Close, Swanley, Kent, all of England

Continuation of Ser. No. 91,543, Nov. 5, 1979, abandoned. This application Dec. 9, 1981, Ser. No. 329,054
Int. Cl.³ H05K *3/28*

U.S. Cl. 430—315 **3 Claims**

1. A method of forming a pattern of solder upon a layer of an electrically conductive metal supported on an electrically non-conductive substrate by providing the metal layer with a patterned solder resist coating, whereby portions of the metal layer are coated with the solder resist coating and other parts of the metal layer are not so coated, and contacting the metal layer provided with the solder resist coating with molten solder whereby solder adheres to the portions of the metal layer not coated with the solder resist coating, in which the solder resist coating is formed by polymerizing, by image-wise exposure to actinic radiation, a photopolymerizable coating and wherein unexposed portions of said photopolymerizable coating is removed by a solvent, the improvement consisting essentially of the steps of:

(1) applying a coating composition comprising:

(a) an ethylenically unsaturated polymerizable reaction product of an aromatic polyepoxide and an ethylenically unsaturated carboxylic acid and principally expoxy acrylate, which product is solid or semi-solid in nature;

(b) an inert inorganic filler, the said filler and the said polymerizable raaction product being present in a weight ratio of from 20 to 65 parts by weight of filler to from 80 to 35 parts by weight of polymerizable reaction product;

(c) a photopolymerization initiator for the said polymerizable reaction product; and

(d) a volatile organic solvent for the said polymerizable reaction product;

(2) allowing said coating composition to dry; and

(3) removing said unexposed positions of said polymerizable coating.

4,390,616

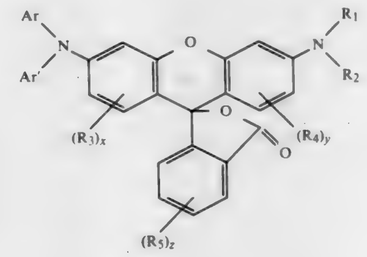
IMAGE RECORDING MEMBERS

Kozo Sato; Ken Iwakura, both of Minami-ashigara, and Akira Igarashi, Fujinomiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 1, 1980, Ser. No. 212,010
Claims priority, application Japan, Nov. 30, 1979, 54-155117
Int. Cl.³ G03C *1/52*

U.S. Cl. 430—338 **19 Claims**

1. An image recording member containing, in combination with a color developing electron acceptor, as a dye precursor a diarylaminofluoran compound represented by the formula (I)



(I)

wherein

Ar and Ar' each represent an aryl group or a heterocyclic ring, or Ar and Ar' together can form a heterocyclic ring,

R_1 and R_2 each represent hydrogen, an alkyl group, a cycloalkyl group, an aralkyl group, an aryl group, or a heterocyclic ring, or R_1 and R_2 together form a heterocyclic ring,

R_3, R_4 and R_5 each represent an alkyl group, an alkoxy group, a halogen atom, a nitro group, an amino group, an alkylamino group, a dialkylamino group, or an acylamino group,

x and y are each 0 or an integer of from 1 to 3, and

z is 0 or an integer of from 1 to 4.

4,390,617

METHOD FOR THE FORMATION OF PHOTOGRAPHIC IMAGES

Kenichiro Okaniwa; Toyoaki Masukawa; Kiyoshi Yamashita, and Wataru Ishikawa, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,806
Claims priority, application Japan, Mar. 18, 1980, 55-35095
Int. Cl.³ G03C *5/24*

U.S. Cl. 430—350 **11 Claims**

1. A method for forming a photographic image comprising imagewise exposing a silver halide photographic material which has at least one hydrophilic layer containing a reducing agent for silver halide or a precursor thereof coated on a support, and heating the exposed silver halide photographic material in the presence of a compound that generates base upon the application of heat and represented by the formula $M_iH_m(PO_n)_i jH_2O$ wherein M is Li, Na, K, Rb, Be, Mg, Ca, or Ba, l and i individually are integers from 1 to 3, m is an integer from 0 to 4, n is 3 or 4 and j is an integer from 0 to 12.

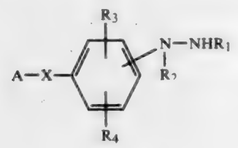
4,390,618

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Hidetoshi Kobayashi; Toshirou Takahashi; Shigeo Hirano; Takeshi Hirosa, and Keiichi Adachi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

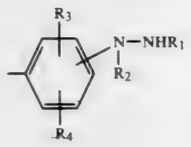
Filed Mar. 15, 1982, Ser. No. 357,930
Claims priority, application Japan, Mar. 13, 1981, 56-36051
Int. Cl.³ G03C *1/40*
U.S. Cl. 430—543 **4 Claims**

1. A silver halide photographic light-sensitive material comprising a layer containing a coupler compound represented by formula (II)



(II)

wherein A represents a residue of a compound capable of undergoing coupling reaction with an oxidation product of an aromatic primary amine developing agent by the removal of one hydrogen atom from the active portion of the said compound; R_1 represents a formyl group, an acyl group, a sulfonyl group, an alkoxycarbonyl group, a carbamoyl group, or a sulfamoyl group; R_2 represents a hydrogen atom, an acetyl group, an ethoxycarbonyl group, or a methanesulfonyl group; each of R_3 and R_4 represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, or a halogen atom; and X represents a divalent linking group bonding A to



through a hetero atom.

4,390,619

LEUKOCYTE OR PLATELET STORAGE USING ION-EXCHANGE RESINS

Denise Harmening-Pittiglio, Silver Spring, Md., assignor to James Clifford Haight, Gaithersburg, Md.

Filed Sep. 28, 1981, Ser. No. 306,322
Int. Cl.³ A61K *35/14*
U.S. Cl. 435—2 **20 Claims**

1. In a composition of matter consisting essentially of metabolizing leukocytes or platelets in an in vitro environment capable of supporting platelet metabolism, the improvement which comprises a water-insoluble polymer containing releasable phosphate or bicarbonate ions for supplying a physiologically acceptable, continuous, sustained release source of buffer to said platelets in an amount sufficient to maintain both pH and ATP levels equal to at least 60% of those of freshly prepared platelets for a storage period of at least 7 days of storage at 22° C.

4,390,620

METHOD AND COMPOSITION FOR THE DETECTION AND STUDY OF CELLULAR ACTIVITY OR THE LIKE AND MEANS FOR APPLYING SUCH METHOD

Guy-Alain Junter; Jean-Francois Lemeland; Eric Selegny, and Jean-Claude Vingent, all of Rouen, France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

Continuation of Ser. No. 921,706, Jul. 3, 1978, abandoned. This application Dec. 16, 1980, Ser. No. 216,911
Claims priority, application France, Jul. 4, 1977, 77 20538
Int. Cl.³ C12Q *1/00, 1/29, 1/04, 1/06*
U.S. Cl. 435—4 **97 Claims**

1. A method for determining the presence or absence of cells, cellular fractions or organites in a liquid medium, said method comprising:

(1) mixing

(A) a liquid medium having sufficient ionic conductivity to permit potentiometric measurements, a pH buffered about 7.0, and containing an energy substrate selected from those which cells, cellular fractions or organites are known to metabolize by at least one metabolic route with

(B) an electron transporter having an initial ratio of oxidized to reduced forms selected from those electron transporters which are a known part of at least one of said metabolic routes, whereby the metabolic activity of the cells, cellular fractions or organites induces a change in the initial ratio of oxidized to reduced form of said electron transporter causing a change in potential of said liquid medium, and

(2) measuring the potential of the medium as a function of time to determine the change in potential which resulted from said change in the ratio of oxidized to reduced form of the electron transporter, said change in ratio having resulted from the metabolic activity of cells, cellular fractions or organites during the time period over which measurements were made, and

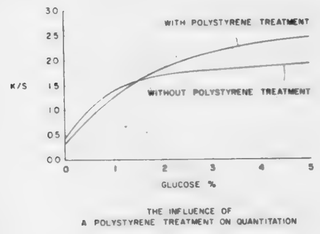
(3) relating the change in potential to the presence or absence of cells, cellular fractions or organites in the liquid medium at the time when the measurements were commenced.

4,390,621

METHOD AND DEVICE FOR DETECTING GLUCOSE CONCENTRATION

Robert Bauer, Bristol, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 216,529, Dec. 15, 1980, Pat. No. 4,336,330. This application Mar. 1, 1982, Ser. No. 353,748
Int. Cl.³ G01N *33/50;* **C12Q** *1/54*
U.S. Cl. 435—14 **7 Claims**



THE INFLUENCE OF A POLYSTYRENE TREATMENT ON QUANTITATION

5. A method for determining the glucose concentration in a test sample containing from about ½ to 10 percent glucose which comprises the steps of providing a test device which includes a carrier having impregnated therein an enzymatic testing composition comprising glucose oxidase, peroxidase, and a chromogen; subsequently impregnating the carrier with from 0.5 percent to 1.5 percent by weight of a solution of polystyrene; contacting said test sample with the carrier of said test device; and observing a detectable response, whereby the glucose concentration is determined.

4,390,622

NEISSERIA BACTERIA SPECIES IDENTIFICATION AND BETA LACTAMASE TESTING METHODS

Garry W. Cartwright, 2227 Flat Creek, Richardson, Tex. 75080

Filed Sep. 21, 1981, Ser. No. 303,725
Int. Cl.³ C12Q *1/34, 1/38, 1/36;* **C13Q** *1/12*
U.S. Cl. 435—18 **35 Claims**

1. A method for providing rapid, high intensity, visual indication of the presence of Neisseria bacteria species in a specimen comprising: the steps of admixing the specimen with a peptone buffer and pH indicator reagent system to form a specimen suspension, contacting the reagent system specimen suspension with at least one carbohydrate substrate taken from the class consisting of glucose, maltose, sucrose and lactose, permitting the reagent system specimen to react with the contacted carbohydrate substrate, and visually observing the reaction results for color change in a predetermined time period.

4,390,623

SERUM-FREE AND MITOGEN-FREE T-CELL GROWTH FACTOR AND PROCESS FOR MAKING SAME

Hans-Ake Frabricius, Breisach, and Roland Stahn, Holzhausen, both of Fed. Rep. of Germany, assignors to Hooper Trading Company, Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 193,112, Oct. 2, 1980, abandoned. This application Mar. 26, 1981, Ser. No. 247,769
Int. Cl.³ C12P *21/00*
U.S. Cl. 435—68 **13 Claims**

1. A process for producing a serum-free and mitogen-free T-cell growth factor comprising:

(1) separating peripheral mononuclear blood cell from a donor;

(2) stimulating the cells by incubating the cells in a liquid tissue culture medium supplemented with serum and a mitogen;

(3) separating and washing the stimulated cells to remove substantially all of the serum and mitogen; and

(4) conditioning the cells obtained in step (3) by incubating the cells in the presence of a serum-free and mitogen-free liquid tissue culture medium to thereby transfer the T-cell growth factor into the liquid phase.

4,390,624

PREPARATION OF PROLINE FROM ALGAE

Richard I. Leavitt, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 10, 1981, Ser. No. 329,224
Int. Cl.³ C12P *13/24;* **C12R** *1/89*
U.S. Cl. 435—107 **11 Claims**

1. A process for the production of L-proline in high amounts which comprises cultivating Chlorella sp. 580 algae under high intensity illumination in an aqueous growth medium containing an amount sufficient of nutrients including nitrogen to effect growth of the algae and a high concentration of sodium chloride of up to 1M under an aerobic condition, providing an adequate supply of carbon in the form of CO_2 in a depth not exceeding approximately 20cm of the aqueous medium for a period of time until the density of the algae substantially prevents the utilization of CO_2 by the algae to produce L-proline and thereafter continuing to cultivate the algae in the absence of light and CO_2 while providing acetate ion to the medium in an amount sufficient to produce high amounts of L-proline within the algae for a period of time until algae of high L-proline content are obtained, harvesting the algae and recovering from same the L-proline thus produced.

4,390,625

METHOD FOR CONTROLLING THE AMOUNT AND DISTRIBUTION OF ALKALOIDS FORMED IN A FERMENTATION PROCESS

Eva Udvardy Nagy nee Cserey Pechany; Miklos Budai; Gyorgy Fekete; Sandor Görög; Bulcsu Herenyi; Geza Wack, and Karoly Zalai, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

Filed Feb. 6, 1981, Ser. No. 232,173
The portion of the term of this patent subsequent to Jan. 18, 2000, has been disclaimed.
Int. Cl.³ C12P *17/18;* **C12R** *1/645*
U.S. Cl. 435—119 **3 Claims**

1. A fermentation process for the preparation of ergot alkaloids which comprises:

cultivating a *Claviceps purpurea* variant strain capable of producing primarily ergocornine, alpha-ergocryptine and beta-ergocryptine, while submerged in a liquid aerated culture broth containing carbon and nitrogen sources, at a temperature of 20°–26° for 4 to 8 days at a pH between 5.4 and 6.8;

employing *Claviceps purpurea* MNG 00186 as the *Claviceps purpurea* variant strain capable of producing primarily ergocornine, alpha-ergocryptine and beta-ergocryptine; and

adding to said culture broth a sufficient amount of a compound selected from the group consisting of a C_4 to C_6 keto acid, a C_4 to C_6 hydroxy acid, or a C_4 to C_6 amino acid, wherein said compound is (a) a bioprecursor of isoleucine, or (b) a compound having the ability to promote the formation of isoleucine, to obtain a higher yield of said ergot alkaloids as well as to increase the percentage of the beta-ergocryptine in said ergot alkaloids.

4,390,626

IMMOBILIZED AMINOACYLASE

Ichiro Chibata, Suita; Tetsuya Tosa, Kyoto; Takao Mori, Takatsuki, and Motoki Fujimura, Kyoto, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Jul. 29, 1981, Ser. No. 288,170
Claims priority, application Japan, Aug. 13, 1980, 55-112024
Int. Cl.³ C12N *11/08, 11/06, 11/14;* **C12P** *13/04*
U.S. Cl. 435—176 **10 Claims**

1. An immobilized aminoacylase preparation which consists essentially of aminoacylase and a water-insoluble porous anion exchanger selected from the group consisting of trimethylammonium-introduced styrene resin and trimethylammonium-introduced silica, wherein the water-insoluble porous anion exchanger has a pore size of about 150 to 3,000 Å, pore volume of about 0.3 to 1.0 ml/g, specific surface area of about 10 to 150 m^2/g, and particle size of about 0.1 to 1.2 mm, the aminoacylase being bonded to the porous anion exchanger and cross-linked with an aliphatic dialdehyde having 2 to 6 carbon atoms.

4,390,627

IMMOBILIZATION OF THE SUCROSE MUTASE IN WHOLE CELLS OF PROTAMINOBACTER RUBRUM

Oreste J. Lantero, Jr., Goshen, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 26, 1981, Ser. No. 315,191
Int. Cl.³ C12N *11/08;* **C12P** *19/12;* **C12N** *11/02, 11/06*
U.S. Cl. 435—180 **5 Claims**

1. A method for the immobilization of the sucrose mutase in a microorganism of the species *Protaminobacter rubrum* which comprises the steps of:

(a) providing an aqueous medium containing the microorganism cells;

(b) adding tannic acid to the aqueous medium in an amount of from 5 to 25 weight percent of the microorganism cells;

(c) adding polyethylenimine of a molecular weight of from about 300 to 100,000 to the aqueous medium in an amount

of from about 2 to 25 weight percent of the microorganism cells;

(d) adding an adduct of an epihalohydrin/polyamine copolymer which is a water soluble cationic polymer obtained by the polymerization of an epihalohydrin with an alkylene polyamine having the formula $R_1R_2NRNH_2$ wherein R is a lower alkylene having from 2 to about 6 carbon atoms, and R_1 and R_2 are each a lower alkyl of from about 1 to about 6 carbon atoms, the mole ratio of epihalohydrin to polyamine being from about 0.60:1 to about 2.7:1, said polymerization comprising reacting with the alkylene polyamine from about 50 to about 90 percent of the amount of epihalohydrin to be polymerized, allowing the reaction to continue until the reaction medium attains a substantially uniform viscosity, and reacting the remaining portion of the epihalohydrin incrementally to obtain the cationic polymer, the temperature of polymerization being from about 60° C. to about 120° C. and glutaraldehyde wherein the weight ratio of copolymer to glutaraldehyde in the adduct is from 1:3.3 to 8.6:1 and the adduct's weight percent of the microorganism cells is from 25 to 95 to form a reaction product;

(e) removing the reaction product from the aqueous medium; and

(f) drying the reaction product.

4,390,628

PROCESS FOR ISOLATING CU, ZN-SUPEROXIDE DISMUTASE FROM AQUEOUS SOLUTIONS CONTAINING SAID ENZYME TOGETHER WITH ACCOMPANYING PROTEINS

Jack T. Johansen, Rungsted Kyst, Denmark, assignor to De Forenede Bryggerier A/S, Copenhagen, Denmark

Continuation-in-part of Ser. No. 315,392, Oct. 27, 1981, which is a continuation of Ser. No. 149,383, May 13, 1980, abandoned. This application Nov. 10, 1981, Ser. No. 320,156

Claims priority, application Denmark, May 17, 1979, 2033/75; Apr. 21, 1980, 1687/80

Int. Cl.³ C12N *9/02*

U.S. Cl. 435—189 **3 Claims**

1. A process for isolating Cu,Zn-superoxide dismutase (SOD) from aqueous solutions containing said enzyme together with accompanying proteins, characterized by subjecting the solution at a pH of 4.7 to 5.0 to chromatography on a cation exchange resin of the same polarity as SOD in the pH range used.

4,390,629

POLYPEPTIDE DEGRADING ENZYMES

Alfred L. Goldberg, Brookline; K. H. Sreedhara Swamy, Allston, and Chin H. Chung, Chestnut Hill, all of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Mar. 30, 1981, Ser. No. 249,104

Int. Cl.³ C12N *9/52, 9/48;* C12R *1/19, 1/42*

U.S. Cl. 435—220 **2 Claims**

1. A method of preparing a proteinaceous mixture having proteolytic activity and containing proteases Do, Re, Mi, Fa, and Pi, said method comprising

providing a culture of cells of *E. coli* or a species of Salmonella or Shigella,

breaking open said bacterial cells to form a cell homogenate,

removing water-insoluble cellular components from said homogenate to form an extract containing solubilized protein,

fractionating the protein of said extract, and

isolating said fraction exhibiting proteolytic activity and containing protease, Do, Re, Mi, Fa, and Pi, said fraction comprising said proteinaceous mixture.

4,390,630

HEMENTIN--A FIBRINOLYTIC AGENT

Roy T. Sawyer, Penclawdd, Wales; Gunther S. Stent, Kensington, Calif.; Andrei Z. Budzynski, Glenside, and Stephanie A. Olexa, Hellertown, both of Pa., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Oct. 28, 1980, Ser. No. 201,655

Int. Cl.³ C12N *9/64, 9/48, 9/50;* A61K *37/54*

U.S. Cl. 435—226 **5 Claims**

1. Hementin, a polypeptide of between about 80 to about 85 kdal isolated from *Haementeria ghilianii*, characterized by having cathodic electrophoretic mobility on cellulose acetate in a 0.075 M sodium veronal buffer, pH 8.6; having anticoagulant activity which activity is independant of the inactivation of thrombin; and by having the ability to dissolve previously formed fibrin clots and having activity toward fibrinogen different from plasmin.

4,390,631

PROCESS FOR PRODUCING BACTERIA HAVING HIGH NITRILASE ACTIVITY

Ichiro Watanabe; Kanehiko Enomoto, both of Yokohama, and Yasuo Ogawa, Kawasaki, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1981, Ser. No. 307,268

Claims priority, application Japan, Sep. 30, 1980, 55/135120

Int. Cl.³ C12N *1/38;* C12P *13/02;* C12N *9/78, 1/20*

U.S. Cl. 435—244 **5 Claims**

1. A process for producing bacteria having a high nitrilase activity comprising incubating bacteria having an ability to produce nitrilase, wherein the improvement comprises using a culture medium containing a water soluble iron compound in an amount of at least 0.2 mg/l as iron.

4,390,632

STABILIZATION PROCESS FOR BIOLOGICAL CELLS AND STABILIZED COMPOSITIONS THEREOF

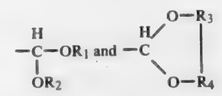
James H. Carter, II, Ft. Lauderdale, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jul. 14, 1980, Ser. No. 167,803

Int. Cl.³ G01N *33/48*

U.S. Cl. 436—10 **19 Claims**

1. A stabilized biological cell composition treated to comprise at least one acetal radical selected from the group consisting of



wherein R_1, R_2, R_3 and R_4 are groups having 1 to about 6 carbon atoms.

4,390,633

DETERMINING REPRODUCTIVE STATUS OF MAMMALS WITH NMR OF CERVICAL MUCUS

Charles P. Merilan, and Jerald R. Sears, both of Columbia, Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Filed Jul. 24, 1981, Ser. No. 286,593

Int. Cl.³ G01N *33/48, 24/08*

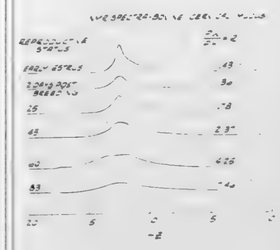
U.S. Cl. 436—65 **8 Claims**

1. The method for determining pregnancy or reproductive status in a mammal which comprises the steps of:

a. obtaining at periodic time intervals mucus samples from the cervix of a mammal whose reproductive status is to be determined;

b. obtaining nuclear magnetic resonance spectra of said samples;

c. determining the nuclear magnetic resonance ratios from said spectra on the basis of the relationship



$$\frac{\text{peak width at half amplitude}}{\text{peak height}}$$

and

d. evaluating the reproductive status of said mammal from said ratios.

4,390,634

CALCIUM FLUOROPHLOGOPITE GLASS-CERAMICS

Syed N. Hoda, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 16, 1982, Ser. No. 349,001

Int. Cl.³ C03C *3/22*

U.S. Cl. 501—3 **3 Claims**

1. A glass-ceramic article which is machinable with hand and machine tools, exhibits high mechanical strength, good resistance to attack by acids and alkalies, excellent dielectric properties, and which does not swell when immersed into water nor develop cracks during the crystallization process having a base composition which is essentially free from alkali metal and which consists essentially, expressed in terms of weight percent on the oxide basis, of about 35–60% SiO_2, 5–20% Al_2O_3, 15–35% MgO, 5–20% CaO, and 5–15% F, which is nucleated with 0.5–4% SrO+BaO, consisting of 0–3.0% SrO and 0–4.0% BaO, or, if SrO and/or BaO are absent, with 8–15% TiO_2, said article containing not more than 10% by volume residual glass and wherein calcium fluorophlogopite is essentially the sole crystal phase when nucleated with 0.5–5.0% SrO+BaO and wherein calcium fluorophlogopite and a minor amount of rutile are essentially the sole crystal phases present when nucleated with 8–15% TiO_2.

4,390,635

ALKALI METAL ALUMINOBOROSILICATE PHOTOCHROMIC GLASSES

David W. Morgan, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,199

Int. Cl.³ C03C *3/26, 3/08*

U.S. Cl. 501—13 **2 Claims**

1. A green transparent photochromic glass wherein crystals of silver chloride and silver bromide sensitized with copper impart the photochromic behavior to the glass and wherein over 50% of the copper is present as Cu^+ ions, said glass consisting essentially, expressed in terms of weight percent on the oxide basis, of 0–2.5% Li_2O, 0–9% Na_2O, 0–17% K_2O, and 0–8% Cs_2O, the sum of $Li_2O+Na_2O+K_2O+Cs_2O$ being 8–20%, 5–25% Al_2O_3, 14–23% B_2O_3, 40–65% SiO_2, 0.004–0.02% CuO, 0.15–0.3% Ag, 0.1–0.25% Cl, 0.1–0.2% Br, the molar ratio alkali metal oxide:B_2O_3 ranging between about 0.55–0.85, where the composition is essentially free from divalent metal oxides other than CuO, the weight ratio Ag:(Cl+Br) ranging between about 0.65–0.95, about 0.03–0.25% Cr_2O_3, and about 0.05–0.3% As_2O_3 and/or Sb_2O_3, as analyzed in the glass.

4,390,636

GLASS FRIT OF DIOPSIDE CRYSTAL PRECURSORS

Werner F. Votava, Broadview Heights, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 188,919, Sep. 19, 1980, Pat. No. 4,337,316. This application Mar. 5, 1982, Ser. No. 353,286

The portion of the term of this patent subsequent to Jun. 29, 1999, has been disclaimed.

Int. Cl.³ C03C *1/00, 1/04*

U.S. Cl. 501—24 **3 Claims**

1. A substantially completely vitreous, smelted, clear glass frit containing:

(a) leachable amounts of deflocculent oxides and flocculent alkaline earths and adapted to serve as a ceramic body flux in a ceramic slip without thickening the slip to an unworkable viscosity,

(b) said frit being completely liquid at a smelting temperature of about 2600° F. to about 2750° F. and containing in solution the diopside precursors CaO, MgO, and SiO_2, said frit consisting essentially of the following components, said diopside precursors comprising at least 35% by weight of said frit:

CaO: 6.27 to 23.9

MgO: 4.45 to 18.4

SiO_2: 46.0 to 60.92

Additive: 5 to 20

said additive being selected from one or more of the following in approximately the percent indicated based on the total weight of the glass:

K_2O: 1.4 to 1.54

Na_2O: 2.5 to 9.1

Li_2O: 0.1 to 1.19

Al_2O_3: 6.7 to 11.32

(c) said frit being adapted upon heating to crystallize from solution at least a fluxing amount of said precursors in the form of fine diopside crystals having an average particle size less than one micron and being substantially free of unreacted alkaline earths, and

(d) said deflocculent oxides and flocculent alkaline earths being leachable from said frit in sufficient relative amounts to counterbalance each other and prevent said thickening of the slip to an unworkable viscosity, and

(e) the foregoing composition containing additionally

B_2O_3: 2.88 to 4.98

P_2O_5: 3.5 to 3.61

4,390,637

X-RAY ABSORBING GLASS FOR A COLOR CATHODE RAY TUBE HAVING A CONTROLLED CHROMATICITY VALUE AND A SELECTIVE LIGHT ABSORPTION

Nobutaka Daiku, Otsu, Japan, assignor to Nippon Electric Glass Company, Limited, Otsu, Japan

Filed Sep. 9, 1981, Ser. No. 300,588

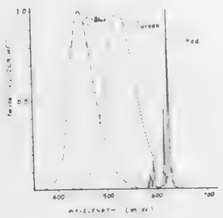
Claims priority, application Japan, Sep. 10, 1980, 55-126344; Jan. 29, 1981, 56-12676

Int. Cl.³ C03C *3/10*

U.S. Cl. 501—64 **5 Claims**

1. A glass for use in color cathode ray tube having the composition essentially consisting, by weight, of 50–75% SiO_2, 0–5% Al_2O_3, 0–4% CaO, 0–3% MgO, 0–13% SrO, 0–16% BaO, 0–3% PbO, 0–3% ZnO, 0–4% ZrO_2, the sum of SrO+-

$BaO+PbO+ZnO+ZrO_2$ being 5–25%, 0–4% Li_2O, 3–15% Na_2O, 2–15% K_2O, the sum of Na_2O+K_2O being 5–20%,



0–2% TiO_2, 0–3% CeO_2, 0.1–5.0% Nd_2O_3, 0.0005–0.05% Cr_2O_3, and 0–2% Pr_6O_{11}.

4,390,638

ACIDPROOF, HYDROLYSIS-RESISTANT OPTICAL AND OPHTHALMIC GLASS OF LOW DENSITY

Karl Mennemann, Taunusstein; Georg Gliemeroth, and Volkmar Geiler, both of Mainz-Finthen, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Jul. 13, 1981, Ser. No. 282,787

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1980, 3026605

Int. Cl.³ C03C *3/08, 3/10*

U.S. Cl. 501—77 **14 Claims**

1. An optical ophthalmic glass having an index of refraction of ≧1.69, an Abbe number of ≧37, and a density of ≦3.30 g/cm³, consisting essentially of (in % by weight):

SiO_2	18–36
B_2O_3	3–18
GeO_2	0–8
Al_2O_3	0–6,
wherein $SiO_2 + B_2O_3 + Al_2O_3 + GeO_2$ =	25–39
P_2O_5	0–14,
wherein $SiO_2 + B_2O_3 + Al_2O_3 + GeO_2 + P_2O_5$ =	30–44
Li_2O	0–12
Na_2O	0–14
K_2O	0–18
$Li_2O + Na_2O + K_2O$ =	2–18
MgO	0–15
CaO	7–21.35
MgO + CaO	15–32
SrO	0–13
BaO	0–17
ZnO	0–15
PbO	0–10
SrO + BaO + ZnO + PbO	0–20
TiO_2	3.95–14
Nb_2O_5	0–13
WO_3	0–10
$TiO_2 + Nb_2O_5 + WO_3$ =	10–21
ZrO_2	2.9–15,
La_2O_3	0–20
Y_2O_3	0–16
Gd_2O_3	0–16
Yb_2O_3	0–10
$La_2O_3 + Y_2O_3 + Gd_2O_3 + Yb_2O_3$ =	0–20
Ta_2O_5	0–13
HfO_2	0–6
SnO_2	0–6.

4,390,639

UPGRADING SYNTHESIS GAS

Frederick A. Pesa, Aurora, and Anne M. Graham, Northfield, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 21, 1981, Ser. No. 332,773

Int. Cl.³ C07C *1/04, 7/163, 29/15*

U.S. Cl. 518—713 **16 Claims**

1. A process for the upgrading of synthesis gas with good selectivity to olefins and oxygenated hydrocarbons comprising contacting carbon monoxide and hydrogen in the vapor phase at a temperature of at least 250° C. and a pressure of at least 500 psi in the presence of a catalyst of the formula

$$RuO_x/Au_a^*$$

wherein

a=about 0.5 to about 1.5 and

x=number of oxygens needed to satisfy the valence requirements of the other elements.

4,390,640

PROCESS FOR THE PRODUCTION OF OPTIONALLY-FOAMED POLYURETHANES

Werner Rasshofer, Cologne; Geza Avar, Leverkusen; Hans-Albrecht Freitag, Bergisch Gladbach; Gerhard Grögler, Leverkusen, and Richard Kopp, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

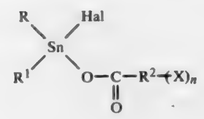
Filed Jan. 25, 1982, Ser. No. 342,303

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3100977

Int. Cl.³ C08G *18/14, 18/24*

U.S. Cl. 521—51 **5 Claims**

1. A process for the production of optionally-foamed polyurethanes comprising reacting polyisocyanates with organic compounds containing at least two isocyanate-reactive hydrogen atoms and having molecular weights from 400 to 10,000 in the presence of activators, characterized in that the activators used are compounds corresponding to the general formula:



in which

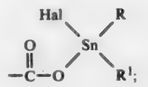
R and R^1 may be the same or different and represent C_1–C_{20}-alkyl, C_5–C_7-cycloalkyl or C_7–C_{30}-alkaryl radicals;

Hal represents a halogen atom;

R^2 represents a halogen atom;

R^2 represents a saturated aliphatic radical containing from 1 to 30 carbon atoms; an unsaturated aliphatic radical containing from 2 to 18 carbon atoms; a cycloaliphatic radical containing from 4 to 7 carbon atoms; or an aromatic radical containing from 6 to 14 carbon atoms;

X represents hydrogen or a group corresponding to the formula



and

n is an integer of from 1 to 3.

4,390,641

FLAME-RETARDANT BENZYLIC-ETHER PHENOLIC MODIFIED FOAM AND METHOD OF PREPARING SAME

Stuart B. Smith, Conyers, Ga., assignor to Thermocell Development, Ltd., Knoxville, Tenn.

Continuation-in-part of Ser. No. 281,290, Jul. 7, 1981. This application Jan. 4, 1982, Ser. No. 336,681

Int. Cl.³ C08G *18/32*; C08J *9/00*

U.S. Cl. 521—103 **18 Claims**

1. A method of preparing a nonfriable, closed-cell, benzylic-ether phenol-formaldehyde modified thermosetting foam product characterized by a low flame spread and smoke properties, which method comprises:

(a) reacting, under substantially anhydrous conditions, 100 parts of a benzylic-ether phenol-formaldehyde resin, having a hydroxyl number of greater than about 200, with from about 50 to 150 parts by weight per 100 parts of the benzylic-ether phenol-formaldehyde resin in the presence of a weak acid catalyst at a pH of from about 4.0 to 6.5, to form a benzylic-ether phenol resin prepolymer; and

(b) reacting the prepolymer, in the presence of a blowing amount of a blowing agent to form a foamable mass, and a catalytic amount of an organometallic catalyst, which is not affected by the pH of the prepolymer, with from about 50 to 200 parts by weight of a methylene diphenyl polyisocyanate in an exothermic reaction, to provide for the further heat and acid condensation of the phenolic resin prepolymer and the reaction of the isocyanate with the prepolymer, to produce a low-friability, substantially closed-cell, phenolic modified thermosetting foam product composed substantially of acid methylene linkages.

4,390,642

FLAME-RETARDANT, THERMOSETTING FOAM PRODUCT AND METHOD OF PREPARING SAME

Stuart B. Smith, Conyers, Ga., assignor to Thermocell Development, Ltd., Knoxville, Tenn.

Continuation-in-part of Ser. No. 238,467, Feb. 26, 1981, Pat. No. 4,350,776. This application Jul. 7, 1981, Ser. No. 281,290

Int. Cl.³ C08G *18/32*

U.S. Cl. 521—112 **13 Claims**

1. A method of preparing a thermosetting foam product, which method comprises: reacting 100 parts of a phenol-formaldehyde resin having a mole ratio of phenol to formaldehyde of from about 1:1.2 to 1:2.0 with from about 10 to 90 parts of a furfural-alcohol polymer, and with from 50 to 250 parts of melamine, and with from 50 to 250 parts of methylene diphenyl isocyanate, the reaction carried out in the presence of a blowing agent, and a catalytic amount of an isocyanate trimerization catalyst, to provide a substantially closed-cell thermosetting foam characterized by low friability and high structural strength and with good flame and heat properties.

4,390,643

PROCESS FOR PRODUCING AMINE FORMALDEHYDE RESIN FOAM

Toshiaki Kanada, Matsudo; Kazuhiro Suzuki; Hiroshi Yoshioka, both of Tokyo; Kenji Maeda, and Yoshihiro Tsurumi, both of Kanamachi, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 124,907, Feb. 26, 1980, abandoned. This application Sep. 3, 1981, Ser. No. 299,168

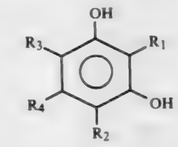
Claims priority, application Japan, Feb. 26, 1979, 54-21604; Nov. 28, 1979, 54-153812; Nov. 28, 1979, 54-153813

Int. Cl.³ C08J *9/14*

U.S. Cl. 521—117 **10 Claims**

1. A process for producing amine formaldehyde resin foam by using a precondensate for the amine formaldehyde resin, foaming agent, a surfactant and a curing agent, characterized in that the foaming agent is selected from the group consisting of aliphatic hydrocarbons, halogenated aliphatic hydrocarbons having a boiling point in the range of from about −30° C. to about 30° C. or mixtures thereof, and the foaming agent being used in amount of from about 0.07 mol to about 1.0 mol per 100 g of solid content of the precondensate for amine formaldehyde resin, and

wherein the foaming system further contains at least one modifier selected from the group consisting of a compound represented by the formula:



I

wherein R_1, R_2 and R_3 are independently selected from the group consisting of hydrogen and alkyl having 1–3 carbon atoms, and R_4 is selected from the group consisting of hydroxyl, hydrogen and alkyl having 1–3 carbon atoms; mixtures of the compounds of formula I; a condensate of each of the compounds of formula I and formaldehyde; and mixtures of the condensate and the compound of formula I, the process comprising

mixing the precondensate, the foaming agent, the modifier and the surfactant under such conditions that the foaming agent is maintained liquid,

emulsifying the resulting mixture at a temperature which is at least 0° C. and higher than the boiling point of the foaming agent by 5°–50° C. and at such a pressure that the foaming agent is maintained liquid at said temperature,

while or after mixing the resulting emulsified mixture with the curing agent, transferring the resulting mixture to an environment having atmospheric pressure or depressurizing the mixture to atmospheric pressure at a temperature which is between 0° and 35° C. and higher than the boiling point of the foaming agent to foam the mixture.

4,390,644

ISOCYANURATE FOAMS USING A SULFONIUM ZWITTERION/METAL CARBONYLATE MIXTURE AS CATALYST

Donald H. Clarke, Essexville; George J. Pomranky, and Donald L. Schmidt, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

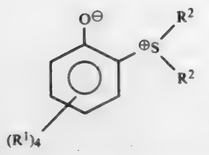
Filed May 18, 1981, Ser. No. 264,503

Int. Cl.³ C08G *18/14, 18/16, 18/58, 18/65*

U.S. Cl. 521—121 **18 Claims**

1. A process for preparing a foamed polymer having isocyanurate moieties and moieties that are adducts of isocyanate moieties and active hydrogen moieties, which comprises reacting an organic polyisocyanate having a plurality of isocyanate moieties or a mixture of organic polyisocyanates with (a) an active hydrogen compound having a plurality of active hydrogen moieties and (b) a compound containing oxirane groups in the presence of a blowing agent and a catalyst, the catalyst comprising an ortho-sulfonium phenoxide, which is soluble in the polyisocyanate or mixture of polyisocyanates, and a carbonylate salt, under conditions such that the phenoxide and the carbonylate salt initiate reaction of the active hydrogen compound, the compound containing oxirane groups and the polyisocyanate or mixture of polyisocyanates to form a foamed polymer having isocyanaurate moieties and adducts of isocyanate moieties and active hydrogen moieties.

17. An ortho-sulfonium phenoxide represented by the formula:



wherein each R^1 is independently a suitably inert monovalent radical capable of existing as a substituent on the benzene ring provided that at least one R^1 is an organic radical containing at least four carbon atoms; and each R^2 is independently a suitably inert monovalent radical and/or two of R^2 are collectively a suitably inert divalent organic radical capable of forming a heterocyclic ring with S^+.

4,390,645

STABLE DISPERSIONS OF POLYMERS IN POLYFUNCTIONAL COMPOUNDS HAVING A PLURALITY OF ACTIVE HYDROGENS AND POLYURETHANES THEREFROM

Dwight K. Hoffman; Robert F. Harris; Nancy B. Tefertiller, all of Midland, Mich., and Randall C. Rains, Angleton, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 23, 1979, Ser. No. 97,070

Int. Cl.³ C08G *18/14, 18/63*

U.S. Cl. 521—137 **9 Claims**

1. A copolymer dispersion which is stable and which comprises:

(A) a polyahl having dispersed therein;

(B) an addition copolymerizate of (1) an adduct of a polyahl and an active ethylenically unsaturated isocyanate with (2) at least one other ethylenically unsaturated monomer; or

(C) an adduct of (1) a polyahl and (2) an addition copolymer of an active ethylenically unsaturated isocyanate with at least one other ethylenically unsaturated monomer which is nonreactive with the isocyanate; or

(D) a mixture of (B) and (C); or

(E) a mixture of (B) and/or (C) and a polymer of at least one other ethylenically unsaturated monomer.

4. A polyurethane composition which is the reaction product of the copolymer dispersion of claim **1** and an organic polyisocyanate.

4,390,646

ERASABLE INKS CONTAINING THERMOPLASTIC BLOCK COPOLYMERS

Edward J. Ferguson, Avon, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Nov. 5, 1981, Ser. No. 318,305

Int. Cl.³ C08L *53/00;* **C08K** *5/01;* **C09D** *11/18*

U.S. Cl. 523—161 **5 Claims**

1. An erasable ink for use in a ball-point writing instrument comprising a pigmented organic solvent solution containing a thermoplastic block copolymer having an arrangement of A (thermoplastic) and B (rubbery) blocks selected from the class consisting of ABA, $(AB)_nX$ and $(—AB)—_n$; in which said thermoplastic blocks are selected from the class consisting of styrene, ester and urethane blocks; in which said rubbery blocks are selected from the class consisting of butadiene, isoprene and ethylene-butylene blocks; in which the ratio of said rubbery blocks to said thermoplastic blocks is from 60:40 to 90:10; and in which the solubility parameter of said organic solvent is from about 7 to about 10.5.

4,390,647

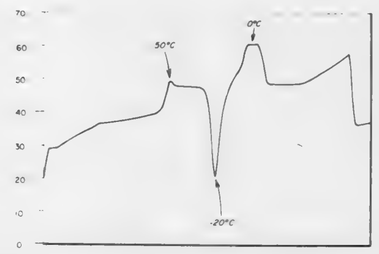
NON-STARCH CONTAINING AQUEOUS SIZING COMPOSITION FOR GLASS FIBERS AND SIZED GLASS FIBERS FOR USE IN REINFORCING ELASTOMERS

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 27, 1981, Ser. No. 238,724

Int. Cl.³ C08L *91/06;* **C03C** *25/02;* **C08K** *9/06*

U.S. Cl. 523—212 **12 Claims**



1. An aqueous non-starch-containing composition for treating glass fibers to produce treated glass fibers to be further treated with an aqueous adhesive coating composition to reinforce elastomeric materials, consisting essentially of:

A. about 0.5 to about 5 weight percent of one or more water dispersible, high molecular weight polyols selected from the group consisting of polyoxy alkylene polyols and polyalkylene polyols having an average molecular weight from about 300 to about 12,000 and mixtures thereof present as flexible film formers,

B. about 0.1 to about 2 weight percent of one or more silane coupling agents,

C. about 0.1 to about 4 weight percent of a cationic lubricant,

D. water in the amount to give a total solids content for the aqueous composition in the range of about 3 to about 20 weight percent.

4,390,648

REINFORCED RUBBERY COMPOSITION

Carl J. Stacy, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 11, 1980, Ser. No. 158,652

Int. Cl.³ C08K *9/00, 3/34, 3/10*

U.S. Cl. 523—216 **13 Claims**

1. A method for improving the hysteresis of a rubbery composition comprising a rubbery polymer and a silicon containing reinforcing agent, said method comprising the steps of:

adding said silicon containing reinforcing agent to said rubbery polymer in the form of zinc-modified silica which is formed by the steps of adding a suitable acidic material to an alkali metal silicate solution to thereby precipitate silica from said alkali metal silicate solution, adding a suitable zinc salt to the solution formed by the adding of said acidic material to said alkali metal silicate solution to thereby form said zinc modified silica, wherein less than the stoichiometric amount of said acidic material, which would be required to completely neutralize the alkali metal oxide which is present in said alkali metal silicate solution, is added to said alkali metal silicate solution, and wherein said zinc salt is added to the solution formed by the adding of said acidic material to said alkali metal silicate solution after the precipitation of silica from said alkali metal silicate solution is substantially complete; and curing said rubbery composition.

4,390,649

INJECTION MOLDABLE POLY(ETHYLENE TEREPHTHALATE)

Shaul M. Aharoni, Morris Plains, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Feb. 18, 1982, Ser. No. 349,781

Int. Cl.³ C08L *67/02;* **C08K** *3/10*

U.S. Cl. 524—167 **15 Claims**

1. In a molding composition comprising

a. a thermoplastic, saturated, linear polyester of terephthalic acid,

b. a plasticizing material and

c. a crystal nucleating agent, the improvement which consists in using as the nucleating agent a powdered crystalline metal hydroxide of grain size not exceeding 45 microns, selected from the group of hydrated aluminum hydroxide containing 30±5% water of hydration, nickel hydroxide, indium hydroxide and copper hydroxide in an amount sufficient to increase the crystallization temperature of an article molded from the polyester composition by at least about 15° C. with regard to that of the mixture of a and b.

4,390,650

PROCESS FOR MAKING FIBROUS MATERIAL WATER REPELLENT

Hans Deiner, Neusäss, and Willy Bernheim, Diedorf, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 14, 1981, Ser. No. 301,569

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1980, 3035824

Int. Cl.³ C08L *83/06*

U.S. Cl. 524—266 **8 Claims**

1. A process for making fibrous material water-repellent, which comprises treating the fibrous material with an aqueous bath containing

(A) an emulsified organopolysiloxane with at least 2 modified or unmodified, crosslinkable, hydroxyl groups,

(B) an emulsion of a polysilicic acid ester of a monovalent alcohol with 1 to 4 carbon atoms, which has been emulsified by the aid of a non-ionic emulsifier, and shows a pH-value of 5 to 7.5, and

(C) a reaction product of an organic compound containing at least one halohydrin group or epoxy group or both and an organic compound containing hydrogen atoms bound to nitrogen, which reaction product is water-soluble or at least water-dispersible when in form of its salt.

4,390,651

PHENYL-CONTAINING ORGANOPOLYSILOXANES

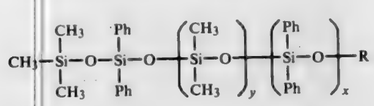
Edgar D. Brown, Jr., Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 748,739, Dec. 9, 1976, which is a division of Ser. No. 506,007, Sep. 16, 1974. This application Dec. 24, 1981, Ser. No. 334,219

Int. Cl.³ C08K *5/54*

U.S. Cl. 524—267 **4 Claims**

1. A polycarbonate composition comprising in admixture an aromatic polycarbonate and a phenyl-containing organopolysiloxane fluid characterized by the general formula:



wherein Ph is phenyl, wherein x and y have a combined value sufficient to provide a phenyl content of from about 40 to about 80 percent by weight, and R is a mixture of hydrogen and trimethylsilyl sufficient to provide the fluid with a trimethylsiloxy content of from about 12 to 21 percent by weight.

4,390,652

NITRILE BARRIER RESINS CONTAINING FILLERS AND PROCESSING AIDS

Ralph E. Isley, Northfield, Ohio, assignor to Standard Oil Company, Cleveland, Ohio

Filed May 26, 1981, Ser. No. 267,154

Int. Cl.³ C08K *5/15*

U.S. Cl. 524—322 **16 Claims**

1. A composition which comprises a blend of (1) a copolymer produced by the polymerization of a major proportion of a mono-unsaturated nitrile and a minor proportion of another monovinyl monomer component polymerizable therewith; (2) an aliphatic carboxylic acid with 18 or less carbon atoms; and (3) an alkaline filler containing a polyvalent cation.

4,390,653

FLAME-RETARDANT FILLED POLYPROPYLENE COMPOUND WITH IMPROVED FLOW PROPERTIES

Thomas L. Levendusky, Greensburg, and William L. Burton, Natrona Heights, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 22, 1982, Ser. No. 341,904

Int. Cl.³ C08K *3/22, 9/04*

U.S. Cl. 524—322 **16 Claims**

1. A surface modified inorganic filler composition compatible with thermoplastic resins, said composition comprising

(a) a powdered inorganic filler having a median particle size of less than about 15 microns, said filler being selected from the group consisting of alumina hydrate, bauxite and magnesium hydroxide;

(b) about 0.5 to 1.5%, based on the weight of the filler, of a liquid surface modifier for the filler, said liquid surface modifier having a titer below about 20° C. and an iodine value of about 15 or less; and

(c) about 0.8 to 2.4%, based on the weight of the filler, of a solid mixture of C_{14}–C_{20} carboxylic acids, said solid mixture having a titer of about 30° to 70° C. and an iodine value of about 15 or less.

4,390,654

VINYL CHLORIDE POLYMER FLAMEPROOFED AND SMOKE INHIBITED WITH A COPPER PHOSPHATE

Ralf Schüler, Recklinghausen, and Günther Maahs, Marl, both of Fed. Rep. of Germany, assignors to Chemische Werke Huels, A.G., Marl, Fed. Rep. of Germany

Filed Apr. 28, 1982, Ser. No. 372,762

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1981, 3116969

Int. Cl.³ C08K *3/32*

U.S. Cl. 524—413 **12 Claims**

1. A polyvinyl chloride blend comprising a vinyl chloride polymer and an amount of copper (II) hydroxide phosphate of the formula $Cu_3(PO_4)_2.Cu(OH)_2$ effective as a smoke retardant.

4,390,655

STABILIZED ETHYLENE/TETRAFLUOROETHYLENE COPOLYMERS

Jerrel C. Anderson, Vienna, W. Va., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 257,107, Apr. 24, 1981, abandoned. This application May 3, 1982, Ser. No. 374,616

Int. Cl.³ C08K *3/16*

U.S. Cl. 524—413 **7 Claims**

1. An ethylene/tetrafluoroethylene copolymer composition having good thermal stability which comprises (a) an ethylene/tetrafluoroethylene copolymer which contains 40 to 70 mol percent tetrafluoroethylene units and complementally 60–30 mol percent ethylene units and optionally, up to 20 mole percent units of at least one copolymerizable ethylenically unsaturated comonomer of 3–12 carbon atoms, and (b) from 0.05 to 500 ppm, based on parts of (a) and (b), cuprous iodide

or cuprous chloride (as copper) free of other inorganic halide salts.

4,390,656

FLAME-RESISTANT MOLDING COMPOSITIONS

Carlos Weise, Burghausen; Dietrich Wolfer, Untereching, and Jörg Patzke, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 9, 1981, Ser. No. 223,605

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1980, 3002397

Int. Cl.³ C08K *3/04;* **C08L** *83/06*

U.S. Cl. 524—493 **15 Claims**

1. A flame-resistant molding composition comprising (1) a diorganopolysiloxane which is free of hydrogen and contains at least 90 percent by weight of diorganopolysiloxane units, (2) an organic polymer selected from the group consisting of polymers of ethylene, propylene, isobutylene, methylbutene-1, butene-1, methylpentene-1, isoprene, butadiene, styrene, hexadiene, dicyclopentadiene, ethylidenenorbornene, vinyl chloride, vinylidene chloride, chloroprene, acrylic acid, methacrylic acid, acrylamide, methacrylamide, acrylonitrile, methacrylonitrile, methyl acrylate, methyl methacrylate, ethyl methacrylate, vinyl acetate, vinyl laurate, vinyl alcohols, saponification products of copolymers of ethylene and vinyl acetate, polyvinyl acetals, chlorosulfonated polyethylenes, polyamides, polyimides, polycarbonates, polyurethanes, polyacetals, polyethers, polysulfones, polyesters, polyepichlorohydrins, polycarbodiimides and graft or block copolymers of diorganopolysiloxanes obtained from the polymerization of a diorganopolysiloxane and at least one organic compound having at least one aliphatic carbon-carbon double bond, (3) graphite and (4) a crosslinking agent.

4,390,657

COMPOSITION OF POLYCARBONATE, AN ABS RESIN AND AN ACRYLATE-METHACRYLATE INTERPOLYMER

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Oct. 19, 1981, Ser. No. 312,795

Int. Cl.³ C08L *69/00*

U.S. Cl. 524—504 **29 Claims**

1. A thermoplastic molding composition which comprises:
(a) a polycarbonate resin;
(b) a copolymer which comprises acrylonitrile, butadiene and an alkenyl aromatic compound; and
(c) a multiphase composite interpolymer which comprises a C_1–C_5 acrylate and a C_1–C_5 methacrylate.

4,390,658

COATING COMPOSITIONS

Clive W. Graetz, Glen Waverly, Australia; Morice W. Thompson, Cox Green, and Charles Bromley, Bourne End, both of United Kingdom, assignors to Imperial Chemical Industries Limited, London, England and Dulux Australia Limited, Victoria, Australia

Filed Oct. 22, 1980, Ser. No. 199,640

Claims priority, application United Kingdom, Oct. 22, 1979, 7936556

Int. Cl.³ C08L *1/34*

U.S. Cl. 524—512 **9 Claims**

1. A crosslinkable coating composition which is miscible in all proportions with water, the film-forming material in which consists of:
(A) crosslinkable, water-insoluble film-forming acrylic polymer particles of size less than 10 microns which are sterically stabilised in dispersion in a liquid blend of:
(B) at least one water-soluble crosslinking agent for the film-forming polymer, with
(C) at least one water-soluble, non-volatile substance of molecular weight less than 1000 which is capable of participating in the reaction whereby the film-forming polymer is crosslinked but which does not appreciably dissolve or swell the particles of the said polymer, the amount of the crosslinking agent (B) being up to 30% of the total weight of the constituents (A), (B) and (C) and the amount of the non-volatile reactive constituent (C) being up to 40% of the said total weight and the sterically stabilised aqueous dispersion of the acrylic polymer (A) being obtained by the polymerisation of monomers in an aqueous medium in which the monomers are soluble but the resulting polymer is insoluble, in the presence of an amphipathic dispersing agent which contains in the molecule as one component thereof as polymer chain which is solvatable by the liquid blend of the crosslinking agent (B) and the co-reactive substance (C) and as another component thereof a polymer chain which is not solvatable by that blend and which anchors itself to the particles of the polymer (A).

4,390,659

METHOD FOR THE PREPARATION OF QUATERNARY CARBOXAMIDE POLYMERS

Frederick W. Stanley, Jr., and William J. Fairchok, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 10, 1980, Ser. No. 158,095

Int. Cl.³ C08L *61/32*

U.S. Cl. 524—555 **13 Claims**

1. A method for preparing a quaternary carboxamide polymer comprising the step of simultaneously contacting a carboxamide polymer with a lower aldehyde and a secondary amine or the reaction product thereof and at least a portion of a quaternizing agent prior to the substantial reaction to the carboxamide polymer with the aldehyde, secondary amine or their reaction product and at conditions sufficient to prepare a N-[tri(hydrocarbyl or inertly substituted hydrocarbyl)ammonium alkyl]-carboxamide polymer.

4,390,660

ULTRAVIOLET LIGHT ABSORBING COMPOSITIONS

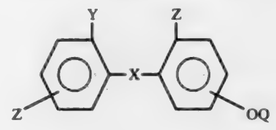
Bruce A. Ashby, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Division of Ser. No. 154,621, May 30, 1981, Pat. No. 4,321,400. This application Dec. 9, 1981, Ser. No. 328,922

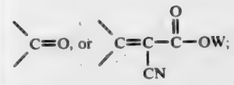
Int. Cl.³ C08K *5/13, 5/16*

U.S. Cl. 524—721 **8 Claims**

1. An aqueous coating composition, which comprises:
(a) a dispersion of a colloidal silica in a solution of the partial condensate of a silanol having the formula $RSi(OH)_3$, where R is selected from the group consisting of alkyl having 1 to 3 carbon atoms and aryl, at least 70 weight percent of which is $CH_3Si(OH)_3$, in a mixture of an aliphatic alcohol and water, said dispersion containing from 10 to 50 percent by weight of solids, said solids consisting essentially of 10 to 70 percent by weight of the colloidal silica and 30 to 90 percent by weight of the partial condensate, and
(b) an effective amount of an ultraviolet light absorbing agent consisting of a compound having the formula



wherein:
X is >C=O, or



Y is H or OH;
Z is H, OH, OQ or OW, where at least one Z is OH if Y is H;
Q is $-CONH(CH_2)_3Si(R_2)_x(OR_1)_y$ or $-CONH(CH_2)_3Si(R_2)_x(OCOR_1)_y$; and
W is C_mH_{2m+1}
where x=0, 1 or 2, y=1, 2 or 3, x+y=3, and R_1 and R_2, independently, are alkyl having 1 to 6 carbon atoms and m=1 to 18.

4,390,661

NOVEL COMPOSITION AND PROCESS FOR PRODUCING SOLID RESIN THEREFROM

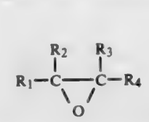
Johann G. Schulz, Pittsburgh, and Daniel Margosian, Verona, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 290,663, Aug. 6, 1981, Pat. No. 4,361,671. This application May 28, 1982, Ser. No. 382,945

Int. Cl.³ C08G *63/42, 63/76, 63/66*

U.S. Cl. 524—878 **59 Claims**

1. A novel composition of matter capable of being cured to a solid resinous material obtained by reacting (1) a coal derivative comprising a mixture of monocyclic, polycyclic, multifunctional carboxylic acids resulting from the interaction of coal with nitric acid with (2) an oxirane defined by the following formula:



wherein R_1, R_2, R_3 and R_4, the same or different, can be hydrogen or an alkyl group having from one to 10 carbon atoms, and then subjecting the resulting reaction product to treatment with hydrogen.

4,390,662

CURABLE RESIN COMPOSITION

Tomonori Ando, Tokyo; Toshiaki Hanyuda, Yokohama; Satohiro Shishido; Fumiaki Sano, both of Kawasaki; Kiyoyuki Ochi, Yokohama; Toshiaki Sugimoto, and Yoshiro Okino, both of Tokyo, all of Japan, assignors to Showa Highpolymer Co., Ltd., Japan

PCT No. PCT/JP80/00274, § 371 Date Mar. 25, 1981, § 102(e) Date Mar. 25, 1981, PCT Pub. No. WO81/01292, PCT Pub. Date May 14, 1981

PCT Filed Nov. 5, 1980, Ser. No. 247,564

Claims priority, application Japan, Nov. 5, 1979, 54-142957

Int. Cl.³ C08L *63/10, 67/06, 75/04*

U.S. Cl. 525—28 **2 Claims**

1. A curable resin composition which comprises:
(a) an unsaturated acrylic urethane prepared by the addition reaction of a hydroxyl-terminated polymer, a polyisocyanate and a monohydroxylalkyl monoacrylate or a monohydroxylalkyl monomethacrylate, substantially free from isocyanate groups and having a weight-average extension of molecular chain of 100 Å or more and
(b) at least one member selected from the group consisting of an unsaturated polyester resin and an epoxy acrylate resin, said unsaturated acrylic urethane being present in an amount effective to increase the toughness of component (b).

4,390,663

SEMI-CONTINUOUS PROCESS FOR MAKING STAR-BLOCK COPOLYMERS

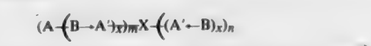
Harold L. Nicholson, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 235,244, Feb. 17, 1981, abandoned. This application Feb. 24, 1982, Ser. No. 351,840

Int. Cl.³ C08F *297/04*

U.S. Cl. 525—53 **6 Claims**

3. A thermoplastic star-block copolymer having a general formula



wherein the A represents a non-elastomeric polymer segment based on the monovinyl aromatic compound, the $(B\rightarrow A')_x$ or $(A'\leftarrow B)_x$ represents an elastomeric polymer segment which is a series of x tapered blocks of conjugated diene (B) to monovinyl aromatic compound (A') copolymers, m and n are integers whose sum is from 3 to 20, x is an integer from 3 to 10 representing the number of additions of conjugated diene used in the semi-continuous process and X is the radical of a polyfunctional coupling agent by means of which the linear polymer blocks are chemically linked to form the star-block copolymers.

4,390,664

PROCESS FOR PREPARING A POLYEPOXIDE AND COMPOSITION THEREFROM

Kaoru Kanayama, Ami, Japan, assignor to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

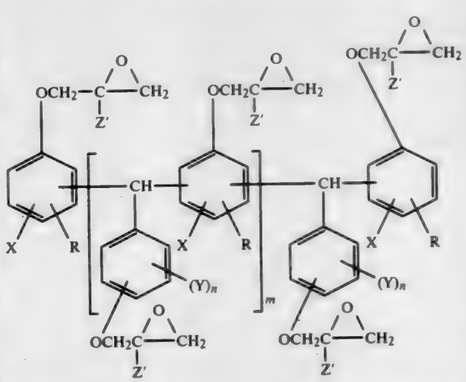
Filed Dec. 30, 1981, Ser. No. 335,813

Claims priority, application Japan, Feb. 27, 1981, 56-26770

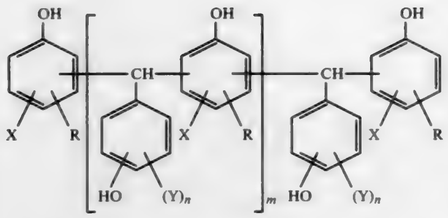
Int. Cl.³ C08G *59/32*

U.S. Cl. 525—117 **11 Claims**

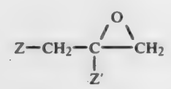
1. A process for preparing a polyepoxide of the formula:



wherein R is H or an alkyl of up to about 18 carbon atoms, X is H or halogen, Y is an alkyl of up to about 18 carbon atoms or methoxy, Z' is H or CH_3, m is an integer of not less than 1; n is 0, 1 or 2, which comprises:
reacting a polyhydric phenol of the formula:



wherein R, X, Y, m and n are the same as defined above and an epihalohydrin or methylepihalohydrin of the formula:



wherein Z represents halogen and Z′ represents H or CH_3.

4,390,665

POLYETHERIMIDE-EPDM TERPOLYMER BLENDS

Harold F. Giles, Jr., Cheshire, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Mar. 18, 1982, Ser. No. 359,258

Int. Cl.³ C08L *79/08*

U.S. Cl. 525—180 **8 Claims**

1. A composition comprising a blend of (a) a minor proportion of an EPDM terpolymer and (b) a polyetherimide.

4,390,666

POLYETHYLENE BLEND COMPOSITION

Kisoo Moriguchi, and Naoji Yoshii, both of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 30, 1982, Ser. No. 403,683

Claims priority, application Japan, Aug. 14, 1981, 56-126587

Int. Cl.³ C08L *23/06, 23/26*

U.S. Cl. 525—194 **7 Claims**

1. A crosslinked polyethylene composition obtained by lightly crosslinking and intimately melt blending a composition comprising high- and medium-density polyethylene (A) having a high molecular weight and a high- and medium-density polyethylene (B) having a low molecular weight, wherein

(i) the viscosity-average molecular weight of polyethylene (A) is 100,000 through 1,000,000, the viscosity-average molecular weight of polyethylene (B) is 1,000 through 100,000, and the ratio of the molecular weight of polyethylene (A) to that of polyethylene (B) is 2 through 100,

(ii) the blending ratio of polyethylene (A) to polyethylene (B) is 5:95 through 80:20, and

(iii) melt index $(MI)_1$ is 0.01 through 3.5, the ratio of the expansion factor α_2 to α_1 (α_2/α_1) is 1.1 through 10, and the ratio of the melt index $(MI)_2$ to $(MI)_1$ $[(MI)_2/(MI)_1]$ is 0.03 through 0.9, wherein:

$(MI)_1$ and $(MI)_2$ are melt indexes of the polyethylene compositions before and after crosslinking, respectively; and

α_1 and α_2 are expansion factors of the polyethylene compositions before and after crosslinking, respectively.

4,390,667

PROCESS FOR INCREASING THE MELT VISCOSITY OF POLYAMIDE WITH ARYL PHOSPHATE COMPOUND

Shaul M. Aharoni, Morris Plains, and Theodore Largman, Morristown, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

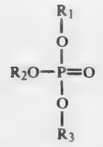
Filed Jul. 6, 1981, Ser. No. 280,564

Int. Cl.³ C08G *9/48, 9/46*

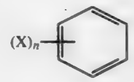
U.S. Cl. 525—420 **13 Claims**

1. A process for decreasing the melt index and increasing the viscosity of a polyamide which comprises:

A. forming a molten mixture of said polyamide and an effective amount of an aryl phosphate compound of the formula:



(a) wherein R_1 is a substituted phenyl group of the formula:



wherein:

X is the same or different at each occurrence and is such that the Hammett sigma (σ) values of X substituents is greater than zero; and

n is an integer which is equal to or greater than 1; and

(b) R_2 and R_3 are the same or different and are individually hydrogen or R_1; and

B. Heating said mixture for a time and at a temperature sufficient to decrease the melt index and increase the viscosity of said polyamide.

4,390,668

AUTOCLAVABLE THERMOPLASTIC MATERIAL WHICH IS HEAT BONDABLE TO A CANNULA AND THE LIKE

Edward B. Garver, Sr., Lindenhurst, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 2, 1981, Ser. No. 326,738

Int. Cl.³ C08L *67/02*

U.S. Cl. 525—444 **7 Claims**

1. A thermoplastic composition consisting essentially of a combination of first and second polymers, said first polymer present in an amount of from about 50% to about 70% by combined weight of said first and second polymers and said first polymer being an autoclavable thermoplastic having a determinable heat bonding characteristic to a metallic member copolyetherester material and said second polymer present in an amount of from about 30% to about 50% by combined by weight of said first and second polymers and said second polymer being a nonautoclavable amorphous thermoplastic copolyester material based on polyethylene terephthalate and having a determinable heat bonding characteristic to the metallic member which exceeds said heat bonding characteristic of said antoclavable material said composition being autoclavable and thermally bondable to metal.

4,390,669

PROCESS FOR MULTI-STEP GAS-PHASE POLYMERIZATION OF OLEFINS

Yoshinori Morita; Shinzi Hayata, both of Iwakuni; Akifumi Kato, Ohtake; Hideo Nara, Ohtake, and Tohru Watanabe, Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

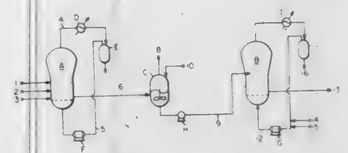
Filed May 22, 1981, Ser. No. 266,593

Claims priority, application Japan, May 27, 1980, 55/69557

The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.

Int. Cl.³ C08F *2/34, 10/00*

U.S. Cl. 526—65 **10 Claims**



1. In a process for polymerizing olefins in the gaseous phase in a first gas-phase polymerization zone and a second gas-phase polymerization zone, which are provided independently from each other, in the presence of a catalyst composed of a transition metal catalyst component and an organometallic compound of a metal of Groups I to III of the periodic table while feeding the catalyst-containing polymer formed in the first zone to the second zone; the improvement comprising

(i) forming a suspension of the polymer from the first zone by feeding an easily volatile hydrocarbon medium, which is liquid under the conditions of feeding the polymer, to a suspension zone in the feed passage for feeding the polymer from the first zone to the second zone, and

(ii) feeding the suspension of the polymer in said liquid medium formed in the suspension zone to the second zone.

4,390,670

ACRYLATE/MALEATE COPOLYMERS, THEIR PREPARATION AND USE AS ANTISCALANTS

Stanley W. Walinsky, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Feb. 9, 1981, Ser. No. 232,475

Int. Cl.³ C08F *2/06*

U.S. Cl. 526—79 **5 Claims**

1. A process for preparing a substantially homogeneous acrylate-maleate copolymer of number average molecular weight from about 500 to 5000, which comprises:

copolymerizing from about 35 to 65 mole percent acrylic or methacrylic acid monomer with from about 65 to 35 mole percent maleic anhydride monomer over a period of from about 0.3 to 10 hours at a temperature of from about 80° to 150° C. in the presence of from about 5 to 25 weight percent polymerization initiator, based on the total weight of said monomers, and from about 45 to 90 weight percent of chain-transfer solvent, based on the total weight of said monomers, initiator and solvent,

said maleic anhydride monomer, said initiator and up to about 10 percent of said acrylic or methacrylic acid monomer being dissolved in said solvent and the remainder of said acrylic or methacrylic acid monomer being introduced over said period at a rate such that said monomer and said copolymer remain in solution in said solvent,

said solvent being selected from the group consisting of ketones, esters and ethers having from 4 to 10 carbon atoms, and mixtures thereof.

4,390,671

CATALYST COMPONENT FOR USE IN THE POLYMERIZATION OF α-OLEFINS AND A METHOD OF USING THE SAME

Masafumi Imai, Ooi; Hiroshi Ueno, Namekawa; Naomi Inaba, Ooi; Makoto Yoda, Kawagoe, and Shozo Wada, Zushi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 59,791, Jul. 23, 1979, Pat. No. 4,253,984. This application Sep. 26, 1980, Ser. No. 191,657

Claims priority, application Japan, Jul. 28, 1978, 53/91536

The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—125 **6 Claims**

1. A process for the polymerization of α-olefins, which comprises subjecting α-olefins to homopolymerization or to copolymerization with ethylene or other α-olefins in the presence of a catalyst comprising:

(a) a titanium-containing solid catalyst component which is produced by a process comprising:

adding from 0.05 to 5 moles per gram atom titanium of tributylaluminum or said aluminum compound complexed with ethyl benzoate to a supported titanium (IV) halide on magnesium halide;

subjecting the mixture to mechanical grinding treatment in the presence of ethylene or propylene to yield a titanium-containing solid catalyst component prepolymerized with from about 0.5 to 100% by weight of polymer;

subjecting the prepolymerized titanium-containing solid catalyst component to a further grinding treatment in vacuum, an inert gas or an inert solvent; and

recovering the resulting titanium-containing solid catalyst component; and

(b) an organo aluminum catalyst component prepared by subjecting an organo aluminum compound and an electron donative compound to a mixing treatment.

4,390,672

MALEIC ACID ANHYDRIDE COPOLYMERS AND THEIR PREPARATION

Wulf von Bonin, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 5, 1981, Ser. No. 318,473

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1980, 3042471

Int. Cl.³ C08F *2/38*

U.S. Cl. 526—209 **4 Claims**

1. A process for the preparation of maleic acid anhydride copolymers with (meth)acrylic acid by radical polymerization in the solvent-free maleic acid anhydride melt in the presence from 0.01 to 2% by weight of initiators at temperatures from 60° to 200° C. comprising polymerizing in the presence of from 0.3 to 1.5% by weight of enol ethers of tetrahydrobenzaldehydes as regulators.

4,390,673

PROCESS FOR PRODUCING SUBSTANTIALLY GEL-FREE BUTADIENE-ISOBUTYLENE COPOLYMERS UTILIZING A BF_3/ROH CATALYST SYSTEM

Kang I. Lee, Framingham, Mass., and James Oziomek, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 11, 1981, Ser. No. 301,482

Int. Cl.³ C08F *4/14*

U.S. Cl. 526—212 **14 Claims**

1. A process for preparing substantially gel-free copolymers of butadiene and isobutylene, having a number average molecular weight of from about 50,000 to about 200,000 and a degree of unsaturation of from about 3 weight percent to about 25 weight percent, which comprises the steps of:

(a) preparing a reaction mixture by dissolving from 50 to 80 mole percent of 1,3-butadiene and from 50 to 20 mole percent of isobutylene monomers in an aliphatic hydrocarbon solvent or a mixture of aliphatic hydrocarbon solvents; and

(b) polymerizing the monomers in the reaction mixture at a temperature of below −95° C. in the presence of a catalyst system consisting of a BF_3 catalyst and an ROH cocatalyst, wherein R is an organic radical selected from the group consisting of alkyl, cycloalkyl, substituted alkyl, aryl and substituted aryl groups, said alkyl groups containing from 1 to 20 carbon atoms; and wherein the molar ratio of BF_3 to ROH is from about 1:1 to about 22:1.

4,390,674

UNIAXIALLY DRAWN VINYLIDENE FLUORIDE POLYMERS

Ian M. Ward, Bramhope, and John C. McGrath, Surbiton, both of England, assignors to National Research Development Corporation, London, England

PCT No. PCT/GB80/00207, § 371 Date Jul. 21, 1981, § 102(e) Date Jul. 21, 1981, PCT Pub. No. WO81/01567, PCT Pub. Date Jun. 11, 1981

PCT Filed Dec. 1, 1980, Ser. No. 285,121

Claims priority, application United Kingdom, Nov. 30, 1979, 7941419

Int. Cl.³ B32B *27/16;* **B29C** *17/02;* **H01L** *41/16*

U.S. Cl. 526—255 **10 Claims**

1. A process for the preparation of a piezoelectric, pyroelectric polyvinylidene fluoride polymer material having a Young's modulus of from 3 to 15 GPa comprising uniaxially drawing in one direction only a sheet of polyvinylidene fluoride at a temperature of from 110° C. to 170° C. to a draw ratio of at least 6 to 1 and poling the drawn sheet by applying an electric field across its thickness to effect its polarization.

4,390,675

CURABLE COMPOSITION AND USE THEREOF

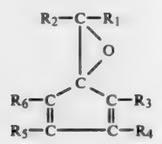
Bruce A. Gruber, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 10, 1981, Ser. No. 300,788

Int. Cl.³ C08F *24/00*

U.S. Cl. 526—273 **12 Claims**

1. A composition containing an epoxidized fulvene of the formula:



wherein each R_1 and R_2 individually is hydrogen or a hydrocarbon containing 1 to 10 carbon atoms, or a hydrocarbon containing one or more oxygen bridges in the chain; or a furyl group; or are interconnected to form a cyclic group, each R_3 and R_6 individually is hydrogen or methyl; each R_4 and R_5 individually is hydrogen or methyl or



provided that a maximum of only one such R_3, R_4, R_5, and R_6 is methyl; and provided that a maximum of any one such R_4 and R_5 is



or prepolymer thereof or mixtures thereof, wherein said prepolymer contains at least about 8% oxirane and a catalytic amount of an acid catalyst having a pKa of about 4 or less.

4,390,676

ULTRAVIOLET ABSORBING LENSES

Samuel Loshaek, Chicago, Ill., assignor to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 741,695, Nov. 15, 1976, Pat. No. 4,304,895, which is a division of Ser. No. 371,603, Jun. 20, 1973, abandoned. This application Jun. 29, 1981, Ser. No. 278,310

The portion of the term of this patent subsequent to Dec. 8, 1998, has been disclaimed.

Int. Cl.³ C02C *7/04;* **C08F** *12/24, 16/12, 216/12*

U.S. Cl. 526—313 **8 Claims**

1. A lens for use by aphakics in contact with the eye comprising a shaped body comprising a polymer formed by copolymerizing a monomer suitable for use in making such lenses and a copolymerizable monomeric ultraviolet absorber, said absorber being in a steady state with respect to extraction thereof from said body by an aqueous medium and being present in an amount sufficient to absorb radiation in the wavelength range of about 340 to 450 mmu.

4,390,677

ARTICLE MOLDED FROM ETHYLENE HYDROCARBON COPOLYMER

Frederick J. Karol; George L. Goeke, both of Belle Mead; Burkhard E. Wagner, Highland Park; William A. Fraser, Princeton, all of N.J.; Robert J. Jorgensen, Dunbar, W. Va., and Nils Friis, Macungie, Pa.

Continuation-in-part of Ser. No. 892,323, Mar. 31, 1978, abandoned. This application Feb. 27, 1979, Ser. No. 14,413

Int. Cl.³ C08F *210/06, 210/08*

U.S. Cl. 526—348.6 **11 Claims**

1. A flexible injection molded article comprising low pressure copolymer of ethylene and at least one monomer selected from the group consisting of propylene and butene-1 having a density of ≧0.91 to ≦0.94; a melt index of ≧2 to ≦80; a M_w/M_n in the range of from about 2.7 to about 4.1; a secant modulus of ≧30,000 to ≦80,000 psi; and a stress crack resistance of greater than 21 days.

4,390,678

ONE-PACKAGE HEAT CURABLE AROMATIC POLYURETHANE COMPOSITION USEFUL FOR JOINING SUBSTRATES AND AS AN IN-MOLD COATING COMPRISING AN ISOCYANATE TERMINATED PREPOLYMER AND A POLYHYDROXY COMPOUND

Stanley B. LaBelle, Anoka, and James A. E. Hagquist, St. Paul, both of Minn., assignors to H. B. Fuller Company, St. Paul, Minn.

Filed Jan. 7, 1982, Ser. No. 337,623

Int. Cl.³ C08G *18/10*

U.S. Cl. 528—60 **29 Claims**

1. A one-package aromatic heat curable polyurethane composition which comprises:

(a) a substantially liquid aromatic isocyanate terminated prepolymer phase comprising the reaction product of an aromatic polyisocyanate compound, and a polyhydroxy compound; and

(b) a separate solid polyhydroxy compound phase, comprising a solid polyhydroxy compound having two or more hydroxyl groups that is insoluble in and dispersed throughout the substantially liquid isocyanate terminated prepolymer phase;

wherein the ratio of OH groups in the solid insoluble polyhydroxy compound phase to the NCO groups in the substantially liquid isocyanate terminated prepolymer phase is less than 2:1.

4,390,679

LATENT URETHANE RESIN SYSTEMS

Jonas Weiss, Port Chester, and Raymond Seltzer, New City, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 17, 1981, Ser. No. 331,858

Int. Cl.³ C08G *18/32*

U.S. Cl. 528—64 **13 Claims**

1. A curable polyurethane resin composition comprising a polyisocyanate and as a curing agent therefor the product resulting from the reaction of an aliphatic, cycloaliphatic or aromatic anhydride or imide with an unsubstituted or lower alkyl-substituted aromatic, araliphatic or cycloaliphatic polyamine.

4,390,680

PHENOLIC HYDROXYL-CONTAINING COMPOSITIONS AND EPOXY RESINS PREPARED THEREFROM

Donald L. Nelson, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 29, 1982, Ser. No. 362,801

Int. Cl.³ C08G *59/00, 65/08, 65/14*

U.S. Cl. 528—97 **21 Claims**

1. An epoxy resin composition resulting from the dehydrohalogenation of the reaction product of

(A) an epoxy alkyl halide; with

(B) an acid catalyzed product resulting from reacting

(1) at least one aromatic hydroxyl-containing compound having from one to two aromatic rings and at least one ortho or para position with respect to a hydroxyl group available for ring alkylation; with

(2) at least one unsaturated hydrocarbon selected from

(a) monounsaturated or diunsaturated hydrocarbons having from 4 to 6 carbon atoms or mixture thereof;

(b) unsaturated hydrocarbons containing an average of from 6 to about 55 carbon atoms per molecule and containing not more than 94 weight percent dicyclopentadiene;

(c) oligomers and/or cooligomers of hydrocarbon dienes, which dienes have from 4 to about 18 carbon atoms and which dienes contain at least 6% by weight of dienes other than dicyclopentadiene; and

(d) mixtures thereof; and

wherein the components (B-1) and (B-2) are employed in quantities which provide a mole ratio of (B-1) to (B-2) of from about 1.5:1 to about 30:1, and components (A) and (B) are employed in quantities which provide an epoxy group to phenolic hydroxyl group ratio of from about 1.5:1 to about 20:1.

4,390,681

LIQUID CRYSTAL COPOLYESTERS

Oliver D. Deex, Clayton, Mo., assignor to Monsanto Company, St. Louis, Mo.

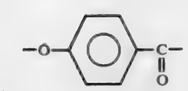
Filed Mar. 4, 1982, Ser. No. 354,569

Int. Cl.³ C08G *63/60*

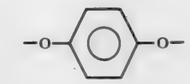
U.S. Cl. 528—193 **5 Claims**

1. A copolyester capable of forming a thermotropic melt phase at a temperature below about 340° C. and having an inherent viscosity of at least about 0.3, consisting essentially of the following divalent radicals:

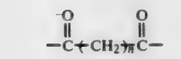
(A)



(B)

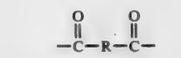


(C)



and

(D)



wherein n is in the range of 6 to 10; wherein R is an aromatic radical, selected from the group consisting of 1,3 phenylene, 1,4-phenylene, 1,5 naphthalene, 2,6-naphthalene, 2,7-naphthalene, wherein the range of radical A is from 10 to 60 mole percent of the copolyester and the range of radical C is from 5 to 100 mole percent of the total of radicals C and D and wherein the inherent viscosity is determined at 30° C. with a solution of copolyester in a phenol symtetrachloroethane solvent pair of weight ratio 3:2, at a concentration of 0.5 gram per 100 ml.

4,390,682

AROMATIC COPOLYESTER

Kayomon Kyo, Kyoto; Yasuhiko Asai, Uji; Isamu Hirose, Kyoto, and Nobuo Suyama, Uji, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

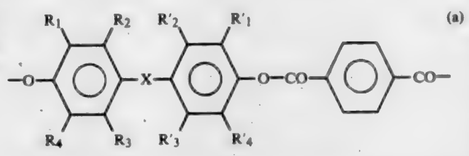
Continuation of Ser. No. 88,313, Oct. 25, 1979, abandoned. This application Oct. 5, 1981, Ser. No. 308,646

Claims priority, application Japan, Oct. 25, 1978, 53-132010

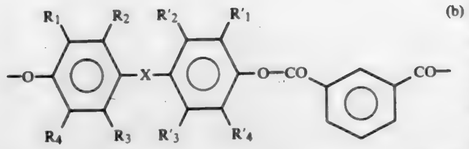
Int. Cl.³ C08G *63/18*

U.S. Cl. 528—194 **12 Claims**

1. An aromatic polyester copolymer consisting essentially of about 10 to about 90 mol% of a recurring unit of the formula (a):


(a)

wherein —X— is selected from the group consisting of —O—, —S—, —SO_2—, —SO—, —CO—, an alkylene group containing 1 to 4 carbon atoms and an alkylidene group containing 1 to 4 carbon atoms; and R_1, R_2, R_3, R_4, R'_1, R'_2, R'_3 and R'_4, which are the same or different, each is selected from the group consisting of a hydrogen atom, a chlorine atom, a bromine atom and an alkyl group containing 1 to 4 carbon atoms; and about 90 to about 10 mol% of a recurring unit of the formula (b):



(b)

wherein —X—, R_1, R_2, R_3, R_4, R'_1, R'_2, R'_3, and R'_4 have the definition in formula (a); and having a logarithmic viscosity number of about at least 0.3 as measured in a mixture of phenol and tetrachloroethane (6:4 in weight ratio) at a concentration of 1 g/100 cc at 25° C. and a terminal carboxyl content of 16 mol eq./ton or less.

4,390,683

STRETCHED FILM STRUCTURE OF THE POLY-1,3-PHENYLENE TEREPHTHALATE TYPE

Tadao Yatsu; Akira Todo, both of Iwakuni, and Toshiki Sotoyama, Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Oct. 6, 1981, Ser. No. 309,101

Claims priority, application Japan, Oct. 9, 1980, 55-140490; Nov. 20, 1980, 55-162618

Int. Cl.³ C08G *63/02, 63/18*

U.S. Cl. 528—194 **6 Claims**

1. A monoaxially or biaxially stretched film structure, or a heat-set structure thereof, of an unstretched film of an aromatic polyester of the poly-1,3-phenylene terephthalate type, said aromatic polyester having an intrinsic viscosity, determined in p-chlorophenol at 50° C., of 0.4 to 2.0 and being composed of (A) polybasic carboxylic acid component units consisting of terephthalic acid units (a_1) and units (a_2) of a polybasic carboxylic acid other than terephthalic acid, the proportion of the units (a_2) being up to 25 mole% based on the units (a_1) and units (a_2) combined, and (B) polyol component units consisting of resorcinol units (b_1) and units (b_2) of a polyol other than resorcinol, the proportion of the units (b_2) being up to 25 mole% based on the units (b_1) and (b_2) combined, the stretched film having a crystallinity of 15 to 55%.

4,390,684

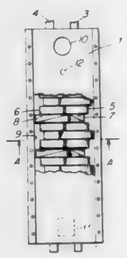
CONTINUOUS POLYMERIZATION METHOD

Hiroyasu Komazawa, Takarazuka; Tadashi Mori, Fujinomiya; Yukio Ikenaga, Fuji; Hiroshi Hotta, Fuji, and Tuneyasu Nakashima, Fuji, all of Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Aug. 12, 1981, Ser. No. 292,073

Int. Cl.³ C08G *2/10*

U.S. Cl. 528—230 **3 Claims**



1. A method of continuous polymerization of a liquid polymerization medium to obtain fine particles of polymer product by conducting the reaction in a polymerization reactor wherein mixing is effected by the action of a plurality of elliptical paddles mounted on each of dual rotating shafts, characterised in that the shafts are rotated in reverse directions to each other, and the paddles are enclosed by walls of the reactor with the inside surface of major axes of the elliptical paddles on one rotating shaft periodically approaching the ends of the minor axes of the corresponding elliptical paddles on the other rotating shaft to effect a mixing action as well as a longitudinal shearing action across a notional interface between said two shafts.

2. A method according to claim 1 for the continuous polymerization of trioxane.

4,390,685

POLYESTER FIBER AND PROCESS FOR PRODUCING SAME

Ken-ichiro Oka; Masatoshi Mineo, both of Mishima, and Terumichi Ono, Tokyo, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jun. 22, 1981, Ser. No. 276,058

Claims priority, application Japan, Jun. 27, 1980, 55-86575; Jun. 27, 1980, 55-86576

Int. Cl.³ C08G *63/02*

U.S. Cl. 528—272 **4 Claims**

1. A polyester fiber having a residual elongation of not higher than 60%, a Young's modulus of 60 to 100 g/d, a boiling water shrinkage of 4 to 10% and a dry heat shrinkage of 5 to 12%, the peak stress temperature in a dry heat shrinkage stress curve of said fiber being lower than 100° C.

4,390,686

POLYESTER-AMIDE RESIN

Harald Janssen, Stemwarde-Siedlung, and Ferdinand Hansch, Wedel, both of Fed. Rep. of Germany, assignors to Dr. Beck & Co. AG, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 109,944, Jan. 7, 1980, Pat. No. 4,360,543, which is a continuation of Ser. No. 539,879, Jan. 9, 1975, abandoned. This application Apr. 12, 1982, Ser. No. 367,537

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1974, 2401027

Int. Cl.³ C08G *69/44, 73/16*

U.S. Cl. 528—289 **16 Claims**

1. A polyester amide resin produced by condensing a polybasic acid with polyhydric alcohol, one of which contains one or more five-membered imide rings between functional groups of the molecule which resin is the product of condensing said polybasic acid and said polyhydric alcohol in the presence of an excess of one or more shortchain diols followed by removal of the diol or diols in such a manner that the condensation is only effected to an extent such that the Durrans softening point of the unhardened resin is not greater than 150° C. and the viscosity of the molten resin at 180° C. is not greater than 5000 mPa s (cP).

4,390,687

HIGH MELT STRENGTH ELASTOMETRIC COPOLYESTERS

William C. T. Tung, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 21, 1981, Ser. No. 304,275

The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.

Int. Cl.³ C08G *63/66, 63/18*

U.S. Cl. 528—295 **11 Claims**

1. A high melt strength, elastomeric, copolyester, comprising:

the polymeric reaction product of

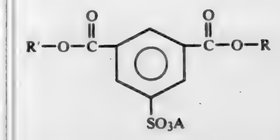
(a) terephthalic acid or a 1 to 4 carbon atom dialkyl ester thereof;

(b) a dimer acid;

(c) a poly(tetramethylene oxide) glycol having a molecular weight of from about 600 to about 2,000;

(d) 1,4-butane diol; and

(e) an ionic compound having the formula



where A is an alkali radical and where R and R′ are alkyls having from 1 to 4 carbon atoms;

the amount of said terephthalic acid or said dialkyl ester thereof ranging from about 80.0 mole percent to about 99.9 mole percent, and the amount of said dimer acid ranging from about 0.1 mole percent to about 15.0 mole percent, said percentages being based upon the total number of moles of said acid constituents or reactive equivalents thereof,

the amount of said poly(tetramethylene oxide) glycol ranging from about 2.0 to about 12.0 mole percent andd the amount of said 1,4-butane diol ranging from about 88.0 mole percent to about 98.0 mole percent, and from about 0.1 to about 5.0 mole percent of said ionic compound, the total mole percent of said acid, said dimer acid, and said ionic compound being about 100 mole percent,

additionally including a molar excess of said 1,4-butane diol ranging from about 5.0 to about 120 percent, said mole percentages of said excess 1,4-butane diol being based upon the total number of moles of said glycol and said 88.0 to said 98.0 mole percent of said 1,4-butane diol so that the molar ratio of all of said glycol constituents to all of said acid constituents or their reactive equivalents and said ionic compound ranges from about 1.05 to about 2.2.

4,390,688

WATER-DILUTABLE POLYESTER, PROCESS FOR THE PREPARATION THEREOF AND THE USE THEREOF

Gerd Walz, Wiesbaden; Thaddäus Wirth, Heidenrod-Wisper, and Walter Sprenger, Dieburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,571

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1981, 3109968; Aug. 22, 1981, 3133319

Int. Cl.³ C08G *63/54;* **C08L** *63/00*

U.S. Cl. 528—295.3 **11 Claims**

1. A water-dilutable polyester having a good resistance to hydrolysis in which free COOH-groups are at least partially present in the form of ammonium salts, derived from

(A) at least one dicarboxylic acid unit;

(B) at least one polycarboxylic monoanhydride being built-in in the form of a half-ester and different from phthalic anhydride and maleic anhydride;

(C) at least one alcohol component containing an at least dihydric alcohol and

(D) at least one epoxy compound having at least two oxiran rings and being selected from the group consisting of epoxidized fatty acids, derivatives thereof, epoxidizid aliphatic hydrocarbons and mixtures thereof with monoepoxides.

3. A process for the preparation of a polyester as claimed in claim 1 which comprises

(a) reacting in a first step (A) at least one dicarboxylic acid unit with (D) at least one epoxy compound having at least two oxiran rings, selected from the group consisting of epoxidized fatty acids, derivatives thereof, epoxidized aliphatic hydrocarbons and mixtures thereof with monoepoxides and (C) at least one alcohol component comprising an at least dihydric alcohol to form a polyester having an acid number between 2 and 100,

(b) reacting in a second step any polyester obtained in step (a) having an acid number of at least 15 with an epoxy compound selected from the group consisting of a monoepoxide, a polyepoxide and a combination of both, said epoxide containing additionally at least one ester group, to form a polyester having an acid number below 15,

(c) reacting the polyester having an acid number below 15 obtained in step (a) or (b) with (B) at least one polycarboxylic monoanhydride, different from phthalic anhydride and maleic anhydride, between ambient temperature and 170° C., thus forming a half-ester of the monoanhydride.

(d) converting free COOH—groups of the half-ester obtained in step (c) with an amine to the ammonium salt and

(e) separating the product of step (d) or diluting said product with a suitable solvent.

4,390,689

POLYCATIONIC POLYMERS AND THEIR PREPARATION

Bernard Jacquet, Antony; Gerard Lang, Epinay sur Seine; Alain Malaval, Aulnay sous Bois; Serge Forestier, Claye Souilly, and Do Le Trung, Drancy, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

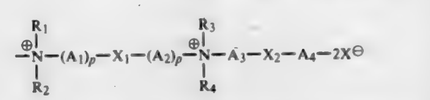
Filed Dec. 17, 1980, Ser. No. 217,403

Claims priority, application France, Dec. 21, 1979, 79 31432

Int. Cl.³ C08G *69/26*

U.S. Cl. 528—335 **27 Claims**

1. Polycationic polymer containing units of the formula

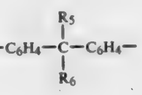


wherein R_1, R_2, R_3 and R_4, each independently represents a hydrocarbon group containing up to 20 carbon atoms, or at least one pair selected from the group consisting of R_1, R_2 and R_3,R_4, together with the nitrogen atom to which it is attached, forms a heterocycle selected from the group consisting of a heterocycle wherein the heteroatom is nitrogen or a heterocycle containing a nitrogen as a first heteroatom and a second heteroatom selected from the group consisting of oxygen and sulfur;

A_1, A_2, A_3 and A_4, each independently represents alkylene or arylene containing up to 20 carbon atoms;

p is 0 or 1;

when p is 0, X_1 represents $—C_6H_4—CO—C_6H_4—$, $—C_6H_4—CHOH—C_6H_4—$,



or $—C_6H_{10}—(CH_2)_nC_6H_{10}—$,

wherein n is a whole number ranging from 1 to 6,

R_5 and R_6 each independently represents hydrogen or alkyl, having up to 20 carbon atoms, or R_5 and R_6, together with the carbon atom to which they are attached, form a ring having 5 or 6 carbon atoms therein;

when p is 1, X_1 represents

$—N(R_7)—(CO—X_3)_y—CO—N(R_8)—$, —CO—O—, —CO—NH—, —O—CO—NH—, $—CO—X_4—CO—$, $—O—CO—X_5—CO—O—$, —O—, —S—, —SO—, $—SO_2—$, —S—S— or $—N(R_9)—$,

wherein X_3 represents alkylene, alkylene interrupted by an —S—S— group, alkenylene, arylene, diaminoalkylene, diaminoarylene, dioxyalkylene, polyoxyalkylene, or dioxyarylene, or X_3 represents a direct covalent bond,

X_4 represents diaminoalkylene, dioxyalkylene, diaminoarylene, dioxyarylene, polyoxyalkylene or dithioalkylene,

X_5 represents alkylene, arylene, diaminoalkylene, diaminocycloalkylene or diaminoarylene,

y is 0 or 1,

R_7, R_8 and R_9 each independently represents hydrogen or alkyl containing up to 12 carbon atoms;

X_2 represents $-N(R_{10})-(CO-X_3)_z-CO-N(R_{11})-$, $-CO-O-$, $-CO-NH-$, $-O-CO-NH-$, $-CO-X_4-CO-$ or $-O-CO-X_5-CO-O-$, wherein X_3, X_4 and X_5 are defined above, z is 0 or 1 and R_{10} and R_{11} each independently represents hydrogen or alkyl containing up to 12 carbon atoms;

with the proviso that when p is 1 and X_1 represents a hetero-atom selected from the group consisting of oxygen and sulfur, z is other than 0.

4,390,690

LAYERED ORGANOPHOSPHOROUS INORGANIC POLYMERS CONTAINING OXYGEN BONDED TO CARBON

Peter M. DiGiacomo, Mission Viejo, and Martin B. Dines, Santa Ana, both of Calif., assignors to Occidental Research Corp., Irvine, Calif.

Continuation of Ser. No. 60,249, Jul. 24, 1979, abandoned, which is a continuation-in-part of Ser. No. 945,971, Sep. 26, 1978, Pat. No. 4,232,146. This application Jun. 12, 1981, Ser. No. 273,027

The portion of the term of this patent subsequent to Nov. 4, 1997, has been disclaimed.

Int. Cl.³ C08G *79/04, 79/00*

U.S. Cl. 528—395 **27 Claims**

1. A process for the production of phosphorus containing organo substituted inorganic polymers containing oxygen bonded to carbon which comprises reacting in a liquid medium:

(a) at least one organophosphorus acid of the formula

$[(HO)_2OP]_nR$ or $[(HO)_2OPO]_nR$

wherein n is 1 or 2 and R is an organo group covalently coupled to phosphorus and which also contains oxygen coupled to carbon but not to phosphorus and wherein when n is 2, R contains at least two carbon atoms and is directly or indirectly coupled to the phosphorus atoms through different carbon atoms whereby the two phosphorus atoms are separated by at least two carbon atoms,

(b) with at least one tetravalent metal ion, to precipitate from the liquid medium, a solid inorganic polymer in which the molar ratio of phosphorus to tetravalent metal is about 2 to 1 and in which the organo group is covalently bonded to phosphorus and phosphorus is linked to the tetravalent metal through oxygen.

4,390,691

PROCESS FOR PREPARING POROUS SPHERICAL CELLULOSE PARTICLES

Masahiko Nishikawa; Hiroaki Ishibashi, and Hidenori Furukawa, all of Minamatashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jul. 21, 1981, Ser. No. 285,582

Claims priority, application Japan, Aug. 21, 1980, 55-114982

Int. Cl.³ C08B *3/06, 3/08, 3/16, 3/18*

U.S. Cl. 536—65 **15 Claims**

1. A process for preparing porous, spherical cellulose particles with high reproducibility, comprising the steps of dissolving a cellulose organic ester in a solvent consisting essentially of a chlorinated hydrocarbon, adding 0.001–20 wt.% (based on said cellulose organic ester) of an acid or alkali to the dissolved cellulose organic ester solution, mixing the resultant solution at a temperature from 0° to 45° C. for a period of time of from 0.2 to 30 hours, suspending said cellulose organic ester solution in an aqueous medium to thereby form droplets, removing said solvent by evaporation to form cellulose organic ester particles, and saponifying said cellulose particles.

4,390,692

TRIMETHYLSILYLATION OF CELLULOSE

John G. Green, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 21, 1982, Ser. No. 390,455

Int. Cl.³ C08B *11/00*

U.S. Cl. 536—84 **11 Claims**

1. A method for the preparation of trimethylsilyl cellulose ethers, which comprises reacting cellulose with hexamethyldisilazane in the presence of a small amount of catalyst, wherein the catalyst is acetamide, acetamide and an ammonium halide, N,N-dimethylformamide and an ammonium halide, N,N-dimethylformamide and trimethylsilyl chloride, 2-oxazolidinone and an ammonium halide, or a mixture thereof.

4,390,693

CEPHALOSPORIN COMPOUNDS

Thomas R. Beattie, North Plainfield; John Hannah, Matawan, and David B. R. Johnston, Warren, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 819,511, Jul. 27, 1977, Pat. No. 4,255,423, which is a continuation of Ser. No. 624,623, Oct. 22, 1975, abandoned, which is a continuation of Ser. No. 367,291, Jun. 4, 1973, abandoned. This application Oct. 9, 1980, Ser. No. 195,690

Int. Cl.³ C07D *501/57;* **A61K** *31/545*

U.S. Cl. 542—442 **4 Claims**

1. The compound 3-(4-thiazoylvinyl)-7α-methoxy-7β-(2-thienylacetamido)-3-cephem-4-carboxylic acid.

4,390,694

METHOD FOR PREPARING STABLE CRYSTALS OF SALT OF CEFTIZOXIME

Norio Ohnishi, Kyoto, and Rinta Ibuki, Ashiya, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jul. 16, 1981, Ser. No. 283,805

Claims priority, application Japan, Jul. 22, 1980, 55-100680

Int. Cl.³ A61K *31/545;* **C07D** *501/04*

U.S. Cl. 544—22 **8 Claims**

1. A method for preparing stable crystals of an alkali metal salt of ceftizoxime, which comprises adding an aqueous solution of the salt of ceftizomime to isopropyl alcohol, and collecting the precipitating crystals.

4,390,695

IMIDO, AMIDO AND AMINO DERIVATIVES OF MERCAPTOACYL PROLINES AND PIPECOLIC ACIDS

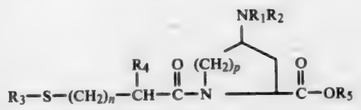
John Krapcho, Somerset, and Peter C. Wade, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 162,341, Jun. 23, 1980, Pat. No. 4,310,461. This application Jun. 1, 1981, Ser. No. 268,921

Int. Cl.³ C07D *413/04, 403/04, 401/04*

U.S. Cl. 544—130 **12 Claims**

1. A compound having the formula



wherein

R_1 and R_2 together with the nitrogen atom to which they are attached are 1-pyrrolidinyl, 1-piperidinyl, 1-homopiperidinyl, 4-morpholinyl, 4-alkyl-1piperazinyl, or 4-aryl-1-piperazinyl;

R_3 is hydrogen, alkyl, aryl, arylalkyl, alkanoyl or arylcarbonyl;

R_4 is hydrogen, alkyl, alkylthio, or trifluoromethyl;

R_5 is hydrogen, alkyl, or arylalkyl;

n is 0, 1 or 2; and

p is 1 or 2;

or a non-toxic, physiologically acceptable salt thereof, or symmetrical dimer thereof; wherein the term "aryl" refers to phenyl, 1-naphthyl, 2-naphthyl, or phenyl monosubstituted with halogen, alkyl, alkoxy, alkylthio, hydroxy, alkanoyl, nitro, amino, dialkylamino, phenyl or trifluoromethyl groups; the term "alkanoyl" refers to groups having up to 9 carbon atoms; and the terms "alkyl" and "alkoxy" refer to groups having 1 to 8 carbon atoms.

4,390,696

Patent Not Issued For This Number

4,390,697

PROCESS FOR THE PREPARATION OF TRIAZOLOQUINAZOLINONES

Wilfred R. Tully, Cirencester Glous, England, assignor to Roussel Uclaf, Paris, France

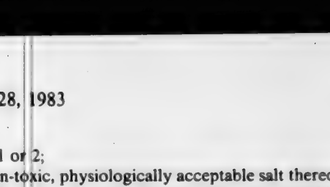
Filed Nov. 3, 1981, Ser. No. 317,858

Claims priority, application United Kingdom, Nov. 10, 1980, 8036025

Int. Cl.³ C07D *487/04*

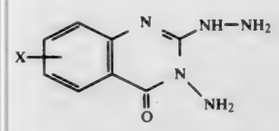
U.S. Cl. 544—251 **9 Claims**

1. A process for the preparation of triazoloquinazolinones of the formula



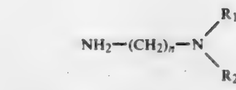
I

wherein X is selected from the group consisting of hydrogen, fluorine, chlorine, bromine, $-NO_2$, $-CF_3$, $-CH_3$ and $-OCH_3$, n is an integer from 2 to 5, R_1 and R_2 are individually selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms and hydroxyalkyl of 1 to 5 carbon atoms or taken together with the nitrogen atom which they are attached form a saturated heterocycle optionally containing another hetero-atom and optionally substituted with at least one member of the group consisting of hydroxy, alkyl and hydroxy alkyl of 1 to 5 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, acyl of an aliphatic carboxylic acid of 1 to 5 carbon atoms, alkoxycarbonyl of 2 to 6 carbon atoms, phenyl and phenyl substituted with halogen or $-CF_3$ comprising reacting a compound of the formula



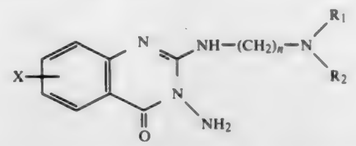
II

wherein X has the above definition with a compound of the formula



III

wherein R_1, R_2 and n have the above definition to obtain a compound of the formula



IV

reacting the latter with a formylation agent to obtain the corresponding compound of formula I and optionally reacting the latter with a non-toxic, pharmaceutically acceptable acid to obtain the corresponding acid addition salt of the compound of formula I.

4,390,698

DETHEOBROMINATION OF COCOA

Jacky Chiovini, Daillens; Maurice Blanc, Morges, and Geoffrey Margolis, Bussigny, all of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed May 21, 1981, Ser. No. 266,091

Int. Cl.³ C07D *473/10*

U.S. Cl. 544—274 **10 Claims**

1. A process for recovering theobromine from an aqueous solution containing theobromine extracted from cocoa material comprising:

(a) contacting the solution with a substantially neutral adsorbent; said adsorbent having the characteristic that when immersed in water, the pH of the water remains essentially unchanged; and then

(b) separating the adsorbent laden with theobromine from the aqueous solution of reduced theobromine content.

4,390,699

6-KETO-MORPHINANS BELONGING TO THE 14-HYDROXY-SERIES

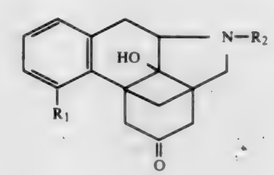
Arnold Brossi; Helmut Schmidhammer, both of Bethesda, and Arthur E. Jacobson, Potomac, all of Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Jul. 16, 1981, Ser. No. 284,089

Int. Cl.³ C07D *221/28;* **A61K** *31/485*

U.S. Cl. 546—74 **8 Claims**

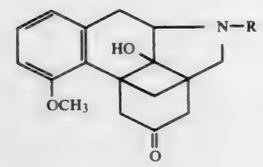
1.



I

where
R_1 = H, O lower alkyl, or O lower acyl
R_2 = Lower alkyl, lower alkenyl, cyclopropylmethyl, or Ph lower alkyl.

2.



II

where
R = methyl, phenethyl, allyl, cycloalkylmethyl wherein alkyl is C_3–C_6, dimethylallyl, alkynyl, or H.

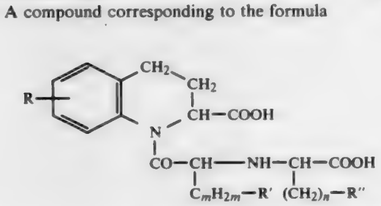
4,390,700

1-CARBOXYAZAALKANOYL-TETRAHYDROQUINOLINE-2-CARBOXYLIC ACIDS

James L. Stanton, Ossining, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,804
Int. Cl.³ C07D *215/12, 215/16*
U.S. Cl. 546—165 **5 Claims**

1. A compound corresponding to the formula



wherein R is hydrogen, alkyl or alkoxy with up to 4 carbon atoms, hydroxy, halogeno or trifluoromethyl; m is an integer from 1 to 4; n is an integer from 1 to 3; R′ is hydrogen; and R″ is hydrogen or R-phenyl; the mono lower alkyl esters with a free 1,2,3,4-tetrahydroquinoline-2-carboxy group, and pharmaceutically acceptable alkali metal, ammonium or acid addition salts thereof.

4,390,701

1-AMINO-2-[3-(3-PIPERIDINOMETHYLPHENOXY)-PROPYLAMINO]CYCLOBUTENE-3,4-DIONE

Aldo A. Algieri, Fayetteville, and Ronnie R. Crenshaw, Dewitt, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed May 18, 1981, Ser. No. 264,533
Int. Cl.³ C07D *295/12*
U.S. Cl. 546—235 **2 Claims**

1. 1-Amino-2-[3-(3-piperidinomethylphenoxy)propylamino]-cyclobutene-3,4-dione, or a nontoxic pharmaceutically acceptable salt thereof

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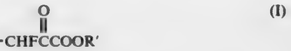
4,390,702

3-SUBSTITUTED-3-FLUOROPYRUVIC ACIDS AND THEIR ESTERS AND SALTS, AND PRODUCTION THEREOF

Susumu Misaki; Masahiro Suefuji; Tadahiko Tsushima, and Hiroshi Tanida, all of Osaka, Japan, assignors to Daikan Kogyo Co., Ltd. and Shionogi and Co., Ltd., both of Osaka, Japan

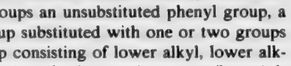
Filed Dec. 29, 1980, Ser. No. 220,917
Claims priority, application Japan, Dec. 29, 1979, 54-173593
Int. Cl.³ C07D *213/55;* **C07C** *69/76, 53/21*
U.S. Cl. 546—296 **10 Claims**

1. A process for preparing a 3-substituted-3-fluoropyruvic acid or ester or salt thereof of the formula:



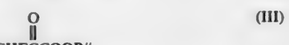
(I)

wherein R is a lower alkyl group, a lower alkanoyl group, a monofluorinated lower alkanoyl group, a substituted phenyl group substituted with one or two groups selected from the group consisting of lower alkyl, lower alkoxy, lower alkanoyl, hydroxyl, halogeno, nitro, amino, mono(lower)alkylamino and di(lower)alkylamino groups an unsubstituted phenyl group, a substituted pyridyl group substituted with one or two groups selected from the group consisting of lower alkyl, lower alkoxy, lower alkanoyl, hydroxyl, nitro, amino, mono(lower)alkylamino and di(lower)alkylamino groups or an unsubstituted pyridyl group and R′ is a hydrogen atom, an ester-forming residue selected from the group consisting of a lower alkyl group, a substituted phenyl group substituted with one or two groups selected from the group consisting of lower alkyl, lower alkoxy, lower alkanoyl, hydroxyl, halogeno, nitro, amino, mono(lower)alkylamino and di(lower)alkylamino groups, an unsubstituted phenyl group or a salt-forming residue selected from the group consisting of alkali metal, alkaline earth metal, ammonium and lower alkylammonium salts which comprises reacting a 3-R-pyruvic ester of the formula:



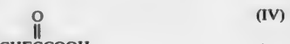
(II)

wherein R″ is said ester-forming residue and R is as defined above with a fluorinating agent selected from the group consisting of fluorine, perfluoroalkyl hypofluorite and xenon difluoride in a solvent inert under the reaction conditions to give a 3-R-3-fluoropyruvic ester of the formula:



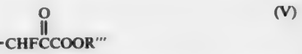
(III)

wherein R and R″ are each as defined above, optionally followed by hydrolysis of the 3-R-3-fluoropyruvic ester (III) to give a 3-R-3-fluoropyruvic acid of the formula:



(IV)

wherein R is as defined above and further optionally followed by conversion of the 3-R-3-fluoropyruvic acid (IV) into a salt thereof of the formula:



(V)

wherein R‴ is said salt-forming residue and R is as defined above.

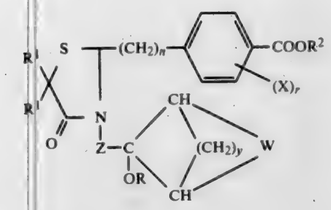
4,390,703

INTERMEDIATES FOR THE RESOLUTION OF SOME INTERPHENYLENE-9-THIA-11-OXO-12-AZAPROSTANOIC ACIDS

Mark G. Bock, Hatfield, and Robert M. Di Pardo, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 22, 1981, Ser. No. 276,117
Int. Cl.³ C07D *277/04*
U.S. Cl. 548—187 **3 Claims**

1. A diastereomeric ester having the formula



wherein
(1) X is chlorine or methyl;
(2) r is 0, 1 or 2;
(3) n is 3 or 4;
(4) R^1 is hydrogen, deuterium or methyl;
(5) R^2 is alkyl, benzyl or diphenylmethyl;
(6) R^3 is camphanyl or camphor carbonyl;
(7) Z is ethylene, trimethylene, cis or transpropenylene or propynylene;
(8) y is 0, 1 or 2 and
(9) W is polymethylene of 2–6 carbon atoms.

4,390,704

PROCESS FOR THE PREPARATION OF 1,2,4-TRIAZOLE

Hans Beer, Vienna, Austria, assignor to Chemie Linz Aktiengesellschaft, Linz, Austria

Filed Jul. 7, 1981, Ser. No. 281,042
Claims priority, application Austria, Jul. 7, 1980, 3533/80
Int. Cl.³ C07D *249/08*
U.S. Cl. 548—262 **8 Claims**

1. A process for the preparation of 1,2,4-triazole by reacting hydrazine and formamide, comprising mixing formamide with hydrazine in a molar ratio of formamide to hydrazine of 2:1 to 2.2:1 in such a way that hydrazine as such or in the form of its hydrate is introduced into the formamide, which formamide has been heated to a temperature of 160°–200° C., said reaction being carried out in such a way that formamide is always present in excess, maintaining the temperature of the reaction mixture in the range of 160°–200° C. while introducing the hydrazine or hydrate, and subsequently reacting the two reactants at a temperature of 160°–240° C. without an addition of ammonia from outside into the reaction zone.

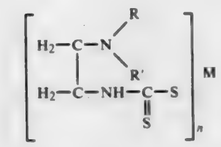
4,390,705

FUNGICIDAL N-SUBSTITUTED ETHYLENDIAMINO-DITHIOCARBAMATES WHICH DO NOT GIVE RISE TO THE FORMATION OF ETHYLENTHIOUREA

Franco Gozzo, Saronno; Nicola Troiani, Milan; Simone Lorusso, S. Giuliano Milanese, and Romano Santi, Florence, all of Italy, assignors to Montedison S.p.A., Milan, Italy

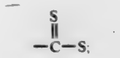
Continuation of Ser. No. 114,510, Jan. 23, 1980, abandoned, which is a continuation of Ser. No. 817,821, Jul. 21, 1977, abandoned. This application Jan. 29, 1982, Ser. No. 343,861
Claims priority, application Italy, Jul. 22, 1976, 25587 A/76
Int. Cl.³ C07D *333/48;* **C07C** *143/00;* **A01N** *55/02, 47/10*
U.S. Cl. 549—3 **7 Claims**

1. An antifungin selected from the group consisting of ethylendiamino-dithiocarbamic acid salts in which at least one of the hydrogen atoms bound to the nitrogen atom in the amino group of ethylendiamino mono- or bis-dithiocarbamate is substituted, said antifungin having the general formula (I):



(I)

in which
R is selected from the group consisting of H and



R′ is selected from the group consisting of C_1–C_{12} alkyl, C_2–C_{12} alkenyl or alkinyl, C_2–C_{12} acyl and a sulpholanyl group;
M is selected from the group consisting of Cu, Zn and Mn; and n is 1 or 2 depending on the valence of M; and
the internal salts of the acids comprehended in formula (I), said antifungin being further characterized in that it does not form ethylenthiourea or substituted ethylenthioureas on standing or under heating.

4,390,706

PROCESS FOR THE RECOVERY OF PURE NITRILES

Axel Kleemann, Hanau, and Peter M. Schalke, Seligenstadt, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 19, 1981, Ser. No. 235,985
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006424
Int. Cl.³ C07D *333/24;* **C07C** *121/66*
U.S. Cl. 349—74 **25 Claims**

1. In a process for the recovery of a nitrile prepared by reacting at 500°–1200° C. cyanogen chloride with an aromatic compound or heteroaromatic compound containing a methyl group or a methylene group containing an active hydrogen and working up the reaction gas mixture, the improvement comprising condensing the reaction mixture of several successive temperature steps in which the first temperature step has the highest temperature and the last temperature step has the lowest temperature, the first condensation step having a drop in temperature to between the boiling point of the methylene or methyl compound employed and the boiling point of the nitrile, thereby condensing the nitrile as a first condensate, drawing off the condensed crude nitrile as sump product, supplying the non-condensed portion which consists chiefly of unreacted methyl or methylene compound and cyanogen chloride as well as hydrogen chloride to a second temperature step between room temperature and the boiling point of the methyl or methylene compound, thereby condensing the residual methyl or methylene compound as a second condensate and drawing off the second condensate.

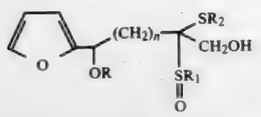
4,390,707

BIS-THIOALKYLFURANS USEFUL AS CYCLOPENTENONE PROSTAGLANDIN INTERMEDIATES

Steven L. Peake, New Canaan, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 2, 1982, Ser. No. 344,980
Int. Cl.³ C07D *309/06, 307/40*
U.S. Cl. 549—214 **10 Claims**

1. A compound of the formula:



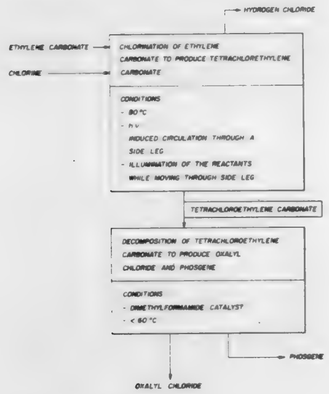
wherein R is a hydroxyl protecting group labile under neutral or acid conditions; R_1 and R_2 are both methyl or ethyl, or together are $-(CH_2)_3-$; and n is 5–7.

4,390,708

PROCESS FOR PRODUCING OXALYL CHLORIDE AND INTERMEDIATES

Robert J. Stokowski; Gerard Tertzakian, both of Edmonton, and Tomoki C. S. Ruo, Calgary, all of Canada, assignors to Terochem Laboratories Ltd., Edmonton, Canada

Filed Feb. 23, 1981, Ser. No. 236,789
Int. Cl.³ C07D *317/42*
U.S. Cl. 549—229 **10 Claims**



1. A process for producing tetrachloroethylene carbonate, comprising:

contacting ethylene carbonate with chlorine in a reaction vessel at a temperature in the range of about 70° to 100° C.;

continuously circulating the above reaction mixture from the reaction vessel through an illuminated reaction zone of reduced cross-sectional area relative to that of the reaction vessel to form tetrachloroethylene carbonate and hydrogen chloride;

adding the chlorine at the reaction zone, such that the added chlorine, together with the hydrogen chloride evolved in the reaction zone, provides the drive for circulating the reaction mixture; and

venting the hydrogen chloride from the reaction vessel.

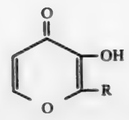
4,390,709

PREPARATION OF GAMMA-PYRONES

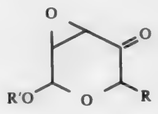
Paul D. Weeks, Gales Ferry, and Robert P. Allingham, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 741,112, Nov. 11, 1976, Pat. No. 4,342,697, which is a continuation-in-part of Ser. No. 608,452, Aug. 28, 1975, abandoned. This application Apr. 26, 1982, Ser. No. 371,932
Int. Cl.³ C07D *309/38*
U.S. Cl. 549—418 **4 Claims**

1. A process for preparing a compound of the formula



wherein R is hydrogen, alkyl or 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms, phenyl or benzyl which comprises contacting a compound



wherein R is as defined above and R′ is alkyl of 1 to 6 carbon atoms, at 25° to 160° C. with an acid substance selected from the group consisting of sulfuric acid, hydrochloric acid, boron trifluoride etherate, p-toluenesulfonic acid, formic acid, zinc chloride and tin tetrachloride.

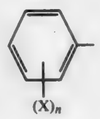
4,390,710

CATALYST SYSTEM FOR MANUFACTURING P-CHLOROPHENYL-N-METHYL CARBAMATE

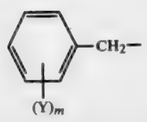
James A. Manner, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 19, 1981, Ser. No. 312,207
Int. Cl.³ C07D *307/77, 317/08;* C07C *125/06*
U.S. Cl. 549—441 **13 Claims**

1. In the process of preparing aromatic esters of N-substituted carbamic acids by reaction of aromatic alcohol of the general formula, R—OH, wherein R is selected from the group consisting of phenyl, naphthyl, halosubstituted naphthyl, benzofuranyl, C_1–C_4 alkyl substituted benzofuranyl, benzyl, substituted phenyl of the graphic formula:



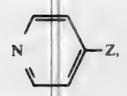
and substituted benzyl of the graphic formula:



wherein X is halogen, C_1–C_8 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthiol, C_1–C_4 dialkylamino, nitro, 1,3-dioxolanyl, 4,5-di(C_1–C_4) alkyl-1,3-dioxolanyl, and n is an integer of from 1 to 3; Y is selected from the group consisting of halogen and nitro, and m is an integer of from 1 to 2, with an isocyanate having the graphic formula:

$$R'''—N=C=O$$

wherein R‴ is selected from the group consisting of C_1–C_3 alkyl, phenyl and cyclohexyl, in the substantial absence of an extraneous solvent, the improvement which comprises conducting said reaction in the presence of a catalytic amount of a combination of (a) 4-aminopyridine catalyst having the graphic formula:



wherein Z is selected from the group consisting of



pyrrolidino, piperidino, and morpholino, and wherein R′ and R″ are each selected from the group consisting of hydrogen, C_1–C_6 alkyl and C_3–C_7 cycloalkyl, and (b) pyridine catalyst selected from the group consisting of pyridine, methylpyridines and dimethylpyridines, the weight ratio of 4-aminopyridine catalyst to pyridine catalyst being from 5:1 to 1:5.

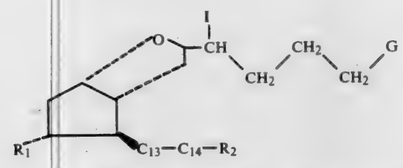
4,390,711

16-HYDROXY-5-IODO-PROSTACYCLIN ANALOGS OF THE 1 SERIES

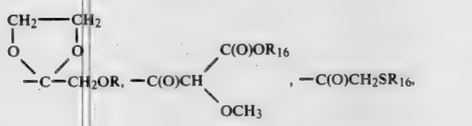
Charles V. Grudzinskas, Nyack, N.Y.; Sow-Mei L. Chen, Park Ridge, N.J., and Allan Wissner, Ardsley, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

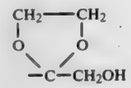
Continuation-in-part of Ser. No. 46,515, Jun. 7, 1979, Pat. No. 4,265,904. This application Nov. 13, 1980, Ser. No. 206,492
The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.
Int. Cl.³ C07D *307/935*
U.S. Cl. 549—465 **25 Claims**

1. A compound of the formula:



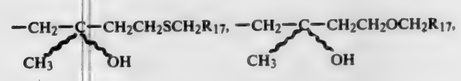
wherein G is selected from the group —C(O)OR, —CH_2OH, —C(O)CH_2OR, —C(O)CH_2OH,



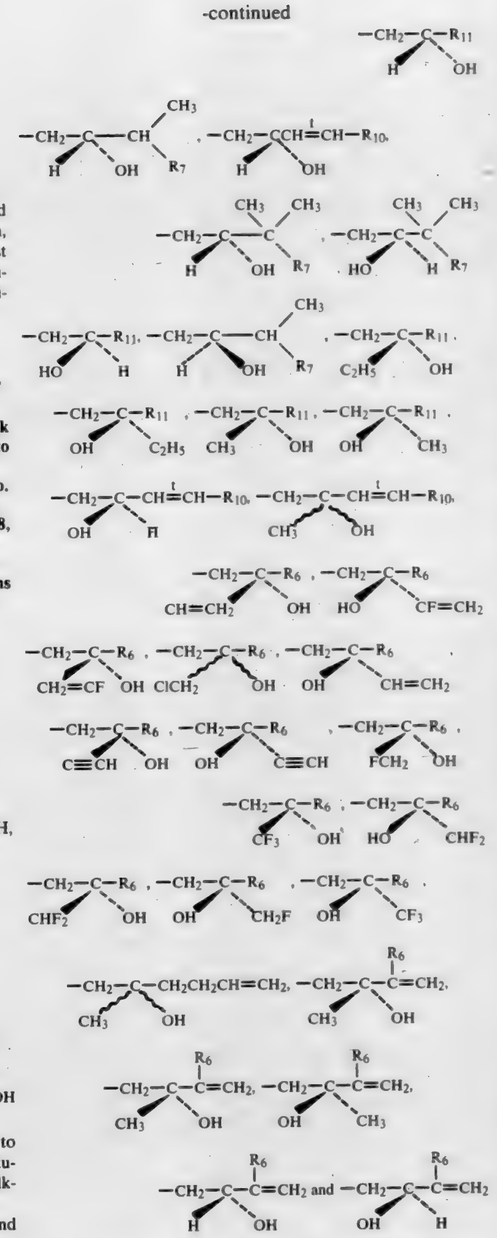


and —C(O)OH wherein R_1 is hydrogen or hydroxy, R is C_1 to C_6 alkyl, or optionally substituted phenyl, wherein the substituents are selected from the group C_1 to C_4 alkyl, C_1 to C_4 alkoxy, halo and trifluoromethyl and R_{16} is C_1 to C_6 alkyl;

C_{13}-C_{14} is selected from the group —CH=CH—(trans) and —CH_2CH_2—; and R_2 is selected from the group



-continued



wherein R_6 is C_3 to C_5 alkyl; R_7 is C_2 to C_4 alkyl; R_{10} is C_1 to C_4 alkyl; R_{11} is C_3 to C_7 alkyl; R_{17} is hydrogen, methyl or ethyl; the racemic mixture thereof; the mirror image thereof; and the pharmaceutically acceptable, non-toxic salts thereof.

4,390,712

AQUEOUS SOLUTION OF CATIONIC ORGANOSILICON COMPOUNDS AND PROCESS FOR THE PRODUCTION OF THE SOLUTIONS

Alfons Karl, Hanau; Wolfgang Buder, Rodenbach, and Peter Kleinschmit, Hanau, all of Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 298,251

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3047994

Int. Cl.³ C07F 7/10

U.S. Cl. 556—413 **15 Claims**

1. A process of preparing an aqueous solution of a cationic organosilicon compound, comprising reacting an alkoxysilylalkyl halide of the formula $(RO)_{3-n}R_n^1—Si—R^2—X$ (I) where R is C_1 to C_5 alkyl, methoxymethyl, ethoxyethyl, methoxyethyl, or C_5 to C_8 cycloalkyl, R^1 is C_1 to C_5 alkyl, phenyl, tolyl, benzyl, or C_5 to C_8 cycloalkyl; R^2 is a divalent ethylenic double bond free hydrocarbon group having 3 to 8 carbon atoms, n is zero, 1 or 2 and X is chlorine, bromine, or iodine with a tertiary amine of the formula $R^3NR^4R^5$ (II) where R^3, R^4, and R^5 each is an alkyl group or benzyl in which the number of carbon atoms of the alkyl group or the alkyl groups together is up to 30 or R^4 and R^5 together with the nitrogen atom or together with the nitrogen atom together with a further hetero atom selected from the group consisting of oxygen, nitrogen, and sulfur is a univalent five to eight membered heterocyclic ring having three to seven $—CH_2—$ groups in the heterocyclic ring, or R^5 is a C_3 to C_{12} cycloalkyl group in aqueous medium at a temperature from room temperature to 300° C. at a mole ratio of (I) to (II) between 1:0.8 to 1:1.2.

4,390,713

QUATERNARY AMMONIUM-FUNCTIONAL SILICON COMPOUNDS

Eugene R. Martin, Onsted, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Filed May 21, 1982, Ser. No. 380,494

Int. Cl.³ C07F 7/10

U.S. Cl. 556—418 **17 Claims**

1. A process for preparing quaternary ammonium-functional silicon compounds which comprises reacting a carbinol-functional quaternary ammonium compound with a carboxylic acid-functional silicon compound.

4,390,714

TERTIARY AROMATIC AMINE ACCELERATORS IN ACRYLIC RESIN

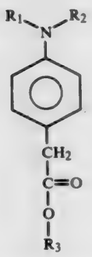
Harold Argentar, Rockville, Md., assignor to American Dental Association Health Foundation, Chicago, Ill.

Division of Ser. No. 885,275, Mar. 10, 1978, Pat. No. 4,243,763. This application Jul. 7, 1980, Ser. No. 166,383

Int. Cl.³ C07C 101/72

U.S. Cl. 560—36 **3 Claims**

1. Tertiary aromatic amines having the following structure:

(A) 

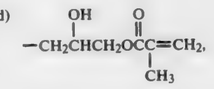
where R_1 and R_2 are the same or different and are selected from the following groups, with at least one of R_1 and R_2 always selected from group (c) and (d) or only one of R_1 and R_2 selected from group (f):

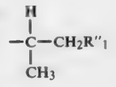
(a) $—CH_3$,

(b) $—CH_2CH_2C_nH_{2n+1}$ with n varying between 0 and 18,

(c)

where R_1', R_2' and R_3' are each either hydrogen, normal alkyl, $—C_nH_{2n+1}$ with n varying between 1 and 20, or t-butyl, but if one R′ is t-butyl, then the adjacent R′ is hydrogen,

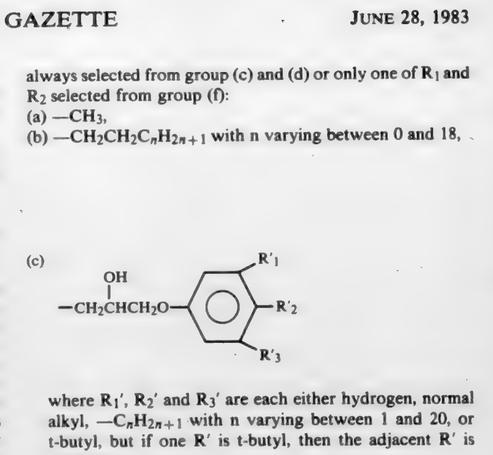
(d) 

(e) 

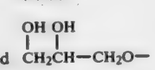
where R_1'' is $—C_nH_{2n+1}$ with n varying from 0 to 17, or

(f) $—CH_2CH_2OH$; or

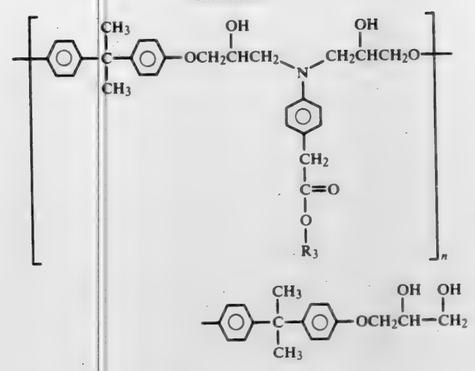
(B) (1)



(B) (2)

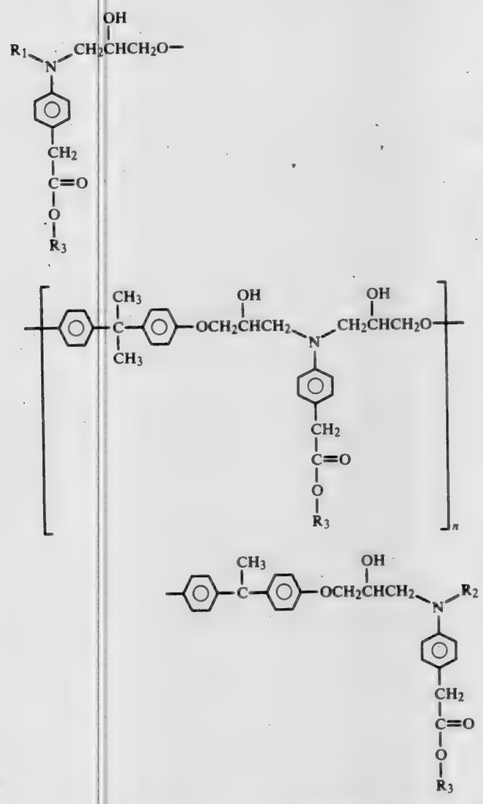


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where n in each instance varies between 1 and 10; or

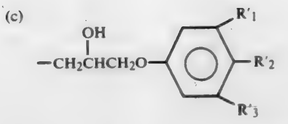
(C)



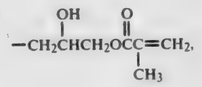
where n varies between 1 and 8, and where R_1 and R_2 are the same or different and are selected from the following groups:

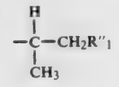
(a) $—CH_3$,

(b) $—CH_2CH_2C_nH_{2n+1}$ with n varying between 0 and 18,

(c) 

where R_1', R_2' and R_3' are each either hydrogen, normal alkyl, $—C_nH_{2n+1}$, with n varying between 1 and 20, or t-butyl, but if one R′ is t-butyl, then the adjacent R′ is hydrogen,

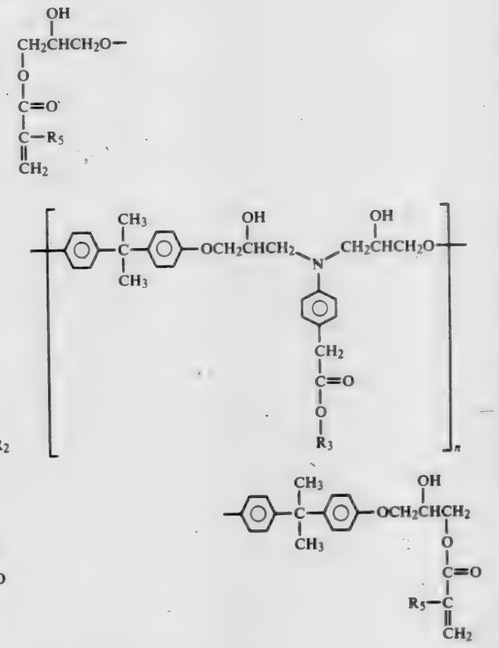
(d) 

(e) 

where R_1'' is $—C_nH_{2n+1}$ with n varying from 0 to 17, or

(f) $—CH_2CH_2OH$; or

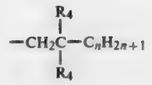
(D)



where n varies between 1 and 10 and R_5 is hydrogen or $—CH_3$;

and where R_3 is in each instance selected from one of the following groups:

(1) $—CH_3$,

(2) 

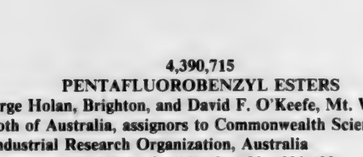
where R_4 is hydrogen or methyl and n varies between 0 and 18,

(3) 

where n varies between 0 and 17, or
(4) the substituents of subparts (A) (c), (A) (d) and (A) (f),
(5) and in the case of amines of type (A), —H.

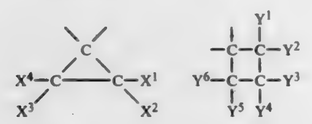
4,390,715
PENTAFLUOROBENZYL ESTERS
George Holan, Brighton, and David F. O'Keefe, Mt. Waverley, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Australia
Filed Jul. 10, 1981, Ser. No. 282,190
Claims priority, application Australia, Jul. 18, 1980, PE4608
Int. Cl.³ C07C *69/76*
U.S. Cl. 424—282 **16 Claims**

1. The (+), (−) and (±) forms of the compounds of the general formula (I)



(I)

characterised in that
R^1 is a halo group; or a lower alkyl, lower alkoxy or lower alkylthio group, each of which may be substituted with one or more halo groups;
R^2 is hydrogen or a methyl group; or R^1 and R^2 together form a methylenedioxy, or a difluoromethylenedioxy group or, with the carbon atoms to which they are attached, an aromatic ring; and
A is one of the groups X or Y

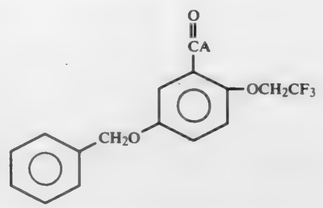


(X) (Y)

wherein
X^1 and X^2 are the same or different and each is hydrogen or a fluoro, chloro, bromo or methyl group, with the proviso that if X^1 is a fluoro group, then X^2 should not be a bromo group; and X^3 and X^4 are the same or different and each is hydrogen or a fluoro group; and
Y^1, Y^2, Y^3, Y^4, Y^5 and Y^6 are the same or different groups and each is hydrogen or a fluoro, bromo, chloro, or methyl group.

4,390,716
PHENOLIC DERIVATIVE
Elden H. Banitt, Woodbury, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.
Division of Ser. No. 271,253, Jun. 8, 1981, Pat. No. 4,339,587.
This application May 5, 1982, Ser. No. 375,176
Int. Cl.³ C07C *69/76*
U.S. Cl. 560—65 **4 Claims**

1. A compound of the formula



in which A is selected from OCH_2CH_3, OH and Cl.

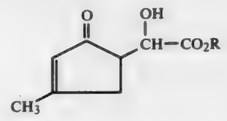
4,390,717
PROCESS FOR PREPARING CARBOXYLIC ACID ESTERS OF DICYCLOPENTADIENES
Katuhiro Ishikawa, Yokkaichi; Ryotaro Ohno, Tokyo, and Masatoshi Arakawa, Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan
Filed Apr. 24, 1981, Ser. No. 257,152
Claims priority, application Japan, Apr. 30, 1980, 55/57672
Int. Cl.³ C07L *67/38*
U.S. Cl. 560—114 **21 Claims**

1. A process for preparing a monocarboxylic ester of a dicyclopentadiene by reacting the dicyclopentadiene with carbon monoxide at a pressure of at least 30 kg/cm² and an alcohol in the presence of a cobalt compound catalyst, characterized by carrying out said reaction at a temperature of 130° or less in the presence of a pyridine base in an amount of 0.5 mole or more per mole of the dicyclopentadiene to hydroesterify the double bond of the norbornene ring.

2. A process for preparing a dicarboxylic ester of a dicyclopentadiene by reacting the dicyclopentadiene with carbon monoxide at a pressure of at least 30 kg/cm² and an alcohol in the presence of a cobalt compound catalyst, characterized by carrying out said reaction at a temperature of 130° C. or less in the presence of a pyridine base in an amount of 0.5 mole or more per mole of the dicyclopentadiene to hydroesterify the double bond of the norbornene ring, thereby preparing a monocarboxylic ester of the dicyclopentadiene, and subsequently hydroesterifying the remaining double bond of said ester to prepare a dicarboxylic ester of the dicyclopentadiene.

4,390,718
PROSTAGLANDIN INTERMEDIATES
Percy Manchand, Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Jul. 1, 1981, Ser. No. 279,492
Int. Cl.³ C07C *59/46, 69/732*
U.S. Cl. 560—122 **4 Claims**

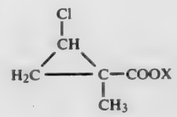
1. A compound of the formula:



wherein R represents hydrogen or a lower alkyl.

4,390,719
1-METHYL-2-CHLOROCYCLOPROPANECARBOXYLIC ACID AND ITS ESTER
Werner Schwarze, Frankfurt; Axel Kleemann, Hanau, and Wolfgang Leuchtenberger, Bruchkobel, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Jul. 6, 1981, Ser. No. 280,356
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1980, 3026093
Int. Cl.³ C07L *61/04, 69/74*
U.S. Cl. 560—124 **3 Claims**

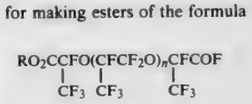
1. A 1-methyl-2-chlorocyclopropane compound of the formula



in which X is a hydrogen atom or a 1–6 carbon atom alkyl group.

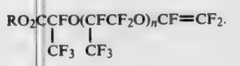
4,390,720
ALKYL ω-FLUOROFORMYL ESTER AND PROCESS
Paul R. Resnick, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 14, 1981, Ser. No. 311,312
Int. Cl.³ C07C *67/31, 67/317, 69/708*
U.S. Cl. 560—184 **16 Claims**

1. A process for making esters of the formula

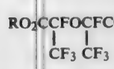


wherein R is CH_3 or C_2H_5 and n is 0 or an integer from 1 to 3, comprising reacting the methyl or ethyl ester of trifluoropyruvic acid with hexafluoropropene oxide in the presence of fluoride ion catalyst, in an aprotic liquid medium.

15. A process according to claim **1** comprising the additional step of pyrolyzing the esters to form vinyl ether monomers of the formula



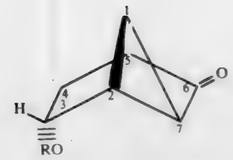
16. An ester of the formula:



wherein R is CH_3 or C_2H_5.

4,390,721
3-ENDO-PROTECTED HYDROXYL-TRICYCLO[3,2,0,0^{2,7}]HEPTAN-6-ONES
Stanley M. Roberts, Macclesfield, England, assignor to Allen & Hanburys Limited, England
Division of Ser. No. 746,741, Dec. 2, 1976, Pat. No. 4,134,911.
This application Nov. 1, 1978, Ser. No. 956,676
Claims priority, application United Kingdom, Dec. 3, 1975, 49686
Int. Cl.³ C07D *309/12*; C07C *69/013, 69/14, 49/517, 49/753*
U.S. Cl. 560—256 **6 Claims**

1. A compound of formula (II)



(II)

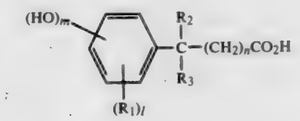
wherein R represents an alkanoyl group containing not more than 7 carbon atoms; an aralkanoyl or aroyl group containing not more than 20 carbon atoms; or an alkyl, C_{1-6} alkoxy-alkyl, C_{1-6} alkoxy-C_{1-6} alkoxyalkyl, aralkyl, cycloalkyl group or tetrahydropyranyl group.

4,390,722
RESOLUTION OF AMINO ACIDS
Meir Lahav; Lia Addadi, and Isabela Weissbuch, all of Rehovot, Israel, assignors to Yeda Research and Development Company Ltd., Rehovot, Israel
Filed Jun. 1, 1981, Ser. No. 268,804
Claims priority, application Israel, Jun. 8, 1980, 60254
Int. Cl.³ C07B *19/00*
U.S. Cl. 562—402 **5 Claims**

1. A process for resolution of a mixture of D- and L-forms of asparagine, whereby the ratio of one desired enantiomorph to the other undesired enantiomorph of said asparagine is increased in the crystalline compound obtained, as compared to the ratio in the starting material, which process comprises forming a supersaturated solution of said mixture, adding D-glutamic acid, D-aspartic acid or D-glutamine as crystallization inhibitor of the D-form when the L-form of asparagine is desired, or including the L-form of these additives when the D-form of asparagine is desired; and crystallizing a portion of the asparagine from said supersaturated solution.

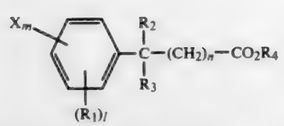
4,390,723
PROCESS FOR PRODUCING HYDROXYPHENYL ALIPHATIC ACID DERIVATIVES
Masahiro Matsuno, Fuji; Yasushi Higuchi; Yutaka Ohishi, both of Shizuoka; Yoshiki Nakayama, Shimizu, and Chihiro Yazawa, Yokohama, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan
Filed Aug. 5, 1981, Ser. No. 290,305
Claims priority, application Japan, Aug. 29, 1980, 55/118401; Feb. 12, 1981, 56/19510
Int. Cl.³ C07C *65/01*
U.S. Cl. 562—478 **8 Claims**

1. In a process for producing a hydroxyphenyl aliphatic acid derivative having the formula



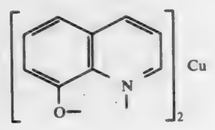
(I)

wherein R_1 represents hydrogen atom, a lower alkyl group, a lower alkoxy group, hydroxy group or a lower alkylcarbonyl group; R_2 and R_3 are the same or different and respectively represent hydrogen atom or a lower alkyl group; and m is 1 or 2; l is 0, 1 or 2; n is 0, 1 or 2; by reacting a halophenyl aliphatic acid derivative having the formula



(II)

wherein R_1, R_2, R_3, m, l and n are defined above and R_4 represents hydrogen atom or a monovalent hydrocarbon moiety; and X represents a halogen atom, with a base an improvement characterized by reacting them in the presence of a catalyst of bis(8-quinolinolate) copper (II) complex having the formula



and reacting the latter with a basic agent to obtain a 3-formyl-4-R_2R_3-but-3-ene-1-oic acid.

4,390,724

PROCESS FOR THE PREPARATION OF 3-FORMYL-4-R_2R_3-BUT-3-ENE-1-OIC ACIDS

Jacques Martel, Bondy; Jean Tessier, Vincennes, and Jean-Pierre Demoute, Montreuil-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

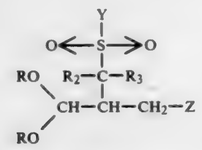
Division of Ser. No. 246,170, Mar. 23, 1981. This application Apr. 16, 1982, Ser. No. 369,145

Claims priority, application France, Mar. 28, 1980, 80 06978

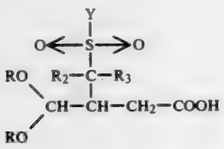
Int. Cl.³ C07C *61/35; 59/74*

U.S. Cl. 562—504 **3 Claims**

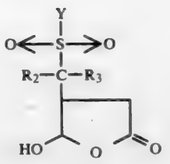
1. A process for the preparation of a 3-formyl-4-R_2R_3-but-3-ene-1-oic acid comprising reacting a compound of the formula



wherein Y is a monocyclic aromatic group, R_2 and R_3 are individually alkyl of 1 to 4 carbon atoms or taken together with the carbon atom to which they are attached form a carbon homocycle of 3 to 6 carbon atoms; the Rs are alkyl of 1 to 6 carbon atoms or together form a polymethylene of 2 to 3 carbon atoms and Z is selected from the group consisting of cyano and —$COOR_1$ wherein R_1 is alkyl of 1 to 6 carbon atoms with a basic agent capable of saponifying the ester group or a hydrolysis agent capable of converting —CN to —COOH to obtain a compound of the formula



wherein R, R_2, R_3 and Y have the above definition, reacting the latter with an acid agent capable of hydrolyzing the ketal group to obtain a compound of the formula



and reacting the latter with a basic agent to obtain a 3-formyl-4-R_2R_3-but-3-ene-1-oic acid.

4,390,725

OXYDEHYDROGENATION PROCESS FOR PREPARING METHACRYLIC ACID AND ITS LOWER ALKYL ESTERS

Chelliah Daniel, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 19, 1981, Ser. No. 322,824

Int. Cl.³ C07C *51/377, 57/05, 67/317, 69/54*

U.S. Cl. 562—599 **3 Claims**

1. In a process for the catalytic conversion of isobutyric acid or a lower alkyl ester thereof to the corresponding α,β-olefinically unsaturated derivative by oxydehydrogenation wherein a catalyst is contacted with a gaseous feed stream containing said acid or ester and molecular oxygen at a temperature between about 300° and 500° C.; the improvement comprising using as catalyst a material having the gram-atom empirical formula $Cu_aFe_bP_cO_x$ wherein a is 0.01–1.0, b is 0.01–1.0, c is 0.01–2.0, and x is determined by satisfying the sum of the unshared positive valences of the other elements shown in the formula.

4,390,726

PROCESS FOR THE PRODUCTION OF GUANIDINE NITRATE FROM A MIXTURE OF UREA AND AMMONIUM NITRATE AND APPARATUS FOR ITS PERFORMANCE

Matthias Thoma, Waldkraiburg, Fed. Rep. of Germany, assignor to Industrie Chemie Thoma GmbH & Co. Produktions KG, Waldkraiburg, Fed. Rep. of Germany

Filed Mar. 25, 1981, Ser. No. 247,512

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1980, 3011333

Int. Cl.³ C07C *128/00*

U.S. Cl. 564—242 **17 Claims**

1. In a process for the manufacture of guanidine nitrate wherein urea is reacted with ammonium nitrate in the presence of silica gel, the improvement comprising carrying out a reaction of said urea and ammonium nitrate wherein the initial mixture of urea and ammonium nitrate contains about a 1:2 weight ratio of urea to ammonium nitrate, heating the initial mixture to an elevated temperature of about 5°–20° C. above the reaction temperature of the urea and ammonium nitrate reactants not exceeding a maximum temperature of about 210° C., separating the formed guanidine nitrate from the reaction mixture, and gradually adding urea to the reaction mixture in such quantities relative to the reaction mixture such that the weight ratio of urea to ammonium nitrate is always about 1:2 up to the final phase of the reaction wherein 90–93% of urea has been consumed, after which the ratio of reactants increases in favor of ammonium nitrate.

4,390,727

PROCESS FOR PREPARING STABLE AQUEOUS SUSPENSIONS OF FORMALDEHYDE

Angelo De Micheli, Saronno, and Piero Bizzozero, Samarate, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jul. 29, 1981, Ser. No. 288,116

Claims priority, application Italy, Nov. 19, 1976, 29549 A/76

Int. Cl.³ C07C *47/058*

U.S. Cl. 568—422 **16 Claims**

1. A stable, fluid and homogeneous suspension, containing from 40 to 60% by weight of formaldehyde in water, in which a portion of the formaldehyde is present in the form of soluble monomer and/or oligomers, the remnant of the formaldehyde, amounting to 5 to 25% by weight, with respect to the whole suspension, being present in the form of undissolved but thermally re-dissolvable polymers of the formaldehyde, which polymers do not settle after at least ten days at temperatures equal to or higher than 20° C., said suspension being obtained by heating a starting aqueous solution, containing from 40 to 60% by weight of formaldehyde at temperatures from 40° to 80° C. under stirring, then admixing with it, at such temperatures, a stabilizing combination of polyvinyl-alcohol and of a guanamine selected from the group consisting of benzoguanamine, m-phthalo-bis-guanamine and lauroguanamine, adjusting the pH to a value from 0.5 to 1.5 or from 6.0 to 8.0, cooling the mixture to a temperature from 10° to 40° C., maintaining such cooled mixture under stirring for a time comprised between 4 and 24 hours, and finally adjusting the pH of the cooled mixture between 3.0 and 4.0.

4,390,728

PROCESS FOR CONVERSION OF TOLUENE TO BENZALDEHYDE

Chelliah Daniel, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Dec. 7, 1981, Ser. No. 328,290

Int. Cl.³ C07C *45/33*

U.S. Cl. 568—431 **4 Claims**

1. A process for the catalytic oxidation of toluene to benzaldehyde comprising contacting a catalyst with a gaseous feed stream containing toluene and oxygen at a temperature in the range of from 475° C. to 550° C. wherein the catalyst is one conforming to the empirical formula $Cu_aFe_bU_cPb_dP_eTe_f$-Mo_gO_x wherein a is 0.5–6.0, b is 0.5–2.0, c is 0.5–6.0, d is 0.05–1.0, e is 0.01–2.0, f is 0.1–2.0, g is 6–12, and x represents a number determined by satisfying the sum of the unshared positive valences of the other elements shown in the formula.

4,390,729

PROCESS FOR CARBONYLATION USING TETRAALKYL PHOSPHONIUM SUBSTITUTED PHOSPHINE AND AMINE TRANSITION METAL COMPLEXES AS CATALYST

Alexis A. Oswald, Mountainside, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 114,627, Jan. 23, 1980, Pat. No. 4,302,401. This application Nov. 3, 1980, Ser. No. 204,245

Int. Cl.³ C07C *45/50;* **C07F** *15/00*

U.S. Cl. 568—454 **15 Claims**

1. A process for carbonylation comprising reacting an organic compound capable of being carbonylated with CO in the presence of a catalyst complex of the formula:

$$[(R_2DQ)_bP^+R^1{}_{4-b}Z^-]_g(MX_n)_s$$

wherein each R is independently selected from an alkyl group containing from 1 to 30 carbon atoms and an aryl group containing from 6 to 10 carbon atoms; D represents a member selected from P and N atoms; Q is a divalent organic radical selected from an alkylene radical and an alkylene radical the carbon chain of which is interrupted with ether oxygen or phenylene group, wherein said alkylene radical contains from 1 to 30 carbon atoms; R^1 represents an alkyl group containing from 1 to 30 carbon atoms, wherein said R1 groups can be the same or different; b is an integer of from 1 to 4; Z^- is an anion; M represents a Group VIII metal atom; X is an anion or organic ligand satisfying the coordination sites of the metal M; b times g is 1 to 6; n is 2 to 6; and s is 1 to 3.

4,390,730

FORMALDEHYDE PRODUCTION

H. Robert Gerberich, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 27, 1981, Ser. No. 287,384

Int. Cl.³ C07C *45/052*

U.S. Cl. 568—473 **20 Claims**

1. In a process for the production of formaldehyde by oxidative dehydrogenation of methanol vapor with oxygen at elevated temperatures, the improvement which comprises passing a mixture of methanol and an oxygen-containing gas over a catalyst comprising silver and lead.

4,390,731

POLYMERIC PHENOLIC BENZYLIC ETHER COMPOSITIONS

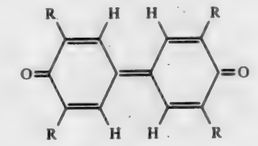
Thomas F. Rutledge, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 177,937, Aug. 14, 1980, abandoned. This application Sep. 24, 1981, Ser. No. 305,147

Int. Cl.³ C07C *43/20, 41/01*

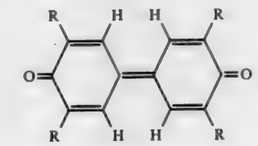
U.S. Cl. 568—643 **9 Claims**

1. The polymeric phenolic benzyl ether composition obtained by heating at a temperature of from about 150° C. to about 250° C. for a period of time of about 0.25 to 2.5 hours an alkyl-substituted diphenoquinone having the formula,



wherein each R is a C_1–C_4 alkyl group and at least one R group contains an alpha hydrogen atom.

6. A process for obtaining polymeric substituted benzyl ether compositions which comprises heating for a period of time of from about 0.25 to 2.5 hours at a temperature of from about 150° C. to about 250° C. an alkyl-substituted diphenoquinone having the formula,



wherein each R is a C_1–C_4 alkyl group and at least one R group contains an alpha hydrogen atom.

4,390,732

PROCESS FOR THE PRODUCTION OF GUAIACOL GLYCERINE ETHER

Wolfgang Merk, Hanau; Rüdolf M. Wagner, Illertissen; Peter Werle, Geinhausen, and Robert S. Nygren, Hanau, all of Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt, Fed. Rep. of Germany

Filed Feb. 10, 1982, Ser. No. 347,482

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1981, 3106995

Int. Cl.³ C07C *41/03*

U.S. Cl. 568—648 **20 Claims**

1. A process for the production of guaiacol glycerine ether comprising reacting o-methoxyphenol with glycidol in the presence of a catalyst selected from the group consisting of alkali metal hydroxides, alkali metal alcoholates, alkali metal cyanates, alkali metal thiocyanates and mixture thereof.

4,390,733

PROCESS FOR PREPARING THE MONO-METHALLYL ETHER OF PYROCATECHIN

Stefano Campolmi, Novara; Vittorio Carletti, Meda, and Marcello Marchi, Novara, all of Italy, assignors to Montedison S.p.A., Milan, Italy

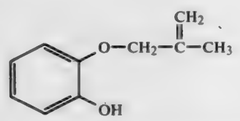
Filed May 14, 1981, Ser. No. 263,598

Claims priority, application Italy, May 16, 1980, 22129 A/80

Int. Cl.³ C07C *41/16*

U.S. Cl. 568—652 **17 Claims**

1. A process for preparing the mono-methallyl ether of pyrocatechin of formula (I)



(I)

characterized in that pyrocatechin is reacted with a methallyl halide in a homogeneous hydroxylated dissolving medium selected from the group consisting of water, C_1–C_5 saturated and unsaturated aliphatic mono-alcohols, and alcohols having the formula: $RO[(CH_2)_nO]_mH$, wherein R is selected from the group consisting of hydrogen and C_1–C_{10} alkyl groups and m and n are integers from 1 to 10, with the proviso that n is at least 2, or mixtures thereof, in the presence of an organic or inorganic base, and at temperatures in the range from about 30° to about 120° C.

4,390,734

PROCESS FOR PRODUCING PROPYLENE GLYCOL MONOALKYL ETHERS FROM ACETALDEHYDE, AN ALKANOL AND SYNGAS USING A NEW CATALYST SYSTEM

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jan. 13, 1982, Ser. No. 339,234

Int. Cl.³ C07C *41/01*

U.S. Cl. 568—678 **21 Claims**

1. A process for producing propylene glycol monoalkyl ethers from acetaldehyde and an alkanol or acetal which comprises contacting a mixture of acetaldehyde and alkanol, or an equivalent acetal, with carbon monoxide and hydrogen in the presence of a catalytic amount of a catalyst consisting of a cobalt-containing compound and a cocatalyst selected from the group consisting of rhodium-containing compounds, ruthenium-containing compounds, and nickel-containing compounds, and heating the mixture at moderate temperatures and moderaate pressures for sufficient time to produce the desired glycol monoalkyl ether, and then recovering the same from the reaction mixture.

4,390,735

PROCESS FOR THE PREPARATION OF P-ALLYLPHENOLS

Siegfried Rosenberger, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

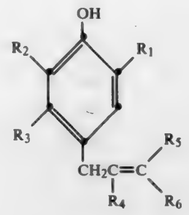
Filed Oct. 13, 1981, Ser. No. 310,709

Claims priority, application Switzerland, Oct. 22, 1980, 7873/80

Int. Cl.³ C07C *37/18, 37/11*

U.S. Cl. 568—790 **11 Claims**

1. A process for the preparation of a p-allylphenol, which is substituted in the ortho-position, of formula I



(I)

wherein

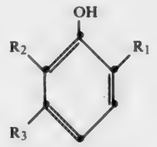
R_1 is C_1–C_{12} alkyl, phenyl, C_7–C_9 aralkyl or C_5–C_7 cycloalkyl,

R_2 is hydrogen, chlorine, C_1–C_{12} alkyl, phenyl, C_7–C_9 aralkyl or C_5–C_7 cycloalkyl,

R_3 is hydrogen or methyl, R_4, R_5 and R_6 independently of one another are hydrogen, phenyl, or C_1–C_{20} alkyl, with the proviso that, as alkyl radicals, R_4, R_5 and R_6 in total contain 1 to 20 C atoms, and which is essentially free of allyl aryl ether,

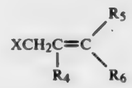
which comprises

reacting a phenol of formula II



(II)

where R_1, R_2 and R_3 are defined as above, with an allyl halide of formula III



(III)

where R_4, R_5 and R_6 are defined as above, and X is halogen,

in a molar equivalent ratio of phenol to allyl halide of 2:1 to 1:2,

in the presence of a base selected from the group consisting of the alkali metal hydroxides, the alkali metal carbonates and the alkali metal alcoholates having 1 to 6 carbon atoms, with at least one mol equivalent of base for each mol equivalent of phenol,

at a temperature of 0° to 130° C., and in the presence of

0.001 to 50 mol. %, based on the phenol of formula II, of a phase transfer catalyst selected from the group consisting of the quaternary salts, cyclic polyethers, open-chain polyethers, N-alkylphosphoramides, methylene-bridged phosphorus oxides and methylene-bridged sulfur oxides.

4,390,736

PROCESS FOR PRODUCING PHENOLS

Yasuhiko Inoue, Niihama; Shigeo Wake, Saijo; Tamio Sirafuji, Chiba, and Masazo Beppu, Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

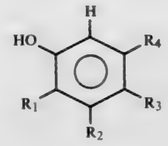
Filed Nov. 10, 1981, Ser. No. 320,106

Claims priority, application Japan, Nov. 26, 1980, 55-167083; Feb. 27, 1981, 56-29149; Aug. 21, 1981, 56-131693

Int. Cl.³ C07C *37/01*

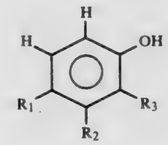
U.S. Cl. 568—801 **7 Claims**

1. A method for the production of phenol or nucleus-substituted phenols of the formula (II),



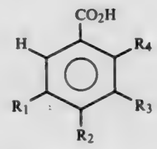
(II)

wherein R_1, R_2, R_3 and R_4 are each a hydrogen atom or a methyl group, and/or the formula (III),



(III)

wherein R_1, R_2 and R_3 are as defined above, comprising the step of catalytically oxidizing benzoic acid or nucleus-substituted benzoic acids of the formula (I),



(I)

wherein R_1, R_2, R_3 and R_4 are as defined above, in gas phase with an oxygen containing gas at a temperature of 200°–600° C. and with pressures at or above atmospheric, using an oxide catalyst of the formula,

$$Mo_aW_bX_cY_dZ_eO_f$$

wherein Mo is molybdenum, W is vanadium, X is at least one of copper, silver, manganese, iron, cobalt, nickel, rhodium, palladium, and platinum, Y is at least one of cerium, uranium, zirconium, chromium, tungsten, zinc, cadmium, tin, phosphorus, antimony, bismuth, and tellurium, Z is at least one of thallium, alkali metals, and alkaline earth metals, and when a is fixed to 12, b is 0.1 to 60, c is 0.1 to 60, d is 0 to 24, e is 0.1 to 120 and f is the number of oxygen atoms satisfying the valence of other elements.

4,390,737

PROCESS FOR THE ORTHO-ALKYLATION OF PHENOLIC COMPOUNDS

Akihide Kudoh; Motoo Kawamata; Kazushi Ohshima; Makoto Kotani, all of Yokohama; Takeshi Tsuda, Kanagawa, and Satoshi Morita, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Oct. 30, 1981, Ser. No. 316,781

Claims priority, application Japan, Nov. 17, 1980, 55-160687

Int. Cl.³ C07C *37/16*

U.S. Cl. 568—804 **8 Claims**

1. In a process for the selective ortho-alkylation of a phenolic compound having at least one ortho-positioned hydrogen atom by catalytically reacting the phenolic compound with a saturated aliphatic alcohol having from 1 to 4 carbon atoms in the vapor phase at a temperature of from 300° C. to 550° C., the improvement of which comprises carrying out the reaction in the presence of a catalyst containing manganese oxide, silicon oxide and one or more additives selected from group (A) consisting of germanium oxide, tin oxide and lead oxide, the silicon oxide in the catalyst being present in such proportion as to provide an atomic ratio of manganese to silicon ranging from 100:0.01 to 100:20, said additives selected from the group (A) being present in such proportion as to provide an atomic ratio of manganese to said metal additives ranging from 100:0.1 to 100:50.

4,390,738

PROCESS FOR THE OXIDATION OF OLEFINIC COMPOUNDS TO OLEFINE OXIDES OR DERIVATIVES THEREOF

Dhafir Y. Waddan, Whalley Range, and Derek Williams, Middlesbrough, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jun. 18, 1981, Ser. No. 274,797

Claims priority, application United Kingdom, Jun. 26, 1980, 8020976

Int. Cl.³ C07C *31/20, 33/04*; C07D *301/06, 301/08*

U.S. Cl. 568—857 **9 Claims**

1. A process for the oxidation of an olefine to an olefine oxide which comprises reacting an olefine selected from the group consisting of C_2 to C_4 mono-olefines and butadiene with oxygen in the presence of a copper catalyst which contains copper atoms to each one of which is bonded one or more peroxo groups thereby producing an olefine oxide.

9. A process according to claim **1** in which water is present and the olefine oxide is converted to the corresponding glycol.

4,390,739

HYDROXYLATION OF OLEFINS

Robert C. Michaelson, Waldwick, and Richard G. Austin, Ridgewood, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 9, 1981, Ser. No. 310,097

Int. Cl.³ C07C *31/20, 31/22, 33/20, 31/42*

U.S. Cl. 568—860 **9 Claims**

1. A process for hydroxylating at least one olefinic compound having at least one ethylenic unsaturation which comprises reacting said olefinic compound with oxygen and water in the presence of a catalyst composition in a manner and under conditions sufficient to convert at least one of said ethylenic unsaturation to its corresponding diol, said catalyst composition comprising:

(a) at least one catalytically active metal oxide wherein the metal of said oxide is selected from the group consisting of Os, Ti, Zr, Nb, Mo, W, Ru, Re, and Ir;

(b) at least one co-catalyst I transition metal salt having a cation and an anion wherein said cation is of a transition metal independently selected from the group consisting of Fe, Co, Ni, Cu, V, Cr, Mn, Sc, Ti, Mo, Ru, Rh, Pd, and W; and said anion is of a member independently selected from the group consisting of halide, carboxylate, aryloate,

aryolate, pseudo halide, R_5S^-, HS^-, R_5Se^-, HSe^-, HTe^-, and R_5Te^-, R_5 being alkyl of from about 1 to about 10 carbons; and

(c) optionally at least one co-catalyst II having a cation and an anion wherein said cation is of a member independently selected from the group consisting of alkali metal, alkaline earth metal, tetra hydrocarbyl ammonium, and tetra hydrocarbyl phosphonium, said hydrocarbyl group being selected from the group consisting of substituted and unsubstituted alkyl, aryl, alkaryl, and aralkyl and said anion is of a member independently selected from the group consisting of halide, carboxylate, aryloate, aryolate, pseudo halide, hydroxyl, R_5S^-, HS^-, R_5Se^-, HSe^-, HTE^-, and R_5Te^-, said R_5 being alkyl as defined above.

4,390,740

PROCESS FOR PREPARING FLUOROBENZENE

Iwao Tabushi, Kyoto; Kazuhiro Shimokawa, Yame; Daiji Naito, Ibaraki; Susumu Misaki, Mino, and Tsutomu Yoshida, Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Dec. 10, 1981, Ser. No. 329,434

Claims priority, application Japan, Dec. 13, 1980, 55-176132; Dec. 28, 1980, 55-186638

Int. Cl.³ C07C *17/10*

U.S. Cl. 570—146 **4 Claims**

1. A process for preparing monofluorobenzene which comprises reacting cyclopentadiene or its dimer of the formula:



with fluorohalomethane of the formula:

$CHFX_2$

wherein Xs are, same or different, halogen atoms in the presence of a phase transfer catalyst and an acid acceptor at a temperature of from 0° C. to 250° C.

4,390,741

PROCESS FOR THE PURIFICATION OF DIISOPROPENYLBENZENE

Howard A. Colvin, Akron, and Joel Muse, Jr., Kent, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 3, 1982, Ser. No. 414,706

Int. Cl.³ C07C *7/04*

U.S. Cl. 585—258 **7 Claims**

1. A process for the separation of diisopropenylbenzene from organic impurities in a dehydrogenation mixture comprising: (1) hydrogenating said dehydrogenation mixture to a maximum isopropenylstyrene concentration of no more than about 5 percent by weight in the presence of a rhodium catalyst and hydrogen to form a hydrogenated dehydrogenation mixture, followed by, (2) fractionally distilling said hydrogenated dehydrogenation mixture under conditions sufficient to separate said diisopropylbenzene from said organic impurities in said hydrogenated dehydrogenation mixture.

4,390,742

REDUCTION OF CYCLOPENTADIENE FROM ISOPRENE STREAMS

Lawson G. Wideman, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 22, 1982, Ser. No. 350,915

Int. Cl.³ C07C *7/01, 7/12*

U.S. Cl. 585—854 **8 Claims**

1. A process for reducing the level of cyclopentadiene present in a C-5 hydrocarbon stream containing no carbonyl compounds comprising forming the respective insoluble salt by contacting said stream with an alkali metal hydroxide, said alkali metal hydroxide being selected from the group consisting of sodium hydroxide, potassium hydroxide, and lithium hydroxide.

4,390,743

SILICON LAYER SOLAR CELL AND METHOD OF PRODUCING IT

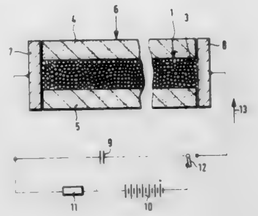
Reinhard Dahlberg, Flein, Fed. Rep. of Germany, assignor to Licentia Patent Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 11, 1981, Ser. No. 301,322

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1980, 3035563

Int. Cl.³ H01L *31/18*

U.S. Cl. 136—258 **16 Claims**



1. A method of producing a silicon layer solar cell having an active silicon layer applied to a surface of a low resistance silicon substrate, said method comprising: forming a low resistance silicon substrate using powder metallurgy by producing a compacted silicon powder member, and sintering or fusing the compacted silicon powder member at a sufficiently high temperature by passing an electrical current through the compacted silicon powder member; and applying an active silicon layer to a surface of the said silicon substrate.

13. A silicon layer solar cell produced according to the method of claim 1.

4,390,744

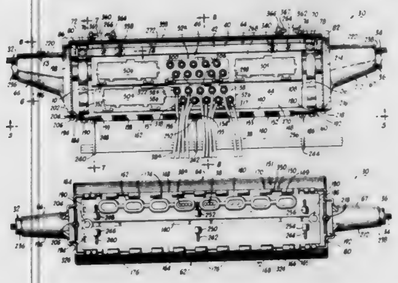
FIXED COUNT TERMINAL

Louis Suffi, Westchester; James E. Golden, Evanston, and Frederick W. Burtelson, Harvard, all of Ill., assignors to Northern Telecom, Inc., Nashville, Tenn.

Filed Dec. 12, 1980, Ser. No. 215,708

Int. Cl.³ H02G *7/08, 15/113, 15/117;* H01R *9/00*

U.S. Cl. 174—41 **47 Claims**



1. A combination of a cable terminal and a communication cable having a support strand portion and a cable conductor portion, said combination comprising:

a base means,

a support means affixed to said support strand portion of said cable and to which said base means is affixed,

a wall means supported by said support means and said base means, said wall means dividing said terminal into a cable compartment in which said communication cable including said support strand portion and said cable conductor portion is disposed and a terminal compartment, and

terminal means mounted on said wall means and extending into said terminal compartment.

10. A cable terminal for use with a communication cable having a plurality of conductors, said cable terminal comprising:

a base means,

a support means to be affixed to said cable,

a wall means supported by said support means and said base means, said wall means having at least one opening, and

terminal means mounted on said wall means, said terminal means having a terminal side from which extends a plurality of terminals and a cable side from which extends a plurality of connecting means consisting of a plurality of connecting wires extending through a retainer ring projecting from said terminal means, each of said connecting wires being coupled to a particular one of said plurality of terminals and each of said connecting wires being adapted to be connected to an individual one of the plurality of conductors within the communication cable.

4,390,745

ENCLOSURES FOR ELECTRICAL APPARATUS, CABLE AND ENCLOSURE COMBINATIONS, AND KITS AND METHODS FOR THEIR CONSTRUCTION

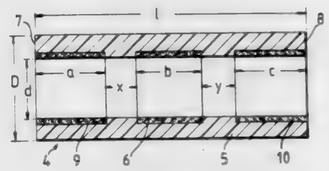
Bodo K. Böttcher, Zorneding, and Manfred O. Wilck, Neubberg, both of Fed. Rep. of Germany, assignors to Raychem GmbH, Putzbrunn, Fed. Rep. of Germany

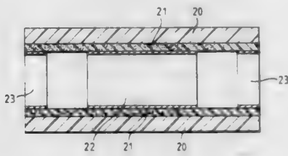
Filed Nov. 30, 1979, Ser. No. 98,900

Claims priority, application United Kingdom, Dec. 1, 1978, 46786/78

Int. Cl.³ H02G *15/064, 15/184*

U.S. Cl. 174—73 R **39 Claims**





1. A recoverable enclosure containing a shielded electric cable, wherein said cable comprises: a conductor, dielectric means surrounding said conductor, and shielding means surrounding said dielectric means, the dielectric means being cut back to expose a length of the conductor and the shielding means being cut back to expose a length of the dielectric means; and wherein said enclosure comprises: a first tubular recoverable article having an inner component of stress-grading material, said stress-grading material carrying a layer of electrically conductive material on its innermost surface, and an outer component of electrically insulating material; and a second tubular recoverable article having an inner component of electrically insulating material and an outer component of electrically conducting material; said first article being recovered into close conformity around said cable such that the inner stress-grading component of said first article is in electri-

cal connection with said shielding means of the cable and extends over the dielectric means of the cable, and said second article being recovered around said first article such that said insulating components of both articles are in close conformity with each other.

16. A recoverable enclosure containing a shielded electric cable, wherein said cable comprises: a conductor, dielectric means surrounding said conductor, and shielding means surrounding said dielectric means, the dielectric means being cut back to expose a length of the conductor and the shielding means being cut back to expose a length of the dielectric means; and wherein said enclosure comprises: a first tubular recoverable article having an outer component of electrically insulating material, a first inner component of stress-grading material, and a second inner component of electrically conductive material, said first and second components being located substantially laterally of each other; and a second tubular recoverable article having an inner component of electrically insulating material and an outer component of electrically conducting material; said first article being recovered into close conformity around said cable such that the inner stress-grading component of said first article is in electrical connection with said shielding means of the cable and extends over the dielectric means of the cable, and said second article being recovered around said first article such that said insulating components of both articles are in close conformity with each other.

26. A kit of parts for use in preparing an enclosure for electrical apparatus comprising first and second hollow articles each having at least one open end, the first hollow article being capable of being positioned about and of being brought into close conformity with the electrical apparatus and comprising a hollow stress grading component within and substantially axially aligned with a hollow electrically insulating component integral therewith, the stress grading component carrying a layer of electrically conductive material on its innermost surface, and the second hollow article being capable of being positioned about and of being brought into close conformity with the first hollow article, when said first hollow article is installed on the electrical apparatus, the second hollow article comprising a hollow electrically insulating component within and substantially axially aligned with a hollow electrically conductive component.

29. A kit of parts for use in preparing an enclosure for electrical apparatus, comprising first and second hollow articles each having at least one open end, the first hollow article being capable of being positioned about and of being brought into close conformity with the electrical apparatus and comprising an outer component of electrically insulating material, a first inner component of stress grading material and a second inner component of electrically conductive material, said first and second components being located substantially laterally of each other, and the second hollow article being capable of being positioned about and of being brought into close conformity with the first hollow article, when said first hollow article is installed on the electrical apparatus, the second hollow article comprising a hollow electrically insulating component within and substantially axially aligned with a hollow electrically conductive component.

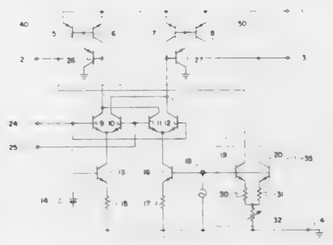
36. A method of enclosing at least one shielded electrical cable which comprises positioning about each said electrical cable a first tubular article comprising an electrically insulating outer component and an inner component of stress grading material integral therewith, said stress grading material carrying a layer of electrically conductive material on its innermost surface, bringing the article into close conformity with each said electrical cable, positioning about the installed first article a second tubular article comprising a hollow electrically insulating component within and substantially axially aligned with an electrically conductive component, and bringing the second article into close conformity with the first article.

4,390,746

STEREO SIGNAL DEMODULATOR HAVING AN IMPROVED SEPARATION CHARACTERISTIC

Naotoshi Higashiyama, and Kazuyuki Doi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1980, Ser. No. 182,646
Claims priority, application Japan, Aug. 31, 1979, 54-111335
Int. Cl.³ H04H *5/00*
U.S. Cl. 179—1 GE **11 Claims**



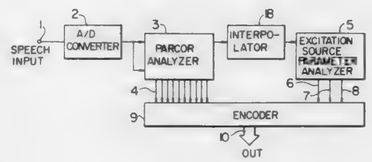
1. A stereo signal demodulator comprising an input terminal supplied with a stereo composite signal, a first transistor having a base coupled to said input terminal and an emitter coupled to a reference potential by way of a resistor, switching citrcuit means coupled to receive a collector output of said first transistor and alternately coupled to generate an output signal at its first and second output ends in response to first and second switching signals, said first switching signal having a phase opposite to the phase of said second switching signal, left and right channel output terminals coupled to said first and second output ends of said switching circuit means, respectively, the output signal generated at said first output end of said switching circuit means comprising essentially a left channel signal and a right channel crosstalk signal, the output signal generated at said second output end of said switching circuit means comprising essentially a right channel signal and a left channel crosstalk signal, crosstalk cancellation circuit means having second and third transistors each having a base coupled to said input terminal and a resistor circuit means coupled between emitters of said second and third transistors, an attenuated stereo composite signal being generated at collectors of said second and third transistors, respectively, and means for supplying said attenuated stereo composite signal to said left and right channel output terminals in order to obtain a high channel separation factor between left and right channels.

4,390,747

SPEECH ANALYZER

Tohru Sampei; Akihiro Asada; Yoshihiro Ohta, and Syunji Iwasaki, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 26, 1980, Ser. No. 191,294
Claims priority, application Japan, Sep. 28, 1979, 54-124055
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SC **3 Claims**



1. A speech analyzer comprising:

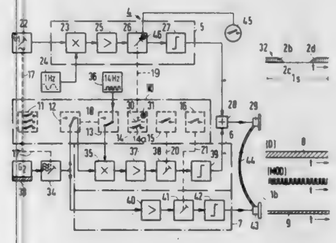
(a) analog-to-digital converter means for receiving and sampling a natural speech signal;
(b) spectrum analyzer means responsive to an output signal of said analog-to-digital converter means for producing spectrum information of said natural speech signal and an output signal in which said spectrum information is eliminated from said natural speech signal;
(c) interpolator responsive to said output signal of said analog-to-digital converter means for interpolating intermediate values between adjacent samples and for producing an output signal representative thereof; and
(d) excitation source parameter analyzer means responsive to the output signal of said interpolator means for producing a pitch information signal indicating the pitch of said natural speech signal.

4,390,748

ELECTRO-ACOUSTICAL MEASURING DEVICE AND METHOD

Eberhard Zwicker, Icking, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,779
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951856
Int. Cl.³ A61B *5/12*
U.S. Cl. 179—1 N **17 Claims**



1. An electro-acoustical device for use in determining the chronological resolution of hearing of an individual, said device comprising earphone means which may be applied to one ear of an individual being tested, a test tone channel connected with said earphone means for producing a test tone at the earphone means which can be interrupted, a masking sound channel which can be connected with the earphone means, and operable during testing of an individual for producing a masking sound for association with the test tone at said earphone means, adjustment means in said channels for adjusting the frequency of the test tone, and the level of the test tone and of masking sound, wherein the improvement comprises: said masking sound channel having noise generator means for generating the masking sound and for supplying noise bands matchable in terms of their frequency band to the adjusted frequency of the test tone, said adjustment means being operable for boosting the level of the masking sound in comparison to the quiescent hearing threshold level of the test tone, and a pulse modulator selectively operable in said masking sound channel for modulating the amplitude of said masking sound, while being switchable to an inactive condition to provide for the supply of a continuous unmodulated masking sound.

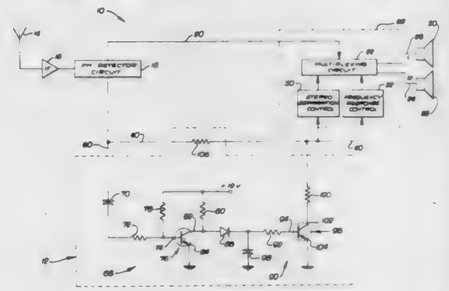
17. An electro-acoustical method for testing the chronological resolution of hearing, said method comprising:
in a first step supplying to an individual whose hearing is to be tested a test tone and determining the value of the threshold sound pressure level at which the individual is able to hear the test tone, so as to determine the quiescent hearing threshold level (RHS) of the individual for said test tone,
in a second step, supplying to the individual the same test tone masked by a continuous noise having a limited frequency band matched to the frequency of the test tone, and determining the sound pressure level at which the individual hears the test tone, so as to determine the listening threshold level (D) for said test tone when masked by said continuous noise,
in a third step supplying to the individual the same test tone masked by noise having said limited frequency band, but which noise is rectangularly amplitude modulated, and determining the sound pressure level at which the individual hears the test tone, so as to determine the listening threshold level (MOD) for said test tone when masked by said noise which is rectangularly amplitude modulated, and
carrying out said first, second and third steps such that chronological resolution of hearing can be judged from a diagram in which the determined threshold levels (RHS, D and MOD) are vertically plotted at equal horizontal distances from one another.

4,390,749

NOISE CONTROL SYSTEM FOR FM RADIO

Erik W. Pearson, Canoga Park, Calif., assignor to Superscope, Inc., Chatsworth, Calif.

Filed Apr. 13, 1981, Ser. No. 253,091
Int. Cl.³ H04H *5/00*
U.S. Cl. 179—1 GJ **11 Claims**



1. In a radio receiver including means for receiving a broadcast FM stereo radio signal and for converting the signal to a stereo radio audio output, a noise control system, comprising:
noise reduction means responsive to the strength of the broadcast radio signal for reducing noise in the audio output when the signal strength is relatively low, said noise reduction means including means for generating a substantially dc voltage having a magnitude proportional to the strength of the broadcast radio signal and means responsive to said dc voltage for reducing noise in the audio output when the broadcast signal strength is relatively low;
detection means for detecting the presence of relatively high levels of noise substantially independent of signal strength, said detection means including a sensing circuit for sensing the presence of ac signal components indicative of noise superimposed upon said dc voltage and for generating an electrical signal when said sensed ac signal components exceed a predetermined threshold magnitude; and
control means responsive to detection of relatively high levels of noise by said detection means for controlling the operation of said noise reduction means to reduce noise in the audio output, said control means including means responsive to said electrical signal generated by said sensing circuit for coupling said dc voltage to a voltage divider circuit and for supplying a divided voltage of reduced magnitude to said means responsive to said dc voltage for reducing noise in the audio output.

4,390,750

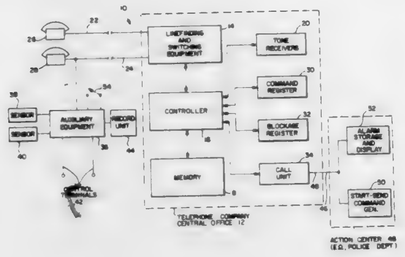
REMOTE SUPERVISORY SYSTEM

Everhard H. B. Bartelink, 15 Ridge Rd., Concord, N.H. 03301

Continuation of Ser. No. 926,102, Jul. 19, 1978, abandoned. This application Mar. 18, 1980, Ser. No. 131,444

Int. Cl.³ H04M *11/04*

U.S. Cl. 179—5 R **61 Claims**



26. Apparatus for supervising the condition of a telephone subscriber's premises by utilizing a telephone circuit that extends from the subscriber's premises to a telephone switching office of the type that includes linefinding means for identifying the subscriber whose telephone circuit is off-hook, and memory means for storing information including information concerning the identity of the subscriber, said apparatus comprising:

(A) sensing means at the premises for detecting the occurrence of a predetermined condition at the premises;

(B) responsive to the detection of said predetermined condition by said sensing means for creating a temporary off-hook condition on the telephone circuit, the subscriber whose telephone circuit is off-hook being identified by the line-identifying means in the office;

(C) means for transmitting a reporting signal to the office over the telephone circuit during the temporary off-hook condition, said reporting signal being indicative of the nature of said predetermined condition at the premises and being such that line switching equipment at the office does not respond to it; and

(D) means at the office for detecting and storing said reporting signal along with the subscriber identity in the memory means at the office.

4,390,751

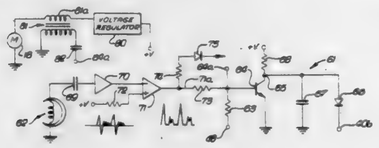
END OF REWIND DETECTION IN A TELEPHONE ANSWERING DEVICE HAVING REMOTE PLAYOUT

Sava Jacobson, 8130 Orion St., Van Nuys, Calif. 91406

Division of Ser. No. 111,589, Jan. 14, 1980, Pat. No. 4,315,104. This application Jan. 12, 1981, Ser. No. 224,042

Int. Cl.³ H04M *1/64*

U.S. Cl. 179—6.07 **5 Claims**



1. A telephone answering device of the type having incoming message recording means, operative during automatic answering operation, to record an incoming message on a tape driven by a tape drive element, and having automatic playout means for playing out recorded incoming messages over the telephone line under remote control in response to detection of a coded signal, said device having the improvement comprising:

a cam mechanism including a cam and a cam drive motor for driving said cam, said tape drive element being positionable by said cam alternatively to a forward position in which said tape drive element drives said incoming message tape in a forward direction and to a rewind position in which said tape drive element rewinds said tape, said cam mechanism normally operating in response to receipt of said coded signal,

cam control circuit means, operative when power first is applied to said device, for determining if said cam is in a first orientation with said tape drive element in said forward position, and if not, for energizing said cam drive motor to drive said cam to said first orientation, said cam mechanism then being in readiness for normal operation in response to receipt of said coded signal, and

audio responsive circuit means, connected to the playback head associated with said incoming message tape, for monitoring the audio signal output from said playback head while said incoming message tape is being rewound and said tape drive element is in said rewind position, and for providing an end-of-rewind signal in response to the termination of said audio signal output, and

means for causing said motor to drive said cam into said first orientation in which said tape drive element is in said forward position in response to occurrence of said end-of-rewind signal.

4,390,752

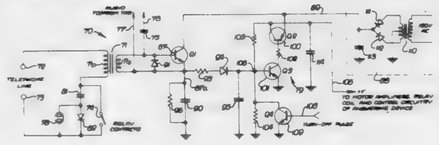
RING DETECTION CIRCUIT FOR A TELEPHONE ANSWERING DEVICE

Sava Jacobson, 8130 Orion St., Van Nuys, Calif. 91406

Filed Nov. 28, 1980, Ser. No. 211,241

Int. Cl.³ H04M *1/64*

U.S. Cl. 179—6.16 **2 Claims**



1. For use in a tape cassette or like telephone answering device in which metallic components that are electrically connected to the device electrical ground are accessible to the user, thereby requiring dc isolation of the telephone line from the device power source and electrical ground, a ring responsive circuit comprising:

a relay having a coil and a set of contacts,

an audio transformer having a primary and a secondary, the primary being connected in series with said relay contacts across the telephone line, said transformer being able to couple audio from the telephone line,

a neon bulb and circuit connected in parallel with said relay contacts so as to capacitively connect the transformer primary across the telephone line when said relay contacts are open, said neon bulb turning on for a portion of each cycle of the ring signal, conduction of said neon bulb resulting in the production of fast rise time transients having high frequency components which are effectively coupled by said transformer,

a source of power,

a transistor,

a first capacitor connected to be charged from said source of power via said transistor,

the secondary of said transformer being effectively connected to the base of said transistor so that the coupled high frequency components momentarily turn on said transistor so as to cause concomitant charging of said first capacitor from said power source, and

bistable switching means, latched in response to the charging of said first capacitor, for connecting said source of power to electrical components of said telephone answering device, including said relay coil, the resultant closure of said relay contacts directly connecting said transformer primary to the telephone line to seize the same, audio thereafter being coupled between said telephone line and said answering device via said transformer.

4,390,753

LINE INTERRUPTION ARRANGEMENT

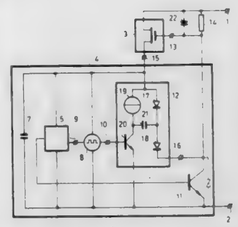
Daniël J. G. Janssen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 13, 1981, Ser. No. 234,087

Claims priority, application Netherlands, Feb. 26, 1980, 8001135

Int. Cl.³ H04M *1/31*

U.S. Cl. 179—81 R **8 Claims**



1. A line interruption arrangement for producing electronically generated dial pulses in a telephone set comprising:

a first semiconductor switching element having a main current path and a control electrode, and

a control circuit having supply terminals and an output terminal, the main current path of said first semiconductor switching element being connected in series with the supply terminals of said control circuit between first and second line terminals, the output terminal of said control circuit being coupled to said control electrode of said semiconductor switching element for rendering the main current path of the semiconductor switching element conductive and non-conductive in response to the absence or presence of control pulses,

said control circuit further comprises an output circuit which makes the potential of the control electrode at least equal to the potential of said first line terminal which is directly connected to the main current path of said first semiconductor switching element.

4,390,754

TONE GENERATOR CIRCUIT

Douglas R. Holberg, Austin, Tex., assignor to Mostek Corporation, Carrollton, Tex.

PCT No. PCT/US80/00817, § 371 Date Jun. 30, 1980, § 102(e) Date Jun. 30, 1980, PCT Pub. No. WO82/00231, PCT Pub. Date Jan. 21, 1982

PCT Filed Jun. 30, 1980, Ser. No. 265,983

Int. Cl.³ H04M *1/50*

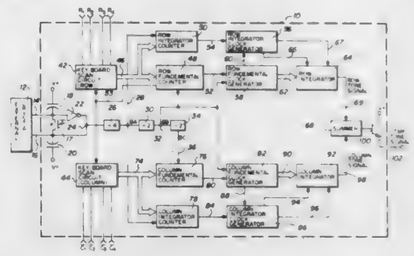
U.S. Cl. 179—84 VF **15 Claims**

1. A tone generator circuit for generating a selected frequency tone signal in response to an input signal, the tone generator circuit receiving a reference frequency signal higher in frequency than the selected frequency tone signal, the circuit comprising:

means for generating a fundamental rate signal derived from said reference signal and having a frequency determined by the input signal;

means for generating an integration rate signal derived from said reference signal and having a frequency determined by said input signal;

means coupled to said means for generating a fundamental rate signal and to said means for generating an integration rate signal for integrating a reference voltage to produce discrete voltage steps at the rate of said integration rate signal,



and also being responsive to said fundamental rate signal for selecting the polarity and amplitude of said discrete voltage steps to produce each cycle of said tone signal as a plurality of segments each segment comprising a plurality of similar integration steps.

4,390,755

DISTRIBUTION FRAME

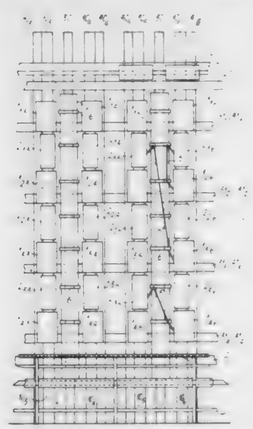
Jean-Francois J. Pierresteguy, 35, rue de la Barauderie, Darvault, Nemours, France (77140)

Filed Jun. 10, 1981, Ser. No. 272,373

Claims priority, application France, Jun. 18, 1980, 80 13483

Int. Cl.³ H04Q *1/14*

U.S. Cl. 179—98 **14 Claims**



1. A structure comprising:

first connecting means arranged in a first sub-matrix of columns and rows;

second connecting means arranged in a second sub-matrix of columns and rows, the second sub-matrix being coplanar with said first sub-matrix; and

link cords for interconnecting terminals of one of said first connecting means to terminals of one of said second connecting means;

corresponding columns (resp. rows) of said two sub-matrices being aligned respectively and the rows (resp. columns) of said two sub-matrices being double interlaced.

4,390,756

METHOD AND APPARATUS FOR GENERATING ELECTROCUTANEOUS STIMULATION PATTERNS FOR THE TRANSMISSION OF ACOUSTIC INFORMATION

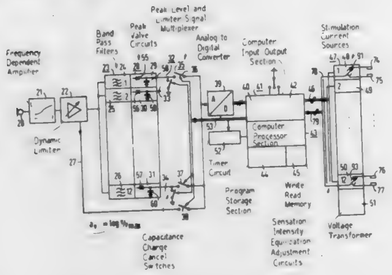
Christian Hoffmann; Manfred Zollner, both of Munich, and Eberhard Zwicker, Icking, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 6, 1981, Ser. No. 222,957

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003315

Int. Cl.³ H04R *25/00*

U.S. Cl. 179—107 BC **23 Claims**



20. A method for producing electric stimulation patterns as a function of acoustical information, which patterns can be transmitted to the skin of an individual by means of electrodes and can be interpreted as acoustical information, said method comprising converting the acoustic signals into electrical signals, separating the electrical signals into frequency bands, and transmitting stimulating signals to respective electrodes based on the information in respective frequency bands, characterized in that electric signals from an acoustic to electric transducer are separated into component signals in band pass filters of frequency band widths (curve **54'**, FIG. **2**) substantially corresponding to the frequency resolution capability of hearing (curve **54**, FIG. **2**), the latter component signals then being converted into signal levels corresponding to the component signal amplitudes, and, finally, taking into account the sensation intensity per electrode and following suppression of irrelevant components, the signal levels are converted into pulse durations of current pulses which are supplied to the electrodes, wherein the band widths of the filter channels with mean frequencies above 500 Hz are somewhat greater than third band widths (curve **54''**, FIG. **2**), and the band widths of filter channels with mean frequencies less than 500 Hz define a band width as a function of mean frequency which is relatively independent of the mean frequency and is approximated by a constant band width of approximately 130 Hz to 150 Hz.

4,390,757

CODING SWITCH

Edgar Wiessner, Amberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

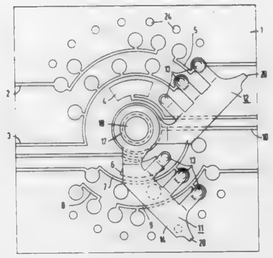
Filed Oct. 14, 1981, Ser. No. 311,415

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1980, 3040546

Int. Cl.³ H01H *19/14*

U.S. Cl. 200—11 G **11 Claims**

1. A coding switch comprising at least two conductor paths each having a plurality of contact points disposed about at least a portion of a circle, circles about at least a portion of which the contact points of the respective conductor paths are disposed being coaxial, and an elongated wiper rotatably secured at one end thereof at the center of the coaxial circles and extending radially therefrom, the wiper having at least two electrically connected contact points spaced along said wiper so as to be radially spaced with respect to the coaxial circles, the wiper having a handle disposed at an end thereof radially spaced from said one end by means of which the wiper can be rotated about the center of the coaxial circles so that each



contact point of the wiper can come into electrical contact with the contact points of a respective conductor path as the wiper is rotated.

4,390,758

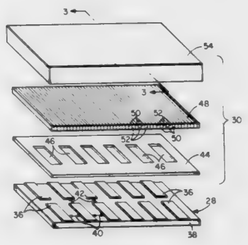
KEY-ACTUATED ELECTRICAL LOCK

Max S. Hendrickson, 1167 N. Shore Dr., Forest Lake, Minn. 55025

Filed Jan. 16, 1981, Ser. No. 225,752

Int. Cl.³ H01H *27/10, 27/00*

U.S. Cl. 200—43 **4 Claims**



1. A key-actuated locking device comprising:

a key having a handle, a flat longitudinal main body attached to the handle, a row of closely spaced apart teeth at a distal end of the main body defining a predetermined pattern from among a plurality of possible different patterns, and orientation means carried by the main body for defining a predetermined orientation of the row of teeth;

a longitudinal key passageway into which the key is inserted, the key passageway cooperating with the orientation means so that the row of teeth have the predetermined orientation;

a circuit board positioned in a first plane adjacent and perpendicular to an end of the key passageway and having a plurality of pairs of separated conductors thereon defining a row of closely spaced apart locations corresponding to possible positions of the spaced apart teeth of the key for a plurality of possible different patterns, including the predetermined pattern;

an insulator sheet positioned adjacent to the circuit board and between the circuit board and the key passageway, the insulator sheet having a plurality of openings, each opening aligned with at least one of the closely spaced locations defined by the separated conductors;

a plurality of elastomeric conductors positioned between the key passageway and the insulator sheet, at least one elastomeric conductor being aligned with each closely spaced location defined by the pairs of separated conductors,

each elastomeric conductor having a first surface for receiving force supplied by a tooth of the key and a second surface for engaging and electrically connecting the pair of separated conductors with which it is aligned, so that when force is applied to the first surface of the elastomeric conductor, its second surface is brought into engagement and electrical contact with the pair of separated conductors with which it is aligned, and wherein the elastomeric conductor is resilient and compressible so that application of force by the tooth which is greater than needed to bring the second surface into engagement with the pair of separated conductors causes compression of the elastomeric conductor without damage to the circuit board, the pair of separated conductors, or the key; and

means connected to the conductors and actuated when only the pairs of conductors at locations corresponding to the predetermined pattern are connected by the elastomeric conductors.

4,390,759

TILT-SENSITIVE IGNITION SWITCH

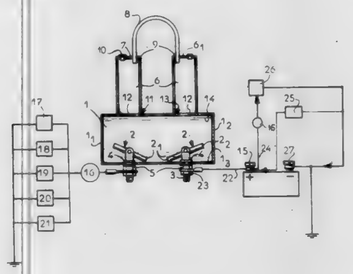
Roger Scieur, Etoges, 51270 Montmort Lucy, France

Filed Apr. 17, 1981, Ser. No. 255,040

Claims priority, application France, May 21, 1980, 80 11307

Int. Cl.³ H01H *35/02*

U.S. Cl. 200—52 A **4 Claims**



1. An automotive ignition cutoff device for preventing a fire or explosion by interrupting at least a portion of the electrical system of a vehicle in the event of overturning or tipping of the vehicle, and comprising:

an elongate hollow body;

at least two conductive studs extending through a wall of said body and sealingly attached thereto, and electrodes attached individually and respectively to each of said studs, said electrodes disposed within said body in a spaced apart relation and said studs connected within said electrical system to provide an electrical circuit discontinuity between one terminal of a battery and a remaining portion of said electrical system;

an electrically conductive fluid disposed within said body and means for electrically connecting said electrodes by said fluid and completing said circuit according to an orientation of said vehicle within a tilt threshold and for electrically disconnecting said electrodes and interrupting said circuit according to an orientation of said vehicle beyond said tilt threshold;

tubes connected to said body, each of said tubes having an axis generally perpendicular to an axis of said body and communicating on one end with an interior of said body via a calibrated orifice generally opposite of said body axis from said respective electrode, said tubes communicating with each other on another end via an air transfer tube; and

an air pervious plug in each of said tubes, said plugs providing means for preventing compression and depression within said device;

whereby air is allowed to pass through said plugs and fluid is not allowed to pass therethrough so that, upon turning said device upside down, said fluid may flow smoothly according to the calibration of said orifices.

4,390,760

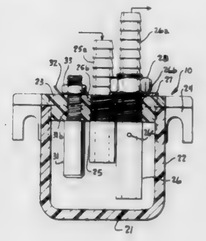
CONDUCTIVITY TYPE IN-LINE LIQUID SENSING APPARATUS

Stephen W. Schwitters, Rockford, Ill., assignor to Taylor Freezer Company, Rockton, Ill.

Filed Jan. 18, 1982, Ser. No. 340,352

Int. Cl.³ H01H *29/00*

U.S. Cl. 200—61.04 **6 Claims**



1. A conductivity type in-line liquid sensing apparatus for insertion in a liquid supply line to sense interruption of the liquid supply in the line, the sensing apparatus comprising a container having an inlet and an outlet adapted for connection in a liquid supply line in series therewith to have the liquid from the line pass through the container, the container being formed of an electrically insulative material and defining a closed trap chamber having a top and bottom, the liquid outlet including an outlet tube electrode of electrically conductive material extending downwardly in the chamber and terminating with its lower end at a preselected level below the top and above the bottom of the chamber, a second electrode extending downwardly in the chamber and terminating with its lower end at a level above the lower end of the outlet tube electrode, a gas vent opening in the outlet tube electrode at a level above the lower end of the second electrode and below the top of the chamber, the gas vent opening having a size that is small as compared to the internal size of the outlet tube electrode and operative to pass gaseous fluids therethrough from the chamber to one outlet while substantially impeding flow of liquid therethrough to the outlet, and electrical conductivity sensing means connected to said outlet tube electrode and said second electrode for sensing the conductivity therebetween.

4,390,761

HIGH CURRENT SWITCHING

Angelo J. Introvigne, Stafford Springs, Conn., assignor to Cole Hersee Company, South Boston, Mass.

Filed Jan. 19, 1981, Ser. No. 226,079

Int. Cl.³ H01H *21/00*

U.S. Cl. 200—67 C **7 Claims**

1. Switching apparatus comprising,

first and second insulatedly separated blade contact means of conducting material,

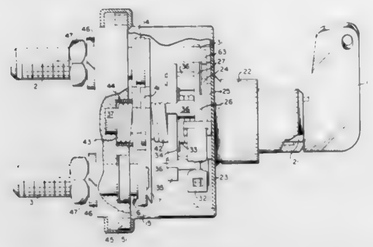
third blade contact means of conducting material relatively rotatable with respect to an axis about which said first and second blade contact means are located in fixed relationship,

means for relatively angularly displacing said third blade contact means relative to said first and second contact blade means about said axis in a plane perpendicular to said axis and parallel to the planes of all said blade contact means to selectively interconnect said first and second blade contact means with said third blade contact means

with said blade contact means upon interconnection being in dovetailing relationship,

action spring means having first and second ends and surrounding said axis for selectively storing and releasing mechanical rotating energy for selectively displacing said third blade contact means with snap action only upon release of the stored energy,

key shaft means for providing torque for winding said action spring means to store potential energy therein by rotating one of said first and second ends about said axis while the other remains stationary about said axis,



means including cam means concentric about said axis rotated by said key shaft means and latch spring means responsive to said key shaft means being displaced a predetermined angle about said axis to actuate said latch spring means with said cam means for releasing the potential energy stored in said action spring means by releasing the previously stationary one of said first and second ends while the previously rotating one remains stationary,

and means for coupling the torque provided by said action spring means upon releasing said potential energy to said third blade contact means for angularly displacing the latter.

4,390,762

CONTACT PIECE FOR AN ELECTRIC VACUUM SWITCH

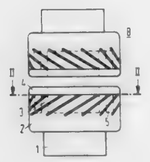
Franz Watzke, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 3, 1981, Ser. No. 240,157

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009925

Int. Cl.³ H01H *33/66*

U.S. Cl. 200—144 B **5 Claims**





1. Contact piece for an electric vacuum switch, comprising a contact carrier base, an obliquely slotted contact carrier wall having an upper surface and being integral with said base forming a pot-shaped contact carrier together with said base, said pot-shaped contact carrier being substantially formed of copper and having a circular cross-section, an unslotted substantially planar contact ring being formed of a contact material and being disposed in said upper surface of said wall, said wall having a circular groove with a rectangular cross-section formed therein extended downwardly from said upper surface thereof, and another unslotted ring formed of a material having a greater resistance than copper being disposed in said groove.

4,390,763

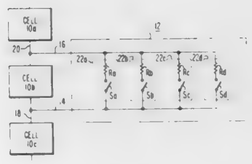
ELECTROCHEMICAL CELL SHUNTING SWITCH ASSEMBLY WITH MATRIX ARRAY OF SWITCH MODULES

Robert M. Hruda, Horseheads, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 27, 1981, Ser. No. 267,823

Int. Cl.³ H01H *33/00;* **C25B** *9/04*

U.S. Cl. 200—144 B **5 Claims**



1. An electrochemical cell shunting switch assembly which is connectable to the terminals of adjacent series connected electrochemical cells to provide an efficient high current capacity shunt path around the shunted cell, and to permit diversion of the shunt current back through the shunted cell in a predetermined time dependent manner, wherein the shunting switch assembly comprises:

(a) first and second bus connectors, the first bus connector connectable at one end to a terminal of a cell adjacent to the cell to be shunted, and the second bus connector connectable at one end to a terminal of another cell adjacent to the cell to be shunted, with the other ends of the first and second bus connectors being disposed in spaced apart parallel planes;

(b) a matrix array of a plurality of parallel switch modules connectable between the first and second bus connectors, which matrix array includes a plurality of shunt path switch modules and a plurality of current diversion switch modules, each of which shunt path switch modules comprise a switch means having contacts which are relatively reciprocable to open and close the switch contacts, with one switch contact serially connected to selected low resistance means to one of the bus connectors, and the other switch contact is connected by flexible connection means to the other bus connector, with individual operating means connected to the switch contact connected to the flexible connector means for opening and closing the switch contacts, which low resistance means is selected to provide a high efficiency shunt current path; and

(c) each of which current diversion modules comprises a switch means and operating means as described above and a selected high resistance means is serially connected to one switch contact and to one of the bus connectors, which high resistance means is selected such that when the shunt path modules are opened a selected portion of the shunt current is diverted back through the shunted cell, and with sequential opening of individual current diversion modules to increase the diverted current back through the cell until with the opening of the last current diversion module all of the current has been diverted back through the previously shunted cell.

4,390,764

PUFFER-TYPE GAS BLAST SWITCH

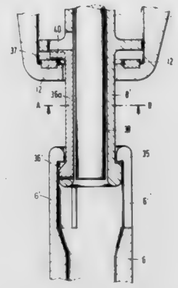
Karl Kriechbaum, Kassel; Hans-Georg Augustin, Fuldabrück, and Dietrich Hoffmann, Kassel-Ki, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 146,403

Claims priority, application Fed. Rep. of Germany, May 5, 1979, 2918145; Jan. 26, 1980, 3002803

Int. Cl.³ H01N *33/88*

U.S. Cl. 200—148 A **26 Claims**



1. A puffer-type gas blast switch comprising a gas compression device composed of two components constituting, respectively, a piston and a cylinder between which is defined a gas compression chamber, one of the components being stationary and the other one of the components being movable for compressing a quenching gas in the chamber during switch opening, an insulating nozzle mounted for directing the compressing quenching gas from the chamber against a switching arc, a first power contact fixed to the movable component of the gas compression device and movable between a switch closing position and a switch opening position, a second power contact arranged to be conductively connected to the first power contact when the latter is in its switch closing position and movable with the latter during at least the initial portion of its movement from the switch closing position, stationary means supporting said second contact, spring means urging the second contact in a direction to break its connection with the first contact, said second contact being directly and releasably connected to said first contact when said first contact is in its switch closing position, and abutment means for limiting the path of movement of said second contact with said first contact during movement of said first contact to its switch opening position.

4,390,765

RUBBER-MADE COVERING MEMBER FOR PUSH BUTTON SWITCHES

Ryoichi Sado, Saitama; Yoshitusgu Morikawa; Takekuni Okamoto, both of Tokyo, and Kazutoki Tahara, Ageo, all of Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed May 27, 1981, Ser. No. 267,662

Claims priority, application Japan, Jun. 9, 1980, 55-77434

Int. Cl.³ H01H *13/52*

U.S. Cl. 200—159 B **4 Claims**

1. A push button switch covering member integrally shaped of a rubbery elastomeric material which comprises

(a) a central pushing part having a downwardly facing protrusion,

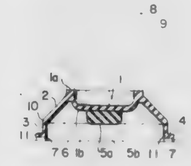
(b) a first annular portion encircling and connected to the central pushing part, which is susceptible to a snapping action by the buckling deformation when the central pushing part is depressed by pushing,

(c) a second annular portion encircling and connected to the first annular portion, and

(d) a base flat surrounding and connected to the second annular portion, at which the push button switch covering member is mounted on a base board of the switch with said protrusion facing said base board, said base flat including a fixed contact lying below said protrusion, the second annular portion having a cylindrical configuration connected at one end to the first annular portion and to the base flat at the other end and being capable of being deformed, when the central pushing part is depressed by pushing, in such a manner that the diameter of the circular connecting line between the first and second annular portions is increased before the first annular portion undergoes a buckling deformation.

2. A push button switch covering member integrally shaped of a rubbery elastomeric material which comprises

(a) a central pushing part having a downwardly facing contact,



(b) a first annular portion encircling and connected to the central pushing part, which is susceptible to a snapping action by a buckling deformation when the central pushing part is depressed by pushing,

(c) a second annular portion encircling and connected to the first annular portion, and

(d) a base flat surrounding and connected to the second annular portion, at which the push button switch covering member is mounted on a base board of the switch with said protrusion facing said base board, said base flat having a fixed contact thereon for engagement with said downwardly facing contact, the second annular portion having a flat annular configuration parallel to the base flat as connected to the first annular portion at the inner periphery and connected to the base flat at the outer periphery and capable of being bent toward the base board around the connecting line between the second annular portion and the base flat when the central pushing part is depressed by pushing before the first annular portion undergoes a buckling deformation.

4,390,766

APPARATUS AND METHOD FOR CONTROLLING ELECTRONIC CONTROLLED COOKING APPARATUS HAVING STORAGE

Atsushi Horinouchi, Otsu, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Feb. 20, 1980, Ser. No. 123,021

Claims priority, application Japan, Feb. 28, 1979, 54-23802

Int. Cl.³ H05B *1/02, 9/06*

U.S. Cl. 219—10.55 B **20 Claims**

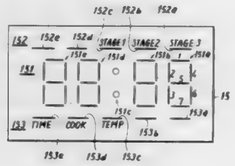
16. A method for controlling stages of storage means in an electronic controlled cooking apparatus, said cooking apparatus comprising

entry means for entering data concerning a cooking condition with respect to a material being cooked, said entry means having at least one cooking condition key for selecting a plurality of cooking conditions, numeral keys, and a specified function key,

storage means for storing said cooking condition data entered from said entry means, said storage means having a plurality of successively defined stages including an initial,

final and at least one intermediate stage, said successive stages being cyclically defined so that said initial stage successively follows said final stage, each said stage having a plurality of regions for storing a group of cooking mode data concerning at least one cooking condition,

buffer memory means for temporarily storing cooking mode data corresponding to one of said stages as it is being entered from said entry means, and having buffer storage regions of the number corresponding to at least the number of said plurality of regions in said one of said stages of said storage means, at least one of said buffer storage regions being used as a flag region identifying which one of said plurality of stages of said storage means will be used to store the data which is presently being stored in said buffer memory means, said method comprising the steps of:



detecting said flag regions of said buffer memory means, corresponding to said plurality of stages of said storage means, responsive to manual operation of said specified function key,

transferring said cooking mode data temporarily stored in said buffer memory means into the corresponding one of said stages of said storage means responsive to said detection of said flag regions,

transferring the cooking mode data in the stage which successively follows said stage corresponding to said set flag to said buffer memory means, and

changing the flag setting in said flag regions of said buffer memory means to the flag corresponding to said following stage.

4,390,767

WINDOWED AND CHOKED COMBINATION OVEN DOOR

Arnold M. Bucksbaum, Cedar Rapids, and Buddy J. Austin, Atkins, both of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa

Filed Jan. 28, 1981, Ser. No. 229,060
Int. Cl.³ H05B *6/76*
U.S. Cl. 219—10.55 D **10 Claims**

1. A windowed door for a microwave oven, comprising:

an inner metal panel having a first side facing the cavity of said oven and a second side facing away from said cavity as defined with said door closed, said panel having an aperture for providing a window in said door;

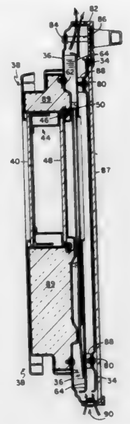
a metal plate positioned on said second side of said panel, said plate being aligned with said aperture and spaced from said panel defining a passageway from said cavity through said aperture and around said plate;

said plate having a plurality of perforations for viewing said cavity;

a first choke-coupling microwave seal communicating with a peripheral region of said plate for preventing the escape of microwave energy from said cavity along said passageway;

a microwave and light transparent glass pane seated between said metal plate and said second side of said panel, said pane covering said aperture; and

a second choke-coupling microwave seal positioned at the perimeter of said metal panel for suppressing leakage of



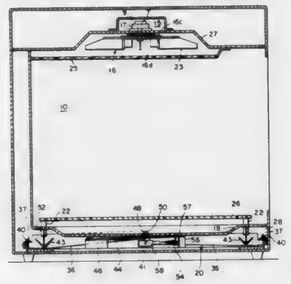
microwave energy from said cavity through the gap between the access opening and said perimeter.

4,390,768

COOK-BY-WEIGHT MICROWAVE OVEN

Wesley W. Teich, Wayland, and Kenneth W. Dudley, Sudbury, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 190,285, Sep. 24, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,720
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **4 Claims**



1. A microwave oven comprising:

an outer housing;

a conductive cavity within said housing, said cavity having a substantially rectangular floor;

a chamber in said housing below said floor;

a weight sensing device positioned in said chamber;

said floor having four apertures respectively located in regions adjacent to the four corners, said apertures having a perimeter of less than one-half wavelength of said microwave energy;

four microwave transparent vertical columns supported by said weight sensing device and respectively protruding through said four apertures in said floor into said cavity;

a plate positioned in said cavity and supported by said four columns whereby the weight of an object placed on said plate is coupled to said weight sensing device;

said weight sensing device providing a first signal which is a function of the weight supported by said columns;

a microprocessor;

a control panel having operator selectable means for providing a second signal corresponding to the initial temperature of said object;

a magnetron for supplying microwave energy to said cavity; and

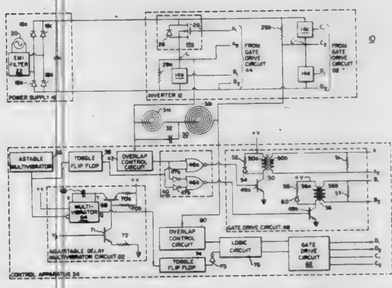
said microprocessor controlling said magnetron in response to said first and second signals.

4,390,769

INDUCTION HEATING APPARATUS PROVIDING SMOOTH POWER CONTROL

Robert L. Steigerwald, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 29, 1980, Ser. No. 154,222
Int. Cl.³ H05B *5/04*
U.S. Cl. 219—10.77 **8 Claims**



1. An improved induction heating apparatus providing smooth power control comprising:

a direct current power supply;

a full bridge inverter having first and second legs, each inverter leg comprised of first and second gate turn-on switching means serially coupled across the output of said direct current power supply, each of said first and second gate turn-off switching means of each inverter leg comprising a field transistor and a diode coupled in the reverse power supply voltage direction across the drain-to-source portion of said field effect transistor;

a resonant induction drive coil load circuit coupled between the junctions of the switching means of said first and second inverter legs, respectively; and

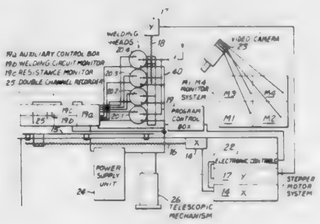
a control apparatus coupled to each of said switching means of said first and second inverter legs for rendering said first and second switching means of each said inverter leg conductive at alternate intervals, said control apparatus controllably delaying initiation of alternate conduction of the switching means of said second inverter leg after initiation of alternate conduction of the switching means of said first inverter leg in accordance with the magnitude of an operator-varied voltage, thereby permitting smooth variation of inverter output power between 0 to 100 percent of maximum output power, said control apparatus comprising an astable multivibrator clock means for generating an output signal at uniform periodic intervals, first circuit means having a first input coupled to the junction between switching means of said first inverter leg and having a second input coupled to said clock means, said first circuit means coupled at its first and second outputs to a separate one of said first and second switching means of said first inverter leg, respectively, and alternately rendering one of said first and second switching means of said first inverter leg conductive in response to said clock means output signal, said first circuit means comprising a toggle flip-flop having an input coupled to said clock means and producing an output voltage which alternately changes in amplitude between a first and second level in response to said clock means output clock signal, an overlap control circuit having an input coupled to the junction between switching devices of said first inverter leg and producing an output voltage which changes in amplitude from a first to a second level in response to the voltage at its input, a logic circuit coupled at its first input to said toggle flip-flop and coupled at its second input to said overlap control circuit, said logic circuit producing a first output voltage whose amplitude changes from a first to a second level in accordance with a first predetermined relationship between voltages at it first and second inputs and producing a second output voltage whose amplitude changes from a first to a second level in accordance with a second predetermined relationship between voltages at its first and second input and gate drive circuit means coupled at its first and second input to said logic circuit means and coupled at each of its first and second output to a separate one of said first and second switching means, respectively, of said first inverter leg, said gate drive circuit supply said first and second switching means with gate drive voltage in accordance with the amplitude of a separate one of said logic circuit first and second output voltages, respectively, delay circuit means having an input coupled to said clock means, said delay circuit means generating an output signal after an interval following receipt of said clock means output signal, said interval being variable in duration in accordance with said operator-varied voltage, and second circuit means having a first input coupled to the junction between switching means of said second inverter leg and having a second input coupled to said delay circuit means, said second circuit means coupled at its first and second outputs to a separate one of said first and second switching means of said second inverter leg, respectively, and alternately rendering one of said first and second switching means of said second inverter leg conductive in response to said delay circuit means output signal.

4,390,770

AUTOMATIC WELDING APPARATUS FOR SOLAR CELLS

Franz Köhler, Unterhaching, and Albert Meggl, Munich, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 65,444, Aug. 10, 1979, abandoned. This application Jul. 24, 1981, Ser. No. 286,390
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1978, 2841465
Int. Cl.³ B23K *11/10*
U.S. Cl. 219—56.21 **8 Claims**



1. Automatic welding apparatus for welding contact tabs to solar cells which are particularly adapted for use in space vehicular solar generators comprising:

a plurality of welding electrodes including electrode heads having individually controlled contact pressure means;

a solar cell conveying table movable in a given direction for

moving solar cells through a welding station past said welding electrodes;
said electrode heads being arranged to extend across said conveying table;
means for moving said electrode heads in a first and a second direction perpendicular to each other, said first and second directions both being perpendicular to said given direction of movement of said conveying table;
means for controlling said conveying table to effect automatic positioning of welding points on said solar cells beneath said welding electrodes;
high-powered current supply means for enabling control of welding current supplied to said electrode heads;
protective gas line means feeding each of said electrode heads;
ohmmeter means for monitoring the effective contact resistance at each of said welding points;
means for enabling individual visual inspection of welds produced by each of said electrode heads; and
program control means for monitoring operational parameters of said apparatus for effecting management of operational functions thereof.

4,390,771

BONDING WIRE BALL FORMING METHOD AND APPARATUS

John A. Kurtz, Gorham, and Donald E. Cousens, Saco, both of Me., assignors to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed May 11, 1981, Ser. No. 262,595
Int. Cl.³ B23K *11/22*
U.S. Cl. 219—56.22 **37 Claims**



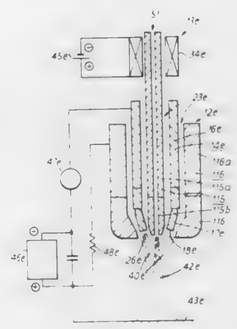
1. A method for forming a ball by melting the end of bonding lead wire extending from a capillary wire holding tool for ball bonding of the lead wire to a die pad of an integrated circuit chip or other microelectronic substrate surface comprising;
substantially enclosing the end of the bonding wire in a shroud or shield;
flooding the shroud or shield and the end of the bonding wire with an inert gas;
generating a controlled pulse train of a preset count of electrical pulses for establishing arc discharge between the wire and the shroud or shield thereby controlling and metering the energy delivered for melting and forming a ball of uniform quality at the end of the wire; and maintaining the pulse height and therefore the voltage amplitude of said pulses substantially constant by establishing said voltage across relatively large high voltage capacitance and discharging no more than substantially 10% of the charge stored by said capacitance for generating said pulses.

4,390,772

PLASMA TORCH AND A METHOD OF PRODUCING A PLASMA

Susumu Hiratake, 1662-9 Kizuki-cho, Kasugai-shi, Aichi-ken, Japan

Division of Ser. No. 22,651, Mar. 21, 1979, Pat. No. 4,275,287.
This application Nov. 24, 1980, Ser. No. 209,624
Claims priority, application Japan, Sep. 28, 1978, 53-119575
Int. Cl.³ B23K *9/00*
U.S. Cl. 219—121 PQ **2 Claims**



1. A method of obtaining a plasma of active gas in a plasma torch comprising the steps of:
(a) providing a pair of radially-spaced coaxial annular nozzle elements each having a convergent frusto-conical surface at a discharge end thereof,
(b) providing an annular cathode disposed coaxially between said convergent surfaces,
(c) providing a bore along the axis of said nozzle elements and said cathode,
(d) discharging an arc from said cathode,
(e) discharging a gas outwardly from said discharge ends of said nozzles to cause said arc to converge,
(f) developing a magnetic field across said discharge ends for causing said arc discharged from said cathode to rotate to accomplish emission of said arc uniformly from the entire perimeter of said cathode thereby to cause said plasma jet to issue as a convergent funnel-shaped flow, and
(g) introducing active gas through said axial bore into said convergent funnel-shaped flow at a position spaced axially from said discharge openings where said funnel-shaped flow has become narrowed, thereby to transform said active gas into a plasma.

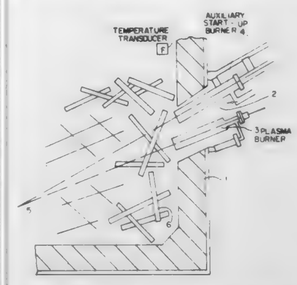
4,390,773

CONTACT ELECTRODE FOR MELTING AND HEATING FURNACES WITH DC PLASMA HEATING

Fred Esser, Wettiner Str. 9, DDR-7010 Leipzig; Detlev Klöpper, E.-Schubert-Str. 20, DDR-7024 Leipzig; Walter Lachner, Schlüterstr. 20, DDR-8021 Dresden, and Gerhard Scharf, Lotzestr. 4, DDR-8027 Dresden, all of German Democratic Rep.

Filed Feb. 5, 1981, Ser. No. 231,606
Int. Cl.³ H05H *1/00*; B23K *1/00*
U.S. Cl. 219—121 PR **1 Claim**

1. In a metallurgical plasma melting furnace for the melting of metals and alloys, having at least one plasma burner having a longitudinal axis mounted in a furnace sidewall port, the improvement comprising at least one start-up burner having a longitudinal axis for each of said at least one plasma burners, the start-up burner mounted in the same port as its associated plasma burner and alongside same with said longitudinal axes of the start-up burner and associated plasma burner intersecting within the furnace and forming an acute angle at the point of intersection.

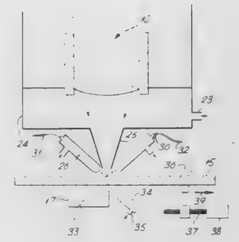


4,390,774

METHOD AND APPARATUS FOR TREATING ELECTRICALLY NON-CONDUCTIVE WORKPIECES

William M. Steen, New Maldon, England, and Walter W. Duley, King City, Canada, assignors to National Research Development Corporation, London, England

Filed Mar. 24, 1981, Ser. No. 247,112
Claims priority, application United Kingdom, Mar. 25, 1980, 8009981
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 FS **22 Claims**



1. A method for treating a workpiece comprising
projecting a beam of light from a laser onto a workpiece formed from non-conductive material and
applying a voltage between at least two electrodes, each distinct from said workpiece to strike an arc,
the electrodes being so positioned that the arc impinges on the workpiece within a heat affected zone created by the laser beam in the workpiece.

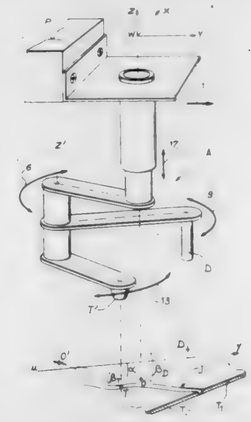
4,390,775

AUTOMATIC AND SELF-ADAPTING PROCESS FOR FUSION-WELDING A JOINT BETWEEN TWO SURFACES

Dominique Biava, Clamart; Jean Cornu, Nantes; Jean-Marie Detriche, Chambourcy; Richard Galera, Meylan; Bernard Tiret, Verdun, and Paul Marchal, Gif sur Yvette, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Feb. 13, 1981, Ser. No. 234,362
Claims priority, application France, Feb. 13, 1980, 80 03152
Int. Cl.³ B23K *9/12*
U.S. Cl. 219—124.34 **17 Claims**

1. Automatic, self-adapting process for welding a joint by fusion with the aid of a welding head which comprises a joint detector and a torch and which is supported by a holder mobile along the joint, this welding head being mobile in rotation about a main axis related to the holder and substantially perpendicular to the plane tangential to the surfaces to be welded at the location of the joint and being mobile in translation along this main axis, the torch and the detector being mobile in rotation about a secondary axis related to the head and parallel to the main axis, the torch passing through the main axis in the course of rotation about the secondary axis, the detector being in advance with respect to the torch, during the displacement of the holder, a reference direction being defined for all the degrees of freedom of the head when the above-mentioned axes as well as the axes of the torch and the detector are in the same plane; said process comprises the following steps of:
recording, during a trial operation prior to welding, the successive positions of the holder along the joint,
determining for each of these positions in the course of this



operation the direction of a straight reference line defined by the two points of intersection of the axis of the torch and of the axis of the detector with the outline of the joint on the surfaces of the pieces to be assembled and recording an electric voltage corresponding to the angular position of this reference direction;
measuring, in the course of welding and for each position of the holder, the angle of the detector with respect to the reference direction of the head, when the detector is above the joint;
correcting, in the course of welding following the trial operation, the angular position of the torch when the torch occupies the position previously occupied by the detector, by an angular displacement which is a funtion of the angular deviation of the detector with respect to the corresponding reference direction at this point of the joint and of the speed of displacement of the head on its path.

4,390,776

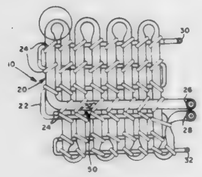
IMMERSION HEATER

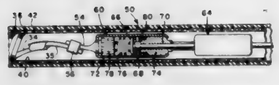
Daryl J. Yane, 2735 Pioneer Trail, Aurora, Ohio 44202, and Roger A. Yane, 954 Canyon View Rd., Sagamore Hills, Ohio 44067

Filed Mar. 1, 1982, Ser. No. 353,601
Int. Cl.³ H05B *3/06*
U.S. Cl. 219—523 **8 Claims**

1. A continuous, flexible heating cable assembly array for immersion heating of a liquid in a container, said cable array comprising:
(a) a heating element disposed in coiled pitches of substantially uniform diameter having a length substantially greater than the coil diameter, said element being formed of a continuous bare wire having a high electrical resistance;

(b) a flexible braided sheath of fibrous glass material received over said coiled pitches continuously along the length thereof;
(c) said coil heating element having at least one uncoiled region disposed intermediate the ends thereof and intermediate to regions of said coiled pitches, which region has the element disposed in axially substantially linear arrangement for a predetermined interval of length;
(d) an outer tubular casing formed of flexible, electrical insulating material having a low surface coefficient of friction and a high resistance to heat and attacks by acid and alkaline solutions, said casing being received over said sheath element and continuous along the length thereof;
(e) connecting means attached to each end of said coiled element and disposed within said casing;

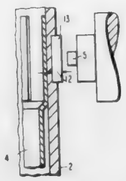




(f) power lead means attached to each of said connecting means, said lead means extending beyond the respective adjacent end of said casing, said lead means being adapted for connection to a source of electrical power;
(g) said cable assembly being folded or bent at a radius less than twice the diameter of said casing in said uncoiled region without materially disturbing said coiled pitches wherein said cable assembly has a plurality of said uncoiled regions spaced therealong and forms an array of side-by-side closely spaced, unbent sections disposed in generally serpentine arrangement;
(h) support means; and,
(i) means for attaching the individual sections to said support means for maintaining said side-by-side closely spaced serpentine arrangement.

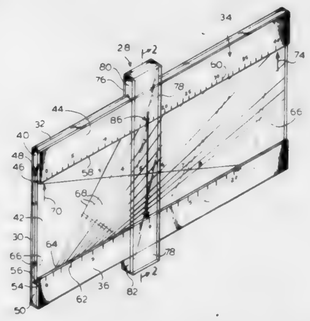
4,390,777
FUSION WELDING PROCESS
Kenneth C. Thomas, Export; Eric D. Jones, Salem, and Marvin A. McBride, Hempfield Township, Westmoreland County, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Mar. 19, 1981, Ser. No. 245,487
Int. Cl.³ B23K *9/23*
U.S. Cl. 219—127 **1 Claim**

1. In a method of fusion welding an austenite metal member to the inside surface of an elongated austenite metal duct by securing the metal member against the inside surface of the duct wall and by applying fusion welding means to the outside surface of the duct wall, the improvement comprising forming a hole from the outside surface partway through the wall of the duct in alignment opposite the metal member secured therein, affixing a metal pellet containing ferrite of sufficient nickel and chromium equivalence to form on fusion with the austenite metal member and duct an alloy including about 5–10% ferrite; and



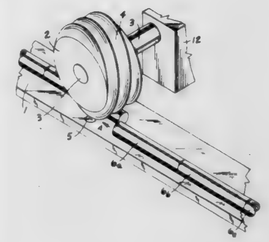
fusing the austenite metal duct wall, austenite metal member and pellet together through application of fusion welding means outside said duct to form said weld including ferrite alloy.

4,390,778
CALCULATOR FOR DETERMINING OPTIMUM TONE REPRODUCTION
Thomas N. Toivonen, 173-03 Fairchild Ave., Flushing, N.Y. 11358
Filed Oct. 7, 1981, Ser. No. 309,488
Int. Cl.³ G06C *3/00*
U.S. Cl. 235—89 R **16 Claims**



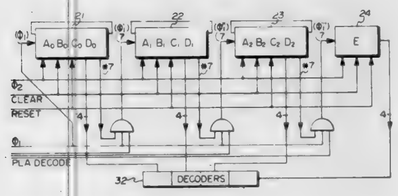
1. A mid-tone calculator for determining optimum tone reproduction to maximize color reproduction comprising; a base having a longitudinal guideway therein and an original density scale and a density compression scale thereon, a lower slide reciprocally shiftable in the guideway, an upper transparent slide reciprocally shiftable in the guideway and overlying the lower slide and the upper and lower slides being shiftable in the guideway with respect to one another, one of the upper and lower slides having a high density indicator and the other of the upper and lower slides having a low density indicator, one of the upper and lower slides having a plurality of tone reference number of curves and the other of the upper and lower slides having a tone intersect line, a transparent cursor longitudinally shiftably mounted on the base, overlying the upper and lower slides and shiftable with respect thereto, and having a half tone placement indicator thereon, and the base, lower slide, upper slide, and cursor being sequentially shiftable with respect to one another so that shifting of the upper and lower slides to produce alignment of the high density indicator with a predetermined high density reading and the low density indicator with a predetermined low density reading on the original density scale will cause the tone intersect line to intersect the tone reference number curves and thereafter shifting of the cursor to a chosen point of intersection of the tone intersect line with a tone reference curve will bring the half tone placement indicator into alignment with a reading on the density compression scale to indicate a density for optimum half tone position.

4,390,779
METHOD AND APPARATUS FOR DETECTING ARTICLES MOVING IN A CONTINUOUS STREAM
Rodney W. Heikel, Mocksville, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Jun. 23, 1980, Ser. No. 162,272
Int. Cl.³ G06M *7/04, 7/08*
U.S. Cl. 377—6 **5 Claims**



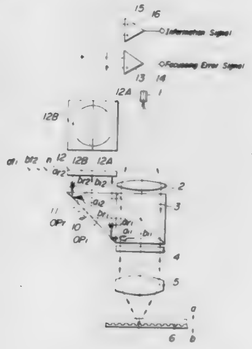
2. Apparatus for counting articles fed in a continuous stream, comprising:
means for detecting the presence or absence of articles in a detection zone and generating signals responsive to same;
means for conveying successive lead articles in a direction of travel into said detection zone so that said detecting means detects the presence of said lead article;
means for accelerating said lead article transversely to said direction of travel while retaining said lead article oriented substantially parallel to said direction of travel such that said acceleration commences after said detecting means detects the presence of said lead article, said acceleration being effective to cause the rearmost portion of said lead article to describe a path of motion entirely outside said detection zone.

4,390,780
LSI TIMING CIRCUIT FOR A DIGITAL DISPLAY EMPLOYING A MODULO EIGHT COUNTER
Ta-Ming Wu, and Gregory E. Gaertner, both of San Diego, Calif., assignors to Burroughs Corporation, Detroit, Mich.
Filed Nov. 10, 1980, Ser. No. 205,801
Int. Cl.³ G06F *3/14;* **H03K** *1/17, 21/36;* **H04N** *5/06*
U.S. Cl. 377—44 **10 Claims**



1. In a timing circuit for a digital display, a counter means comprising:
a plurality of counter stages connected in series;
each counter stage having four cells connected in series such that each counter stage will provide a drive signal to the next counter stage in the series only when the driving counter stage has progressed from zero to seven; and
cell decoding circuitry coupled to the outputs of each cell of each counter stage such that only two cell readouts are required to decode the state of each counter stage.

4,390,781
METHOD AND APPARATUS FOR DETECTING FOCUSSING ERROR SIGNAL OF OBJECTIVE LENS
Toru Musha, Hachioji, Japan, assignor to Olympus Optical Co. Ltd., Japan
Continuation-in-part of Ser. No. 161,428, Jun. 20, 1980, abandoned. This application Oct. 8, 1980, Ser. No. 195,075
Claims priority, application Japan, Jun. 25, 1979, 54-79943
Int. Cl.³ G01J *1/36*
U.S. Cl. 250—204 **36 Claims**

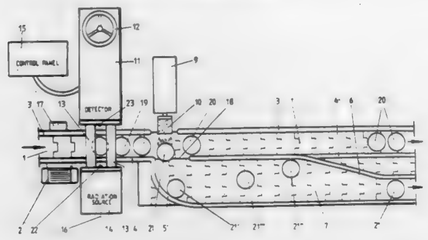


1. A method for detecting a focussing error signal of an objective lens with respect to an object onto which a light spot is to be formed by means of said objective lens, comprising
focussing light emitted from a light source onto the object;
introducing at least a part of a light flux reflected from the object into an optical member including an optical surface which reflects and/or refracts said part of the light flux, said optical member being made of material which has a higher refractive index than that of the material into which said light flux enters after being refracted by and transmitted through said optical surface, said optical surface being set so that a given light ray in said part of the light flux is made incident upon the optical surface at an angle which is substantially equal to a given critical angle when said objective lens is in an in-focussed condition; and
detecting a variation in distribution of light amount of at least a part of the light flux reflected and/or refracted by said optical surface to produce a focussing error signal.

4,390,782
METHOD AND APPARATUS FOR MEASURING THE LIQUID LEVEL OF CONTAINERS
Karl-Ulrich Vornfett, Hamburg, Fed. Rep. of Germany, assignor to Justus Technik GmbH Industrie-Anlagen, Hamburg, Fed. Rep. of Germany
Filed Nov. 17, 1980, Ser. No. 207,615
Int. Cl.³ G01N *21/24*
U.S. Cl. 250—223 B **9 Claims**

1. A method for measuring the liquid level in each of a number of containers comprising:
moving said container on a conveyor belt one at a time past a measuring station having a radiation source and detector;
detecting the speed of movement of said belt and producing a speed signal indicating that speed;
passing radiation through each said container as said con-

tainer passes through said station for a given number of time periods of fixed duration; and



varying the time between said periods in accordance with said speed signal so that each container recreives substantially the same radiation regardless of its speed.

4,390,783

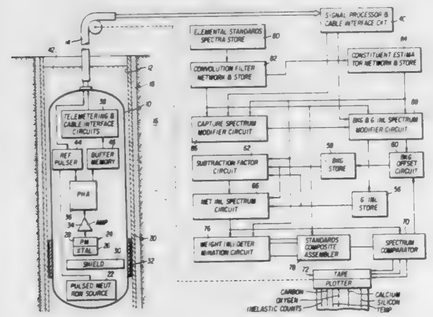
SPECTROSCOPIC ANALYSIS WITH BACKGROUND COMPENSATION

James A. Grau, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 174,969, Aug. 4, 1980. This application Oct. 2, 1981, Ser. No. 307,930

Int. Cl.³ G01V *5/00*

U.S. Cl. 250—270 **20 Claims**



1. A method for spectroscopically analyzing the elemental constituents of a geological formation, the method comprising the steps of:

(a) repetitively irradiating the formation with bursts of primary radiation;

(b) for each burst, detecting secondary radiation emanating from the formation during a first time interval;

(c) generating a gross energy spectrum from a series of said first time intervals, said gross energy spectrum including a portion due to background;

(d) for each burst, detecting secondary radiation emanating from the formation during a different, second time interval;

(e) generating a background spectrum from a series of said second time intervals;

(f) adjusting said background spectrum to more closely resemble the background portion of said gross energy spectrum by repetitively changing the offset of said background spectrum by different amounts and selecting the changed background spectrum which most closely resembles the background portion of said gross energy spectrum; and

(g) substantially eliminating said background portion of said gross energy spectrum by combining said gross energy spectrum and said adjusted background spectrum to generate an improved net energy spectrum substantially free of background.

4,390,784

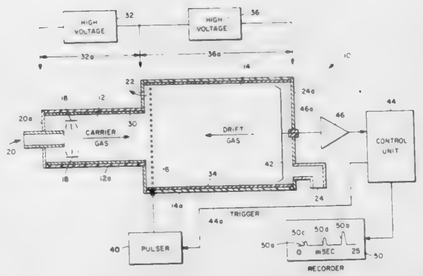
ONE PIECE ION ACCELERATOR FOR ION MOBILITY DETECTOR CELLS

David R. Browning, Reisterstown; Gordon R. Sima, Jr., Joppa; John C. Schmidt, and David W. Sickenberger, both of Baltimore, all of Md., assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 80,887, Oct. 1, 1979, abandoned. This application Jan. 29, 1981, Ser. No. 229,480

Int. Cl.³ H01J *49/40*

U.S. Cl. 250—287 **8 Claims**



1. In an ion mobility detector having an ion mobility grid and an enclosed volume in which an electrostatic field operates on ions for characterizing the mobility of said ions in said electrostatic field in an environment of gas and vapor molecules whose mean free path is many times smaller than the boundaries of said ion mobility detector, an improvement wherein the electrostatic field is enclosed within a relatively continuous structure comprised of first and second tubes communicating with each other through said ion mobility grid, said first tube encompassing a reactant region and said second tube encompassing a drift region, said relatively continuous structure having a film resistor disposed on the surface of said structure encompassing said field whereby a voltage potential difference impressed across said film resistor causes said field to be generated.

4,390,785

METHOD AND APPARATUS FOR REMOTELY DETECTING GASES IN THE ATMOSPHERE

Mark E. Faulhaber, and James M. Prober, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Dec. 29, 1980, Ser. No. 220,997

Int. Cl.³ H01J *31/49;* **G01J** *1/00*

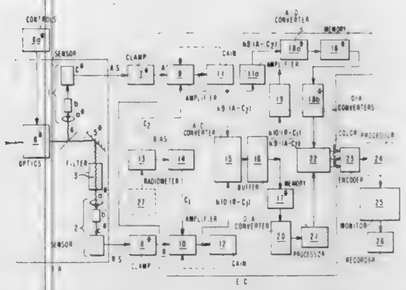
U.S. Cl. 250—330 **24 Claims**

1. A method of detecting the presence in the atmosphere of a gas which absorbs or emits infrared radiation within a defined wavelength region and determining its location with respect to at least one fixed background reference point, wherein

(a) a number of points within a circumscribed background area, which are at a temperature different from the average temperature of the intervening atmosphere are viewed by the imaging optics of an imaging-analyzing means having a first sensor means and a second sensor means capable of generating electrical output signals that are responsive to the resulting net radiative flux transmitted through the atmosphere;

the first sensor means having a higher sensitivity and the second sensor means having a lower sensitivity to the gas of interest in the defined infrared wavelength region;

(b) the amplitudes of the output signals generated by said sensor means are ratioed pixel-by-pixel within the defined infrared wavelength region; and



(c) an image signal responsive to the ratio of said output signal amplitudes is produced, said image signal being displayed on a display means, the image indicating the presence of the gas of interest at at least one point within the circumscribed area being surveyed.

4,390,786

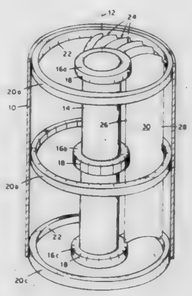
NEUTRON DETECTION APPARATUS

Manfred K. Kopp, Oak Ridge, and Kenneth H. Valentine, Lenoir City, both of Tenn., assignors to The United States of America as represented by The United States Department of Energy, Washington, D.C.

Filed Apr. 24, 1981, Ser. No. 257,031

Int. Cl.³ G01T *1/18*

U.S. Cl. 250—385 **13 Claims**



1. An array of electrode plates uniformly spaced apart from one another about an axis, each of said electrode plates having a spiral-arc configuration in a plane perpendicular to said axis, inner edges of said electrode plates being parallel with and spaced equidistant from said axis and said electrode plates spiralling in the same direction relative to said axis with the spacing between adjacent ones of said electrode plates remaining constant as the distance between the side surfaces thereof and said axis increases.

4,390,787

METHOD AND APPARATUS FOR AUTOMATIC EGG MASS COUNTING

Daniel T. Jennings, Orono, Me.; Charles K. Carniglia, Santa Rosa, Calif., and David B. Young, Indiana Harbour Beach, Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 29, 1980, Ser. No. 202,032

Int. Cl.³ G01N *21/33*

U.S. Cl. 250—459.1 **13 Claims**



1. A method for counting biological masses on foliage samples comprising the steps of:

exposing a foliage sample having attached biological masses to ultraviolet radiation in a test chamber, causing said foliage sample and masses to fluoresce;

dividing the fluoresced from the exposed biological masses and foliage into blue and green component colors and individually measuring each color;

discriminating between the fluoresced light due to the biological masses and the fluoresced light from other foliage components; and

counting the biological masses based upon the fluoresced light of said component colors emitted from the masses.

4,390,788

ELECTRON BEAM PATTERNING METHOD AND APPARATUS WITH CORRECTION OF DEFLECTION DISTORTION

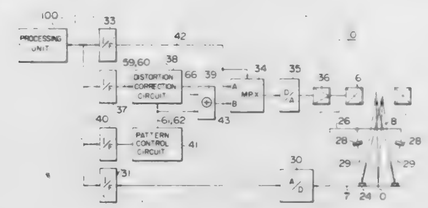
Soichiro Hayashi, and Yoshihiko Suenaga, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 2, 1981, Ser. No. 239,512

Claims priority, application Japan, Mar. 5, 1980, 55-26699

Int. Cl.³ H01J *37/00*

U.S. Cl. 250—491.1 **6 Claims**



1. An apparatus for forming a predetermined pattern on an object through controlled deflection of an electron beam while correcting the deflection distortion of the electron beam, said apparatus comprising:

deflector means for deflecting an electron beam;

an object provided with a plurality of reference marks formed thereon for correcting a deflection distortion associated with said deflector means;

a processing unit which is operative before pattern formation to measure the positions of the reference marks on said object by scanning the reference marks with the electron beam to determine deflection distortion correction data through interpolation on the basis of the measured results and which provides pattern forming data; and

a control unit which preliminarily stores said correction data

and is operative upon pattern formation to correct said pattern forming data supplied from said processing unit by use of the stored correction data, thereby supplying the corrected data as a deflection signal to said deflector means, including A/D converter means for converting information obtained by scanning said reference marks with said electron beam into digital signals and for supplying said digital signals to said processing unit, a signal change-over switch responsive to a control signal from said processing unit, D/A converter means for D/A converting the output of said switch to produce a deflection signal to be supplied to said deflector means, correction means for producing a correction signal for actual pattern formation on the basis of said correction data from said processing unit, pattern control means for producing a deflection signal to be supplied to said deflector means on the basis of said pattern forming data from said processing unit, and adder means for adding said correction signal from said correction means and said deflection signal from said pattern control means to produce a corrected deflection signal, said signal change-over switch being responsive to said control signal to select the output from said adder means upon pattern formation and the output data from said processing unit upon correction of deflection distortion.

4,390,789

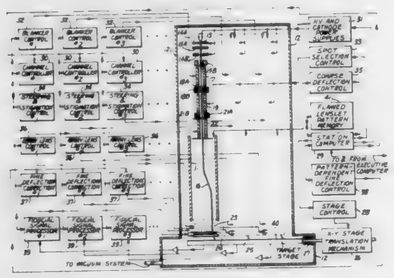
ELECTRON BEAM ARRAY LITHOGRAPHY SYSTEM EMPLOYING MULTIPLE PARALLEL ARRAY OPTICS CHANNELS AND METHOD OF OPERATION

Donald O. Smith, Lexington, and Kenneth J. Harte, Carlisle, both of Mass., assignors to Control Data Corporation, Minneapolis, Minn.

Filed May 21, 1981, Ser. No. 266,074

Int. Cl.³ H01J *37/00*

U.S. Cl. 250—492.2 **60 Claims**



1. A multi-channel electron beam array lithography (EBAL) apparatus employing a plurality of parallel operated electron beam channels each being of the fly's eye type having an electron gun for producing an electron beam, an array lenslet assembly and associated fine deflector assembly together with a coarse deflector for selectively directing the electron beam to a desired array lenslet within the array lenslet assembly and its associated fine deflector which thereafter directs the electron beam to a desired point on a target surface, a common movable stage for supporting target surfaces below the plurality of parallel operated electron beam channels and for moving the target surfaces in common relative to the array optics assembly of all channels, and a common vacuum enclosure housing enclosing all of said electron beam channels within a commonly evacuated space.

4,390,790

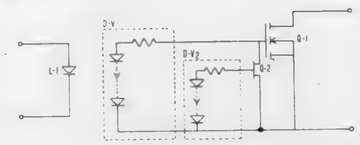
SOLID STATE OPTICALLY COUPLED ELECTRICAL POWER SWITCH

Edward T. Rodriguez, Winchester, Mass., assignor to Theta-J Corporation, Mass.

Continuation-in-part of Ser. No. 65,072, Aug. 9, 1979, Pat. No. 4,296,331. This application Sep. 12, 1980, Ser. No. 186,419

Int. Cl.³ G02B *27/00*

U.S. Cl. 250—551 **5 Claims**



1. A solid state optically-coupled relay comprising,

(a) solid state light emitting means,

(b) principal solid state photodector means comprising a first diode series array optically controllable by the light emitting means,

(c) output terminal means,

(d) an enhancement-mode vertical conduction (DMOS) MOSFET, constituting an output FET of the relay switch with gate, source and drain electrodes, the source and drain electrodes thereof being connected to said output terminal means and the source and gate electrodes being connected directly to the ends of the first diode array.

4,390,791

SOLID-STATE PHOTOELECTRIC TRANSDUCER

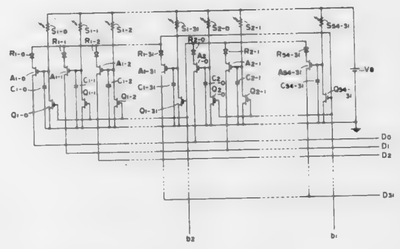
Katsunori Hatanaka, Yokohama; Shunichi Uzawa; Yutaka Hirai, both of Tokyo, and Naoki Ayata, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1981, Ser. No. 247,752

Claims priority, application Japan, Mar. 31, 1980, 55-42207; Mar. 31, 1980, 55-42208; Mar. 31, 1980, 55-42209; Mar. 31, 1980, 55-42210

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—578 **58 Claims**



36. A solid-state photoelectric transducer comprising a plurality of output units for photoelectrically converted signals, each unit including:

a plurality of photoelectric converter elements;

a plurality of signal amplifying means for outputting amplified signals corresponding to signals output from said photoelectric converter elements corresponding to an amount of light incident on said photoelectric converter elements, each of said signal amplifying means being connected with a corresponding one of said photoelectric converter elements;

a plurality of cross-talk preventing means for preventing cross-talk of signals output from each of said signal amplifying means, each of said signal amplifying means being provided with one of said cross-talk preventing means; and

compensation means for compensating the environmental characteristics of the photoelectric converter elements in the output unit;

a plurality of said signal amplifying means being exclusively selected by a unit selecting signal in each of said output units, and said signal amplifying means of the same level in each of said output units having a signal output line in common.

4,390,792

AUTOMOTIVE ELECTRICAL POWER SUPPLY SYSTEM WITH REVERSE POLARITY INDICATION

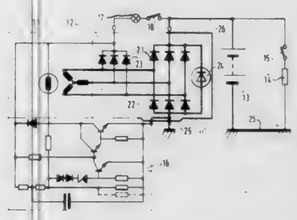
Friedhelm Meyer, Illingen; Wolfgang Kurz, Hemmingen, and Joachim Severing, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 7, 1981, Ser. No. 281,238

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1980, 3030700

Int. Cl.³ H02J *7/00*

U.S. Cl. 307—10 BP **7 Claims**



1. A self-contained power supply system having an alternator (**11**);

a battery (**13**) separable and separately connectable and replaceable in the system, and having terminals of predetermined polarity;

a rectifier (**12**) including an array of rectifier diodes (**21**, **22**);

cooling plates (**33**, **34**) retaining said rectifier diodes;

an insulating support plate (**28**), said cooling plates with the rectifier diodes thereon being secured to the insulating suppot plate; and

output terminals (**25**, **26**) of said predetermined polarity, the rectifier being connected to the alternator to rectify the output therefrom and supply current to the battery to charge the battery, and

means to indicate connection of the battery (**13**) to the rectifier with reverse polarity including

a diode (**24**) connected across the output terminals (**25**, **26**) and poled in blocking direction with respect to the polarity of the output terminals, said diode having a current capacity small with respect to that of the rectifier and being secured to the insulating plate (**28**) and electrically connected between the respective cooling plates (**33**, **34**) of the rectifier.

4,390,793

ELECTRONIC LIQUID LEVEL CONTROL APPARATUS

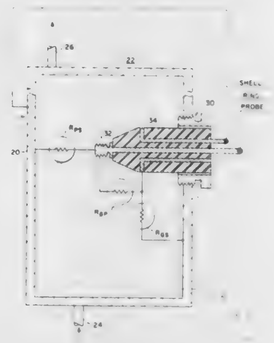
Robert S. John, Deerfield, Ill., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 236,842

Int. Cl.³ G05D *9/12*; H01H *35/18*

U.S. Cl. 307—118 **7 Claims**

1. An apparatus for monitoring the level of liquid in a container in which the container comprising a conductive member in contact with any liquid in the container, a probe assembly mounted in said container to contact liquid at least reaching a predetermined level in the container; said probe assembly includes a liquid level sensing probe member positioned to be contacted by liquid in the container reaching said predetermined level, and a guard shield spaced from said probe member and insulated electrically therefrom, said shield and said probe member being insulated electrically from said container conductive member, a source of alternating current, the invention comprising a voltage divider across said source of current and including in said divider resistance of liquid between the container conductive member and the probe member, a sensing circuit path in parallel with the liquid resistance, said parallel path including the liquid and surface leakage between the conductive member, the probe member and the guard shield



for monitoring circuit leakage from said members to said guard shield, an circuit coupled to said voltage divider and biased to respond to voltage conditions in said divider sensed between said probe member and said conductive member during alternate half cycles of the current from the source to produce a monitoring output indicative of liquid reaching said level, a leakage monitoring circuit coupled to said probe member and biased to monitor circuit leakage conditions during the intervening half cycles of the current from the source for interrupting the output circuit responsive to excessive surface leakage conditions monitored during said intervening half cycles.

4,390,794

CIRCUIT ARRANGEMENT FOR CONTROLLING THE SWITCH-ON OF SUPPLY VOLTAGE

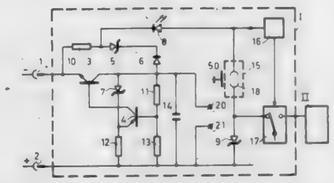
Wilhelmus G. Kuiper, and Anne Klaassen, both of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 25, 1982, Ser. No. 342,528

Claims priority, application Netherlands, Jan. 28, 1981, 8100388

Int. Cl.³ H01H *9/54*

U.S. Cl. 307—140 **3 Claims**



1. A circuit arrangement for controlling the switch-on of a supply voltage in an electrical apparatus which has first and second supply terminals, the series arrangement of the emitter-base path of a first transistor and the collector-emitter path of a second transistor being arranged between the first and second

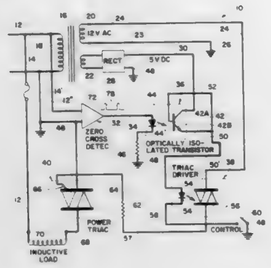
supply terminals, the base of the second transistor being connected to a voltage divider provided between the collector of the first transistor and the second supply terminal, characterized in that a second series arrangement of a resistor, a photodiode, a Zener diode and a switching element is arranged between the first and second supply terminals, the collector of the first transistor being connected to a point on the second series arrangement via at least a diode.

4,390,795

A.C. POWER CONTROL FOR INDUCTIVE LOADS

Reginald B. Tharrington, Broken Arrow, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Filed May 26, 1981, Ser. No. 266,804
Int. Cl.³ G05F *1/64*; H02P *13/24*
U.S. Cl. 307—143 **2 Claims**



1. An electronic switching system for inductive loads in A.C. circuits, comprising;

(a) triac switch means in series with an inductive load across an A.C. voltage and gate means for controlling ignition in said triac switch means;

(b) triac driver means with photo electric control for igniting said triac driver means, the output of which controls the potential on said gate means of said triac switch means;

(c) optically isolated transistor means for controlling the light emitting diode in said triac driver means; and

(d) zero crossing detecting means for supplying short term voltage pulses to control the light emitting diode of said optically isolated transistor means;

whereby, responsive to said zero crossing detecting means, said triac driver means enables said triac switch means which conducts in the reverse direction as soon as the prior current in the forward direction drops to zero, which is at a variable time after voltage zero, dependent on the power factor of the load.

4,390,796

VOLTAGE TO DUTY CYCLE CONVERTER

Robert W. McClenahan, Philadelphia, and Thomas J. Walsh, Hatboro, both of Pa., assignors to Leeds & Northrup Co., North Wales, Pa.

Filed Apr. 15, 1981, Ser. No. 254,797
Int. Cl.³ H03K *5/00*; H03L *7/00*
U.S. Cl. 307—261 **8 Claims**

1. A converter for converting an analog voltage to a duty cycle comprising:

a capacitor

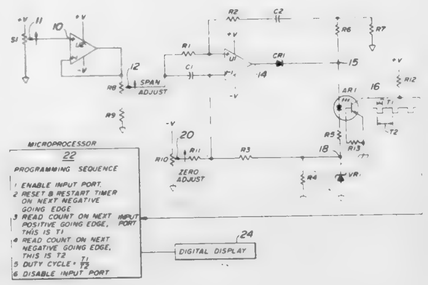
a resistor connected at one terminal to said capacitor to form a series circuit;

a differential amplifier;

a reference voltage source provided by a zener diode supplied by current from the output of said differential amplifier;

switching means including a series connected diode and resistor in circuit connecting said zener diode to the output of said differential amplifier so that outputs of one polarity cause a fixed voltage to be maintained across said zener diode with outputs of opposite polarity being disconnected from said zener diode by said diode, said switching means being operative to selectively pass charging current through said series circuit from said reference voltage source in one state and for disconnecting said source to discharge said capacitor through said resistor in another state; and

detecting means including said differential amplifier whose inverting input is connected to said terminal and whose non-inverting input is connected to receive both said analog voltage through an input resistor and a positive



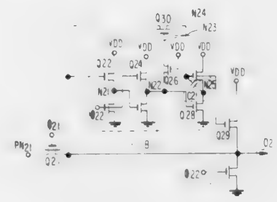
feedback signal from the output of said amplifier by way of a series resistance-capacitance network connecting said output to said non-inverting input, said detecting means being responsive solely to the difference between said analog voltage and the voltage at said terminal for causing said switching means to go from said one state to said other when said difference reaches a certain magnitude of one polarity and to reverse states when said difference reaches said magnitude in an opposite polarity, whereby the duty cycle of the resulting oscillations is proportional to the value of said analog voltage.

4,390,797

SEMICONDUCTOR CIRCUIT

Shoji Ishimoto, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1980, Ser. No. 175,806
Claims priority, application Japan, Aug. 7, 1979, 54/100893
Int. Cl.³ H03K *5/01*
U.S. Cl. 307—264 **9 Claims**



1. A semiconductor circuit comprising a first node, a second node, first means for supplying said first node with a logic signal, a first field effect transistor coupled between said first and second nodes, means for operatively making said first transistor conducting thereby to provide said second node with a signal at said first node, a power supply terminal, a second field effect transistor, means for connecting one of a source and a drain of said second transistor to said power supply terminal, means for connecting the other of the source and drain of said second transistor to said second node, a delay

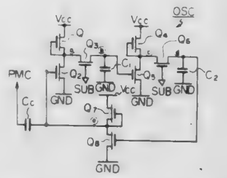
circuit having an input terminal coupled to said second node, a true output terminal and a complement output terminal, a third field effect transistor, means for connecting one of a source and a drain of said third transistor to said second node, means for connecting a gate of said third transistor to said complement output terminal, means for connecting the other of the source and drain of said third transistor to a gate of said second transistor, a capacitor, means for connecting one end of said capacitor to the gate of said second transistor and means for connecting the other end of said capacitor to said true output terminal.

4,390,798

BIAS-VOLTAGE GENERATOR

Setsuo Kurafuji, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 19, 1980, Ser. No. 208,384
Claims priority, application Japan, Nov. 22, 1979, 54/151777
Int. Cl.³ H03K *3/01, 3/353*
U.S. Cl. 307—296 R **5 Claims**



1. A bias-voltage generator for applying a bias voltage to a semiconductor substrate having an integrated circuit thereon, said generator comprising:

an oscillator producing an oscillating AC signal, said oscillator comprising an RC circuit for varying the frequency of said oscillating AC signal in response to variations of the voltage level of said semiconductor substrate, said RC circuit including a capacitor (C) and a variable resistance (R) comprising a MOSFET having a gate electrode directly connected to the semiconductor substrate such that said variable resistance varies in accordance with the variations of the voltage level of the semiconductor substrate;

a coupling capacitor connected, at one end thereof, to the output of said oscillator; and

a charge pumping circuit for absorbing electric charges accumulated in said semiconductor substrate, connected firstly to the other end of said coupling capacitor, secondly to a ground of said integrated circuit, and thirdly to said semiconductor substrate,

wherein the oscillating frequency of said oscillating AC signal produced by said oscillator varies in proportion to the variation of the voltage level of said semiconductor substrate.

4,390,799

TEMPERATURE COMPENSATED SWITCHABLE CURRENT SOURCE

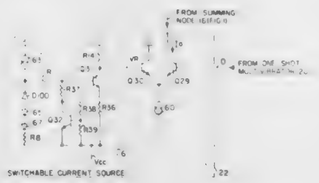
James C. Schmoock, San Jose, Calif., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 922,397, Jul. 5, 1978, Pat. No. 4,234,806. This application Jun. 13, 1980, Ser. No. 159,314
Int. Cl.³ H03K *5/153, 17/14*
U.S. Cl. 307—310 **3 Claims**

1. A temperature compensated switchable current source comprising:

(a) means for producing a pulsed signal which changes from a first level to a second level in a time interval, such time interval varying with temperature over a predetermined range of temperatures;

(b) means, including a pair of transistors coupled to a current source, a first one of such transistors having a base electrode adapted for coupling to the pulsed signal producing means and a second one of such transistors having a base electrode fed by a reference voltage, for enabling current from the current source to pass through one of the pair of transistors when the level of the pulsed signal is at the first level, such first level being greater than the reference voltage and for enabling current from the current source to pass through the other one of the transistors when the level of the pulsed signal is at the second level, such second level being less than the reference voltage;



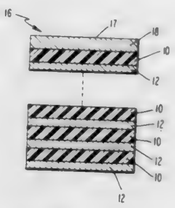
(c) means for producing the reference voltage and for varying the level of such reference voltage with variations in temperature such variation in the level of such reference voltage being in accordance with the variation in the time interval of the pulsed signal changing from the first level to the second level, enabling a pulse of current to pass from the current source through one of the pair of transistors in response to the pulsed signal, such current pulse having a time duration substantially invariant with variations in temperature over the predetermined range of temperatures.

4,390,800

ELECTRET DEVICE

Masamichi Tanaka, Yamato, and Hiroto Wada, Yokosuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 30, 1981, Ser. No. 280,052
Claims priority, application Japan, Jun. 30, 1980, 55-88780; Jun. 30, 1980, 55-88782; Jun. 30, 1980, 55-88816
Int. Cl.³ G11C *13/02*
U.S. Cl. 307—400 **4 Claims**



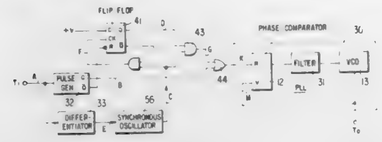
1. An electret device comprising:

a plurality of electret elements formed in stacked layers upon each other, wherein at least the electret element located at the bottom layer comprises a polarized dielectric body situated adjacent to the electret element in the succeeding layer and a conductive electrode secured to the bottom surface of said dielectric body, each electret element having a volume of surface charge of a single polarity, and a cover body constructed of a conductive material attached to the top surface of the electret element located at the top layer of said stack.

4,390,801
CIRCUIT FOR REPRODUCING A CLOCK SIGNAL

Hirotaka Kurata, Kokubunji, and Shiro Yoshida, Machida, both of Japan, assignors to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,233
Claims priority, application Japan, Jun. 8, 1981, 56-87942
Int. Cl.³ H03K *5/13, 17/28*
U.S. Cl. 307—409 **9 Claims**

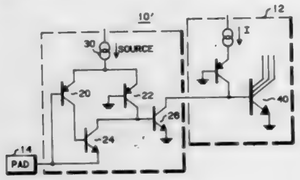


1. A circuit for reproducing a clock signal comprising
a phase lock loop circuit having a voltage-controlled oscillator that generates an oscillation output at a frequency which is approximately equal to an integral multiple of the frequency of the clock signal contained in an input signal,
a pulse-generating device that outputs pulses of a fixed width triggered by said input signal and synchronous therewith, the output pulses of said pulse-generating device being supplied as an input to said phase lock loop circuit,
an oscillation device that outputs pulses having approximately the same period as the clock signal period triggered by the input signal, and
a selecting device to gate the output pulse of the said oscillation device to said phase lock loop circuit as an input in the output pulse spacing of the said pulse-generating device, the output pulse spacing of the said pulse-generating device being interpolated with the output pulse of the said oscillation device so that a clock signal output is obtained from the said phase lock loop circuit.

4,390,802
LOW-VOLTAGE, HIGH-NOISE IMMUNITY I^2L INTERFACE

Stephen H. Woltz, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1980, Ser. No. 219,084
Int. Cl.³ H03K *19/091, 19/092*
U.S. Cl. 307—475 **4 Claims**

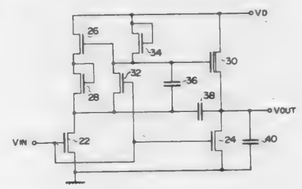


1. An improved integrated injection logic (I^2L) interface adapted for switching associated I^2L logic circuitry by selective grounding of an associated bonding pad, including in combination:
first and second transistors forming a differential pair, each transistor being of a first conductivity type and having base emitter and collector electrodes;
a constant current source for providing an injector current to said emitter electrodes of said differential transistor pair;
third and fourth transistors of a second conductivity type and having base emitter and collector electrodes; and
means for connecting said base of said first transistor and said emitter of said third transistor to the associated bonding pad, for connecting said collector electrode of said first transistor to said base electrode of said third transistor, for interconnecting said collector electrode of said third transistor to said collector electrode of said second transistor and to said base electrode of said fourth transistor, and for connecting and permanently maintaining said base electrode of said second transistor and said emitter electrode of said fourth transistor at ground reference potential,
said collector electrode of said fourth transistor being connected to the associated I^2L logic circuitry for control thereof.

4,390,803
SEMICONDUCTOR DRIVER CIRCUIT

Hideharu Koike, Chigasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 19, 1980, Ser. No. 218,094
Claims priority, application Japan, Dec. 27, 1979, 54/171656
Int. Cl.³ H03K *17/687, 3/01*
U.S. Cl. 307—578 **6 Claims**

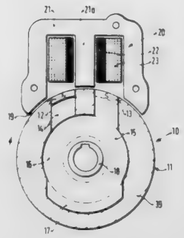


1. A semiconductor driver circuit comprising:
an input terminal;
a power supply terminal;
a first switching MOS transistor having a gate connected to said input terminal;
a second switching MOS transistor having a gate connected to said input terminal, a load capacitor being adapted to be connected in parallel with a current path of said second switching MOS transistor;
a series circuit of first and second MOS transistors connected between said power supply terminal and said first switching MOS transistor;
a third MOS transistor connected between said power supply terminal and said second switching MOS transistor;
a third switching MOS transistor whose current path is connected at one end to a junction between said first switching MOS transistor and said series circuit of first and second MOS transistors, and at the other end to the gates of said second and third MOS transistors, and whose gate is connected to said input terminal;
a series circuit of first and second capacitive means connected between the gate and source of said third MOS transistor, a junction between said first and second capacitive means being coupled with a junction between said first and third switching MOS transistors; and
a fourth MOS transistor whose source is to be connected with said load capacitor through said first and second capacitive means and whose gate and drain are connected with said power supply terminal.

4,390,804
MAGNETO GENERATOR FOR IGNITION SYSTEMS

Josef Orova, Schwabach; Herbert Roderer; Hans D. Schmid, both of Nuremberg, and Horst-G. Steffen, Schwarzenbruck, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 19, 1981, Ser. No. 275,517
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023677
Int. Cl.³ F02P *1/00;* **H02K** *25/12*
U.S. Cl. 310—70 R **8 Claims**



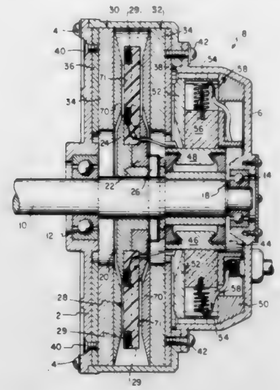
1. Magneto generator for an ignition system comprising
a rotating magnet wheel (**10**);
a plate shaped permanent magnet (**16, 31**) embedded in said magnet wheel, said permanent magnet having a first and second pole face at opposite axial sides thereof;
a first and second pole plate (**14, 15; 32, 33**) respectively abutting said first and second pole face and located at respective first and second axial positions of said magnet wheel, each of said first and second pole plate having a radially extending portion and an axially extending claw shaped pole shoe (**12, 13; 34, 35**) located at the periphery of the wheel,
said pole shoes being located circumferentially adjacent each other, projecting axially across said permanent magnet and spanning a minor portion of the circumference of said magnet wheel; and
at least one of said pole plates having a weight compensating extension (**17, 37**) in the region of the magnet wheel radially opposite said pole shoes.

4,390,805
ELECTROMECHANICAL MACHINE

James H. Hahn, Fort Lauderdale, Fla., assignor to David H. Rush, Hollywood, Fla.

Continuation of Ser. No. 22,422, Mar. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 816,610, Jul. 18, 1977, Pat. No. 4,118,556. This application Dec. 24, 1981, Ser. No. 334,303
Int. Cl.³ H02K *21/26*
U.S. Cl. 310—154 **21 Claims**

1. An electromechanical machine comprising:
first and second stator members spaced apart to form a gap therebetween, each having a circular array of P magnetic poles of alternately opposite polarity, P being an even integer, each pole of each stator member occupying a substantially equal pole arc sector of the circular array and being aligned opposite an opposite-polarity pole of the other stator member,
an armature rotor between the stator members having a non-overlapping, circular array of C coils on each of the front and back face thereof, C being an integer greater than P, the coil array on one rotor face being angularly offset relative to the coil array on the other rotor face, each coil of each rotor

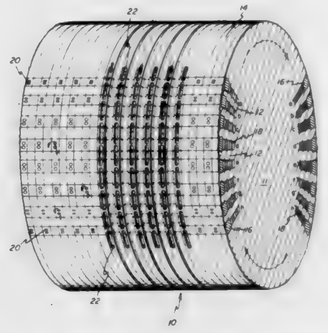


face occupying a substantially equal coil arc sector smaller than a pole arc sector; and
a commutator rotatable with the rotor.

4,390,806
DYNAMOELECTRIC MACHINE ROTORS WITH MECHANICAL SEPARATORS

Kirk G. O'Brien, Schenectady, and John A. DeBrita, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,574
Int. Cl.³ H02K *1/22*
U.S. Cl. 310—261 **8 Claims**



1. A rotor for a dynamoelectric machine comprising:
a cylindrical core of magnetically permeable material having longitudinal slots along the outer periphery thereof:
a plurality of series-connected conductive windings disposed in layers within said longitudinal slots, said layers being maintained in series connection by electrical insulation disposed between said layers in which at least one of said layers comprises at least two parallel-connected laminations; and
an abrasion prevention material disposed between said parallel-connected laminations and having a thickness and composition unrelated to the electrical conductivity between said laminations and said abrasion prevention material is effective to prevent galling between said laminations in the event of relative motion therebetween.

4,390,807
SURFACE ACOUSTIC WAVE DEVICE

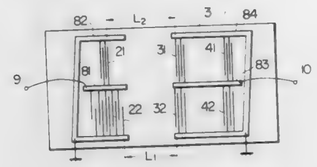
Kiyoharu Kishimoto, Yokohama; Katashi Hazama, Zushi, and Akitsuna Yuhara, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 90,436, Nov. 1, 1979, abandoned. This application Jan. 7, 1982, Ser. No. 337,718

Claims priority, application Japan, Nov. 1, 1978, 53-133699; Nov. 1, 1978, 53-133700

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—313 B **18 Claims**



1. A surface acoustic wave device having constant-frequency-interval multi-peak frequency characteristics where the frequency interval between adjacent peak frequencies is Δf, the device comprising:

a piezoelectric substrate;

first, second and third electrodes formed on said substrate in spaced relation to each other, each of said three electrodes having a passband not narrower than said frequency interval Δf;

signal source means coupled to one of said three electrodes to effect a first conversion with one electrode to convert an electric signal generated by said signal source means into a surface acoustic wave signal which is propagated along said substrate by said one electrode;

means for electrically connecting the other two electrodes to each other in a polarity reversed sense; and

detector means coupled to said other two electrodes to effect a second conversion with said other two electrodes to convert the surface acoustic wave signal propagated by said one electrode and received by said other two electrodes into an electric signal through said detector means,

wherein said three electrodes are spaced apart from one another on said substrate so that the difference between the distance between said first and second electrodes and the distance between said first and third electrodes is equal to $v/\Delta f$, where v represents the speed of a surface acoustic wave propagating along the surface of said substrate, so that peak frequencies defined by $(n+\frac{1}{2})\Delta f$ (n=0, 1, 2, —) are obtained from said surface acoustic wave device.

4,390,808
PICTURE DISPLAY DEVICE HAVING A GAS DISCHARGE DISPLAY PANEL

Gerhard H. F. De Vries, and Harmanus B. Bulle, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

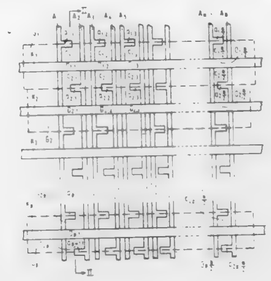
Filed Oct. 6, 1980, Ser. No. 194,160

Claims priority, application Netherlands, Oct. 10, 1979, 7907490

Int. Cl.³ H01J *17/49*

U.S. Cl. 313—584 **9 Claims**

1. A display device including a gas discharge display panel and means for driving the panel wherein the gas discharge display panel is provided with a gas-tight envelope and within said envelope comprises a set of N discharge cells arranged in a matrix of n rows and N/n columns, where $n \geqq 2$, which set comprises first and second electrode means for selectively energising the N discharge cells, wherein the first electrode means comprises N column conductors extending transversely to the rows, with n column conductors for each column of discharge cells which n column conductors each has a discrete discharge surface element such that in each column of cells each cell has associated therewith for selectively energising the cell a respective one of the discrete discharge surface elements



and a surface element of the second electrode means; characterized in that the surface elements of the second electrode means of the set are electrically interconnected.

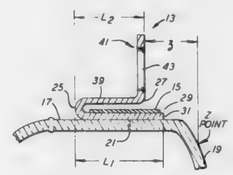
4,390,809
BRACKET SUPPORT MEANS FOR A CATHODE RAY TUBE

Robert B. Mitchell, Seneca Falls, and Harry R. Swank, Liverpool, both of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,328

Int. Cl.³ H04N *5/65*; H01J *29/87*

U.S. Cl. 313—482 **4 Claims**



1. Cathode ray tube bracket mounting means of the type employed in a multiple spaced-apart bracket tube-support system associated with implosion-inhibiting banding means oriented as a tensioned encompassment of the forward region of the tube adjacent the viewing area thereof, each of said brackets being formed from a longitudinal piece of substantially rigid material having first and second spatially-related transverse bends therein to provide predetermined integral bracket portions comprising: a seating portion having a longitudinal axis and evidencing length and width dimensions defined between longitudinal edges and a forward and an aft region thereof, said seating portion being of substantially arcuate shaping across said width dimension and extending longitudinally therein to substantially conform to discrete perimetrical surface regions of said tube to facilitate subsequent substantially contiguous placement of said seating portion between said banding means and the selected surface of said tube, said aft region being demarcated by said first transverse bend defining a U-shaped reverse curvature of said bracket material; an integral protruding portion extending forwardly from said first transverse bend in substantially spatial parallel relationship with said seating portion and having a fore-region terminated by said second transverse bend in said bracket material, said second transverse bend being rearward of the forward end of said seating portion; and an integral ear-like appendage portion upstanding in a substantially normal manner from said protruding portion at said second transverse bend, said appendage being in a plane substantially parallel with and normal to said subsequent banding orientation and having an aperture therethrough to facilitate subsequent attachment to appropriate tube supportive and positioning means associated with operational orientation.

4,390,810
SEMICONDUCTOR LIGHT-EMITTING DISPLAY DEVICE

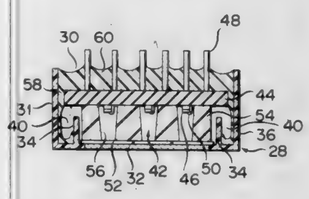
Takeshi Biwa, Mizumaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 24, 1980, Ser. No. 162,512

Claims priority, application Japan, Jul. 9, 1979, 54/85895

Int. Cl.³ H05B *33/04*; H01L *33/00*

U.S. Cl. 313—500 **7 Claims**



1. A semiconductor light-emitting display device, comprising:

a casing having a display portion formed in a bottom wall thereof, side walls defining a predetermined number of corners, and an opening cut in the side opposite to the display portion, said display portion being formed of a transparent material;

a light-emitting assembly for emitting light through the display portion, the light-emitting assembly being housed in the casing and including at least one semiconductor light-emitting element provided with a light-emitting pattern;

a reflector disposed between the light-emitting assembly and the display portion of the casing for guiding the light emitted from the semiconductor light-emitting element to the display portion;

a resin layer sealing the gap between the light-emitting assembly and the casing near the opening for protecting the semiconductor light-emitting element from the external environment;

partition means mounted to the bottom wall for isolating a first space including at least one corner of the casing from a second space around said display portion; and

a resin reservoir formed by said partition means, the side walls of the casing, and the bottom wall of the casing for storing resin flowing toward said display portion through the corners of the casing when sealing the gap between the light-emitting assembly and the casing with said resin layer whereby flowing resin is prevented from reaching the display portion of the semiconductor light-emitting display device.

4,390,811
HIGH INTENSITY DISCHARGE LAMP INCLUDING ARC EXTINGUISHING MEANS

Harold L. Rothwell, Jr., Rowley; W. Calvin Gungle, Danvers, both of Mass., and Alan Daignault, Londonderry, N.H., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 16, 1981, Ser. No. 244,433

Int. Cl.³ H01J *7/44, 17/34, 19/78, 29/96*

U.S. Cl. 315—73 **3 Claims**

1. A high intensity discharge lamp having:

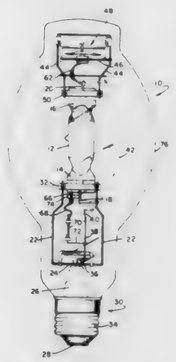
an inner arc tube having therein at least two electrodes between which a discharge takes place to produce visible light and ultraviolet radiation;

and an outer envelope substantially transparent to said visible light and opaque to said ultraviolet radiation, said outer envelope surrounding a volume having a pressure of the order of 100 torr;

a source of electrical power;

circuit means within said outer envelope electrically connecting said source of electrical power to said electrodes;

and lamp extinguishing means for interrupting said source of electrical power when the pressure in said outer envelope approaches atmospheric pressure, said lamp extinguishing means being serially connected between said source of



electrical power and one of said electrodes and being characterized by an electrically conductive, evacuated, hermetically sealed diaphragm have a first effective dimension at pressures near atmospheric pressure and a second effective dimension, larger than said first effective dimension, at pressures substantially less than atmospheric pressure;

one side of said diaphragm being permanently electrically connected to one of said electrodes and the other side of said diaphragm being temporarily electrically connected to a terminal which will shorten its effective length by melting back when subjected to an arc; said diaphragm being disc-shaped and being evacuated to a pressure of about 10–6 torr.

4,390,812
REGULATOR AND SWITCHING CIRCUIT FOR FLASHER UNITS

Robert L. Seidler, 104 Ridgewood Dr., Longwood, Fla. 32750

Filed Jun. 25, 1981, Ser. No. 277,241

Int. Cl.³ H05B *39/02, 39/09*

U.S. Cl. 315—200 A **17 Claims**

1. A voltage regulator and switching circuit for controlling the voltage across an incandescent lamp when the supply voltage is greater than the required lamp voltage for switching the lamp on and off, and for minimizing energy losses when the supply voltage is less than the required lamp voltage, comprising:

a switching silicon transistor having its emitter connected to one terminal of a source of varying voltage and its collector connected to said lamp, the other terminal of said lamp connected to the other terminal of said voltage source;

a driving transistor having its emitter connected to the base of said switching transistor and its collector connected to said collector of said driving transistor via a diode thereby forming a darlington connection when the potential at the collector of said switching transistor is less than the potential at the collector of said driving transistor;

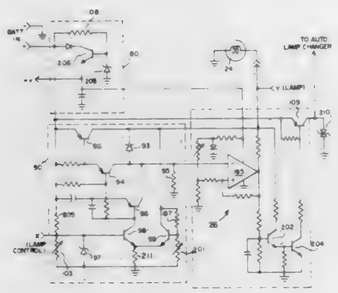
a bypass resistor connected between the collector of said

driving transistor and the other terminal of said source of voltage;

an amplifier having inputs thereof controlled by a fixed reference voltage when the supply voltage is greater than the required lamp voltage, said amplifier having an output connected to the base of said driving transistor to thereby regulate the collector voltage of said switching transistor in proportion to said reference voltage, the voltage at the input to said amplifier held at essentially zero when said lamp is to be off and at the reference voltage when said lamp is to be on; and

voltage divider means connected to said inputs of said amplifier for providing a variable reference voltage when the supply voltage is less than the required lamp voltage, said voltage divider means selected to produce a low voltage drop across said switch transistor and a low value of drive current through said driving transistor;

whereby said driving transistor and said switching transistor function as a darlington pair at the turn on of said incandescent lamp during the time that the filament thereof is at a low resistance and said switching transistor functions as a single regulator transistor when the resistance of the lamp filament increases and reduces the current therethrough, and said bypass resistor provides a path for the drive current through said driving transistor.

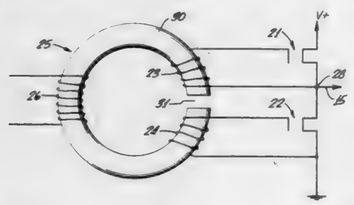


4,390,813

TRANSFORMER FOR DRIVING CLASS D AMPLIFIER

Charles A. Stanley, San Jose, Calif., assignor to Litek International Inc., Hayward, Calif.

Filed Jun. 29, 1981, Ser. No. 278,894
Int. Cl.[3] H05B *41/24;* **H01F** *17/06, 19/04*
U.S. Cl. 315—248 **9 Claims**



5. In an electrodeless discharge lamp of the type including an ionizable medium within a sealed envelope capable of emitting radiant energy when subjected to a radio frequency field, an oscillator for generating an output signal at a given radio frequency, a Class D RF amplifier including first and second transistors connected in series and adapted to be driven alternately on and off by said oscillator output signal, a transformer including a toroidal, magnetic core, a primary winding on said core responsive to said oscillator output signal, first and second secondary windings on said core coupled to said first and second transistors, respectively, said primary and secondary windings being spaced around said core, and an induction coil responsive to the output of said amplifier, said coil being positioned in close physical proximity to said medium in said envelope for coupling to said medium an electric field having a magnitude sufficient to initiate ionization of said medium and a magnetic field for maintaining said ionization, the improvement comprising:

means for isolating said secondary windings from each other, said means comprising:

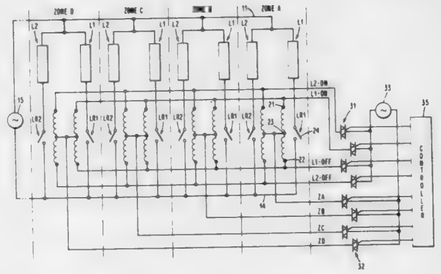
means forming a high reluctance path between said secondary windings.

4,390,814

LIGHTING APPARATUS

Sanford C. Peek, Andover, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 7, 1981, Ser. No. 261,391
Int. Cl.[3] H05B *37/02*
U.S. Cl. 315—320 **9 Claims**



1. Lighting apparatus for controlling the lighting level in a multiplicity of lighting zones comprising

a plurality of lamp units located at each of said zones;

a set of switching means located at each of said zones, each set having switching means corresponding to those of every other set;

each lamp unit being connected to a source of electrical power for operating the lamp unit through a switching means at the associated zone;

each switching means having first, second, and common terminals; said switching means being operable to be latched in a closed circuit condition in response to simultaneous signals at the first and common terminals, and being operable to be latched in an open circuit condition in response to simultaneous signals at the second and common terminals;

the common terminals of the switching means within each set being connected together providing a multiplicity of enable connections;

the first terminals of the corresponding switching means from each set being connected together providing a group of ON connections;

the second terminals of the corresponding switching means from each set being connected together providing a group of OFF connections; and

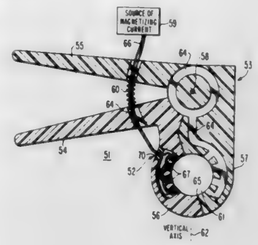
control means for selectively applying a signal to selected connections of said groups of ON and OFF connections and for selectively applying a signal simultaneously to selected enable connections whereby predetermined lamp units are selectively turned on or off.

4,390,815

APPARATUS FOR INFLUENCING ELECTRON BEAM MOVEMENT

Charles W. Key, Bloomington, and Edward W. Christensen, II, Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 17, 1981, Ser. No. 244,664
Int. Cl.[3] H01J *29/70, 29/76*
U.S. Cl. 315—368 **10 Claims**



1. Apparatus for influencing movement of electron beams in a cathode ray tube, comprising:

means for magnetizing a strip of magnetizable material disposed about the neck of said tube to produce permanently magnetized regions on said strip for influencing the movement of said beams, comprising:

a first member incorporating first magnetizing coils;

a second member separate from said first member and incorporating second magnetizing coils coupled to said first coils;

means coupled to said first and second members for selectively providing a first opened position of said members for placing said magnetizing means on said tube neck from a position substantially perpendicular to said tube neck and a second closed position of said members with said magnetizing means encircling said neck;

a source of magnetizing current; and

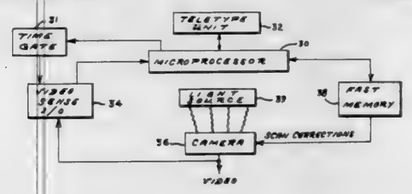
means coupling said source of magnetizing current to said first and second magnetizing coils for developing magnetic fields in the vicinity of said coils for magnetizing said magnetizable strip.

4,390,816

SCAN CORRECTED VIDICON CAMERA APPARATUS

Milton L. Noble, Liverpool, and William G. Hoefer, Syracuse, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 23, 1980, Ser. No. 200,226
Int. Cl.[3] H01J *29/56*
U.S. Cl. 315—370 **9 Claims**



1. A scan corrected vidicon camera apparatus comprising in combination:

a light source providing illumination

a vidicon camera focused upon said illumination and being uniformly illuminated by said light source, said vidicon camera providing a video output,

a pair of spatial reference filters directly mounted in said vidicon camera to provide a compound spatial reference, said vidicon camera having a faceplate and a target, said pair of spatial reference filters positioned between faceplate and said target,

a video sense unit receiving said video output, said video sense unit sampling said video output and providing a digital word therefor, and

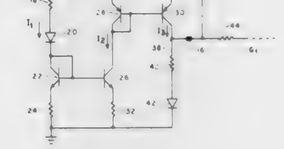
a microprocessor unit receiving said digital word, said microprocessor including a control unit to initiate a calibration sequence within said microprocessor and a fast memory to store data therein, said microprocessor unit injecting a perturbation into said vidicon camera, said microprocessor unit utilizing said digital word to maximize said video output.

4,390,817

INTEGRATABLE CRT SPOT CUT-OFF NETWORK

Fred D. Johnson, Evanston, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 27, 1981, Ser. No. 238,771
Int. Cl.[3] H01J *29/70, 29/72*
U.S. Cl. 315—384 **4 Claims**



1. In a television receiver which develops at least one supply voltage and which includes a CRT having one or more grids, an improved spot cut-off network for a grid, comprising:

a current generator powered by the supply voltage for establishing a reference current, and responsive to a collapse of the supply voltage for rapidly terminating the reference current;

a biasing resistance having one end thereof coupled to the grid;

a diode coupled between a reference potential and the other end of the biasing resistance;

a capacitor coupled between a supply voltage and said one end of the biasing resistance for bypassing A.C. signals at the grid and for charging toward the latter supply voltage through the biasing resistance and the diode; and

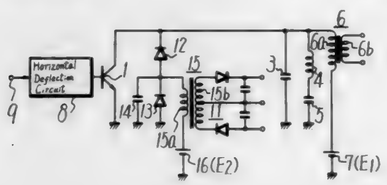
transistor means comprising a current mirror adapted to be turned on by and to mirror the reference current into the biasing resistance so as to establish a forward grid bias across the biasing resistance and diode, and adapted to be turned off by the termination of the reference current for terminating the mirrored current and for inhibiting the capacitor from discharging into said transistor means, whereby the charge stored on the capacitor reverse biases the grid when the reference current terminates so that the CRT beam is cut off.

4,390,818

TELEVISION RECEIVER

Tamiji Nagai, Kawasaki, and Yoshio Ishigaki, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 22, 1981, Ser. No. 286,205
Claims priority, application Japan, Jul. 25, 1980, 55-102577
Int. Cl.³ H01J *29/70*
U.S. Cl. 315—408 **7 Claims**



1. In a television receiver of the type including a first load circuit having a transformer with a winding, apparatus comprising:

horizontal output transistor means having an output path connected between a first terminal at a first potential and a second terminal at a second potential;

first series circuit means comprised of at least first and second damper means connected together at a connection point and connected in series between said first and second terminals;

second series circuit means comprised of deflection coil means and S-shaping capacitor means connected in series between said first and second terminals;

retrace capacitor means connected between said first and second terminals;

third capacitor means connected between said connection point and said second terminal;

choke coil means;

first voltage supply source means connected to said first terminal through said choke coil means; and

second voltage supply source means connected to said connection point through the winding of said transformer of said first load circuit, the voltage supplied by said first voltage supply source means being selected to be at least as large as the voltage supplied by said second voltage supply source means.

4,390,819

TELEVISION RECEIVER FERRORESONANT POWER SUPPLY USING A TWO-MATERIAL MAGNETIZABLE CORE ARRANGEMENT

William E. Babcock, Warren, and Frank S. Wendt, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

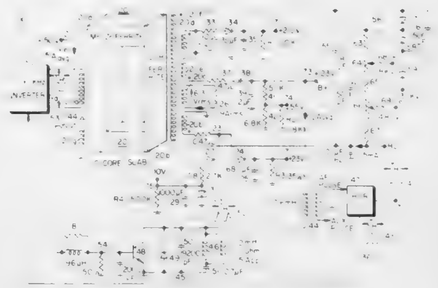
Filed Apr. 2, 1981, Ser. No. 250,130
Int. Cl.³ H01J *29/70*
U.S. Cl. 315—411 **22 Claims**

1. Apparatus for a television display including an ultor voltage power supply and a saturating core regulating transformer capable of operating over a range of temperatures without thereby being subject to undesirably large changes in an output voltage of said transformer, comprising:

a magnetizable core including first and second core sections;

a plurality of windings including a first winding wound on said first core section and arranged for coupling to a source of exciting current for generating a magnetic flux in said magnetizable core, a second one of said plurality of windings being wound on said second core section such that magnetic flux that links said second winding develops an alternating polarity output voltage across said second winding;

a capacitance coupled to one of said plurality of windings that is wound on said magnetizable core for developing a circulating current in the capacitance coupled winding to produce a magnetic flux that aids in substantially magnetically saturating at least a portion of said second core section during each polarity interval of said alternating polarity output voltage for regulating said output voltage, said first core section being operated in the magnetically unsaturated region of the B-H loop characteristic of the first core section magnetizable material,



wherein the magnetizable material of the magnetically saturating second core section is selected to have a higher Curie temperature than that of the magnetizable material of the substantially nonsaturating first core section;

an ultor terminal; and

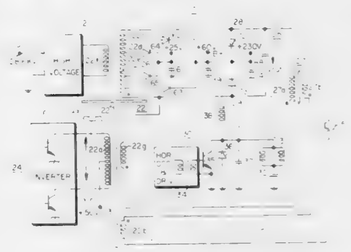
means including a high voltage rectifier arrangement coupled to said ultor terminal for developing an ultor voltage from said regulated output voltage.

4,390,820

TELEVISION RECEIVER FERRORESONANT LOAD POWER SUPPLY DISABLING CIRCUIT

Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 3, 1981, Ser. No. 298,973
Int. Cl.³ H01J *29/70*
U.S. Cl. 315—411 **8 Claims**



1. A disabling circuit for a television display system, comprising:

a source of input voltage;

a transformer including primary and secondary windings; said primary winding being coupled to said source for developing an alternating supply voltage across said secondary winding;

a self-regulating load circuit including a saturable reactor having a first winding coupled to said transformer secondary winding for regulating said supply voltage;

a tertiary winding of said transformer for stepping up said regulated supply voltage;

a high voltage circuit coupled to said tertiary winding for developing an ultor accelerating potential for a picture tube of said television display system;

a load circuit within said television display system; and

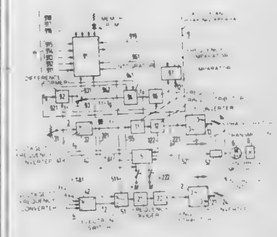
means coupled to said television display system load circuit and to said saturable reactor first winding for energizing said television display system load circuit such that the disconnection of said saturable reactor first winding from said transformer secondary winding disables the normal energization of said television display system load circuit.

4,390,821

DEVICE FOR CHANGING THE RELATIVE ANGULAR POSITIONS OF OPERATING SHAFTS OF A GROUP ELECTRIC DRIVE

Dietrich Krampe, Neunkirchen, and Herbert Schleicher, Dettingen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 136,356, Apr. 1, 1980. This application Aug. 3, 1981, Ser. No. 289,169
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2515035
Int. Cl.³ H02P *5/46*
U.S. Cl. 318—85 **3 Claims**



1. A control for an electric motor drive comprising:

at least first and second individual drive shafts, the first drive shaft driven by a first synchronous motor and the second drive shaft driven by a second synchronous motor;

a first frequency generator having a predetermined frequency output;

a second frequency generator having an output frequency which is variable in response to at least one frequency control signal;

a first static converter having an input coupled to the output of the first frequency generator and having a predetermined output voltage;

a second static converter having an input and having an output voltage equal in amplitude to that of the first static converter;

means coupling the first synchronous motor to the output of the first static converter;

first switching means coupling the input of the second static converter to at least one of the output of the first frequency generator and the output of the second frequency generator;

second switching means for transferring the input of the second synchronous motor between the output of the first static converter and the output of the second static converter, whereby, without noticeable phase angular error, the second synchronous motor can be switched to the second static converter for changing the phase angle position of the second synchronous motor relative to the first synchronous motor, and the input of the second synchronous motor can be subsequently switched back to the output of the first static converter;

means responsive to phase difference between the inputs to the first and second static converters for enabling the second switching means to reconnect the second synchronous motor to the first frequency converter when the desired angular position has been reached and when the phases of the output voltages of the static converters are in agreement; and

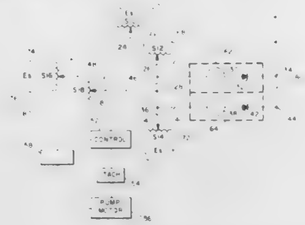
means coupled to the second frequency generator for driving the second static converter to start up and to brake the second synchronous motor.

4,390,822

RATIO CONTROL SYSTEM

Bernard Wechsler, 2831 E. White Star Ave., Ste. "D", Anaheim, Calif. 92806

Filed Jul. 31, 1981, Ser. No. 288,681
Int. Cl.³ H02P *7/74*
U.S. Cl. 318—114 **4 Claims**



1. Apparatus for continuously feeding materials to be mixed together in ratios comprising:

means for providing ratios of electrical voltages, said means comprising:

at least one first ratio autotransformer having input terminals and a wiper arm having an output terminal and responsive to a supply voltage;

at least one first supply autotransformer having input terminals and a wiper arm having an output terminal and said at least one first supply autotransformer responsive to output voltage from said at least one ratio autotransformer;

at least one second supply autotransformer having input terminals and a wiper arm having an output terminal and said at least one second supply autotransformer responsive to said a supply voltage;

means for actuating the wiper arm of said at least one first supply autotransformer in relation to the wiper arm of said at least one second supply autotransformer;

means responsive to said means for providing ratios of electrical voltages for feeding selected ratios of materials to be mixed together, said responsive means comprising:

at least one first vibrator system having external terminals to receive electrical input from said means for providing ratios of electrical voltages;

mechanical means to provide vibrations in response to electrical input received by means of said external terminals;

rectifying means to rectify the electrical input received by means of said external terminals;

at least one second vibrator system having external terminals to receive electrical input from said means for providing ratios of electrical voltages;

mechanical means to provide vibrations in response to electrical input received by means of said external terminals; and

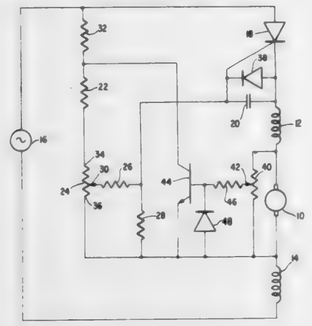
rectifying means to rectify the electrical input received by means of said external terminals.

4,390,823

MOTOR CONTROL SYSTEM INCORPORATING TOP SPEED LIMITING ARRANGEMENT

Jack Brown, Union, and John W. Wurst, Dover, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Feb. 8, 1979, Ser. No. 10,453
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—331 **5 Claims**



1. A motor control system for operating a motor at preselected speeds and including means for connecting said system to a cyclically varying power supply, a phase control circuit connected between said motor and said power supply, means for setting a speed for said motor, and a firing circuit coupled to said phase control circuit for phase firing said phase control circuit to supply power to said motor during a portion of the cycle of said power supply in accordance with the setting of said setting means,

wherein the improvement comprises means for limiting the top speed of said motor including:

means for providing a signal corresponding to the speed of said motor when said phase control circuit is not supplying power to said motor; and

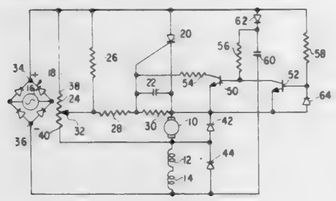
limiting means responsive to said signal for preventing said firing circuit from operating when said signal is above a predetermined threshold value corresponding to a desired top speed and for allowing said firing circuit to operate in accordance with the setting of said speed setting means when said signal is below said predetermined threshold value, whereby motor speed control is effected by the setting of said speed setting means only up to said desired top speed.

4,390,824

FULL WAVE MOTOR CONTROL CIRCUIT

Jack Brown, Union, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jun. 12, 1981, Ser. No. 273,173
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—331 **2 Claims**



1. A system for operating a motor from an alternating current power source comprising:

a full wave rectifier having an input connected to said source and having positive and negative output terminals;

a silicon controlled rectifier connected in series with said motor between said output terminals of a polarity to allow current to flow through said silicon controlled rectifier and said motor when said silicon controlled rectifier is turned on;

a charging capacitor connected across the gate and cathode of said silicon controlled rectifier;

current control means connected in circuit with said charging capacitor for controlling the current supplied to said charging capacitor, the rate at which current is supplied to said charging capacitor controlling the motor speed by determining the point in each cycle of the power source when said silicon controlled rectifier is turned on; and

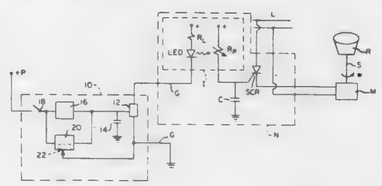
discharge means effective during every cycle of the full wave rectifier output and responsive to the level of the full wave rectifier output being below a predetermined threshold for providing a discharge path for said charging capacitor and for raising the effective holding current level for said silicon controlled rectifier.

4,390,825

AUTO-THRESHOLD SLOW START CONTROL CIRCUIT FOR A CENTRIFUGE

David W. Ginn, Newtown, Conn., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Jun. 26, 1981, Ser. No. 277,875
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—384 **5 Claims**



1. A slow start control network for use with a drive motor control arrangement for a centrifuge comprising:

a circuit element having a predetermined transfer function connectable to the drive motor control arrangement;

a charging capacitor adapted to apply a predetermined triggering signal to the circuit element to trigger the same and initiate current flow through the drive motor control arrangement;

a primary current source for charging the capacitor;

a supplemental current source for providing a supplemental current to the capacitor to assist the charging of the capacitor; and

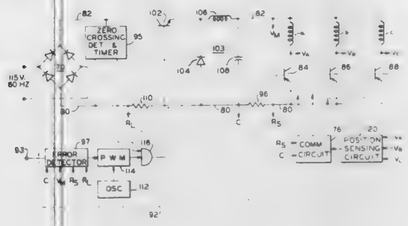
means responsive to the flow of current through the drive motor control arrangement to disconnect the supplemental current source from the capacitor.

4,390,826

LAUNDERING APPARATUS, METHOD OF OPERATING A LAUNDRY MACHINE, CONTROL SYSTEM FOR AN ELECTRONICALLY COMMUTATED MOTOR, METHOD OF OPERATING AN ELECTRONICALLY COMMUTATED MOTOR, AND CIRCUIT

David M. Erdman, and Harold B. Harms, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 77,776, Sep. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 802,484, Jun. 1, 1977, Pat. No. 4,169,990, which is a continuation-in-part of Ser. No. 729,761, Oct. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 482,409, Jun. 24, 1974, Pat. No. 4,005,347. This application Apr. 17, 1980, Ser. No. 141,268
Claims priority, application Canada, Sep. 12, 1980, 360269; European Pat. Off., Apr. 16, 1981, 81-3017118
Int. Cl.³ H02P *5/06*
U.S. Cl. 318—439 **21 Claims**



1. A circuit for controlling the energization of an electrical load from an AC source comprising:

a pair of DC lines;

means for rectifying the AC output of the source to apply a DC voltage across said DC lines in the form of a full wave rectified sinusoidal signal;

means connected between said DC lines and the load for chopping the full wave rectified sinusoidal signal to provide pulses at a frequency which is high with respect to the frequency of the full wave rectified sinusoidal signal;

means responsive to an externally derived signal representative of the desired energization of the load for modulating the width of the pulses;

means responsive to current in said DC lines for modifying the externally derived signal to maintain the amplitude of the DC line current below a predetermined level;

means for detecting zero crossovers of the full wave rectified sinusoidal signal; and

means responsive to said detecting means for applying the pulses only during a predetermined time interval in each half cycle of the full wave rectified sinusoidal signal, the initiating and terminating points of each of the time intervals being spaced substantially equal phase angles away from the initiating and terminating zero crossovers that define the corresponding half cycle of the full wave rectified sinusoidal signal, respectively;

whereby the load presents a high power factor to the AC source.

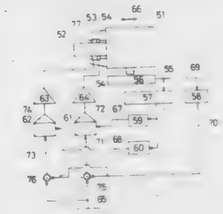
4,390,827

LINEAR MOTOR

Issei Imahashi, Yamanashi, Japan, assignor to Telmec Co., Ltd., Japan

Filed Feb. 5, 1981, Ser. No. 231,759
Claims priority, application Japan, Feb. 13, 1980, 55-016284
Int. Cl.³ G05B *11/00*
U.S. Cl. 318—687 **6 Claims**

1. A linear motor comprising a stator formed by juxtaposing a large number of magnetic path members for establishing magnetic fields having alternately reversed directions of magnetic paths, along a straight line; first and second coils having a mutually fixed relationship, said coils being disposed within the magnetic fields established by said magnetic path members; first and second current amplifiers having variable amplification factors, said first and second amplifiers being connected to said first and second coils, respectively; a position detector for detecting the position of said coils; a frequency voltage converter for receiving the output of said position detector and



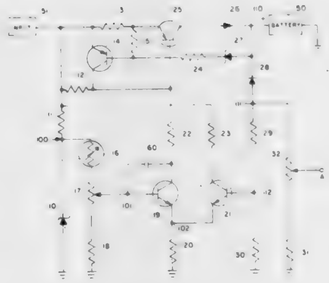
providing a signal representative of the speed of said coils relative to said magnetic path members; a counter connected to said position detector for determining the position of said coils relative to said magnetic path members; and two memory devices for receiving the output of said counter and determining variable amplification factors for said current amplifiers for driving said coils relative to said magnetic path members.

4,390,828

BATTERY CHARGER CIRCUIT

Merle E. Converse, Helotes, and Glenn T. Darilek, San Antonio, both of Tex., assignors to Transaction Control Industries, Bryan, Tex.

Filed Mar. 17, 1982, Ser. No. 359,021
Int. Cl.³ H02J *7/04*
U.S. Cl. 320—32 **7 Claims**



1. A battery charger comprising:

means for generating a charging voltage and current;

means for electrically connecting said means for generating a charging voltage and current to a battery;

means for sensing the charge state of said battery; and,

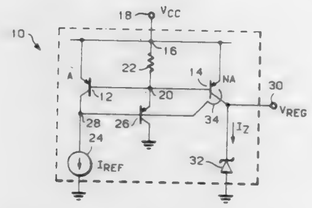
means responsive to the charge state of said battery for increasing the charging voltage and current from an initial level to a relatively constant current level to a relatively constant voltage level wherein the current is reduced from the constant current level to zero in proportion to the amount of charge stored in said battery.

4,390,829

SHUNT VOLTAGE REGULATOR CIRCUIT

Robert B. Jarrett, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1981, Ser. No. 269,184
Int. Cl.³ G05F *3/18*
U.S. Cl. 323—231 **3 Claims**



1. A monolithic integrated regulator circuit for providing a regulated voltage at an output thereof in response to an unregulated voltage supplied thereto whenever the magnitude of the unregulated voltage is greater than a predetermined value but less than a predetermined maximum value and having a minimum voltage differential between the input and output thereof, comprising:

a first PNP transistor having an emitter region, a base region and a collector region, said emitter region being coupled to the input of the regulator circuit;

a second PNP transistor having an emitter region, a base region and a collector region, said emitter region having an area N times greater than the area of said emitter region of said first PNP transistor and being coupled therewith, said base region being coupled to said base region of said first PNP transistor, said collector being coupled to the output of the regulator circuit;

a current source coupled to said collector region of said first PNP transistor for sourcing a current therefrom;

a Zener diode coupled in shunt to the output of the regulator circuit; and

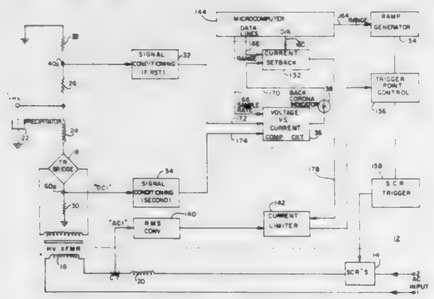
collector circuit means coupled to said current source for collecting current that otherwise would be injected into the substrate of the integrated regulator circuit when said second PNP transistor becomes saturated wherein the current flow through said first transistor is reduced.

4,390,830

BACK CORONA DETECTION AND CURRENT SETBACK FOR ELECTROSTATIC PRECIPITATORS

Thomas C. Laugesen, Silverton, N.J., assignor to NWL Transformers, Bordentown, N.J.

Filed Oct. 15, 1981, Ser. No. 311,870
Int. Cl.³ G05F *1/455*
U.S. Cl. 323—237 **6 Claims**



1. A control system for monitoring across an electrostatic precipitator the departure of current from voltage at the start of a back corona condition and continuously reducing the current until said back corona condition is substantially minimized comprising

means for comparing the voltage and current applied to the precipitator for detecting when said current increases at a faster rate than said voltage for producing a signal indicating a back corona condition, and

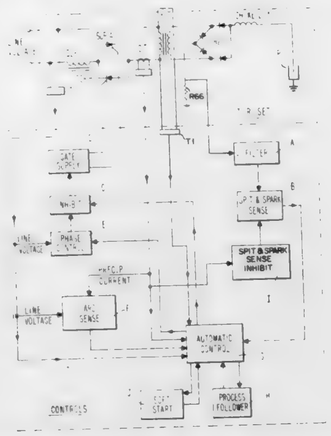
means for setting back said current in response to said back corona condition signal for substantially minimizing said current while maximizing said voltage to maintain normal precipitator operation at the knee of the voltage/current curve.

4,390,831

ELECTROSTATIC PRECIPITATOR CONTROL

William Byrd, Princeton, and Stephen J. Kohke, Martinsville, both of N.J., assignors to Research-Cottrell, Inc., Somerville, N.J.

Continuation of Ser. No. 76,496, Sep. 17, 1979, abandoned. This application May 18, 1981, Ser. No. 264,577
Int. Cl.³ B03C *3/68*
U.S. Cl. 323—240 **25 Claims**



1. Electronic apparatus providing means for controlling AC voltage and current supplied from a source to the primary of a transformer/rectifier set (T/R set) feeding a load circuit comprising an electrostatic precipitator which is subject to spitting, sparking, arcing or shorting, said control means comprising:

a. inductive series impedance in the circuit of said transformer sufficient to limit transient primary currents to an acceptable maximum value in the event of said spitting, sparking, arcing or shorting in said load circuit;

b. a pair of silicon controlled rectifiers (SCR's) in inverse-parallel connection in circuit with said primary of said transformer of said T/R set;

c. gate current supply means connected to the gates of said SCR's for controlling the condition thereof;

d. phase control means for providing output signals which are phase controlled with respect to line voltage;

e. means for supplying voltage representative of AC line voltage to said phase control means;

f. means for developing an AC current signal whose instantaneous values and polarities represent the instantaneous values of current drawn from the source of AC voltage;

g. means for developing an AC voltage pulse during a set time interval following each zero crossing of the AC voltage supply, the polarity of said voltage pulse being the same as the polarity of said AC voltage supply during said set interval;

h. AC sensing means developed by said AC current signals and said AC voltage pulses for producing an output signal only when said current signal exceeds a set minimum value during a voltage pulse and has reverse polarity with respect to the polarity of said voltage pulse;

i. direct current sensing means for developing output signals in response to sudden changes of current in the load circuit of said T/R set resulting from said spitting and sparking;

j. an automatic control system;

k. means for applying said output signals developed by either or both of said sensing means to said automatic control system;

l. means for applying output signals from said automatic control system to said phase control means;

m. means for applying output signals from said phase control means to said gate current supply means for controlling the conduction of said SCR's.

4,390,832

CIRCUIT FOR ELECTRO MECHANICAL TUBING SEALER

Junius E. Taylor, Tempe, Ariz., assignor to Engineering & Research Associates, Inc., Tucson, Ariz.

Continuation of Ser. No. 122,293, Feb. 19, 1980, abandoned. This application Dec. 28, 1981, Ser. No. 334,749
Int. Cl.³ H05B *9/04*; B32B *19/02*; G05F *1/44*
U.S. Cl. 323—273 **5 Claims**



1. A circuit for delivering a predetermined level of energy to an impedance load having variable capacitance and resistance, said circuit comprising in combination:

(a) oscillator circuit means for producing a high frequency electromagnetic variable ouput energy on an output of said oscillator circuit means, said oscillator circuit means having a supply voltage input for receiving a variable amplitude constant frequency supply voltage required for operation of said oscillator circuit means;

(b) variable impedance load means for receiving electromagnetic energy from said oscillator circuit means;

(c) a cable coupled between said load means and said oscillator circuit means for conducting the electromagnetic energy from said oscillator circuit means to said load means, said load means presenting a variable impedance to said cable when the load impedance is varied and causing a change in voltage at the output of said oscillator circuit means;

(d) power circuit means connected to said supply voltage input for providing the variable amplitude constant frequency supply voltage to said oscillator circuit means, said power circuit means having a control input for controlling the amplitude of the supply voltage; and
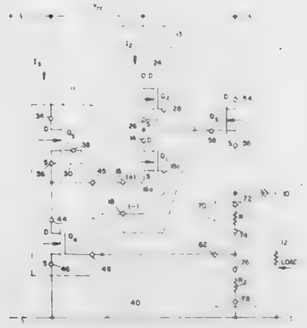
(e) control means responsive to the variable output voltage and coupled between the output of said oscillator circuit means and the control input of said power circuit means for altering the control voltage at the control input of said power circuit means to vary the amplitude of the supply voltage provided by said power circuit means to said oscillator circuit means and to vary the amplitude of the output voltage at the output of said oscillator circuit means conducted via said cable to said load means.

4,390,833

VOLTAGE REGULATOR CIRCUIT

Chin-Pyng J. Tzeng, Placentia, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 22, 1981, Ser. No. 266,239
Int. Cl.³ G05F *1/56*
U.S. Cl. 323—280 **18 Claims**



1. A voltage regulator circuit adapted to operate between a voltage source and a voltage source return, to supply a predetermined output voltage at an output voltage terminal to a load comprising:

an inverter means having an inverter input terminal and an inverter output terminal, for inverting and amplifying the voltage difference between a voltage received at said inverter input terminal and a relatively fixed inverter threshold voltage, said inverter means providing an inverted control voltage at an inverter output terminal,

an output voltage scaling means having an input terminal providing a scaled output voltage signal at said output terminal,

an amplifier means having a non-inverting input terminal and an inverting input terminal and an output terminal, for amplifying the voltage difference between said non-inverting input and said inverting input to provide an output voltage determining control signal at said amplifier means output terminal,

said inverter output terminal being connected to said amplifier means non-inverting input terminal, and

said output voltage scaling means output terminal being connected to said inverter means inverter input terminal and to said amplifier means inverting input terminal,

an output multiterminal semiconductor device having a first and second conduction path terminal and a control terminal, said first conduction path terminal being connected to said voltage source, said second conduction path terminal being connected to said output voltage terminal, said control terminal being connected to said amplifier means output terminal and being responsive to said output voltage determining control signal to provide current to said load in relatively constant output voltage determining relation.

4,390,834

DIGITAL VOLUME CONTROL

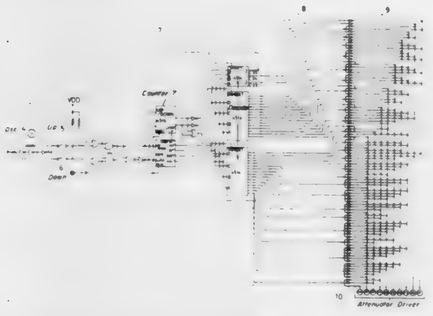
Akihiro Ohshita, Higashihiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 188,566, Sep. 18, 1980. This application Mar. 19, 1982, Ser. No. 360,049

Claims priority, application Japan, Feb. 25, 1980, 55/23283

Int. Cl.³ H02J *3/12*

U.S. Cl. 179—1 VL **9 Claims**



1. A volume control circuit comprising:

encoder means for generating attenuation constraining enabling signals for said semiconductor switch means;

actuator means for initiating volume control operation by generating a number of pulses;

counter means for counting the number of pulses supplied via said actuator means and providing an electrical representation of the number of said pulses to said encoder means to define a corresponding attenuation level and

attenuator circuit means connected to said semiconductor switch means for providing the level of attenuation constrained by said encoder means.

4,390,835

FAULT IDENTIFICATION IN ELECTRIC POWER TRANSMISSION SYSTEMS

Makeen M. Elkateb, and William J. Cheetham, both of Stafford, England, assignors to The General Electric Company Limited, London, England

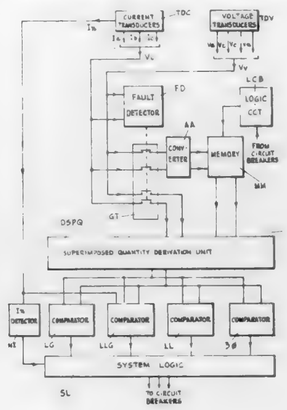
Filed Sep. 24, 1980, Ser. No. 190,268

Claims priority, application United Kingdom, Sep. 27, 1979, 7933571

Int. Cl.³ G01R *31/02*

U.S. Cl. 324—51 **15 Claims**

1. A method of identifying faults in a polyphase alternating current electric power transmission system wherein determination of the type of fault occurring is effected by monitoring, using analogue techniques, the instantaneous values of quantities which are combinations of at least two of the group com-



prising the superimposed currents and the superimposed voltages arising in the system on occurrence of a fault.

4,390,836

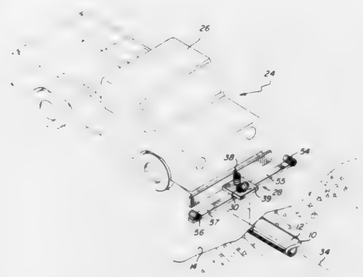
METHOD AND APPARATUS FOR THE DETECTION OF PIPELINE HOLIDAYS

Charles R. Bruce, Littleton, and Irvin D. Johnson, Englewood, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Aug. 11, 1980, Ser. No. 177,156

Int. Cl.³ G01R *31/00, 31/12;* **G01V** *3/165*

U.S. Cl. 324—54 **10 Claims**



10. A method of detecting and locating a holiday in an insulating coating of a subterranean electrically conductive pipeline comprising:

inducing an alternating electrical current in at least a portion of the pipeline,

orienting a pair of coil members on opposite sides of a vertical plane including the longitudinal axis of the pipeline in generally longitudinally parallel relationship relative to the pipeline,

moving the pair of coils through an electromagnetic field generated by electric current flowing in a direction normal to the central axis of the pipeline through a holiday in the insulating coating of the pipeline whereby an electrical current signal is induced in the pair of coil members representative of the presence and magnitude of the holiday,

displaying the electrical current signal, and

sensing a normal electromagnetic field generated by the current flowing axially in the pipeline, determining the relative relationship between the pair of coil members and the pipeline from the sensed normal electromagnetic field and then guiding the pair of coil members through the electromagnetic field generated by electrical current flowing radially through the holiday in response to the sensed normal electromagnetic field.

4,390,837

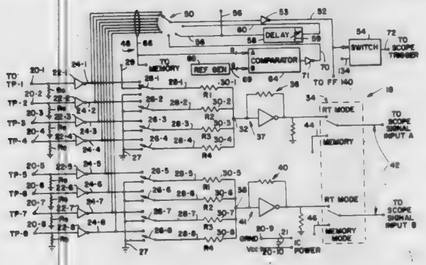
TEST UNIT FOR A LOGIC CIRCUIT ANALYZER

Kevin Hotvedt, 1826 Vera Ave., Redwood City, Calif. 94061

Filed Aug. 25, 1980, Ser. No. 180,849

Int. Cl.³ G01R *15/12*

U.S. Cl. 324—73 R **22 Claims**



1. A test unit for identifying output signals at a plurality of test points of a logic circuit on an oscilloscope having a scope signal input and a scope triggering input, said unit comprising:

(a) a plurality of test probes being connectable to the plurality of test points to sense the output signals, respectively;

(b) means for producing summed signals;

(c) a plurality of impedance elements having different weighted values, each of said impedance elements being connected between one of said test probes and said producing means;

(d) means for coupling the summed signals to the scope signal input;

(e) means for selectively coupling and decoupling said test probes from said producing means; and

(f) means for supplying a triggering signal to the scope triggering input in response to one of the sensed output signals.

4,390,838

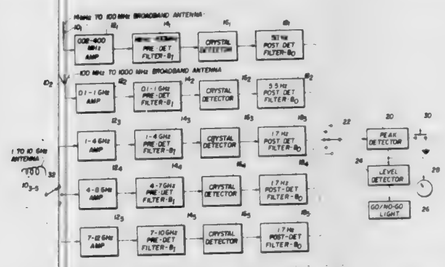
BROADBAND MEASUREMENT SYSTEM

John W. Savage, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 2, 1981, Ser. No. 230,558

Int. Cl.³ G01R *23/16*

U.S. Cl. 324—77 E **17 Claims**



1. A method of measuring the emission of electromagnetic energy over a relatively wide bandwidth comprising the steps of:

receiving electrical signals of said emission;

applying said signals to a detection circuit having a response characteristic where the ratio of the impulse signal response to the CW signal is a predetermined function of said detection circuit defined by the relationship:

$$r = 1/(2B_OB_I - B^2{}_O)^{0.5}$$

wherein r is the ratio of the impulse signal response to the CW signal response, B_I is the pre-detection bandwidth of said detection circuit, and B_O is the post-detection bandwidth of said detection circuit;

detecting said electrical signals in said detection circuit and providing video output signals therefrom; and

applying said video output signals to a measuring circuit operative to determine the amplitude of said video output signals.

4,390,839

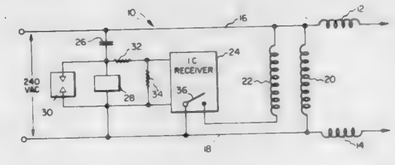
METHOD AND APPARATUS FOR TONE CONTROLLED VARIABLE SENSITIVITY TIME-OF-DAY WATT-HOUR METERING

John M. Houston, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 30, 1980, Ser. No. 192,451

Int. Cl.³ G01R *15/08;* **H04B** *3/54*

U.S. Cl. 324—116 **20 Claims**



1. A time-of-day watt-hour meter for measuring energy supplied over a pair of alternating current power line conductors comprising:

a rotor for driving a set of dials;

at least one current coil connected in series with at least one of said power line conductors;

at least one voltage coil connected between said pair of power line conductors, said rotor and coils being configured to operate as an induction motor; and

means for selectively adjusting the sensitivity of said voltage coil for a predetermined portion of a predetermined time interval to cause said rotor to rotate at a faster rate during the time during which said signals bearing tone burst information are received than during the time during which no such signals are received, said means being responsive to signals bearing tone burst information at a predetermined frequency present on said power line, said tone burst frequency being higher than the A.C. power delivery frequency supplied over the conductor pair.

4,390,840

ZEUGMATOGRAPHY PROCESS

Alexander Ganssen; Arnulf Oppelt, both of Erlangen, and Wilfried Loeffler, Herzogenaurach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 19, 1980, Ser. No. 208,145

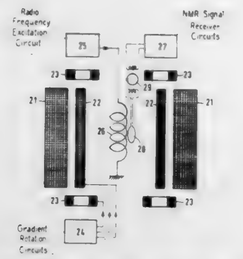
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951537

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—309 **2 Claims**

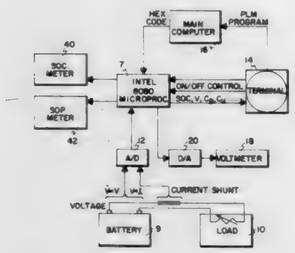
1. A method of producing an image representing nuclear spin density information for a body, using nuclear magnetic resonance signals, characterized in that, for the purpose of locally-resolved detection of such nuclear spin density information in said body, said method comprises

(a) subjecting the body to a constant magnetic field B_o along one axis,
(b) superimposing, transversely to said one axis, a linear field gradient dBo/dr, which can be rotated in a stepwise fashion through at least 180 degrees about said one axis,
(c) varying the frequency of an exciting radio frequency field B_1 such that fast adiabatic resonance passages are excited in a region of the body to be examined,
(d) detecting the variation in magnetization alone said one



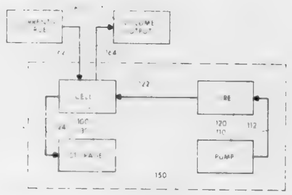
axis synchronously with the frequency variation of the radio frequency field B_1 to derive a projection of the nuclear spin density perpendicularly to the superimposed field gradient,
(e) successively rotating the field gradient in a stepwise fashion about said one axis, and for each successive rotation of the field gradient, repeating the detecting step (d) so that a plurality of projections are measured, and
(f) constructing from said projections an image of the nuclear spin density.

4,390,841
MONITORING APPARATUS AND METHOD FOR BATTERY POWER SUPPLY
Harry L. Martin, Knoxville, Tenn., and Raymond E. Goodson, West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.
Filed Oct. 14, 1980, Ser. No. 196,398
Int. Cl.³ G01N *27/46*
U.S. Cl. 324—427 **12 Claims**



1. A monitoring device for a battery power supply, said device comprising:
input means adapted to receive a current signal from a battery power supply to be monitored;
first capacity means connected with said input means to receive said current signal therefrom and responsive thereto providing an output signal indicative of the used capacity of a said battery power supply then being monitored;
second capacity means connected with said input means to receive said current signal therefrom, said second capacity means providing predicted parameters dependent upon the diffusion characteristics of said battery power supply, and said second capacity means being responsive to said current signal and to said predicted parameters of said battery power supply to provide an output signal indicative of the predicted remaining capacity of a said battery power supply then being monitored; and
determining means connected with first and second capacity means to receive said outputs therefrom and responsive thereto providing an output signal indicative of the state-of-charge of said battery power supply then being monitored.

4,390,842
FLUID CONDUCTIVITY DEVICE FOR MEASURING FLUID VOLUMES AND METHOD THEREFOR
N. Duane Wygant, Sedalia, and Stanley C. Jones, Littleton, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio
Filed Dec. 23, 1980, Ser. No. 219,562
Int. Cl.³ G01N *27/02*
U.S. Cl. 324—439 **12 Claims**

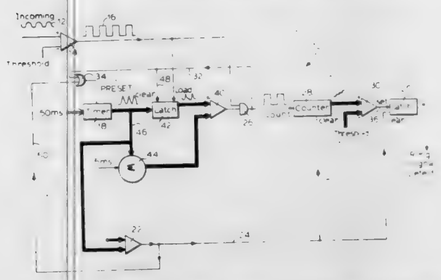


1. A device for measuring the volume of each fluid in a fluid mixture, said fluid mixture flowing at a constant volumetric flow rate and each fluid in said mixture having a different electrical conductivity, said device comprising:
means (**600**) receiving said mixture (**300**) for separating said mixture (**300**) in a formed passageway (**200**) into separate individual fluid droplets (**310, 320**), said separating means (**600**) being capable of maintaining said constant volumetric flow of said mixture (**300**), and
means (**400, 170**) operatively interconnected with said separating means (**600**) for determining the time required for each droplet (**310, 320**) to flow through said passageway (**200**) by sensing the electrical conductivity of each droplet (**310, 320**) commencing with the leading interface (**500**) and ending with the lagging interface (**510**) as it passes through said passageway (**200**), said determined time being proportional to the volume of said droplet (**310, 320**).

4,390,843
TELEPHONE SYSTEM RING PERIOD DETECTOR
William L. Betts, Maderia Beach, and Kenneth Martinez, Pinellas Park, both of Fla., assignors to Paradyne Corporation, Largo, Fla.
Filed Feb. 9, 1981, Ser. No. 232,703
Int. Cl.³ H03K *9/08*
U.S. Cl. 328—138 **4 Claims**

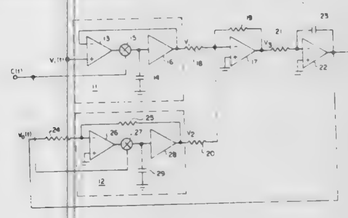
1. A circuit for differentiating a first waveform signal from a second waveform signal of lower frequency comprising:
detecting circuit means having an input for receiving an incoming waveform signal and producing a train of output pulses, the interval between pulses corresponding generally to the period of said waveform;
a timer adapted to count down from a time less than the period of the lower frequency signal but greater than the period of the higher frequency signal, said timer having a "preset" input;
latch means which when set indicate said first waveform;
first circuit means interconnecting said latch and said timer adapted to clear said latch each time said timer counts down to zero;
second circuit means interconnecting said latch and said

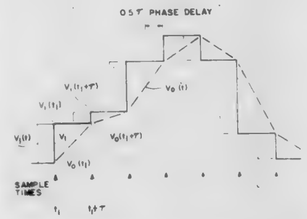
detecting circuit output whereby said output pulses set said latch;
third circuit means interconnecting said detecting circuit output and said timer "preset" input; and
means for excluding pulses having a time duration of less than a preselected time from setting said latch comprising:
a second latch loaded by said timer when the pulse train from said detector circuit is low and which remembers the previous timer value when said pulse train is high;



an adder connected to the output of said timer and adapted to add to said timer output an amount equal to said preselected timer duration;
and comparator means having a positive input connected to said second latch and a negative input connected to said adder, the output of said comparator means connected to said latch "set" input.

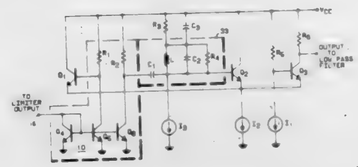
4,390,844
INTEGRATION FILTER FOR STEP WAVEFORMS
Joseph W. Ting, Culver City, Calif., assignor to California Institute of Technology, Pasadena, Calif.
Filed Dec. 24, 1980, Ser. No. 219,825
Int. Cl.³ H03K *4/90, 6/00*
U.S. Cl. 328—142 **7 Claims**





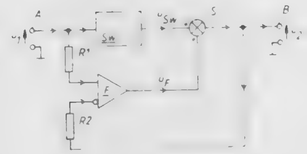
1. A method for smoothing a multistep waveform of an electrical signal by converting each step thereof into a perfectly linear segment over the next step period, each segment extending from the voltage at the end of the preceding step to the voltage at the beginning of the next step whereby said linear segment for each step has a potential difference between its beginning and its end voltages equal to the step change in potential.

4,390,845
GATED QUADRATURE DETECTOR BIASED TO SWITCH ON SINUSOIDAL ZERO CROSSINGS
Lawrence P. Strickland, Tamarac, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 5, 1980, Ser. No. 213,762
Int. Cl.³ H03D *3/22*; H03K *9/06*
U.S. Cl. 329—103 **3 Claims**



1. A quadrature detector, comprising:
an input driver including a current mirror circuit receiving an input train of variable frequency waves for developing first and second outputs;
a phase-shift network receiving the first output of the input driver for developing a phase-shifted output;
a gating circuit comprising a plurality of transistors forming an OR gate responsive to the phase-shifted output of the phase-shift network and the second output of the input driver; and
a biasing circuit, including a resistor coupled between a voltage source and the phase-shift network and an active current sink coupled to the phase-shift network, for applying a DC bias to the output of the phase-shift network and to the gating circuit so that the gating circuit switches on those zero crossings of the output of the phase-shift network which are induced by frequency changes associated with the input train of waves.

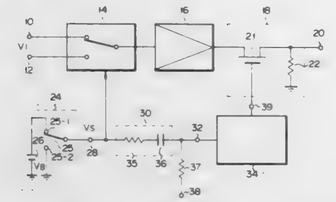
4,390,846
POWER AMPLIFIER CONNECTION
Gunnar Cragfors, and Jörgen Bosson, both of Västeras, Sweden, assignors to ASEA Aktiebolag, Västeras, Sweden
Filed Jan. 21, 1981, Ser. No. 226,995
Claims priority, application Sweden, Jan. 28, 1980, 8000633
Int. Cl.³ H03F *3/68*
U.S. Cl. 330—10 **5 Claims**



1. A power amplifier connection for converting an AC input signal into an amplifier AC output signal, said connection comprising:
a constant amplitude pulse width modulated switching amplifier providing a first output signal,
a proportional amplifier providing a second output signal,
means for summing said first and second output signals to form said amplifier AC output signal,
means for controlling said switching amplifier in dependence on said input signal to the amplifier connection so that said amplifier AC output signal substantially follows said input signal, and

means for controlling said proportional amplifier in dependence on the deviation between said AC input signal and said AC amplified output signal.

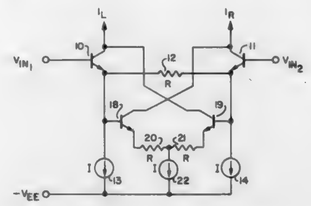
4,390,847
MUTING DEVICE
Hisashi Yamada, Yokohama, and Tsutomu Sugawara, Yokosuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Nov. 3, 1980, Ser. No. 203,497
Claims priority, application Japan, Nov. 20, 1979, 54/149529
Int. Cl.³ H03G *3/34*
U.S. Cl. 330—51 **12 Claims**



1. A muting device comprising:
a signal-generating means for generating a switching operation changeover signal, said signal-generating means including DC power source means for having a predetermined DC voltage and for producing a DC current and switch means for receiving the DC current and for selectively generating the DC current at the output terminal thereof to produce said switching operation changeover signal;
changeover switching means connected to the output terminal of said switch means, for selectively transmitting one of a plurality of data signals in response to said switching operation changeover signal;
differentiation means connected to the output terminal of said switch means of said signal-generating means, for differentiating said switching operation changeover signal, said differentiation means including a single differentiation circuit for producing a differentiation signal having the positive and negative differentiated waveform components;
control circuit means having a single input terminal connected to the differentiation circuit of said differentiation means, for detecting whether a voltage level of said differentiation signal falls outside a predetermined voltage range and for generating a control signal when the voltage level at said negative differentiated waveform components is lower than a first voltage level which defines a minimum level of said voltage range or when the voltage level at said positive differentiated waveform components is higher than a second voltage level which defines a maximum level; and
muting switching means connected to said control circuit means, for attenuating said data signal selectively transmitted by said changeover switching means in response to said control signal from said control circuit means.

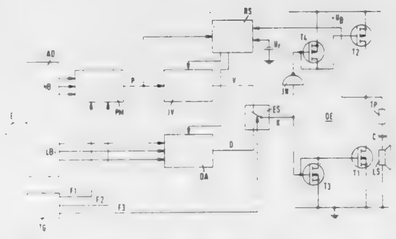
4,390,848
LINEAR TRANSCONDUCTANCE AMPLIFIER
Robert A. Blauschild, Los Altos, Calif., assignor to Signetics, Sunnyvale, Calif.
Filed Feb. 12, 1981, Ser. No. 233,911
Int. Cl.³ H03F *1/02, 3/45*
U.S. Cl. 330—151 **15 Claims**

1. A self-biasing linear transconductance amplifier, which comprises:
a differential transconductance amplifier stage having a first bipolar transistor with first emitter, base and collector zones and a second bipolar transistor with second emitter, base and collector zones, said first and second base zones comprising the differential voltage input terminals of said linear transconductance amplifier and said first and second collector zones comprising the differential current output terminals of said linear transconductance amplifier;
a differential correction amplifier stage having first and second input terminals and first and second output terminals, said first and second input terminals being directly connected, respectively, to said first and second emitter



zones of said first and second bipolar transistors and said first and second output terminals being connected, respectively, to said second and first collector zones of said second and first bipolar transistors; and
means for establishing the relative gain of said correction amplifier stage with respect to the gain of said transconductance amplifier stage such that the nonlinearities generated in such transconductance amplifier stage are substantially cancelled by the nonlinearities generated in said correction amplifier stage.

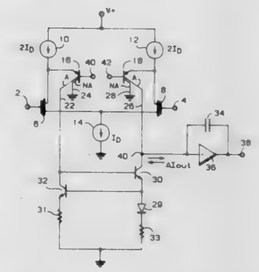
4,390,849
AUDIO POWER AMPLIFIER WITH CLASS-D PUSH-PULL OUTPUT STAGE
Leslie Miskin, Gundelfingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed Apr. 28, 1981, Ser. No. 258,490
Claims priority, application Fed. Rep. of Germany, May 7, 1980, 3017414
Int. Cl.³ H03F *3/217, 3/38, 3/68*
U.S. Cl. 330—251 **1 Claim**



1. Audio power amplifier with class-D push-pull output stage, characterized by the following features:
the input stage is an analog-to-digital converter (AD) which provides a binary-coded output signal;
the low-order bits (LB) of the output signal of the analog-to-digital converter (AD) are applied to the input of a digital-to-analog converter (DA), and the other, high-order digits (HB) are applied to the input of a pulse-width modulator (PM);
the output signal (P) of the pulse-width modulator (PM) is applied to a pulse amplifier (IV) whose gain is adjusted by a control signal from a gated control stage (RS) in such a way that the amplitude of the output signal (V) of the pulse amplifier (IV) is equal to the maximum amplitude of the output signal (D) of the digital-to-analog converter (DA);

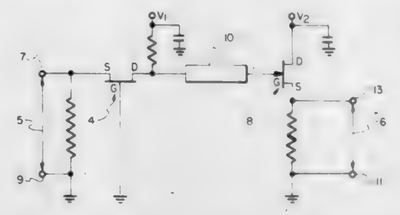
via an electronic changeover switch (ES), the output signal (D) of the digital-to-analog converter (DA) is added to the output signal (V) of the pulse amplifier (IV) between every two of the output pulses of the pulse amplifier (IV);
this combination signal (K) and the signal inverse thereto each control one of the two halves (T1, T3; T2, T4) of the class-D push-pull output stage, each of which contains a VMOS or DMOS transistor (T1, T2) operated in constant-current mode outside the saturation region, and
the control signal for the gain of the pulse amplifier (IV) and the reference voltage of the digital-to-analog converter (DA) are generated by the control stage (RS), which is gated by the output signal of the pulse-width modulator (PM) and compares the drain-source voltages of the series-connected VMOS or DMOS transistors (T1, T2) with a voltage reference (U_r) so that these transistors are operated outside their saturation region.

4,390,850
OPERATIONAL AMPLIFIER HAVING IMPROVED SLEW RATE/BANDWIDTH CHARACTERISTICS
William F. Davis, Tempe, and Stuart B. Shacter, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 16, 1981, Ser. No. 244,445
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—253 **8 Claims**



1. An amplifier having first and second stages, comprising:
first and second field-effect-transistor input devices adapted to receive first and second input signals;
a first current source coupled to said first input device for supplying current thereto;
a second current source coupled to said second input device for supplying current thereto;
first and second current splitting means coupled to said first and second input devices respectively and to said first and second current sources respectively for splitting current supplied thereto by said first and second current sources respectively; and
current mirror means coupled between said first and second current splitting means and coupled to said second stage for supplying current to said second stage when said first input device is on and said second input device is off and for receiving current from said second stage when said second input device is on and said first input device is off, said first current splitting means comprising transistor means having an emitter coupled to said first current source, a first collector coupled to said current mirror means, a second collector adapted to be coupled to a first source of voltage and having a base electrode adapted to be coupled to a bias potential, said first and second collectors being of different area.

4,390,851
MONOLITHIC MICROWAVE AMPLIFIER HAVING ACTIVE IMPEDANCE MATCHING
J. Aiden Higgins, Westlake Village, and Aditya K. Gupta, Newbury Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Nov. 25, 1980, Ser. No. 210,455
Int. Cl.³ H03F *3/16*
U.S. Cl. 330—277 **5 Claims**



1. A monolithic microwave amplifier comprising:
an input port having a signal input terminal and an input ground terminal;
an output port having a signal output terminal and an output ground terminal;
a first field effect transistor having a source coupled to said signal input terminal, a gate, and a drain which is positively biased with respect to said source of said first field effect transistor;
an interstage matching network having its input end connected to said drain of said first field effect transistor;
a second field effect transistor having a gate connected to the output end of said interstage matching circuit, a source coupled to said signal output terminal, and a drain which is positively biased with respect to said source of said second field effect transistor;
said input ground terminal, said gate of said first field effect transistor, said drain of said second field effect transistor and said output ground terminal, all being connected in common.

4,390,852
BUFFER AMPLIFIER
John L. Addis, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Apr. 13, 1981, Ser. No. 253,471
Int. Cl.³ H03F *3/16, 3/26*
U.S. Cl. 330—300 **5 Claims**



1. A buffer amplifier, comprising:
a source follower input stage comprising a field-effect transistor having a gate connectable to a signal source;
a complementary emitter follower output stage comprising an emitter-coupled pair of transistors wherein the bases thereof are coupled to the source of said field-effect transistor;
bias means for providing a substantially constant bias current

for said emitter-coupled pair of transistors, said bias means including first means for bootstrapping the emitters of said emitter-coupled pair of transistors; and

second means for bootstrapping the drain of said field-effect transistor,

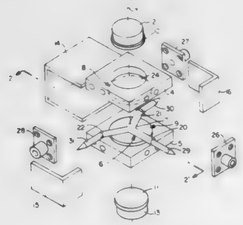
wherein both of said first and second bootstrapping means are driven by the output of said source follower input stage.

4,390,853

MICROWAVE TRANSMISSION DEVICES COMPRISING GYROMAGNETIC MATERIAL HAVING SMOOTHLY VARYING SATURATION MAGNETIZATION

Moni G. Mathew, and Thomas J. Weisz, both of Sunnyvale, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 139,815, Apr. 14, 1980, abandoned.
This application Aug. 12, 1981, Ser. No. 292,202
Int. Cl.³ H01P *1/387, 1/36, 1/218*
U.S. Cl. 333—1.1 **22 Claims**



1. A microwave transmission device comprising,

a first conductor disposed in a first plane,

a second conductor disposed in a second plane in parallel relation and spaced from said first conductor for transmitting electromagnetic energy in a single TEM mode with other modes suppressed,

a first body including a first gyromagnetic material adapted to be magnetized by a magnetic field and disposed between said first and second conductors, said body having a smoothly varying saturation magnetization in a direction parallel to said first plane for providing broad bandwidth operation for said device, said saturation magnetization varying as a function of position in a plane parallel to said first plane.

4,390,854

BROAD BANDWIDTH SURFACE ACOUSTIC WAVE FILTER APPARATUS WITH STAGGERED TUNING

Roger D. Colvin, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

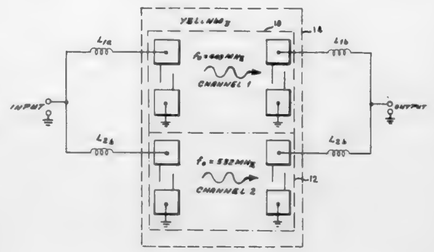
Filed Mar. 3, 1981, Ser. No. 239,955
Int. Cl.³ H03H *9/64, 9/145*
U.S. Cl. 333—193 **10 Claims**

1. A broad bandwidth filter apparatus comprising in combination:

a piezoelectric substrate;

a plurality of surface acoustic wave transducer pairs deposited upon said piezoelectric substrate, each transducer pair of said plurality of surface acoustic wave transducer pairs comprise an input transducer and an output transducer, each transducer pair operating at a predetermined center frequency, each transducer pair comprising a signal channel, and,

a separate tuning means for each of said plurality of surface acoustic wave transducer pairs, each transducer pair having a tuning means connected to its input transducer and to its output transducer, said tuning means for tuning said plurality of surface acoustic wave transducer pairs above and below its center frequency, all tuning means for said input transducers connected together to receive an input



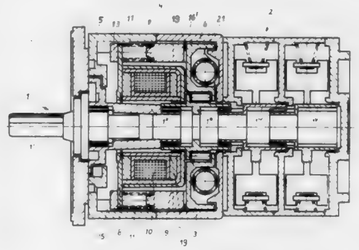
signal, all tuning means for said output transducers connected together to provide an output signal.

4,390,855

RESETTING DEVICE FOR MANUALLY OPERABLE ROTARY SWITCH

Gottfried Alsch, Vienna, Austria, assignor to Hubert Laurenz Naimer, Ascona, Switzerland

Filed Aug. 24, 1981, Ser. No. 295,492
Claims priority, application Austria, Sep. 25, 1980, 4802/80
Int. Cl.³ H01H *9/00, 67/02*
U.S. Cl. 335—166 **7 Claims**



1. In combination: a rotary switch comprising a drive shaft manually rotatable about an axis thereof for rotation from a starting to a selected switching position; and a resetting device for resetting the switch to the starting position when a supply voltage falls below a predetermined limiting value, the resetting device comprising

(a) an electromagnet arranged coaxially on the drive shaft and connected to the supply voltage, the electromagnet having an armature movable into a retracted position in response to a supply voltage above the limiting value when the drive shaft is in the selected switching position,

(b) a restoring mechanism loaded by a return spring to return the switch drive shaft to the starting position, the armature of the electromagnet being arranged for selectively releasing the restoring mechanism when the supply voltage is below the limiting value in the selected switching position of the drive shaft,

(c) a blocking tappet axially slidable in relation to the drive shaft and movable for blocking the restoring mechanism in the retracted position of the armature, and

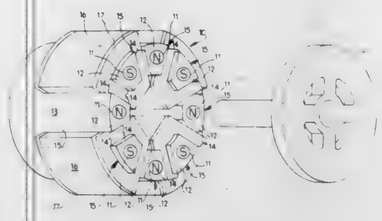
(d) cooperating blocking means on the restoring mechanism and blocking tappet, the blocking means including complementary projecting and recess elements extending in the direction of the axis and adapted to interengage when the armature is in the retracted position and the rotary switch is in the switching position.

4,390,856

MULTIPOLE SOLENOIDS

Michael M. Schechter, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 31, 1981, Ser. No. 289,008
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—256 **15 Claims**



RING-SHAPED MULTIPOLE SOLENOID

1. An electromagnetic device comprising:

a stator means having a plurality of pole means;

an armature means positioned adjacent said stator means for activation by said stator means and being movable with respect to said stator means;

an air gap positioned between said stator means and said armature for passing a magnetic flux, said air gap having a size dependent upon the relative positions of said stator means and said armature; and

induction coil means associated with alternating pole means for carrying an electric current and establishing a magnetic flux in a first direction in said associated pole means and a magnetic flux in a second direction in said pole means adjacent said associated pole means, thus forming magnetic poles of opposite polarity at the extremities of adjacent pole means, said induction coil means being adapted to carry an electric current so that at each instant during travel of said armature means the magnitude of the electric current is substantially that required to maintain the magnetic flux density in said air gap at saturation level, the electric current in said induction coil means rising relatively fast upon initial relative movement to a relatively high magnitude so that saturation magnetic flux density is achieved after a relatively small amount of travel of said armature means, the electric current decreasing from said relatively high magnitude as a function of the reduction in said air gap; and

all of said induction coil means being substantially identical with one another, having substantially identical electrical time constants and producing substantially identical magnetic traction forces, the total traction force of said electromagnetic device being substantially equal to the sum of forces of all of said induction coil means and the electric time constant of said electromagnetic device being substantially equal to the time constant of a single induction coil means associated with a single pole means.

4,390,857

ELECTROMAGNET

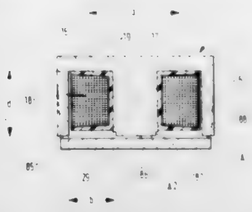
Hans Kubach, Korntal-Münchingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 30, 1981, Ser. No. 326,090
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1980, 3046891
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—282 **6 Claims**

1. An electromagnet for controlling a fuel injection valve for internal combustion engines, having a magnetic circuit which includes:

a ferromagnetic shell core having a window surface area A; an armature;

a magnetic winding, applied within the shell core, having an ohmic resistance R, a predetermined number of windings W, a fill factor K_L, and a window fill factor K_F, wherein



the magnetic winding is comprised of a wire which as a specific resistance S_L and a winding length l_m; and

wherein the magnetic circuit is dimensioned according to the formula

$$R = \frac{\rho_L \cdot l_m \cdot W^2}{A \cdot K_L \cdot K_F}$$

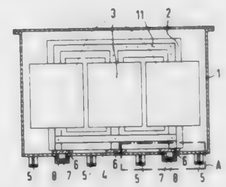
such that the quotient A/l_m is selected to be as small as possible.

4,390,858

LIQUID-COOLED TRANSFORMER FOR LARGE POWER RATINGS

Odilo Schulzer, Erlangen, Fed. Rep. of Germany, assignor to Transformatoren Union Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,816
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1980, 3012449
Int. Cl.³ H01F *27/02*
U.S. Cl. 336—92 **13 Claims**



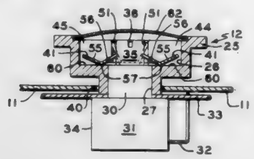
1. Liquid-cooled transformer for large power ratings, comprising tank having a bottom, large-area base plates resting on said tank bottom, an active part and a pressure device fastened to said base plates, a plurality of separate cups disposed in said tank bottom, hardenable liquid synthetic resin filling said cups, a plurality of posts being supported by and projecting downward from said base plates in direction of said tank bottom, each of said posts being immersed in a respective one of said separate cups for horizontally locking said active part relative to said tank bottom.

4,390,859

ELECTRIC THERMOSTAT WITH ADJUSTING KNOB

Donald J. Kasprzyk, Minn.; David A. Margenau, both of Maple Grove, and Marvin D. Nelson, St. Louis Park, all of Mo., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Apr. 9, 1981, Ser. No. 252,644
Int. Cl.³ H01C *7/02, 10/32*
U.S. Cl. 338—25 **8 Claims**



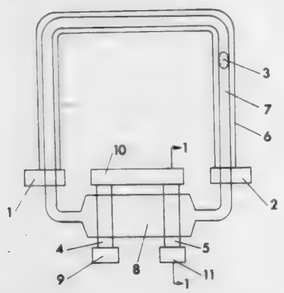
1. An electric thermostat, including: a housing to enclose and mount said thermostat; potentiometer means for setting an electrical value into said thermostat with said potentiometer means having a potentiometer body fixed in space within said thermostat; said potentiometer means further including a potentiometer shaft with said shaft being rotatable to adjust said potentiometer means to in turn set said thermostat; a knob having a hole with said hole being coaxial with said shaft to allow said knob to be placed over said shaft; said knob further including a cavity recessed into said knob with said shaft projecting into said cavity; clip means recessed in said cavity and formed of a single piece of resilient material; said clip means having an opening formed through said clip means with said opening normally being smaller than said shaft to allow a frictional engagement between said clip means and said shaft by said shaft passing through said opening in said clip means; and said clip means further having projection means being formed to allow said opening in said clip means to be biased against the natural resilience of said clip means to an enlarged size greater than said shaft to allow positioning said knob with respect to said shaft.

4,390,860

ELECTRONICALLY VARIABLE RESISTANCE DEVICE

Steven E. Garvey, 18288 Highway 9, Boulder Creek, Calif. 95006

Filed Jul. 23, 1981, Ser. No. 286,242
Int. Cl.³ H01C *10/02*
U.S. Cl. 338—38 **6 Claims**



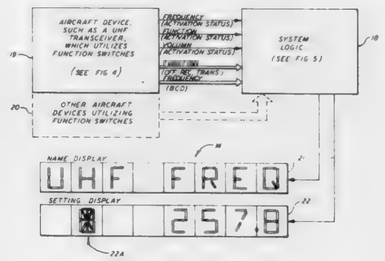
1. A variable resistance device comprising:
a channel having a continuous resistive portion isolated from a continuous conductive portion;
a moveable conductive liquid globule contained in said channel;
means for moving said globule in response to an electric current.

4,390,861

COCKPIT DISPLAY SYSTEM TO REDUCE VERTIGO

Edwin Cohen, Binghamton, N.Y., and Jack A. Maynard, Hallstead, Pa., assignors to The Singer Company, Binghamton, N.Y.

Continuation of Ser. No. 90,764, Nov. 2, 1979, abandoned. This application Mar. 11, 1981, Ser. No. 242,742
Int. Cl.³ G08C *21/00, 23/00;* **G06F** *3/14*
U.S. Cl. 340—27 R **6 Claims**



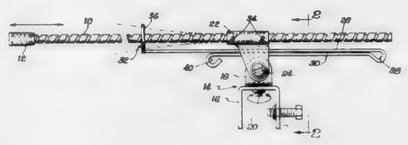
1. An anti-vertigo cockpit display system for preventing spatial disorientation by indicating, within a pilot's normal field of view, the identity and the setting of a plurality of predetermined functions controlled by separate control switch means located out of the pilot's normal field of view, comprising:
a single display means, for displaying a selected one of the functions, located within the pilot's normal field of view so that it may be viewed without it being necessary to turn the pilot's head,
the control switch means each having a single knob located out of the pilot's normal field of view,
system logic circuit means connected with each of said single knobs to energize said display means when a selected single knob is touched by the pilot's hand,
said display means being adapted to reveal both the entire present setting and the identity of the function connected with said selected single knob,
so that said pilot is informed without moving his eyes from his normal field of view, and
so that said present setting can be altered by adjusting said single knob of said control switch means.

4,390,862

PROXIMITY INDICATOR FOR MOTOR VEHICLES

William J. Elks, 1310 Cary Way, San Diego, Calif. 92109

Filed Apr. 16, 1981, Ser. No. 254,825
Int. Cl.³ B60Q *9/00;* **H01H** *3/16*
U.S. Cl. 340—61 **6 Claims**



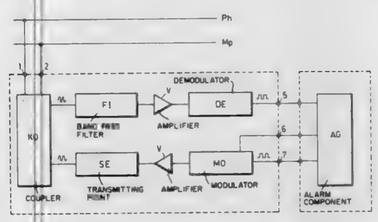
1. A proximity indicator for a vehicle comprising:
(a) a mounting bracket defining a yoke;
(b) a feeler probe extending from said yoke and at least a portion of which is conductive;
(c) a ring contact having a shaft mounted in said yoke, said ring contact encircling said probe;
(d) both said ring contact shaft and said probe being longitudinally adjustable for sensitivity and proximity settings, respectively by virtue of a common adjustable yoke engaging same therebetween;
(e) an electric signal;
(f) a powered electric circuit defined through said signal, probe and ring such that it is closed when said probe contacts said ring, whereby deflection of said probe against said contact actuates said signal.

4,390,863

SYSTEM FOR THE TRANSMISSION OF BINARY SIGNALS BETWEEN THE COMPONENTS OF AN ALARM SYSTEM

Willi Merkel, Albstadt, Fed. Rep. of Germany, assignor to Fritz Fuss Kom.-Ges Elektrotechnische Fabrik, Albstadt, Fed. Rep. of Germany

Filed Jun. 12, 1980, Ser. No. 158,880
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1979, 2923715
Int. Cl.³ H04B *3/54*
U.S. Cl. 340—310 R **7 Claims**



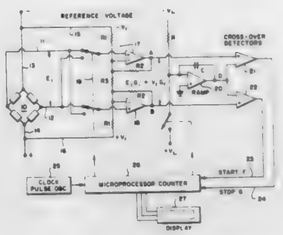
1. A system for the transmission of binary signals having two logical conditions between the components of an alarm installation and across a transmission path including an external wire network, comprising:
converting means for converting each of the two logical conditions of said binary signals into respective signal frequencies,
coupling means for coupling the alarm installation to the external wire network,
clamping means for clamping the voltage level of both binary signals on the same amplitude, and providing the binary signals representing the two logical conditions with respective signal frequencies within the range of between 20 kHz and 500 kHz, said frequencies being separated from each other by less than 10 kHz, and
band pass filter means for detecting the respective signals frequencies said filter means comprising two linked parallel resonant circuits, one of said two linked parallel circuits being tuned to a first one of the two respective frequencies and another of said two linked parallel circuits being tuned to a second one of the respective frequencies, said band pass filter exhibiting a narrow band pass response characteristic which is symmetrical with respect to a band mean frequency of the two binary signals, and
wherein the coupling means comprises a ferrite ring with three windings, including a first winding connected via two condensors with the external wire network, a second winding connected to the converting means, and a third winding connected to the band pass filter means.

4,390,864

ANALOG TO DIGITAL CONVERTER WITHOUT ZERO DRIFT

A. Newman Ormond, 12020 E. Rivera Rd., Santa Fe Springs, Calif. 90670

Filed May 11, 1981, Ser. No. 262,555
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 NT **6 Claims**



1. A method of converting an analog signal to a numerical count directly proportional to said analog signal without zero drift by utilizing equal and opposite reference voltages, including effecting a first conversion in accord with the following steps:
(a) utilizing a differential operational amplifier means including two operational amplifiers for adding said analog signal to said reference voltages to provide two first output voltage levels;
(b) generating a first ramp voltage of given slope;
(c) generating a series of constant frequency clock pulses;
(d) providing a counter for said clock pulses;
(e) starting and stopping said counter with first signals generated at points in time when said first ramp voltage crosses over said two first output voltage levels, respectively to define a first given number N1 of pulses;
(f) subtracting said analog signal from said reference voltages through said differential operational amplifier means to provide two second output voltage levels;
(g) generating a second ramp voltage of the same given slope as said first ramp voltage;
(h) starting and stopping said counter with second signals generated at points in time when said second ramp voltage crosses over said two second output voltage levels respectively to provide a second given number N2 of pulses; and,
(i) dividing N1−N2 by N1+N2 to provide said numerical count.

4,390,865

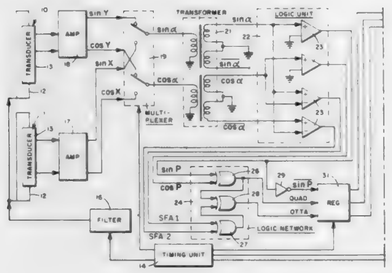
APPARATUS FOR DIGITAL POSITION MEASUREMENTS BY A CYCLIC POSITION TRANSDUCER

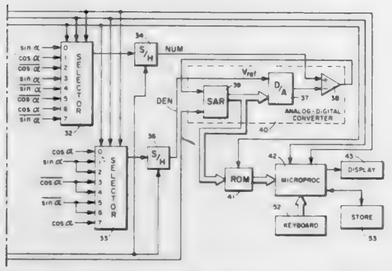
Luciano Lauro, Pavone Canavese, Italy, assignor to Olivetti Controllo Numerico S.p.A., Marcianise, Italy

Continuation of Ser. No. 68,382, Aug. 21, 1979, abandoned. This application May 28, 1981, Ser. No. 267,910
Claims priority, application Italy, Aug. 31, 1978, 69013 A/78
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 SY **3 Claims**

1. An apparatus for digital position measurements, comprising a precision transducer having a stationary scale provided with a single zig-zag circuit, the transverse conductors of which are located at a predetermined elementary interval, and a cursor provided with a pair of windings, one out of phase with respect to the other by a quarter of said interval, said zig-zag circuit being supplied with a sinusoidal signal to cause said windings to generate as outputs a pair of signals proportional to the sine and cosine of the electric angle corresponding to the position of measurement within one interval, a circuit for supplying the complementary signals of said pair of signals,

comparator means responsive to said pair of signals and said complements for producing two pairs of square waves, the waves of each pair being mutually distanced 90 degrees, one of the waves of one pair being distanced from one wave of the other pair 45 degrees, a logic network combining said square waves for producing a quadrant wave and an octant wave of the positions indicated by said transducer, within one interval, a register responsive to one of said square waves and to said quadrant and octant of said angle, a pair of multiplexers each one having an output connected to a corresponding sample hold circuit, said multiplexers being responsive to the digital code so memorized to select, according to the octant, two signals among said pair of signals and said complementary signals for causing said sample hold circuits to generate octant





continuous voltages representative of the analog value of the numerator and denominator of a fraction less than 1, thus selectively indicating the absolute value of the tangent and the contangent of said electric angle, converting means for converting said absolute value into a digital value, said converting means including a digital analog converter having as a reference the value of said denominator, a comparator between said numerator and the output of said converter and a counter incremented by said comparator for supplying a digital input to said converter, whereby said digital value is obtained by successive approximations, and a read only memory addressed by the digital value so obtained and by at least part of the digital code of said register for directly indicating the position of said cursor in said interval.

4,390,866

KEYBOARD WITH ELECTRONIC HYSTERESIS

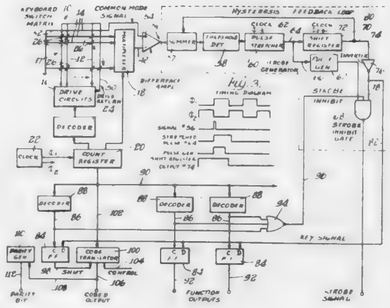
Keith A. Engstrom, Arlington Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 457,884, Apr. 4, 1974, which is a division of Ser. No. 339,476, Mar. 8, 1973, abandoned, which is a continuation of Ser. No. 144,902, May 19, 1971, abandoned. This application Feb. 19, 1981, Ser. No. 235,374

Int. Cl.³ G11C *19/00*

U.S. Cl. 340—365 E **18 Claims**

1. A keyboard comprising a plurality of selectively operable matrix elements each having an actuated state and an unactuated state, output means for scanning and sensing the state of each of said matrix elements in a sequential cyclic manner, memory means coupled to said output means for temporarily storing the sensed state of each of said matrix elements, said output means comprising a level detection means coupled to said matrix elements and to said memory means for ensuring the validity of said states sensed by said output means and feedback means coupled to said memory means for transmitting a feedback signal representative of the state that the matrix



element being scanned was in during the previous scan cycle, said level detection means being constructed to respond to said feedback signal so as to provide a first signal level upon which said sensed state of a scanned matrix element is superimposed when said feedback signal is representative of an unactuated state of said scanned matrix element and a second signal level upon which said sensed state of a scanned matrix element is superimposed when said feedback signal is representative of an actuated state of said scanned matrix element.

4,390,867

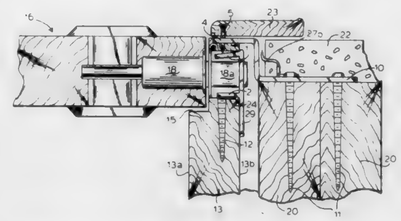
BURGLAR ALARM SYSTEM

James Queren, 218-07 43rd Ave., Bayside, N.Y. 11361

Filed Aug. 3, 1981, Ser. No. 289,373

Int. Cl.³ G08B *13/06*

U.S. Cl. 340—542 **7 Claims**



1. A burglar alarm system mounted in a reinforced doorway framing which comprises a wooden door jamb having two substantially parallel major faces and two minor faces substantially perpendicular to the major faces, one of the major faces having a recessed end portion delimited by one of the minor faces and a shoulder constituting a stop for a door, and the door jamb defining a door latch bolt hole in the recessed end portion, a wall including wooden wall stud means adjacent the other major face of the door jamb, the other major face and the wall defining a narrow space therebetween, the door jamb being mounted on the wall and the minor faces of the door jamb extending substantially parallel to the wall, a reinforcement metal plate extending over a substantial portion of the wall stud means and a substantial portion of the one minor face of the door jamb, the reinforcement plate being securely affixed to the wall stud means and the one minor face of the door jamb and covering a substantial region of the minor door jamb face adjacent and beyond the door latch bolt hole, the securely affixed plate holding the door jamb firmly in position, a striker plate defining a hole registering with the bolt hole and mounted thereover on the jamb, an electrically conductive rigid backer plate arranged in the narrow space in contact with the other major face of the door jamb and in registry with the striker plate, the backer plate having a predetermined electrical polarity and defining a hole registering with the hole in the striker plate, whereby a long latch bolt may be projected from the door into the latch bolt hole through the holes in the striker and backer plates, and fastening elements securing the striker and backer plates to the door jamb, the fastening elements passing through the jamb between the striker and backer plates whereby the door jamb is sandwiched between the striker and backer plates, and the burglar alarm system comprising a burglar alarm and an electrical control circuit connected to the burglar alarm and energizable to set off the alarm, the circuit having a normally open switch point consisting of a flange projecting from the backer plate towards the striker plate slightly recessed from the hole in the striker plate and slightly inclined towards the striker plate hole whereby the backer plate flange is out of contact with, but close to, the long latch bolt projected into the latch bolt hole for locking the door, and a contact element having an electrical polarity opposite to the electrical polarity of the backer plate, the contact element being mounted in the reinforcement plate and extending towards, but being normally slight spaced from, the flange whereby the switch point is open and the control circuit is not energized, displacement of the projected latch bolt towards the flange by a burglar tool and resultant displacement of the flange towards the contact element causing the flange to touch the contact element and energize the control circuit to set off the alarm.

4,390,868

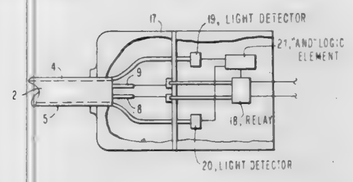
SECURITY OF MANUFACTURED APPARATUS

Richard L. Garwin, Scarsdale, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1980, Ser. No. 206,933

Int. Cl.³ G08B *13/00, 13/18, 13/24*

U.S. Cl. 340—568 **9 Claims**



1. A power cord of the type that delivers electrical power from a disconnectable source to a power-dependent apparatus the improvement comprising:

at least two power delivery conductors;

at least one signal bearing member of the type capable of transmitting at least one of optical and electrical signals; positioned visibly along the length of, insulated from, and contiguous with said power delivery conductors;

electrical-to-optical signal transducer means located at, at least one of said disconnectable source and said apparatus and operable to provide a light signal through said signal bearing member; and

optical-to-electrical signal transducer means at the other of said at least one of said disconnectable source and said apparatus responsive to said light signal; and indicating continuity conditions along said power cord.

4,390,869

GAS SENSING SIGNALING SYSTEM

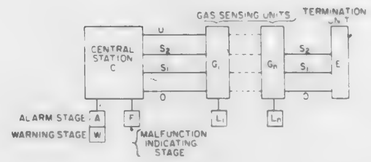
Peter Christen, Männedorf, and Peter Müller, Oetwil, both of Switzerland, assignors to Cerberus AG, Männedorf, Switzerland

Continuation-in-part of Ser. No. 54,786, Jul. 5, 1979, abandoned. This application Jan. 14, 1981, Ser. No. 225,097

Claims priority, application Switzerland, Jul. 17, 1978, 7721/78

Int. Cl.³ G08B *17/10*

U.S. Cl. 340—632 **44 Claims**



1. Gas sensing system having

a plurality of gas sensing units ($G_1 \ldots G_n$), each sensing unit including

a gas sensor (**1**) providing a sensing output signal (**1'**, **1***a*, **1***b*) upon sensing presence of a gas to which the gas sensor is responsive;

threshold level means (**2,3**) responsive to said sensing output signal having at least two threshold levels (low, high) and providing respective low level and high level output signals (**2***a*, **3***a*) upon sensing gas concentration exceeding a lower level, or exceeding a higher level, respectively;

a low level signal processing stage (**6**);

and a high level signal processing stage (**7**),

said signal processing stages being respectively connected to said threshold level means and responsive to the respective low level and high level output signals (**2***a*, **3***a*);

a central station (C);

connecting cable means (U, S_1, S_2, O) interconnecting the central station (C) and the gas sensing units ($G_1 \ldots G_n$) for signal transfer between said central station and said units,

said central station (C) including

a warning stage (W);

an alarm stage (A);

a low level input signal analyzing stage comprising

a warning signal timing stage (**11**) establishing a warning signal time interval;

a warning signal input circuit (**10**) and warning signal transfer means responsive to the low level signal (**2***a*) over said connecting cable means and activating said warning signal timing stage (**11**);

a warning signal self-holding circuit operative if the low level signal (**2***a*) persists for the timing duration of said warning signal timing state (**11**) for then activating said warning stage (W);

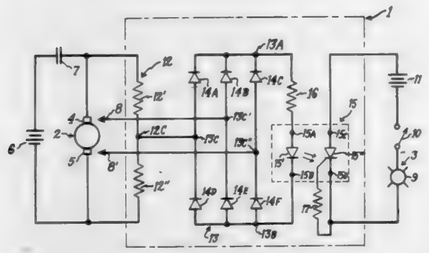
and a high level signal analyzing stage comprising

an alarm signal timing stage (**31**) establishing an alarm signal time interval which is shorter than the warning signal time interval;

an alarm signal input circuit (**30**) and alarm signal transfer means responsive to the high level signal (**3***a*) over said connection cable means and activating said alarm signal timing stage (**31**);

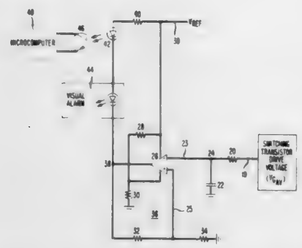
and an alarm signal self-holding circuit operative if the high level signal (**3***a*) persists for the timing duration of said alarm signal timing stage (**31**) for then activating said alarm stage (A).

4,390,870
INTERFACE CIRCUIT FOR BRUSH WEAR INDICATOR APPLICATION
Richard N. Michael, McKean, Pa., assignor to General Electric Company, Research Triangle Park, N.C.
Filed Jun. 15, 1981, Ser. No. 273,555
Int. Cl.³ G08B 21/00; H02H 7/08
U.S. Cl. 340—648 **6 Claims**



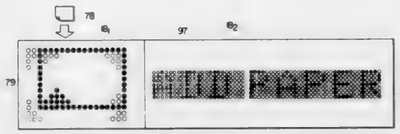
1. An interface circuit for use between a brush wear indicating circuit and a plurality of brush wear sensors that are each operable respectively, to transmit or produce an electrical signal responsive to the occurrence of a predetermined degree of wear of an associated brush, comprising;
a resistor bridge circuit having a midpoint voltage connection;
a diode bridge circuit having a plurality of input connections and a pair of output connections, one of said input connections being electrically connected to the midpoint voltage connection of said resistor bridge, and each of the other input connections being connectable, respectively, to receive signals from one of said plurality of brush wear sensors,
and a photon coupled isolator having input terminals electrically connected, respectively, to the output connections of said diode bridge and having output terminals electrically connectable to transmit a signal to an indicating means responsive to actuation of the photon coupled isolator.

4,390,871
CIRCUIT FOR DETECTING REDUCTION IN POWER
Michael W. Andrews, Whippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Apr. 29, 1981, Ser. No. 258,678
Int. Cl.³ G08B 21/00
U.S. Cl. 340—659 **9 Claims**



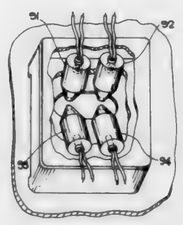
1. A method for providing a control signal indicating a reduction in power delivered to the input of a DC-DC converter
characterized by the steps of
averaging the voltage levels of the drive pulses to a switching transistor in said converter,
comparing said average drive pulse voltage level with a threshold voltage level (14), and
generating a control signal (42,46) when said average drive pulse voltage level exceeds said threshold voltage level.

4,390,872
DOT MATRIX CONDITION DISPLAY DEVICE FOR PHOTOCOPIERS
Reiji Murakami, 1438 Nishiterao, Kanagawa-ku, Yokohama-shi, and Shunichi Nakajima, 408 Kishine-cho, Kohoku-ku, Yokohama-shi, both of Japan
Filed Apr. 27, 1981, Ser. No. 257,620
Claims priority, application Japan, Apr. 30, 1980, 55/58346
Int. Cl.³ G08B 21/00
U.S. Cl. 340—679 **7 Claims**



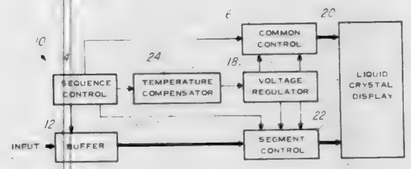
1. A display device for a photocopier for detecting various troubles of the photocopier by a detector and for displaying these troubles, comprising:
(a) display means for simultaneously displaying both symbol marks corresponding to various troubles of said photocopier and display phrases representing the meanings of said symbol marks;
(b) pattern generating means for electronically storing pattern signals representing said symbol marks and said display phrases;
(c) control means for receiving at least one detection signal from said detector and for outputting a control signal to read out from said pattern generating means said pattern signals representing said symbol mark and said display phrase corresponding to said detection signal; and
(d) display driving means for receiving said pattern signals and for driving said display means in accordance with said pattern signals read out from said pattern generating means to display said corresponding symbol mark and said display phrase.

4,390,873
ELECTRONIC MOUSE
Steven T. Kirsch, 655 S. Fairoaks Ave., Apt. D313, Sunnyvale, Calif. 94086
Filed May 18, 1981, Ser. No. 264,478
Int. Cl.³ G08B 5/36
U.S. Cl. 340—710 **19 Claims**



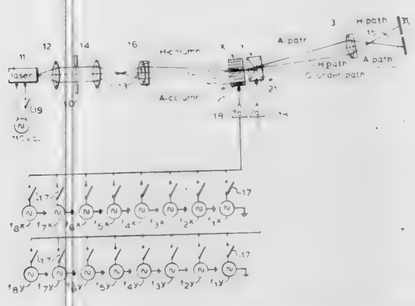
1. A position control system for a cursor or the like comprising,
a surface having a repetitive pattern of passive, position-related contrasting indicia extending over the surface, the indicia defining position states in two directions at the same locations,
detector means comprising a four-quadrant detector movable over the surface for sensing said passive indicia and generating an electrical signal representing position states in response thereto, and
electrical memory means connected to the detector means for noting changes in said electrical signal and converting said changes to digital signals in position registers for a cursor or the like.

4,390,874
LIQUID CRYSTAL DISPLAY SYSTEM HAVING IMPROVED TEMPERATURE COMPENSATION
Robert H. Woodside, Lubbock, Tex., and Michael J. Drury, Ft. Collins, Colo., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 9, 1981, Ser. No. 223,664
Int. Cl.³ G09G 3/18
U.S. Cl. 340—812 **20 Claims**



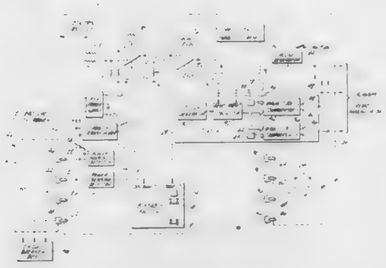
1. A liquid crystal display system comprising:
a liquid crystal display segment;
a display drive means for alternatively coupling said display segment to first and second voltages;
a capacitance ratio selection means, responsive to the temperature of said display segment, for selecting one of a plurality of predetermined ratio values, each predetermined ratio value corresponding to one of a plurality of temperature ranges; and
a temperature compensation means for determining the ratio of the capacitance of said display segment when coupled to said first voltage to the capacitance of said display segment when coupled to said second voltage, and for changing said second voltage to converge said ratio to said selected predetermined ratio value.

4,390,875
MESSAGE CHARACTER IMAGE PROJECTION CONTROL SYSTEM
Joseph T. McNaney, 8548 Boulder Dr., La Mesa, Calif. 92041
Continuation-in-part of Ser. No. 201,179, Oct. 27, 1980, abandoned. This application Mar. 17, 1982, Ser. No. 359,135
Int. Cl.³ G08B 5/36
U.S. Cl. 340—815.27 **2 Claims**



1. In a message character image projection control system including an array of character shaped light forming window means, a source of light and means for exposing the window means of said array to light from said source, and optical means positioned along an optical axis of said system for establishing individual optical path relationships between each said window means of the array and said optical axis, wherein the improvement comprises:
(a) said optical means including first and second acousto-optic optical path relationship control means and each of said control means including an ultrasonic frequency transducer and an interaction medium positioned along said optical axis, and a source of ultrasonic frequency voltages and circuit means for connecting said transducers to this source of voltages for an establishing of any of a number of different acoustic wave light reflecting conditions within the interaction medium of said first control means and within the interaction medium of said second control means, each said optical path relationship corresponding, respectively, to a combination of said light reflecting conditions of said first and second control means;
(b) means for establishing a predetermined one of said light reflecting conditions within said medium of the first control means and a predetermined one of said light reflecting conditions within said medium of the second control means and establishing a corresponding one of said optical path relationships between a predetermined one of the window means of said array and said optical axis;
(c) said exposing of the window means of said array to light from said source including a flooding of the entire array of said window means, simultaneously, with light from said source of light, said flooding of the entire array of window means allowing a viewing of an optical image of said predetermined one of the window means from along said optical axis.

4,390,876
ELECTRIC UTILITY DEMAND LIMITING DEVICE AND METHOD
Glenn J. Bjorklund, Santa Ana, and Charles E. Phillips, Alhambra, both of Calif., assignors to Southern California Edison Co., Inc., Rosemead, Calif.
Filed Jul. 25, 1980, Ser. No. 172,251
Int. Cl.³ H04Q 9/00; H02J 13/00
U.S. Cl. 340—825.17 **26 Claims**



1. An electrical power demand limiting device for controllably disconnecting a local load extraneous the device from a power source comprising
signal generating means for generating a first signal representative of the electrical power consumption of the load,
comparing means responsive to the signal generating means for comparing the first signal to a preset electrical power consumption limit,
receiving means for receiving a remote control signal from a power production source responsive to conditions at said power production source for providing an enable output in response thereto to enable the operation of the device,
disconnecting means responsive to the comparing means and to the enable output of the receiving means for discon-

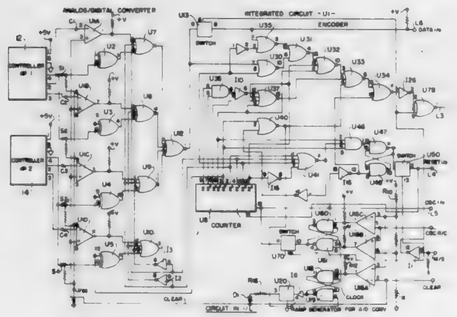
necting the said extraneous local load entirely from the power source when the first signal exceeds the preset limit and when the receiving means has enabled the device, and resetting means for resetting the disconnecting means to reconnect the local load to the power source such reconnected load being the entire initial load or a locally selected portion of said initial load.

4,390,877

REMOTE CONTROL SYSTEMS FOR TOY VEHICLES, AND THE LIKE

Kenneth J. Curran, 2080 Shady Brook Ct., Thousand Oaks, Calif. 91362

Filed Jul. 31, 1980, Ser. No. 174,037
Int. Cl.³ H04B *7/00*; A63H *30/04*; G06F *3/02*
U.S. Cl. 340—825.72 **9 Claims**



1. A remote control system for an instrumentality to be controlled comprising: a controller for producing at least one analog control signal; analog/digital converter circuitry connected to the controller for converting the analog control signal into digital control signals representing at least one command to be transmitted to the instrumentality; encoding circuitry connected to the analog/digital converter circuitry for processing the digital control signals from the analog/digital converter circuitry into successive words containing binary coded bits representative of said digital control signals; cyclic signal generating circuitry connected to said controller for introducing a cyclic signal to said controller to cause said encoding circuitry to produce a predetermined number of such successive words for each cycle of said signal with the binary value of the binary coded bits in the words generated during each of the cycles being dependent upon the value of said analog control signal; and means connected to the encoding circuit for transmitting the successive words to the instrumentality.

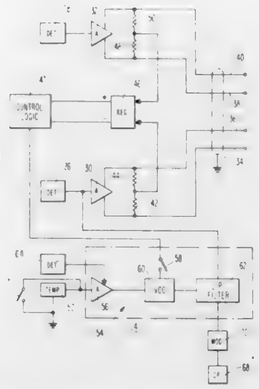
4,390,878

TWO RECEIVER NOISE LOGGERS

John W. Harrell, Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 2, 1981, Ser. No. 222,101
Int. Cl.³ G08C *19/00*
U.S. Cl. 340—856 **10 Claims**

1. In a system for acoustic noise logging in a production well including:
up-hole components,
down-hole components, the down hole components including at least two sonic detectors, said up-hole components and said down-hole components being linked together by four wire interconnecting means, the improvement comprising:
additional down-hole components including:
a first parameter detector, the output signal from which is a frequency proportional to a sensed first parameter;
a second parameter detector having a means for frequency modulating said signal in response to a sensed second parameter; and



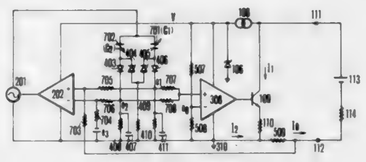
a third parameter detector having a means for amplitude modulating said signal in response to a sensed third parameter.

4,390,879

APPARATUS FOR CONVERTING PHYSICAL QUANTITIES

Atsushi Kimura, Yokohama, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Jul. 18, 1980, Ser. No. 170,108
Claims priority, application Japan, Feb. 15, 1980, 55-17293
Int. Cl.³ G08C *19/10*
U.S. Cl. 340—870.37 **7 Claims**



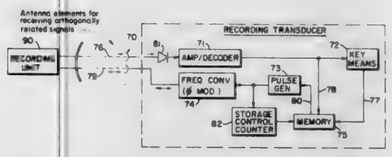
1. Apparatus for converting a physical quantity into an electrical signal representative of the quantity without error from changes in ambient conditions comprising:
a power source for supplying electrical power of said apparatus;
a detecting circuit means supplied with the output of said power source for detecting variations in a physical quantity to be measured, the electrical characteristics of said detecting circuit means being varied in accordance with changes in said physical quantity to be measured, and in accordance with changes in ambient conditions;
a reference electrical value;
a converting circuit means for amplifying a difference between a first electrical output of said detecting circuit means and said reference value, and for converting the amplified difference into an output of said apparatus;
a negative feedback circuit means for feeding back a feedback signal which is a portion of said output of said apparatus to a control circuit means; and
said control circuit means for comparing a second electrical output of said detecting circuit means with said feedback signal, and for controlling the electrical power supplied by said power source in accordance with said comparison.

4,390,880

RADIO COMMUNICATION SYSTEM AND TRANSMITTER AND RECEIVER EQUIPMENT THEREFOR

Bengt Henoch, Skärholmen, Sweden, assignor to Stiftelsen Institute for Mikrovagsteknik vid Tekniska Hogskolan i Stockholm, Stockholm, Sweden

Continuation-in-part of Ser. No. 828,031, Aug. 26, 1977, abandoned. This application Sep. 29, 1980, Ser. No. 191,501
Claims priority, application Sweden, Sep. 2, 1976, 7609732
Int. Cl.³ G01S *13/80*
U.S. Cl. 343—6.8 LC **8 Claims**



1. A system located at a first station to provide two-way radio communication with a second station wherein said second station is equipped to receive a radio signal and to transmit an interrogation radio signal and also an information-bearing radio signal having an information signal component and key signal component, said system comprising first means providing for the reception of said information-bearing signal but not said interrogation signal, second means for retrieving said information and key signal components from the information-bearing signal received by said first means, an electrically programmable read/write memory, third means for storing a preselected code, fourth means connected to said memory for enabling information to be written into and read out of said memory, said fourth means including a circuit for comparing the retrieved key signal component with said pre-selected code and for writing the information contained in said information signal component into said memory only if the retrieved key signal component corresponds to said code, fifth means for receiving said interrogation signal, but not said information-bearing signal and sixth means rendered effective upon the reception of said interrogation signal for transmitting the information stored in said memory in the form of a signal that is receivable by said second station.

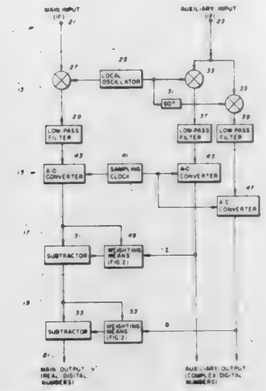
4,390,881

REAL-DATA DIGITAL-REAL-WEIGHT CANCELER

Bernard L. Lewis, Oxon Hill, and Frank F. Kretschmer, Laurel, both of Md., assignors to The United States of America as respresented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 9, 1982, Ser. No. 386,838
Int. Cl.³ H04B *7/00*
U.S. Cl. 343—100 LE **10 Claims**

1. A real-data digital-real-weight canceler comprising:
input means for receiving a main channel signal having a bandwidth B, and for receiving an auxiliary channel signal which is correlated to the main channel signal;
converter means connected to the input means for mixing both the main channel signal, the inphase and quaduature components of the auxiliary channel signal, with a reference signal whose frequency is outside the frequency spectrum of the main channel signal;
digitizing means connected to the converter means for sampling the difference frequencies of the mixed signals at a rate of at least 2B and for converting the samples of the main channel signal to real digital numbers and the samples of the inphase and quadrature components of the auxiliary channel signal respectively to the real and imaginary parts of complex digital numbers;
first adaptive loop means for orthogonalizing the real digital numbers and the real part of the complex digital numbers; and



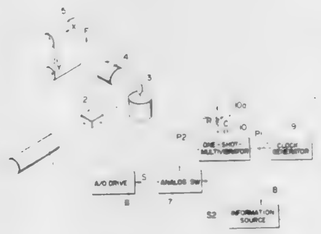
second adaptive loop means for orthogonalizing the real digital numbers and the imaginary part of the complex digital numbers.

4,390,882

DENSITY ADJUSTING METHOD IN IMAGE RECORDING

Yuji Ohara, and Kazuo Horikawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 5, 1981, Ser. No. 318,538
Claims priority, application Japan, Nov. 11, 1980, 55/158516
Int. Cl.³ G01D *15/14*
U.S. Cl. 346—1.1 **7 Claims**



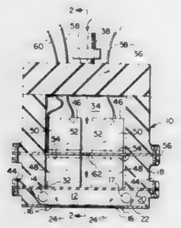
1. In a process of recording an image by scanning a recording material with a light beam modulated by an image signal, a method of adjusting the image density in the image recording which comprises the steps of; controlling the intensity of a light beam at predetermined intervals as a function of a clock pulse for obtaining picture elements of said image, recording a picture element only for a predetermined recording time within each said predetermined interval and not effecting recording of a picture element for the remainder of said predetermined interval, and adjusting the density of the entire recorded image by changing said predetermined recording time.

4,390,883

FLUID JET PRINT HEAD AND METHOD OF TERMINATING OPERATION THEREOF

Leonard G. Stoneburner, Richmond Dale, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Sep. 8, 1981, Ser. No. 300,146
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **24 Claims**



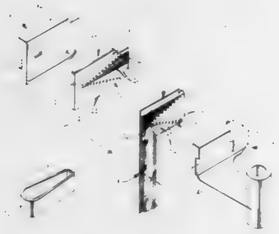
1. A fluid jet print head, comprising:
manifold means defining a fluid receiving reservoir, a fluid inlet communicating with said fluid reservoir, and at least one orifice communicating with said fluid reservoir,
means for supplying fluid through said fluid inlet to said fluid reservoir to produce a jet drop stream emanating from said orifice, and
inflatable means, cooperating with said manifold means, for expansion within said fluid reservoir to displace fluid therefrom and contact said manifold means so as to seal said orifice and terminate fluid flow through said orifice.

4,390,884

PRINTHEAD STYLUS ASSEMBLY

Steven L. Applegate, and Edward R. Lloyd, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,975
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—139 C **14 Claims**



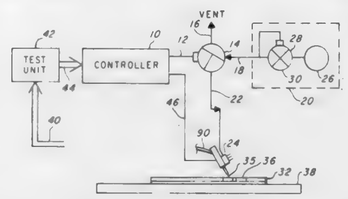
1. A stylus electrode insert for a printhead comprising:
a backing sheet of resilient compressable material;
a support layer extending over at least a portion of said backing sheet;
a set of spaced electrodes formed on said support layer and extending to a printing edge thereof;
a set of contact pads corresponding, respectively, to the electrodes of said set, which contact pads are staggered in a pattern characterized by an essentially uniform offset distances that are less than contact pad dimension in the direction of the offset; and
a set of conductors extending from said electrodes to connect with the respective of said contact pads at end sections thereof projecting as a result of said offset, whereby a compact connection arrangement is achieved.

4,390,885

APPARATUS AND METHOD FOR FLUID TRANSFER

Gautam N. Shah, Garland; Michael R. Brown, Plano; Edward C. Lee, Dallas; Gerald C. Hook, Garland; Robert L. Wand, Richardson; Charles R. Ratliff, Richardson, and Virge W. McClure, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 26, 1981, Ser. No. 277,584
Int. Cl.³ G01D *15/18, 9/00*
U.S. Cl. 346—140 R **10 Claims**



1. A system for selectively applying a predetermined amount of ink to an individual item of a plurality of items forming a sheet thereof, comprising:
(a) a reservoir having an enclosed cavity for said ink with a first and second opening into said cavity;
(b) a pneumatic supply;
(c) a valve connected to said pneumatic supply, ambient air, and said first opening for selectively connecting said supply in response to a first signal to said ink and ambient air to said ink;
(d) an arm for selective movement of a first end thereof from a rest position to an inking position in response to a second signal;
(e) a tube having one end disposed through said second opening into said ink and another end opposite to said one end thereof attached to said arm for movement to a position closely adjacent to said item;
(f) a table having said sheet disposed thereon for positioning each item adjacent said ink position;
(g) a controller connected to said valve and said arm for producing said first signal for a known duration to expel said predetermined amount of ink from said cavity through said tube and initiating said second signal substantially simultaneously with said first signal.

4,390,886

INK JET PRINTING MACHINE

S. Bertil Sultan, Carrollton, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 25, 1981, Ser. No. 305,583
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 PD **6 Claims**



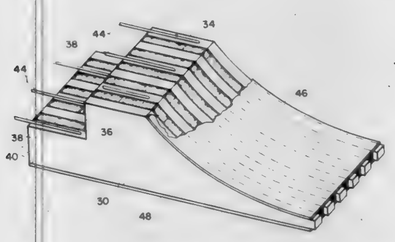
1. An ink jet printing machine comprising:
an array of nozzles;
a plurality of channels for coupling a supply of writing fluid to each nozzle of said array;
a plurality of transducers, each of said transducers positioned closely adjacent an associated channel, so that activation of the transducer that is adjacent its associated channel ejects a droplet of writing fluid from the nozzle coupled to that channel;
one each of the nozzles, channels and transducers being supported in a housing of their own which, when abutted against other similar housings, forms said array of nozzles;
means for activating said transducers in the housings; and
each said housing having recessed portions which define slots which are spaced between adjacent transducers and extending between adjacent channels to isolate each transducer and associated channel from the transducers and their associated channels in the other housings with which said housing abuts.

4,390,887

ELECTROGRAPHIC RECORDING STYLUS

William R. Chynoweth, Littleton, and Roger D. Erickson, Denver, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 29, 1980, Ser. No. 201,769
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—155 **8 Claims**



1. A stylus array for electrographic recording apparatus, said stylus array comprising:
a plurality of stylus elements, each of said stylus elements being formed of thin, flat electrically conductive material;
each of said stylus elements being contoured to have a narrow forward operating tip, a lower edge defining a reference plane, an upper edge tapering from said operating tip away from said reference plane to a first level a first distance from said reference plane and having a stepped rear edge defining a second level a second distance from said reference plane;
said plurality of stylus elements being laminated and having an electrically insulating layer between adjacent stylus elements forming a unitary stylus array;
electrical connection means secured to said first level of alternate ones of said stylus elements in said array and further electrical connection means secured to said second level of the intermediate ones of said stylus elements in said array.

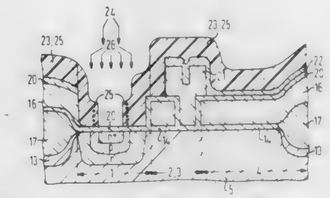
4,390,888

X-Y INFRARED CCD SENSOR AND METHOD FOR MAKING SAME

Lothar Risch, Ottobrunn, and Hermann Mader, Unterhaching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 28, 1980, Ser. No. 182,472
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1979, 2943143
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **5 Claims**

1. An infrared radiation-sensitive device in a p-doped silicon substrate comprising:
an infrared sensor consisting of an n^+pn diode having a three-layer structure expanding in the vertical direction in said substrate;
said layers of said diode in said three-layer structure respectively functioning as an emitter, a base and a collector, said emitter layer having a doping density greater than the doping density of said base layer, and said doping density of said base layer being greater than the doping density of said collector layer,
said base layer being the central layer in said three-layer structure and having a thickness such that for a selected doping of said central layer a region of said central layer is depleted of free charge carriers with no voltage applied thereto;
an n-channel charge coupled device in said substrate having an array of clocked transfer electrodes disposed on an insulating layer above said substrate; and
a clocked metal-oxide-semiconductor storage electrode disposed on said insulating layer between said sensor and one of said transfer electrodes for periodically transferring charge generated in said sensor by incident infrared radiation to said charge coupled device.



4,390,889

PHOTODIODE HAVING AN INGAAS LAYER WITH AN ADJACENT INGAASP P-N JUNCTION

Federico Capasso, Westfield; Albert L. Hutchinson, Piscataway, and Ralph A. Logan, Morristown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 9, 1980, Ser. No. 195,333
Int. Cl.³ H01L *29/90, 29/161, 29/14*
U.S. Cl. 357—30 **18 Claims**



1. A photodiode comprising a semiconductor substrate having a first conductivity type, a first lattice matched semiconductor layer disposed on said substrate and having said first conductivity type;
a lattice matched p-n junction in a second lattice matched semiconductor disposed on said first semiconductor layer characterized in that said second semiconductor has a bandgap larger than the bandgap of said first semiconductor; said p-n junction is formed by a second semiconductor layer having a first conductivity type and a third semiconductor layer having a second conductivity type; said second semiconductor layer having a dopant concentration less than $10^{16}/cm^3$.

4,390,890

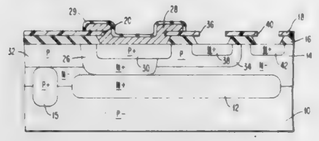
SATURATION-LIMITED BIPOLAR TRANSISTOR DEVICE

David L. Bergeron, Winooski, Vt., and Parsotam T. Patel, Round Rock, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,035

Int. Cl.³ H01L *27/04*

U.S. Cl. 357—44 **4 Claims**



1. A semiconductor structure comprising;

a semiconductor substrate having a first N type region, a first P type region having first and second sections disposed between said first N type region and a surface of said substrate, a second N type region disposed between said first and second P type sections, extending from said surface to said first N type region and having a given maximum dopant concentration, a third N type region disposed between the second section of said first P type region and said first N type region having a maximum dopant concentration lower than that of said second N type region, a fourth N type region formed within the second section of said P type region at said surface and a second P type region having a maximum dopant concentration substantially higher than the maximum dopant concentration in said first P type region and disposed at said surface within said substrate in contact with said second N type region and said second section,

first contact means connected to said second N type region through said first N type region,

second contact means connected to said fourth N type region,

third contact means connected to the first section of said first P type region, and

fourth contact means connected to said second P type region.

4,390,891

SEMICONDUCTOR COMPONENT WITH A PLURALITY OF SEMICONDUCTOR ELEMENTS

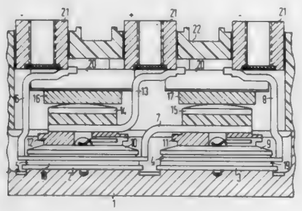
Walter Bahlinger, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 18, 1980, Ser. No. 188,592

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1979, 2942409

Int. Cl.³ H01L *23/42*

U.S. Cl. 357—79 **4 Claims**



1. Semiconductor component having a plurality of semiconductor elements disposed in a case, including a bottom of the case, and case terminals, comprising conductor bars electrically connecting the semiconductor elements to each other and to the case terminals, the semiconductor elements being in thermal and pressure contact with the bottom through at least one of said conductor bars and being electrically insulated from the bottom, pressure contacts disposed between the semiconductor elements and said conductor bars, said conductor bars being formed of first sections of relatively large width associated with the pressure contacts, and second sections of relatively small width connected to said first sections, said first sections of said conductor bars being circular and having diameters being at least substantially equal to the diameter of the semiconductor elements, and said first sections of said conductor bars having a surface resting against the semiconductor elements, said first sections being lapped flat and uniformly roughened at least on said surface resting against the semiconductor elements.

4,390,892

TV SYNC GENERATOR SYSTEM FOR PAL STANDARDS

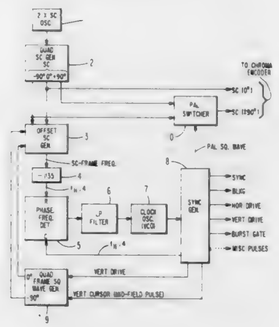
Arthur J. Banks, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 20, 1981, Ser. No. 313,163

Claims priority, application United Kingdom, Jan. 26, 1981, 8102285

Int. Cl.³ H04N *9/44*

U.S. Cl. 358—17 **6 Claims**



1. A PAL television synchronization generator system comprising a quadrature subcarrier generator having an input for receiving a reference frequency signal and an output means for providing a pair of quadrature phase related subcarrier signals; an offset subcarrier generator having an input coupled to said quadrature generator output means and an output means for providing a subcarrier signal that is frequency offset with respect to said quadrature subcarrier signals and having phase steps of ninety degrees of the subcarrier signal occurring twice per field; and a phase locked loop having an error signal and coupled to said offset subcarrier generator output means; whereby said error signal in said phase locked loop is easily filtered.

4,390,893

DIGITAL COLOR MODULATOR

Gilbert E. Russell, Hayward, and Hee Wong, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 15, 1980, Ser. No. 216,469

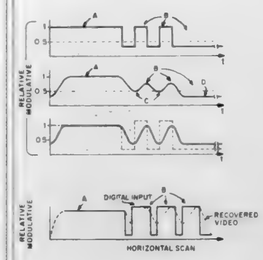
Int. Cl.³ H04N *9/535*; G01G *1/28*

U.S. Cl. 358—27 **2 Claims**

1. A method for precompensating a digital signal represent-

ing a dot-by-dot color video signal for the apparent high luminance of yellow in a NTSC format comprising the steps of:

detecting a yellow dot;



reducing the chrominance level of the yellow dot; and

increasing the luminance level during the period of the yellow dot.

4,390,894

NOISE SUPPRESSION CIRCUIT FOR A VIDEO SIGNAL

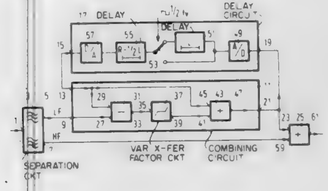
Johannes G. Raven, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 27, 1981, Ser. No. 288,235

Claims priority, application Netherlands, Aug. 20, 1980, 8004697; Feb. 18, 1981, 8100788

Int. Cl.³ H04N *5/21*

U.S. Cl. 358—36 **4 Claims**



1. A noise suppression circuit for a video signal, comprising a delay circuit having a time delay of substantially one field period and a combining circuit in which an output signal of the delay circuit is combined with an input signal, characterized in that the actual time delay of the delay circuit is switchable between one field period minus half a line period for alternate field scanning periods and one field period plus half a line period for the intervening field scanning period.

4,390,895

COLOR IMAGE PICK-UP APPARATUS

Itsuzo Sato, Chigasaki; Kazushige Ooi, Sagamihara; Kikuo Saito, Yokohama; Yasuo Takemura, Tokyo, and Toshihiro Shinohara, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 11, 1981, Ser. No. 301,440

Claims priority, application Japan, Oct. 7, 1980, 55-139369

Int. Cl.³ H04N *9/04*

U.S. Cl. 358—44 **9 Claims**

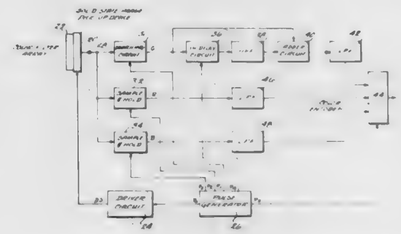
1. A color image pick-up apparatus comprising:

a substantially planar array of solid state light-sensitive elements;

a filter mosaic made up of individual filter elements which are superposed in one-to-one registry on said light-sensitive elements, said mosaic being comprised of a first type of element sensitive to a spectral region corresponding to luminance and associated with the color green, a second type of element sensitive to one spectral region corresponding to chrominance and associated with the color red, and third type of element sensitive to a different spectral region corresponding to chrominance and associated with the color blue, the three types of elements occurring in repeating patterns which are such that over at least a major portion of said array luminance-type elements occur at every other element position along both of two orthogonal directions of said array;

separating means for separating said signals associated with red, green, and blue from the output signal of said solid state image pick-up device;

extracting means for extracting a high frequency component



from said signal corresponding to luminance and associated with green;

means for adding said high frequency component signal corresponding to luminance and associated with green to the signal corresponding to luminance produced from the adjacent horizontal element of said solid state light-sensitive element; and

color encoder means, connected to said separating means and adding means, for producing color video signals from the signals corresponding to said luminance and chrominance.

4,390,896

POWER SUPPLY CIRCUIT

Hubert J. Ploumen, Borne, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

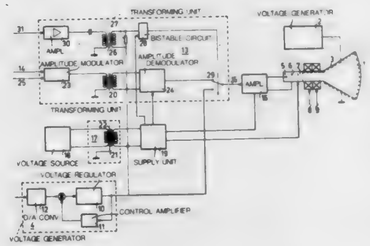
PCT No. PCT/NL80/00021, § 371 Date Feb. 26, 1981, § 102(e) Date Feb. 26, 1981, PCT Pub. No. WO81/00182, PCT Pub. Date Jan. 22, 1981

PCT Filed Jun. 10, 1980, Ser. No. 243,963

Claims priority, application Netherlands, Jun. 27, 1979, 79/04989

Int. Cl.³ H04N *9/27*

U.S. Cl. 358—73 **2 Claims**



1. A power supply circuit for applying a rapidly varying high voltage to a penetron-type cathode ray tube for a color display system, comprising a first voltage generator for supplying a constant high voltage to the anode, a second voltage generator for supplying to the cathode a voltage having a varying magnitude representative of different colors, a first transforming unit for converting video signals referenced to a first reference voltage into video signals reference to the volt-

age having a varying magnitude which serves as a second reference voltage, a second transforming unit for converting a supply voltage referenced to the first reference voltage into a supply voltage reference to the second reference voltage, and a supply unit for deriving from the supply voltage referenced to the second reference voltage supply voltages for the first transforming unit and the cathode ray tube;

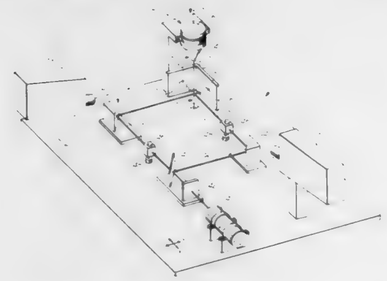
characterized in that the first transforming unit comprises an amplitude modulator, a first inductive coupling, and an amplitude demodulator for respectively modulating at a carrier frequency the video signals referenced to the first reference voltage, converting the modulated video signals into signals referenced to the second reference voltage, and demodulating the converted video signals, said inductive coupling comprising primary and secondary windings and a shield between said windings having the potential of the first reference voltage.

4,390,897

TECHNIQUE FOR AUTOMATICALLY CENTERING A LIGHTGUIDE FIBER IN A COATING

David H. Smithgall, Sr., East Windsor Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Apr. 17, 1981, Ser. No. 255,077
Int. Cl.³ H04M 7/00
U.S. Cl. 358—101 **9 Claims**



1. A method of automatically centering a lightguide fiber in a light transmissive coating material having an index of refraction lower than that of the fiber, comprising the steps of:

(a) directing a light beam at the coated fiber to cause a forward scattered light intensity pattern to impinge on a screen, the pattern having a high intensity central peak and a first and second outboard interference fringes;

(b) monitoring the forward scattered light pattern to determine the period of each of the first and second outboard interference fringes; and

(c) comparing the period of the fringes to determine the eccentricity of the fiber within the coating in a plane normal to the light beam.

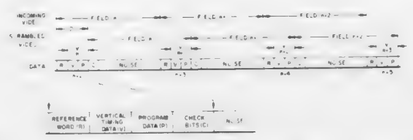
4,390,898

SCRAMBLING AND UNSCRAMBLING VIDEO SIGNALS IN A PAY TV SYSTEM

John A. Bond; Yuan-Lu Li, both of Ottawa, and Leslie J. Crane, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 23, 1981, Ser. No. 246,878
Int. Cl.³ H04N 7/16
U.S. Cl. 358—119 **16 Claims**

1. A method of scrambling a video signal, comprising video signal lines and vertical intervals, to produce a scrambled video signal, said method comprising replacing each vertical interval by dummy video signal lines and separately providing information relating to the timing of the replaced vertical intervals of the scrambled video signal, wherein different numbers of dummy video signal lines are used to replace different



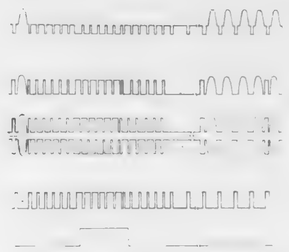
vertical intervals, whereby the field length of the scrambled video signal is varied.

4,390,899

TELEVISION SIGNAL PROCESSING SYSTEM

Hiroshi Osaka, and Akira Honma, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 220,782
Claims priority, application Japan, Dec. 29, 1979, 54-173104
Int. Cl.³ H04N 7/16
U.S. Cl. 358—120 **3 Claims**



1. A television processing system in a wireless pay-television system wherein a television signal is encoded by an encoder, the coded signal is transmitted to subscribers' ends, and the coded signal received at each of the subscribers' ends is decoded into an ordinary television signal by a decoder,

which system is characterized in that said encoder processes and encodes the television signal by inverting a synchronizing signal component thereof with reference to a pedestal level and expanding said component to an extent not exceeding a peak value of a video signal component and by reducing the number of horizontal synchronizing signal components so that each of the horizontal synchronizing signal components may correspond to plural lines; said decoder including:

a horizontal synchronizing signal extracting circuit adapted to be driven by the coded television signal for generating a signal having the same period as a horizontal synchronizing signal;

a vertical synchronizing signal extracting circuit adapted to be driven by the coded television signal for generating a signal having the same period as a vertical synchronizing signal;

a PLL circuit for obtaining a signal having the same frequency and the same phase as the horizontal synchronizing signal component from an output from said horizontal synchronizing signal extracting circuit;

a switching signal generating circuit adapted to be driven by an output from said PLL circuit and the output from said vertical synchronizing signal extracting circuit for producing a switching signal;

a synchronous reproducing circuit adapted to be driven by the output from said vertical synchronizing signal extracting circuit and the output from said PLL circuit; and

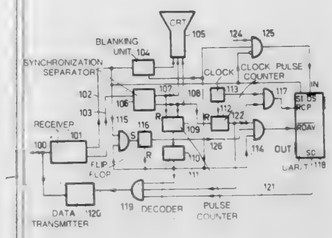
a television signal switching circuit adapted to be driven by the switching signal for selectively outputting the coded television signal or an output from said synchronous reproducing circuit.

4,390,900

BIDIRECTIONAL INFORMATION TRANSMISSION VIA A LONG DISTANCE VIDEO INTERFACE (LDVI) CABLE

Hendrik Van Kampen; Joseph G. Rouland, and Hendrik J. Baakman, all of Beekbergen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 22, 1981, Ser. No. 256,440
Claims priority, application Netherlands, Apr. 25, 1980, 8002412
Int. Cl.³ H04N 7/00
U.S. Cl. 358—147 **4 Claims**



1. A data processing system, comprising a main station (HS) and a peripheral station (PS) which are connected by a video line, the main station comprising a control unit (1) with at least one processing unit (3), a memory (2), and a video control unit (VCU) (4), the peripheral station comprising a video interface (6) to which I/O apparatus (7, 8, 9) is locally connected, an input of the video control unit being connected to the memory in order to form a composite video signal from the display information received for a video picture which is line-wise scanned; the VCU comprising first means for inserting data information from the memory into the composite video signal during at least one line duration during which the video picture has to be blanked, a video line (LDVI) (5), which is connected on the one side to an output of the said video control unit and on the other side to an input of the video interface, the peripheral station also comprising a display apparatus for a video picture which is line-wise scanned, said display apparatus being connected to an output of said video interface, the video interface comprising second means for extracting said inserted data information from the composite video signal in order to make this data information available to a local data processing device which is also suitable for receiving further data information from the I/O apparatus present, characterized in that said second means are also suitable for applying said further data information to said video line and for inserting this further data information into the composite video signal during at least one line duration during a period which the picture has to be blanked, the video control unit comprising third means for extracting said further data information from the composite video signal in order to transfer said further data information to said memory.

4,390,901

METHOD AND APPARATUS FOR CONTROLLING THE OPERATION OF A TELEVISION SIGNAL RECEIVER

Edmond Keiser, Loferweg 6, Gröbenzell, Fed. Rep. of Germany (8031)

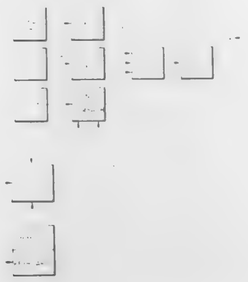
Filed Oct. 16, 1980, Ser. No. 197,672
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950432
Int. Cl.³ H04N 9/491
U.S. Cl. 358—147 **6 Claims**

1. A method for controlling operation of a television signal receiver comprising the steps of:

(a) providing a code signal representing information with respect to the type of program at the transmitter side,

(b) inserting the code signal into the vertical blanking gap of the television signal to be transmitted therewith,

(c) detecting and analyzing the code signal at the receiver side, and



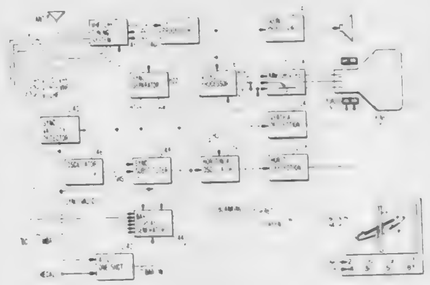
(d) actuating the receiver unit in response to detection of a predetermined code signal in said detecting step, characterized in that said actuating step includes controlling of a video recorder for recording a selected type of program.

4,390,902

TUNING DISPLAY FOR A TELEVISION RECEIVER

Danny Chin, Plainsboro; John G. N. Henderson, Princeton, and Robert J. Maturo, Bricktown, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,617
Int. Cl.³ H04N 5/50
U.S. Cl. 358—192.1 **10 Claims**



1. In a television (TV) receiver which receives TV signals in a plurality of frequency bands and which includes tuning means for developing a tuning signal to select one of said TV signals, processing means for developing video signals responsive to said selected TV signal, deflection means for developing a periodic deflection signal responsive to said selected TV signal, and display means for displaying a picture responsive to said video signals and to said deflection signal,

apparatus comprising:

blanking means responsive to said tuning signal for eliminating the display of a portion of said picture, which means includes

delay means responsive to said tuning signal for developing a trigger signal delayed in time from a predetermined condition of said deflection signal, which time delay is related to said tuning signal and is shorter than the period of said deflection signal,

pulse generation means responsive to said trigger signal for

generating a pulse signal having a time duration substantially shorter than the period of said deflection signal, and

first driver means responsive to said pulse signal and coupled to said processing means for inhibiting said video signals from being applied to said display means during said pulse signal duration, whereby the display of the portion of said picture during said pulse signal duration is eliminated; and

tuning indicator means for causing a tuning indication signal to be displayed on said display means within the blanked portion of said picture during said pulse signal duration, which means includes

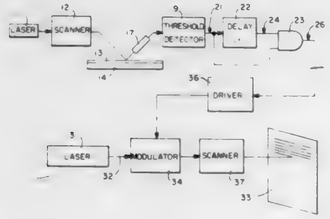
second driver means responsive to said pulse signal for applying said tuning indication signal to said display means unaffected by said video signals during said pulse signal duration.

4,390,903

IMAGING SYSTEM AND METHOD WITH MID-TONE ENHANCEMENT

Keith H. Pomeroy, San Juan Capistrano, Calif., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Apr. 23, 1980, Ser. No. 143,814
Int. Cl.[3] H04N *1/40*
U.S. Cl. 358—282 **10 Claims**



1. In a method for forming an image of an object on an output medium, the steps of: scanning the object to provide a video signal which varies in level in accordance with the object, processing the video signal to provide a generally rectangular signal comprising a series of pulses of predetermined height and a width which varies in accordance with the level of the video signal, decreasing the width of each one of the pulses by a predetermined fixed amount, scanning a writing beam across the output medium and modulating the beam in accordance with the pulses of decreased width to form an image of the object on the output medium.

4,390,904

AUTOMATIC CIRCUIT AND METHOD FOR EDITING COMMERCIAL MESSAGES FROM TELEVISION SIGNALS

Howard R. Johnston, Burnaby, and Michael E. R. V. Koombes, Vancouver, both of Canada, assignors to Shelton Video Editors, Inc., Bellingham, Wash.

Filed Sep. 20, 1979, Ser. No. 77,733
Int. Cl.[3] H04N *5/76*
U.S. Cl. 358—335 **15 Claims**

11. In combination, a video tape recorder for recording a television signal and having a pause control for temporarily interrupting said recording in response to the receipt of a pause control signal, and a commercial message editing circuit for producing said pause control signal, wherein the improvement in said commercial message editing circuit comprises:

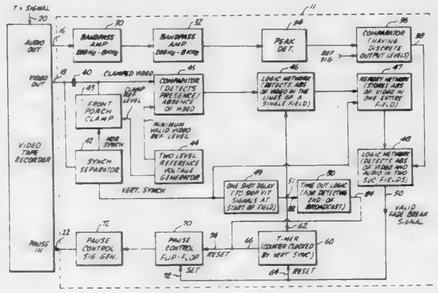
detection circuit means for detecting each of a series of breaks in a telecast that are indicative of one or more commercial interruptions in non-commercial program content and in which each of such breaks is associated with a predetermined amplitude condition of the video and audio components of the television signal that exists for a predetermined minimum time greater than one video field duration, said detection circuit means comprising means for detecting said predetermined amplitude condition of said video component of the television signal existing for said predetermined minimum time, and means for detecting a predetermined audio level of said audio component of the television signal existing for said predetermined minimum time;

electrical timing means having a retriggerable timing mode providing a predetermined time-out interval, said timing means being initially triggered and thereafter retriggered by said detection circuit means in response to the detection of successive breaks in a telecast; and

means responsive to said electrical timing means for producing said pause control signal in response to and for so long as said electrical timing means is in said retriggerable timing mode; and for terminating said pause control signal when said electrical timing means times out at the end of said predetermined time-out interval.

13. A method of editing commercial messages from a video tape recording of a telecast in which such messages interrupt the non-commercial program content of such telecast, the steps comprising:

recording the telecast on a video tape recorder;



electrically detecting each of a series of breaks that occur in said telecast and that are characterized by a predetermined amplitude condition of the video and audio components of the television signal existing for a predetermined minimum time greater than one video field duration, and in which a first of such series of breaks marks the beginning of a first commercial message and succeeding breaks in such series occur at time intervals that do not normally exceed a predetermined time period, and in which a last of such series of breaks indicates the resumption of non-commercial program content of said telecast;

automatically initiating a timing interval of predetermined duration in response to the detection of a first of said series of breaks, and automatically restarting said timing interval each time a succeeding break in said series is detected, selecting said timimg interval of predetermined duration to be equal to or just greater than said predetermined time period;

generating said editing control signal in response to the step of detecting a first of said series of breaks, and continuing to generate said control signal until said timing interval times out without being restarted; and

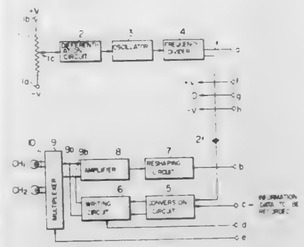
applying said editing control signal to the video tape recorder for temporarily interrupting the recording step for the duration of said control signal.

4,390,905

MAGNETIC CARD RECORDING APPARATUS

Naoki Tokitsu, Chiryu, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 22, 1981, Ser. No. 276,251
Claims priority, application Japan, Jul. 24, 1980, 55-101671
Int. Cl.[3] G11B *5/09, 25/04*
U.S. Cl. 360—2 **9 Claims**



1. An apparatus for magnetically recording information on a magnetic card comprising:

guide means disposed to guide a moving magnetic card;

magnetic head means positioned to contact with said magnetic card moving through said guide means;

electric signal generator means having a movable member moved in response to the movement of said magnetic card for producing an output electric signal having a characteristic corresponding to said movement;

voltage signal generator means receiving said output electric signal for generating an output voltage signal of a magnitude proportional to a speed of the movement of said magnetic card;

oscillator means oscillating at a frequency proportional to the magnitude of said output voltage signal of said voltage signal generator means;

converting means receiving an input information signal to be recorded for converting the same in response to an output signal of said oscillator means; and

writing control means controlling the recording of an output signal of said converting means on said magnetic card;

whereby the recording of information with a predetermined high recording density is enabled irrespective of the moving speed of said magnetic card,

wherein said electric signal generator means includes a varible resistor having a movable member moved by said moving magnetic card, and

wherein said voltage signal generating means includes differentiation circuit means for producing said output voltage signal as a differentiation of said output electric signal from said electric signal generator means.

4,390,906

MAGNETIC RECORDING AND/OR REPRODUCING SYSTEM FOR TELEVISION AND AUDIO SIGNAL

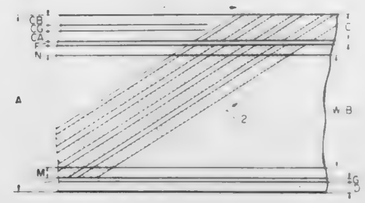
Mitsunobu Furumoto, Yao; Osahiko Yano, Ibaraki; Hiroshi Taniguchi, Hirakata; Kanji Kubo, Katano, and Masamitsu Ohtsu, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Apr. 17, 1981, Ser. No. 255,348
Claims priority, application Japan, Apr. 23, 1980, 55-52852
Int. Cl.[3] H04N *5/78*
U.S. Cl. 360—19.1 **16 Claims**

1. A magnetic television signal recording system characterized by having:

a first recording mode in which a video signal is recorded by rotating magnetic heads in a series of oblique tracks on a magnetic tape, said oblique tracks being inclined at an angle with respect to the center line of said magnetic tape and being discontinuous, and wherein an audio signal is time-compressed and recorded with said rotating heads at predetermined portions of said oblique tracks adjacent to the ends thereof, and

a second recording mode in which the audio signal is recorded by means of a stationary head in a track parallel to the center line of said magnetic tape;



the tracks in which the audio signal is recorded in said first recording mode and the track in which the audio signal is recorded in said second recording mode being wholly or partially coincident with each other; and

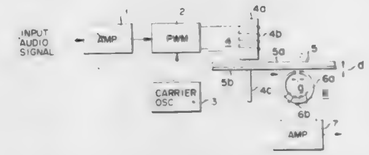
means for selectively causing said television signal recording system to operate in said first recording mode or said second recording mode.

4,390,907

MAGNETIC RECORDING SYSTEM

Tatsuo Fujiwara, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 12, 1980, Ser. No. 177,721
Claims priority, application Japan, Sep. 17, 1979, 54-119092
Int. Cl.[3] G11B *5/00, 5/02, 5/09*
U.S. Cl. 360—32 **11 Claims**



1. A magnetic recording and reproducing system comprising a means for pulse width modulating a carrier wave with a frequency higher than the frequency of an input signal by said input signal, a means for vertical magnetization recording said pulse width modulation of the carrier wave on a magnetic recording medium, and a reproducing means for reproducing the input signal recorded on the magnetic recording medium, means having a high sensitivity characteristic with respect to the input signal component of the modulation recorded in said recording medium and a low sensitivity characteristic with respect to the carrier wave component of the modulation.

4,390,908

PHASE SERVO CIRCUIT

Tadahiko Nakamura, Ayase; Kenji Nakano, Yokohama, and Shigeru Tajima, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

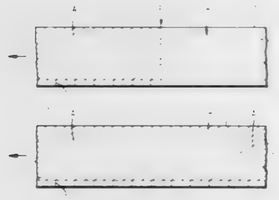
Filed Nov. 12, 1980, Ser. No. 206,055
Claims priority, application Japan, Nov. 12, 1979, 54-146290
Int. Cl.[3] G11B *27/02;* H04N *5/78*
U.S. Cl. 360—70 **15 Claims**

1. A phase servo circuit for controlling at least one rotatable

magnetic head which is used for recording and/or reproducing a video signal, comprising:

pulse generator means for producing a pulse signal synchronous with the rotating phase of said at least one rotatable magnetic head;

control signal generating means for generating a control signal having a pulse width modulated in response to a first phase difference between said pulse signal and a first synchronizing signal of a video signal to be recorded for controlling said rotating phase of said at least one rotatable magnetic head;



phase difference detecting means for detecting a second phase difference between said first synchronizing signal and a second synchronizing signal of a reproduced video signal; and

modulating means for supplying a reference signal to said control signal generating means in response to said phase difference detecting means so that said pulse width of the control signal is further modulated in response to the second phase difference detected by said phase difference detecting means.

4,390,909

VIDEO SIGNAL REPRODUCING APPARATUS WITH TAPE TENSION CONTROL ARRANGEMENT

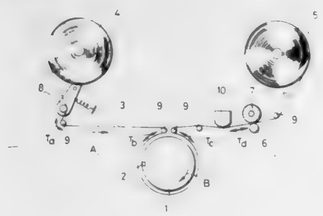
Hitoshi Sakamoto, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 24, 1980, Ser. No. 220,100

Claims priority, application Japan, Dec. 29, 1979, 54-171746

Int. Cl.³ G11B *15/43*

U.S. Cl. 360—71 **19 Claims**



1. Apparatus for reproducing video signals recorded on a magnetic tape, comprising:

transducer means for reproducing the video signals recorded on said magnetic tape;

capstan assembly means for adjusting the amount of tension on said magnetic tape;

tape tension detecting means for detecting the amount of tension on said magnetic tape; and

tape tension control means for controlling said capstan assembly means to maintain the tension on said magnetic tape within a predetermined range in response to the amount of tension detected by said tape tension detecting means and the speed and direction of movement of said magnetic tape.

4,390,910

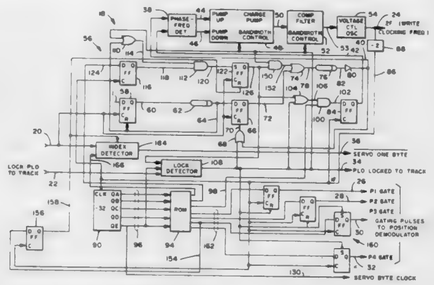
PHASE-LOCK OSCILLATOR

Rosser S. Wilson, Danville, Calif., assignor to Ball Corporation, Muncie, Ind.

Filed Jan. 30, 1981, Ser. No. 229,869

Int. Cl.³ G11B *21/10*

U.S. Cl. 360—77 **25 Claims**



1. A phase-lock oscillator for use in conjunction with a movable servo surface having a servo encoding scheme which includes timing information and position-indicating-information, comprising:

(a) means, responsive to an error signal, for generating a write clocking frequency signal;

(b) means, responsive to first and second input signals, for generating the error signal;

(c) means for acquiring initial synchronization including

(i) means, responsive to the timing information, for generating the first input signal, and

(ii) means, responsive to the write clocking frequency signal, for generating the second input signal;

(d) means for tracking the acquired synchronization including

(i) means, responsive to the timing information occurring within a narrow interval straddling the expected time of arrival of the timing information, and the write clocking frequency signal, for generating the first input signal in phase coherence with the timing information, and

(ii) means, responsive to the write clocking frequency signal and timing information, for generating the second input signal in phase coherence with the write clocking frequency signal, and in frequency coherence with the timing information; and

(e) means for generating gating pulses in response to the write clocking frequency signal to demodulate the position-indicating-information.

4,390,911

SIGNAL SEPARATION IN MAGNETIC RECORDING USING BURIED SERVO

Klaas B. Klaassen, 's Gravenzande, Netherlands, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1981, Ser. No. 259,269
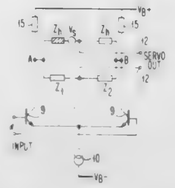
Int. Cl.³ G11B *21/10*

U.S. Cl. 360—77 **7 Claims**

1. In a track following servo system for a magnetic record member in which servo information is recorded underneath data information on the magnetic record member, and the same magnetic transducer is used to simultaneously read the servo information and write the data information, the transducer having a predetermined impedance characteristic, the improvement comprising:

impedance means having an impedance characteristic matching said predetermined impedance characteristic of said transducer,

circuit means connecting said impedance means to the output of said magnetic transducer, and



servo output means connected to said circuit means to produce a servo output signal in which the voltage generated in said transducer during the writing of data information is effectively cancelled due to the presence of said impedance means.

4,390,912

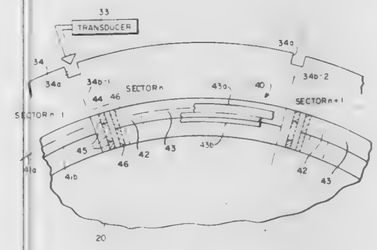
TRANSDUCER POSITIONING SYSTEM AND DATA DISK THEREFOR

Friedrich R. Hertrich, and Slobodan R. Perera, both of Boulder, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Nov. 12, 1980, Ser. No. 206,008

Int. Cl.³ G11B *21/08, 21/10*

U.S. Cl. 360—78 **9 Claims**



1. A magnetic disk for a disk drive unit that is used in a secondary storage facility for a data processing system that includes magnetic disk rotating means, movable transducer means and servo controller means, said magnetic disk being adapted for mounting on the rotating means adjacent to the movable transducer means whereby the movable transducer means generates read signals in response to recordings on the disk surface, said magnetic disk comprising:

A. a plurality of data sectors,

(1) each data sector spanning an angular portion of the disk spaced apart from other data sectors, and

(2) disposed within said data sectors, at least two radially interleaved sets of data tracks centered on corresponding circular track centerlines,

B. a plurality of servo sectors alternating with said data sectors, each servo sector including at least two sets of servo information blocks which are circumferentially spaced from each other and each of which contains first and second assymmetrical, time-displaced complementary zero information signals recorded alternately in radially adjacent servo information blocks, the phase boundaries of the servo information signals in radially adjacent blocks defining the respective sets of said circular track centerlines, and

C. sector indicia means for indicating the angular location of said servo sectors whereby the servo controller means is responsive to the read signals produced by the recordings in said servo sectors for locating said movable transducer means with respect to said data tracks.

4,390,913

TAPE CASSETTE AND CASSETTE RECEIVER COMBINATION FOR TRANSDUCING APPARATUS

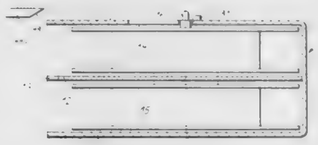
Wolfgang Fell, Seeheim, and Werner Sanders, Darmstadt, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 1, 1980, Ser. No. 211,839

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951109

Int. Cl.³ G11B *15/00*

U.S. Cl. 360—85 **11 Claims**



1. A tape transducing system comprising the combination of

a tape cassette (**10**) including a cassette housing (**11**) open at one end,

a tape reel carrier (**12**) longitudinally slidably mounted in the cassette housing for sliding movement in a plane transverse to the winding axis of the tape reels, for carrying tape reels (**14, 15**) thereon in superposed relation,

and operating engagement means (**16**) coupled to the tape reel carrier (**12**);

with

a tape cassette receiver including

a support structure defining a receiver chamber (**1**) open at one side to receive said cassette housing (**11**) with the tape reel carrier (**12**) and tape reels (**14, 15**) thereon upon sliding movement of the cassette housing (**11**) into said chamber,

a movable lever (**32**) secured to the support structure positioned to be engageable by said cassette housing (**11**);

and coupling means (**41**) for coupling the lever (**32**) to the operating and engagement means (**16**) of the tape reel carrier (**12**) and effecting longitudinal removing sliding movement of the tape reel carrier (**12**) and said reels (**14, 15**) thereon out of the cassette housing (**11**) upon insertion movement of the cassette housing into said chamber.

4,390,914

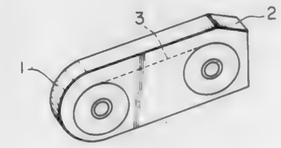
TAPE CASSETTE AND SOUND RECORDING AND REPRODUCING APPARATUS FOR USE THEREFOR

Shinichi Nagai, 17-2, Kitanakafuri 3-chome, Hirakata-shi, Osaka-fu 573, Japan

Filed Jan. 29, 1981, Ser. No. 229,507

Int. Cl.³ G11B *23/04*; G03B *1/04*; G11B *23/46, 15/60*

U.S. Cl. 360—96.5 **5 Claims**



1. A tape cassette comprising a housing having a semi-circular shape on either of the left or right sides thereof with angular

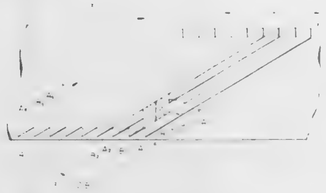
corners on the other of said left or right sides with either the upper or lower corner of said angular corners being obliquely cropped such that said tape cassette is oriented, both from the left to the right and in such a manner such that said cassette cannot be inserted in an upside-down manner.

4,390,915

HELICAL SCAN TYPE VIDEO TAPE RECORDER

Atsuo Matsuyama, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,863
Claims priority, application Japan, Dec. 11, 1979, 54-160505
Int. Cl.³ G11B *5/52, 5/28, 27/02*
U.S. Cl. 360—104 **15 Claims**



1. A helical scan type video tape recording apparatus having an editing function, comprising:

a rotary body;

a rotary video head secured to said rotary body for recording video signals on a video tape in a plurality of skewed video tracks;

recording control means for supplying recording current to said video head in response to a recording command signal;

a rotary erase head secured to said rotary body for erasing video signals recorded in selected video tracks, said rotary erase head being positioned to scan said video tracks ahead of said video head by at least one video tracks interval; and

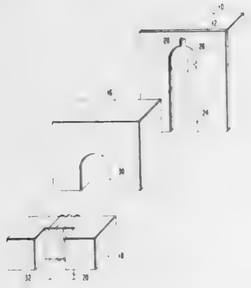
erasing control means for supplying erasing current to said rotary erase head in response to said recording command signal.

4,390,916

SINGLE TRACK MAGNETIC HEAD ASSEMBLY

William W. Chow, and Larry P. Dunn, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1980, Ser. No. 208,766
Int. Cl.³ G11B *5/42, 5/20, 5/221*
U.S. Cl. 360—127 **6 Claims**



1. A magnetic head assembly comprising:

a nonmagnetic substrate having a slot extending upwardly from one edge;

a thin film layer of magnetic material deposited on a flat surface of said substrate generally normal to said edge, said thin film layer having a slot contiguous with the first-mentioned slot and of greater height as measured from said edge, terminating in a transducing gap which is of substantially narrower width than said slots and extends to a transducing face defining the upper end of the assembly and has a height corresponding to a preselected desired throat height;

a nonmagnetic closure joined to said thin film layer and extending downward from said transducing face part way toward said edge, said closure having a slot substantially aligned with and substantially the same width as the upper portion of said first-mentioned slot;

a magnetic bridge structure joined to said thin film layer and extending from the bottom of said closure to said edge, said bridge structure having a U-shaped recess aligned with said slots and extending laterally inward part way toward said thin film layer;

said thin film layer separating said substrate from said closure and bridge structure and making planar contact with said bridge structure and being bisected by the slot and gap therein to form two substantially symmetrical pole pieces; and

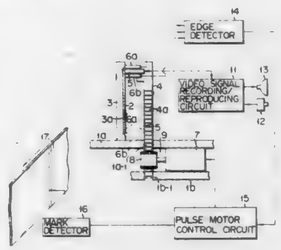
electric coil means disposed within said recess and wound about said bridge structure.

4,390,917

DEVICE FOR DETECTING EDGE OF MAGNETIC TAPE FOR RECORDING SIGNALS

Seizo Watanabe, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1980, Ser. No. 169,657
Claims priority, application Japan, Jul. 24, 1979, 54/93901; Jul. 24, 1979, 54/101952[U]; Jul. 24, 1979, 54/101953[U]
Int. Cl.³ G11B *21/08, 5/12, 15/48, 5/02*
U.S. Cl. 360—128 **10 Claims**



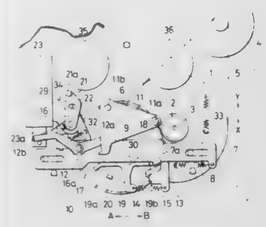
1. A device for detecting the edge of a magnetic tape for recording signals, comprising: first means provided integral with a magnetic head and arranged such that it extends beyond at least one edge of the magnetic tape when the magnetic head is brought to a position corresponding to an end track adjacent to said one edge of the tape, second means stationarily provided on the side of the tape opposite said first means such that it can be faced by said first means when the latter extends beyond said at least one edge, and tape edge detection signal generating means coupled to said first and second means such as to produce a tape edge detection signal when said first means is brought to a position facing said second means.

4,390,918

OPERATING MODE SWITCHING MECHANISM FOR A TAPE RECORDER

Shigeru Matsumoto, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Feb. 20, 1981, Ser. No. 236,632
Claims priority, application Japan, Feb. 22, 1980, 55-20405
Int. Cl.³ G11B *15/10*
U.S. Cl. 360—137 **13 Claims**



1. An operating mode switching mechanism for a tape recorder having a movable carrier member carrying thereon an electromagnetic transuducer and movable between first and second positions, a tape driving mechanism arranged to drive a magnetic tape at a constant speed when said carrier member assumes said second position, a plurality of manually operating keys for effecting various operations, and a motor, comprising;

(a) a single solenoid aranged to be energized by pulses applied thereto in response to the operation of said operating keys;

(b) a rotary wheel;

(c) means for locking said rotary wheel at a predetermined angular position and for unlocking the same in response to the energization of said solenoid;

(d) means for rotating said rotary wheel after unlocked so that said rotary wheel provides a 360 degree revolution from said predetermined angluar position;

(e) means responsive to the rotation of said rotary wheel for causing said carrier member to move from said first position to said second position against a biasing force only when said solenoid is being energized until said rotary wheel is rotated by a first predetermined angle;

(f) means responsive to the rotation of said rotary wheel for locking said carrier member in an intermediate position between said first and second positions only when said solenoid is being energized during the time said carrier member assumes said second position until said rotary wheel is rotated by a second predetermined angle which is smaller than said first predetermined angle;

(g) means responsive to the rotation of said rotary wheel for causing said carrier member to move from said second position to said first position when said solenoid is being energized until said rotary wheel is rotated by a third predetermined angle which is smaller than said second predetermined angle;

(h) means for detecting the rotational angle of said rotary wheel; and

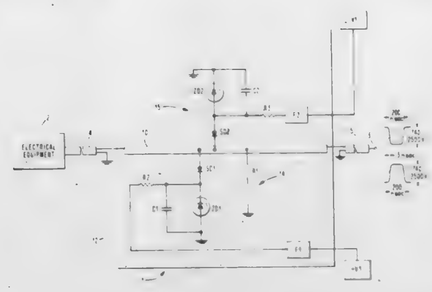
(i) means responsive to the detected angle of said rotary wheel for deenergizing said solenoid when said rotary wheel is rotated by one of said first to third predetermined angles, which has been selected in accordance with said selected operating key.

4,390,919

ELECTRONIC SURGE ARRESTOR

Leon C. Lesinski, Walpole, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Nov. 27, 1981, Ser. No. 325,537
Int. Cl.³ H02H *9/04*
U.S. Cl. 361—56 **14 Claims**



1. A fast-response electronic surge arrestor for protecting electrical equipment from large amplitude, fast rise-time transients of first and second polarities, said surge arrestor comprising:

an input;

an elongated conductor coupled to the input and adapted to be coupled to electrical equipment to be protected from transients, said conductor being in the form of a flat microwave strip transmission line disposed on a ground plane substrate and operative to receive transients of first and second polarities presented to the input and also signals in the UHF band for bi-directional transmission between the electrical equipment and the input;

a source of reference potential;

first and second transient suppression circuit means arranged in parallel and coupled between the conductor and the source of reference potential for dissipating transients of the first and second polarities, respectively;

said first transient suppression circuit means comprising:

a first fast-response Zener diode having an internal capacitance of a predetermined value and further having an anode coupled to the source of reference potential and a cathode;

a first switching diode coupled to the conductor and in series with the first Zener diode and having an internal capacitance of a value less than the value of the internal capacitance of the first Zener diode for reducing the effective capacitance between the conductor and the source of reference potential, said first switching diode having an anode coupled to the conductor and a cathode coupled to the cathode of the first Zener diode;

said first Zener diode being operative in response to a large amplitude, fast rise-time transient of the first polarity present on the conductor to dissipate said transient and said first switching diode cooperating with the first diode to minimize dissipation of signals in the UHF band on the conductor; and

a source of positive dc reverse bias voltage coupled to the juncture of the first Zener diode and the first switching diode and operative to establish a positive dc reverse bias voltage at said juncture having a value for further minimizing dissipation of signals in the UHF band on the conductor due to rectification action of the diodes; and

said second transient suppression circuit means comprising:

a second fast-response Zener diode having an internal capacitance of a predetermined value and further having a cathode coupled to the source of reference potential and an anode;

a second switching diode coupled to the conductor and in

series with the second Zener diode and having an internal capacitance of a value less than the value of the internal capacitance of the second Zener diode for reducing the effective capacitance between the conductor and the source of reference potential, said second switching diode having a cathode coupled to the conductor and an anode coupled to the anode of the second Zener diode;

said second Zener diode being operative in response to a large amplitude, fast rise-time transient of the second polarity present on the conductor to dissipate said transient and said second switching diode cooperating with the second Zener diode to minimize dissipation of signals in the UHF band on the conductor; and

a source of negative dc reverse bias voltage coupled to the juncture of the second Zener diode and the second switching diode and operative to establish a negative dc reverse bias voltage at said juncture having a value for further minimizing dissipation of signals in the UHF band on the conductor due to rectification action of the diodes.

4,390,920

SWITCHING DEVICE FOR THE SHORT-CIRCUIT AND OVERLOAD PROTECTION OF A POWER SWITCHING CIRCUIT

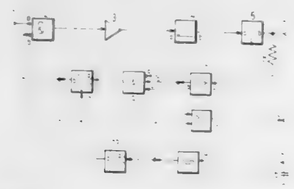
Waldemar Lau, Hockenheim, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Dec. 17, 1981, Ser. No. 331,610

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048249

Int. Cl.³ H02H *3/08*

U.S. Cl. 361—75 **6 Claims**



1. Switching device for the short-circuit and overload protection of a power switching circuit, comprising an input, an output, a first AND gate, a power amplifier, a current limiter circuit and a current sensor connected in series between said input and output, said first AND gate having an inverting input, a threshold value switch connected to said current sensor for producing a current sensor-shaped signal to be fed to said inverting input of said first AND gate, a digital switch-in retarder for delaying the arrival of the current sensor-shaped signal at said inverting input of said first AND gate by producing a given switch-in time lag for blocking said first AND gate until a given switch-off time lag has run out in case of short-circuits and overloads, said digital switch-in retarder including a second AND gate having a first input, a second input, a third inverting input and an output, and a first counter being afterconnected to said second AND gate and having a pulse timing input, a resetting input and an output, said first input of said second AND gate being connected to said threshold value switch, an oscillator connected to said second input of said second AND gate, said third inverting input of said second AND gate being connected to said output of said first counter, said output of said second AND gate being connected to said pulse timing input of said first counter, said output of said first counter being connected to said inverting input of said first AND gate, and a second counter for producing said given switch-off time lag, said second counter having an input connected to said oscillator and an output connected to said resetting input of said first counter.

4,390,921

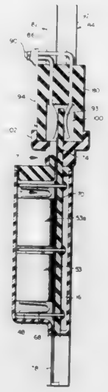
LINE PROTECTOR AND RELATED TERMINATION ARRANGEMENT

Bertram W. Baumbach, Arlington Heights, Ill., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Oct. 13, 1981, Ser. No. 310,473

Int. Cl.³ H02H *3/20;* **H05K** *5/02*

U.S. Cl. 361—119 **11 Claims**



1. A line protector for a communications circuit comprising a housing having opposite ends, a printed circuit board in said housing and having a part thereof projecting from one of said housing ends, first and second line terminals printed on said board and being electrically insulated from each other, a ground terminal printed on said board and being electrically insulated from each of said line terminals, said printed terminals extending from within the housing to said projected part of the board so as to lie outwardly of said housing and adjacent to one another, a first contact in said housing adjacent to said one end and being electrically connected to said first line terminal, a second contact in said housing adjacent to the other end of said housing and being electrically connected to said second terminal, and a third contact in said housing intermediate the first and second contacts and being electrically connected to said ground terminal; and surge voltage arrester means between said first and second contacts and having a first electrode electrically connected to said first contact, a second electrode electrically connected to said second contact, a ground electrode structure electrically connected to said third contact, each of said contacts being secured to the printed circuit board and projecting therefrom, and an insulator movable relative to said board to overlie the portions of said first and second terminals that are on said projected part while leaving exposed the ground terminal portion on said projected part.

4,390,922

VIBRATION SENSOR AND ELECTRICAL POWER SHUT OFF DEVICE

Raymond A. Pelliccia, 221 Garrett Ave., Chula Vista, Calif. 92010

Filed Feb. 4, 1982, Ser. No. 345,920

Int. Cl.³ H01H *35/14*

U.S. Cl. 361—170 **2 Claims**

1. A vibration detection and electrical power shut off device for interrupting electrical power in a power line when vibrations sensed by the device exceeded a predetermined intensity, comprising:

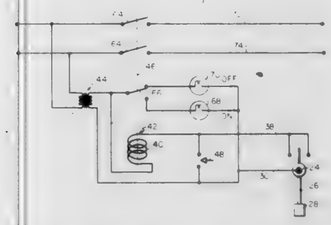
a pendulum switch member suspended for universal movement and including a rod and a weight at the bottom of said rod, said rod including electrical contact means, and said pendulum switch member being electrically connected to solenoid means;

a contact ring of electrically conductive material surrounding said electrical contact means on said rod in close proximity thereto;

solenoid means connected to said contact ring and to switching means in an electrical power line, said solenoid means being mounted with its actuator rod extending substantially vertical and downward;

a latch arm pivotally mounted at one end to support means, the other end of said arm being pivotally mounted to said solenoid actuator rod with a lock notch in said arm between its ends;

a switch limb pivotally mounted at its lower end to pivot



means on said support means and extending upward so that its free end can position in said notch in the power on position, the limb being positioned slightly over center relative to the pivot means so that it has a tendency to fall outward;

power switch means mounted on said support means; and

light indicator switch means mounted on said support means;

whereby said pendulum moves with vibration and the contact means on said rod touches the contact ring to energize the solenoid means causing said solenoid actuator rod to lift said latch arm upward and release said switch limb whereby it falls outward by gravitational force, opening the power switch means and switching the light indicator switch means to the on position.

4,390,923

CONTROL OF STATIC NEUTRALIZATION

Donald G. Saurenman, Whittier, Calif., assignor to Consan Pacific Incorporated, Whittier, Calif.

Continuation-in-part of Ser. No. 259,503, May 1, 1981, which is a continuation-in-part of Ser. No. 241,684, Mar. 9, 1981, which is a continuation-in-part of Ser. No. 124,242, Feb. 25, 1980. This application Aug. 6, 1981, Ser. No. 290,423

The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.

Int. Cl.³ H05F *3/06*

U.S. Cl. 361—222 **42 Claims**

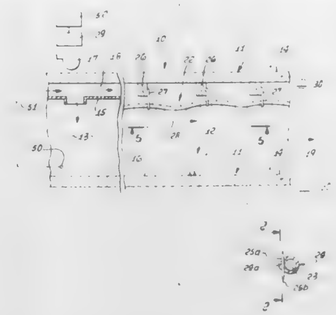
1. The method of reducing static electricity in a work zone, that includes:

(a) providing first electrically conductive cable means with ion dispensing tips spaced therealong, and to which positive voltage is applicable,

(b) providing second electrically conductive cable means with ion dispensing tips spaced therealong, and to which negative voltage is applicable,

(c) said (a) and (b) steps carried out to provide flexible cables having cores to which said voltage is applicable and to have protective sleeves of insulating material on and extending along the cores, the sleeves defining walls, the tips defined by needles having shanks penetrating through the sleeve walls and extending generally sidewardly adjacent core material and make electrical contact therewith so as to receive application of said voltage, the tips openly exposed outwardly of the cables to dispense ions into the atmosphere near the cables,

(d) locating said first and second cable means, at adjusted separations from one another so that static electricity at or



proximate the work is effectively reduced to non-objectionable levels when said positive and negative voltages are applied to the cable means,

(e) and clamping said cable means at said adjusted separations.

4,390,924

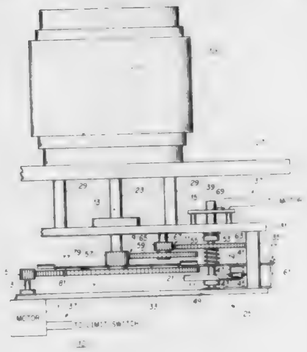
VARIABLE CAPACITOR WITH GEAR TRAIN END STOP

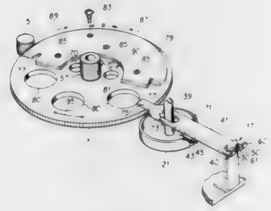
Herman Nebiker, Jr., Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 12, 1981, Ser. No. 262,735

Int. Cl.³ H01G *5/01*

U.S. Cl. 361—279 **13 Claims**





1. In combination, a variable vacuum capacitor with a tuning shaft connected to a motor driven drive train for rotating the tuning shaft varying the capacitance of the variable vacuum

capacitor thereby, the motor driven drive train having at least a first drive means and an energy absorbing means comprising;

a friction plate;

a mounting means for mounting the friction plate to the first drive means and separating the mounted friction plate from first drive means by first predetermined distance;

a wedge member of a thickness that is at least equal to the first predetermined distance; and

activate means for placing the wedge member between the friction plate and the drive means so that, when the first drive means is rotating and the wedge member is placed betweeen the friction plate and the first drive means, the friction between the wedge member and the friction plate acts to retard the rotation of the first drive means.

9. A drive train having at least a first drive means and an energy absorbing means comprising an end stop;

a friction plate;

a mounting means for mounting the friction plate to the first drive means and separating the mounted friction plate from the first drive means by first predetermined distance;

a wedge member of a thickness that is at least equal to the first predetermined distance; and

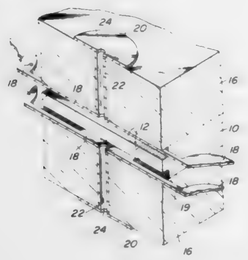
activate means for placing the wedge member between the friction plate in the drive means so that, when the first drive means is rotating and the wedge member is placed between the friction plate and the first drive means, the friction between the wedge member and the friction plate acts to retard the rotation of the first drive means.

4,390,925

MULTIPLE-CAVITY VARIABLE CAPACITANCE PRESSURE TRANSDUCER

Paul J. Freud, Furlong, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Aug. 26, 1981, Ser. No. 296,290
Int. Cl.³ H01G 7/00
U.S. Cl. 361—283 **11 Claims**



7. A pressure transducer of the capacitor type comprising:

a wafer of inorganic electrically insulating material having a plurality of interconnected electrically conductive surfaces deposited over spaced portions of one surface of said wafer to form a capacitor plate thereon;

a semiconductor diaphragm structure having a plurality of spaced recesses, said structure being electrostatically bonded to said wafer so as to form with said wafer a plurality of cavities with the conductive surfaces of said wafer facing said diaphragm structure; and

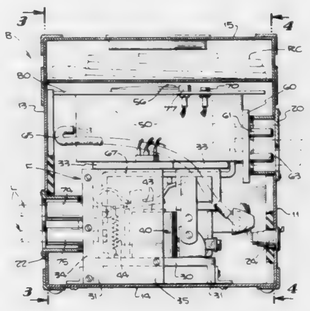
means providing fluid communication between said cavities so that the diaphragm structure acts as an opposing capacitor plate responsive to the application of changes in the fluid pressure in the cavities so as to change the capacitance between the diaphragm structure and the conductive area as an indication of the magnitude of the pressure change.

4,390,926

PORTABLE SWITCHING UNIT

Randall A. Hart, North Hollywood, Calif., assignor to Lexus Liting, Inc., Los Angeles, Calif.

Filed May 1, 1981, Ser. No. 259,460
Int. Cl.³ H02B 1/10
U.S. Cl. 361—334 **2 Claims**



1. A remotely controlled portable heavy duty electrical switch including:

a lower base plate, having two ends and corresponding feet for maintaining the base plate in an elevated position;

a pair of magnetic contactors which rest on top of the lower base plate and are secured to it, each contactor having an input terminal and an output terminal, both input terminals being located at one end of said lower base plate and the output terminals being located at the other end of said lower base plate;

an upper base plate disposed above the magnetic contactors and having associated sidewall means which extend downwardly towards and are secured to the lower base plate;

a circuit breaker box disposed upon and secured to said upper base plate, said circuit breaker box containing two interruptible circuits and also having a mechanical reset switch on its exposed upper surface;

an input terminal board carrying a set of three input terminals and secured to one end of said breaker box above said one end of said lower base plate, the first and third input terminals being connected to respective ones of said interruptible circuits;

a pair of heavy duty electrical conductors each connected to a corresponding interruptible circuit at the other end of said circuit box, said conductors extending around corresponding lateral sides of said circuit box to locations beneath said input terminal board and being there connected to input terminals of corresponding magnetic contactors;

a third heavy duty electrical conductor connected to the second one of said terminals on said input terminal board and extending underneath said circuit breaker box and between said magnetic contactors to the other end of said contactors;

an output terminal board secured to the other end of said lower base plate and carrying at least one set of three output terminals, the first and third output terminals being connected to output ends of respective ones of said magnetic contactors, and the third output terminal being connected to said third heavy duty conductor; and

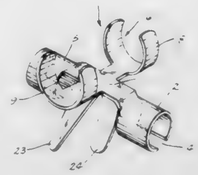
each of said magnetic contactors having a normally open pair of contact plates, and coil means energizable for closing said plates so as to energize a corresponding pair of said output terminals.

4,390,927

BICYCLE FLASHLIGHT HOLDER

Donald E. Von Feldt, R.R. 1, Duncombe, Iowa 50532

Filed May 19, 1982, Ser. No. 379,928
Int. Cl.³ F21V 33/00
U.S. Cl. 362—72 **5 Claims**



1. Apparatus for selectively attaching a flashlight to bicycle handlebars, said bicycle handlebars being of a type having a central generally vertically extending shaft, a generally upwardly and horizontally forwardly extending connection structure connected to the top of the shaft, and a bar connected to the top front portion of said connection structure and extending to each side of said connection structure for providing handles for steering a bicycle, said apparatus comprising:

a base portion adapted to be disposed near the front top portion of the connection structure and overlying the center of said bar;

a first resilient downwardly extending clamp means attached to one side of said base portion for extending around more than half of the circumference of a section of said bar on one side of said connection structure and for resiliently holding one end of said base portion in place;

a second resilient downwardly extending clamp means attached to the other side of said base portion for extending around more than half of the circumference of a second section of said bar on the other side of said connection structure for resiliently holding the other side of said base portion in place;

an upwardly extending flashlight clamping means attached to said base portion for extending around at least half of the circumference of a flashlight for holding a flashlight in place while the bicycle is being ridden; and

rotation prevention means attached to said base portion and extending above and below said connection structure for preventing said base portion and thereby said flashlight from rotating out of a predetermined position, whereby a bicycle can be ridden at night by using said apparatus with a common flashlight as a headlight.

4,390,928

CONTAINER

Hermann Runge, Regensburg-Mintraching, Fed. Rep. of Germany, assignor to Boerung-Gebrauchsartikel GmbH, Regensburg, Fed. Rep. of Germany

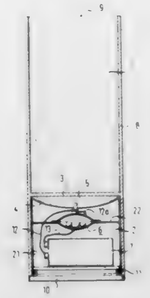
Filed Jul. 31, 1981, Ser. No. 288,781
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3111102
Int. Cl.³ F21V 33/00
U.S. Cl. 362—101 **19 Claims**

1. A container for a liquid comprising:

first and second chambers having a divider means therebetween for separating the chambers,

a light means in the second chamber, the light means including a reflector, a light bulb passing through the reflector, a power source electrically connected to the light bulb, and a switch means electrically connected between the light bulb and power source,

wherein the switch means comprises two electrically conductive shell portions with a space therebetween and insulating means separating the shell portions; and at least



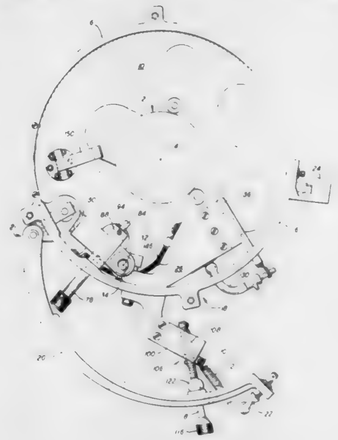
one movable, electrically-conductive contact means in the space.

4,390,929

PRECISE LAMP POSITIONER

Carlo F. La Fiandra, New Canaan, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 11, 1981, Ser. No. 262,561
Int. Cl.³ F21S 5/00
U.S. Cl. 362—216 **14 Claims**



1. An assembly for precisely positioning a lamp comprising, in combination:

a base;

a door pivotally coupled to said base;

a pivot arm pivotally coupled at one end thereof to said base;

a pivot arm adjustment means for adjusting the position of the free end of said pivot arm with respect to said pivot base;

a pivot plate pivotally coupled about a pivot axis to said free end of said pivot arm, said pivot plate including lamp support means; and

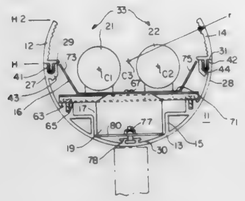
a pivot plate adjustment means coupled between said pivot plate and said door to adjustably position said pivot plate with respect to said pivot arm to which said pivot plate is coupled while said door remains in one position and to pivot said pivot plate about said pivot axis when said door is moved relative to said base.

4,390,930

INDIRECT LIGHTING FIXTURE WITH IMPROVED LIGHT CONTROL

Douglas J. Herst, Ross, and Peter Y. Y. Ngai, Danville, both of Calif., assignors to Herst Lighting Co., Berkeley, Calif.

Filed Apr. 15, 1981, Ser. No. 254,462
Int. Cl.³ F21S *3/0*
U.S. Cl. 362—224 **18 Claims**



1. An indirect lighting fixture having a cross-sectional dimension of approximately 6 inches comprising

a light source,

an opaque housing having opaque side wall portions which extend upwardly from beneath said light source,

side lens means attached to the opaque side wall portions of said housing and extending upwardly therefrom to form a light transmitting extension thereof, said side lens means being formed to receive light from said light source and direct same substantially laterally of said fixture such that the greatest portion of the light travelling through said lens is directed above said horizontal plane and a small portion of the light travelling through said lens is directed below said horizontal plane, said portion of light directed below said horizontal plane of said fixture being great enough to provide a perception of seeing a light source when an observer views the fixture above but near eye level and small enough to avoid excessive brightness,

said light source being vertically elevated within said housing relative to the side walls thereof a sufficient distance to permit a small portion of light emanating from the light source to be directed below said horizontal plane by said side lens means, and

reflector means in said housing beneath said light source for reflecting light therefrom generally upwardly so as to increase the amount of light directed out of said fixture.

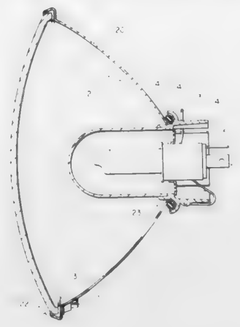
4,390,931

LAMP ASSEMBLY

Joel C. Gorick, 10416 Windsor View Dr., Potomac, Md. 20854, and Riley H. Mayhall, Jr., Burtonsville, Md., assignors to Joel C. Gorick, Potomac, Md.

Filed Jul. 11, 1980, Ser. No. 168,669
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—267 **5 Claims**

1. A lamp assembly comprising a sealed optical system including a lens, reflector and enclosed bulb mounting means so that the volume confined between the lens, reflector and bulb mounting means is hermetically sealed, said bulb mounting means comprising a cup shaped element fitted within a central opening in said reflector, at least the inner end portion of said cup shaped element being made of light transmitting material, the outer end portion of said cup shaped element being open to receive a light bulb and means for retaining a bulb within said



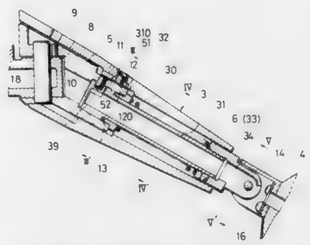
bulb mounting means without invading the hermetically sealed volume.

4,390,932

HANGER ARM MECHANISM IN DENTAL LIGHTING EQUIPMENT

Takahiro Matsui, Uji, and Minoru Watanabe, Shinnaka, all of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Sep. 17, 1981, Ser. No. 302,976
Claims priority, application Japan, Jul. 3, 1981, 56-99744[U]
Int. Cl.³ F21V *21/26*
U.S. Cl. 362—269 **3 Claims**



1. A hanger arm mechanism in dental lighting equipment including a horizontally movable arm, a vertically movable arm, a hanger arm and a lamp head, said mechanism being characterized in that said hanger arm comprises:

a hanger arm body made of a pipe member;

a rotary member, said rotary member being provided in the front portion of said hanger arm body and vertically movable with the lamp head and being inserted into and coupled to said hanger arm body so as to be freely rotatable about the axis shaft line of the hanger arm body; and

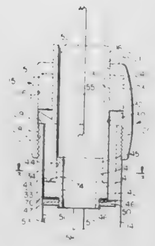
a friction adjusting member, said member being adapted to change the rotating slide contact portion formed in said rotary member and the friction force of said contact portion for affecting rotation of said rotary member under pressure contact friction.

4,390,933

MULTIPLE POSITION LAMP

Jerome Warshawsky, Baldwin, N.Y., assignor to I. W. Industries, Inc., Melville, N.Y.

Filed Dec. 11, 1980, Ser. No. 215,507
Int. Cl.³ F21V *21/22, 21/26;* **F21S** *1/12, 3/12*
U.S. Cl. 362—270 **6 Claims**



1. A multiple position lamp comprising;

a base;

a telescopic body mounted to said base, said body including first and second tubular members, said first member being fixed to said base and being formed with a longitudinal rib on an interior surface thereof, said second tubular member being telescopically received within said first tubular member and being rotatably movable to said first tubular member, a ring being disposed within said first tubular member and being formed of a groove for slidably receiving said rib for vertical movement; and a block member, and means to connect said block member to said second tubular member and means to connect said block member to said ring, said block member being formed with a radial flange for abutting said rib in rotation of said second tubular member in said first tubular member so as to limit rotational movement of said second tubular member relative to said first tubular member to less than 360°; said ring being of annular configuration and having an outer circumference slidably disposed with said first tubular member and an inner circumference slidably disposed with said block member;

a receptacle adapted to receive a lamp; and means for mounting said receptacle to said second tubular member for movement therewith; further comprising a collar, said collar being disposed around said tubular members and being formed with means to releasably interconnect said tubular members; whereby on releasing said tubular members said second member vertically slides with said block member on the rib of said first member and rotates within the block member until said flange abuts said rib; said rib having parallel sides, and said flange being formed with a circumferential outer surface for slidably engaging the inside of said first member and parallel side surfaces for abutting said rib.

4,390,934

SIGNAL LAMP

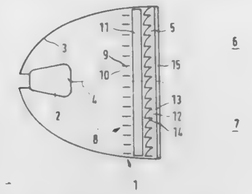
Achim Willing, Doschendorf, Fed. Rep. of Germany, assignor to Auer-Sog Glaswerke GmbH, Bad Gandersheim, Fed. Rep. of Germany

Filed May 26, 1981, Ser. No. 267,079
Claims priority, application Fed. Rep. of Germany, May 27, 1980, 3020097
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—291 **10 Claims**

1. A signal lamp having a light source, light bundling optics arranged to receive light from the light source, a dispersion sheet carrying dispersion elements adapted to receive the light, strips horizontally arranged between the light source and the dispersion shield evenly spaced from one another having their upper sides light absorptive with respect to incident outer stray light characterized in that

the interval "h" between adjacent strips **8** corresponds substantially to the height of a single given dispersion element **12**; and

the horizontal strips **8** are arranged coincidentally with the



transition from one dispersion element **12** to the next adjacent dispersion element **12**; and

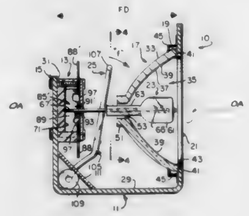
the dispersion elements **12** are constructed such that light "L" which contacts them from above or in the horizontal direction is bent more severely downward when the light contacts the upper zone of the dispersion element than when it contacts the lower zone of the dispersion element.

4,390,935

PROJECTION UNIT WITH SEPARABLE LAMP CAPSULE AND MEANS FOR EJECTING SAME

Emery G. Audesse, Beverly, Mass.; George B. Kendrick, and Pratap P. Chavan, both of Lexington, Ky., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 13, 1981, Ser. No. 253,332
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—306 **19 Claims**



1. A projection unit comprising:

a holder including front and rear upstanding portions, said front upstanding portion defining an opening therein and including a forward reference surface thereon;

a socket positioned on or forming part of said rear upstanding portion of said holder, said socket defining a rear reference surface thereon, said rear reference surface located at a predetermined, fixed distance from said forward reference surface on said front upstanding portion of said holder;

a reflector located within said holder, said reflector having a concave reflecting portion defining a forward aperture and including a front reference surface thereon, and a rear apex portion defining an opening therein, said front reference surface of said reflector mating with said forward reference surface of said holder in a preestablished manner whereby said forward aperture of said reflector is aligned with said opening within said front upstanding portion;

a lamp removably positioned within said socket and oriented in a non-contacting relationship with said reflector, said lamp including an envelope portion located substantially within said concave reflecting portion of said reflector

when said lamp is positioned within said socket, a sealed end portion adjacent said envelope portion and located substantially within said opening within said rear apex portion of said reflector when said lamp is positioned within said socket, and a pair of lead-in wires located within said sealed end portion of said lamp and having portions thereof projecting from said sealed end portion, said lead-in wires electrically connected to said socket, at least one of said wires being positioned within said socket in contact with said rear reference surface of said socket when said lamp is positioned within said socket; and

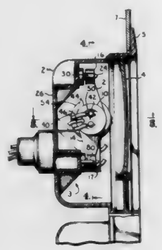
means for ejecting said lamp from said holder whereby said lamp will pass through said forward aperture of said reflector and said opening within said front upstanding portion of said holder, said means for ejecting said lamp comprising an arm member pivotally oriented on said holder, said arm member engaging said lamp to effect said ejection thereof.

4,390,936

RESILIENT SUSPENSION MOUNT

Charles A. Slater, Jr., Overland Park, Kans., and Spencer A. Darby, Kansas City, Mo., assignors to Peterson Manufacturing Co., Grandview, Mo.

Filed Feb. 2, 1981, Ser. No. 230,661
Int. Cl.³ F21V *15/04*
U.S. Cl. 362—390 **18 Claims**



1. A suspension mount for supporting a filament-type bulb on an associated lamp structure having first and second attachment members in such a manner so as to inhibit the transfer of vibrations to said bulb from said lamp structure; said mount comprising:

(a) a bulb receiving cup adapted to receive the bulb therein;

(b) first and second spaced resilient arms extending outwardly from the cup, said respective arms each including apertures at distal ends thereof each of said arm distal ends being engageable with an associated attachment member, said arms urged onto said respective associated attachment members by interferingly receiving said respective attachment member within said respective associated arm aperture, said arms being frictionally and removably retained thereon allowing selective removal of said suspension mount from said lamp structure.

4,390,937

SELF-STARTING TRANSFORMER-COUPLED FET MULTIVIBRATORS

Charles A. Clark, Jr., Chatsworth, Calif., assignor to RCA Corporation, New York, N.Y.

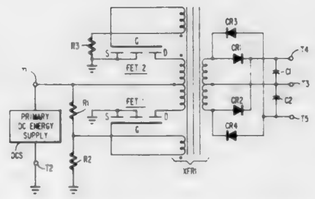
Filed Jun. 17, 1981, Ser. No. 274,624
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—22 **12 Claims**

10. In a transformer-coupled multivibrator in which a first and a second field effect transistor have alternately conducting channels connected to provide push-pull drive to the primary winding of a transformer, which transformer has a core of magnetically saturable material, the improvement providing for self-starting of the multivibrator which comprises:

means for applying between the source and gate electrodes of said first field effect transistor a first source-to-gate potential having a quiescent component and a dynamic component, including

means applying as the dynamic component of said first source-to-gate potential a potential proportionally responsive by a first factor to the potential across said primary winding for completing a first regenerative feedback connection, and including

means applying as the quiescent component of said first source-to-gate potential a direct potential conditioning the channel of said first field effect transistor to be conductive at start-up; and



means for applying between the source and gate electrodes of said second field effect transistor a second source-to-gate potential having a quiescent component and a dynamic component, including

means applying as the dynamic component of said second source-to-gate potential a potential proportionally responsive by a second factor to the potential across said primary winding, which second factor is larger than said first factor, and including

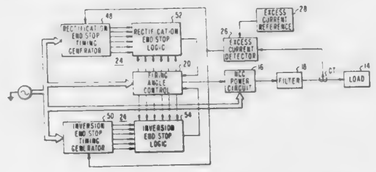
means applying as the quiescent component of said second source-to-gate potential a direct potential conditioning the channel of said second field effect transistor to be relatively non-conductive at start-up.

4,390,938

CYCLOCONVERTER APPARATUS WITH CONTROLLABLE END STOP FIRING PULSE CONTROL MEANS

Eric J. Stacey, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 95,803, Nov. 19, 1979, Pat. No. 4,309,752.
This application Jun. 11, 1981, Ser. No. 272,597
Int. Cl.³ H02M *1/08*
U.S. Cl. 363—54 **3 Claims**



1. End stop firing pulse control circuitry, for power conversion apparatus that has naturally commutated gated power switches to which firing pulses are applied at appropriate times, comprising:

means for generating digital timing waveforms phase locked with applied phase voltage waveforms during normal converter operation and shifted in timing upon application of a control signal;

logic circuit means for processing said digital timing waveforms with digital shift register outputs of an integral type firing pulse control circuit to produce inhibiting or forcing end stop firing pulses to said power switches in response to a shift in said timing waveforms; and

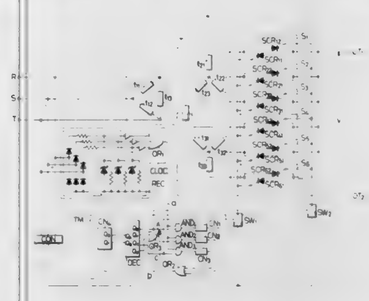
means for sensing a variable system parameter that is independent of the voltage source and producing a control signal applied to said means for generating timing waveforms when said variable system parameter is outside predetermined limits.

4,390,939

ELECTRIC POWER SOURCE DEVICE

Isao Sugawara, Warabi, Japan, assignor to Kabushiki Kaisha Chiyoda, Japan

Filed Jul. 7, 1981, Ser. No. 281,085
Claims priority, application Japan, Oct. 14, 1980, 55/142387
Int. Cl.³ H02M *7/155*
U.S. Cl. 363—129 **4 Claims**



1. An electric power source device in which the secondary windings of a transformer having the primary windings connected to an alternating current source are connected to output ends through reverse parallel circuits of thyristors including at least one thyristor having a first polarity with respect to the output ends and at least one thyristor having a second opposite polarity with respect to the output ends, the device comprising:

(a) a phase controlling circuit connected to said alternating current source and generating a signal driving said thyristors at a predetermined phase of the alternating current source,

(b) a plurality of analogue switches inserted between said phase controlling circuit and the thyristors, at least one of said analog switches being connected to the thyristors having the first polarity and at least one other of said analog switches being connected to the thyristors having the second opposite polarity,

(c) a clock signal generating circuit connected to the alternating current source and generating pulses at a predetermined phase of the alternating current source, and

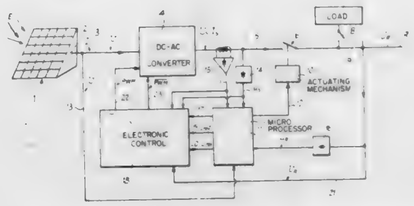
(d) a timer circuit connected to said clock signal generating circuit and selectively opening and closing said plurality of analogue switches at a first time interval wherein only the analog switches enabling the thyristors having the first polarity are closed, a second time interval wherein only the analog switches enabling the thyristors having the second reverse polarity are closed, and a third time interval wherein all of the analog switches are open.

4,390,940

PROCESS AND SYSTEM FOR PRODUCING PHOTOVOLTAIC POWER

Rene Corbefin, Mondonville, and Gabriel Vacelet, Pibrac, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jun. 12, 1981, Ser. No. 273,267
Claims priority, application France, Jun. 26, 1980, 80 14235
Int. Cl.³ H02M *7/537*
U.S. Cl. 363—132 **10 Claims**



6. A system for producing photovoltaic power comprising an assembly of photovoltaic cells and a D.C.-A.C. converter transforming the D.C. power produced by said assembly into A.C. power, wherein said converter is controlled by a control signal which determines the rate of conversion of the D.C. power into A.C. power, and said system further comprises

a modulator delivering at its output a modulated signal acting as control signal for said converter and of which the rate of modulation regulates said rate of conversion,

a processor for determining by iteration the modulation rate which results in maximum power available at the output of said converter and

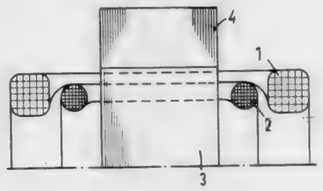
means for imposing said modulation rate on said modulated signal.

4,390,941

STATIC MAGNETIC FREQUENCY MULTIPLIES

Wilhelm Benecke, Bad Neustadt, Fed. Rep. of Germany, and Heinz Rosenberg, Vienna, Austria, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,575
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 2913612
Int. Cl.³ H02M *5/32*
U.S. Cl. 363—174 **10 Claims**



1. A static magnetic frequency multiplier comprising:

laminated iron structures forming a closed magnetic circuit, at least one of the structures comprising slots between teeth;

a polyphase primary winding, distributed in the slots and having a number of pole pairs p_1, the winding being such that a voltage will be induced at its terminals substantially only by the fundamental of a field having the pole pair p_1; and

a secondary winding distributed in slots in one of the structures and magnetically coupled to the primary winding, the secondary winding having a number of pole pairs p_2,

where p_2 is an uneven multiple of p_1, the second winding being such that no voltage can be induced at its terminals by the fundamental of a field having the pole pair number p_1;

the iron structures having at least one magnetic return path at least a portion of which is subjected to pronounced magnetic saturation by the magnetic field produced by the primary winding when it is supplied with the nominal primary voltage at the nominal frequency while the teeth remain unsaturated.

4,390,942

CONTROL SYSTEM

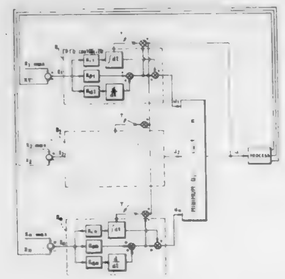
Cornelis de Keizer, Dordrecht, Netherlands, assignor to IHC Holland N.V., Papendrecht, Netherlands

Filed Oct. 16, 1980, Ser. No. 197,536

Claims priority, application Netherlands, Oct. 19, 1979, 7907723

Int. Cl.³ G05B *11/42*; G06G *7/66*

U.S. Cl. 364—162 **1 Claim**



1. Control system for controlling the variables of a process, comprising at least two proportional-integral-differential controllers each comprising a linear signal path, a differentiating signal path and an integrating signal path, all connected to an input junction, the outputs of the linear signal path and the differentiating signal path being added at an intermediate junction and the resulting sum signal is added to the output signal of the integrating signal path at an output junction, each proportional-integral-differential controller supplying an output suitable for controlling one of the process variables such that said process variable is maintained as close as possible to a predetermined maximum value without any of the other process variables exceeding its respective predetermined maximum value, the difference between the value of each of the process variables and the maximum value applying to each of said respective process variables being supplied to a separate proportional-integral-differential controller assigned to the associated process variable, the outputs of all controllers being supplied to a comparator circuit, which comparator circuit delivers the smallest of these signals through feedback signal paths to a difference junction in each controller, the difference being formed as a difference signal between the comparator output and said sum signal at the said intermediate junction in the associated controller, and means whereby said difference signal is periodically sampled and used for periodically resetting the integrating circuit in the integrating signal path in each controller.

4,390,943

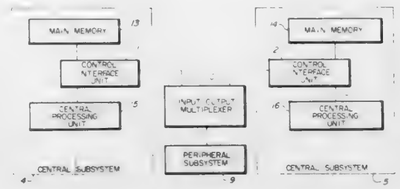
INTERFACE APPARATUS FOR DATA TRANSFER THROUGH AN INPUT/OUTPUT MULTIPLEXER FROM PLURAL CPU SUBSYSTEMS TO PERIPHERAL SUBSYSTEMS

Jerome J. Twibell, and Knute S. Crawford, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Dec. 26, 1979, Ser. No. 106,779

Int. Cl.³ G06F *3/00, 13/00, 15/16*

U.S. Cl. 364—200 **9 Claims**



1. In a data processing system in which a plurality of central processing unit subsystems transmit data signal groups to peripheral subsystems through a single input/output multiplexer, wherein processing unit data signal groups are applied to output terminals of each central processing unit subsystem, a set of said data signal groups from a particular central processing unit subsystem being separated by at least one system timing cycle from each other set of data signal groups from said particular subsystem, apparatus in said input/output multiplexer for receiving data signal groups from said plurality of said central subsystems comprising:

a plurality of transfer registers, one coupled to each of said central processing unit subsystems, each of said transfer registers including an indicating register cell indicating the presence of a data signal group awaiting transfer from said coupled transfer register;

a switch means coupled to said transfer registers;

an input register coupled to said switch means for receiving each data signal group applied to said input/output multiplexer during a current system timing cycle; and

control means adapted to receive signals from all of said indicating register cells, said control means also adapted to receive system timing signals, wherein said control means determines a current transfer register of said transfer registers through which data signal groups can be transferred during said current system timing cycle by means of address signals applied to said switch means, said address signals determined by said register cell contents, wherein a new current transfer register can be determined by said control means during a one of said separations between said sets of data groups.

4,390,944

SYSTEM FOR CONTROLLING ACCESS TO A COMMON BUS IN A COMPUTER SYSTEM

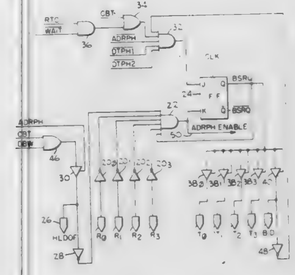
William L. Quackenbush, Palo Alto; Stephen C. Porter, Los Gatos, and William P. Cargile, Half Moon Bay, all of Calif., assignors to BTI Computer Systems, Sunnyvale, Calif.

Filed May 13, 1980, Ser. No. 149,485

Int. Cl.³ G06F *9/46*

U.S. Cl. 364—200 **5 Claims**

1. A system for controlling access to a multiconductor common bus having 2^n connectors for effecting connection of a corresponding number of circuit devices to the bus, wherein n is a positive integer greater than 1, a plurality of circuit devices engaged with respective said connectors so as to establish connection between the devices and the bus, a clock pulse source for producing successive time quantums, and means for coupling said clock pulse source to said devices, the connectors each having a unique code identification and being positionally ranked on the bus from superior to inferior so that a device engaged with a given connector is positionally ranked and identified in correspondence with the given connector, said system comprising n associated pairs of priority terminals in each connector, one terminal of each said pair being a transmit terminal and the other being a receive terminal, said pairs of terminals being grouped into n groups wherein each group contains a number of terminal pairs equal to the number of said connectors and wherein each pair in a connector is a member of only one group, each group being an ith group wherein i has an integer value from 1 to n, the terminal pairs of each group being subsumed in one of 2^{n-i} sets, means interconnecting the transmit terminals of one half the pairs of each set to the receive terminals of the other half of the pairs in the set thereby to establish the devices engaged with the connector having



said one half the pairs as superior devices and the devices engaged with the connectors having other half of the pairs as inferior devices with respect to the superior devices bus signal request applying means carried on each said device for applying a bus request signal to all transmit terminals in the connector with which the device is engaged during a first time quantum so that devices engaged with connectors having receive terminals interconnected with transmit terminals to which the bus request signal is applied are established as inferior devices, each said device having means for sensing the receive terminals in the connector with which the device is engaged during said first time quantum, and means on each device coupled to said sensing means for establishing one of said devices as a source device in response to sensing simultaneous absence on all receive terminals in the connector with which the device is engaged of a bus request signal from a superior device.

4,390,945

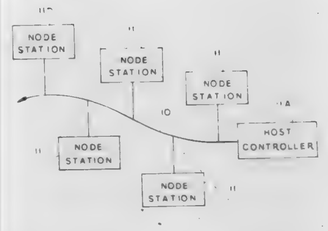
SELF-MANAGING VARIABLE FIELD STORAGE STATION EMPLOYING A CURSOR FOR HANDLING NESTED DATA STRUCTURES

John D. Olsen, Escondido, Calif., and Stephen A. Allen, Wilmington, Del., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 25, 1980, Ser. No. 180,612

Int. Cl.³ G06F *7/22*

U.S. Cl. 364—200 **3 Claims**



1. A variable field storage system for storing variable length data field segments including information structures having substructures nested therein, each such structure starting with a beginning delimiter character and ending with an ending delimiter character, said structures and substructures being capable of being nested to any level as determined by the number of beginning delimiter characters previously not matched by ending delimiter characters during a scanning of the stored field segments, said system comprising:

a serial periodic storage medium;

access means coupled to said storage medium for supplying at least data to said storage medium in a sequence of structures and substructures;

said access means including cursor address means for containing addresses specifying particular locations in the storage medium, said access means serving to supply a new data segment representing a structure or substructure at a location specified by said cursor address means.

4,390,946

LOOKAHEAD ADDRESSING IN A PIPELINE COMPUTER CONTROL STORE WITH SEPARATE MEMORY SEGMENTS FOR SINGLE AND MULTIPLE MICROCODE INSTRUCTION SEQUENCES

Thomas A. Lane, New Brighton, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Oct. 20, 1980, Ser. No. 198,888

Int. Cl.³ G06F *9/22, 9/28, 9/38, 9/42*

U.S. Cl. 364—200 **5 Claims**

1. A banked control store (**10**) for conditional branching in a pipeline computer comprising:

an address multiplexer (**22**) having input means for receiving original instructions in said pipeline computer, input means for receiving branch instructions, and input means for receiving increment instructions together with logic means for controlling the selection of an output of said address multiplexer said address multiplexer being responsive to said inputs to alter said original instructions in response to a predetermined condition,

a control store address register means (**24**) for receiving the output of said address multiplexer,

a single microinstruction memory means (**92**) for receiving the output from said control store address register and for producing a first microinstruction for controlling said pipeline computer as a memory output,

a multiple microinstruction memory means (**96**) for receiving the output from said control store address register and for producing a second microinstruction for controlling said pipeline computer as a memory output,

a memory select means (**94**) for receiving the outputs of said single microinstruction memory and said multiple microinstruction memory and having an output consisting of a selected memory output which is selected from said first microinstruction or said second microinstruction,

an output register means (**34, 36, 48, 62, 74**) for said memory select means,

a single microinstruction flip-flop (**26**) having an output for controlling said memory select means said flip-flop receiving an output from said address multiplexer,

a branch logic (**54**) network for producing a control output which is provided to said address multiplexer to cause said address multiplexer to alter said original instructions,

means for providing branch condition inputs (**56**) to said branch logic network,

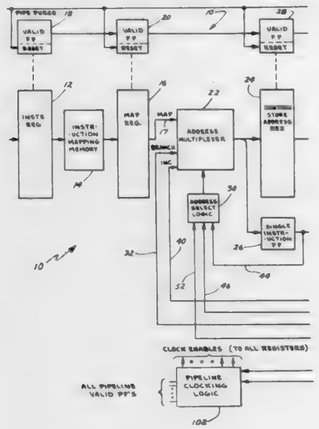
instruction register means for receiving program instructions,

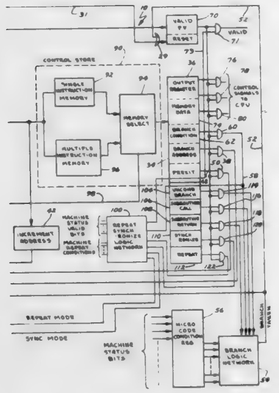
instruction mapping memory means for receiving instructions from said instruction register means,

instruction map register means for receiving the output of said instruction mapping memory means and connected to said input means for receiving original instructions of said address multiplexer, and

first through fourth valid flip-flops associated, respectively, with said instruction register means, said instruction map

register means, said control store address register means and said output register means, and wherein said first through fourth valid flip-flops control purging of said





register means, respectively, and wherein said branch logic network provides a control signal to at least one of said flip-flops in the event a branch is taken to purge the contents of the associated register.

4,390,947

SERIAL LINE COMMUNICATION SYSTEM

Wallace E. DeShon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 15,687, Feb. 27, 1979, Pat. No. 4,270,205. This application Dec. 16, 1980, Ser. No. 217,070

Int. Cl.³ G06F *3/00, 11/14*

U.S. Cl. 364—200 **5 Claims**

1. A serial line communication system comprising:

a central computer means;

a communications line controller computer means having the capability to format a message from said central computer means, add a sync pattern and error detection code to a message from said central computer means and change the baud rate at which a message from said central computer is transmitted;

means for interfacing said central computer means and said communications line controller computer means;

a first peripheral interface adapter;

means for interfacing said communications line controller computer means and said first peripheral interface adapter;

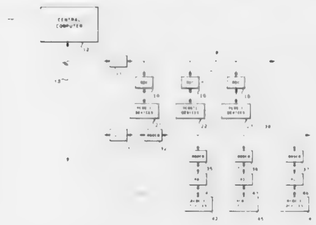
a serial communications line;

means for interfacing said serial communications line and said first peripheral interface adapter;

a second peripheral interface adapter means;

means for interfacing said serial communications line and said second peripheral interface adapter means;

a remote device controller computer means having the capability to determine the baud rate at which a message



is transmitted from said communications line controller computer means on said serial communications line and to detect errors in a message transmitted from said communications line controller computer means on said serial communications line;

means for interfacing said second peripheral interface adapter means and said remote device controller computer means;

at least one remote device; and

means for interfacing said remote device controller computer means to said at least one remote device.

4,390,948

NAVIGATION INSTRUMENT

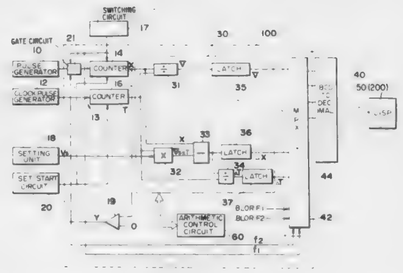
Kazuyuki Mori, Yokohama; Masanori Mizote; Hitoshi Takeda, both of Yokosuka; Kiyoshi Yamaki; Hidetaka Suzuki, both of Yokohama; Hiroyuki Nomura, Fujisawa, and Teruo Kawasaki, Yokohama, all of Japan, assignors to Nissan Motor Co. Ltd., Kanagawa, Japan

Filed Jun. 13, 1980, Ser. No. 159,198

Claims priority, application Japan, Jun. 14, 1979, 54/75458

Int. Cl.³ G06M *3/14;* **G01C** *22/00*

U.S. Cl. 364—424 **9 Claims**



5. A navigation instrument comprising:

distance detecting means for detecting travelling distance of a vehicle from a starting point and producing a signal showing the detected distance of travel of the vehicle, said distance detecting means selectively counting up and down the travelling distance;

manually operable switching means for switching operation

of said distance detecting means between counting up and down, said switch means producing a down count signal while it effects down counting operation;

stopping means for comparing a value counted down by said distance detecting means with a predetermined value and producing a stop signal to be fed to said distance detecting means for stopping counting operation thereof, said stopping means being responsive to said down count signal for sequentially comparing the counted value with said predetermined value while the down count signal is present;

time detecting means for detecting travelling time of the vehicle and producing a signal showing the length of time which it takes the vehicle to travel said detected distance;

setting means for setting a scheduled average speed of the vehicle;

arithmetic means for calculating the average travelling speed of the vehicle, the deviation of travelling distance from a scheduled distance and the deviation of travelling time from a scheduled time and, in response, generating three corresponding data signals;

signal selector means, responsive to a data selector command fed from said arithmetic means, for sequentially outputting one of said three data signals from said arithmetic means;

display means, responsive to each signal applied thereto from said signal selector means, for displaying the content of said each applied signal; and

down count indicator means incorporated in said display means and responsive to said down count signal for indicating that the distance detecting means counts down the travelling distance while the down count signal is present.

4,390,949

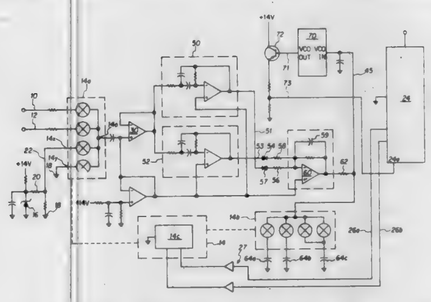
ELECTRONIC SYSTEM AND METHOD FOR SELF-CALIBRATION OF INSTRUMENT LANDING SYSTEMS

Harley W. Beningfield, Satellite Beach, and Donna F. Wilt, West Melbourne, both of Fla., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 26, 1981, Ser. No. 267,222

Int. Cl.³ G06G *7/78*

U.S. Cl. 364—429 **23 Claims**



1. A method for correcting circuit induced errors in a navigation system of the type in which an operational input signal, having discrete spectral components each of known frequency and varying amplitude, is processed through frequency selective circuits in order to produce an output signal representative of deviation from a desired position, said method comprising the steps of:

A. generating a first test signal representative of a known first position, said first test signal including a plurality of spectral components having frequencies generally corresponding to those of the operational input signal and having known amplitudes;

B. processing said first test signal through the frequency selective circuits in order to derive a first position error corresponding to said known first position;

C. changing the amplitude of said spectral components of said first test signal so as to produce a second test signal representative of a second known position;

D. processing said second test signal through the frequency selective circuits in order to derive a second position error corresponding to said known second position;

E. deriving an error corrective function, effective over a range of operational input signals, from said first and second position errors; and

F. modifying the output signal from the frequency selective circuits with said error correction function for all subsequently processed operational input signals so as to correct for position errors introduced by processing.

4,390,950

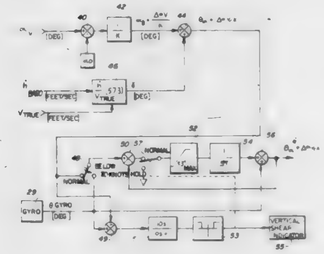
ANGLE OF ATTACK BASED PITCH GENERATOR AND HEAD UP DISPLAY

Hans R. Muller, Redmond, Wash., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 28, 1980, Ser. No. 210,771

Int. Cl.³ G01C *23/00;* **G06G** *7/78*

U.S. Cl. 364—434 **20 Claims**



9. In a head up display for the operation of an aircraft having an angle of attack signal source, an air mass flight path angle signal source and a gyroscopic pitch signal source, a pitch calculating system for stabilizing the display of symbology generated by said head up display, comprising:

first means for combining said angle of attack signal with said flight path angle signal to obtain a first pitch signal having a long term component;

second means coupled to said gyroscopic pitch source and said first combining means for combining said gyroscopic pitch signal and said first pitch signal to develop a calculated pitch signal having a low frequency component dependent upon said long term component and having a high frequency component dependent upon said gyroscopic pitch signal;

a source of aircraft pitch signal referred to said head up display;

correction signal generating means for generating a correction signal from said aircraft pitch signal and said calculated pitch signal; and

third means for combining said correction signal and said calculated pitch signal to obtain a pitch stabilization signal for stabilizing said display.

4,390,951

APPARATUS FOR MONITORING ROAD TRAFFIC TO CONTROL AN ASSOCIATED SIGNALING SYSTEM

Raymond Marcy, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 3, 1980, Ser. No. 183,927

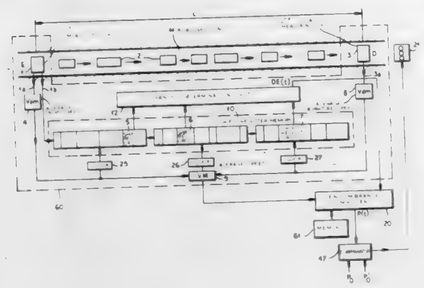
Claims priority, application France, Sep. 7, 1979, 79 22452

Int. Cl.³ G06F *15/48;* **G08G** *1/00*

U.S. Cl. 364—436 **10 Claims**

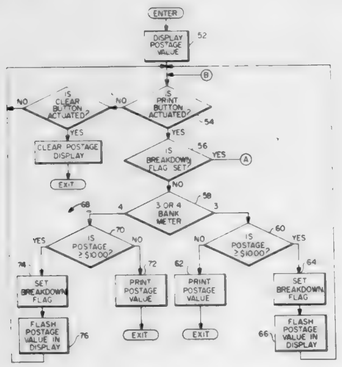
1. An apparatus for monitoring traffic on a road section of predetermined length L, comprising:

speed-sensing means disposed at said road section;
arithmetic means connected to said speed-sensing means for determining a mean overall speed VM of vehicles passing thereover;
pulse-generating means disposed at an entrance end of said road section for emitting trains of measuring pulses representing by their number the lengths Li of vehicles found entering said road section;
processing means connected to said arithmetic means and to said pulse-generating means for obtaining from said pulse



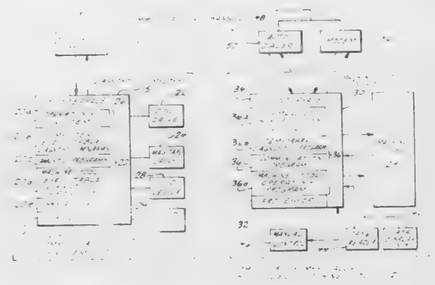
trains and from said mean speed VM a count of said measuring pulses representing the combined length ΣLi of vehicles simultaneously present on said road section and for deriving from said count an occupancy density DE(t)=ΣLi/L; and
computer means connected to said processing means and to said arithmetic means for generating an output signal proportional to an encumbrance P(t)=DE(t)/VM indicative of the degree of loading of said road section by vehicular traffic.

4,390,952
MAILING SYSTEM WITH SEQUENTIAL PRINTING CONTROL
Daniel F. Dlugos, Huntington, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Jun. 27, 1980, Ser. No. 163,596
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—464 **8 Claims**



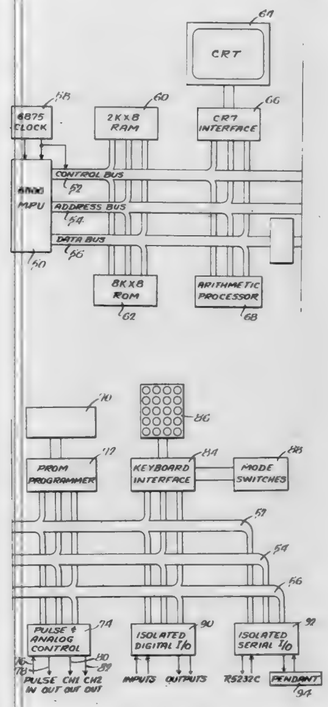
1. A method of enabling a mailing system to print a calculated postage value which exceeds the maximum digit printing capacity of its meter means, the system comprising meter means for imprinting a postage value and means operatively connected to the meter means for setting a postage amount to be printed, and control means for computing a postage value and controlling said meter means and said meter setting means, the method comprising the steps of:
(a) determining the maximum digit printing capacity of the meter means,
(b) comparing a calculated postage value for mailing an article with the determined maximum digit printing capacity,
(c) actuating the meter means to print the calculated value if the calculated value does not exceed the determined value, or
(d) actuating the meter means to sequentially print a succession of postage values, the sum of which corresponds to the calculated postage value if the calculated postage value exceeds the determine maximum value.

4,390,953
UNMANNED DIAGNOSTIC COMMUNICATIONS SYSTEM FOR COMPUTER CONTROLLED MACHINE TOOLS
Richard Johnstone, Brookfield, Wis., assignor to Kearney & Trecker Corporation, Milwaukee, Wis.
Continuation-in-part of Ser. No. 205,102, Nov. 10, 1980, abandoned. This application Jul. 6, 1981, Ser. No. 281,019
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—474 **7 Claims**



1. An unmanned diagnostic communication system for automatically analyzing the operation of a remotely situated computer controlled machine tool and for diagnosing abnormalities disclosed during machine tool operation comprising:
a diagnostic communication computer system including
means for automatically monitoring the operation of a remotely situated computer controlled machine tool following establishment of a communication link between the remotely situated computer controlled machine tool;
means for automatically selecting a predetermined diagnostic program in response to identifying data indicative of the machine tool type and for causing said program to be executed by said machine tool; and
means responsive to the receipt of data from said machine tool produced upon execution of said predetermined diagnostic program for automatically diagnosing any machine tool abnormalities in accordance with the said data produced by said machine tool upon execution of said predetermined diagnostic program;
a communication channel between said diagnostic communication computer system and the remotely situated computer controlled machine tool for carrying instructions from the diagnostic communication computer system to the remotely situated computer controlled machine tool to direct machine tool operation and for carrying data from the remotely situated computer controlled machine tool indicative of the machine tool type and indicative of machine tool operating characteristics to said diagnostic communication computer system; and
means coupled between said communication channel and said diagnostic communication system and coupled between said communication channel and the remotely situated computer controlled machine tool for automatically establishing a communications link across said communication channel between said diagnostic communications system and a remotely situated computer controlled machine tool in response to a command generated by the remotely situated computer controlled machine tool.

4,390,954
OVERRIDE CONTROL APPARATUS AND METHOD FOR PARAMETER ADJUSTMENT OF DIGITALLY BASED WELDING PROCESS PROGRAMMERS
Richard P. Manning, Nashville, Tenn., assignor to Merrick Engineering, Inc., Nashville, Tenn.
Filed Apr. 13, 1981, Ser. No. 253,861
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—477 **10 Claims**



1. Apparatus for controlling a welding control parameter for a welder during a welding process comprising:
storage means for storing program data representative of: a length of a time interval (T) over which welding is to occur,
an initial value of power (X0) to be supplied to a welding head at the beginning of said time interval, and
a target value of power (X1) to be supplied to a welding at the termination of said time interval;
manually actuable input means for changing said target value (X1) during said time interval;
calculating means for repetitively and frequently calculating, during said time interval, the instantaneous value of power X(t) to be supplied to a welding head according to the equation: $X(t)=(X1-X0)t/T+X0$, and for providing an output signal indicative of X(t);
and weld power supply means responsive to the output value X(t) of said calculating means for supplying power to a weld head given by the value X(t), whereby the amount of power supplied to the welding head is calculated repetitively and frequently and whereby the adjustments for the amount of power supplied to the welding head can be made in real time during the welding interval.

4,390,955
POSITION DETECTING SYSTEM
Yoshiaki Arimura, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Continuation-in-part of Ser. No. 231,781, Feb. 5, 1981, abandoned, which is a continuation of Ser. No. 77,781, Sep. 21, 1978, abandoned. This application filed Jun. 2, 1981, Ser. No. 269,756
Claims priority, application Japan, Sep. 28, 1978, 53-118588
Int. Cl.³ G01B *11/00*
U.S. Cl. 364—490 **17 Claims**

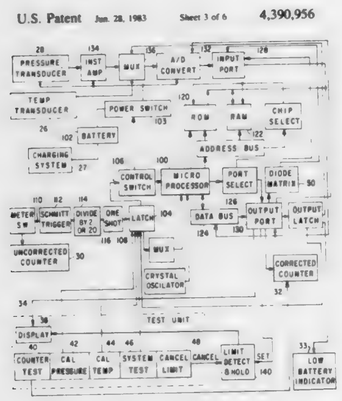


15. A chip position detecting apparatus comprising:
photographic means including an image pick-up means having a number of light sensing elements 2-dimensionally arranged on a given plane for photographing a chip provided on the surface with a bonding pad;
storage means for storing picture element information including a level distribution corresponding to an analog picture element signal produced from said image pick-up means;
level discrimination means for determining a first discrimination level for discriminating edges of said chip and second discrimination level for discriminating the bonding pad in a manner such that the picture element information is classified into proper groups in accordance with levels of the picture element information and a first mean value with a high level that is obtained on the basis of the given number of picture element information in the order from highest level to the lowest level and a second mean value with a low level which is obtained on the basis of a given number of picture element information in the order from the lowest level to the highest level;
edge video information detection means for obtaining edge video information corresponding to the edge of the chip by sequentially reading out information corresponding to the picture element information used to determine said first and second discrimination levels from said storage means in accordance with a pattern of light sensing elements of said image pick-up means and by comparing said information with said first discrimination level;
contour determining means for determining the contour or delineation of said chip from said edge video information;
calculating means for calculating a position of said bonding pad located at a known position relative to said chip contour or chip delineation determined;
bonding pad video information determining means for obtaining pad video information which represents the bonding pad by comparing picture element information corresponding to a position within a given range around the center of the bonding pad position calculated from picture element information and said second discrimination level; and
second calculating means for calculating a position of the bonding pad at a target pattern from said pad video information.

4,390,956
APPARATUS FOR CORRECTING MEASURED GAS FLOW

Malcolm W. Cornforth, Edgewater Park, N.J., and Robert S. Jacobsen, Hatboro, Pa., assignors to The Singer Company, Stamford CT

Filed Mar. 6, 1981, Ser. No. 241,328
Int. Cl.³ G01F *1/00*
U.S. Cl. 364—510 17 Claims



1. Apparatus for recording the volume of gas flowing through a conduit, each measured unit volume being corrected to a base volume at given base conditions of base pressure and base temperature, said apparatus comprising:

means for measuring the volume of the flowing gas and providing a volume pulse in response to measuring said unit volume;

means responsive to said volume pulse for measuring the temperature of the flowing gas and providing a first electrical signal corresponding thereto;

means responsive to said volume pulse for measuring the pressure of the flowing gas and providing a second electrical signal corresponding thereto;

means for storing a first plurality of constant values;

means responsive to said volume pulse for utilizing said stored first plurality of constant values and the measured pressure and temperature values to calculate a second constant value;

means responsive to said volume pulse for utilizing said stored first plurality of constant values and the measured pressure value to calculate a third plurality of constant values;

means for utilizing said calculated third plurality of constant values and the measured pressure and temperature values to calculate a supercompressibility factor;

means for utilizing said supercompressibility factor and said second calculated constant value to calculate a correction factor;

means for deriving a corrected volume from the measured volume and the correction factor;

a counter;

means for converting said corrected volume into an integral number of increments for said counter plus a remainder;

means for storing said remainder; and

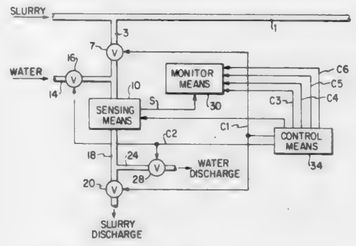
means for incrementing said counter by said integral number of increments;

whereby a measured unit volume is corrected and recorded for every volume pulse.

4,390,957
COAL SLURRY MONITOR MEANS AND METHOD

Leonidas Skarlos, Beaumont, and Roger M. Dille, Port Arthur, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 24, 1980, Ser. No. 190,121
Int. Cl.³ G01N *27/46*
U.S. Cl. 364—550 8 Claims

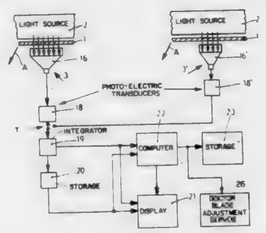


1. A monitor receiving a slurry of coal and water for providing an output signal corresponding to the weight by percent of the coal in the slurry comprising sensing means for sensing the hydrogen content of the water in the slurry and providing a corresponding signal, said sensing means utilizing low resolution nuclear magnetic resonance in its sensing, water signal means for providing a signal corresponding to the hydrogen content of water, output means connected to the sensing means and to the water signal means for providing the output signal corresponding to the coal content of the slurry in accordance with the signals from the sensing means and the water signal means, and source means for providing water through the sensing means in accordance with a first control signal, valve means receiving the slurry for providing the slurry through the sensing means in accordance with a second control signal; and in which the output means includes control signal means for providing the first and second control signals to the source means and to the valve means so that the sensing means will provide its signal corresponding either to the water or to the slurry depending on whether the slurry or the water is passing.

4,390,958
ELECTRO-OPTICAL MEASURING APPARATUS TO COVER ZONES OF DIFFERENT WIDTHS AND OBTAIN COMPUTED UTILIZATION SIGNALS FOR PRINTING APPARATUS

Hans E. Mamberer, Königsbrunn, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Dec. 2, 1980, Ser. No. 212,034
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1979, 2950606
Int. Cl.³ B41F *7/08*
U.S. Cl. 364—550 12 Claims



1. In and for combination with a printing apparatus having means for controlling application of ink to selected surface areas of an ink receiving surface,

apparatus for selective electro-optical measurement of zones of information coverage of selectively different widths on the surface of an elongated areal carrier, and deriving corresponding representative utilization signals, representative of the coverage of respective zones of the carrier by intelligence information which is optically contrasting with respect to said carrier, to permit determination of the degree of inking of regions of the surface area of the ink receiving surface, said apparatus comprising

an electro-optical transducing arrangement (**2, 3, 16**) providing an electrical signal representative of the relative distribution of information coverage in the respective zones of the surface areal carrier,

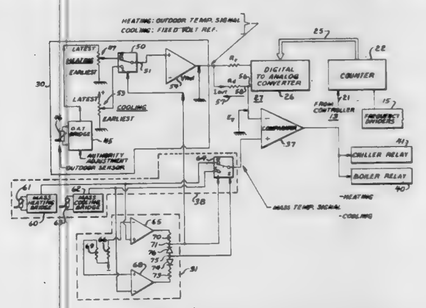
wherein the electro-optical transducing arrangement includes

a plurality of light pick-ups divided into at least two groups, each group of pick-ups located in a row extending transversely to the carrier, and the rows being staggered longitudinally of the carrier, the pick-ups of the respective groups being positioned in the respective rows having individual different lengths to cover, respectively, zones of different widths on said carrier; and transfer switch means (T) selectively connecting the output from a respective group of pick-up to said ink application control means to provide signals to said ink application control means having a characteristic relative to the width of the respective zone of the carrier scanned by the pick-ups in the selected group, as selected and switched by said transfer switch (T).

4,390,959
OPTIMAL START PROGRAMMER

Christian G. Cabou, Highland Park, Ill., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Oct. 20, 1980, Ser. No. 198,667
Int. Cl.³ G06F *15/20;* G05D *23/00*
U.S. Cl. 364—557 18 Claims

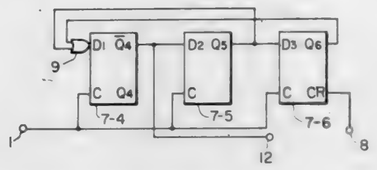


1. An optimal start programmer apparatus operable in a heating mode to generate an output command signal for actuating heating means, and operable in a cooling mode to generate an output command signal for actuating cooling means, said apparatus generating said output command signal during a predetermined search period prior to occupancy of the building, said apparatus comprising: mode selection circuit means responsive to an indoor mass temperature for the building for selecting an indoor mass temperature for the building for selecting the operating mode for the apparatus; timing source means for generating a periodic timing signal of known repetition rate; counter circuit means coupled to said timing source means enabled at the start of a search period to be responsive to said timing signal for generating digital signals representative of lapsed time from the commencement of the search period; converter circuit means coupled to said counter circuit means and responsive to said digital signals for generating an enabling signal representative of said digital signals; reference signal generating means controlled by said mode selection circuit means to provide a reference signal which varies as a function of outside air temperature when the apparatus is operating in the heating mode and to provide a reference signal which is independent of outside air temperature when the apparatus is operating in the cooling mode; means for receiving and summing the reference signal provided by said reference signal generating means and said analog signal to thereby generate a time variable set point signal which is representative of the outside air temperature when the apparatus is operating in the heating mode and which is independent of the outside air temperature when the apparatus is operating in the cooling mode and means for comparing said time variable setpoint signal with an indoor mass temperature signal and responsively generating said output command signal when the mass temperature signal and the time variable set point signal reach a predetermined relation.

4,390,960
FREQUENCY DIVIDER

Kiichi Yamashita, Hachiouji; Junichi Nakagawa, Tokotozawa, and Tadao Kaji, Hinode, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 21, 1980, Ser. No. 209,112
Claims priority, application Japan, Nov. 21, 1979, 54-150083
Int. Cl.³ G06F *7/68;* H03K *21/32*
U.S. Cl. 364—703 18 Claims



1. A frequency divider comprising:

a counter constructed of one or more flip-flop circuits;

a shift register including an input terminal connected with an output terminal of said counter, an output terminal for providing a shift register output signal and a clear terminal responsive to a predetermined external control signal for varying the number of the frequency division of the frequency divider by forcing the shift register output signal at the output terminal to a zero condition; and

a feedback circuit for feeding an input terminal of the flip-flop circuit at the first stage of said counter with an OR signal comprised of the output of said counter and the output signal of said shift register.

4,390,961
DATA PROCESSOR PERFORMING A DECIMAL MULTIPLY OPERATION USING A READ ONLY MEMORY

Virendra S. Negi, Pepperell, and Steven A. Tague, Billerica, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 24, 1980, Ser. No. 220,218
Int. Cl.³ G06F *7/52*
U.S. Cl. 364—756 16 Claims

1. A decimal multiplying system for multiplying a multiplicand by successive decimal digits of a multiplier comprising:

first register means for storing decimal digits of said multiplicand;

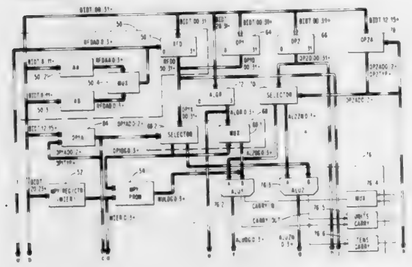
second register means for storing said multiplier decimal digits;

multiply register means coupled to said second register means for storing each of said successive multiplier decimal digits;

said second register means coupled to said first register means for storing said multiplicand decimal digits after said each of said successive multiplier decimal digits are stored in said multiply register means;

read only memory means coupled to said multiply register means and said second register means and responsive to a selected multiplier decimal digit and each of said multiplicand decimal digits for generating a units product decimal digit on a first cycle of operation and a tens product decimal digit on a second cycle of operation for said each multiplicand decimal digit;

third register means for storing partial product decimal digits;



adder means coupled to said read only memory means and said third register means and responsive to each of said units product decimal digit and a corresponding first partial product decimal digit during each of said first cycles of operation for generating a first sum decimal digit for replacing said first corresponding partial product digit in said third register means,

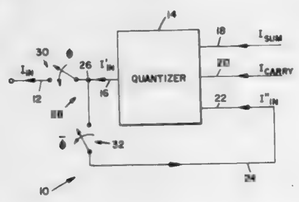
and responsive to each of said tens unit product decimal digit and a second corresponding partial product decimal digit during each of said second cycles of operation for generating a second sum decimal digit for replacing said second corresponding partial product digit in said third register means.

4,390,962

LATCHED MULTIVALUED FULL ADDER

Karl W. Current, Davis, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Mar. 25, 1980, Ser. No. 133,836
Int. Cl.[3] G06F 7/49
U.S. Cl. 364—768 **14 Claims**



1. A synchronous latched multivalued full adder for processing a first input current having any one of a plurality of multivalues, comprising:

(a) quantizer means, having an input, a first sum output, a second carry output and a third output, for generating a sum logical output current at said first sum output and a carry logical output current at said second carry output in response to current being received at said input and for regenerating the received current in response to the sum logical output current and the received current at said input to produce a second regenerated current at said third output;

(b) first means for directing the first input current to said input of said quantizer means;

(c) second feedback means for directing the second regenerated current from said third output to said input of said quantizer means, and

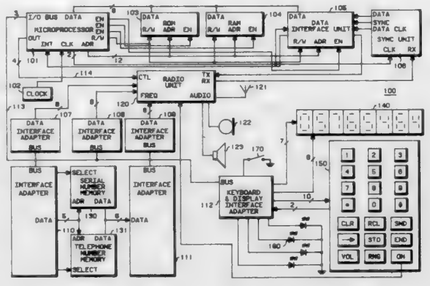
(d) clock controlled switch means for decoupling and coupling said first directing means and for coupling and decoupling said second feedback directing means, respectively, from said input of said quantizer means to direct the second regenerated current or the first input current to said input of said quantizer means as the received current.

4,390,963

INTERFACE ADAPTER ARCHITECTURE

Larry C. Puhl, Sleepy Hollow, and Paul A. Kasley, Melrose Park, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 15, 1980, Ser. No. 187,306
Int. Cl.[3] G06F 3/04, 3/00
U.S. Cl. 364—900 **8 Claims**



1. Interface adapter circuitry coupled to a self-clocking serial data bus having binary first and second forward data signals for receiving a binary data signal including data, address and control portions, transmitted thereon, the first and second forward data signals having a first binary state before and after the data signal, the first forward data signal having a second binary state and the second forward data signal having the first binary state for data signal bits having a binary zero state, the first forward data signal having the first binary state and the second forward data signal having the second binary state for data signal bits having a binary one state, and the first and second forward data signals having the second binary state between successive data signal bits, said interface circuitry comprising:

generating means responsive to the second binary state of the first and second forward data signals for generating a clock signal;

latch means coupled to the first and second forward data signals for storing an output signal having a binary zero state in response to the second binary state of the first forward data signal and the first binary state of the second forward data signal, and storing an output signal having a binary one state in response to the first binary state of the first forward data signal and the second binary state of the second forward data signal;

receiving register means having a plurality of output signals and being responsive to the clock signal for serially receiving the latch means output signal;

output register means having a plurality of output signals and being responsive to a first control signal for receiving the data portion of the data signal in the receiving register means;

data direction register means having a plurality of output

signals and being responsive to a second control signal for receiving the data portion of the data signal in the receiving means;

interface means, having a plurality of interface signals, for applying each of the output register means output signals to a corresponding interface signal in response to a predetermined binary state of a corresponding data direction register means output signal;

detecting means responsive to the adddress portion of the data signal in the receiving register means for detecting the presence of a predetermined address signal and generating a chip select signal when the predetermined address signal is detected; and

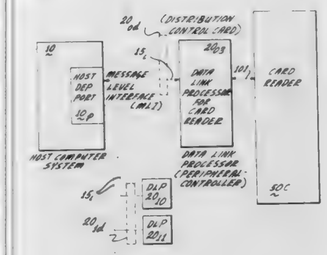
control means responsive to the chip select signal and the control signal portion of the data signal in the receiving register means for generating the first and second control signals.

4,390,964

INPUT/OUTPUT SUBSYSTEM USING CARD READER-PERIPHERAL CONTROLLER

Joseph F. Horky, Huntington Beach, and Ronald J. Dockal, San Clemente, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sep. 9, 1980, Ser. No. 185,422
Int. Cl.[3] G06F 3/00
U.S. Cl. 364—900 **8 Claims**



1. In a data transfer network wherein a main host computer system receives data from a peripheral card reader mechanism via the operations of an I/O subsystem, said I/O subsystem comprising:

(a) a message level interface bus providing parallel data transfer of 16-bit words, said interface bus connecting said host computer to a base module;

(b) a base module which includes:

(b1) a common backplane connecting a card-reader data link processor to a distribution control circuit card and to a maintenance circuit card;

(b2) said distribution control circuit card for controlling the connection and disconnection of said card-reader data link processor to said main host system via said interface bus, said connection and disconnection being regulated by control signals initiated by said main host system or said card-reader data link processor;

(b3) said card-reader data link processor operating to manage the read-out of data from said card reader mechanism, said data link processor having a dedicated connection means to said card reader mechanism, said data link processor including:

(b3a) common control circuit means which include:

(i) PROM control storage means for storing individually addressable micro-code word operators;

(ii) latching register means, connected to said PROM control storage means, to store and convey an accessed word operator to a peripheral dependent circuit means for execution;

(iii) sequencing means, initiated by said main host computer, for selecting address locations to access word operators in said PROM control storage means for executing commands from said main host system;

(iv) RAM buffer memory storage means for temporary holding of data being transferred from said card reader peripheral mechanism to said main host computer, said buffer storage means including:

(iv-a) a first dedicated memory portion for storing raw data received from said card reader mechanism;

(iv-b) a second dedicated memory portion for storing translated data which has been translated and formatted by a translation means in response to said accessed micro-code word operators;

(b3b) said peripheral dependent circuit means including:

(i) logic means for executing micro-code word operators received from said common control circuit means;

(ii) means, responsive to accessed micro-code word operators from said PROM control storage means, to generate control signals for said card reader peripheral mechanism and for said sequencing means;

(iii) data multiplexor means for selecting one of multiple sources of data to be stored in said RAM buffer storage means, said sources including:

(iii-a) translated and formatted data from said translation means;

(iii-b) raw untranslated data from said card reader mechanism via said RAM buffer storage means;

(iii-c) identification coded data to identify the particular type of data link processor used;

(iii-d) result-descriptor data to inform said main host system of the completion/incompletion of each task initiated by said main host system;

(iv) address register means for supplying addresses for the read-out and the write-in of data in said RAM buffer memory storage means, said address register means receiving address data from said PROM control storage means;

(v) data latching means for temporary storing the outputs of said data multiplexor means and for transferring data to:

(v-a) said distribution control circuit card for transfer to said main host system;

(v-b) an OP-decoder for decoding micro-code word operators and effecting execution of data transfers and translation commands;

(v-c) said maintenance circuit card for testing and checking said card reader data link processor;

(v-d) said RAM buffer storage means;

(vi) said translation means being controlled by said OP-decoder for receiving untranslated raw data from said first dedicated portion of said buffer memory storage means and functioning to translate said raw data into a selected code and selected format for transfer to said second dedicated portion of said memory storage means, for subsequent transmittal to said main host system;

(vii) said OP-decoder receiving instructions from said PROM control storage means and functioning to control said translation means and to provide branching instructions to said sequencing means;

(viii) jumper encoding means connected to said data multiplexor means to provide said coded data identifying the specific card reader data link processor;

(ix) result register means, controlled by said micro-code word operators to generate said result descriptor data for transfer to said data multiplexor means;

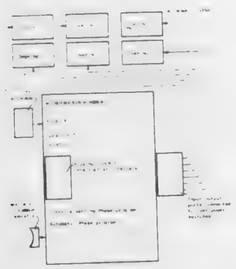
(b4) said maintenance circuit card, which when initiated by said main host system, functions to test and check the operation of said card reader data link processor.

4,390,965

MICRO-WAVE OVENS

Lionel Albert, Westmount, Canada, assignor to Jovanita Inc., Westmount, Canada

Filed Jun. 5, 1980, Ser. No. 156,758
Int. Cl.³ G05B 19/02; H05B 3/02
U.S. Cl. 364—400 14 Claims



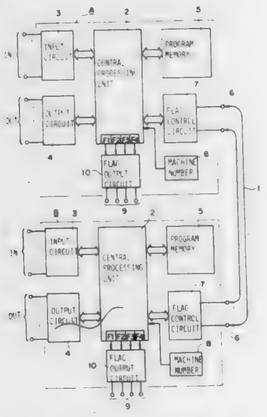
1. An electronic system for processing a plurality of portions of food in a like plurality of microwave ovens, comprising:
means for accepting and storing the time values representing the processing time of respective portions in respective ovens;
clock means;
means for selecting the longest of the said time values;
means for counting down the time remaining in said longest time value, as clocked off by the said clock means;
means for comparing, at predetermined intervals, each said time value, one at a time, with the said time remaining, and for turning on a respective oven when its time value is equal to the time remaining;
means for turning off all the ovens when the said time remaining has reached zero.

4,390,966

SEQUENCE CONTROLLER

Keisuke Kawashima, Nagaokakyo; Yoshitane Saito, Kameoka; Akihiro Yamada, Kyoto, and Satoshi Yano, Nagaokakyo, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jul. 15, 1980, Ser. No. 169,218
Claims priority, application Japan, Jul. 23, 1979, 54-93484
Int. Cl.³ G06F 15/46
U.S. Cl. 364—900 3 Claims



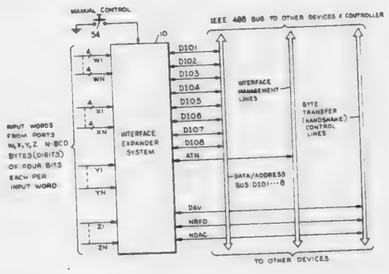
1. A sequence controller for carrying out process steps, which reads sequential user instructions which have been entered into a program memory by a user and then transmits a sequence of output statuses in response to statuses of inputs based on said user instructions, comprising:
a central processing unit;
a program memory operatively connected to said central processing unit;
an input circuit operatively connected to said central processing unit for receiving status inputs;
an output circuit operatively connected to said central processing unit for transmitting status outputs;
one or more flags controlled by predetermined user instructions, said flags being operatively connected to said central processor and utilized to show operational conditions;
a flag control input-output terminal connectable to a similar flag control input-output terminal of another similar sequence controller through a common bus;
flag control sending means operably connecting said central processing unit to said input-out terminal for sending out to said input-output terminal a flag control signal directed to another controller according to a predetermined user instructions; and
flag control signal receiving means, operably connecting said central processing unit to said input-output terminal for sequentially examining signals applied to said input-output terminal, and, when a flag control signal directed to the particular controller itself is applied, controlling a flag of that particular controller in accordance with said control signal.

4,390,967

INTERFACE SYSTEM WHEREIN THE INTERFACE IS ADDRESSED BEFORE DATA TRANSFER FROM A SELECTED DEVICE

Ira Eglowstein, and Peter E. Solender, both of Williamsville, N.Y., assignors to Interface Systems, Inc., Williamsville, N.Y.

Filed Oct. 14, 1980, Ser. No. 196,661
Int. Cl.³ G06F 3/00
U.S. Cl. 364—900 10 Claims



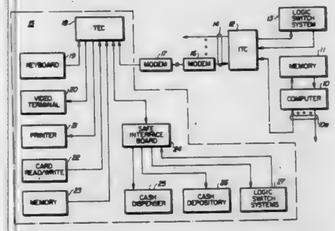
1. A system for expanding the number of ports which can be interconnected to a bus which enables digital messages to be exchanged among devices connected to said ports and other devices and a controller connected to said bus, said expanding system comprising means responsive to address messages transmitted along said bus which identifies said expanding system for selectively enabling listening to messages corresponding to different ones of said ports of said expanding system, and means responsive to said port identifying messages for enabling the sequential transmission of a predetermined number of bytes of data to said bus from the one of said different ports which is selectively enabled.

4,390,968

AUTOMATED BANK TRANSACTION SECURITY SYSTEM

Richard E. Hennessy, Marlboro; Roger Frymire, Cambridge, and Cary Coovert, Natick, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 30, 1980, Ser. No. 221,674
Int. Cl.³ G06F 15/30
U.S. Cl. 364—900 5 Claims



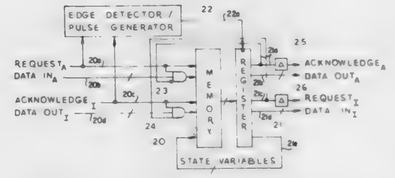
1. An automated banking system, including a central computer system located at a central site, which comprises:
(a) plural data entry means located at a like plurality of remote sites and responsive to customer initiated action for providing binary information signals representative of a personal identification number (PIN), an account number (ACCN), a bank identification number (BIN), a number having a predetermined relationship with said PIN (PIN OFFSET 1), transaction data descriptive of a desired banking transaction, and transaction limits;
(b) plural automated teller machines each located at any one of said remote sites and receiving said PIN, ACCN, BIN, PIN OFFSET 1, transaction data and transaction limits from an adjacent one of said plural data entry means for performing the following operations by way of signal paths wholly contained within said plural automated teller machines:
(1) validating said ACCN against resident binary customer account number codes,
(2) generating a first transaction identification number (TRAN 1), a transaction request (TREQ), a second transaction identification number as a function of TRAN 1 (TRAN 2'), and a number which is a function of PIN, BIN and ACCN (PIN OFFSET 2).
(3) comparing TRAN 2' and a third transaction number which is a function of TRAN 1 (TRAN 2),
(4) if TRAN 2 and TRAN 2' are equivalent, comparing PIN OFFSET 1 and PIN OFFSET 2, and
(5) if PIN OFFSET 1 and PIN OFFSET 2 are equivalent, dispensing transaction items to said customer and receiving transaction items from said customer in accordance with said transaction data; and
(c) plural controller means in electrical communication with said central computer system during on-line operations and in electrical communication with different pluralities of said plural automated teller machines during both on-line and off-line operations, and receiving TREQ, ACCN, TRAN 1 and said transaction limits from said plural automated teller machines for transfer to said central computer system during on-line operations, and for validating TREQ against said transaction limits and resident customer account information during off-line operations, and for generating TRAN 2 for transfer to a requesting one of said plural automated teller machines in the event TREQ is valid.

4,390,969

ASYNCHRONOUS DATA TRANSMISSION SYSTEM WITH STATE VARIABLE MEMORY AND HANDSHAKING PROTOCOL CIRCUITS

Alan B. Hayes, Salt Lake City, Utah, assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 21, 1980, Ser. No. 142,608
Int. Cl.³ G06F 3/00, 13/00
U.S. Cl. 364—900 4 Claims



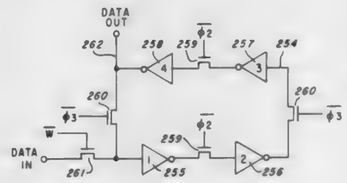
1. An asynchronous binary circuit comprising:
a stored state circuit cell including a memory containing a state table of sets of state variables and an output register coupled to said memory to receive a current set of state variables;
said cell having a source input data line and a source request line coupled to said memory, said output register having output lines;
said output register being coupled to the input of said memory to address said memory along with said input data to fetch the next set of state variables; and
a pulse generator coupled to said source request line and having a timing line coupled to said output register, said pulse generator including delay means to delay the transmission of a timing signal to said output register a fixed period of time after the receipt of a binary signal transition on said source request line.

4,390,970

ROTATING REGISTER UTILIZING FIELD EFFECT TRANSISTORS

Brian Kay, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 15, 1980, Ser. No. 216,237
Int. Cl.³ G11C 19/00
U.S. Cl. 365—73 18 Claims



1. A storage register comprising:
an input means;
an output means;
a plurality of pairs of field effect transistor means and a plurality of pairs of clocking means arranged in a closed circuit loop having a first clocking means of a clocking means pair connected between the first and second field effect transistor means of a field effect transistor means pair, and having a second clocking means of the clocking means pair connected between each pair of field effect transistor means and having said input means connected between said first clocking means and said second field effect transistor means and having said output connected

between said second field effect transistor means and said second clocking means.

4,390,971

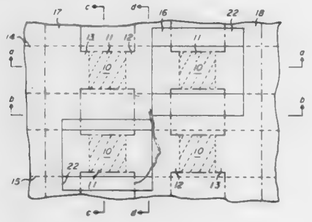
POST-METAL PROGRAMMABLE MOS READ ONLY MEMORY

Chang-Kiang Kuo, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 890,555, Mar. 20, 1978. This application Jul. 20, 1981, Ser. No. 284,847

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—104 **1 Claim**



1. A read only memory array comprising: a plurality of memory cells formed at a face of a silicon body in an array of rows and columns; each memory cell including an insulated gate field effect transistor having a source, a drain and a gate, the gate being insulated from the silicon by a gate insulator; a plurality of other insulated gate field effect transistors formed at said face of the silicon body in an area peripheral to the array; a first thick silicon oxide insulating coating only on said area peripheral to the array covering the other field effect transistors except at contact areas; interconnections in the peripheral areas formed by metal strips on top of said first silicon oxide coating and connected to the other field effect transistors at said contact areas; a second thick insulating coating on said face covering the array and the peripheral areas over the metal strips with apertures formed in the second insulating coating over only selected ones of the memory cells; and impurity implanted regions underlying the gate and gate insulator for said selected ones of the memory cells to alter substantially the threshold of the transistors of such cells compared to the transistors of memory cells other than the selected ones.

4,390,972

REFRESHING SYSTEM FOR DYNAMIC MEMORY

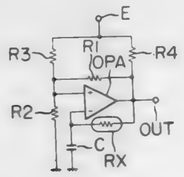
Minoru Machida, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1980, Ser. No. 209,499

Claims priority, application Japan, Nov. 29, 1979, 54/153674

Int. Cl.³ G11C *13/00*

U.S. Cl. 365—222 **2 Claims**



1. An oscillator of a pulse generator for use in a system for refreshing a dynamic memory comprising:

an operational amplifier having a first input terminal and a second input terminal and an output terminal;

a thermistor connected between the first input terminal and the output terminal;

a capacitor connected between the first input terminal and a ground;

a first resistor connected between the second input terminal and the output terminal;

a second resistor connected between the second input terminal and the ground;

a third resistor connected between the second input terminal and a power supply; and

a fourth resistor connected between the output terminal and the power supply.

4,390,973

METHOD FOR DETERMINING THE EXTENT OF SUBSURFACE REACTION INVOLVING ACOUSTIC SIGNALS

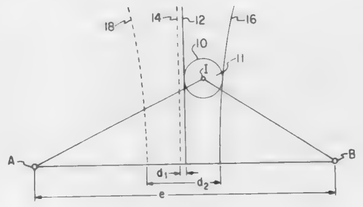
Eike Rietsch, Houston, Tex., assignor to Deutsche Texaco Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 21,512, Mar. 19, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,994

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812490

Int. Cl.³ G01V *1/30*

U.S. Cl. 367—40 **8 Claims**



1. A method for determining the extent of subsurface reactions in an earth formation in which random acoustic signals are radiated from that portion of the earth formation involved in the reaction comprising the steps of recording the acoustic signals by at least two receivers, and cross-correlating the recorded signals in accordance with one of the following equations:

$$C_{AB}(\tau) = \int s_A(t+\tau)s_B(t)dt, \text{ or } C_{AB}(\tau) = \sum_i s_A(ti+\tau)s_B(ti)$$

where C_{AB} is a cross-correlation function of a time shift τ, s_A corresponds to the signal received by one receiver, s_B corresponds to the signal received by the other receiver, and t is time so that at least one surface containing the reaction area is determined from the cross-correlation; and wherein two values of the time shift (τ_1, τ_2) are determined from the cross-correlation for which the values of the cross-correlation beginning with small shifts increases and, for the first time, exceeds the general noise level and, respectively, where the increased values of the cross-correlation finally return to the general noise level, and that from the absolute values of these time shifts (τ_1, τ_2) two vertex distances (d_1, d_2) are determined by multiplication of these shifts by the propagation velocity of acoustic signals, and that from these vertex distances (d_1, d_2) and the locations of the two receivers at focal points, two sheet hyperboloids of revolution are formed and the position of the reaction area is localized in such a way that, depending on the sign of the time shifts (τ_1, τ_2) the reaction area appears either inside or outside of one of the sheets of the hyperboloids of revolution.

4,390,974

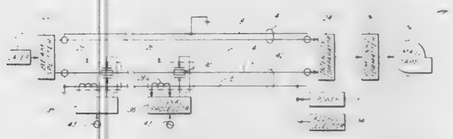
SEISMIC DATA TELEMETRIC SYSTEM

Lee Siems, Houston, Tex., assignor to Litton Resources Systems, Inc., Houston, Tex.

Filed Jan. 8, 1981, Ser. No. 223,519

Int. Cl.³ G01V *1/22*

U.S. Cl. 367—76 **22 Claims**



1. A signal transfer sensor for use with an optical fiber data handling system, comprising:

means for non-invasively coupling said sensor to said optical fiber data handling system at any desired location;

means associated with said sensor for inductively receiving power from said optical fiber data handling system;

means for accepting a signal from the optical fiber data handling system for use by the sensor;

means for sensing a data signal; and

means for applying to the optical fiber data handling system, a signal related to the sensed data signal.

4,390,975

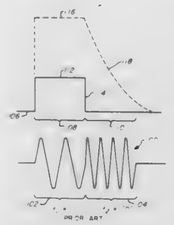
DATA TRANSMISSION IN A DRILL STRING

Elbert N. Shawhan, West Chester, Pa., assignor to NL Sperry-Sun, Inc., Sugarland, Tex.

Continuation-in-part of Ser. No. 891,657, Mar. 20, 1978, abandoned. This application Apr. 10, 1980, Ser. No. 139,046

Int. Cl.³ G01V *1/40*

U.S. Cl. 367—82 **3 Claims**



1. In a borehole drilling apparatus, a method of acoustically transmitting borehole data through a drill string which, due to the drill string configuration, inherently provides a resonant environment for acoustic signals transmitted therethrough, comprising the steps of:

transmitting an acoustical signal in the drill string for a first predetermined interval and ceasing transmission of the signal for a second predetermined interval, wherein the first interval is shorter than the second to ensure sufficient time to permit decay of the acoustic signal transmitted during the first predetermined interval to represent a first binary state;

ceasing transmission of said signal for a third predetermined interval to represent a second binary state; and

combining transmission and cessation of transmission of said signal in binary sequences representative of borehole data.

4,390,976

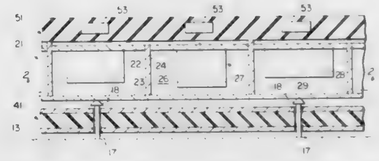
ACOUSTIC SIGNAL CONDITIONING DEVICE

John J. Eynck, Arnold, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 27, 1981, Ser. No. 228,847

Int. Cl.³ H04R *17/00*

U.S. Cl. 367—153 **6 Claims**



1. An acoustic array for application to submerged hull surfaces comprises:

an acoustic baffle for attachment to the hull to reduce the transmission of shipboard noise;

an acoustic conditioning module connected to said acoustic baffle for coherently reflecting the incident acoustic signal so that the reflected acoustic signals reinforce the incident acoustic signals; said conditioning module comprises inner and outer coverplates, a plurality of spacer elements extending between said coverplates to form a plurality of closed chambers therebetween, and tuned damping elements positioned in said chambers and secured to said outer coverplate; said inner coverplate connected to said acoustic baffle; and said damping elements include an elastomeric damping layer secured to said outer coverplate and an inertial mass secured to said elastomeric damping layer and spaced from said inner coverplate; and

an outer layer connected to said outer coverplate and containing a plurality of hydrophone elements embedded therein, said outer layer formed of a material having an impedance which substantially matches the impedance of seawater.

4,390,977

APPARATUS FOR MAINTAINING ROTATIONAL SPEED IN DISK REPRODUCING DEVICE

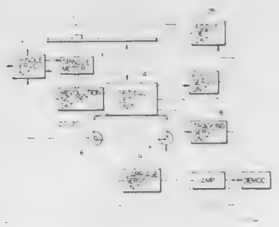
Yoshio Onigata; Tsutomu Fukui, and Kazuo Yajika, all of Tokorozawa, Japan, assignors to Universal Pioneer Corporation, Tokyo, Japan

Filed Nov. 13, 1981, Ser. No. 321,016

Claims priority, application Japan, Nov. 17, 1980, 55-165062[U]

Int. Cl.³ G11B *27/22, 7/00*

U.S. Cl. 369—50 **11 Claims**



1. A disc reading device in which data recorded on a disc is reproduced by a signal reading unit to provide a reproduction signal, a synchronizing signal is extracted from said reproduction signal, said synchronizing signal and a first reference signal are compared in a first comparison means to provide a first error signal and a rotating means rotates said disc at a

speed in accordance with a speed control signal, the improvement comprising:

detecting means for detecting the rotating speed of said disc independently of said synchronizing signals;

generating means for generating a second reference signal corresponding to a desired disc rotating speed;

second comparison means for producing a second error signal in accordance with the difference between said second reference signal and the output of said detecting means; and

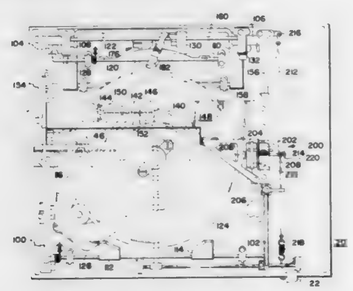
switching means for selectively applying either of said first and second error signals to said rotating means as said speed control signal.

4,390,978

CARRIAGE TRANSLATING MECHANISM FOR VIDEO DISC PLAYER

Jeremy D. Pollack, Kingston, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 30, 1981, Ser. No. 279,183
Int. Cl.³ G11B *21/08, 3/36*
U.S. Cl. 369—220 **5 Claims**



1. In a disc record player for playing back prerecorded information from a rotatable disc record by means of a signal pickup housed in a carriage, when pickup/record relative motion is established; said carriage being subject to translation radially of said disc record during playback; a carriage drive apparatus comprising:

(A) a selectively-energized carriage drive motor mounted to said carriage, and coupled to an output shaft;

(B) a cord having a portion wrapped around said output shaft, and having its ends stretched between a pair of anchor points in said player such that said cord extends along a path substantially parallel to the direction of translation of said carriage; said drive motor causing said carriage translation when energized; and

(C) selectively-operated means for slackening said cord to reduce the tension therein to allow motion of said carriage substantially independent of said motor.

4,390,979

ROTARY RECORDING MEDIUM REPRODUCING APPARATUS HAVING A ROTARY RECORDING MEDIUM CLAMPING DEVICE

Takashi Saito, Ayase, and Toru Kishi, Zama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

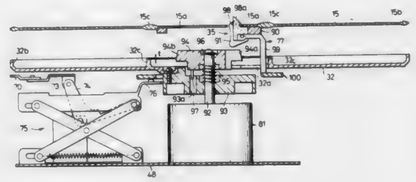
Filed Aug. 13, 1981, Ser. No. 292,396
Claims priority, application Japan, Aug. 14, 1980, 55/114488[U]
Int. Cl.³ G11B *19/00, 11/00, 17/00;* **H04N** *5/76*
U.S. Cl. 369—270 **10 Claims**

1. A rotary recording medium reproducing apparatus comprising a turntable onto which a rotary recording medium is placed, a motor for rotating said turntable, a reproducing transducer for reproducing a recorded signal from the rotary recording medium placed onto said turntable, and a clamping mechanism for clamping said rotary recording medium on said turntable, said clamping device comprising:

a support structure capable of unitarily rotating with said turntable and moving up and down independently of said turntable, for supporting said rotary recording medium in the vicinity of a center hole of the rotary recording medium when said support structure is in a raised position;

an elevating mechanism for moving said support structure upwards and downwards;

clamping fingers provided on said support structure for clamping said rotary recording medium on said turntable in the vicinity of the center hole of said rotary recording medium when said clamping fingers are operated, said clamping fingers being pivotally supported at positions



deviated from their centers of gravity so as to rotate towards a clamping releasing direction; and

a receiving and stopping member for rotating said clamping fingers towards a clamping direction opposite to the clamping releasing direction by receiving and stopping parts of said clamping fingers when said support structure is lowered,

said support structure being separated from both said elevating mechanism and said receiving and stopping member when said support structure is lowered,

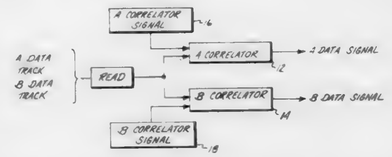
said clamping fingers being applied with a rotational force in the clamping direction due to the weight of said support structure, to press the part of the rotary recording medium in the vicinity of the center hole thereof against said turntable.

4,390,980

DEMULTIPLEXING PLURAL DATA STREAMS

Charles A. Brown, Chelmsford, Mass., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Jul. 27, 1981, Ser. No. 287,450
Int. Cl.³ H04J *11/00, 15/00*
U.S. Cl. 370—19 **18 Claims**



1. A method of demultiplexing a composite signal containing a plurality of data streams, each stream being coded in a polarized code and phase shifted from the other streams by a predetermined phase shift, said method comprising:

providing a correlator signal for each of said plurality of data streams, each of said correlator signals being mutually orthogonal with the other correlator signals and phase shifted from the other correlator signals by the predetermined phase shift of its corresponding data stream; and

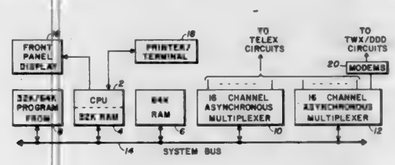
separately multiplying said composite signal by each of said correlator signals to derive a plurality of resultant signals, each representing the data bits in a respective one of said streams.

4,390,981

MICROPROCESSOR CONTROLLED MESSAGE HANDLING SYSTEM

Leonard J. Wood, San Mateo; Balakrishna Parasuraman; Edwin H. Williams, both of Sunnyvale; Mark G. Alexander, Mountain View, and Richard C. Montgomery, Jr., Santa Clara, all of Calif., assignors to Syscom, Inc., Sunnyvale, Calif.

Filed Dec. 29, 1980, Ser. No. 220,375
Int. Cl.³ H04J *3/04*
U.S. Cl. 370—56 **22 Claims**



1. A microprocessor controlled message handling system for use in a dial-up environment and for transmitting messages to and receiving messages from existing telex, TWX and DDD terminals, comprising:

a system bus;

first memory means coupled to said bus for storing system operating programs;

second memory means coupled to said bus for storing said messages;

multichannel multiplexing means coupled between said bus and said telex terminals, said multichannel multiplexing means including a first plurality of low-speed input ports and a second plurality of high speed output ports;

modulator-demodulator means coupled between said multiplexing means and said TWX and DDD terminals; and

microprocessor means for providing on said bus write memory and read memory command signals and a signal representation of a memory location of said memory and multiplexing means connected to said bus to cause said memory location to respectively store a signal on data lines of said bus and to cause said memory location to provide a signal on said data lines.

4,390,982

DIGITAL PBX SYSTEM

William H. Williams, Arlington, Tex., and Michael G. Burke, Corinth, Miss., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 14, 1981, Ser. No. 225,020
Int. Cl.³ H04J *3/00, 6/00*
U.S. Cl. 370—67 **6 Claims**

1. A telecommunications system for providing communication between a plurality of ports having analog input and output capability over a plural channel multiple bus digital switching and control network, interface means for each port for bidirectionally coupling the port to channels of the digital network, each said interface including a coder-decoder for converting information in analog from its port for the digital network and converting information in digital form from the network to analog, each interface means comprising channel selection and storage apparatus for maintaining correspondence between channels for the transfer of information to and from its port, said channel selection and storage apparatus including means for selecting a bus of said multiple bus network for the receipt of information by said coder-decoder and



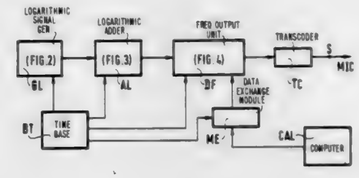
for direct transfer of information from each port to a predetermined one of said busses.

4,390,983

DIGITAL FREQUENCY SENDER

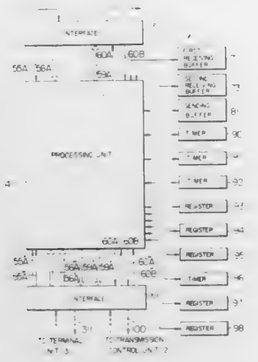
Philippe Duplessis, Colombes, and Philippe Delpit, Paris, both of France, assignors to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed Feb. 19, 1981, Ser. No. 235,818
Claims priority, application France, Feb. 19, 1980, 80 03572
Int. Cl.³ H03K *13/18;* **H04J** *3/12*
U.S. Cl. 370—77 **6 Claims**



1. A digital frequency sender comprising a generator for producing as a multi-frequency code signal two single-frequency signals, said generator comprising a first memory, amplifier means, and a time base, said generator producing said multi-frequency code signal by cyclically reading out values from said first memory under the control of said time base, said values representing a sine function in compressed form, and said amplifier means amplifying the compressed signals; an adder for combining said two single-frequency signals produced by said generator to produce a compressed two-frequency signal; a frequency output unit comprising a second memory for storing the compressed two-frequency signal produced by said adder; sender means for sending the said two-frequency signals to a digital PCM channel; a data exchange module; and selector means controlled by a computer via said data exchange module for applying the contents of any word in said second memory to any time slot of the digital PCM channel.

4,390,984
STATUS CHECK METHOD FOR A DATA TRANSMISSION SYSTEM
Kazumasa Sugiura, Katsuta; Kinji Mori, Kawasaki; Hirokazu Ihara, Machida, and Yoshinori Kawai, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 9, 1981, Ser. No. 300,622
Claims priority, application Japan, Sep. 12, 1980, 55-125965
Int. Cl.³ H04J *3/08*
U.S. Cl. 370—88 **10 Claims**



1. A status check method for a data transmission system, said system comprising a first major loop formed by connecting a plurality of first transmission control units for the control of message transmission with a first loop transmission line for sending the message in a first direction; a second major loop formed by connecting a plurality of second transmission control units for the control of message transmission with a second loop transmission line for transmitting the message in a second direction opposite to said first direction, said first transmission control units being in a paired relation with said second transmission control units; a bypass transmission line capable of bidirectional message transmission and connecting said first and second transmission control units; and

a plurality of terminal units provided for each pair of said first and second transmission control units and connected to at least one of said first and second transmission control units to perform sending and selective receiving of a message to and from said first and second major loop;

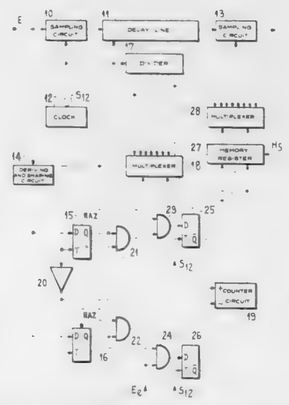
said first and second transmission control units having a first register means for storing a bypass flag which is referred to for deciding as to whether the message should be given to said bypass transmission line or to said loop transmission line, and a second register means for storing its own address which should be compared with an address field contained in said received message indicating a transmission source, thereby to decide as to whether the received message is a self-generated message; said method being characterized by the following steps:

a first step where one of said first and second transmission control units sends, to the loop transmission line, a check message which contains a data field with an initial value set and a code field indicating a function of checking the state of the minor loop (which connects two adjacent pairs of transmission control units, the one pair containing its own transmission control unit while the other pair contains those on the downstream side), and starts a time counting operation to know the time-over of return time of said check message;

a second step where three transmission control units on said minor loop except the transmission control unit that has sent out said check message rewrite the values of data fields in the received check messages in accordance with a prescribed rule and thereafter transfer the message to adjacent transmission control units on said minor loop; and

a third step where said first or second transmission control unit that has sent out said check message decides as to whether the value of the data field in the received message is equal to a prescribed value, and if equality is confirmed, the above-mentioned time counting operation is interrupted while, if a time-over is detected, a bypass flag is set for instructing said first register means to supply subsequent message outputs to said bypass transmission line.

4,390,985
DEVICE FOR THE SYNCHRONIZATION OF DIGITAL DATA TRANSMITTED IN PACKETS
Pierre Fourcade, and Dominique Dupray, both of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Mar. 26, 1981, Ser. No. 247,926
Claims priority, application France, Mar. 28, 1980, 80 07015
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—94 **5 Claims**



1. A device for the synchronization of digital data transmitted in the form of packets, comprising a synchronization circuit whose input is connected to the digital signal input and which, by comparing the transitions of the digital signal and those of reference signals, defines a synchronized reference signal available after a time T_S, a delay line whose time lag is equal to T_S connected to the digital signal input and an output sampling circuit connected to the output of the delay line and comprising a sampling control input, wherein the device also comprises a memory circuit having an input coupled to the output of the synchronization circuit, a clock input for receiving a synchronization clock signal at the rhythm of the data packets, but displaced by T_S with respect to the start of said packets and an output coupled to the sampling control input of the output circuit, the content of the memory circuit being directly connected to the synchronized reference signal, the clock signal controlling the change of state of the memory circuit at a time T_S after the start of the received data packets and blocking the state of this circuit at the end of the received data packets.

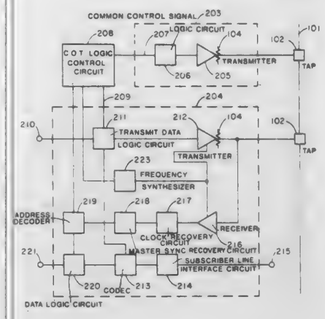
4,390,986
DIGITAL SUBSCRIBER COMMUNICATION SYSTEM
Donald W. Moses, Minneapolis, Minn., assignor to Seismograph Service Corporation, Tulsa, Okla.
Filed Apr. 21, 1980, Ser. No. 142,137
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—99 **41 Claims**

1. A digital subscriber communications system having means for transmitting and receiving a plurality of time-division multiplexed signals, each signal having a series of frames and a predetermined number of binary digits per frame, between a central office location and multiple subscriber locations characterized in that:

the means for transmitting the signals comprises;

means for generating a separate master synchronization signal for each signal transmitted;

means connected to the synchronization signal generating means for encoding each of the signals for transmission with an optimum frame format and optimum bit format within each frame wherein each frame comprises fifteen information bits per frame and one framing bit per frame



thereby creating a frame format having sixteen bits per frame; and

transmitter means for transmitting each signal in the sixteen bit frame format; and

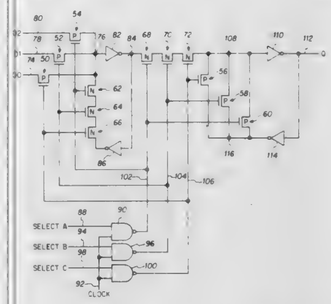
the means for receiving the signals comprises:

means for detecting the framing bit in each frame;

means connected to the framing bit detecting means for recovering the master synchronization signal; and

means for decoding the information in each frame according to the frame format and bit format in each frame established by the framing bit and the master synchronization signal.

4,390,987
MULTIPLE INPUT MASTER/SLAVE FLIP FLOP APPARATUS
David W. Best, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Jul. 14, 1981, Ser. No. 283,265
Int. Cl.³ H04J *3/02;* **H03K** *17/00*
U.S. Cl. 370—112 **8 Claims**

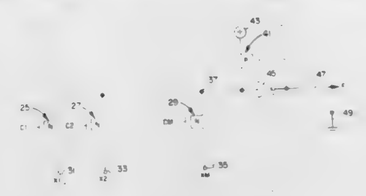


5. The method of multiplexing one of a plurality of signals through a master/slave flip flop including gating means in the input sections and feedback sections of each of the master and slave stages comprising the steps of:

parallel gating each of n signals to be multiplexed at the input section of the master stage and the feedback section of the slave stage; and

serial gating each of n signals to be multiplexed in the input section of the slave stage and in the feedback section of said master stage.

4,390,988
EFFICIENT MEANS FOR IMPLEMENTING MANY-TO-ONE MULTIPLEXING LOGIC IN CMOS/SOS
David W. Best, Marion, and Jeffrey D. Russell, Cedar Rapids, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Jul. 14, 1981, Ser. No. 283,264
Int. Cl.³ H04J *3/02;* **H03K** *17/00*
U.S. Cl. 370—113 **7 Claims**



5. Apparatus for reducing current consumption in a multiplexing circuit comprising, in combination:

power supply means;

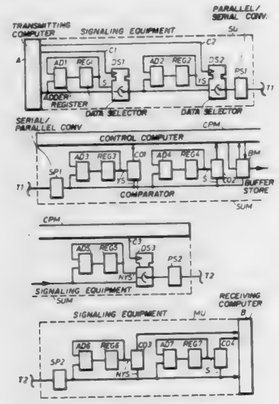
signal input means for supplying signals of first and second logic values from a signal selection circuit; and

gating means connected between said power supply means and said signal input means for connecting said signal input means to said power supply means when signals are received of a first logic value approaching the voltage level of the power supply means thereby minimizing active current flow and for disconnecting said signal input means from effective electrical connection with said power supply means when the signals received are of a second logic value thereby minimizing static current flow.

4,390,989
METHOD AND AN ARRANGEMENT FOR SUPERVISING FAULTS WHEN TRANSMITTING DATA BETWEEN COMPUTERS
Jens E. Pehrson, Stocksund, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
PCT No. PCT/SE80/00140, § 371 Date Jan. 15, 1981, § 102(e) Date Jan. 7, 1981, PCT Pub. No. WO80/02611, PCT Pub. Date Nov. 27, 1980
PCT Filed May 14, 1980, Ser. No. 229,595
Claims priority, application Sweden, May 15, 1979, 7904270
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—22 **6 Claims**

1. In a data transmission system having information stations interconnected by transmission lines and wherein communication is by signal packets containing start-stop information, message words and address-control signal information, said address-control signal information being controllably changeable when passing through an information station, the method of monitoring the reliability of the elements of the system comprising: at the start of transmission generating an inner check sum by adding only all the message words of the signal packet to form an inner check sum which is not intentionally changed during the entire transmission, and inserting the inner check sum into the signal packet, whenever a signal packet leaves a station entering into the signal packet an address word associated with the destination of the packet, said address word being changeable during transmission in dependence on the next information station to receive the signal packet, generat-

ing an outer check sum which is at least the sum of the address word and the inner check word, inserting the outer check sum into the signal packet; and when a signal packet is received at an information station generating a receiving station inner check sum by adding only the message words of the received signal packet, comparing the receiving station inner check sum with the inner check sum previously inserted in the signal



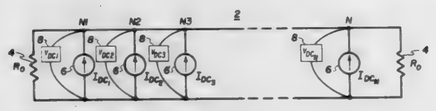
packet to determine the reliability of the upstream information station and the transmission line interconnecting the stations; and generating a receiving station outer check sum by adding all the received message words and the received inner check sum, and comparing the receiving station outer check sum with the received check sum to determine the reliability of the transmission link interconnecting the receiving information station with information check station upstream therefrom.

4,390,990

METHOD FOR MULTIPLE SIGNAL COLLISION DETECTION ON A TRANSMISSION LINE

Gerald L. Ainsworth, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 8, 1980, Ser. No. 184,855
Int. Cl.³ H04Q 9/00
U.S. Cl. 371—57 **2 Claims**



1. A method for detecting multiple signal collisions on a transmission line at a receiving node comprising the step of:

injecting a predetermined level of direct current (DC) at each active transmission node into said transmission line; and

sensing at said receiving node the DC level resulting from said step of injecting a DC level at each active transmission node to indicate multiple signal collisions.

4,390,991

ADAPTIVE LASER OUTPUT COUPLER

James E. Pearson, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 6, 1981, Ser. No. 251,679
Int. Cl.³ H01S 3/08
U.S. Cl. 372—21 **4 Claims**



1. A laser having an optical cavity comprising a gain medium, reflective means defining an optical cavity about said gain medium for resonating optical radiation therein at a resonant power level and further comprising:

means for maintaining the polarization of a portion of said resonating optical radiation circulating within said cavity within a first polarization plane;

phase conjugate means, disposed intermediate said reflective means, for generating a phase conjugate beam having a variable power level and a second plane of polarization orthogonal to said first polarization plane, the ratio of said variable power level and said resonant power level being a function of said resonant power level; and

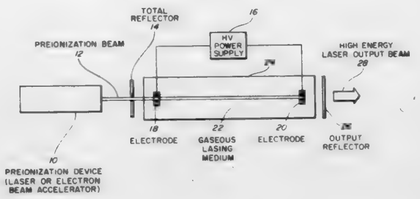
means for coupling radiation in said second plane out of said cavity.

4,390,992

PLASMA CHANNEL OPTICAL PUMPING DEVICE AND METHOD

O'Dean P. Judd, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 17, 1981, Ser. No. 284,151
Int. Cl.³ H01S 3/091
U.S. Cl. 372—70 **15 Claims**



1. An optical pumping device for a repetitively operated gaseous laser comprising:

a gaseous lasing medium;

electrodes disposed in said gaseous lasing medium;

means for providing an electrical potential between said electrodes;

laser means for generating a repetitive pulsed laser beam which produces a substantially uniform longitudinal preionization path in said gaseous lasing medium in the axial direction of said laser between said electrodes sufficient to cause said electrical potential to produce an electrical discharge between said electrodes to form a plasma channel along said preionizatoin path,

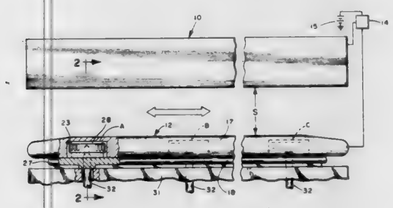
said plasma channel having sufficient blackbody radiation determined by said means for providing an electrical potential to optically pump said lasing medium in a repetitive manner.

4,390,993

LASER ELECTRODE ASSEMBLY

Richard J. Sojka, San Lorenzo; Leonard W. Braverman, San Francisco; Steve Guch, Jr., Saratoga, and David J. Clark, Atherton, all of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Filed May 18, 1981, Ser. No. 264,367
Int. Cl.³ H01S 3/097
U.S. Cl. 372—87 **2 Claims**



1. An electrode assembly for a laser, said laser having a base, said assembly comprising

first and second elongated coextensive electrodes spaced apart to define a discharge gap,

said first electrode comprising an elongated carrier fastened to said base and a bar adjacent to and coextensive with said carrier on the side thereof opposite from said base, said bar having one side facing said second electrode and having a plurality of longitudinally spaced and aligned sockets on the opposite side thereof,

said carrier having a like number of longitudinally spaced and aligned plugs projecting therefrom toward said second electrode adapted to be removably insertable in said sockets, respectively,

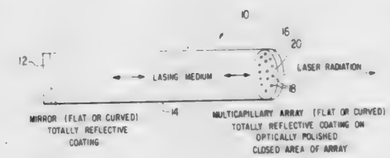
each of said plugs having spring fingers secured thereto and engageable with said bar within the associated socket for releasably connecting said bar to said carrier.

4,390,994

LASER UTILIZING COATED, MULTICAPILLARY ARRAY AS OUTPUT WINDOW

James R. Roberts, 12512 W. Old Baltimore Rd., Boyds, Md. 20720; Thomas J. McIlrath, 5944 Westchester Park Dr., College Park, Md. 20740, and Thomas B. Lucatorto, 3600 Van Ness St., NW., Washington, D.C. 20008

Filed Jul. 14, 1980, Ser. No. 168,698
Int. Cl.³ H01S 3/08
U.S. Cl. 372—99 **5 Claims**



1. In a laser for generating output radiation having a wavelength of less than 2000 Å, including an active, lasing medium, pumping means for creating a population inversion in said medium, and an optical resonant cavity including a totally reflective mirror disposed at one end of the resonant cavity and an output window disposed at the other end of the resonant cavity, the improvement comprising said output window including a multi-capillary array having a plate with a plurality of pores extending therethrough parallel to the said output radiation from the laser, said pores having a diameter, a length, and a diameter-to-length ratio comprising a means for establishing molecular flow of said lasing medium therethrough, said pores comprise an open area of the plate and the remaining area of said plate in contact with the lasing medium and surrounding said pores comprises a closed area, said closed area being normal to the laser radiation and provided with a coating which reflects the laser radiation.

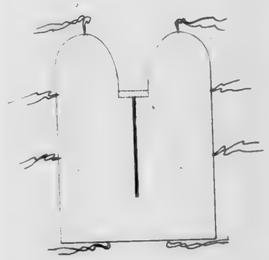
DESIGN PATENTS

GRANTED JUN. 28, 1983

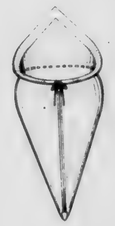
ERRATA

For CLASS	See PATENT NO.
D07–308	269,516
D07–308	269,517

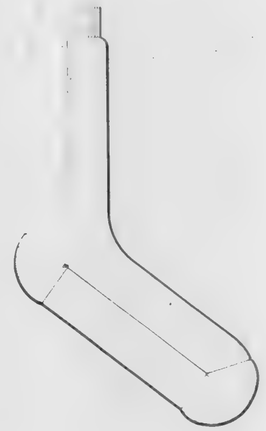
269,474
INFANT SLEEPING BAG OR SIMILAR ARTICLE
Patricia R. Mundy, 1411 Wysteria Way, Richardson, Tex. 75080
Filed Mar. 27, 1981, Ser. No. 248,320
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—17



269,475
BABY BUNTING
Darlene J. Albertson, Milwaukie, Oreg., assignor to Verna Howell, Gladstone, Oreg.
Filed Feb. 9, 1981, Ser. No. 232,586
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—25



269,476
SOCK
Daniel L. Brier, 530 25th Ave., NW., Hickory, N.C. 28601
Filed Sep. 15, 1980, Ser. No. 187,473
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—331



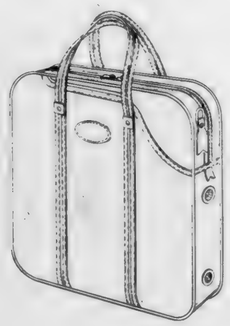
269,477
SOCK
Daniel L. Brier, 530 25th Ave., NW., Hickory, N.C. 28601
Filed Sep. 15, 1980, Ser. No. 187,475
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—331



269,478
KEY RING
John Y. Enomoto, 2035 Heather Dr., Monterey Park, Calif. 91754
Filed May 11, 1981, Ser. No. 262,344
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—61



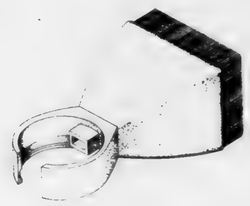
269,479
SPORT BAG
Joseph Y. Pelavin, North Bergen, N.J., assignor to CPG Products Corp., Minneapolis, Minn.
Filed Dec. 23, 1980, Ser. No. 219,468
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



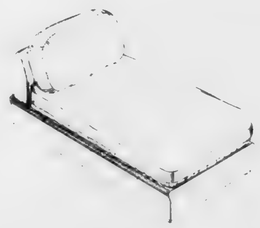
269,480
COMBINED CARRYING AND STORAGE CASE AND CONTROL DISPLAY STAND FOR ELECTRONIC MUSICAL INSTRUMENT COMPONENTS
Richard H. Peterson, 11748 Walnut Ridge Dr., Palos Park, Ill. 60464; Patrick J. Bovenizer, Alsip, Ill.; Richard W. Jensen, Elmhurst, Ill., and William H. Hass, Hickory Hills, Ill., assignors to Richard H. Peterson, Palos Park, Ill.
Filed Jun. 9, 1981, Ser. No. 271,760
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—76



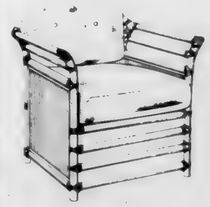
269,481
COMBINED DISPENSER AND BRUSH ATTACHMENT FOR A SHAVING CREAM CONTAINER OR THE LIKE
Edward P. Souza, 255 Union Ave., Campbell, Calif. 95008
Filed Mar. 26, 1981, Ser. No. 247,837
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—19



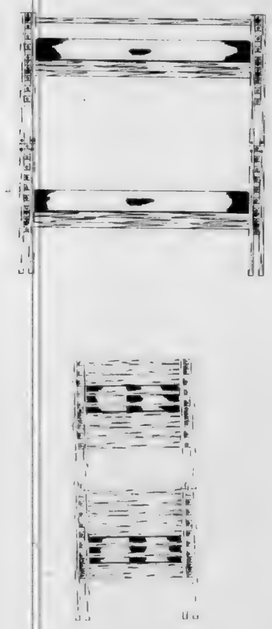
269,482
LOUNGE SEAT OR SIMILAR ARTICLE
Nicholas A. Ungaro, Louisville, Ky., assignor to Schweiger Industries, Inc., Jefferson, Wis.
Filed Apr. 29, 1981, Ser. No. 258,595
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—37



269,483
ARMCHAIR
Henry Olko, Chicken Valley Rd., Locust Valley, N.Y. 11650
Filed Oct. 23, 1980, Ser. No. 199,857
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57



269,484
BUNK BED
Robert V. Thompson, Boatyard Condominiums, 75th Ave., N., Myrtle Beach, S.C. 29577
Filed Apr. 23, 1981, Ser. No. 256,801
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—83



269,485
SUPPORT FOR SPOOLS OF ELECTRICAL WIRES OR THE LIKE
Jack C. Beall, 9440 S. Central Expressway, Dallas, Tex. 75216
Filed Feb. 9, 1981, Ser. No. 232,885
Term of patent 14 years
Int. Cl. D06—*06*
U.S. Cl. D6—85

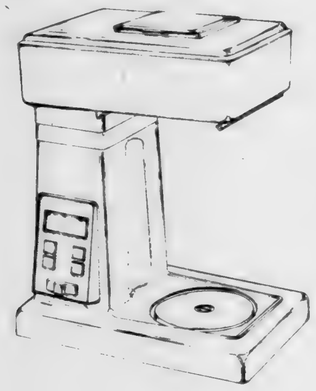
269,486
HAT HOLDER
Sam R. Marrs, 9924 Miller, Apt. 128, Dallas, Tex. 75218
Filed Oct. 30, 1980, Ser. No. 202,148
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—116

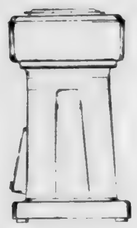


269,487
LABORATORY TABLE OR SIMILAR ARTICLE
Klaus Maier, Heidenheim, Fed. Rep. of Germany, assignor to Strohm+Maier Labormöbel GmbH, Heidenheim, Fed. Rep. of Germany
Filed Apr. 7, 1980, Ser. No. 138,374
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1979, 2131/79
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—162



269,488
COFFEE BREWER
Vincent G. Marotta, 18801 S. Park Blvd., Shaker Heights, Ohio 44122
Filed Jul. 1, 1981, Ser. No. 279,533
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—309



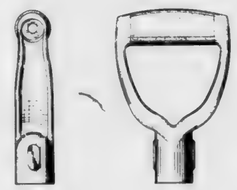


269,489
TABLE TOP MILL
Tsugio Akita, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 1, 1981, Ser. No. 268,618
Claims priority, application Japan, Dec. 19, 1980, 55-53241
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—53

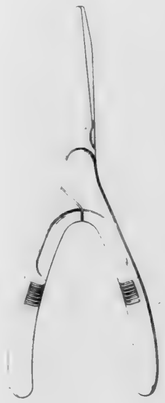




269,490
HANDLE FOR HAND TOOLS
Robert A. Germain, Ashtabula, Ohio, assignor to True Temper Corporation, Cleveland, Ohio
Filed Jan. 30, 1981, Ser. No. 229,974
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—1



269,491
GARDEN SHEARS
Alan K. Pittaway, High Wycombe, England, assignor to Wilkinson Sword, Limited, England
Filed Jul. 28, 1981, Ser. No. 287,660
Claims priority, application United Kingdom, Jan. 31, 1981, 81998682; Jan. 31, 1981, 81998683
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—5





269,492
BEVERAGE CAN CRUSHER
Albert L. Peggs, 1824 Calle Ciervos, San Dimas, Calif. 91773
Filed May 4, 1981, Ser. No. 260,379
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



269,493
SOLDERING IRON HANDLE
Daniel C. Koturov, Stanton, and Alvis R. Knowles, Carson, both of Calif., assignors to Eldon Industries, Inc., Hawthorne, Calif.
Filed Jan. 22, 1981, Ser. No. 227,430
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



269,494
WEDGE
Anthony M. Tremaglio, 184 Maybrook Rd., Waterbury, Conn. 06708, and Philip Kaye, 35 Turkey Hill N., Westport, Conn. 06880
Filed Feb. 19, 1981, Ser. No. 234,980
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—47



269,495
WEDGE
Arnold H. Finn, Farmington, Conn., assignor to TACO Products, Incorporated, Plainville, Conn.
Filed Jul. 27, 1981, Ser. No. 287,508
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—47



269,496
COMPOUND HAND TOOL
Maynard H. Brown, Jr., 308 East St., East Herkimer, N.Y. 13350
Filed May 15, 1981, Ser. No. 264,201
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—81



269,497
BRAKE SPRING TOOL
Frank Rogowsky, 3651 Brandon Gate Dr., Mississauga, Ontario, Canada (L4T 3E4)
Filed May 6, 1981, Ser. No. 261,264
Claims priority, application Canada, Nov. 19, 1980, 19-11-80-1
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—88



269,498
FLASK OR SIMILAR ARTICLE
Frank H. Witt, Jr., Trumbull, Conn., assignor to Rosalie S. Levine, Trumbull; Mildred J. Bisacca, Fairfield and GRRN Co., Easton, all of, Conn., part interest to each
Filed Oct. 15, 1980, Ser. No. 197,335
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—307



269,499
BOTTLE
Francisco Rafart, Barcelona, Spain, assignor to L'Aixertell, S.A., Barcelona, Spain
Filed Oct. 26, 1979, Ser. No. 88,642
Claims priority, application Spain, Apr. 27, 1979, 94534
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—349



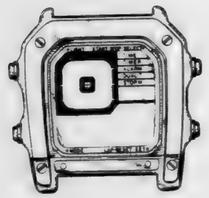
269,500
BOTTLE
Claude Bit, Thonon, France, assignor to Societe Anonyme des Eaux Minerales d'Evian, Evian des Bains, France
Filed Feb. 27, 1981, Ser. No. 239,655
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—350



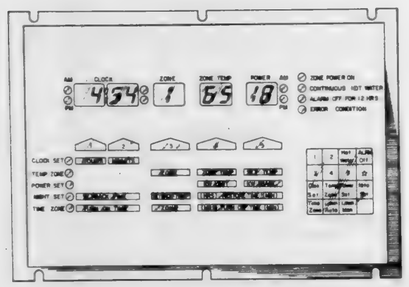
269,501
ELECTRONIC WRIST WATCH GAME
Katsumi Sato, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed May 15, 1981, Ser. No. 264,542
Claims priority, application Japan, Nov. 8, 1980, 55-46822
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—31



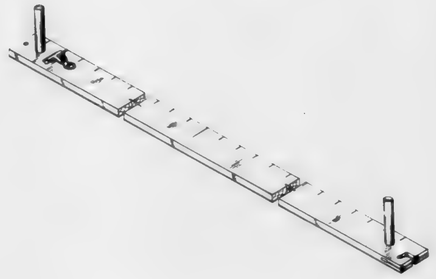
269,502
DIGITAL WRISTWATCH
Masaharu Tanaka, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Apr. 20, 1981, Ser. No. 255,420
Claims priority, application Japan, Oct. 27, 1980, 55-44816
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38



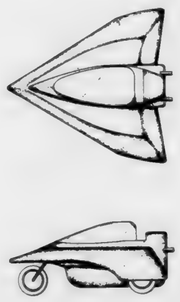
269,503
FACE PLATE FOR A DEMAND LIMITER
Stanley S. Huffman, Golden; Alan F. Neel, II, Lakewood, and Rodney M. Johnson, Golden, all of Colo., assignors to Peak Demand Limiters, Inc., Lakewood, Colo.
Filed Dec. 26, 1979, Ser. No. 107,407
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46



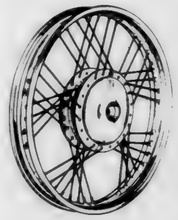
269,504
MACRAME MEASURE
Suzie Swenson, 29 Red Deer Rd., Londonderry, N.H. 03053
Filed Mar. 12, 1981, Ser. No. 243,059
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—71



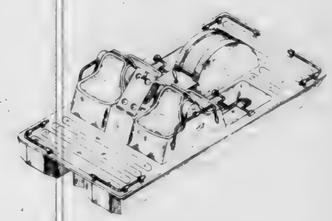
269,505
TRANSPORTATION VEHICLE
Gilbert L. Gordon, 3513 Clark Rd., Indianapolis, Ind. 46224
Filed Jan. 19, 1981, Ser. No. 226,049
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—85



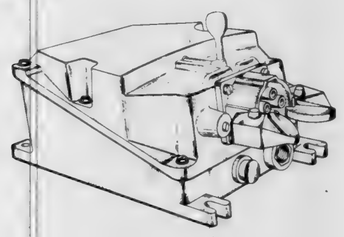
269,506
WHEEL FOR MOTORCYCLE
Toshiyuki Suzuki, Shimada; Kazumi Inaba, Toyookamura, and Kiyoshi Amaki, Kaga, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Nov. 10, 1980, Ser. No. 205,704
Claims priority, application Japan, May 13, 1980, 55/18665
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205



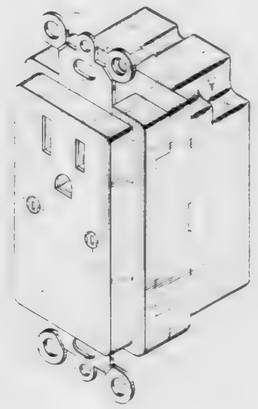
269,507
PADDLE BOAT
Paul K. Sabelhouse, Jr., Wolcottville, and Paul K. Sabelhouse, Sr., Rome City, both of Ind., assignors to Ayr-Way Industries, Inc., Kendallville, Ind.
Filed Dec. 18, 1980, Ser. No. 217,799
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—306



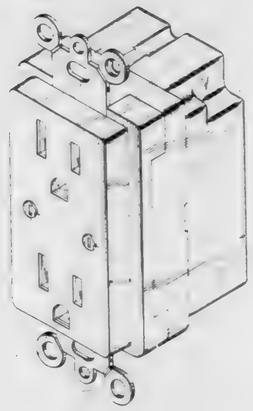
269,508
ELECTRICAL CONNECTOR
Bronius Gaizauskas, Chicago, Ill., assignor to Akzona Incorporated, Asheville, N.C.
Filed Dec. 20, 1979, Ser. No. 105,834
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



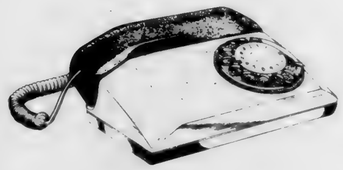
269,509
ELECTRONIC RECEPTACLE
Richard C. Doyle, Greenlawn; Lester Rivera, Glendale, and Saul Rosenbaum, East Meadow, all of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Oct. 7, 1981, Ser. No. 309,309
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—30



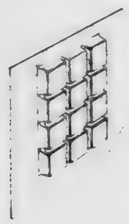
269,510
ELECTRONIC RECEPTACLE
Richard C. Doyle, Greenlawn; Lester Rivera, Glendale, and Saul Rosenbaum, East Meadow, all of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Oct. 7, 1981, Ser. No. 309,317
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—30



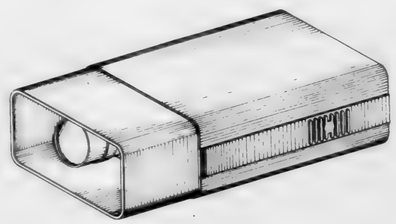
269,511
DESK TELEPHONE
Giovanni Arduini, and Marco del Corno, both of Milan, Italy, assignors to Italtel S.p.A., Milan, Italy
Filed Oct. 21, 1980, Ser. No. 199,320
Claims priority, application Italy, Apr. 24, 1980, 21638 B/80
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



269,512
NUMBER ENLARGER COVER FOR A PUSH-BUTTON TELEPHONE
Norton R. Goldberg, Skokie, Ill., assignor to Hodin Marketing, Inc., Chicago, Ill.
Filed Aug. 20, 1982, Ser. No. 409,908
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66



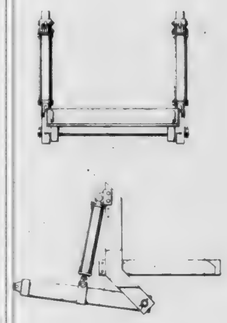
269,513
TELEVISION CAMERA OR SIMILAR ARTICLE
Albert L. Nagele, Wilmette, Ill., assignor to VCS, Inc., Carol Stream, Ill.
Filed Aug. 21, 1980, Ser. No. 180,077
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—78



269,514
SNOW THROWER
John M. Berner, 4927 St. Croix Ave., Minneapolis, Minn. 55422
Filed Mar. 27, 1979, Ser. No. 24,308
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D15—12



269,515
QUICK COUPLER MOUNT FOR FRONT OF FARM TRACTOR
Andrew C. Yoder, R.R. #1, Amboy, Ind. 46911
Filed Feb. 6, 1981, Ser. No. 232,230
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—32

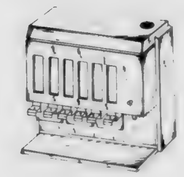


269,516
BEVERAGE DISPENSER
John G. Kiser, Albert Lea, Minn., assignor to Fountain Industries, Inc., Albert Lea, Minn.
Filed May 11, 1981, Ser. No. 262,558
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D7—308

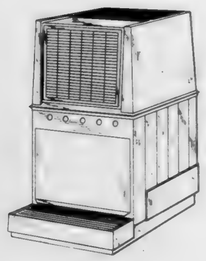






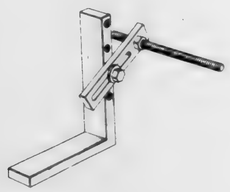


269,517
BEVERAGE DISPENSER
James D. Vogel, Anoka, and William B. MacKrell, New Brighton, both of Minn., assignors to The Cornelius Company, Anoka, Minn.
Filed Mar. 23, 1981, Ser. No. 246,563
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D7—308

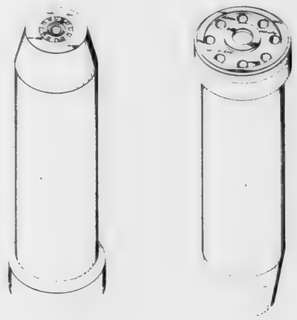




269,518
MILLING MACHINE TABLE STOP OR SIMILAR ARTICLE
Paul Karlan, 511 Center Ave., Mamaroneck, N.Y. 10543
Filed Jul. 7, 1980, Ser. No. 166,309
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—140



269,519
NOZZLE FOR A CUTTING TORCH
Stellan Braun, Dalby, Sweden, assignor to AGA Aktiebolag, Sweden
Filed Dec. 2, 1980, Ser. No. 212,524
Term of patent 14 years
Int. Cl. D15—*09*; D8—*03*
U.S. Cl. D15—144



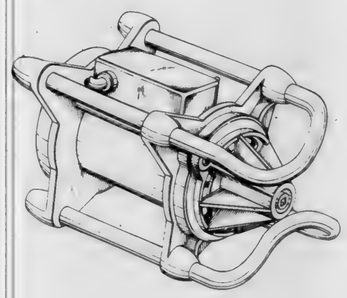
269,520
NOZZLE COMPONENT FOR A CUTTING TORCH
Stellan Braun, Dalby, Sweden, assignor to AGA Aktiebolag, Sweden
Filed Dec. 2, 1980, Ser. No. 212,525
Term of patent 14 years
Int. Cl. D15—*09*; D8—*03*
U.S. Cl. D15—144



269,521
NOZZLE COMPONENT FOR A CUTTING TORCH
Stellan Braun, Dalby, Sweden, assignor to AGA Aktiebolag, Sweden
Filed Dec. 2, 1980, Ser. No. 212,526
Term of patent 14 years
Int. Cl. D15—*09*; D8—*03*
U.S. Cl. D15—144



269,522
DRIVE UNIT FOR FLEXSHAFT VIBRATORS
Lee E. Reichel, Kettering, and David H. Voisard, Troy, both of Ohio, assignors to Koehring Company, Brookfield, Wis.
Filed Jun. 26, 1980, Ser. No. 163,335
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—147



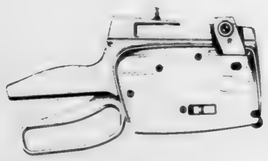
269,523
GUITAR OR SIMILAR ARTICLE
Charles T. Burge, Kalamazoo, Mich., assignor to Norlin Industries, Inc., White Plains, N.Y.
Filed Jun. 15, 1981, Ser. No. 274,326
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14



269,524
BASS GUITAR OR SIMILAR ARTICLE
Charles T. Burge, Kalamazoo, Mich., assignor to Norlin Industries, Inc., White Plains, N.Y.
Filed Jun. 15, 1981, Ser. No. 274,327
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14

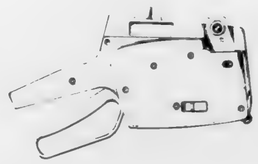


269,525
LABELLING APPARATUS
Wolfgang Reinke, Rothenberg, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Dec. 19, 1980, Ser. No. 218,408
Claims priority, application Switzerland, Jul. 14, 1980, 111295/80
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—19



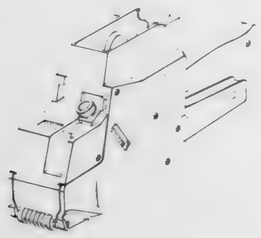


269,527
LABELLING APPARATUS
Werner Becker, Hirschhorn, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Dec. 22, 1980, Ser. No. 219,343
Claims priority, application Switzerland, Jul. 14, 1980, 111294
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—19

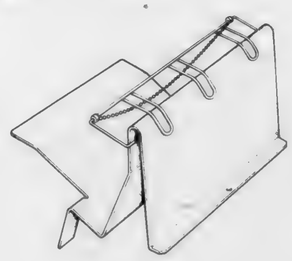




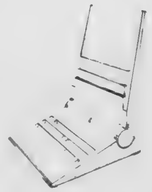
269,526
LABEL PRINTING AND APPLYING APPARATUS
Günter Holland-Letz, Hirschhorn, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Dec. 22, 1980, Ser. No. 218,723
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1980, URA 679/80
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—19



269,528
FORMS ACCUMULATOR SHELF FOR A PRINTER
Eugene K. Sokolowski, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Mar. 2, 1981, Ser. No. 239,782
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—22



269,529
COMBINED MEMO PAPER DISPENSER, CALENDAR AND PICTURE MOUNT
Tang W. Luen, Kowloon, Hong Kong, assignor to Tang Fun Kee Manufacturing Co., Ltd., Kowloon, Hong Kong
Filed Feb. 17, 1981, Ser. No. 234,497
Claims priority, application United Kingdom, Aug. 19, 1980, 996203
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—22



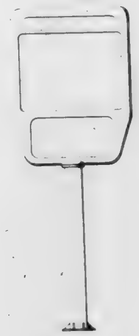
269,530
WRITING INSTRUMENT OR SIMILAR ARTICLE
Richard Luntz, P.O. Box 24234, Lyndhurst, Ohio 44924
Filed Jul. 17, 1981, Ser. No. 284,520
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—47



269,531
CONTAINER FOR LIQUID ADHESIVE
Tsuneo Ando, Fujisawa, Japan, assignor to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan
Filed Nov. 25, 1980, Ser. No. 210,262
Claims priority, application Japan, May 22, 1980, 55-019856
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—66



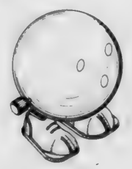
269,532
COMBINED CLOCK AND ADVERTISING DISPLAY DEVICE
Carlos P. Amar, 600 NE. 36 St., Miami, Fla. 33137
Filed Nov. 24, 1980, Ser. No. 209,407
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—20



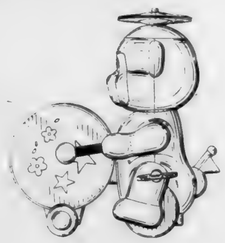
269,533
ROLLING TOY
Richard A. Chase; Danny E. Simpson, both of Baltimore, Md., and D. Michael Williams, New York, N.Y., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.
Filed Oct. 30, 1980, Ser. No. 202,388
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—64



269,534
ACTION TOY
Geoffrey C. Garth, Long Beach, Calif., assignor to Tomy Corporation, Carson, Calif.
Filed Oct. 20, 1980, Ser. No. 198,803
Claims priority, application Japan, Aug. 27, 1979, 54-35693
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150



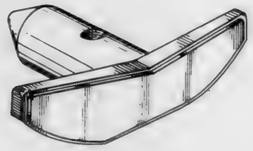
269,535
TOY MONKEY
Wai-Kuen Tung, Kowloon, Hong Kong, assignor to The Best Toys Co. Ltd., Kowloon, Hong Kong
Filed Feb. 2, 1981, Ser. No. 230,374
Claims priority, application United Kingdom, Oct. 29, 1980, 997304
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150



269,536
BALL CATCHING AND THROWING DEVICE
Homer C. Amos, Palm Springs, Calif., assignor to Brunswick Corporation, Skokie, Ill.
Filed Jun. 10, 1980, Ser. No. 158,330
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—210



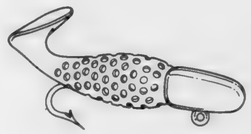
269,537
GOLF PUTTER HEAD
Richard B. C. Tucker, Baltimore, Md., assignor to STX, Inc., Baltimore, Md.
Filed Jan. 23, 1981, Ser. No. 227,804
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—219



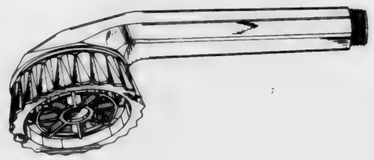
269,538
PLAYGROUND SEE-SAW
Roland H. Sinfield, 96 S. 360 West, and A. Neil Grose, 111 E. 100 South, both of Morgan, Utah 84050
Filed Mar. 10, 1981, Ser. No. 242,198
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—251



269,539
ARTIFICIAL FISHING LURE
William O. Williams, Jr., Rte. 2, Box 172, Clover, S.C. 29201
Division of Ser. No. 103,482, Dec. 14, 1979, Pat. No. 263,988.
This application Nov. 16, 1981, Ser. No. 321,683
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



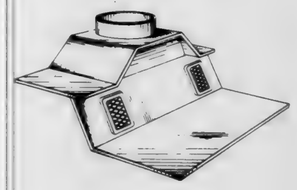
269,540
HAND SHOWER
Nils Larsson, Dalavägen 50, Västra Frölunda, Sweden (421 68)
Filed Feb. 26, 1981, Ser. No. 238,439
Claims priority, application Sweden, Aug. 26, 1980, 80-1593
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



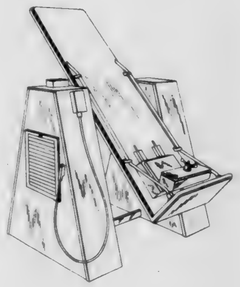
269,541
OIL-FIRED SPACE HEATER
Kazuharu Nakamura, Nagoya, Japan, assignor to Toyotomi Kogyo Co., Ltd., Aichi, Japan
Filed Dec. 5, 1980, Ser. No. 213,756
Claims priority, application Japan, Jun. 5, 1980, 55-22450
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—123



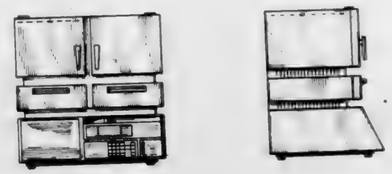
269,542
WOOD STOVE TOP
Anthony A. Mote, 9808 Polk East, Tacoma, Wash. 98445
Filed Dec. 2, 1980, Ser. No. 212,231
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



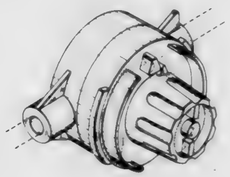
269,543
TRACTION TABLE
Robert R. Walper, and Frederick R. Wilkes, both of Sarasota, Fla., assignors to Walper Corporation, Sarasota, Fla.
Filed Jan. 23, 1981, Ser. No. 227,613
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—03



269,544
COAL ANALYZER OR THE LIKE
Solomon Jarmell, Pittsburgh, and Barry E. Rodgers, Eastmont, both of Pa., assignors to Allied Corporation, Morris Township, Morris County, N.J.
Filed Jun. 2, 1980, Ser. No. 155,850
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D24—8



269,545
DISPOSABLE CASSETTE FOR USE WITH AN INTRAVENOUS CONTROLLER
Raymond E. Cannon, San Diego, Calif., assignor to IMED Corporation, San Diego, Calif.
Filed Jan. 27, 1981, Ser. No. 228,887
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—8



269,546
PHYSIOLOGIC MONITOR OR THE LIKE
Robert K. Rogers; Robert R. Steuer, both of Salt Lake City, Utah; F. Gordon Mackay, Tarzana, and Spencer L. Mackay, Canoga Park, both of Calif., assignors to DNA Medical, Inc., Salt Lake City, Utah
Filed Oct. 16, 1980, Ser. No. 197,764
Term of patent 14 years
Int. Cl. D24—*02*; D10—*02*
U.S. Cl. D24—17



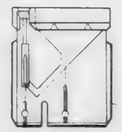
269,547
TIBIAL COMPONENT EXTENDER AND TOOL FOR IMPLANTATION
David B. Rosenthal, 150-15 86th Ave., Jamaica, N.Y. 11432
Filed Jul. 16, 1981, Ser. No. 284,075
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—26



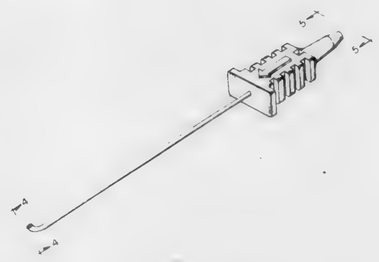


269,548
CARTRIDGE FOR DETERMINING THE ELECTROCHEMICAL CHARACTERISTICS OF A LIQUID
Robert J. Sarrine, Ann Arbor, and Steven E. Enzer, Brooklyn, both of Mich., assignors to Transidyne General Corp., Ann Arbor, Mich.
Filed Dec. 15, 1980, Ser. No. 216,462
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—19

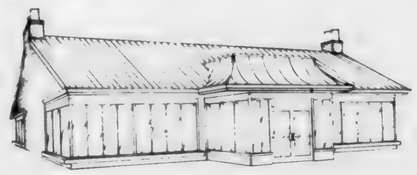




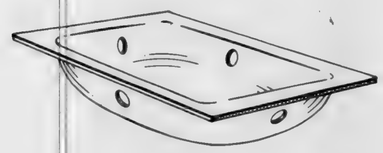
269,549
EPIDURAL NEEDLE
James R. Gross, Bartlett, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Oct. 9, 1980, Ser. No. 195,449
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—54



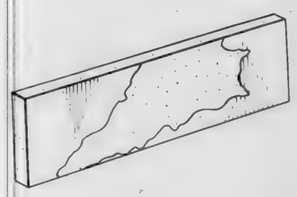
269,550
BUILDING
Thomas L. Tollett, Memphis, Tenn., assignor to Dobbs House, Inc.
Filed Jun. 22, 1981, Ser. No. 275,673
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22



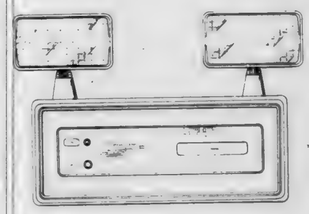
269,551
CEILING TILE
Ghislain Riverin, R.R. #2, Hamilton, Ontario, Canada (L8N 2Z7)
Filed Jul. 17, 1979, Ser. No. 58,354
Claims priority, application Canada, Jun. 25, 1979, 25-06-79-1
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



269,552
BRICK
Elsie M. Atkinson, Huntington Beach, Calif., assignor to Atkinson Brick Co., Los Angeles, Calif.
Filed Sep. 30, 1980, Ser. No. 192,608
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—86



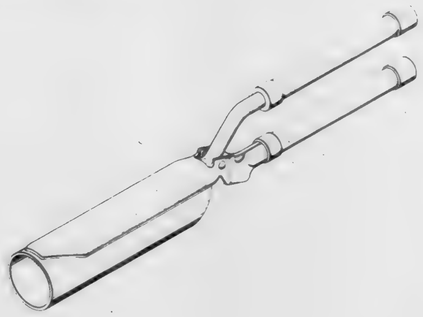
269,553
EMERGENCY LIGHTING UNIT
Robert W. Johnson, Bucks County, Pa., and Donald W. Doman, Rock County, Wis., assignors to Exide Electronics Corporation, Philadelphia, Pa.
Filed Aug. 14, 1980, Ser. No. 178,034
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D26—63



269,554
LIGHTER
Taro Yanai, No. 3-13, Shirakawa 1-chome, Koto-ku, Tokyo, Japan
Filed Jun. 27, 1980, Ser. No. 163,913
Claims priority, application Japan, Dec. 28, 1979, 54-182674[U]
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—36



269,555
HAIR CURLING IRON OR THE LIKE
Clifford J. Peterson, 1021 N. Crescent Dr., #301, Hollywood, Calif. 90046; Peter Dawes, 5031 Genesta, Encino, Calif. 91316, and Gary E. Birks, 615 Avenue "D", Redondo Beach, Calif. 90277
Filed Nov. 9, 1981, Ser. No. 319,681
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35



269,556
HORSE TETHERING SUPPORT
James Studley, 1501 Hillside Ave., Norco, Calif. 91760, and Bennie J. Johnson, 14039 Santa Ana Ave., Fontana, Calif. 92335
Filed Jan. 12, 1981, Ser. No. 224,277
Term of patent 14 years
Int. Cl. D30—*09*
U.S. Cl. D30—44



269,557
FLOOR POLISHER
Floyd L. Cook, Jr., Muskegon Heights, Mich., assignor to McGraw-Edison Company, Rolling Meadows, Ill.
Filed Mar. 24, 1980, Ser. No. 133,447
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—19



269,558
CLEANER MAIN BODY OR THE LIKE
John D. Essex, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Nov. 6, 1980, Ser. No. 204,467
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—22



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF JUNE, 1983

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See*—
Gibson, Paul W.; and Orthoefer, Frank T., 4,390,450, Cl. 252-307.000.
Abe, Seiko: *See*—
Igashira, Toshihiko; Nomura, Ken; Abe, Seiko; and Ishida, Yasuhiko, 4,390,000, Cl. 123-549.000.
Aberer, James B.: *See*—
Ostroski, Richard J.; Aberer, James B.; and Best, Gary, 4,389,780, Cl. 30-408.000.
Abraham, Fayez F., to Tyler Refrigeration Corporation. One and a half band refrigerated display case. 4,389,852, Cl. 62-82.000.
ABU Aktiebolag: *See*—
Karlsson, Jarding U.; and Moosberg, Borje S., 4,390,140, Cl. 242-84.52C.
Acker, Otto H. Bicycle construction. 4,390,191, Cl. 280-281.00R.
Ackerman, William R., to W. R. Weaver Co. Range-finding telescopic sight. 4,389,791, Cl. 33-246.000.
Ackermann, Robert A.; and Vitale, Nicholas G., to Mechanical Technology Incorporated. Two stage stirling engine. 4,389,844, Cl. 60-517.000.
Acquaye, Clemenceau T. A.: *See*—
Gorecki, Marian; Acquaye, Clemenceau T. A.; Wilchek, Meir; and Rich, Alexander, 4,390,526, Cl. 424-177.000.
Adachi, Keiichi: *See*—
Kobayashi, Hidetoshi; Takahashi, Toshirou; Hirano, Shigeo; Hirosa, Takeshi; and Adachi, Keiichi, 4,390,618, Cl. 430-543.000.
Adamek, David J.: *See*—
McLaren, Edwin C.; and Adamek, David J., 4,389,802, Cl. 40-307.000.
Addadi, Lia: *See*—
Lahav, Meir; Addadi, Lia; and Weissbuch, Isabela, 4,390,722, Cl. 562-402.000.
Addis, John L., to Tektronix, Inc. Buffer amplifier. 4,390,852, Cl. 330-300.000.
Adelhard, Georg; Hasselberg, Herbert; Obermeier, Manfred; Sierwald, Karl; Szedlacsek, Jozsef; and Somogyi, Gyorgy, to Kabelmetal Electro GmbH; and Diosgyori Gepgyar. Single-twist stranding. 4,389,838, Cl. 57-71.000.
Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Junter, Guy-Alain; Lemeland, Jean-Francois; Selegny, Eric; and Vingent, Jean-Claude, 4,390,620, Cl. 435-4.000.
Agfa-Gevaert Aktiengesellschaft: *See*—
Biedermann, Ernst; Findeis, Gunter; Weber, Klaus; and Zahn, Wolfgang, 4,390,270, Cl. 355-46.000.
Agrico Chemical Company: *See*—
Weston, Charles W.; and O'Neill, Padraic S., 4,390,509, Cl. 423-313.000.
Agrotechnika, narodni podnik: *See*—
Mackrle, Svatopluk; Mackrle, Vladimir; and Dracka, Oldrich, 4,390,422, Cl. 210-188.000.
Agulia, Gianluigi. Remote tire pressure indicator. 4,389,884, Cl. 73-146.500.
Agurok, Peisakh Y.: *See*—
Rusinov, Mikhail M.; Judova, Galina N.; Kudryashov, Jury V.; and Agurok, Peisakh Y., 4,390,249, Cl. 350-453.000.
Aharoni, Shaul M., to Allied Corporation. Injection moldable poly-(ethylene terephthalate). 4,390,649, Cl. 524-167.000.
Aharoni, Shaul M.; and Largman, Theodore, to Allied Corporation. Process for increasing the melt viscosity of polyamide with aryl phosphate compound. 4,390,667, Cl. 525-420.000.
Ainsworth, Gerald L., to Hewlett-Packard Company. Method for multiple signal collision detection on a transmission line. 4,390,990, Cl. 371-57.000.
Aisin Seiki Company, Limited: *See*—
Toyoda, Minoru, 4,389,864, Cl. 70-456.00R.
Aisin Seiki Kabushiki Kaisha: *See*—
Nawa, Hideo, 4,389,956, Cl. 112-240.000.
Akashi, Shunji, to Yoshida Kogyo K.K. Ornamental attachment for slide fastener sliders. 4,389,758, Cl. 24-205.11R.
Akiba, Nobuo: *See*—
Furuichi, Masayoshi; Honjo, Takeshi; and Akiba, Nobuo, 4,390,268, Cl. 355-15.000.
Aktiebolag Carl Munters: *See*—
Ernst, Gunter; and Wurz, Dieter, 4,390,481, Cl. 261-112.000.
Aktiebolaget Metka: *See*—
Hakansson, William, 4,389,778, Cl. 30-338.000.
Aktiebolaget Svenska Precisions verktyg: *See*—
Eriksson, Alf, 4,390,310, Cl. 408-141.000.
AKZO N.V.: *See*—
Havinga, Reginoldus; Torenbeek, Reinder; and Schreurs, Petrus H. M., 4,390,451, Cl. 252-311.000.
Henne, Werner; and Scheuren, Jurgen, 4,390,455, Cl. 252-430.000.
van der Werff, Oebele P., 4,389,839, Cl. 57-238.000.
Alani, Safwat D.; and Sellman, Milhim D. Application unit for epicutaneous testing or treatment. 4,390,027, Cl. 128-743.000.
Albany International Corp.: *See*—
Duncan, Jeffrey B., 4,390,433, Cl. 210-767.000.
Albert, Lionel, to Jovanita Inc. Micro-wave ovens. 4,390,965, Cl. 364-400.000.
Albertson, Robert V. Apparatus for reciprocating liquid in a cooling system of an internal combustion engine. 4,390,049, Cl. 141-92.000.
Albrechtson, Loren R.: *See*—
Peck, Richard M.; Reif, Robert B.; and Albrechtson, Loren R., 4,390,614, Cl. 430-252.000.
Albrile, Walter, to Ing. C. Olivetti & C., S.p.A. Carriage support for typewriter. 4,390,295, Cl. 400-330.100.
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Feurer, Bernard, 4,390,482, Cl. 264-1.400.
Alexander, Mark G.: *See*—
Wood, Leonard J.; Parasuraman, Balakrishna; Williams, Edwin H.; Alexander, Mark G.; and Montgomery, Richard C., Jr., 4,390,981, Cl. 370-56.000.
Alexander, William J., III. Oscillating guide roll assembly for cloth winder. 4,390,139, Cl. 242-66.000.
Alfa-Laval AB: *See*—
Palm, Bengt A., 4,390,350, Cl. 55-38.000.
Alferness, Rodney C., to Bell Telephone Laboratories, Incorporated. Tunable polarization independent wavelength filter. 4,390,236, Cl. 350-96.140.
Algieri, Aldo A.; and Crenshaw, Ronnie R., to Bristol-Myers Company. 1-Amino-2-[3-(3-piperidinomethylphenoxy)propylamino]cyclobutene-3,4-dione. 4,390,701, Cl. 546-235.000.
Alison, John R. Turbine wheel. 4,390,316, Cl. 415-76.000.
Allen & Hanburys Limited: *See*—
Roberts, Stanley M., 4,390,721, Cl. 560-256.000.
Allen, Stephen A.: *See*—
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Allied Corporation: *See*—
Aharoni, Shaul M., 4,390,649, Cl. 524-167.000.
Aharoni, Shaul M.; and Largman, Theodore, 4,390,667, Cl. 525-420.000.
Kato, Kenneth J.; and Frollini, Dominick, Jr., 4,390,406, Cl. 204-435.000.
Long, Emile D.; and Richardson, Keith C., 4,389,993, Cl. 123-421.000.
Mani, Krishnamurthy N.; and Chlanda, Frederick P., 4,390,402, Cl. 204-180.00P.
Marshall, Robert M.; and Dardoufas, Kimon C., 4,390,591, Cl. 428-391.000.
Segal, Leon, 4,390,489, Cl. 264-126.000.
Allingham, Robert P.: *See*—
Weeks, Paul D.; and Allingham, Robert P., 4,390,709, Cl. 549-418.000.
Allis-Chalmers Corporation: *See*—
Downing, Terry R.; Zorns, John M.; and Croft, Winfred C., 4,390,085, Cl. 188-72.900.
Alsch, Gottfried, to Naimer, Hubert Laurenz. Resetting device for manually operable rotary switch. 4,390,855, Cl. 335-166.000.
Altizer, John W.: *See*—
Fong, Calvin C.; Altizer, John W.; Arnold, Vernon E.; and Lawson, John K., 4,389,820, Cl. 51-410.000.
Aluminum Company of America: *See*—
Levendusky, Thomas L.; and Burton, William L., 4,390,653, Cl. 524-322.000.
Yu, Ho, 4,390,364, Cl. 75-67.00A.
Amana Refrigeration, Inc.: *See*—
Bucksbaum, Arnold M.; and Austin, Buddy J., 4,390,767, Cl. 219-10.55D.
Amemiya, Masahiro: *See*—
Sueyoshi, Toshinobu; Hirai, Shigeo; and Amemiya, Masahiro, 4,390,361, Cl. 75-0.5BA.
American Cyanamid Company: *See*—
Grudzinskas, Charles V.; Chen, Sow-Mei L.; and Wissner, Allan, 4,390,711, Cl. 549-465.000.
Peake, Steven L., 4,390,707, Cl. 549-214.000.
Sloboda, Adolph E., 4,390,545, Cl. 424-275.000.
American Davidson, Inc.: *See*—
Langlois, Henry J.; Hart, Dean W.; and Blazek, Gary J., 4,390,321, Cl. 417-15.000.
American Dental Association Health Foundation: *See*—
Argentar, Harold, 4,390,714, Cl. 560-36.000.
American Filtrona Corporation: *See*—
Berger, Richard M., 4,390,031, Cl. 131-336.000.

American Hoechst Corporation: *See—*
Pomeroy, Keith H., 4,390,903, Cl. 358-282.000.

American Sign & Indicator Corporation: *See—*
Seibert, Lloyd; and Ellefsen, George E., 4,389,804, Cl. 40-447.000.

Amigues, Pierre; Chauvin, Yves; Commereuc, Dominique; Gaillard, Jean; and Phung, Nhu H., to Institut Francais du Petrole. Process for treating aqueous streams containing aluminum. 4,390,431, Cl. 210-724.000.

AMP Incorporated: *See—*
Casey, Daniel T., 4,389,769, Cl. 29-751.000.
Showman, Robert L.; and Weber, Robert N., 4,390,224, Cl. 339-75.0MP.

Anderson, Carl. Window and door trim for use with siding. 4,389,824, Cl. 52-211.000.

Anderson, James. Photographic distortion method and apparatus. 4,390,272, Cl. 355-84.000.

Anderson, Jerrel C., to Du Pont de Nemours, E. I., and Company. Stabilized ethylene/tetrafluoroethylene copolymers. 4,390,655, Cl. 524-413.000.

Ando, Shizuka; Oyama, Hiroshi; and Yamaguchi, Toshio, to Toto, Ltd. Body part cleansing device. 4,389,738, Cl. 4-420.200.

Ando, Tomonori; Hanyuda, Toshiaki; Shishido, Satohiro; Sano, Fumiaki; Ochi, Kiyoyuki; Sugimoto, Toshiaki; and Okino, Yoshiro, to Showa Highpolymer Co., Ltd. Curable resin composition. 4,390,662, Cl. 525-28.000.

Andreason, Gustav O.; Friberg, Ulf R.; Kuvaja, Heimo H.; and Qvarnstrom, Bengt G. L., to Stora Kopparbergs Bergslags Aktiebolag. Seedling transplant unit. 4,389,814, Cl. 47-73.000.

Andrews, John W., to United States of America, Energy. Hot water tank for use with a combination of solar energy and heat-pump desuperheating. 4,390,008, Cl. 126-427.000.

Andrews, Michael W., to Bell Telephone Laboratories, Incorporated. Circuit for detecting reduction in power. 4,390,871, Cl. 340-659.000.

Annen, Klaus: *See—*
Hofmeister, Helmut; Wiechert, Rudolf; Annen, Klaus; Laurent, Henry; and Beier, Sybille, 4,390,530, Cl. 424-238.000.

Aoki, Hachiro; Tomita, Hitoshi; and Nagamata, Kiyoshi, to Diesel Kiki Co., Ltd. Distribution type fuel injection pump. 4,389,998, Cl. 123-502.000.

Applegate, Steven L.; and Lloyd, Edward R., to International Business Machines Corporation. Printhead stylus assembly. 4,390,884, Cl. 346-139.00C.

Appleton Electric Company: *See—*
Sviatoslavsky, Nicolas N.; and Kelpin, Charles A., 4,390,114, Cl. 220-337.000.

Arai, Kiyoshi, to Sony Corporation. Method and apparatus for controlling a printer. 4,389,935, Cl. 101-93.010.

Arai, Toshiyuki: *See—*
Nohda, Masao; Umemura, Izumi; and Arai, Toshiyuki, 4,390,255, Cl. 351-212.000.

Arakawa, Masatoshi: *See—*
Ishikawa, Katuhiro; Ohno, Ryotaro; and Arakawa, Masatoshi, 4,390,717, Cl. 560-114.000.

Argentar, Harold, to American Dental Association Health Foundation. Tertiary aromatic amine accelerators in acrylic resin. 4,390,714, Cl. 560-36.000.

Arimura, Yoshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Position detecting system. 4,390,955, Cl. 364-490.000.

Armco Inc.: *See—*
Fisher, Christopher L., 4,390,306, Cl. 405-124.000.

Arnold, John: *See—*
Kluver, Leroy; and Arnold, John, 4,389,929, Cl. 100-88.000.

Arnold, Vernon E.: *See—*
Fong, Calvin C.; Altizer, John W.; Arnold, Vernon E.; and Lawson, John K., 4,389,820, Cl. 51-410.000.

Arnoux, Jean, to Cesar Arnoux, S.A. Watch casing. 4,390,288, Cl. 368-276.000.

Asada, Akihiro: *See—*
Sampei, Tohru; Asada, Akihiro; Ohta, Yoshihiro; and Iwasaki, Syunji, 4,390,747, Cl. 179-1.0SC.

Asahi-Dow Limited: *See—*
Yoshimura, Isao; and Togashi, Takao, 4,390,587, Cl. 428-215.000.

Asahi Glass Company Ltd.: *See—*
Oda, Yoshio; Morikawa, Shinsuke; Ikemura, Masaaki; Yarita, Tomio; Noshiro, Makoto; Gotoh, Isao; Jitsugiri, Yukio; Yonemori, Shigeaki; Sato, Kimihiko; and Uchida, Keiichi, 4,390,511, Cl. 423-469.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Moriguchi, Kisoo; and Yoshii, Naoji, 4,390,666, Cl. 525-194.000.
Yasui, Koichi; and Hisano, Jinpei, 4,390,493, Cl. 264-328.160.

Asai, Yasuhiko: *See—*
Kyo, Kayomon; Asai, Yasuhiko; Hirose, Isamu; and Suyama, Nobuo, 4,390,682, Cl. 528-194.000.

ASEA Aktiebolag: *See—*
Cragfors, Gunnar; and Bosson, Jorgen, 4,390,846, Cl. 330-10.000.

Ashby, Bruce A., to General Electric Company. Ultraviolet light absorbing compositions. 4,390,660, Cl. 524-721.000.

Asher, William J.: *See—*
Davis, Thomas A.; and Asher, William J., 4,390,521, Cl. 424-36.000.

Ashland Oil, Inc.: *See—*
Daniel, Chelliah, 4,390,725, Cl. 562-599.000.
Daniel, Chelliah, 4,390,728, Cl. 568-431.000.
Gruber, Bruce A., 4,390,675, Cl. 526-273.000.
Myers, George D., 4,390,415, Cl. 208-113.000.
Walters, Paul W.; Benslay, Roger M.; and Barger, Dwight F., 4,390,503, Cl. 422-147.000.
Whitlock, Dellas M., 4,389,867, Cl. 72-126.000.

Astro Development Corporation: *See—*
Dudek, Harold M., 4,389,908, Cl. 74-711.000.

Athanassiu, Christos; and St. Laurent, Wilfred H., Jr., to Bellofram Corporation. Rolling diaphragm vacuum control. 4,390,036, Cl. 137-116.500.

Atlanta Grotnes Machine Company: *See—*
Grotnes, Carl C., II, 4,389,875, Cl. 72-393.000.

Atlantic Richfield Company: *See—*
Nicholson, Harold L., 4,390,663, Cl. 525-53.000.

Audeh, Costandi A., to Mobil Oil Corporation. Co-processing of residual oil and coal. 4,390,409, Cl. 208-8.0LE.

Audeh, Costandi A., to Mobil Oil Corporation. Process for the production of fuels and metal values. 4,390,410, Cl. 208-8.0LE.

Audesse, Emery G.; Kendrick, George B.; and Chavan, Pratap P., to GTE Products Corporation. Projection unit with separable lamp capsule and means for ejecting same. 4,390,935, Cl. 362-306.000.

Auer-Sog Glaswerke GmbH: *See—*
Willing, Achim, 4,390,934, Cl. 362-291.000.

Augustin, Hans-Georg: *See—*
Kriechbaum, Karl; Augustin, Hans-Georg; and Hoffmann, Dietrich, 4,390,764, Cl. 200-148.00A.

Austin, Buddy J.: *See—*
Bucksbaum, Arnold M.; and Austin, Buddy J., 4,390,767, Cl. 219-10.55D.

Austin, Richard G.: *See—*
Michaelson, Robert C.; and Austin, Richard G., 4,390,739, Cl. 568-860.000.

Autelca, AG: *See—*
Siegenthaler, Fritz, 4,390,296, Cl. 400-608.000.

Automation Industries, Inc.: *See—*
Carter, David P. E., 4,390,222, Cl. 339-45.00M.

Avar, Geza: *See—*
Rasshofer, Werner; Avar, Geza; Freitag, Hans-Albrecht; Grogler, Gerhard; and Kopp, Richard, 4,390,640, Cl. 521-51.000.

Axelrod, Robert J., to General Electric Company. Diphenyl pentaerythritol diphosphonate. 4,390,477, Cl. 260-927.00R.

Ayata, Naoki: *See—*
Hatanaka, Katsunori; Uzawa, Shunichi; Hirai, Yutaka; and Ayata, Naoki, 4,390,791, Cl. 250-578.000.

B.N.F. Metals Technology Centre: *See—*
Bowers, John E., 4,390,363, Cl. 75-63.000.

Baakman, Hendrik J.: *See—*
Van Kampen, Hendrik; Rouland, Joseph G.; and Baakman, Hendrik J., 4,390,900, Cl. 358-147.000.

Babcock, Clarence O., to United States of America, Interior. Borehole gauge for in-situ measurement of stress and other physical properties. 4,389,896, Cl. 73-784.000.

Babcock-Hitachi Kabushiki Kaisha: *See—*
Kajiyama, Shigeru, 4,389,894, Cl. 73-637.000.

Babcock, William E.; and Wendt, Frank S., to RCA Corporation. Television receiver ferroresonant power supply using a two-material magnetizable core arrangement. 4,390,819, Cl. 315-411.000.

Bach, Dieter; Jackle, Heiner G.; and Marquardt, Kurt. Method and apparatus for determining the colloid index in liquids. 4,389,879, Cl. 73-61.00R.

Backes, Earl L.: *See—*
Wilgus, William D.; and Backes, Earl L., 4,390,098, Cl. 209-571.000.

Bahlinger, Walter, to Siemens Aktiengesellschaft. Semiconductor component with a plurality of semiconductor elements. 4,390,891, Cl. 357-79.000.

Bahrle, Friedrich; Binder, Hellmuth; Meyer, Wolfram; and Wulf, Helmut, to Daimler-Benz Aktiengesellschaft. Transverse guide roller arrangement for a track guided vehicle. 4,389,945, Cl. 104-247.000.

Bak, Chan S.: *See—*
Gaven, Joseph V., Jr.; and Bak, Chan S., 4,390,291, Cl. 374-160.000.

Bake, Willem J. H. Container. 4,390,282, Cl. 366-40.000.

Baker, William H. Automated surge weir and rim skimming gutter flow control system. 4,389,739, Cl. 4-512.000.

Bako, Lazlo, to Presto Lock, Inc. Combination locks. 4,389,863, Cl. 70-312.000.

Balducci, Luigi; and Rustioni, Massimo, to Montedison S.p.A. Rutile (TiO_2) pigments coated with (1) trigonal anhydrous alumina (Al_2O_3) and (2) cubic metal aluminate ($MeAl_2O_4$) (Me=Co, Ni, Cu, Zn, Mg) and process. 4,390,374, Cl. 106-300.000.

Baldwin Piano & Organ Company: *See—*
Uetrecht, Dale M.; and Simmons, Carlton J., Jr., 4,389,914, Cl. 84-1.010.

Ball Corporation: *See—*
Wilgus, William D.; and Backes, Earl L., 4,390,098, Cl. 209-571.000.
Wilson, Rosser S., 4,390,910, Cl. 360-77.000.

Balloon Works, Inc., The: *See—*
Barnes, Tracy L.; and Murphy, Christy A., 4,390,149, Cl. 244-31.000.

Balogh, Louis J.; Fitzhugh, Raymond L.; Kimes, Dale S.; and Weinstein, Myron, to Goodyear Tire & Rubber Company, The. Apparatus and method for measuring roll diameters. 4,389,788, Cl. 33-178.00D.

Banitt, Elden H., to Riker Laboratories, Inc. Phenolic derivative. 4,390,716, Cl. 560-65.000.

Bank, Herbert M.: *See—*
Rubenstein, Irving H.; and Bank, Herbert M., 4,390,553, Cl. 426-138.000.

Banks, Arthur J., to RCA Corporation. TV Sync generator system for PAL standards. 4,390,892, Cl. 358-17.000.

Barger, Dwight F.: *See—*
Walters, Paul W.; Benslay, Roger M.; and Barger, Dwight F., 4,390,503, Cl. 422-147.000.

Barlage, Bruno, to H. Niemeyer Sohne GmbH & Co. KG. Soil working machine. 4,390,070, Cl. 172-54.500.

Barmag Barmer Maschinenfabrik AG: *See—*
Oberstrass, Detley, 4,389,841, Cl. 57-340.000.

Barnes, James E., to Cox, James M., a part interest. Adjustable ankle stirrup device for a chiropractic table. 4,390,173, Cl. 269-328.000.

Barnes, Tracy L.; and Murphy, Christy A., to Balloon Works, Inc., The. Balloon envelope and method of fabricating same. 4,390,149, Cl. 244-31.000.

Barnette, Luverne H.; and Liang, Charles C., to Duracell Inc. Solid state cell with anolyte. 4,390,446, Cl. 252-182.100.

Bartelink, Everhard H. B. Remote supervisory system. 4,390,750, Cl. 179-5.00R.

Barthelmess, Ulrich, to OMYA GmbH. Centrifugal classifier. 4,390,419, Cl. 209-11.000.

Bartholomay, Donald O., to Gustafson, Inc. Automatic crosscut sampler. 4,389,906, Cl. 73-863.550.

Bartholomew, Victor L., to Hudson Oxygen Therapy Sales Company. Percussor assembly. 4,390,013, Cl. 128-55.000.

Bartl, James C., to Label-Aire Inc. Label applicator and method for labeling the forward faces of articles. 4,390,386, Cl. 156-235.000.

BASF Aktiengesellschaft: *See—*
Lach, Dietrich, 4,390,340, Cl. 8-94.240.

BASF Farben & Fasern A.G.: *See—*
Buchholz, Hagen; Johannsmeier, Hans-Dieter; and Vock, Friedrich, 4,390,126, Cl. 239-1.000.

BASF Wyandotte Corporation: *See—*
Schwartz, Ellen S.; and Tincher, Cline A., 4,390,439, Cl. 252-73.000.
Schwartz, Ellen S.; and Tichner, Cline A., 4,390,440, Cl. 252-76.000.

Batchelder, J. Samuel. Method and apparatus for dielectrophoretic manipulation of chemical species. 4,390,403, Cl. 204-180.00R.

Bate, Gary W.: *See—*
Coker, Robert J.; Bate, Gary W.; and Deuzeman, Henk J., 4,390,398, Cl. 203-18.000.

Bauer, Robert, to Miles Laboratories, Inc. Method and device for detecting glucose concentration. 4,390,621, Cl. 435-14.000.

Baumann, Hanns U., to Sharon K. Baumann Trust. Simplified construction system. 4,389,831, Cl. 52-741.000.

Baumann, Hans, to Grob & Co. Aktiengesellschaft. Heddle frame stave. 4,390,045, Cl. 139-91.000.

Baumbach, Bertram W., to Reliance Electric Company. Line protector and related termination arrangement. 4,390,921, Cl. 361-119.000.

Baxter Travenol Laboratories, Inc.: *See—*
Garver, Edward B., Sr., 4,390,668, Cl. 525-444.000.
Kopp, Clinton V., 4,390,575, Cl. 428-36.000.

Bayer Aktiengesellschaft: *See—*
Ebneth, Harold; and Klipfel, Siegfried, 4,390,588, Cl. 428-263.000.
Rasshofer, Werner; Avar, Geza; Freitag, Hans-Albrecht; Grogler, Gerhard; and Kopp, Richard, 4,390,640, Cl. 521-51.000.
von Bonin, Wulf, 4,390,672, Cl. 526-209.000.

BBC Brown, Boveri & Company, Limited: *See—*
Kehlhofer, Rolf, 4,389,847, Cl. 60-659.000.

Beattie, Thomas R.; Hannah, John; and Johnston, David B. R., to Merck & Co., Inc. Cephalosporin compounds. 4,390,693, Cl. 542-442.000.

Beavan, Stuart W., to Lever Brothers Company. Machine dishwashing composition. 4,390,441, Cl. 252-96.000.

Becher, Albert F.: *See—*
King, Paul V.; Becher, Albert F.; and Henderson, Wilmer P., 4,389,947, Cl. 109-1.00S.

Becka Michael M., to International Shoe Machine Corporation. Molding an insole and attaching the molded insole to a last bottom. 4,389,745, Cl. 12-142.00T.

Becker, Kunibert; Kirchbrucher, Rudiger; Lagodka, Gunter; and Pohlmann, Klaus-Dieter, to Gewerkschaft Eisenhutte Westfalia. Advance mechanism for a mine roof support assembly. 4,390,308, Cl. 405-299.000.

Beckman Instruments, Inc.: *See—*
Meyer, Richard C., 4,390,283, Cl. 366-142.000.

Beehler, Richard F., to Heil-Quaker Corporation. Terminal block and capacitor mount for blower. 4,390,219, Cl. 339-14.00R.

Beer, Hans, to Chemie Linz Aktiengesellschaft. Process for the preparation of 1,2,4-triazole. 4,390,704, Cl. 548-262.000.

Behnert, Reinhard, to Vereinigte Flugtechnische Werke GmbH. Power unit with gas turbine. 4,389,842, Cl. 60-39.360.

Behrend, Paul. Spraying gun for metal spraying. 4,390,127, Cl. 239-83.000.

Beier, Sybille: *See—*
Hofmeister, Helmut; Wiechert, Rudolf; Annen, Klaus; Laurent, Henry; and Beier, Sybille, 4,390,530, Cl. 424-238.000.

Bell Telephone Laboratories, Incorporated: *See—*
Alferness, Rodney C., 4,390,236, Cl. 350-96.140.
Andrews, Michael W., 4,390,871, Cl. 340-659.000.
Broyer, Alfred P., 4,390,120, Cl. 228-180.00R.
Capasso, Federico; Hutchinson, Albert L.; and Logan, Ralph A., 4,390,889, Cl. 357-30.000.
Coyne, Kevin N.; and Curtis, Hazen, III, 4,390,225, Cl. 339-88.00R.
Geyling, Franz T.; and Louzon, Theodore J., 4,390,589, Cl. 428-381.000.

Bellofram Corporation: *See—*
Athanassiu, Christos; and St. Laurent, Wilfred H., Jr., 4,390,036, Cl. 137-116.500.

Benasutti, John E., to Burroughs Corporation. Electrical connector assembly for an integrated circuit package. 4,390,220, Cl. 339-17.0CF.

Bendix Corporation, The: *See—*
Browning, David R.; Sima, Gordon R., Jr.; Schmidt, John C.; and Sickenberger, David W., 4,390,784, Cl. 250-287.000.
Donaldson, Robert D., 4,389,781, Cl. 33-1.00M.
Niles, Paul D.; and Normann, Richard W., 4,390,221, Cl. 339-17.00M.

Benecke, Wilhelm; and Rosenberg, Heinz, to Siemens Aktiengesellschaft. Static magnetic frequency multiplies. 4,390,941, Cl. 363-174.000.

Beningfield, Harley W.; and Wilt, Donna F., to Rockwell International Corporation. Electronic system and method for self-calibration of instrument landing systems. 4,390,949, Cl. 364-429.000.

Benslay, Roger M.: *See—*
Walters, Paul W.; Benslay, Roger M.; and Barger, Dwight F., 4,390,503, Cl. 422-147.000.

Beppu, Masazo: *See—*
Inoue, Yasuhiko; Wake, Shigeo; Sirafuji, Tamio; and Beppu, Masazo, 4,390,736, Cl. 568-801.000.

Berger, Richard M., to American Filtrona Corporation. Tobacco filter. 4,390,031, Cl. 131-336.000.

Bergeron, David L.; and Patel, Parsotam T., to International Business Machines Corporation. Saturation-limited bipolar transistor device. 4,390,890, Cl. 357-44.000.

Bergvall, Bengt A., to Husqvarna. Sewing machine for sewing fancy seams. 4,389,953, Cl. 112-158.00E.

Berisch, Volker, to ITT Industries, Inc. Deceleration-sensitive braking pressure control device. 4,390,213, Cl. 303-24.00A.

Berk, Donald M.; Jacoby, Charles E.; and Reagan, Larry, to SI Handling Systems Inc. Driverless vehicle conveyor system. 4,389,941, Cl. 104-49.000.

Bernheim, Willy: *See—*
Deiner, Hans; and Bernheim, Willy, 4,390,650, Cl. 524-266.000.

Bertelsen, Corey A., to Chevron Research Company. Process for burning retorted oil shale and improved combustor. 4,389,950, Cl. 110-235.000.

Berthold, Fritz; Kolehmainen, Seppo; and Tarkkanen, Veikko. Use of a method, particularly an automatic method, for measuring light as well as improvements and apparatuses for carrying out the same. 4,390,274, Cl. 356-36.000.

Bertone, Gregory A.; and Bossart, Clayton J., to Mine Safety Appliances Company. Indicating system for atmospheric pump arrangement. 4,389,903, Cl. 73-863.030.

Bes, Louis, to Framatome. Unclogging and recovering device for sludge deposited on the tube plate of a steam generator. 4,390,034, Cl. 134-104.000.

Best, David W., to Rockwell International Corporation. Multiple input master/slave flip flop apparatus. 4,390,987, Cl. 370-112.000.

Best, David W.; and Russell, Jeffrey D., to Rockwell International Corporation. Efficient means for implementing many-to-one multiplexing logic in CMOS/SOS. 4,390,988, Cl. 370-113.000.

Best, Gary: *See—*
Ostroski, Richard J.; Aberer, James B.; and Best, Gary, 4,389,780, Cl. 30-408.000.

Bester, Horst: *See—*
Niehaus, Norbert; Popperling, Rolf; and Bester, Horst, 4,390,367, Cl. 75-125.000.

Betts, William L.; and Martinez, Kenneth, to Paradyne Corporation. Telephone system ring period detector. 4,390,843, Cl. 328-138.000.

Beukema, Duane M.: *See—*
Faiks, Frederick S.; Pergler, Charles C.; Whitwam, Ronald L.; Knoblauch, Jack R.; Beukema, Duane M.; and Hozeski, Kenneth W., 4,390,206, Cl. 297-300.000.

Beyen, Heinrich, to Reederei und Spedition "Braunkohle" GmbH. Apparatus for accommodating a substance to be shielded from the environment. 4,390,040, Cl. 137-340.000.

Biava, Dominique; Cornu, Jean; Detriche, Jean-Marie; Galera, Richard; Tiret, Bernard; and Marchal, Paul, to Commissariat a l'Energie Atomique. Automatic and self-adapting process for fusion-welding a joint between two surfaces. 4,390,775, Cl. 219-124.340.

Biedermann, Ernst; Findeis, Gunter; Weber, Klaus; and Zahn, Wolfgang, to Agfa-Gevaert Aktiengesellschaft. Photographic copier. 4,390,270, Cl. 355-46.000.

Bigham, Bobby J., to Peppers, James M. Caulking gun. 4,390,115, Cl. 222-326.000.

Binder, Hellmuth: *See—*
Bahrle, Friedrich; Binder, Hellmuth; Meyer, Wolfram; and Wulf, Helmut, 4,389,945, Cl. 104-247.000.

Bione, Angelo A., to Marmon Company. Musical instrument including electronic sound reverberation. 4,389,915, Cl. 84-1.240.

BioResearch Inc.: *See—*
Kurtz, Leonard D., 4,390,492, Cl. 264-255.000.

Biran, Benjamin; and Biran, Miriam. Foot-operated exercising device. 4,390,177, Cl. 272-73.000.

Biran, Miriam: *See—*
Biran, Benjamin; and Biran, Miriam, 4,390,177, Cl. 272-73.000.

Bird, Stanford W. Container lid having vent means. 4,390,113, Cl. 220-306.000.

Bitterly, Jack G. Vacuum chamber and method of creating a vacuum. 4,389,794, Cl. 34-5.000.

Biwa, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor light-emitting display device. 4,390,810, Cl. 313-500.000.

Bizzozero, Piero: *See—*
De Micheli, Angelo; and Bizzozero, Piero, 4,390,727, Cl. 568-422.000.

Bjorklund, Glenn J.; and Phillips, Charles E., to Southern California Edison Co., Inc. Electric utility demand limiting device and method. 4,390,876, Cl. 340-825.170.

Black & Decker Inc.: *See—*
Overbury, Douglas G.; and McDougall, Robert J., 4,389,779, Cl. 30-382.000.

Blacknell Buildings Limited: *See—*
Brooks, Douglas H. M., 4,390,578, Cl. 428-57.000.

Blair, Daniel R.; Lomneth, Richard B.; Prosise, Robert L.; and Tao, Bernard T., to Procter & Gamble Company, The. Margarine oil product. 4,390,561, Cl. 426-607.000.

Blanc, Maurice: *See—*
Chiovini, Jacky; Blanc, Maurice; and Margolis, Geoffrey, 4,390,698, Cl. 544-274.000.

Blauschild, Robert A., to Signetics. Linear transconductance amplifier. 4,390,848, Cl. 330-151.000.

Blazek, Gary J.: *See—*
Langlois, Henry J.; Hart, Dean W.; and Blazek, Gary J., 4,390,321, Cl. 417-15.000.

Block, Charles; and Mintz, Leon, to Joseph Galkin Corporation. Belt loop setting system. 4,389,957, Cl. 112-262.300.

Blytas, George C., to Shell Oil Company. Sulfur separation process. 4,390,516, Cl. 423-573.00R.

Board of Overseers of Goshen College: *See—*
Jacobs, Merle E., 4,390,341, Cl. 8-424.000.

Bocinski, Terrance E.; and Knight, Alan D., to International Business Machines Corporation. Tri-lead cable housing removal tool. 4,389,770, Cl. 29-764.000.

Bock, Mark G.; and Di Pardo, Robert M., to Merck & Co., Inc. Intermediates for the resolution of some interphenylene-9-thia-11-oxo-12-azaprostanoic acids. 4,390,703, Cl. 548-187.000.

Boden, Richard M., to International Flavors & Fragrances Inc. Branched chain olefinic, alcohols, thiols, esters and ethers, organoleptic uses thereof, processes for preparing same and intermediates therefor. 4,390,443, Cl. 252-174.110.

Boden, Richard M.; Licciardello, Michael; Maisano, Joseph J., Jr.; and Hanna, Marie R., to International Flavors & Fragrances Inc. Perfumed stable aqueous hypochlorite bleach compositions containing 2-methyl-2-octanol and thickened variation thereof. 4,390,448, Cl. 252-187.260.

Boden, Richard M., to International Flavors & Fragrances Inc. Aliphatic branched olefin dioxolanes, dithiolanes, and oxathiolanes and uses thereof in augmenting or enhancing the aroma and/or taste of consumable materials. 4,390,462, Cl. 252-522.00R.

Boden, Richard M.; Licciardello, Michael; and Tyszkiewicz, Theodore J., to International Flavors & Fragrances Inc. Process for augmenting or enhancing the aroma of perfume compositions and colognes utilizing alkyl, aralkyl, and bicycloalkyl methyl carbonates. 4,390,463, Cl. 252-522.00R.

Boden, Richard M.: *See—*
Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., 4,390,435, Cl. 252-8.600.

Boeing Company, The: *See—*
Whitener, Philip C., 4,390,150, Cl. 244-45.00R.

Boeni, Hans; Meier, Beda; and Szacsvay, Gabor, to Hilti Aktiengesellschaft. Forming engagement grooves in a tool shank. 4,389,870, Cl. 72-354.000.

Boerema, Edward T.: *See—*
Flowerday, Carl; Marcus, Konrad H.; Kempkers, Gordon; Boerema, Edward T.; and Fleming, Dennis J., 4,390,202, Cl. 296-97.00K.

Boerung-Gebrauchsartikel GmbH: *See—*
Runge, Hermann, 4,390,928, Cl. 362-101.000.

Bolick, Stephen M.; and Vought, John O. Pressure regulator assembly guard. 4,389,890, Cl. 73-431.000.

Bonar Industries Inc.: *See—*
Cuthbertson, Bruce, 4,390,051, Cl. 150-1.000.

Bond Cote of Virginia, Inc.: *See—*
Holden, Durrell W., 4,390,585, Cl. 428-172.000.

Bond, John A.; Li, Yuan-Lu; and Crane, Leslie J., to Northern Telecom Limited. Scrambling and unscrambling video signals in a pay TV system. 4,390,898, Cl. 358-119.000.

Bononi, Walter. Pad of high elasticity. 4,390,256, Cl. 351-139.000.

Bookbinder, Carl. Window mirror. 4,390,240, Cl. 350-258.000.

Borak, Josef. Watering valve-bracket for rabbits and small fur bearing animals. 4,389,977, Cl. 119-72.500.

Bossart, Clayton J.: *See—*
Bertone, Gregory A.; and Bossart, Clayton J., 4,389,903, Cl. 73-863.030.

Bosson, Jorgen: *See—*
Cragfors, Gunnar; and Bosson, Jorgen, 4,390,846, Cl. 330-10.000.

Bottcher, Bodo K.; and Wilck, Manfred O., to Raychem GmbH. Enclosures for electrical apparatus, cable and enclosure combinations, and kits and methods for their construction. 4,390,745, Cl. 174-73.00R.

Bowden, Larry D.; Miyashita, Albert H.; and Ravenelle, Charles I., to International Business Machines Corporation. Layered electrophotographic imaging element, apparatus and method sensitive to gallium arsenide laser, the element including two charge generation layers and a polycarbonate adhesive layer. 4,390,610, Cl. 430-58.000.

Bowers, John E., to B.N.F. Metals Technology Centre. Continuous method for removing copper from lead. 4,390,363, Cl. 75-63.000.

Bowers, Kenneth E.; and Markley, Charles E., to Ethyl Development Corporation. Blow pin assembly. 4,390,338, Cl. 425-525.000.

Boyesen, Eyvind, to Performance Industries, Inc. Internal combustion engine fuel supply system. 4,389,982, Cl. 123-73.00R.

Boykins, James L., Jr. Uniform for Karate and the like. 4,389,733, Cl. 2-2.000.

Brantl, Victor; Henschen, Agnes; Teschemacher, Hansjorg; and Lottspeich, Friedrich. Pharmacologically active peptides and medicaments containing the same. 4,390,527, Cl. 424-177.000.

Bratten, Jack R. Filtration apparatus. 4,390,428, Cl. 210-400.000.

Braun Aktiengesellschaft: *See—*
Knoll, Dieter, 4,390,108, Cl. 220-228.000.

Braverman, Leonard W.: *See—*
Sojka, Richard J.; Braverman, Leonard W.; Guch, Steve, Jr.; and Clark, David J., 4,390,993, Cl. 372-87.000.

Braxmeier, Hans: *See—*
Stahlecker, Hans; and Braxmeier, Hans, 4,389,837, Cl. 57-16.000.

Brazel, James P., to General Electric Company. Alumina-alumina composite. 4,390,583, Cl. 428-113.000.

Brenner, Richard K. Container bag system for bicycles. 4,390,088, Cl. 190-51.000.

Brent, Albert: *See—*
Dille, Roger M.; Middleton, Leigh R.; Brent, Albert; and Robin, Allen M., 4,390,347, Cl. 48-197.00R.
Dille, Roger M.; Middleton, Leigh R.; Brent, Albert; and Robin, Allen M., 4,390,348, Cl. 48-197.00R.

Bridges, Charles D.: *See—*
McGee, John K.; Lafferty, Harold L.; Bridges, Charles D.; and Smith, Archie L., 4,390,186, Cl. 277-236.000.

Bridoux, Monique J. S.: *See—*
Hanotier, Jacques D. V.; Bridoux, Monique J. S.; and Dauby, Jacques F., 4,390,472, Cl. 260-398.600.

Briens, Guy, to Societe Nationale Industrielle Aerospatiale. Process for making a perforated rigid sheet material for sound absorbing composite cellular structure. 4,390,584, Cl. 428-116.000.

Brill, Robert. Muffler and exhaust extractor. 4,390,079, Cl. 181-227.000.

Briner, Emil; Clement, Heinz; and Eberli, Heiner, to Rieter Machine Works Limited. Method of producing a staple fibre sliver and apparatus for implementing the method. 4,389,752, Cl. 19-0.560.

Briner, Emil; Novak, Peter; Tanner, Bruno; and Gasser, Hermann, to Rieter Machine Works Limited. Method of automatically doffing the full bobbin packages from, and donning the empty bobbin tubes onto, the spindles of a preparatory spinning machine. 4,389,840, Cl. 57-267.000.

Brister, Eneas E.; and Williams, Frederick P., to Monarch Marking Systems, Inc. Composite label web. 4,390,577, Cl. 428-42.000.

Bristol-Myers Company: *See—*
Algieri, Aldo A.; and Crenshaw, Ronnie R., 4,390,701, Cl. 546-235.000.

Bromley, Charles: *See—*
Graetz, Clive W.; Thompson, Morice W.; and Bromley, Charles, 4,390,658, Cl. 524-512.000.

Brooks, Douglas H. M., to Blacknell Buildings Limited. Method of joining members. 4,390,578, Cl. 428-57.000.

Brossi, Arnold; Schmidhammer, Helmut; and Jacobson, Arthur E., to United States of America, Health and Human Services. 6-Keto-morphinans belonging to the 14-hydroxy-series. 4,390,699, Cl. 546-74.000.

Brown, Boveri & Cie AG: *See—*
Lau, Waldemar, 4,390,920, Cl. 361-75.000.

Brown, Charles A., to Control Data Corporation. Demultiplexing plural data streams. 4,390,980, Cl. 370-19.000.

Brown, Edgar D., Jr., to General Electric Company. Phenyl-containing organopolysiloxanes. 4,390,651, Cl. 524-267.000.

Brown, Henry C.: *See—*
Mueller, Fredrick N.; and Brown, Henry C., 4,390,216, Cl. 308-6.00R.

Brown, Jack; and Wurst, John W., to Singer Company, The. Motor control system incorporating top speed limiting arrangement. 4,390,823, Cl. 318-331.000.

Brown, Jack, to Singer Company, The. Full wave motor control circuit. 4,390,824, Cl. 318-331.000.

Brown, Michael R.: *See—*
Shah, Gautam N.; Brown, Michael R.; Lee, Edward C.; Hook, Gerald C.; Wand, Robert L.; Ratliff, Charles R.; and McClure, Virge W., 4,390,885, Cl. 346-140.00R.

Browning, David R.; Sima, Gordon R., Jr.; Schmidt, John C.; and Sickenberger, David W., to Bendix Corporation, The. One piece ion accelerator for ion mobility detector cells. 4,390,784, Cl. 250-287.000.

Broyer, Alfred P., to Bell Telephone Laboratories, Incorporated. Soldering methods and apparatus. 4,390,120, Cl. 228-180.00R.

Broyles, Harry C., to Raychem Corporation. Enhanced recovery memory metal device. 4,390,599, Cl. 428-597.000.

Bruce, Charles R.; and Johnson, Irvin D., to Marathon Oil Company. Method and apparatus for the detection of pipeline holidays. 4,390,836, Cl. 324-54.000.

Bruttel, Beat; and Pfenninger, Heinz, to Ciba-Geigy Corporation. Process for the preparation of solid composition of water-soluble dyes. 4,390,342, Cl. 8-524.000.

BTI Computer Systems: *See—*
Quackenbush, William L.; Porter, Stephen C.; and Cargile, William P., 4,390,944, Cl. 364-200.000.

Buchholz, Hagen; Johannsmeier, Hans-Dieter; and Vock, Friedrich, to BASF Farben & Fasern A.G. Process for supplying painting lines with paint. 4,390,126, Cl. 239-1.000.

Buckeye Cellulose Corporation, The: *See—*
Franz, Norman J.; and Reynolds, Elizabeth B., 4,389,734, Cl. 2-59.000.

Bucksbaum, Arnold M.; and Austin, Buddy J., to Amana Refrigeration, Inc. Windowed and choked combination oven door. 4,390,767, Cl. 219-10.55D.

Budai, Miklos: *See—*
Udvardy Nagy nee Cserey Pechany, Eva; Budai, Miklos; Fekete, Gyorgy; Gorog, Sandor; Herenyi, Bulcsu; Wack, Geza; and Zalai, Karoly, 4,390,625, Cl. 435-119.000.

Budden, Raymond G.; and Scott, Fraser, to Ring Sights Limited. Collimator gunsight. 4,390,276, Cl. 356-251.000.

Buder, Wolfgang: *See—*
Karl, Alfons; Buder, Wolfgang; and Kleinschmit, Peter, 4,390,712, Cl. 556-413.000.

Budzich, Tadeusz. Lubrication and sealing of a free floating piston of hydraulically driven gas compressor. 4,390,322, Cl. 417-243.000.

Budzynski, Andrei Z.: *See—*
Sawyer, Roy T.; Stent, Gunther S.; Budzynski, Andrei Z.; and Olexa, Stephanie A., 4,390,630, Cl. 435-226.000.

Bullard, Edward M.; and Smith, Gregory M., to Mobil Oil Corporation. Laminar thermoplastic film constructions. 4,390,573, Cl. 428-35.000.

Bulle, Harmanus B.: *See—*
De Vries, Gerhard H. F.; and Bulle, Harmanus B., 4,390,808, Cl. 313-584.000.

Bunas, Norman L.; and Smith, Gertrude I., to Devoke Company. Data splice kit. 4,390,389, Cl. 156-502.000.

Burbach, Henry E., to Combustion Engineering, Inc. Method of manufacturing pulverizer rolls. 4,389,767, Cl. 29-527.100.

Burgin, Kermit H. Method for producing and collecting a liquid extract and a dry by-product from a mash. 4,389,928, Cl. 100-37.000.

Burk, John H. Replacement wear pins and replaceable impeller assembly for impact crusher. 4,390,136, Cl. 241-275.000.

Burke, Michael G.: *See—*
Williams, William H.; and Burke, Michael G., 4,390,982, Cl. 370-67.000.

Burnham, Francis L., to Orangeburg Technologies, Inc. Multiple-stage small temperature differential heat-powered pump. 4,390,323, Cl. 417-253.000.

Burroughs Corporation: *See—*
Benasutti, John E., 4,390,220, Cl. 339-17.0CF.
Hayes, Alan B., 4,390,969, Cl. 364-900.000.
Horky, Joseph F.; and Dockal, Ronald J., 4,390,964, Cl. 364-900.000.
Olsen, John D.; and Allen, Stephen A., 4,390,945, Cl. 364-200.000.
Wu, Ta-Ming; and Gaertner, Gregory E., 4,390,780, Cl. 377-44.000.

Burtelson, Frederick W.: *See—*
Suffi, Louis; Golden, James E.; and Burtelson, Frederick W., 4,390,744, Cl. 174-41.000.

Burton, William L.: *See—*
Levendusky, Thomas L.; and Burton, William L., 4,390,653, Cl. 524-322.000.

Bush, Vannevar, to Massachusetts Institute of Technology. Expansible chamber apparatus and its operation. 4,389,921, Cl. 92-59.000.

Bushnell, Sherman W., Jr. Portable lift with ladder. 4,390,080, Cl. 182-115.000.

Bussjager, Rudy C.: *See—*
Chrostowski, Ronald F.; Bussjager, Rudy C.; and Del Toro, James J., 4,389,851, Cl. 62-81.000.

Butler, James W.; and Colvin, Alex D., to Ford Motor Company. Method of measuring an air to fuel ratio. 4,389,881, Cl. 73-116.000.

Butler, Louis L. Wheel alignment apparatus. 4,389,793, Cl. 33-336.000.

Butscher, Franz, to Motor-und Turbinen-Union GmbH. Air supply and fuel volume control arrangement for an auxiliary combustion chamber of a supercharged internal combustion engine. 4,389,846, Cl. 60-606.000.

Butts, Lawrence D., to Scovill Inc. Electrically controlled latch. 4,390,197, Cl. 292-144.000.

Byrd, William; and Kohke, Stephen J., to Research-Cottrell, Inc. Electrostatic precipitator control. 4,390,831, Cl. 323-240.000.

Bytzek, Max: *See—*
Heinrich, Wolfgang; Hammer, Klaus-Dieter; and Bytzek, Max, 4,390,569, Cl. 427-366.000.

C. E. Shepherd Company, Inc.: *See—*
Sheperd, Charles E., 4,390,478, Cl. 261-6.000.

Cabou, Christian G., to Johnson Controls, Inc. Optimal start programmer. 4,390,959, Cl. 364-557.000.

Calderone, Nicholas; Watkins, Hugh; and Yoshida, Takao, to International Flavors & Fragrances, Inc. Use of 4-methyl-3-cyclohexene-1-carboxylic acid for enhancing or augmenting the aroma of fabric softener compositions or drier-added articles. 4,390,434, Cl. 252-8.600.

Calfee, Richard V.; and Miner, Jay, to Intermedics, Inc. Implantable device with microprocessor control. 4,390,022, Cl. 128-419.0PG.

Calhoun, L. Owen: *See—*
Thorpe, Frank P.; and Calhoun, L. Owen, 4,390,106, Cl. 220-3.700.

California Institute of Technology: *See—*
Ting, Joseph W., 4,390,844, Cl. 328-142.000.

Callaway, Milton A., to Simmons U.S.A. Corporation. Mattress arrangement having a removable side-insertable center core structure. 4,389,743, Cl. 5-464.000.

Callicoatte, Jerry D. Downhole pump having a power piston and a production piston. 4,390,326, Cl. 417-401.000.

Calvert, Rodney K., to Mead Corporation, The. Method and apparatus for loading bottles into open top bottle carriers. 4,389,832, Cl. 53-48.000.

Camp, Albert T. Coated azide gas generating composition. 4,390,380, Cl. 149-8.000.

Campolmi, Stefano; Carletti, Vittorio; and Marchi, Marcello, to Montedison S.p.A. Process for preparing the mono-methallyl ether of pyrocatechin. 4,390,733, Cl. 568-652.000.

Camsco, Inc.: *See—*
Mueller, Fredrick N.; and Brown, Henry C., 4,390,216, Cl. 308-6.00R.

Canada, Her Majesty the Queen in right of, as represented by the Minister of Defence: *See—*
Tatters, Ronald; Dolman, John E.; and Howell, Donald R., deceased, 4,389,922, Cl. 92-156.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of Natural Resources: *See—*
Novak, Milan, 4,389,807, Cl. 43-96.000.

Canfield, Carl M.: *See—*
Patton, John T.; and Canfield, Carl M., 4,390,068, Cl. 166-267.000.

Canon Inc.: *See—*
Furuichi, Masayoshi; Honjo, Takeshi; and Akiba, Nobuo, 4,390,268, Cl. 355-15.000.

Canon Kabushiki Kaisha: *See—*
Hatanaka, Katsunori; Uzawa, Shunichi; Hirai, Yutaka; and Ayata, Naoki, 4,390,791, Cl. 250-578.000.
Hirohata, Michio; Ogawa, Yukio; and Taguchi, Tetsuya, 4,390,262, Cl. 354-230.000.
Ikemori, Keiji, 4,390,248, Cl. 350-427.000.
Kato, Masatake, 4,390,251, Cl. 350-467.000.
Machida, Minoru, 4,390,972, Cl. 365-222.000.
Minoura, Kazuo, 4,390,235, Cl. 350-6.100.
Satomura, Hiroshi, 4,389,968, Cl. 118-652.000.
Suzuki, Koji; Inuzuka, Tsuneki; and Kurita, Kenji, 4,390,265, Cl. 355-14.00D.
Takahashi, Yuji, 4,390,175, Cl. 271-157.000.
Yamamoto, Hiroshi; and Uchidoi, Masanori, 4,390,261, Cl. 354-173.000.

Capasso, Federico; Hutchinson, Albert L.; and Logan, Ralph A., to Bell Telephone Laboratories, Incorporated. Photodiode having an InGaAs layer with an adjacent InGaAsP p-n junction. 4,390,889, Cl. 357-30.000.

Capuano, Terry D., to Lamson & Sessions Co., The. Method of mounting a fastener. 4,389,766, Cl. 29-432.200.

Carbaugh, John E.: *See—*
Loehr, Clifford E.; Crawford, Roger A.; Carbaugh, John E.; and Welch, Cletus N., 4,390,512, Cl. 423-474.000.

Cardox Corporation: *See—*
Preiss, Martin D.; and Students, Peter A., 4,390,356, Cl. 62-35.000.

Cargile, William P.: *See—*
Quackenbush, William L.; Porter, Stephen C.; and Cargile, William P., 4,390,944, Cl. 364-200.000.

Carletti, Vittorio: *See—*
Campolmi, Stefano; Carletti, Vittorio; and Marchi, Marcello, 4,390,733, Cl. 568-652.000.

Carluccio, John F. Universal wiper plug for liquid cosmetic products. 4,390,298, Cl. 401-122.000.

Carmer, Richard V.: *See—*
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,390,590, Cl. 428-383.000.

Carniglia, Charles K.: *See—*
Jennings, Daniel T.; Carniglia, Charles K.; and Young, David B., 4,390,787, Cl. 250-459.100.

Carpenter Technology Corporation: *See—*
Wozniak, Donald R., 4,390,496, Cl. 376-245.000.

Carrier Corporation: *See—*
Chrostowski, Ronald F.; Bussjager, Rudy C.; and Del Toro, James J., 4,389,851, Cl. 62-81.000.
Haas, Rudy E.; Smorol, Michael E.; Tobin, Curtis L.; and Walker, James J., Jr., 4,390,059, Cl. 165-76.000.
Hile, James R., 4,389,853, Cl. 62-89.000.

Carter, David P. E., to Automation Industries, Inc. Lanyard release-/umbilical electrical connector. 4,390,222, Cl. 339-45.00M.

Carter, James H., II, to Coulter Electronics, Inc. Stabilization process for biological cells and stabilized compositions thereof. 4,390,632, Cl. 436-10.000.

Carter, Merle F.: *See—*
Kast, Jack L.; Eddy, Albert R.; and Carter, Merle F., 4,389,919, Cl. 89-185.000.

Cartwright, Garry W. Neisseria bacteria species identification and beta lactamase testing methods. 4,390,622, Cl. 435-18.000.

Cary, Lloyd H., to Howmet Aluminum Corp. Suspended ceiling system with crossing clip. 4,389,828, Cl. 52-665.000.

Casey, Daniel T., to AMP Incorporated. Terminating tool which is adjustable to accommodate different centerline spacing. 4,389,769, Cl. 29-751.000.

Casio Computer Co., Ltd.: *See—*
Morishige, Morio, 4,390,287, Cl. 368-240.000.

Cassidy, Michael P.; D'Amico, John F.; DeAngelo, Michael A., Jr.; and Lin, Kon-Mang, to Western Electric Company, Incorporated. Treatment of a substrate surface to reduce solder sticking. 4,389,771, Cl. 29-846.000.

Castro, Albert J., to Westates Space-Era Products, Inc. dba Wespac. Ribbon re-inking machine capable of reloading a variety of types of ribbon cassettes. 4,390,294, Cl. 400-196.100.

Caterpillar Tractor Co.: *See—*
Gibson, Dennis H., 4,389,991, Cl. 123-383.000.

Cecil, Olin B.: *See—*
Robinson, John T.; Cecil, Olin B.; and Shah, Rajiv R., 4,390,392, Cl. 156-643.000.

Celanese Corporation: *See—*
Costanza, John R., 4,390,401, Cl. 204-159.240.
Costanza, John R., 4,390,401, Cl. 204-159.240.
Gerberich, H. Robert, 4,390,730, Cl. 568-473.000.

Celio, Tino; and Ott, Hans, to GRETAG Aktiengesellschaft. Illumination control for a densitometer and density measuring device having such control. 4,390,280, Cl. 356-445.000.

Censor Patent-und Versuchsanstalt: *See—*
Loebach, Ernst W.; and Sawatzki, Harry L., 4,390,273, Cl. 355-125.000.

Cerberus AG: *See—*
Christen, Peter; and Muller, Peter, 4,390,869, Cl. 340-632.000.

Cernansky, Joseph: *See—*
Rudell, Elliot; Cernansky, Joseph; and Garner, Harold, 4,390,178, Cl. 272-114.000.

Cesar Arnoux, S.A.: *See—*
Arnoux, Jean, 4,390,288, Cl. 368-276.000.

Champion International Corporation: *See—*
McLaren, Edwin C.; and Adamek, David J., 4,389,802, Cl. 40-307.000.

Champlin Petroleum Company: *See—*
Patton, John T.; and Canfield, Carl M., 4,390,068, Cl. 166-267.000.

Chant, Bernard J.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; Ouwerkerk, Anton V.; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,390,444, Cl. 252-174.110.

Chapman, Ward W. Sheet metal protective cover for awning windows. 4,389,816, Cl. 49-62.000.

Chard, James W., Jr.; and Corrigan, Timothy F., to Drying Systems, Inc. Apparatus for conveying sheets such as veneer having improved wicket construction. 4,390,093, Cl. 198-654.000.

Chauvel, Bernard, to Rhone-Poulenc Industries. Interpolymer latex and process for the preparation thereof. 4,390,597, Cl. 428-512.000.

Chauvin, Yves: *See—*
Amigues, Pierre; Chauvin, Yves; Commereuc, Dominique; Gaillard, Jean; and Phung, Nhu H., 4,390,431, Cl. 210-724.000.

Chavan, Pratap P.: *See—*
Audesse, Emery G.; Kendrick, George B.; and Chavan, Pratap P., 4,390,935, Cl. 362-306.000.

Cheetham, William J.: *See—*
Elkateb, Makeen M.; and Cheetham, William J., 4,390,835, Cl. 324-51.000.

Chemie Linz Aktiengesellschaft: *See—*
Beer, Hans, 4,390,704, Cl. 548-262.000.

Chemische Werke Huels, A.G.: *See—*
Schuler, Ralf; and Maahs, Gunther, 4,390,654, Cl. 524-413.000.

Chen, Sow-Mei L.: *See—*
Grudzinskas, Charles V.; Chen, Sow-Mei L.; and Wissner, Allan, 4,390,711, Cl. 549-465.000.

Cheng, Yue C. Cord reel assembly. 4,390,142, Cl. 242-96.000.

Chernovol, Arkady V.: *See—*
Khusnutdinov, Gil D.; Chernovol, Arkady V.; Shumikhin, Vladimir S.; Shulga, Vasily T.; Poteiko, Andrei I.; Kamensky, Vladimir K.; Kondakov, Jury A.; and Shmigidin, Viktor G., 4,390,362, Cl. 75-49.000.

Chevalier, Andre, to Institut Francais du Petrole. Plug-in connector suitable for use in a fluid medium. 4,390,229, Cl. 339-115.00R.

Chevron Research Company: *See—*
Bertelsen, Corey A., 4,389,950, Cl. 110-235.000.
O'Rear, Dennis J.; and Mayer, Jerome F., 4,390,413, Cl. 208-61.000.

Chianelli, Russell R.; and Pecoraro, Theresa A., to Exxon Research and Engineering Co. Method of preparing chalocogenides of group VIII by low temperature precipitation from nonaqueous solution, the products produced by said method and their use as catalysts. 4,390,514, Cl. 423-509.000.

Chibata, Ichiro; Tosa, Tetsuya; Mori, Takao; and Fujimura, Motoki, to Tanabe Seiyaku Co., Ltd. Immobilized aminoacylase. 4,390,626, Cl. 435-176.000.

Chin, Danny; Henderson, John G. N.; and Maturo, Robert J., to RCA Corporation. Tuning display for a television receiver. 4,390,902, Cl. 358-192.100.

Chin, Hsiao-Ling M., to Stauffer Chemical Company. N-Tetrachloroethylthio benzoyl anilides useful as acaricides and to control mosquitoes. 4,390,549, Cl. 424-324.000.

Chiovini, Jacky; Blanc, Maurice; and Margolis, Geoffrey, to Societe d'Assistance Technique pour Produits Nestle S.A. Detheobromination of cocoa. 4,390,698, Cl. 544-274.000.

Chisso Corporation: *See—*
Nishikawa, Masahiko; Ishibashi, Hiroaki; and Furukawa, Hidenori, 4,390,691, Cl. 536-65.000.

Chlanda, Frederick P.: *See—*
Mani, Krishnamurthy N.; and Chlanda, Frederick P., 4,390,402, Cl. 204-180.00P.

Chodnekar, Madhukar S.; Kaiser, Ado; and Kienzle, Frank, to Hoffmann-La Roche Inc. Imidazoquinazolines having pharmaceutical activity. 4,390,540, Cl. 424-251.000.

Chou, Hsin-hsin; and Hendrickson, William A., to Minnesota Mining and Manufacturing Company. Charge transfer imaging process. 4,390,607, Cl. 430-48.000.

Chow, Philip Y., to T. Y. Lin International. Prestressed concrete pressure vessels with increased pressure-retaining capability. 4,389,825, Cl. 52-224.000.

Chow, William W.; and Dunn, Larry P., to International Business Machines Corporation. Single track magnetic head assembly. 4,390,916, Cl. 360-127.000.

Christen, Peter; and Muller, Peter, to Cerberus AG. Gas sensing signaling system. 4,390,869, Cl. 340-632.000.

Christen, Werner: *See—*
Durr, Herbert; Christen, Werner; and Muller, Helmut, 4,390,285, Cl. 366-168.000.

Christensen, Edward W., II: *See—*
Key, Charles W.; and Christensen, Edward W., II, 4,390,815, Cl. 315-368.000.

Christensen, Rolf E., to Scott Paper Company. Tension wire meter for impregnating foam with liquid fabric conditioner. 4,389,965, Cl. 118-261.000.

Christman, Chris L., to United States of America, Health and Human Services. Ultrasonic therapy applicator that measures dosage. 4,390,026, Cl. 128-660.000.

Chrostowski, Ronald F.; Bussjager, Rudy C.; and Del Toro, James J., to Carrier Corporation. Method for defrosting a heat exchanger of a refrigeration circuit. 4,389,851, Cl. 62-81.000.

Chubb & Son's Lock and Safe Company Limited: *See—*
Sands, Raymond L.; and Ward, Geoffrey M., 4,389,948, Cl. 109-82.000.

Chung, Chin H.: *See—*
Goldberg, Alfred L.; Swamy, K. H. Sreedhara; and Chung, Chin H., 4,390,629, Cl. 435-220.000.

Chynoweth, William R.; and Erickson, Roger D., to Honeywell Inc. Electrographic recording stylus. 4,390,887, Cl. 346-155.000.

Ciba-Geigy Corporation: *See—*
Bruttel, Beat; and Pfenninger, Heinz, 4,390,342, Cl. 8-524.000.
Deiner, Hans; and Bernheim, Willy, 4,390,650, Cl. 524-266.000.
Marky, Michael, 4,390,476, Cl. 260-505.00C.
Rosenberger, Siegfried, 4,390,735, Cl. 568-790.000.
Stanton, James L., 4,390,700, Cl. 546-165.000.
Wehner, Wolfgang; Farooq, Saleem; and Kostler, Hans-Gunter, 4,390,538, Cl. 424-249.000.
Weiss, Jonas; and Seltzer, Raymond, 4,390,679, Cl. 528-64.000.

Citizen Watch Co., Ltd.: *See—*
Mizukuchi, Yutaka, 4,390,467, Cl. 252-299.630.

Clarion Co., Ltd.: *See—*
Osaka, Hiroshi; and Honma, Akira, 4,390,899, Cl. 358-120.000.

Clark, Charles A., Jr., to RCA Corporation. Self-starting transformer-coupled FET multivibrators. 4,390,937, Cl. 363-22.000.

Clark, David J.: *See—*
Sojka, Richard J.; Braverman, Leonard W.; Guch, Steve, Jr.; and Clark, David J., 4,390,993, Cl. 372-87.000.

Clarke, Donald H.; Pomranky, George J.; and Schmidt, Donald L., to Dow Chemical Company, The. Isocyanurate foams using a sulfonium zwitterion/metal carbonylate mixture as catalyst. 4,390,644, Cl. 521-121.000.

Clement, Heinz: *See—*
Briner, Emil; Clement, Heinz; and Eberli, Heiner, 4,389,752, Cl. 19-0.560.

Clements, C. Dale. Thigh support brace. 4,390,015, Cl. 128-80.00R.

Clifton, Norman L. Tool belt suspenders. 4,389,736, Cl. 2-328.000.

Cody, Ian A., to Exxon Research and Engineering Co. Selective dewaxing of hydrocarbon oil using surface-modified zeolites. 4,390,414, Cl. 208-111.000.

Cogswell, Frederic N.; and Mitchell, David T., to Imperial Chemical Industries Limited. Moulding. 4,390,581, Cl. 428-71.000.

Cohen, Edwin; and Maynard, Jack A., to Singer Company, The. Cockpit display system to reduce vertigo. 4,390,861, Cl. 340-27.00R.

Cokelekoglu, Erden. Press lock system for railing construction. 4,390,164, Cl. 256-65.000.

Coker, Robert J.; Bate, Gary W.; and Deuzeman, Henk J., to Fiberglas Canada Limited. Modified process for resin manufacturing using a continuous separate distillation column. 4,390,398, Cl. 203-18.000.

Cole Hersee Company: *See—*
Introvigne, Angelo J., 4,390,761, Cl. 200-67.00C.

Coleman, Donald J.; Jackson, Wilbur C.; Lube, Robert R.; and Spohr, Albert R., to Sunbeam Corporation. Electric dry shaver. 4,389,772, Cl. 30-43.900.

Collins, Walter W. Belt buckle and knife. 4,389,775, Cl. 30-156.000.

Colosio Cesare: *See—*
Huisl, Herbert F., 4,389,859, Cl. 66-224.000.

Colton, D. Frederick: *See—*
Lea, Richard K.; Edwards, Julian D.; and Colton, D. Frederick, 4,390,366, Cl. 75-101.0BE.

Colvin, Alex D.: *See—*
Butler, James W.; and Colvin, Alex D., 4,389,881, Cl. 73-116.000.

Colvin, Howard A.; and Muse, Joel, J., to Goodyear Tire & Rubber Company, The. Process for the purification of diisopropenylbenzene. 4,390,741, Cl. 585-258.000.

Colvin, Roger D., to United States of America, Air Force. Broad bandwidth surface acoustic wave filter apparatus with staggered tuning. 4,390,854, Cl. 333-193.000.

Combustion Engineering, Inc.: *See—*
Burbach, Henry E., 4,389,767, Cl. 29-527.100.
McGee, John K.; Lafferty, Harold L.; Bridges, Charles D.; and Smith, Archie L., 4,390,186, Cl. 277-236.000.
Tenhaaf, Peter H., 4,390,420, Cl. 209-403.000.

Commereuc, Dominique: *See—*
Amigues, Pierre; Chauvin, Yves; Commereuc, Dominique; Gaillard, Jean; and Phung, Nhu H., 4,390,431, Cl. 210-724.000.

Commissariat a l'Energie Atomique: *See—*
Biava, Dominique; Cornu, Jean; Detriche, Jean-Marie; Galera, Richard; Tiret, Bernard; and Marchal, Paul, 4,390,775, Cl. 219-124.340.

Commonwealth Scientific and Industrial Research Organization: *See—*
Holan, George; and O'Keefe, David F., 4,390,715, Cl. 424-282.000.

Community Light & Sound, Inc.: *See—*
Howze, Bruce; and Henrickson, Clifford, 4,390,078, Cl. 181-185.000.

Compagnie Industrielle Des Telecommunications Cit-Alcatel: *See—*
Duplessis, Philippe; and Delpit, Philippe, 4,390,983, Cl. 370-77.000.

Comtorgage Corporation: *See—*
Meyer, Franklin, Jr., 4,389,789, Cl. 33-178.00R.

Connelly, Arthur J.: *See—*
Martin, T. Edward, 4,389,885, Cl. 73-151.500.

Conoco Inc.: *See—*
Moore, J. Scott, 4,390,066, Cl. 166-245.000.

Conrad, Willibrod, to Lucas Industries Limited. Automatic adjusters for drum brakes. 4,390,086, Cl. 188-79.50B.

Consan Pacific Incorporated: *See—*
Saurenman, Donald G., 4,390,923, Cl. 361-222.000.

Consilvio, Arthur. Solar boiler. 4,390,009, Cl. 126-439.000.

Container Corporation of America: *See—*
Ostler, Charles R.; and Hampton, William A., 4,390,154, Cl. 248-346.000.

Continental Group, Inc., The: *See—*
Tysver, Oliver J., 4,390,112, Cl. 220-274.000.

Control Data Corporation: *See—*
Brown, Charles A., 4,390,980, Cl. 370-19.000.
Lane, Thomas A., 4,390,946, Cl. 364-200.000.
Smith, Donald O.; and Harte, Kenneth J., 4,390,789, Cl. 250-492.200.

Control Logic (Proprietary) Limited: *See—*
Murray, Alan B., 4,389,990, Cl. 123-353.000.

Conver Ingenieur-Technik GmbH & Co. KG: *See—*
Gloystein, Jurgen F. G.; and Szirniks, Klaus G., 4,389,761, Cl. 24-287.000.

Converse, Merle E.; and Darilek, Glenn T., to Transaction Control Industries. Battery charger circuit. 4,390,828, Cl. 320-32.000.

Conway, Charles S. Cargo handling system for tanker vessels. 4,389,959, Cl. 114-74.00R.

Cooke, Theodore M.: *See—*
Merritt, Alfred R.; Cooke, Theodore M.; Lin, An-Chung R.; and Whitfield, Richard G., 4,390,369, Cl. 106-31.000.

Cooper, James L., to Eastman Kodak Company. Recovery of rhodium and cobalt low pressure oxo catalyst. 4,390,473, Cl. 260-429.00R.

Coovert, Cary: *See—*
Hennessy, Richard E.; Frymire, Roger; and Coovert, Cary, 4,390,968, Cl. 364-900.000.

Copar Corporation: *See—*
Johnson, Keith R., 4,389,969, Cl. 118-665.000.
Schmidt, Robert W., 4,389,971, Cl. 118-669.000.

Coppola, A. Gerard, executor: *See—*
Donovan, William J., deceased; Coppola, A. Gerard, executor; and Sanford, William D., 4,390,580, Cl. 428-68.000.

Copyer Co., Ltd.: *See—*
Furuichi, Masayoshi; Honjo, Takeshi; and Akiba, Nobuo, 4,390,268, Cl. 355-15.000.

Corain, Luciano, to Nuovo Pignone S.p.A. Reciprocating device for increasing the weft density in cloth weave fabrics. 4,390,044, Cl. 139-98.000.

Corbefin, Rene; and Vacelet, Gabriel, to Societe Nationale Industrielle Aerospatiale. Process and system for producing photovoltaic power. 4,390,940, Cl. 363-132.000.

Cornforth, Malcolm W.; and Jacobsen, Robert S., to Singer Company, The. Apparatus for correcting measured gas flow. 4,390,956, Cl. 364-510.000.

Corning Glass Works: *See—*
Hoda, Syed N., 4,390,634, Cl. 501-3.000.
Morgan, David W., 4,390,635, Cl. 501-13.000.
Olson, John H.; and Schlaufman, Robert J., 4,390,593, Cl. 428-410.000.

Cornu, Jean: *See—*
Biava, Dominique; Cornu, Jean; Detriche, Jean-Marie; Galera, Richard; Tiret, Bernard; and Marchal, Paul, 4,390,775, Cl. 219-124.340.

Cornwell, Charles E. Method for mixing, spraying and placing cementitious materials. 4,390,371, Cl. 106-88.000.

Corrigan, Timothy F.: *See—*
Chard, James W., Jr.; and Corrigan, Timothy F., 4,390,093, Cl. 198-654.000.

Cosco, Inc. (Tucker Housewares Div.): *See—*
Pirro, Armand, 4,390,110, Cl. 220-318.000.

Cosgrove, James F.; Dahlke, Gerhard P.; and Wurms, Charles, to International Business Machines Corporation. Boatless point source evaporation method. 4,390,571, Cl. 427-43.100.

Costanza, John R., to Celanese Corporation; and Celanese Corporation. Acrylate or methacrylate esters of alkylene oxide adducts of alkyl/aryl phenols as wetting agents for ultraviolet curable coating compositions. 4,390,401, Cl. 204-159.240.

Coulter Electronics, Inc.: *See—*
Carter, James H., II, 4,390,632, Cl. 436-10.000.

Courtney, Robert W.; Parker, Stephen J.; and Threadgold, Alan C. Coating compositions. 4,390,615, Cl. 430-315.000.

Cousens, Donald E.: *See—*
Kurtz, John A.; and Cousens, Donald E., 4,390,771, Cl. 219-56.220.

Cox, James M.: *See—*
Barnes, James E., 4,390,173, Cl. 269-328.000.

Cox, Walter T.; and Tannery, Edward F. Vehicle locking mechanism. 4,390,195, Cl. 292-53.000.

Coyne, Kevin N.; and Curtis, Hazen, III, to Bell Telephone Laboratories, Incorporated. Fuse block assembly. 4,390,225, Cl. 339-88.00R.

Crafco, Inc.: *See—*
Jacobson, Carl C., Jr.; and Manning, Mark C., 4,390,304, Cl. 404-110.000.

Cragfors, Gunnar; and Bosson, Jorgen, to ASEA Aktiebolag. Power amplifier connection. 4,390,846, Cl. 330-10.000.

Craggs, Harold B.; and Weisdorfer, Leo. Pelting board. 4,389,795, Cl. 34-103.000.

Cragoe, Edward J., Jr., to Merck & Co., Inc. 1-(Substituted-aminoalkoxyphenyl)-2-methylene-1-alkanones, compositions and use. 4,390,537, Cl. 424-248.580.

Cramer, Rudolph E.; and Ouwerkerk, Johannes H. W., to Hoogovens Ijmuiden B.V. Apparatus for mixing at least one additional gas into a main flow of gas. 4,390,346, Cl. 48-180.00R.

Crane, Leslie J.: *See—*
Bond, John A.; Li, Yuan-Lu; and Crane, Leslie J., 4,390,898, Cl. 358-119.000.

Crawford, Knute S.: *See—*
Twibell, Jerome J.; and Crawford, Knute S., 4,390,943, Cl. 364-200.000.

Crawford, Roger A.: *See—*
Loehr, Clifford E.; Crawford, Roger A.; Carbaugh, John E.; and Welch, Cletus N., 4,390,512, Cl. 423-474.000.

Crenshaw, Ronnie R.: *See—*
Algieri, Aldo A.; and Crenshaw, Ronnie R., 4,390,701, Cl. 546-235.000.

Croft, Winfred C.: *See—*
Downing, Terry R.; Zorns, John M.; and Croft, Winfred C., 4,390,085, Cl. 188-72.900.

Crompton, Alan W., to Crompton, Alan Woodhouse. Method and apparatus for separating apricot kernels from husks. 4,389,927, Cl. 99-575.000.

Crompton, Alan Woodhouse: *See—*
Crompton, Alan W., 4,389,927, Cl. 99-575.000.

Crutcher Resources Corporation: *See—*
Thompson, Floyd M., Jr., 4,389,765, Cl. 29-426.500.

CTS Corporation: *See—*
Thorpe, Frank P.; and Calhoun, L. Owen, 4,390,106, Cl. 220-3.700.

Cudmore, Patrick J., to Wave-Rider, Inc. Rotary wing device. 4,390,148, Cl. 244-19.000.

Cuffiani, Illaro; Galli, Paolo; and Zucchini, Umberto, to Montedison S.p.A. Catalyst components for polymerizing olefins. 4,390,454, Cl. 252-429.00B.

Cummings, Robert, to U.S. Clinical Products, Inc. Flexible plastic sterile closure system for containers. 4,390,104, Cl. 215-232.000.

Cunningham, Ernest R., to Grip-Pak, Inc. Lay flat tube multi-packaging device for containers. 4,390,095, Cl. 206-150.000.

Curran, Kenneth J. Remote control systems for toy vehicles, and the like. 4,390,877, Cl. 340-825.720.

Current, Karl W., to University of California, The Regents of the. Latched multivalued full adder. 4,390,962, Cl. 364-768.000.

Curtis, Hazen, III: *See—*
Coyne, Kevin N.; and Curtis, Hazen, III, 4,390,225, Cl. 339-88.00R.

Curtis, Huntington W.; Kellogg, Robert M.; Kissinger, Kerry W.; Mappes, Robert P.; and Stephans, Emery J., to International Business Machines Corporation. Chemical analysis system including a test package and rotor combination. 4,390,499, Cl. 422-72.000.

Cuthbertson, Bruce, to Bonar Industries Inc. Securing a liner within a flexible container. 4,390,051, Cl. 150-1.000.

CVI Incorporated: *See—*
Sarcia, Domenico S., 4,389,850, Cl. 62-6.000.

Dages, Daniel, to Saint Gobain Vitrage. Plasticizers for polyvinyl butyral. 4,390,594, Cl. 428-437.000.

Dahlberg, Reinhard, to Licentia Patent Verwaltungs-GmbH. Silicon layer solar cell and method of producing it. 4,390,743, Cl. 136-258.000.

Dahlke, Gerhard P.: *See—*
Cosgrove, James F.; Dahlke, Gerhard P.; and Wurms, Charles, 4,390,571, Cl. 427-43.100.

Daignault, Alan: *See—*
Rothwell, Harold L., Jr.; Gungle, W. Calvin; and Daignault, Alan, 4,390,811, Cl. 315-73.000.

Daikan Kogyo Co., Ltd.: *See—*
Misaki, Susumu; Suefuji, Masahiro; Tsushima, Tadahiko; and Tanida, Hiroshi, 4,390,702, Cl. 546-296.000.

Daikin Kogyo Co., Ltd.: *See—*
Tabushi, Iwao; Shimokawa, Kazuhiro; Naito, Daiji; Misaki, Susumu; and Yoshida, Tsutomu, 4,390,740, Cl. 570-146.000.

Daiku, Nobutaka, to Nippon Electric Glass Company, Limited. X-Ray absorbing glass for a color cathode ray tube having a controlled chromaticity value and a selective light absorption. 4,390,637, Cl. 501-64.000.

Daily, Virgil W., III, to Unarco Industries, Inc. Hinge for cover of kettle cooker. 4,390,002, Cl. 126-25.00R.

Daimler-Benz Aktiengesellschaft: *See—*
Bahrle, Friedrich; Binder, Hellmuth; Meyer, Wolfram; and Wulf, Helmut, 4,389,945, Cl. 104-247.000.
Frankle, Gerhard; and Hase, Friedrich-Wilhelm, 4,389,987, Cl. 123-300.000.

Dainippon Screen Manufacturing Co., Ltd.: *See—*
Henmi, Kojiro; and Takenaka, Kiyosi, 4,390,269, Cl. 355-27.000.

Daiwa Can Company, Limited: *See—*
Wakamatsu, Atsuyuki; and Tonooka, Keisuke, 4,390,135, Cl. 241-101.200.

Dallons, Robert E.; and Fortune, William S., to Edsyn, Inc. Tweezers for removal of dual in-line pin (DIP) components. 4,389,912, Cl. 81-43.000.
Dalrymple, Peirce E. Torque converter. 4,390,089, Cl. 192-105.00B.
D'Amico, John F.: *See—*
Cassidy, Michael P.; D'Amico, John F.; DeAngelo, Michael A., Jr.; and Lin, Kon-Mang. 4,389,771, Cl. 29-846.000.
Daniel, Chelliah, to Ashland Oil, Inc. Oxydehydrogenation process for preparing methacrylic acid and its lower alkyl esters. 4,390,725, Cl. 562-599.000.
Daniel, Chelliah, to Ashland Oil, Inc. Process for conversion of toluene to benzaldehyde. 4,390,728, Cl. 568-431.000.
Daniel Industries, Inc.: *See—*
Geisow, Bernard H., 4,390,171, Cl. 267-169.000.
Daniels, Alexander: *See—*
United States of America, National Aeronautics and Space Administration; Gasser, Max G.; Sherman, Allan; Studer, Philip A.; Daniels, Alexander; and Goldowsky, Michael P., 4,389,849, Cl. 62-6.000.
Danjo, Hiroyuki; Takimoto, Kazuaki; Muta, Gensuke; and Hiroki, Nobuyoshi, to Shinagawa Refractories Co., Ltd.; and Sumitomo Metal Industries Co., Ltd. Hot-gunning method for repairing converters. 4,390,166, Cl. 266-44.000.
Dansk Industri Syndikat A/S: *See—*
Grove, Morgens W.; and Eriksen, Carl-Erik, 4,390,056, Cl. 164-7.100.
Darby, Spencer A.: *See—*
Slater, Charles A., Jr.; and Darby, Spencer A., 4,390,936, Cl. 362-390.000.
Dardoufas, Kimon C.: *See—*
Marshall, Robert M.; and Dardoufas, Kimon C., 4,390,591, Cl. 428-391.000.
Darilek, Glenn T.: *See—*
Converse, Merle E.; and Darilek, Glenn T., 4,390,828, Cl. 320-32.000.
Datta, Pabitra; and Poliniak, Eugene S., to RCA Corporation. Doped polyphenylene ether lubricant for high density information discs. 4,390,579, Cl. 428-65.000.
Dauby, Jacques F.: *See—*
Hanotier, Jacques D. V.; Bridoux, Monique J. S.; and Dauby, Jacques F., 4,390,472, Cl. 260-398.600.
Davies, John H.: *See—*
Rosenbaum, Herman S.; and Davies, John H., 4,390,497, Cl. 376-414.000.
Davies, Kenneth W., to Dominion Engineering Works, Ltd. Drive system for edger mill. 4,389,865, Cl. 72-29.000.
Davis, Larry; and Klein, Joseph T., to Hoechst-Roussel Pharmaceuticals Inc. {1-[3-(6-Fluoro-1,2-benzisoxazol-3-yl)propyl]-4-(2-oxo-1-benzimidazolinyl} piperidines, pharmaceutical compositions and methods of use. 4,390,544, Cl. 424-267.000.
Davis, Thomas A.; and Asher, William J., to Exxon Research and Engineering Co. Artificial red cells. 4,390,521, Cl. 424-36.000.
Davis, William F.; and Shacter, Stuart B., to Motorola, Inc. Operational amplifier having improved slew rate/bandwidth characteristics. 4,390,850, Cl. 330-253.000.
Dayco Corporation: *See—*
Gunter, Jonas L.; Haren, Doyle V.; Hofle, Anatoli; and Medford, Richard D., 4,390,214, Cl. 305-35.00R.
De Forenede Bryggerier A/S: *See—*
Johansen, Jack T., 4,390,628, Cl. 435-189.000.
De Limon Fluhme GmbH & Co.: *See—*
Saretzky, Horst, 4,390,083, Cl. 184-7.00F.
DeAngelo, Michael A., Jr.: *See—*
Cassidy, Michael P.; D'Amico, John F.; DeAngelo, Michael A., Jr.; and Lin, Kon-Mang, 4,389,771, Cl. 29-846.000.
DeBrita, John A.: *See—*
O'Brien, Kirk G.; and DeBrita, John A., 4,390,806, Cl. 310-261.000.
De Ceuster, Jean; and Papageorges, Georges, to Interox. Process for the regeneration of waste paper. 4,390,395, Cl. 162-5.000.
Deex, Oliver D., to Monsanto Company. Liquid crystal copolyesters. 4,390,681, Cl. 528-193.000.
Degussa AG: *See—*
Karl, Alfons; Buder, Wolfgang; and Kleinschmit, Peter, 4,390,712, Cl. 556-413.000.
Merk, Wolfgang; Wagner, Rudolf M.; Werle, Peter; and Nygren, Robert S., 4,390,732, Cl. 568-648.000.
Degussa Aktiengesellschaft: *See—*
Kleemann, Axel; and Schalke, Peter M., 4,390,706, Cl. 349-74.000.
Schwarze, Werner; Kleemann, Axel; and Leuchtenberger, Wolfgang, 4,390,719, Cl. 560-124.000.
Deiner, Hans; and Bernheim, Willy, to Ciba-Geigy Corporation. Process for making fibrous material water repellent. 4,390,650, Cl. 524-266.000.
de Keizer, Cornelis, to IHC Holland N.V. Control system. 4,390,942, Cl. 364-162.000.
Delpit, Philippe: *See—*
Duplessis, Philippe; and Delpit, Philippe, 4,390,983, Cl. 370-77.000.
Delta Kogyo Co., Ltd.: *See—*
Izuno, Sadami; Kiyomitsu, Isao; and Tsuji, Toshihiko, 4,390,209, Cl. 297-410.000.
Del Toro, James J.: *See—*
Chrostowski, Ronald F.; Bussjager, Rudy C.; and Del Toro, James J., 4,389,851, Cl. 62-81.000.
De Micheli, Angelo; and Bizzozero, Piero, to Montedison S.p.A. Process for preparing stable aqueous suspensions of formaldehyde. 4,390,727, Cl. 568-422.000.
Demoute, Jean-Pierre: *See—*
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,390,724, Cl. 562-504.000.
Denz, Helmut; Stumm, Hans-Peter; and Zechnall, Martin, to Robert Bosch GmbH. Internal combustion engine control system for use with turbo-charged engine, and method. 4,389,994, Cl. 123-478.000.
Der Avedisian, Suren: *See—*
Swartley, John S.; and Der Avedisian, Suren, 4,390,551, Cl. 426-107.000.
DeSantis, Raymond P.; and Puffer, Herbert J., Jr., to PTX-Pentronix, Inc. Die, punch and core rod assembly for compacting powder material. 4,390,335, Cl. 425-78.000.
DeShon, Wallace E., to Phillips Petroleum Company. Serial line communication system. 4,390,947, Cl. 364-200.000.
Desrosiers, Leo: *See—*
Golan, Michael G.; and Desrosiers, Leo, 4,389,753, Cl. 19-106.00R.
Destrampe, Terry G. Post-shutdown coolant-supply device. 4,389,984, Cl. 123-196.00S.
Detriche, Jean-Marie: *See—*
Biava, Dominique; Cornu, Jean; Detriche, Jean-Marie; Galera, Richard; Tiret, Bernard; and Marchal, Paul, 4,390,775, Cl. 219-124.340.
Detroit Radiant Products Company: *See—*
Rozzi, Mario, 4,390,125, Cl. 237-70.000.
Deutsch, Peter C., to Marine Industries Company. Cord grip for electrical wiring connector devices. 4,390,227, Cl. 339-103.00C.
Deutsche Texaco Aktiengesellschaft: *See—*
Rietsch, Eike, 4,390,973, Cl. 367-40.000.
Deuzeman, Henk J.: *See—*
Coker, Robert J.; Bate, Gary W.; and Deuzeman, Henk J., 4,390,398, Cl. 203-18.000.
Devoke Company: *See—*
Bunas, Norman L.; and Smith, Gertrude I., 4,390,389, Cl. 156-502.000.
De Vries, Gerhard H. F.; and Bulle, Harmanus B., to U.S. Philips Corporation. Picture display device having a gas discharge display panel. 4,390,808, Cl. 313-584.000.
DeWitt, Nick R. Pressure controlled air/water cushion. 4,389,742, Cl. 5-455.000.
Diamond S.A.: *See—*
Marazzi, Silvio, 4,390,237, Cl. 350-96.200.
Diesel Kiki Co., Ltd.: *See—*
Aoki, Hachiro; Tomita, Hitoshi; and Nagamata, Kiyoshi, 4,389,998, Cl. 123-502.000.
Uchida, Kazuo, 4,390,129, Cl. 239-533.500.
DiGiacomo, Peter M.; and Dines, Martin B., to Occidental Research Corp. Layered organophosphorous inorganic polymers containing oxygen bonded to carbon. 4,390,690, Cl. 528-395.000.
Digital Equipment Corporation: *See—*
Hertrich, Friedrich R.; and Perera, Slobodan R., 4,390,912, Cl. 360-78.000.
Dille, Roger M.; Middleton, Leigh R.; Brent, Albert; and Robin, Allen M., to Texaco Inc. Trim control process for partial oxidation gas generator. 4,390,347, Cl. 48-197.00R.
Dille, Roger M.; Middleton, Leigh R.; Brent, Albert; and Robin, Allen M., to Texaco Inc. Trim control process for partial oxidation gas generator. 4,390,348, Cl. 48-197.00R.
Dille, Roger M.: *See—*
Skarlos, Leonidas; and Dille, Roger M., 4,390,957, Cl. 364-550.000.
Di Marco, Joel E.: *See—*
Goldsmith, Wesely R.; and Di Marco, Joel E., 4,389,785, Cl. 33-174.00S.
Dines, Martin B.: *See—*
DiGiacomo, Peter M.; and Dines, Martin B., 4,390,690, Cl. 528-395.000.
Diosgyori Gepgyar: *See—*
Adelhard, Georg; Hasselberg, Herbert; Obermeier, Manfred; Sierwald, Karl; Szedlacsek, Jozsef; and Somogyi, Gyorgy, 4,389,838, Cl. 57-71.000.
Di Pardo, Robert M.: *See—*
Bock, Mark G.; and Di Pardo, Robert M., 4,390,703, Cl. 548-187.000.
Director-General, Agency of Industrial Science & Technology: *See—*
Tanaami, Kazuo; and Matsuda, Nobuo, 4,390,501, Cl. 422-143.000.
Dlugos, Daniel F., to Pitney Bowes Inc. Mailing system with sequential printing control. 4,390,952, Cl. 364-464.000.
Dobrynin, Vladimir E.: *See—*
Garkusha, Anatoly V.; and Dobrynin, Vladimir E., 4,390,319, Cl. 415-209.000.
Dockal, Ronald J.: *See—*
Horky, Joseph F.; and Dockal, Ronald J., 4,390,964, Cl. 364-900.000.
Dr. Beck & Co. AG: *See—*
Janssen, Harald; and Hansch, Ferdinand, 4,390,686, Cl. 528-289.000.
Dr. Carl Hahn, G.m.b.H.: *See—*
Stuttgen, Gunter; and Schaefer, Hans, 4,390,532, Cl. 424-240.000.
Doi, Kazuyuki: *See—*
Higashiyama, Naotoshi; and Doi, Kazuyuki, 4,390,746, Cl. 179-1.0GE.
Dolman, John E.: *See—*
Tatters, Ronald; Dolman, John E.; and Howell, Donald R., deceased, 4,389,922, Cl. 92-156.000.
Dominion Engineering Works, Ltd.: *See—*
Davies, Kenneth W., 4,389,865, Cl. 72-29.000.

Donaldson, Robert D., to Bendix Corporation, The. Pneumatic counterbalance for a coordinate measuring machine. 4,389,781, Cl. 33-1.00M.
Donovan, William J., deceased; by Coppola, A. Gerard, executor; and Sanford, William D. High pressure laminate for access floor panels. 4,390,580, Cl. 428-68.000.
Dow Chemical Company, The: *See—*
Clarke, Donald H.; Pomranky, George J.; and Schmidt, Donald L., 4,390,644, Cl. 521-121.000.
Green, John G., 4,390,692, Cl. 536-84.000.
Hoffman, Dwight K.; Harris, Robert F.; Tefertiller, Nancy B.; and Rains, Randall C., 4,390,645, Cl. 521-137.000.
Manzie, Otter L., Jr., 4,389,878, Cl. 73-38.000.
Nelson, Donald L., 4,390,680, Cl. 528-97.000.
Stanley, Frederick W., Jr.; and Fairchok, William J., 4,390,659, Cl. 524-555.000.
Downing, Terry R.; Zorns, John M.; and Croft, Winfred C., to Allis-Chalmers Corporation. Automatic mechanical brake adjuster. 4,390,085, Cl. 188-72.900.
Dracka, Oldrich: *See—*
Mackrle, Svatopluk; Mackrle, Vladimir; and Dracka, Oldrich, 4,390,422, Cl. 210-188.000.
Dragun, Edward B.: *See—*
Trembly, Gray C.; Goldberg, Ernest; and Dragun, Edward B., 4,389,940, Cl. 102-489.000.
Draiswerke GmbH: *See—*
Durr, Herbert; Christen, Werner; and Muller, Helmut, 4,390,285, Cl. 366-168.000.
Dreier, Ernst; and Hoss, Richard, to Fritz Gegauf Aktiengesellschaft Bernina-Machmaschinenfabrik. Needle bar operated trimmer. 4,389,952, Cl. 112-128.00R.
Drouin, Gilbert; Lacoste, Jean; and Tremblay, Gilles. Screw extractor. 4,389,913, Cl. 81-53.200.
Drury, Michael J.: *See—*
Woodside, Robert H.; and Drury, Michael J., 4,390,874, Cl. 340-812.000.
Drying Systems, Inc.: *See—*
Chard, James W., Jr.; and Corrigan, Timothy F., 4,390,093, Cl. 198-654.000.
Du Pont Canada Inc.: *See—*
Oughton, Richard W., 4,390,469, Cl. 260-123.500.
Dubois, Michel A. J., to Esso Societe Anonyme Francaise. Apparatus suitable for use in closing openings with a foam-expanded bladder. 4,390,333, Cl. 425-11.000.
Dudek, Harold M., to Astro Development Corporation. Partially fluid locked drive train. 4,389,908, Cl. 74-711.000.
Dudley, Kenneth W.: *See—*
Teich, Wesley W.; and Dudley, Kenneth W., 4,390,768, Cl. 219-10.55B.
Dufour, Joseph H., Sr. Semiautomatic firearm. 4,389,920, Cl. 89-190.000.
Dugan, Charles; and Dugan, Timothy, to Farm Fresh Shrimp Corporation. Apparatus and method for rearing shrimp. 4,389,974, Cl. 119-2.000.
Dugan, Timothy: *See—*
Dugan, Charles; and Dugan, Timothy, 4,389,974, Cl. 119-2.000.
Duley, Walter W.: *See—*
Steen, William M.; and Duley, Walter W., 4,390,774, Cl. 219-121.0FS.
Dull, Hans-Jurgen; and Hillmer, Adolf, to Siemens Aktiengesellschaft. Switch for a carriage of a two track suspension railroad. 4,389,942, Cl. 104-103.000.
Dulux Australia Limited: *See—*
Graetz, Clive W.; Thompson, Morice W.; and Bromley, Charles, 4,390,658, Cl. 524-512.000.
Dumont Industries: *See—*
Marcotte, Richard P.; and Dumont, John W., Jr., 4,389,980, Cl. 122-114.000.
Dumont, John W., Jr.: *See—*
Marcotte, Richard P.; and Dumont, John W., Jr., 4,389,980, Cl. 122-114.000.
Duncan, Jeffrey B., to Albany International Corp. Dewatering system with water deckle. 4,390,433, Cl. 210-767.000.
Duncan, Ronnie J. Snap-on shut off valve. 4,390,159, Cl. 251-148.000.
Dunlap, Alvin E. Drill guide. 4,389,790, Cl. 33-185.00R.
Dunn, Larry P.: *See—*
Chow, William W.; and Dunn, Larry P., 4,390,916, Cl. 360-127.000.
Dunn, Sidney R., to Photax (London) Ltd. Slide viewer or projector. 4,389,803, Cl. 40-361.000.
Dunn, Wendell E., Jr., to Reynolds Metals Company. Aluminum chloride addition to electrolytic cells. 4,390,400, Cl. 204-67.000.
Duplessis, Philippe; and Delpit, Philippe, to Compagnie Industrielle Des Telecommunications Cit-Alcatel. Digital frequency sender. 4,390,983, Cl. 370-77.000.
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Anderson, Jerrel C., 4,390,655, Cl. 524-413.000.
Faulhaber, Mark E.; and Prober, James M., 4,390,785, Cl. 250-330.000.
Ginn, David W., 4,390,825, Cl. 318-384.000.
Resnick, Paul R., 4,390,720, Cl. 560-184.000.
Dupray, Dominique: *See—*
Fourcade, Pierre; and Dupray, Dominique, 4,390,985, Cl. 370-94.000.
Duracell Inc.: *See—*
Barnette, Luverne H.; and Liang, Charles C., 4,390,446, Cl. 252-182.100.
Durr, Herbert; Christen, Werner; and Muller, Helmut, to Draiswerke GmbH. Method and apparatus for mixing solids with liquids, in particular for gluing wood chips. 4,390,285, Cl. 366-168.000.
Dustin, Paul C.: *See—*
Spigarelli, Donald J.; and Dustin, Paul C., 4,389,797, Cl. 34-73.000.
Dutmers, Louis G.: *See—*
Hutson, Marvin R.; and Dutmers, Louis G., 4,390,132, Cl. 241-55.000.
Dvoracek, Louis M.; Fischer, Paul W.; and Skripek, Milan, to Union Oil Company of California. Process and compositions for reducing fouling of heat exchange surfaces. 4,390,412, Cl. 208-48.00R.
Dwojak, Stanislaw: *See—*
Kolodziejski, Stanislaw; Dwojak, Stanislaw; and Grabowski, Andrzej, 4,389,897, Cl. 73-861.000.
Dynatrans AB: *See—*
Oberg, Lars G., 4,390,314, Cl. 414-547.000.
E. R. Squibb & Sons, Inc.: *See—*
Krapcho, John; and Wade, Peter C., 4,390,695, Cl. 544-130.000.
Ridgway, Frank; and Woolfenden, Richard D. G., 4,390,558, Cl. 426-541.000.
E-Z-Rect Metal Products Ltd.: *See—*
Husband, Wallace T., 4,390,103, Cl. 211-182.000.
Eapen, Kuttikandathil E.: *See—*
Kahn, Marvin L.; and Eapen, Kuttikandathil E., 4,390,550, Cl. 426-102.000.
Eastman Kodak Company: *See—*
Cooper, James L., 4,390,473, Cl. 260-429.00R.
Gabrielsen, Rolf S.; Graham, Patricia A.; Klijanowicz, James E.; and Stern, Max H., 4,390,606, Cl. 430-9.000.
Minor, James C., 4,390,267, Cl. 355-14.00E.
Eaton Corporation: *See—*
Goscenski, Edward J., Jr., 4,389,909, Cl. 74-711.000.
Thorson, Clayton W., 4,390,329, Cl. 418-61.00B.
Eberli, Heiner: *See—*
Briner, Emil; Clement, Heinz; and Eberli, Heiner, 4,389,752, Cl. 19-0.560.
Ebneth, Harold; and Klipfel, Siegfried, to Bayer Aktiengesellschaft. Process for coating cloth of metallized textile fibers and their use for the production of microwave-reflecting articles. 4,390,588, Cl. 428-263.000.
Eddy, Albert R.: *See—*
Kast, Jack L.; Eddy, Albert R.; and Carter, Merle F., 4,389,919, Cl. 89-185.000.
Edgerton, Robert F., to Energy Conversion Devices, Inc. Apparatus for regulating substrate temperature in a continuous plasma deposition process. 4,389,970, Cl. 118-666.000.
Edgren, Richard A., to Syntex Pharmaceuticals International Ltd. Method of contraception using peak progestogen dosage. 4,390,531, Cl. 424-239.000.
Edsyn, Inc.: *See—*
Dallons, Robert E.; and Fortune, William S., 4,389,912, Cl. 81-43.000.
Edwards, Julian D.: *See—*
Lea, Richard K.; Edwards, Julian D.; and Colton, D. Frederick, 4,390,366, Cl. 75-101.0BE.
Eglowstein, Ira; and Solender, Peter E., to Interface Systems, Inc. Interface system wherein the interface is addressed before data transfer from a selected device. 4,390,967, Cl. 364-900.000.
Eichler, Jurgen; Herz, Claus; and Neisius, Karl-Heinz, to Merck Patent Gesellschaft mit beschrankter Haftung. Mixtures of aromatic-aliphatic ketones as photoinitiators and photopolymerizable systems containing them. 4,390,453, Cl. 252-426.000.
Eiswerth, James E., to General Electric Company. Tip cap for a rotor blade and method of replacement. 4,390,320, Cl. 416-97.00R.
Elastic Coating Systems, Inc.: *See—*
Rehberg, Irene L., 4,390,570, Cl. 427-385.500.
Elkateb, Makeen M.; and Cheetham, William J., to General Electric Company Limited, The. Fault identification in electric power transmission systems. 4,390,835, Cl. 324-51.000.
Elks, William J. Proximity indicator for motor vehicles. 4,390,862, Cl. 340-61.000.
Ellefsen, George E.: *See—*
Seibert, Lloyd; and Ellefsen, George E., 4,389,804, Cl. 40-447.000.
Ellicson, John W.: *See—*
Pickens, Robert C., Jr.; Thomas, Reese R.; and Ellicson, John W., 4,390,582, Cl. 428-85.000.
Elliston, Thomas L., to Hydra Rig Incorporated. Fire fighting boom assembly for service vessel. 4,390,315, Cl. 414-740.000.
Elo, Ari; and Poikonen, Jorma, to Elomatic Oy. Pump driven by the radiation energy of the sun. 4,390,325, Cl. 417-379.000.
Elomatic Oy: *See—*
Elo, Ari; and Poikonen, Jorma, 4,390,325, Cl. 417-379.000.
Embach, James T. Viewer/projector for display of 360 degree holographic film cassettes. 4,390,234, Cl. 350-3.650.
Endo, Hirofumi: *See—*
Yamato, Takashi; Endo, Hirofumi; Matsumoto, Kimiichiro; and Miyake, Hajimu, 4,390,548, Cl. 424-321.000.
Enen, Jack, Jr.; and Sullivan, Wayne M., to Enen Machine Tool & Equipment Co. Junk basket. 4,390,064, Cl. 166-99.000.
Enen Machine Tool & Equipment Co.: *See—*
Enen, Jack, Jr.; and Sullivan, Wayne M., 4,390,064, Cl. 166-99.000.
Energy Conversion Devices, Inc.: *See—*
Edgerton, Robert F., 4,389,970, Cl. 118-666.000.
Energy Profiles, Inc.: *See—*
Salisbury, Winfield W., 4,390,494, Cl. 376-107.000.
Salisbury, Winfield W., 4,390,495, Cl. 376-120.000.

Enga, Bernard E.; and Prasad, Christopher, to Johnson, Matthey & Co., Limited. Prechamber catalytic ignition system. 4,389,983, Cl. 123-143.00B.

Engineering & Research Associates, Inc.: *See—*
Rosen, Evan W., 4,390,073, Cl. 177-118.000.
Taylor, Junius E., 4,390,832, Cl. 323-273.000.

English, Irene F.: *See—*
English, Roy L.; and English, Irene F., 4,389,815, Cl. 47-81.000.

English, Roy L.; and English, Irene F. Wick support for wick-watering plants. 4,389,815, Cl. 47-81.000.

Engstrom, Keith A., to Illinois Tool Works Inc. Keyboard with electronic hysteresis. 4,390,866, Cl. 340-365.00E.

Enomoto, Kanehiko: *See—*
Watanabe, Ichiro; Enomoto, Kanehiko; and Ogawa, Yasuo, 4,390,631, Cl. 435-244.000.

Enomoto, Ryo; Yoshioka, Michihiro; and Yokoyama, Takao, to Ibigawa Electric Industry Co. Ltd. Apparatus for producing silicon carbide consisting mainly of β-type crystal. 4,390,504, Cl. 422-166.000.

Epstein, Irving. Releasable hook. 4,389,907, Cl. 74-529.000.

Erdman, David M.; and Harms, Harold B., to General Electric Company. Laundering apparatus, method of operating a laundry machine, control system for an electronically commutated motor, method of operating an electronically commutated motor, and circuit. 4,390,826, Cl. 318-439.000.

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Chynoweth, William R.; and Erickson, Roger D., 4,390,887, Cl. 346-155.000.

Eriksen, Carl-Erik: *See—*
Grove, Morgens W.; and Eriksen, Carl-Erik, 4,390,056, Cl. 164-7.100.

Eriksson, Alf, to Aktiebolaget Svenska Precisions verktyg. Tapping attachment. 4,390,310, Cl. 408-141.000.

Ernest, Michael V.: *See—*
Sanchez, Moises G.; Ernest, Michael V.; and Laine, Norman R., 4,390,456, Cl. 252-448.000.

Erno-Raumfahrttechnik GmbH: *See—*
Schilf, Lothar; and Giese, Ingo H., 4,390,275, Cl. 356-43.000.

Ernsberger, Fred M., to PPG Industries, Inc. Low temperature reduction process for photomasks. 4,390,592, Cl. 428-410.000.

Ernst, Gunter; and Wurz, Dieter, to Aktiebolag Carl Munters. Apparatus for spraying trickler plates with cooling water. 4,390,481, Cl. 261-112.000.

Esakov, Michael D.: *See—*
Ferguson, Daniel J.; Stringer, Frederick D.; and Esakov, Michael D., 4,390,385, Cl. 156-229.000.

Esho, Sotaro; and Gokan, Hiroshi, to Nippon Electric Co., Ltd. Process for manufacture of thin-film magnetic bubble domain detection device. 4,390,404, Cl. 204-192.00E.

Esmil B.V.: *See—*
van Leeuwen, Johannes, 4,390,430, Cl. 210-527.000.

Esselte Pendaflex Corporation: *See—*
Holland-Letz, Gunter, 4,389,934, Cl. 101-92.000.

Esser, Fred; Klopper, Detlev; Lachner, Walter; and Scharf, Gerhard. Contact electrode for melting and heating furnaces with DC plasma heating. 4,390,773, Cl. 219-121.0PR.

Essex Group, Inc.: *See—*
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,390,590, Cl. 428-383.000.

Esso Societe Anonyme Francaise: *See—*
Dubois, Michel A. J., 4,390,333, Cl. 425-11.000.

Ethyl Corporation: *See—*
Leavitt, Richard I., 4,390,624, Cl. 435-107.000.

Ethyl Development Corporation: *See—*
Bowers, Kenneth E.; and Markley, Charles E., 4,390,338, Cl. 425-525.000.

Evans, Daniel R. Adjustable surgical arm rest and instrument platform. 4,390,011, Cl. 128-1.00R.

Evans, William P.; and Leger, Violeta Z., to Union Carbide Corporation. Complex metal sulfide cathodes for nonaqueous cells. 4,390,604, Cl. 429-197.000.

Ex-Cell-O Corporation: *See—*
Hendry, James W.; and Han, Je-Chin, 4,390,486, Cl. 264-45.500.
Lisiecki, Robert E., 4,390,121, Cl. 229-17.00G.

Exxon Production Research Co.: *See—*
Willman, Bertram T., 4,390,067, Cl. 166-245.000.

Exxon Research and Engineering Co.: *See—*
Chianelli, Russell R.; and Pecoraro, Theresa A., 4,390,514, Cl. 423-509.000.
Cody, Ian A., 4,390,414, Cl. 208-111.000.
Davis, Thomas A.; and Asher, William J., 4,390,521, Cl. 424-36.000.
Merritt, Alfred R.; Cooke, Theodore M.; Lin, An-Chung R.; and Whitfield, Richard G., 4,390,369, Cl. 106-31.000.
Michaelson, Robert C.; and Austin, Richard G., 4,390,739, Cl. 568-860.000.
Oswald, Alexis A., 4,390,729, Cl. 568-454.000.

Eynck, John J., to United States of America, Navy. Acoustic signal conditioning device. 4,390,976, Cl. 367-153.000.

Fagan, Michael W. Ladder rack for vehicle. 4,390,117, Cl. 224-310.000.

Fahmy, Mohamed A., to Rhone-Poulenc Agrochimie. S-(Tertiary alkyl) alkylphosphonoamidodithioates and their use as insecticides and nematocides. 4,390,529, Cl. 424-220.000.

Faiks, Frederick S.; Pergler, Charles C.; Whitwam, Ronald L.; Knoblauch, Jack R.; Beukema, Duane M.; and Hozeski, Kenneth W., to Steelcase, Incorporated. Synchrotilt chair control. 4,390,206, Cl. 297-300.000.

Fairchild Camera & Instrument Corp.: *See—*
Kurtz, John A.; and Cousens, Donald E., 4,390,771, Cl. 219-56.220.
Phy, William S., 4,390,598, Cl. 428-577.000.

Fairchok, William J.: *See—*
Stanley, Frederick W., Jr.; and Fairchok, William J., 4,390,659, Cl. 524-555.000.

Fandrey, Peter: *See—*
Lehmann, Wilfried; and Fandrey, Peter, 4,390,317, Cl. 415-143.000.

Fangmann, Michael D., to Jancy Engineering Co. Cradle pipe adaptor for magnetic drill. 4,390,309, Cl. 408-76.000.

Farm Fresh Shrimp Corporation: *See—*
Dugan, Charles; and Dugan, Timothy, 4,389,974, Cl. 119-2.000.

Farooq, Saleem: *See—*
Wehner, Wolfgang; Farooq, Saleem; and Kostler, Hans-Gunter, 4,390,538, Cl. 424-249.000.

Faulhaber, Mark E.; and Prober, James M., to Du Pont de Nemours, E. I., and Company. Method and apparatus for remotely detecting gases in the atmosphere. 4,390,785, Cl. 250-330.000.

Fehr, Richard B. Toolbag suspenders and holder. 4,390,116, Cl. 224-209.000.

Fekete, Gyorgy: *See—*
Udvardy Nagy nee Cserey Pechany, Eva; Budai, Miklos; Fekete, Gyorgy; Gorog, Sandor; Herenyi, Bulcsu; Wack, Geza; and Zalai, Karoly, 4,390,625, Cl. 435-119.000.

Fell, Wolfgang; and Sanders, Werner, to Robert Bosch GmbH. Tape cassette and cassette receiver combination for transducing apparatus. 4,390,913, Cl. 360-85.000.

Fenley, Joel S., to Saf-T-Trac Company. Drapery carrier. 4,390,055, Cl. 160-348.000.

Ferguson, Daniel J.; Stringer, Frederick D.; and Esakov, Michael D., to W. R. Grace & Co., Cryovac Div. Heat sealable, multi-ply polypropylene film. 4,390,385, Cl. 156-229.000.

Ferguson, Edward J., to Gillette Company, The. Erasable inks containing thermoplastic block copolymers. 4,390,646, Cl. 523-161.000.

Fernekes, Robert W.; and Tesser, Murray V., to Senscom Corporation. Hand held viewer for various size films. 4,390,257, Cl. 353-95.000.

Ferro Corporation: *See—*
Votava, Werner F., 4,390,636, Cl. 501-24.000.

Feurer, Bernard, to Alcon Pharmaceuticals Limited. Method for molding contact lenses using microwave energy. 4,390,482, Cl. 264-1.400.

Fiber Industries, Inc.: *See—*
McLaughlin, William D., Jr., 4,389,774, Cl. 30-133.000.

Fiberglas Canada Limited: *See—*
Coker, Robert J.; Bate, Gary W.; and Deuzeman, Henk J., 4,390,398, Cl. 203-18.000.

Fickelscher, Kurt G., to P. A. Rentrop, Hubbert & Wagner Fahrzeugausstattungen GmbH & Co. Machine with rotary piston including a flexible annular member. 4,390,328, Cl. 418-45.000.

Findeis, Gunter: *See—*
Biedermann, Ernst; Findeis, Gunter; Weber, Klaus; and Zahn, Wolfgang, 4,390,270, Cl. 355-46.000.

Finike Italiana Marposs S.p.A.: *See—*
Solaroli, Sergio, 4,389,787, Cl. 33-174.00Q.

Fink, Warren R.: *See—*
Tafara, Peter T.; and Fink, Warren R., 4,390,425, Cl. 210-232.000.

Firestone Tire & Rubber Company, The: *See—*
Lee, Kang I.; and Oziomek, James, 4,390,673, Cl. 526-212.000.

Fischbach, Wolfgang, to Heinrich Baumgarten KG Eisen- und Blechwarenfabrik. Side handle for utensils. 4,390,200, Cl. 294-27.00H.

Fischer, Artur. Connecting element. 4,389,809, Cl. 46-26.000.

Fischer, Paul W.: *See—*
Dvoracek, Louis M.; Fischer, Paul W.; and Skripek, Milan, 4,390,412, Cl. 208-48.00R.

Fischer, Wolfgang; and Link, Renate, to Merck Patent Gesellschaft mit beschrankter Haftung. Method for the determination of leukemic cells. 4,390,518, Cl. 424-3.000.

Fisher, Christopher L., to Armco Inc. Composite arch structure. 4,390,306, Cl. 405-124.000.

Fisher, James B., Jr. Dual purpose bird feeder. 4,389,975, Cl. 119-51.00R.

Fitzhugh, Raymond L.: *See—*
Balogh, Louis J.; Fitzhugh, Raymond L.; Kimes, Dale S.; and Weinstein, Myron, 4,389,788, Cl. 33-178.00D.

Flander, Walter; Leikas, Jukka; and Hirvonen, Vesa, to Oy Wartsila Oy. Method for the production and assembly of lock parts. 4,389,764, Cl. 29-416.000.

Fleishman, Gregg. Portable furniture. 4,390,204, Cl. 297-16.000.

Fleming, Dennis J.: *See—*
Flowerday, Carl; Marcus, Konrad H.; Kempkers, Gordon; Boerema, Edward T.; and Fleming, Dennis J., 4,390,202, Cl. 296-97.00K.

Fletcher, Edwin H., to Transway International Corporation. Barge. 4,389,960, Cl. 114-248.000.

Flowerday, Carl; Marcus, Konrad H.; Kempkers, Gordon; Boerema, Edward T.; and Fleming, Dennis J., to Prince Corporation. Visor control. 4,390,202, Cl. 296-97.00K.

Fonda, James B., to Lord Corporation. Photocurable compositions for use as ceramic ink vehicles. 4,390,565, Cl. 427-44.000.

Fong, Calvin C.; Altizer, John W.; Arnold, Vernon E.; and Lawson, John K., to Lockheed Corporation. Blasting machine utilizing sublimable particles. 4,389,820, Cl. 51-410.000.

Ford Motor Company: *See—*
Butler, James W.; and Colvin, Alex D., 4,389,881, Cl. 73-116.000.
Schechter, Michael M., 4,390,856, Cl. 335-256.000.

Forestier, Serge: *See—*
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,390,522, Cl. 424-45.000.
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,390,689, Cl. 528-335.000.

Forman, Everett W. Self-retaining rib belt. 4,390,014, Cl. 128-78.000.

Forster, Hans: *See—*
Leckband, Uwe; Thiele, Willi; Hagenah, Klaus; and Forster, Hans, 4,390,029, Cl. 131-109.0AB.

Fortune, William S.: *See—*
Dallons, Robert E.; and Fortune, William S., 4,389,912, Cl. 81-43.000.

Foster, Edwin E. Adjustable bicycle handlebar stem. 4,390,300, Cl. 403-24.000.

Fourcade, Pierre; and Dupray, Dominique, to Thomson-CSF. Device for the synchronization of digital data transmitted in packets. 4,390,985, Cl. 370-94.000.

Fournier, Jacques M. A., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.". System for measuring resonance frequencies in turbine and compressor vanes and propeller blades. 4,389,891, Cl. 73-579.000.

Fowler, Alan B.; Rosenberg, Robert; and Rupprecht, Hans S., to International Business Machines Corporation. Self-aligned process for fabricating gallium arsenide metal-semiconductor field effect transistors. 4,389,768, Cl. 29-571.000.

Fox, Ronald L., to United States of America, Energy. Downhole steam generator using low pressure fuel and air supply. 4,390,062, Cl. 166-59.000.

Foxcroft Associates: *See—*
Robinson, Thomas C.; Kitrilakis, Sotiris; and Martin, Thomas B., Jr., 4,389,737, Cl. 3-1.700.

Frabricius, Hans-Ake; and Stahn, Roland, to Hooper Trading Company. Serum-free and mitogen-free T-cell growth factor and process for making same. 4,390,623, Cl. 435-68.000.

Framatome: *See—*
Bes, Louis, 4,390,034, Cl. 134-104.000.

Frankle, Gerhard; and Hase, Friedrich-Wilhelm, to Daimler-Benz Aktiengesellschaft. Control member for fuel injection devices. 4,389,987, Cl. 123-300.000.

Franz, Norman J.; and Reynolds, Elizabeth B., to Buckeye Cellulose Corporation, The. Impervious oversleeve with antiroll-down collar for surgical gown. 4,389,734, Cl. 2-59.000.

Fraser, William A.: *See—*
Karol, Frederick J.; Goeke, George L.; Wagner, Burkhard E.; Fraser, William A.; Jorgensen, Robert J.; and Friis, Nils, 4,390,677, Cl. 526-348.600.

Frei AG Maschinenbau: *See—*
Frei, Siegfried, 4,389,964, Cl. 118-66.000.

Frei, Siegfried, to Frei AG Maschinenbau. Apparatus for applying a protective coating to the seam of welded can sleeves. 4,389,964, Cl. 118-66.000.

Freitag, Hans-Albrecht: *See—*
Rasshofer, Werner; Avar, Geza; Freitag, Hans-Albrecht; Grogler, Gerhard; and Kopp, Richard, 4,390,640, Cl. 521-51.000.

Fremont Industries, Inc.: *See—*
Spekman, Paul, Jr., 4,390,465, Cl. 252-527.000.

Freud, Paul J., to Leeds & Northrup Company. Multiple-cavity variable capacitance pressure transducer. 4,390,925, Cl. 361-283.000.

Freyre, Frederick W., to Hazeltine Corporation. Continuously variable delay line. 4,390,247, Cl. 350-358.000.

Friberg, Ulf R.: *See—*
Andreason, Gustav O.; Friberg, Ulf R.; Kuvaja, Heimo H.; and Qvarnstrom, Bengt G. L., 4,389,814, Cl. 47-73.000.

Friedmann, Oswald: *See—*
Huber, Lothar; and Friedmann, Oswald, 4,389,985, Cl. 123-198.00F.

Frielingsdorf, Horst. Method and apparatus for the transport of glass panes. 4,390,358, Cl. 65-111.000.

Friis, Nils: *See—*
Karol, Frederick J.; Goeke, George L.; Wagner, Burkhard E.; Fraser, William A.; Jorgensen, Robert J.; and Friis, Nils, 4,390,677, Cl. 526-348.600.

Fritz Fuss Kom.-Ges Elektrotechnische Fabrik: *See—*
Merkel, Willi, 4,390,863, Cl. 340-310.00R.

Fritz Gegauf Aktiengesellschaft Bernina-Machmaschinenfabrik: *See—*
Dreier, Ernst; and Hoss, Richard, 4,389,952, Cl. 112-128.00R.

Frollini, Dominick, Jr.: *See—*
Kato, Kenneth J.; and Frollini, Dominick, Jr., 4,390,406, Cl. 204-435.000.

Fry, Donovan N.: *See—*
Sharrock, Michael; Fry, Donovan N.; and William, Robert, 4,389,801, Cl. 40-159.000.

Fryer, Rodney I.: *See—*
Walser, Armin; and Fryer, Rodney I., 4,390,471, Cl. 260-244.400.

Frymire, Roger: *See—*
Hennessy, Richard E.; Frymire, Roger; and Coovert, Cary, 4,390,968, Cl. 364-900.000.

Fuchs, Heinz, to Ruhrkohle A G. Drill core inclinometer. 4,389,792, Cl. 33-304.000.

Fuji Photo Film Co., Ltd.: *See—*
Kobayashi, Hidetoshi; Takahashi, Toshirou; Hirano, Shigeo; Hirosa, Takeshi; and Adachi, Keiichi, 4,390,618, Cl. 430-543.000.
Mori, Teruo; Shirai, Hiroshi; Kakei, Tsutomu; Watanabe, Masaru; and Matsuhisa, Tsuneyasu, 4,390,407, Cl. 204-206.000.
Ohara, Yuji; and Horikawa, Kazuo, 4,390,882, Cl. 346-1.100.
Ono, Yoshihiro; Nabara, Akira; and Ikeda, Tomoaki, 4,390,601, Cl. 428-412.000.
Sato, Kozo; Iwakura, Ken; and Igarashi, Akira, 4,390,616, Cl. 430-338.000.

Fujikawa, Tadashi; and Goto, Masami, to Nissan Motor Company, Limited. Head lamp washing system. 4,390,128, Cl. 239-284.00A.

Fujiki, Yoshinori, to National Institute for Researches in Inorganic Materials. Process for manufacturing fibrous potassium titanate. 4,390,513, Cl. 423-598.000.

Fujimoto, Misao, to Toyo Kogyo Co., Ltd. Exhaust gas recirculation system for internal combustion engines. 4,390,001, Cl. 123-571.000.

Fujimura, Motoki: *See—*
Chibata, Ichiro; Tosa, Tetsuya; Mori, Takao; and Fujimura, Motoki, 4,390,626, Cl. 435-176.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Ohnishi, Norio; and Ibuki, Rinta, 4,390,694, Cl. 544-22.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,390,534, Cl. 424-246.000.

Fujita, Kazunori: *See—*
Kawana, Hidejiro; Horiba, Tatsuo; Iwamoto, Kazuo; Fujita, Kazunori; and Tamura, Kohki, 4,390,603, Cl. 429-30.000.

Fujita, Yoshiji: *See—*
Omura, Yoshiaki; Mori, Fumio; Fujita, Yoshiji; Nishida, Takashi; Tamai, Yoshin; Wada, Fumio; and Itoi, Kazuo, 4,390,547, Cl. 424-304.000.

Fujita, Yoshimi; and Yamashita, Toshiharu, to Hoya Corporation. Method of exposure of chemically machineable light-sensitive glass. 4,390,391, Cl. 156-628.000.

Fujitsu Limited: *See—*
Kurafuji, Setsuo, 4,390,798, Cl. 307-296.00R.
Shimoda, Haruo; and Tanabe, Kaoru, 4,389,967, Cl. 118-500.000.

Fujiwara, Tatsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic recording system. 4,390,907, Cl. 360-32.000.

Fukagai, Toshio: *See—*
Hashimoto, Mitsuru; Sasaki, Masaomi; Fukagai, Toshio; Katoh, Tatsuya, deceased; and Katoh, Mankichi, heir, 4,390,608, Cl. 430-57.000.

Fukui, Tsutomu: *See—*
Onigata, Yoshio; Fukui, Tsutomu; and Yajika, Kazuo, 4,390,977, Cl. 369-50.000.

Fulkerson, Earl. Apparatus having push/pull actuated boom for generating waves in the ground. 4,390,077, Cl. 181-121.000.

Furuichi, Masayoshi; Honjo, Takeshi; and Akiba, Nobuo, to Copyer Co., Ltd.; and Canon Inc. Cleaning device for transferring system wet type copying machine. 4,390,268, Cl. 355-15.000.

Furuichi, Shuhei: *See—*
Okano, Michiaki; and Furuichi, Shuhei, 4,390,028, Cl. 128-777.000.

Furukawa, Hidenori: *See—*
Nishikawa, Masahiko; Ishibashi, Hiroaki; and Furukawa, Hidenori, 4,390,691, Cl. 536-65.000.

Furumoto, Mitsunobu; Yano, Osahiko; Taniguchi, Hiroshi; Kubo, Kanji; and Ohtsu, Masamitsu, to Matsushita Electric Industrial Co. Ltd. Magnetic recording and/or reproducing system for television and audio signal. 4,390,906, Cl. 360-19.100.

G. A. Serlachius Oy: *See—*
Larikka, Leo, 4,389,866, Cl. 72-71.000.

Gabrielsen, Rolf S.; Graham, Patricia A.; Klijanowicz, James E.; and Stern, Max H., to Eastman Kodak Company. Color-forming para-sulfonamidodiphenylamine dye precursor and sulfonimide dye in photographic material and process. 4,390,606, Cl. 430-9.000.

Gaertner, Gregory E.: *See—*
Wu, Ta-Ming; and Gaertner, Gregory E., 4,390,780, Cl. 377-44.000.

GAF Corporation: *See—*
Ziegler, B. Randall, 4,390,336, Cl. 425-82.100.

Gaillard, Jean: *See—*
Amigues, Pierre; Chauvin, Yves; Commereuc, Dominique; Gaillard, Jean; and Phung, Nhu H., 4,390,431, Cl. 210-724.000.

Gaitos, Janise N.; Shattuck, Meredith D.; and Wilbur, Clayton V., to International Business Machines Corporation. Method and apparatus for correction of non-impact printing. 4,390,297, Cl. 400-697.100.

Galera, Richard: *See—*
Biava, Dominique; Cornu, Jean; Detriche, Jean-Marie; Galera, Richard; Tiret, Bernard; and Marchal, Paul, 4,390,775, Cl. 219-124.340.

Galli, Paolo: *See—*
Cuffiani, Illaro; Galli, Paolo; and Zucchini, Umberto, 4,390,454, Cl. 252-429.00B.

Gambro AG: *See—*
Riede, Gerhard, 4,390,424, Cl. 210-232.000.

Ganssen, Alexander; Oppelt, Arnulf; and Loeffler, Wilfried, to Siemens Aktiengesellschaft. Zeugmatography process. 4,390,840, Cl. 324-309.000.

Gardner, Joseph J., Jr. Jam prevention means for high-speed web handling device. 4,390,118, Cl. 226-25.000.

Garkusha, Anatoly V.; and Dobrynin, Vladimir E. Turbine exhaust hood. 4,390,319, Cl. 415-209.000.

Garner, Harold: *See—*
Rudell, Elliot; Cernansky, Joseph; and Garner, Harold, 4,390,178, Cl. 272-114.000.

Garrett, Robert A.: *See—*
Wier, John P.; and Garrett, Robert A., 4,390,076, Cl. 180-11.000.

Garrison, Harold K.; and Ratzlaff, Howard J., to Hesston Corporation. Anti-slip bale thrower. 4,390,092, Cl. 198-638.000.

Gartside, Robert J.; and Woebcke, Herman N., to Stone & Webster Engineering Corporation. Solids feeding device and system. 4,390,502, Cl. 422-145.000.

Garver, Edward B., Sr., to Baxter Travenol Laboratories, Inc. Autoclavable thermoplastic material which is heat bondable to a cannula and the like. 4,390,668, Cl. 525-444.000.

Garvey, Steven E. Electronically variable resistance device. 4,390,860, Cl. 338-38.000.

Garwin, Richard L., to International Business Machines Corporation. Security of manufactured apparatus. 4,390,868, Cl. 340-568.000.

Gasser, Hermann: *See*—
Briner, Emil; Novak, Peter; Tanner, Bruno; and Gasser, Hermann, 4,389,840, Cl. 57-267.000.

Gasser, Max G.: *See*—
United States of America, National Aeronautics and Space Administration; Gasser, Max G.; Sherman, Allan; Studer, Philip A.; Daniels, Alexander; and Goldowsky, Michael P., 4,389,849, Cl. 62-6.000.

Gately, Dana R., to Sealed Air Corporation. Apparatus having an automatic foam dispensing system for forming shock-absorbing members in a container. 4,390,337, Cl. 425-89.000.

Gates, James T. Humidifying system for mobile vehicles. 4,390,479, Cl. 261-27.000.

Gaven, Joseph V., Jr.; and Bak, Chan S., to Spectro-Systems, Incorporated. Thermal indicator for wells. 4,390,291, Cl. 374-160.000.

Gebrueder Buehler AG: *See*—
Kossebau, Friedrich K. O., 4,390,090, Cl. 193-32.000.

Gedon, Catherine. Small-size device for simulating a bridge game. 4,390,183, Cl. 273-148.00A.

Geiler, Volkmar: *See*—
Mennemann, Karl; Gliemeroth, Georg; and Geiler, Volkmar, 4,390,638, Cl. 501-77.000.

Geisow, Bernard H., to Daniel Industries, Inc. Compression spring capsule. 4,390,171, Cl. 267-169.000.

General Electric Company: *See*—
Ashby, Bruce A., 4,390,660, Cl. 524-721.000.
Axelrod, Robert J., 4,390,477, Cl. 260-927.00R.
Brazel, James P., 4,390,583, Cl. 428-113.000.
Brown, Edgar D., Jr., 4,390,651, Cl. 524-267.000.
Eiswerth, James E., 4,390,320, Cl. 416-97.00R.
Erdman, David M.; and Harms, Harold B., 4,390,826, Cl. 318-439.000.
Ghezzo, Mario; and Griffing, Bruce F., 4,390,393, Cl. 156-643.000.
Giles, Harold F., Jr., 4,390,665, Cl. 525-180.000.
Houston, John M., 4,390,839, Cl. 324-116.000.
Liu, Ping Y., 4,390,657, Cl. 524-504.000.
Michael, Richard N., 4,390,870, Cl. 340-648.000.
O'Brien, Kirk G.; and DeBrita, John A., 4,390,806, Cl. 310-261.000.
Ritzer, Alan; Shah, Bakulesh; and Sliva, Daniel E., 4,390,510, Cl. 423-342.000.
Rosenbaum, Herman S.; and Davies, John H., 4,390,497, Cl. 376-414.000.
Steigerwald, Robert L., 4,390,769, Cl. 219-10.770.
Wanat, David J., 4,390,133, Cl. 241-93.000.

General Electric Company Limited, The: *See*—
Elkateb, Makeen M.; and Cheetham, William J., 4,390,835, Cl. 324-51.000.

General Foods Corporation: *See*—
Swartley, John S.; and Der Avedisian, Suren, 4,390,551, Cl. 426-107.000.

General Mills Products Corp.: *See*—
Trautlein, Fred S.; and Stephens, James R., 4,390,099, Cl. 211-4.000.

General Motors Corporation: *See*—
Hammond, Dean C., Jr.; and Vickers, Paul T., 4,390,355, Cl. 55-523.000.
Lockhart, Bruce D., 4,389,910, Cl. 74-843.000.
Plyler, Robert G.; and Suverison, Lyle B., 4,390,231, Cl. 339-217.00S.
Strahan, Robert M.; Hopf, Philip W.; and Williams, Phillip G., 4,390,193, Cl. 280-777.000.
Widmer, Paul; and Mercer, Robert R., 4,390,208, Cl. 297-379.000.

Genvex Energiteknik A/S: *See*—
Svendsen, Biarne R., 4,389,857, Cl. 62-325.000.

George F. and Irene Sherrill 1978 Trust No. 1: *See*—
Sherrill, George F., 4,390,539, Cl. 424-251.000.

George F. and Irene Sherrill 1978 Trust No. 2: *See*—
Sherrill, George F., 4,390,539, Cl. 424-251.000.

Gerberich, H. Robert, to Celanese Corporation. Formaldehyde production. 4,390,730, Cl. 568-473.000.

Getz, John L., to Industrial Adhesive, Inc. Apparatus for applying hot-melt to thread. 4,389,966, Cl. 118-405.000.

Gewerkschaft Eisenhutte Westfalia: *See*—
Becker, Kunibert; Kirchbrucher, Rudiger; Lagodka, Gunter; and Pohlmann, Klaus-Dieter, 4,390,308, Cl. 405-299.000.

Geyling, Franz T.; and Louzon, Theodore J., to Bell Telephone Laboratories, Incorporated. Metal coating of fibers. 4,390,589, Cl. 428-381.000.

Ghezzo, Mario; and Griffing, Bruce F., to General Electric Company. Method of forming an isolation trench in a semiconductor substrate. 4,390,393, Cl. 156-643.000.

Giaimo, Anthony: *See*—
Larsen, Robert H.; and Giaimo, Anthony, 4,389,955, Cl. 112-184.000.

Gibson, Dennis H., to Caterpillar Tractor Co. Rotation sensitive pressure regulator. 4,389,991, Cl. 123-383.000.

Gibson, Paul W.; and Orthoefer, Frank T., to A. E. Staley Manufacturing Company. Proteinaceous foaming compositions and method for preparing foamed proteinaceous products. 4,390,450, Cl. 252-307.000.

Giese, Ingo H.: *See*—
Schilf, Lothar; and Giese, Ingo H., 4,390,275, Cl. 356-43.000.

Giese, Wolfgang. Magnetic tape handling apparatus. 4,390,145, Cl. 242-186.000.

Giles, Harold F., Jr., to General Electric Company. Polyetherimide-EPDM terpolymer blends. 4,390,665, Cl. 525-180.000.

Gillette Company, The: *See*—
Ferguson, Edward J., 4,390,646, Cl. 523-161.000.
Nissen, Warren I.; and Petrillo, Richard J., 4,389,773, Cl. 30-50.000.
Strout, Robert B., 4,389,868, Cl. 72-132.000.

Ginn, David W., to Du Pont de Nemours, E. I., and Company. Auto-threshold slow start control circuit for a centrifuge. 4,390,825, Cl. 318-384.000.

Girgis, Mikhail M., to PPG Industries, Inc. Non-starch containing aqueous sizing composition for glass fibers and sized glass fibers for use in reinforcing elastomers. 4,390,647, Cl. 523-212.000.

Givaudan Corporation: *See*—
Krasnobajew, Victor, 4,390,556, Cl. 426-538.000.
Krasnobajew, Victor, 4,390,557, Cl. 426-538.000.

Gliemeroth, Georg: *See*—
Mennemann, Karl; Gliemeroth, Georg; and Geiler, Volkmar, 4,390,638, Cl. 501-77.000.

Globe Oil Tools, Inc.: *See*—
Phelan, Charles M., 4,390,072, Cl. 175-229.000.

Gloystein, Jurgen F. G.; and Szirniks, Klaus G., to Conver Ingenieur-Technik GmbH & Co. KG. Container coupling with split housing. 4,389,761, Cl. 24-287.000.

Glyco-Metall-Werke Daelen & Loos GmbH: *See*—
Hodes, Erich; Sternisa, Danilo; and Schneider, Walter, 4,390,563, Cl. 427-27.000.

Goby, Larry G., to Reynolds Manufacturing Company. Land leveling scrapers. 4,389,800, Cl. 37-124.000.

Goeke, George L.: *See*—
Karol, Frederick J.; Goeke, George L.; Wagner, Burkhard E.; Fraser, William A.; Jorgensen, Robert J.; and Friis, Nils, 4,390,677, Cl. 526-348.600.

Goetz, Michael A.; McCormick, Pamela A.; and Monaghan, Richard L., to Merck & Co., Inc. Antiparasitic macrolide from a strain of *Streptomyces hygroscopicus*. 4,390,546, Cl. 424-279.000.

Gokan, Hiroshi: *See*—
Esho, Sotaro; and Gokan, Hiroshi, 4,390,404, Cl. 204-192.00E.

Golan, Michael G.; and Desrosiers, Leo, to Kendall Company, The. Web takeoff roll. 4,389,753, Cl. 19-106.00R.

Golay, Jean-Pierre; and Uberti, Jean-Louis, to Mefina S.A. Fuze for non-spinning projectiles. 4,389,937, Cl. 102-249.000.

Goldberg, Alfred L.; Swamy, K. H. Sreedhara; and Chung, Chin H., to President and Fellows of Harvard College. Polypeptide degrading enzymes. 4,390,629, Cl. 435-220.000.

Goldberg, Ernest: *See*—
Trembly, Gray C.; Goldberg, Ernest; and Dragun, Edward B., 4,389,940, Cl. 102-489.000.

Golden, James E.: *See*—
Suffi, Louis; Golden, James E.; and Burtelson, Frederick W., 4,390,744, Cl. 174-41.000.

Goldenberg, Frank G. Disposable rain poncho system. 4,390,096, Cl. 206-390.000.

Goldfinger, Paul. Garment carrying device. 4,390,087, Cl. 190-41.00B.

Goldner, Walther: *See*—
Resag, Jorg; Goldner, Walther; and Treiber, Horst, 4,390,207, Cl. 297-362.000.

Goldowsky, Michael P.: *See*—
United States of America, National Aeronautics and Space Administration; Gasser, Max G.; Sherman, Allan; Studer, Philip A.; Daniels, Alexander; and Goldowsky, Michael P., 4,389,849, Cl. 62-6.000.

Goldsmith, Wesely R.; and Di Marco, Joel E. Sine-bar gage-blocks and direct reading micrometer adjustment. 4,389,785, Cl. 33-174.00S.

Goldsworthy, John; Ross, William J.; and Verge, John P., to Lilly Industries Limited. Quinolone derivatives and their use in a method of controlling an immediate hypersensitivity disease. 4,390,541, Cl. 424-258.000.

Gonzalez, Hector M., to Philip Morris Incorporated. Modular conveyor guide and system utilizing same. 4,390,091, Cl. 198-358.000.

Goodman, Donald: *See*—
Koral, Marvin; and Goodman, Donald, 4,390,459, Cl. 252-511.000.

Goodson, Raymond E.: *See*—
Martin, Harry L.; and Goodson, Raymond E., 4,390,841, Cl. 324-427.000.

Goodyear Tire & Rubber Company, The: *See*—
Balogh, Louis J.; Fitzhugh, Raymond L.; Kimes, Dale S.; and Weinstein, Myron, 4,389,788, Cl. 33-178.00D.
Colvin, Howard A.; and Muse, Joel, Jr., 4,390,741, Cl. 585-258.000.
Mendiola, Joseph V.; and Smith, David E., 4,390,052, Cl. 152-356.00R.
Tung, William C. T., 4,390,687, Cl. 528-295.000.
Wideman, Lawson G., 4,390,742, Cl. 585-854.000.

Gorecki, Marian; Acquaye, Clemenceau T. A.; Wilchek, Meir; and Rich, Alexander, to Yeda Research & Development Co. Ltd. Pharmaceutical agents for the treatment of sickle cell disease. 4,390,526, Cl. 424-177.000.

Gorick, Joel C.; and Mayhall, Riley H., Jr., to Gorick, Joel C. Lamp assembly. 4,390,931, Cl. 362-267.000.

Gorog, Sandor: *See*—
Udvardy Nagy nee Cserey Pechany, Eva; Budai, Miklos; Fekete, Gyorgy; Gorog, Sandor; Herenyi, Bulcsu; Wack, Geza; and Zalai, Karoly, 4,390,625, Cl. 435-119.000.

Goscenski, Edward J., Jr., to Eaton Corporation. Cam mechanism for limited slip or locking differential. 4,389,909, Cl. 74-711.000.

Gotman, Alexander, to Presco, Inc. Precise quick-release positioning mechanism. 4,390,172, Cl. 269-56.000.

Goto, Jiro: *See*—
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,390,534, Cl. 424-246.000.

Goto, Masami: *See*—
Fujikawa, Tadashi; and Goto, Masami, 4,390,128, Cl. 239-284.00A.

Gotoh, Isao: *See*—
Oda, Yoshio; Morikawa, Shinsuke; Ikemura, Masaaki; Yarita, Tomio; Noshiro, Makoto; Gotoh, Isao; Jitsugiri, Yukio; Yonemori, Shigeaki; Sato, Kimihiko; and Uchida, Keiichi, 4,390,511, Cl. 423-469.000.

Gozzo, Franco; Troiani, Nicola; Lorusso, Simone; and Santi, Romano, to Montedison S.p.A. Fungicidal N-substituted ethylendiamino-dithiocarbamates which do not give rise to the formation of ethylenthiourea. 4,390,705, Cl. 549-3.000.

Grabowski, Andrzej: *See*—
Kolodziejski, Stanislaw; Dwojak, Stanislaw; and Grabowski, Andrzej, 4,389,897, Cl. 73-861.000.

Graetz, Clive W.; Thompson, Morice W.; and Bromley, Charles, to Imperial Chemical Industries Limited; and Dulux Australia Limited. Coating compositions. 4,390,658, Cl. 524-512.000.

Graham, Anne M.: *See*—
Pesa, Frederick A.; and Graham, Anne M., 4,390,639, Cl. 518-713.000.

Graham, Patricia A.: *See*—
Gabrielsen, Rolf S.; Graham, Patricia A.; Klijanowicz, James E.; and Stern, Max H., 4,390,606, Cl. 430-9.000.

Granda, Edward J.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,390,464, Cl. 252-522.00R.

Grau, James A., to Schlumberger Technology Corporation. Spectroscopic analysis with background compensation. 4,390,783, Cl. 250-270.000.

Graves, Howard K., to Valen Mfg. Co. Electrical outlet box. 4,390,105, Cl. 220-3.600.

Green, Carmel H. Metering toy for selecting a self-propelled vehicle of greatest strength. 4,389,810, Cl. 46-264.000.

Green, John G., to Dow Chemical Company, The. Trimethylsilylation of cellulose. 4,390,692, Cl. 536-84.000.

GRETAG Aktiengesellschaft: *See*—
Celio, Tino; and Ott, Hans, 4,390,280, Cl. 356-445.000.

Griffin, Ernest E.: *See*—
Lowry, Joseph M.; and Griffin, Ernest E., 4,389,836, Cl. 56-12.700.

Griffing, Bruce F.: *See*—
Ghezzo, Mario; and Griffing, Bruce F., 4,390,393, Cl. 156-643.000.

Grip-Pak, Inc.: *See*—
Cunningham, Ernest R., 4,390,095, Cl. 206-150.000.

Grob & Co. Aktiengesellschaft: *See*—
Baumann, Hans, 4,390,045, Cl. 139-91.000.

Grogler, Gerhard: *See*—
Rasshofer, Werner; Avar, Geza; Freitag, Hans-Albrecht; Grogler, Gerhard; and Kopp, Richard, 4,390,640, Cl. 521-51.000.

Grossman, Morris G. Concealed door hinge. 4,389,748, Cl. 16-278.000.

Grotnes, Carl C., II, to Atlanta Grotnes Machine Company. Method and apparatus for making beads on drums. 4,389,875, Cl. 72-393.000.

Grove, Morgens W.; and Eriksen, Carl-Erik, to Dansk Industri Syndikat A/S. Method and apparatus for producing one or more hollow sand cores suitable for casting moulds. 4,390,056, Cl. 164-7.100.

Gruber, Bruce A., to Ashland Oil, Inc. Curable composition and use thereof. 4,390,675, Cl. 526-273.000.

Grudzinskas, Charles V.; Chen, Sow-Mei L.; and Wissner, Allan, to American Cyanamid Company. 16-Hydroxy-5-iodo-prostacyclin analogs of the 1 series. 4,390,711, Cl. 549-465.000.

Grumman Aerospace Corporation: *See*—
Rose, George R., Jr., 4,390,069, Cl. 169-15.000.

Grun, Ingo. Heat exchanger. 4,390,352, Cl. 55-208.000.

GTE Laboratories Incorporated: *See*—
Peek, Sanford C., 4,390,814, Cl. 315-320.000.
Peters, Thomas E.; and McColl, James R., 4,390,449, Cl. 252-301.60F.

GTE Products Corporation: *See*—
Audesse, Emery G.; Kendrick, George B.; and Chavan, Pratap P., 4,390,935, Cl. 362-306.000.
Houck, David L., 4,390,368, Cl. 75-251.000.
Lesinski, Leon C., 4,390,919, Cl. 361-56.000.
Rothwell, Harold L., Jr.; Gungle, W. Calvin; and Daignault, Alan, 4,390,811, Cl. 315-73.000.
Sojka, Richard J.; Braverman, Leonard W.; Guch, Steve, Jr.; and Clark, David J., 4,390,993, Cl. 372-87.000.

Gubau, Giuseppe; Roano, Domenico; and Quaranti, Giovanni, to Ing. C. Olivetti & C., S.p.A. Electronic typewriter. 4,390,293, Cl. 400-144.200.

Guch, Steve, Jr.: *See*—
Sojka, Richard J.; Braverman, Leonard W.; Guch, Steve, Jr.; and Clark, David J., 4,390,993, Cl. 372-87.000.

Gulf Research & Development Company: *See*—
Schulz, Johann G.; and Margosian, Daniel, 4,390,661, Cl. 524-878.000.

Gungle, W. Calvin: *See*—
Rothwell, Harold L., Jr.; Gungle, W. Calvin; and Daignault, Alan, 4,390,811, Cl. 315-73.000.

Gunter, Jonas L.; Haren, Doyle V.; Hofle, Anatoli; and Medford, Richard D., to Dayco Corporation. Crawler track structure having wear surface. 4,390,214, Cl. 305-35.00R.

Gupta, Aditya K.: *See*—
Higgins, J. Aiden; and Gupta, Aditya K., 4,390,851, Cl. 330-277.000.

Gustafson, Inc.: *See*—
Bartholomay, Donald O., 4,389,906, Cl. 73-863.550.

Gutierrez, Manuel, to United States of America, Interior. Capacitance probe sensor device. 4,389,900, Cl. 73-861.420.

Gyger, Paul; and Schar, Hugo, to Rieter Machine Works Limited. Apparatus for severing a fibre layer of staple fibres. 4,389,751, Cl. 19-0.350.

Gytel, Ulla B. Aluminium chloride composition and a method for its manufacture. 4,390,445, Cl. 252-175.000.

H. B. Fuller Company: *See*—
LaBelle, Stanley B.; and Hagquist, James A. E., 4,390,678, Cl. 528-60.000.

H. Niemeyer Sohne GmbH & Co. KG: *See*—
Barlage, Bruno, 4,390,070, Cl. 172-54.500.

Haagenson, Bruce: *See*—
Schleusner, Clifford E., 4,390,228, Cl. 339-113.00R.

Haas, Rudy E.; Smorol, Michael E.; Tobin, Curtis L.; and Walker, James J., Jr., to Carrier Corporation. Heat exchanger and fan and method of assembly. 4,390,059, Cl. 165-76.000.

Hagedorn, Leonard: *See*—
Schulein, Rolf-Gunter; and Hagedorn, Leonard, 4,390,109, Cl. 220-234.000.

Hagenah, Klaus: *See*—
Leckband, Uwe; Thiele, Willi; Hagenah, Klaus; and Forster, Hans, 4,390,029, Cl. 131-109.0AB.

Hagquist, James A. E.: *See*—
LaBelle, Stanley B.; and Hagquist, James A. E., 4,390,678, Cl. 528-60.000.

Hahn, Allen W.; Nichols, Michael F.; Sharma, Ashok K.; and Hellmuth, Eckhard W., to University of Missouri, Curators of the. Oxygen electrode and method for preparation thereof. 4,390,405, Cl. 204-415.000.

Hahn, James H., to Rush, David H. Electromechanical machine. 4,390,805, Cl. 310-154.000.

Haight, James Clifford: *See*—
Harmening-Pittiglio, Denise, 4,390,619, Cl. 435-2.000.

Hakansson, William, to Aktiebolaget Metka. Device for knife handle. 4,389,778, Cl. 30-338.000.

Hammer, Klaus-Dieter: *See*—
Heinrich, Wolfgang; Hammer, Klaus-Dieter; and Bytzek, Max, 4,390,569, Cl. 427-366.000.

Hammerschlag, Robert H. Aperture screen for the observation of bright objects with preservation of the resolution. 4,390,243, Cl. 350-319.000.

Hammerschmitt, Nikolaus. Separator for low viscosity fluids. 4,390,421, Cl. 210-86.000.

Hammond, Charles S., Jr.; and Mitchell, Henry D., Jr., to Western Electric Company, Inc. Forming a strand package having multiple coil lengths. 4,390,137, Cl. 242-54.00R.

Hammond, Dean C., Jr.; and Vickers, Paul T., to General Motors Corporation. Wall-flow monolith filter. 4,390,355, Cl. 55-523.000.

Hampton, William A.: *See*—
Ostler, Charles R.; and Hampton, William A., 4,390,154, Cl. 248-346.000.

Han, Je-Chin: *See*—
Hendry, James W.; and Han, Je-Chin, 4,390,486, Cl. 264-45.500.

Haner, Douglas: *See*—
Podell, Jack; and Haner, Douglas, 4,389,808, Cl. 46-16.000.

Hanna, Marie R.: *See*—
Boden, Richard M.; Licciardello, Michael; Maisano, Joseph J., Jr.; and Hanna, Marie R., 4,390,448, Cl. 252-187.260.
Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., 4,390,435, Cl. 252-8.600.

Hannah, John: *See*—
Beattie, Thomas R.; Hannah, John; and Johnston, David B. R., 4,390,693, Cl. 542-442.000.

Hanotier, Jacques D. V.; Bridoux, Monique J. S.; and Dauby, Jacques F., to Labofina S.A. Process for the oxidation of hydrocarbons. 4,390,472, Cl. 260-398.600.

Hansch, Ferdinand: *See*—
Janssen, Harald; and Hansch, Ferdinand, 4,390,686, Cl. 528-289.000.

Hanyuda, Toshiaki: *See*—
Ando, Tomonori; Hanyuda, Toshiaki; Shishido, Satohiro; Sano, Fumiaki; Ochi, Kiyoyuki; Sugimoto, Toshiaki; and Okino, Yoshiro, 4,390,662, Cl. 525-28.000.

Haraikawa, Tetsuo; and Tamura, Koichi, to Tokico Ltd. Mechanical disc brake. 4,390,084, Cl. 188-71.700.

Harbison, William C.: *See*—
White, William H.; Harbison, William C.; and Nelson, Gary L., 4,390,373, Cl. 106-287.120.

Hard, Robert A.; and Prieto, Martin A., to Occidental Research Corporation. Process for making titanium metal from titanium ore. 4,390,365, Cl. 75-84.400.

Hardigg Industries, Inc.: *See*—
Turner, E. Wayne, 4,390,384, Cl. 156-221.000.

Hardin, George E. Dry pre-mixed mortar. 4,390,372, Cl. 106-90.000.

Haren, Doyle V.: *See*—
Gunter, Jonas L.; Haren, Doyle V.; Hofle, Anatoli; and Medford, Richard D., 4,390,214, Cl. 305-35.00R.

Hareng, Michel; Le Berre, Serge; Leclerc, Pierre; and Perbet, Jean Noel, to Thomson-CSF. Liquid crystal visual display unit and telephone terminal incorporating such a unit. 4,390,244, Cl. 350-333.000.

Hargrave, John C. Elastomer formulated fishing product. 4,389,805, Cl. 43-43.140.

Harmening-Pittiglio, Denise, to Haight, James Clifford. Leukocyte or platelet storage using ion-exchange resins. 4,390,619, Cl. 435-2.000.

Harms, Harold B.: *See*—
Erdman, David M.; and Harms, Harold B., 4,390,826, Cl. 318-439.000.

Harrell, John W., to Mobil Oil Corporation. Two receiver noise loggers. 4,390,878, Cl. 340-856.000.

Harris, Robert F.: *See*—
Hoffman, Dwight K.; Harris, Robert F.; Tefertiller, Nancy B.; and Rains, Randall C., 4,390,645, Cl. 521-137.000.

Harrison, Eugene O.; Martin, David J.; and Olson, Martin L. Enteral feeding system. 4,390,017, Cl. 604-270.000.

Hart, Dean W.: *See*—
Langlois, Henry J.; Hart, Dean W.; and Blazek, Gary J., 4,390,321, Cl. 417-15.000.

Hart, Peter J.: *See*—
Scinta, James; and Hart, Peter J., 4,390,411, Cl. 208-11.0LE.

Hart, Randall A., to Lexus Liting, Inc. Portable switching unit. 4,390,926, Cl. 361-334.000.

Harte, Kenneth J.: *See*—
Smith, Donald O.; and Harte, Kenneth J., 4,390,789, Cl. 250-492.200.

Hartig, F. Gunter, to Siemens Aktiengesellschaft. Electronic arrangement for idling stabilization. 4,389,989, Cl. 123-339.000.

Hase, Friedrich-Wilhelm: *See*—
Frankle, Gerhard; and Hase, Friedrich-Wilhelm, 4,389,987, Cl. 123-300.000.

Hashimoto, Mitsuru; Sasaki, Masaomi; Fukagai, Toshio; Katoh, Tatsuya, deceased (by Katoh, Tazuki, heir); and by Katoh, Mankichi, heir, to Ricoh Company, Ltd. Layered charge generator/transport electrophotographic photoconductor uses bisazo pigment. 4,390,608, Cl. 430-57.000.

Hasselberg, Herbert: *See*—
Adelhard, Georg; Hasselberg, Herbert; Obermeier, Manfred; Sierwald, Karl; Szedlacsek, Jozsef; and Somogyi, Gyorgy, 4,389,838, Cl. 57-71.000.

Hastings, Thomas M. High security locking assembly for lockrods type rear-end closures of cargo vehicles. 4,389,862, Cl. 70-2.000.

Hatanaka, Katsunori; Uzawa, Shunichi; Hirai, Yutaka; and Ayata, Naoki, to Canon Kabushiki Kaisha. Solid-state photoelectric transducer. 4,390,791, Cl. 250-578.000.

Hauni-Werke Korber & Co. KG: *See*—
Leckband, Uwe; Thiele, Willi; Hagenah, Klaus; and Forster, Hans, 4,390,029, Cl. 131-109.0AB.

Havinga, Reginoldus; Torenbeek, Reinder; and Schreurs, Petrus H. M., to AKZO N.V. Concentrated aqueous metal aldonate and/or ammonium aldonate composition. 4,390,451, Cl. 252-311.000.

Haworth Mfg., Inc.: *See*—
Wisniewski, Joseph M.; and Mrotz, Walter C., III, 4,390,210, Cl. 297-452.000.

Hayashi, Kiyoshi: *See*—
Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, 4,390,264, Cl. 355-8.000.

Hayashi, Soichiro; and Suenaga, Yoshihiko, to Hitachi, Ltd. Electron beam patterning method and apparatus with correction of deflection distortion. 4,390,788, Cl. 250-491.100.

Hayata, Shinzi: *See*—
Morita, Yoshinori; Hayata, Shinzi; Kato, Akifumi; Nara, Hideo; and Watanabe, Tohru, 4,390,669, Cl. 526-65.000.

Hayes, Alan B., to Burroughs Corporation. Asynchronous data transmission system with state variable memory and handshaking protocol circuits. 4,390,969, Cl. 364-900.000.

Hayes, Gerald G.: *See*—
Meyer, Leonard S.; Murray, Michael J.; Hayes, Gerald G.; and McClain, Robert L., 4,390,156, Cl. 249-80.000.

Hazama, Katashi: *See*—
Kishimoto, Kiyoharu; Hazama, Katashi; and Yuhara, Akitsuna, 4,390,807, Cl. 310-313.00B.

Hazeltine Corporation: *See*—
Freyre, Frederick W., 4,390,247, Cl. 350-358.000.

Heep, Dieter, to Waeschle Machinenfabrik GmbH. Method of and arrangement for supplying a fuel to a plurality of burners of a furnace. 4,389,949, Cl. 110-101.0CF.

Heikel, Rodney W., to R. J. Reynolds Tobacco Company. Method and apparatus for detecting articles moving in a continuous stream. 4,390,779, Cl. 377-6.000.

Heil-Quaker Corporation: *See*—
Beehler, Richard F., 4,390,219, Cl. 339-14.00R.

Heinrich Baumgarten KG Eisen- und Blechwarenfabrik: *See*—
Fischbach, Wolfgang, 4,390,200, Cl. 294-27.00H.

Heinrich, Bruno: *See*—
Schwenk, Wilhelm; Heinrich, Bruno; and Mangen, Rolf, 4,390,568, Cl. 427-234.000.

Heinrich, Wolfgang; Hammer, Klaus-Dieter; and Bytzek, Max, to Hoechst Aktiengesellschaft. Process for forming a polymeric coating on the outside surface of a length of tubing. 4,390,569, Cl. 427-366.000.

Hellmuth, Eckhard W.: *See*—
Hahn, Allen W.; Nichols, Michael F.; Sharma, Ashok K.; and Hellmuth, Eckhard W., 4,390,405, Cl. 204-415.000.

Henderson, Donald S.: *See*—
Ritter, Ronald E.; and Henderson, Donald S., 4,390,416, Cl. 208-120.000.

Henderson, John G. N.: *See*—
Chin, Danny; Henderson, John G. N.; and Maturo, Robert J., 4,390,902, Cl. 358-192.100.

Henderson, Wilmer P.: *See*—
King, Paul V.; Becher, Albert F.; and Henderson, Wilmer P., 4,389,947, Cl. 109-1.00S.

Hendrickson, Max S. Key-actuated electrical lock. 4,390,758, Cl. 200-43.000.

Hendrickson, William A.: *See*—
Chou, Hsin-hsin; and Hendrickson, William A., 4,390,607, Cl. 430-48.000.

Hendry, James W., to KMMCO Structural Foam, Inc. Apparatus for injection molding of parts from foam plastics material and/or from solid plastics material. 4,390,332, Cl. 425-4.00R.

Hendry, James W.; and Han, Je-Chin, to Ex-Cell-O Corporation. Method and apparatus for heating a mold cavity uniformly. 4,390,486, Cl. 264-45.500.

Henmi, Kojiro; and Takenaka, Kiyosi, to Dainippon Screen Manufacturing Co., Ltd. Copying machine. 4,390,269, Cl. 355-27.000.

Henne, Werner; and Scheuren, Jurgen, to Akzo N.V. Catalytic membranes in artificial organs. 4,390,455, Cl. 252-430.000.

Hennessy, Richard E.; Frymire, Roger; and Coovert, Cary, to Honeywell Information Systems Inc. Automated bank transaction security system. 4,390,968, Cl. 364-900.000.

Henoch, Bengt, to Stiftelsen Institute for Mikrovagstenknik vid Tekniska Hogskolan i Stockholm. Radio communication system and transmitter and receiver equipment therefor. 4,390,880, Cl. 343-6.8LC.

Henrickson, Clifford: *See*—
Howze, Bruce; and Henrickson, Clifford, 4,390,078, Cl. 181-185.000.

Henry, Hugh A. Bath tub head rest. 4,389,740, Cl. 4-575.000.

Henschen, Agnes: *See*—
Brantl, Victor; Henschen, Agnes; Teschemacher, Hansjorg; and Lottspeich, Friedrich, 4,390,527, Cl. 424-177.000.

Herenyi, Bulcsu: *See*—
Udvardy Nagy nee Cserey Pechany, Eva; Budai, Miklos; Fekete, Gyorgy; Gorog, Sandor; Herenyi, Bulcsu; Wack, Geza; and Zalai, Karoly, 4,390,625, Cl. 435-119.000.

Hernandez, Pablo M., to S. C. Johnson & Son, Inc. Aqueous film forming lubricant useful in a method for drawing aluminum and other soft metals. 4,390,436, Cl. 252-49.300.

Herpers, Lodewijk-Jozef, to Medtronic, Inc. Implantable medical device and power source depletion control therefor. 4,390,020, Cl. 128-419.0PG.

Herring, Charles H. Lure case. 4,389,806, Cl. 43-57.100.

Herst, Douglas J.; and Ngai, Peter Y. Y., to Herst Lighting Co. Indirect lighting fixture with improved light control. 4,390,930, Cl. 362-224.000.

Herst Lighting Co.: *See*—
Herst, Douglas J.; and Ngai, Peter Y. Y., 4,390,930, Cl. 362-224.000.

Hertrich, Friedrich R.; and Perera, Slobodan R., to Digital Equipment Corporation. Transducer positioning system and data disk therefor. 4,390,912, Cl. 360-78.000.

Herz, Claus: *See*—
Eichler, Jurgen; Herz, Claus; and Neisius, Karl-Heinz, 4,390,453, Cl. 252-426.000.

Hesston Corporation: *See*—
Garrison, Harold K.; and Ratzlaff, Howard J., 4,390,092, Cl. 198-638.000.

Hewlett-Packard Company: *See*—
Ainsworth, Gerald L., 4,390,990, Cl. 371-57.000.

Higashiyama, Naotoshi; and Doi, Kazuyuki, to Nippon Electric Co., Ltd. Stereo signal demodulator having an improved separation characteristic. 4,390,746, Cl. 179-1.0GE.

Higgins, J. Aiden; and Gupta, Aditya K., to Rockwell International Corporation. Monolithic microwave amplifier having active impedance matching. 4,390,851, Cl. 330-277.000.

Higo, Nobumasa: *See*—
Kataoka, Masami; and Higo, Nobumasa, 4,389,902, Cl. 73-861.770.

Higuchi, Kazuya: *See*—
Ito, Susumu; Saito, Sadayuki; and Higuchi, Kazuya, 4,390,167, Cl. 266-48.000.

Higuchi, Yasushi: *See*—
Matsuno, Masahiro; Higuchi, Yasushi; Ohishi, Yutaka; Nakayama, Yoshiki; and Yazawa, Chihiro, 4,390,723, Cl. 562-478.000.

Hile, James R., to Carrier Corporation. Method and apparatus for controlling an air conditioning unit with multi-speed fan and economizer. 4,389,853, Cl. 62-89.000.

Hill, Harold I.: *See*—
O'Neill, Michael J.; and Hill, Harold I., 4,390,290, Cl. 374-142.000.

Hill, Raymond G. Liquid mixing systems. 4,390,035, Cl. 137-99.000.

Hillmer, Adolf: *See*—
Dull, Hans-Jurgen; and Hillmer, Adolf, 4,389,942, Cl. 104-103.000.

Hilti Aktiengesellschaft: *See*—
Boeni, Hans; Meier, Beda; and Szacsvay, Gabor, 4,389,870, Cl. 72-354.000.

Hirai, Shigeo: *See*—
Sueyoshi, Toshinobu; Hirai, Shigeo; and Amemiya, Masahiro, 4,390,361, Cl. 75-0.5BA.

Hirai, Yutaka: *See*—
Hatanaka, Katsunori; Uzawa, Shunichi; Hirai, Yutaka; and Ayata, Naoki, 4,390,791, Cl. 250-578.000.

Hirakura, Koji; Sawada, Yasuo; Watase, Kenta; and Iijima, Takeshi, to Ricoh Company, Ltd. Toner concentration control apparatus. 4,389,972, Cl. 118-691.000.

Hirano, Shigeo: *See*—
Kobayashi, Hidetoshi; Takahashi, Toshirou; Hirano, Shigeo; Hirosa, Takeshi; and Adachi, Keiichi, 4,390,618, Cl. 430-543.000.

Hiratake, Susumu. Plasma torch and a method of producing a plasma. 4,390,772, Cl. 219-121.0PQ.

Hirohata, Michio; Ogawa, Yukio; and Taguchi, Tetsuya, to Canon Kabushiki Kaisha. Electromagnetically operated diaphragm shutter. 4,390,262, Cl. 354-230.000.

Hiroki, Nobuyoshi: *See*—
Danjo, Hiroyuki; Takimoto, Kazuaki; Muta, Gensuke; and Hiroki, Nobuyoshi, 4,390,166, Cl. 266-44.000.

Hirosa, Takeshi: *See*—
Kobayashi, Hidetoshi; Takahashi, Toshirou; Hirano, Shigeo; Hirosa, Takeshi; and Adachi, Keiichi, 4,390,618, Cl. 430-543.000.

Hirose, Isamu: *See*—
Kyo, Kayomon; Asai, Yasuhiko; Hirose, Isamu; and Suyama, Nobuo, 4,390,682, Cl. 528-194.000.

Hirvonen, Vesa: *See*—
Flander, Walter; Leikas, Jukka; and Hirvonen, Vesa, 4,389,764, Cl. 29-416.000.

Hisano, Jinpei: *See*—
Yasui, Koichi; and Hisano, Jinpei, 4,390,493, Cl. 264-328.160.

Hitachi, Ltd.: *See*—
Hayashi, Soichiro; and Suenaga, Yoshihiko, 4,390,788, Cl. 250-491.100.
Kajiyama, Shigeru, 4,389,894, Cl. 73-637.000.
Kawana, Hidejiro; Horiba, Tatsuo; Iwamoto, Kazuo; Fujita, Kazunori; and Tamura, Kohki, 4,390,603, Cl. 429-30.000.
Kishimoto, Kiyoharu; Hazama, Katashi; and Yuhara, Akitsuna, 4,390,807, Cl. 310-313.00B.
Miyauchi, Katsuki; Oi, Tetsu; and Suganuma, Tsuneo, 4,390,460, Cl. 252-518.000.
Otake, Katsumoto; Miyai, Masahiko; Mukai, Yasuteru; and Okouchi, Isao, 4,390,058, Cl. 165-1.000.
Sampei, Tohru; Asada, Akihiro; Ohta, Yoshihiro; and Iwasaki, Syunji, 4,390,747, Cl. 179-1.0SC.
Sugiura, Kazumasa; Mori, Kinji; Ihara, Hirokazu; and Kawai, Yoshinori, 4,390,984, Cl. 370-88.000.
Tsukiyama, Nobuyoshi; and Ichige, Ryo, 4,390,461, Cl. 252-519.000.
Ueda, Toshimichi; Tezuka, Akira; Wakairo, Seiichi; Sakuma, Moriyuki; and Mochizuki, Masashi, 4,389,855, Cl. 62-200.000.
Yamashita, Kiichi; Nakagawa, Junichi; and Kaji, Tadao, 4,390,960, Cl. 364-703.000.

Hitachi Maxell, Ltd.: *See*—
Sueyoshi, Toshinobu; Hirai, Shigeo; and Amemiya, Masahiro, 4,390,361, Cl. 75-0.5BA.

Hobart Corporation: *See*—
Margraf, Dallas A.; and Treiber, Fritz F., 4,390,390, Cl. 156-566.000.

Hoda, Syed N., to Corning Glass Works. Calcium fluorophlogopite glass-ceramics. 4,390,634, Cl. 501-3.000.

Hodes, Erich; Sternisa, Danilo; and Schneider, Walter, to Glyco-Metall-Werke Daelen & Loos GmbH. Method for producing top surfacing layers. 4,390,563, Cl. 427-27.000.

Hoechst Aktiengesellschaft: *See*—
Heinrich, Wolfgang; Hammer, Klaus-Dieter; and Bytzek, Max, 4,390,569, Cl. 427-366.000.
Walz, Gerd; Wirth, Thaddaus; and Sprenger, Walter, 4,390,688, Cl. 528-295.300.
Wiedemann, Wolfgang, 4,390,609, Cl. 430-58.000.

Hoechst-Roussel Pharmaceuticals Inc.: *See*—
Davis, Larry; and Klein, Joseph T., 4,390,544, Cl. 424-267.000.

Hoefer, William G.: *See*—
Noble, Milton L.; and Hoefer, William G., 4,390,816, Cl. 315-370.000.

Hoehn, John W. Method and apparatus for depacking articles. 4,390,313, Cl. 414-412.000.

Hoesselbarth, Helmut, to Wurttembergische Metallwarenfabrik. Coffee machine. 4,389,924, Cl. 99-289.00R.

Hoffman, Dwight K.; Harris, Robert F.; Tefertiller, Nancy B.; and Rains, Randall C., to Dow Chemical Company, The. Stable dispersions of polymers in polyfunctional compounds having a plurality of active hydrogens and polyurethanes therefrom. 4,390,645, Cl. 521-137.000.

Hoffmann, Christian; Zollner, Manfred; and Zwicker, Eberhard, to Siemens Aktiengesellschaft. Method and apparatus for generating electrocutaneous stimulation patterns for the transmission of acoustic information. 4,390,756, Cl. 179-107.0BC.

Hoffmann, Dietrich: *See*—
Kriechbaum, Karl; Augustin, Hans-Georg; and Hoffmann, Dietrich, 4,390,764, Cl. 200-148.00A.

Hoffmann-La Roche Inc.: *See*—
Chodnekar, Madhukar S.; Kaiser, Ado; and Kienzle, Frank, 4,390,540, Cl. 424-251.000.
Manchand, Percy, 4,390,718, Cl. 560-122.000.
Walser, Armin; and Fryer, Rodney I., 4,390,471, Cl. 260-244.400.

Hofle, Anatoli: *See*—
Gunter, Jonas L.; Haren, Doyle V.; Hofle, Anatoli; and Medford, Richard D., 4,390,214, Cl. 305-35.00R.

Hofmeister, Helmut; Wiechert, Rudolf; Annen, Klaus; Laurent, Henry; and Beier, Sybille, to Schering, A.G. 3-Deoxy-Δ^{15}-steroids. 4,390,530, Cl. 424-238.000.

Hogg, James W. Novel continuous, high speed method of galvanizing and annealing a continuously travelling low carbon ferrous wire. 4,390,377, Cl. 148-12.00B.

Hohn, Cletus R. Electrical plug for a receptacle having a plurality of contact pins. 4,390,226, Cl. 339-89.00M.

Hokushin Electric Works, Ltd.: *See*—
Kimura, Atsushi, 4,390,879, Cl. 340-870.370.

Holan, George; and O'Keefe, David F., to Commonwealth Scientific and Industrial Research Organization. Pentafluorobenzyl esters. 4,390,715, Cl. 424-282.000.

Holberg, Douglas R., to Mostek Corporation. Tone generator circuit. 4,390,754, Cl. 179-84.0VF.

Holden, Durrell W., to Bond Cote of Virginia, Inc. Durable flexible membrane and method of making same. 4,390,585, Cl. 428-172.000.

Holland-Letz, Gunter, to Esselte Pendaflex Corporation. Hand labelling apparatus. 4,389,934, Cl. 101-92.000.

Hollandse Signaalapparaten B.V.: *See*—
Ploumen, Hubert J., 4,390,896, Cl. 358-73.000.

Holstein und Kappert GmbH: *See*—
Knabe, Uwe, 4,389,833, Cl. 53-167.000.

Holzwarth, Dietmar: *See*—
Rieger, Hansjorg; and Holzwarth, Dietmar, 4,390,053, Cl. 152-213.00A.

Honeywell Inc.: *See*—
Chynoweth, William R.; and Erickson, Roger D., 4,390,887, Cl. 346-155.000.
Kasprzyk, Donald J.; Margenau, David A.; and Nelson, Marvin D., 4,390,859, Cl. 338-25.000.
Szonntagh, Eugene L., 4,389,876, Cl. 73-27.00R.

Honeywell Information Systems Inc.: *See*—
Hennessy, Richard E.; Frymire, Roger; and Coovert, Cary, 4,390,968, Cl. 364-900.000.
Negi, Virendra S.; and Tague, Steven A., 4,390,961, Cl. 364-756.000.
Twibell, Jerome J.; and Crawford, Knute S., 4,390,943, Cl. 364-200.000.

Honjo, Takeshi: *See*—
Furuichi, Masayoshi; Honjo, Takeshi; and Akiba, Nobuo, 4,390,268, Cl. 355-15.000.

Honma, Akira: *See*—
Osaka, Hiroshi; and Honma, Akira, 4,390,899, Cl. 358-120.000.

Hoogovens Ijmuiden B.V.: *See*—
Cramer, Rudolph E.; and Ouwerkerk, Johannes H. W., 4,390,346, Cl. 48-180.00R.

Hook, Gerald C.: *See*—
Shah, Gautam N.; Brown, Michael R.; Lee, Edward C.; Hook, Gerald C.; Wand, Robert L.; Ratliff, Charles R.; and McClure, Virge W., 4,390,885, Cl. 346-140.00R.

Hooper Trading Company: *See*—
Frabricius, Hans-Ake; and Stahn, Roland, 4,390,623, Cl. 435-68.000.

Hopf, Philip W.: *See*—
Strahan, Robert M.; Hopf, Philip W.; and Williams, Phillip G., 4,390,193, Cl. 280-777.000.

Horiba, Tatsuo: *See*—
Kawana, Hidejiro; Horiba, Tatsuo; Iwamoto, Kazuo; Fujita, Kazunori; and Tamura, Kohki, 4,390,603, Cl. 429-30.000.

Horii, Wataru: *See*—
Shimizu, Keiichiro; and Horii, Wataru, 4,390,245, Cl. 350-343.000.

Horikawa, Kazuo: *See*—
Ohara, Yuji; and Horikawa, Kazuo, 4,390,882, Cl. 346-1.100.

Horinouchi, Atsushi, to Sanyo Electric Co., Ltd. Apparatus and method for controlling electronic controlled cooking apparatus having storage. 4,390,766, Cl. 219-10.55B.

Horky, Joseph F.; and Dockal, Ronald J., to Burroughs Corporation. Input/output subsystem using card reader-peripheral controller. 4,390,964, Cl. 364-900.000.

Hoss, Richard: *See*—
Dreier, Ernst; and Hoss, Richard, 4,389,952, Cl. 112-128.00R.

Hotta, Hiroshi: *See*—
Komazawa, Hiroyasu; Mori, Tadashi; Ikenaga, Yukio; Hotta, Hiroshi; and Nakashima, Tuneyasu, 4,390,684, Cl. 528-230.000.

Hotvedt, Kevin. Test unit for a logic circuit analyzer. 4,390,837, Cl. 324-73.00R.

Houck, David L., to GTE Products Corporation. Flame spray powder. 4,390,368, Cl. 75-251.000.

Houlihan, John T., to Timex Corporation. Timepiece with multifunctional member. 4,390,289, Cl. 368-286.000.

Houston, John M., to General Electric Company. Method and apparatus for tone controlled variable sensitivity time-of-day watt-hour metering. 4,390,839, Cl. 324-116.000.

Howell, Donald R., deceased: *See*—
Tatters, Ronald; Dolman, John E.; and Howell, Donald R., deceased, 4,389,922, Cl. 92-156.000.

Howell, June E., executrix: *See*—
Tatters, Ronald; Dolman, John E.; and Howell, Donald R., deceased, 4,389,922, Cl. 92-156.000.

Howlett, John L. Wind velocity gage for sailboats. 4,389,887, Cl. 73-189.000.

Howmet Aluminum Corp.: *See*—
Cary, Lloyd H., 4,389,828, Cl. 52-665.000.
Player, Wayne H., 4,389,823, Cl. 52-200.000.

Howze, Bruce; and Henrickson, Clifford, to Community Light & Sound, Inc. Loudspeaker horn. 4,390,078, Cl. 181-185.000.

Hoya Corporation: *See—*
Fujita, Yoshimi; and Yamashita, Toshiharu, 4,390,391, Cl. 156-628.000.
Tatsumi, Kazutsune, 4,390,242, Cl. 350-318.000.

Hozeski, Kenneth W.: *See—*
Faiks, Frederick S.; Pergler, Charles C.; Whitwam, Ronald L.; Knoblauch, Jack R.; Beukema, Duane M.; and Hozeski, Kenneth W., 4,390,206, Cl. 297-300.000.

Hruda, Robert M., to Westinghouse Electric Corp. Electrochemical cell shunting switch assembly with matrix array of switch modules. 4,390,763, Cl. 200-144.00B.

HTC Corporation, The: *See—*
Spigarelli, Donald J.; and Dustin, Paul C., 4,389,797, Cl. 34-73.000.

Huber, Erich, to Johannes Heidenhain GmbH. Projection screen. 4,390,239, Cl. 350-120.000.

Huber, Lothar; and Friedmann, Oswald, to Luk Lamellen und Kupplungsbau GmbH. Apparatus for establishing and terminating connections between crankshafts. 4,389,985, Cl. 123-198.00F.

Huchette, Michel; and Leroy, Patrick, to Roquette Freres. Sorbose for inhibiting fermentation acids in the mouth. 4,390,523, Cl. 424-48.000.

Hudson Oxygen Therapy Sales Company: *See—*
Bartholomew, Victor L., 4,390,013, Cl. 128-55.000.

Hughes Aircraft Company: *See—*
Yamagishi, Frederick G., 4,390,595, Cl. 428-446.000.

Huisl, Herbert F., to Colosio Cesare. Knitting machine. 4,389,859, Cl. 66-224.000.

Hukuta, Masakazu, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Fuel tank cap for motor vehicle. 4,390,107, Cl. 220-202.000.

Humphreys, John A.; and Humphreys, Michael D. P. Article mounting rack. 4,390,101, Cl. 211-41.000.

Humphreys, Michael D. P.: *See—*
Humphreys, John A.; and Humphreys, Michael D. P., 4,390,101, Cl. 211-41.000.

Hunten, Dieter, to Klockner-Humboldt-Deutz Aktiengesellschaft. Plate-type filter. 4,390,427, Cl. 210-333.010.

Husband, Wallace T., to E-Z-Rect Metal Products Ltd. Shelving system. 4,390,103, Cl. 211-182.000.

Husqvarna: *See—*
Bergvall, Bengt A., 4,389,953, Cl. 112-158.00E.

Hutch Protective Devices Ltd.: *See—*
Taylor, William H., 4,390,199, Cl. 292-346.000.

Hutchinson, Albert L.: *See—*
Capasso, Federico; Hutchinson, Albert L.; and Logan, Ralph A., 4,390,889, Cl. 357-30.000.

Hutson, Marvin R.; and Dutmers, Louis G., to Omark Industries, Inc. Wood chipper. 4,390,132, Cl. 241-55.000.

Hutter, Charles G., III, to Physical Systems, Inc. Adhesive attachment assembly. 4,390,576, Cl. 428-40.000.

Hwang, Sung T. Folding furniture piece. 4,389,946, Cl. 108-115.000.

Hyde, Paul E.; and Rowell, John A., to Neptune Microfloc, Inc. Method and apparatus for wetting powder. 4,390,284, Cl. 366-165.000.

Hydra Rig Incorporated: *See—*
Elliston, Thomas L., 4,390,315, Cl. 414-740.000.

I. W. Industries, Inc.: *See—*
Warshawsky, Jerome, 4,390,933, Cl. 362-270.000.

Ibigawa Electric Industry Co. Ltd.: *See—*
Enomoto, Ryo; Yoshioka, Michihiro; and Yokoyama, Takao, 4,390,504, Cl. 422-166.000.

Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Refrigerant gas heater system for display cabinets. 4,389,856, Cl. 62-248.000.

Ibuki, Rinta: *See—*
Ohnishi, Norio; and Ibuki, Rinta, 4,390,694, Cl. 544-22.000.

Ichige, Ryo: *See—*
Tsukiyama, Nobuyoshi; and Ichige, Ryo, 4,390,461, Cl. 252-519.000.

ICI Americas Inc.: *See—*
Rutledge, Thomas F., 4,390,731, Cl. 568-643.000.

Igarashi, Akira: *See—*
Sato, Kozo; Iwakura, Ken; and Igarashi, Akira, 4,390,616, Cl. 430-338.000.

Igashira, Toshihiko; Nomura, Ken; Abe, Seiko; and Ishida, Yasuhiko, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Air-fuel mixture heating device for internal combustion engine. 4,390,000, Cl. 123-549.000.

Ihara Chemical Industry Co., Ltd.: *See—*
Matsuno, Masahiro; Higuchi, Yasushi; Ohishi, Yutaka; Nakayama, Yoshiki; and Yazawa, Chihiro, 4,390,723, Cl. 562-478.000.

Ihara, Hirokazu: *See—*
Sugiura, Kazumasa; Mori, Kinji; Ihara, Hirokazu; and Kawai, Yoshinori, 4,390,984, Cl. 370-88.000.

IHC Holland N.V.: *See—*
de Keizer, Cornelis, 4,390,942, Cl. 364-162.000.

Iijima, Takeshi: *See—*
Hirakura, Koji; Sawada, Yasuo; Watase, Kenta; and Iijima, Takeshi, 4,389,972, Cl. 118-691.000.

Ikeda, Tomoaki: *See—*
Ono, Yoshihiro; Nabara, Akira; and Ikeda, Tomoaki, 4,390,601, Cl. 428-412.000.

Ikemori, Keiji, to Canon Kabushiki Kaisha. Wide angle zoom lens. 4,390,248, Cl. 350-427.000.

Ikemura, Masaaki: *See—*
Oda, Yoshio; Morikawa, Shinsuke; Ikemura, Masaaki; Yarita, Tomio; Noshiro, Makoto; Gotoh, Isao; Jitsugiri, Yukio; Yonemori, Shigeaki; Sato, Kimihiko; and Uchida, Keiichi, 4,390,511, Cl. 423-469.000.

Ikenaga, Yukio: *See—*
Komazawa, Hiroyasu; Mori, Tadashi; Ikenaga, Yukio; Hotta, Hiroshi; and Nakashima, Tuneyasu, 4,390,684, Cl. 528-230.000.

Illinois Tool Works Inc.: *See—*
Engstrom, Keith A., 4,390,866, Cl. 340-365.00E.

Imahashi, Issei, to Telmec Co., Ltd. Linear motor. 4,390,827, Cl. 318-687.000.

Imai, Masafumi; Ueno, Hiroshi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, to Toa Nenryo Kogyo Kabushiki Kaisha. Catalyst component for use in the polymerization of α-olefins and a method of using the same. 4,390,671, Cl. 526-125.000.

Imai, Toshihiro, to Olympus Optical Co., Ltd. Photographic lens system. 4,390,250, Cl. 350-465.000.

Imperial Chemical Industries Limited: *See—*
Cogswell, Frederic N.; and Mitchell, David T., 4,390,581, Cl. 428-71.000.
Graetz, Clive W.; Thompson, Morice W.; and Bromley, Charles, 4,390,658, Cl. 524-512.000.

Imperial Chemical Industries PLC: *See—*
Waddan, Dhafir Y.; and Williams, Derek, 4,390,738, Cl. 568-857.000.

Imperial Clevite Inc.: *See—*
Kowal, Leonard J., 4,389,872, Cl. 72-388.000.
Schwarz, Albert J.; and Kowal, Leonard J., 4,389,873, Cl. 72-388.000.

Inaba, Naomi: *See—*
Imai, Masafumi; Ueno, Hiroshi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,390,671, Cl. 526-125.000.

Inco Limited: *See—*
Lea, Richard K.; Edwards, Julian D.; and Colton, D. Frederick, 4,390,366, Cl. 75-101.0BE.

Industrial Adhesive, Inc.: *See—*
Getz, John L., 4,389,966, Cl. 118-405.000.

Industrie Chemie Thoma GmbH & Co. Produktions KG: *See—*
Thoma, Matthias, 4,390,726, Cl. 564-242.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Albrile, Walter, 4,390,295, Cl. 400-330.100.
Gubau, Giuseppe; Roano, Domenico; and Quaranti, Giovanni, 4,390,293, Cl. 400-144.200.

Ingeberg, Bjorn. Anchorage with accessories for attachment to walls, floors and ceilings. 4,389,830, Cl. 52-710.000.

Inland Steel Company: *See—*
Rastogi, Prahbat K., 4,390,378, Cl. 148-111.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,390,278, Cl. 356-392.000.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and apparatus for inspecting the accuracy of a machined contour in a workpiece. 4,390,278, Cl. 356-392.000.

Inoue, Yasuhiko; Wake, Shigeo; Sirafuji, Tamio; and Beppu, Masazo, to Sumitomo Chemical Company, Limited. Process for producing phenols. 4,390,736, Cl. 568-801.000.

Insituform International Inc.: *See—*
Wood, Eric, 4,390,574, Cl. 428-36.000.

Institut Francais du Petrole: *See—*
Amigues, Pierre; Chauvin, Yves; Commereuc, Dominique; Gaillard, Jean; and Phung, Nhu H., 4,390,431, Cl. 210-724.000.
Chevalier, Andre, 4,390,229, Cl. 339-115.00R.

Interface Systems, Inc.: *See—*
Eglowstein, Ira; and Solender, Peter E., 4,390,967, Cl. 364-900.000.

Intermedics, Inc.: *See—*
Calfee, Richard V.; and Miner, Jay, 4,390,022, Cl. 128-419.0PG.

International Business Machines Corporation: *See—*
Applegate, Steven L.; and Lloyd, Edward R., 4,390,884, Cl. 346-139.00C.
Bergeron, David L.; and Patel, Parsotam T., 4,390,890, Cl. 357-44.000.
Bocinski, Terrance E.; and Knight, Alan D., 4,389,770, Cl. 29-764.000.
Bowden, Larry D.; Miyashita, Albert H.; and Ravenelle, Charles I., 4,390,610, Cl. 430-58.000.
Chow, William W.; and Dunn, Larry P., 4,390,916, Cl. 360-127.000.
Cosgrove, James F.; Dahlke, Gerhard P.; and Wurms, Charles, 4,390,571, Cl. 427-43.100.
Curtis, Huntington W.; Kellogg, Robert M.; Kissinger, Kerry W.; Mappes, Robert P.; and Stephans, Emery J., 4,390,499, Cl. 422-72.000.
Fowler, Alan B.; Rosenberg, Robert; and Rupprecht, Hans S., 4,389,768, Cl. 29-571.000.
Gaitos, Janise N.; Shattuck, Meredith D.; and Wilbur, Clayton V., 4,390,297, Cl. 400-697.100.
Garwin, Richard L., 4,390,868, Cl. 340-568.000.
Klaassen, Klaas B., 4,390,911, Cl. 360-77.000.

International Flavors & Fragrances Inc.: *See—*
Boden, Richard M., 4,390,443, Cl. 252-174.110.
Boden, Richard M.; Licciardello, Michael; Maisano, Joseph J., Jr.; and Hanna, Marie R., 4,390,448, Cl. 252-187.260.
Boden, Richard M., 4,390,462, Cl. 252-522.00R.
Boden, Richard M.; Licciardello, Michael; and Tyszkiewicz, Theodore J., 4,390,463, Cl. 252-522.00R.
Calderone, Nicholas; Watkins, Hugh; and Yoshida, Takao, 4,390,434, Cl. 252-8.600.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,390,464, Cl. 252-522.00R.
Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., 4,390,435, Cl. 252-8.600.

Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; Ouwerkerk, Anton V.; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,390,444, Cl. 252-174.110.

International Harvester Co.: *See—*
Luck, Karl-Heinz; Kallenberg, Albert; Schnippering, Manfred; and Moeselaken, Herbert, 4,389,757, Cl. 24-205.10R.

International Minerals & Chemical Corp.: *See—*
Seeney, Charles E., 4,390,370, Cl. 106-38.300.

International Shoe Machine Corporation: *See—*
Becka Michael M., 4,389,745, Cl. 12-142.00T.

International Telephone & Telegraph: *See—*
Vincent, Arthur L., 4,390,515, Cl. 423-573.00G.

International Telephone and Telegraph Corporation: *See—*
John, Robert S., 4,390,793, Cl. 307-118.000.
Williams, William H.; and Burke, Michael G., 4,390,982, Cl. 370-67.000.

Interox: *See—*
De Ceuster, Jean; and Papageorges, Georges, 4,390,395, Cl. 162-5.000.

Introvigne, Angelo J., to Cole Hersee Company. High current switching. 4,390,761, Cl. 200-67.00C.

Inuzuka, Tsuneki: *See—*
Suzuki, Koji; Inuzuka, Tsuneki; and Kurita, Kenji, 4,390,265, Cl. 355-14.00D.

Ishibashi, Hiroaki: *See—*
Nishikawa, Masahiko; Ishibashi, Hiroaki; and Furukawa, Hidenori, 4,390,691, Cl. 536-65.000.

Ishida, Yasuhiko: *See—*
Igashira, Toshihiko; Nomura, Ken; Abe, Seiko; and Ishida, Yasuhiko, 4,390,000, Cl. 123-549.000.

Ishigaki, Yoshio: *See—*
Nagai, Tamiji; and Ishigaki, Yoshio, 4,390,818, Cl. 315-408.000.

Ishihama, Toshio: *See—*
Niibori, Kenji; and Ishihama, Toshio, 4,390,054, Cl. 160-265.000.

Ishikawa, Katuhiro; Ohno, Ryotaro; and Arakawa, Masatoshi, to Japan Synthetic Rubber Co., Ltd. Process for preparing carboxylic acid esters of dicyclopentadienes. 4,390,717, Cl. 560-114.000.

Ishikawa, Shozo; Katagiri, Kazuharu; Watanabe, Katsunori; and Kitahara, Makoto. Electrophotographic photosensitive azo pigment containing members. 4,390,611, Cl. 430-59.000.

Ishikawa, Wataru: *See—*
Okaniwa, Kenichiro; Masukawa, Toyoaki; Yamashita, Kiyoshi; and Ishikawa, Wataru, 4,390,617, Cl. 430-350.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Koike, Takaaki, 4,389,845, Cl. 60-602.000.
Matsui, Kunio; Tsuchiya, Hiroaki; and Suzuki, Ryushi, 4,390,351, Cl. 55-204.000.

Ishimoto, Shoji, to Nippon Electric Co., Ltd. Semiconductor circuit. 4,390,797, Cl. 307-264.000.

Isley, Ralph E., to Standard Oil Company. Nitrile barrier resins containing fillers and processing aids. 4,390,652, Cl. 524-322.000.

Ito, Susumu; Saito, Sadayuki; and Higuchi, Kazuya, to Kawasaki Steel Corporation. Apparatus for removing torch-cutting slag of slab. 4,390,167, Cl. 266-48.000.

Itoi, Kazuo: *See—*
Omura, Yoshiaki; Mori, Fumio; Fujita, Yoshiji; Nishida, Takashi; Tamai, Yoshin; Wada, Fumio; and Itoi, Kazuo, 4,390,547, Cl. 424-304.000.

ITT Industries, Inc.: *See—*
Berisch, Volker, 4,390,213, Cl. 303-24.00A.
Miskin, Leslie, 4,390,849, Cl. 330-251.000.
Schulein, Rolf-Gunter; and Hagedorn, Leonard, 4,390,109, Cl. 220-234.000.

Iwakura, Ken: *See—*
Sato, Kozo; Iwakura, Ken; and Igarashi, Akira, 4,390,616, Cl. 430-338.000.

Iwamoto, Kazuo: *See—*
Kawana, Hidejiro; Horiba, Tatsuo; Iwamoto, Kazuo; Fujita, Kazunori; and Tamura, Kohki, 4,390,603, Cl. 429-30.000.

Iwasaki, Syunji: *See—*
Sampei, Tohru; Asada, Akihiro; Ohta, Yoshihiro; and Iwasaki, Syunji, 4,390,747, Cl. 179-1.0SC.

Iwaya, Hirokatsu; Saigo, Hiroshi; and Suzuki, Takashi, to Iwaya Kabushiki Kaisha. Bird action toy. 4,389,811, Cl. 46-232.000.

Iwaya Kabushiki Kaisha: *See—*
Iwaya, Hirokatsu; Saigo, Hiroshi; and Suzuki, Takashi, 4,389,811, Cl. 46-232.000.

Izuno, Sadami; Kiyomitsu, Isao; and Tsuji, Toshihiko, to Toyo Kogyo Co., Ltd.; and Delta Kogyo Co., Ltd. Plastic seat-back framework and method for the manufacture thereof. 4,390,209, Cl. 297-410.000.

J. M. Voith GmbH: *See—*
Rohde, Gunter; and Kuhn, Friedrich, 4,390,138, Cl. 242-55.000.

Jackle, Heiner G.: *See—*
Bach, Dieter; Jackle, Heiner G.; and Marquardt, Kurt, 4,389,879, Cl. 73-61.00R.

Jackson, Wilbur C.: *See—*
Coleman, Donald J.; Jackson, Wilbur C.; Lube, Robert R.; and Spohr, Albert R., 4,389,772, Cl. 30-43.900.

Jacobs, Merle E., to Board of Overseers of Goshen College. Composition and process for producing pigmentation in hair or skin. 4,390,341, Cl. 8-424.000.

Jacobsen, Robert S.: *See—*
Cornforth, Malcolm W.; and Jacobsen, Robert S., 4,390,956, Cl. 364-510.000.

Jacobson, Arthur E.: *See—*
Brossi, Arnold; Schmidhammer, Helmut; and Jacobson, Arthur E., 4,390,699, Cl. 546-74.000.

Jacobson, Carl C., Jr.; and Manning, Mark C., to Crafco, Inc. Crushed rock applicator mechanism. 4,390,304, Cl. 404-110.000.

Jacobson, Sava. End of rewind detection in a telephone answering device having remote playout. 4,390,751, Cl. 179-6.070.

Jacobson, Sava. Ring detection circuit for a telephone answering device. 4,390,752, Cl. 179-6.160.

Jacoby, Charles E.: *See—*
Berk, Donald M.; Jacoby, Charles E.; and Reagan, Larry, 4,389,941, Cl. 104-49.000.

Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, to Societe Anonyme dite: L'Oreal. Cosmetic agents based on cationic polymers, cosmetic compositions containing the same and the use of said cosmetic agents. 4,390,522, Cl. 424-45.000.

Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, to Societe Anonyme dite: L'Oreal. Polycationic polymers and their preparation. 4,390,689, Cl. 528-335.000.

Jaffa, David; and Szarka, Sandor, to Precision Screen Machines, Inc. Cleaning attachment for screen printer. 4,389,936, Cl. 101-123.000.

James Howden Australia Pty. Limited: *See—*
Miljoen, Rodney W., 4,390,353, Cl. 55-304.000.

Jamesbury Corporation: *See—*
Johnson, David A.; Wright, Joseph B.; and Pashoogian, Michael, 4,390,039, Cl. 137-315.000.

Jamgotchian, George H. Magnetic electrical connector. 4,390,232, Cl. 339-224.000.

Jancy Engineering Co.: *See—*
Fangmann, Michael D., 4,390,309, Cl. 408-76.000.

Janome Sewing Machine Co. Ltd.: *See—*
Makabe, Hachiro; and Tanaka, Haruhiko, 4,389,954, Cl. 112-158.00E.

Janssen, Daniel J. G., to U.S. Philips Corporation. Line interruption arrangement. 4,390,753, Cl. 179-81.00R.

Janssen, Harald; and Hansch, Ferdinand, to Dr. Beck & Co. AG. Polyester-amide resin. 4,390,686, Cl. 528-289.000.

Janssen, Johannes A.: *See—*
Weterings, Cornelis A. M.; and Janssen, Johannes A., 4,390,507, Cl. 423-8.000.

Japan Synthetic Rubber Co., Ltd.: *See—*
Ishikawa, Katuhiro; Ohno, Ryotaro; and Arakawa, Masatoshi, 4,390,717, Cl. 560-114.000.

Jaqua, Vance W., to Rockwell International Corporation. Ultrasonic check valve and diesel fuel injector. 4,389,999, Cl. 123-536.000.

Jaques, Diane H.: *See—*
Jaques, Michael J.; and Jaques, Diane H., 4,389,813, Cl. 47-67.000.

Jaques, Michael J.; and Jaques, Diane H. Planter tree for floor, wall or ceiling mounting. 4,389,813, Cl. 47-67.000.

Jarrett, Robert B., to Motorola, Inc. Shunt voltage regulator circuit. 4,390,829, Cl. 323-231.000.

Jen-Tung, Cheng, to Kuo-Yung Industrial Company. Method for producing fuel gas from limestone. 4,390,349, Cl. 48-197.00R.

Jennings, Daniel T.; Carniglia, Charles K.; and Young, David B., to United States of America, Agriculture. Method and apparatus for automatic egg mass counting. 4,390,787, Cl. 250-459.100.

Jepsen, Henry E. Heat engine. 4,389,858, Cl. 62-498.000.

Jeroszko, Ronald A.: *See—*
Markowski, Stanley J.; Jeroszko, Ronald A.; and Lohmann, Robert P., 4,389,848, Cl. 60-738.000.

Jimpo, Kiyokazu: *See—*
Yamada, Hirotada; Jimpo, Kiyokazu; Okuda, Takao; Noguchi, Hiroshi; and Tobiki, Hisao, 4,390,535, Cl. 424-246.000.

Jitsugiri, Yukio: *See—*
Oda, Yoshio; Morikawa, Shinsuke; Ikemura, Masaaki; Yarita, Tomio; Noshiro, Makoto; Gotoh, Isao; Jitsugiri, Yukio; Yonemori, Shigeaki; Sato, Kimihiko; and Uchida, Keiichi, 4,390,511, Cl. 423-469.000.

Joel & Aronoff, Inc.: *See—*
Sharrock, Michael; Fry, Donovan N.; and William, Robert, 4,389,801, Cl. 40-159.000.

Johannes Heidenhain GmbH: *See—*
Huber, Erich, 4,390,239, Cl. 350-120.000.

Johannesson, Orn: *See—*
Kristinsson, Sigurdur; and Johannesson, Orn, 4,389,750, Cl. 17-63.000.

Johannsmeier, Hans-Dieter: *See—*
Buchholz, Hagen; Johannsmeier, Hans-Dieter; and Vock, Friedrich, 4,390,126, Cl. 239-1.000.

Johansen, Jack T., to De Forenede Bryggerier A/S. Process for isolating Cu, Zn-superoxide dismutase from aqueous solutions containing said enzyme together with accompanying proteins. 4,390,628, Cl. 435-189.000.

John, Robert S., to International Telephone and Telegraph Corporation. Electronic liquid level control apparatus. 4,390,793, Cl. 307-118.000.

Johnson Controls, Inc.: *See—*
Cabou, Christian G., 4,390,959, Cl. 364-557.000.

Johnson, David A.; Wright, Joseph B.; and Pashoogian, Michael, to Jamesbury Corporation. Valve assembly and disassembly device. 4,390,039, Cl. 137-315.000.

Johnson, Fred D., to Zenith Radio Corporation. Integratable CRT spot cut-off network. 4,390,817, Cl. 315-384.000.

Johnson, Irvin D.: *See—*
Bruce, Charles R.; and Johnson, Irvin D., 4,390,836, Cl. 324-54.000.

Johnson, Keith R., to Copar Corporation. Glue detector. 4,389,969, Cl. 118-665.000.

Johnson, Matthey & Co., Limited: *See—*
Enga, Bernard E.; and Prasad, Christopher, 4,389,983, Cl. 123-143.00B.

Johnson Products Co., Inc.: *See—*
Khalil, Ezzat N.; and Syed, Ali N., 4,390,033, Cl. 132-7.000.

Johnston, David B. R.: *See—*
Beattie, Thomas R.; Hannah, John; and Johnston, David B. R., 4,390,693, Cl. 542-442.000.

Johnston, Howard R.; and Koombes, Michael E. R. V., to Shelton Video Editors, Inc. Automatic circuit and method for editing commercial messages from television signals. 4,390,904, Cl. 358-335.000.

Johnstone, Richard, to Kearney & Trecker Corporation. Unmanned diagnostic communications system for computer controlled machine tools. 4,390,953, Cl. 364-474.000.

Jones, Eric D.: *See—*
Thomas, Kenneth C.; Jones, Eric D.; and McBride, Marvin A., 4,390,777, Cl. 219-127.000.

Jones, Stanley C.: *See—*
Wygant, N. Duane; and Jones, Stanley C., 4,390,842, Cl. 324-439.000.

Jorephani, Karim. Apparatus suitable for use in removing or reducing a crease or tangle in a magnetic recording tape of a cassette. 4,390,146, Cl. 242-200.000.

Jorgensen, Bernard A., to Lockheed Corporation. Aircraft decompression vent assembly. 4,390,152, Cl. 244-118.500.

Jorgensen, Robert J.: *See—*
Karol, Frederick J.; Goeke, George L.; Wagner, Burkhard E.; Fraser, William A.; Jorgensen, Robert J.; and Friis, Nils, 4,390,677, Cl. 526-348.600.

Joseph Galkin Corporation: *See—*
Block, Charles; and Mintz, Leon, 4,389,957, Cl. 112-262.300.

Jovanita Inc.: *See—*
Albert, Lionel, 4,390,965, Cl. 364-400.000.

Joyner, Auvin H. Stock/sauce separator. 4,389,926, Cl. 99-495.000.

Judd, O'Dean P., to United States of America, Energy. Plasma channel optical pumping device and method. 4,390,992, Cl. 372-70.000.

Judova, Galina N.: *See—*
Rusinov, Mikhail M.; Judova, Galina N.; Kudryashov, Jury V.; and Agurok, Peisakh Y., 4,390,249, Cl. 350-453.000.

Junter, Guy-Alain; Lemeland, Jean-Francois; Selegny, Eric; and Vingent, Jean-Claude, to Agence Nationale de Valorisation de la Recherche (ANVAR). Method and composition for the detection and study of cellular activity or the like and means for applying such method. 4,390,620, Cl. 435-4.000.

Justus Technik GmbH Industrie-Anlagen: *See—*
Vornfett, Karl-Ulrich, 4,390,782, Cl. 250-223.00B.

Kabelmetal Electro GmbH: *See—*
Adelhard, Georg; Hasselberg, Herbert; Obermeier, Manfred; Sierwald, Karl; Szedlacsek, Jozsef; and Somogyi, Gyorgy, 4,389,838, Cl. 57-71.000.

Kabushiki Kaisha Chiyoda: *See—*
Sugawara, Isao, 4,390,939, Cl. 363-129.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Miyoshi, Taisuke, 4,390,246, Cl. 350-357.000.

Kabushiki Kaisha Hosokawa Yoko: *See—*
Niwa, Susumu, 4,390,552, Cl. 426-126.000.

Kabushiki Kaisha Mitutoya Seisakusho: *See—*
Sakata, Hideo; and Takahashi, Seigo, 4,389,783, Cl. 33-143.00K.

Kabushiki Kaisha Morita Seisakusho: *See—*
Matsui, . Takahiro; and Watanabe, Minoru, 4,390,932, Cl. 362-269.000.
Okano, Michiaki; and Furuichi, Shuhei, 4,390,028, Cl. 128-777.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Hukuta, Masakazu, 4,390,107, Cl. 220-202.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Tanasawa, Yasusi, 4,389,986, Cl. 123-298.000.

Kahn, Marvin L.; and Eapen, Kuttikandathil E., to Rich Products Corporation. Intermediate mositure frozen foods. 4,390,550, Cl. 426-102.000.

Kaiser, Ado: *See—*
Chodnekar, Madhukar S.; Kaiser, Ado; and Kienzle, Frank, 4,390,540, Cl. 424-251.000.

Kaji, Tadao: *See—*
Yamashita, Kiichi; Nakagawa, Junichi; and Kaji, Tadao, 4,390,960, Cl. 364-703.000.

Kajiyama, Shigeru, to Hitachi Ltd.; and Babcock-Hitachi Kabushiki Kaisha. Cylindrical guide rail for detector. 4,389,894, Cl. 73-637.000.

Kakei, Tsutomu: *See—*
Mori, Teruo; Shirai, Hiroshi; Kakei, Tsutomu; Watanabe, Masaru; and Matsuhisa, Tsuneyasu, 4,390,407, Cl. 204-206.000.

Kallenberg, Albert: *See—*
Luck, Karl-Heinz; Kallenberg, Albert; Schnippering, Manfred; and Moeselaken, Herbert, 4,389,757, Cl. 24-205.10R.

Kamath, Venkatesh: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; Ouwerkerk, Anton V.; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,390,444, Cl. 252-174.110.

Kamensky, Vladimir K.: *See—*
Khusnutdinov, Gil D.; Chernovol, Arkady V.; Shumikhin, Vladimir S.; Shulga, Vasily T.; Poteiko, Andrei I.; Kamensky, Vladimir K.; Kondakov, Jury A.; and Shmigidin, Viktor G., 4,390,362, Cl. 75-49.000.

Kamimura, Yoichi: *See—*
Yoshioka, Issei; and Kamimura, Yoichi, 4,390,525, Cl. 424-71.000.

Kanada, Toshiaki; Suzuki, Kazuhiro; Yoshioka, Hiroshi; Maeda, Kenji; and Tsurumi, Yoshihiro, to Mitsubishi Gas Chemical Co., Inc. Process for producing amine formaldehyde resin foam. 4,390,643, Cl. 521-117.000.

Kanayama, Kaoru, to Mitsubishi Petrochemical Co., Ltd. Process for preparing a polyepoxide and composition therefrom. 4,390,664, Cl. 525-117.000.

Kanebo, Ltd.: *See—*
Nasuno, Toshihiro; and Otoi, Kiyoshi, 4,390,524, Cl. 424-63.000.

Kaneko, Hogara. Tool for strap tensioning and cutting. 4,390,047, Cl. 140-93.200.

Kardos, Karl; Mattsson, Bertil; and Westermark, Olle, to Produktutvecklingscentrum i Goteborg. Universal furnace. 4,390,004, Cl. 126-104.00A.

Karl, Alfons; Buder, Wolfgang; and Kleinschmit, Peter, to Degussa AG. Aqueous solution of cationic organosilicon compounds and process for the production of the solutions. 4,390,712, Cl. 556-413.000.

Karliner, Rudolf, to Wagner Spray Tech Corporation. Pressure release valve for pumps. 4,390,324, Cl. 417-282.000.

Karlsson, Jarding U.; and Moosberg, Borje S., to ABU Aktiebolag. Centrifugal brake for fishing reels. 4,390,140, Cl. 242-84.52C.

Karol, Frederick J.; Goeke, George L.; Wagner, Burkhard E.; Fraser, William A.; Jorgensen, Robert J.; and Friis, Nils. Article molded from ethylene hydrocarbon copolymer. 4,390,677, Cl. 526-348.600.

Kasama, Masatoshi, to Kinugawa Pacific Kabushiki Kaisha. Clasp for swimming article. 4,389,756, Cl. 24-171.000.

Kasley, Paul A.: *See—*
Puhl, Larry C.; and Kasley, Paul A., 4,390,963, Cl. 364-900.000.

Kasprzyk, Donald J.; Margenau, David A.; and Nelson, Marvin D., to Honeywell, Inc. Electric thermostat with adjusting knob. 4,390,859, Cl. 338-25.000.

Kast, Jack L.; Eddy, Albert R.; and Carter, Merle F., to Remington Arms Company, Inc. Firing pin block for firearm with a rotary breech bolt. 4,389,919, Cl. 89-185.000.

Kasuya, Yutaka: *See—*
Teranishi, Masayuki; Obase, Hiroyuki; Takai, Haruki; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,390,536, Cl. 424-246.000.

Katagiri, Kazuharu: *See—*
Ishikawa, Shozo; Katagiri, Kazuharu; Watanabe, Katsunori; and Kitahara, Makoto, 4,390,611, Cl. 430-59.000.

Kataoka, Masami; and Higo, Nobumasa, to Nippondenso Co., Ltd. Flow rate transducer. 4,389,902, Cl. 73-861.770.

Kato, Akifumi: *See—*
Morita, Yoshinori; Hayata, Shinzi; Kato, Akifumi; Nara, Hideo; and Watanabe, Tohru, 4,390,669, Cl. 526-65.000.

Kato, Kenneth J.; and Frollini, Dominick, Jr., to Allied Corporation. Replaceable outer junction double junction reference electrode. 4,390,406, Cl. 204-435.000.

Kato, Masatake, to Canon Kabushiki Kaisha. Photographic objectives of relatively large aperture. 4,390,251, Cl. 350-467.000.

Kato, Shozo: *See—*
Takeuchi, Hidetsugu; Muramatsu, Tsuyoshi; and Kato, Shozo, 4,389,871, Cl. 72-356.000.

Kato, Toshifumi, to Ricoh Company, Ltd. Sheet clamping device. 4,390,176, Cl. 271-270.000.

Katoh, Mankichi, heir: *See—*
Hashimoto, Mitsuru; Sasaki, Masaomi; Fukagai, Toshio; Katoh, Tatsuya, deceased; and Katoh, Mankichi, heir, 4,390,608, Cl. 430-57.000.

Katoh, Tatsuya, deceased: *See—*
Hashimoto, Mitsuru; Sasaki, Masaomi; Fukagai, Toshio; Katoh, Tatsuya, deceased; and Katoh, Mankichi, heir, 4,390,608, Cl. 430-57.000.

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Hashimoto, Mitsuru; Sasaki, Masaomi; Fukagai, Toshio; Katoh, Tatsuya, deceased; and Katoh, Mankichi, heir, 4,390,608, Cl. 430-57.000.

Katz, Lester: *See—*
Lacy, Lewis L.; Robinson, Michael B.; Rathz, Thomas J.; Katz, Lester; and Nisen, Daniel B., 4,389,904, Cl. 73-863.110.

Kavalieros, Tony. Safety hopples. 4,389,835, Cl. 54-71.000.

Kawa Co., Ltd.: *See—*
Nagai, Hidetaka; Wada, Yasushi; Kobayashi, Ichiro; Tamada, Mitsuru; Ushiyama, Keiichi; and Yamamoto, Toshiyuki, 4,390,520, Cl. 424-28.000.

Kawai, Yoshinori: *See—*
Sugiura, Kazumasa; Mori, Kinji; Ihara, Hirokazu; and Kawai, Yoshinori, 4,390,984, Cl. 370-88.000.

Kawakami, Fukushi: *See—*
Niimi, Koji; and Kawakami, Fukushi, 4,389,892, Cl. 73-586.000.

Kawamata, Motoo: *See—*
Kudoh, Akihide; Kawamata, Motoo; Ohshima, Kazushi; Kotani, Makoto; Tsuda, Takeshi; and Morita, Satoshi, 4,390,737, Cl. 568-804.000.

Kawana, Hidejiro; Horiba, Tatsuo; Iwamoto, Kazuo; Fujita, Kazunori; and Tamura, Kohki, to Hitachi, Ltd. Methanol fuel cell. 4,390,603, Cl. 429-30.000.

Kawasaki, Kazuya: *See—*
Ogita, Yasuhiro; Kawasaki, Kazuya; Nagao, Kouichi; and Mori, Naoki, 4,389,854, Cl. 62-157.000.

Kawasaki Steel Corporation: *See—*
Ito, Susumu; Saito, Sadayuki; and Higuchi, Kazuya, 4,390,167, Cl. 266-48.000.

Kawasaki, Teruo: *See—*
Mori, Kazuyuki; Mizote, Masanori; Takeda, Hitoshi; Yamaki, Kiyoshi; Suzuki, Hidetaka; Nomura, Hiroyuki; and Kawasaki, Teruo, 4,390,948, Cl. 364-424.000.

Kawashima, Keisuke; Saito, Yoshitane; Yamada, Akihiro; and Yano, Satoshi, to Omron Tateisi Electronics Co. Sequence controller. 4,390,966, Cl. 364-900.000.

Kay, Brian, to Texas Instruments Incorporated. Rotating register utilizing field effect transistors. 4,390,970, Cl. 365-73.000.

Kearney & Trecker Corporation: *See—*
Johnstone, Richard, 4,390,953, Cl. 364-474.000.

Kehlhofer, Rolf, to BBC Brown, Boveri & Company, Limited. Method for the rapid increase in output of a steam turbine plant. 4,389,847, Cl. 60-659.000.

Keiser, Edmond. Method and apparatus for controlling the operation of a television signal receiver. 4,390,901, Cl. 358-147.000.

Kellogg, Robert M.: *See—*
Curtis, Huntington W.; Kellogg, Robert M.; Kissinger, Kerry W.; Mappes, Robert P.; and Stephans, Emery J., 4,390,499, Cl. 422-72.000.

Kelly, Thomas L. Plate bonded system on top of rubber and method of preparing same. 4,389,826, Cl. 52-410.000.

Kelpin, Charles A.: *See—*
Sviatoslavsky, Nicolas N.; and Kelpin, Charles A., 4,390,114, Cl. 220-337.000.

Kempkers, Gordon: *See—*
Flowerday, Carl; Marcus, Konrad H.; Kempkers, Gordon; Boerema, Edward T.; and Fleming, Dennis J., 4,390,202, Cl. 296-97.00K.

Kendall Company, The: *See—*
Golan, Michael G.; and Desrosiers, Leo, 4,389,753, Cl. 19-106.00R.

Kendrick, George B.: *See—*
Audesse, Emery G.; Kendrick, George B.; and Chavan, Pratap P., 4,390,935, Cl. 362-306.000.

Kennedy, Carl S.; and Zellmann, Fred, to Nalco Chemical Company. Dibasic acids to reduce coefficient of friction in rolling oils. 4,390,438, Cl. 252-56.00D.

Key, Charles W., and Christensen, Edward W., II, to RCA Corporation. Apparatus for influencing electron beam movement. 4,390,815, Cl. 315-368.000.

Khalil, Ezzat N.; and Syed, Ali N., to Johnson Products Co., Inc. Stable hair relaxer. 4,390,033, Cl. 132-7.000.

Khusnutdinov, Gil D.; Chernovol, Arkady V.; Shumikhin, Vladimir S.; Shulga, Vasily T.; Poteiko, Andrei I.; Kamensky, Vladimir K.; Kondakov, Jury A.; and Shmigidin, Viktor G. Method and apparatus for out-of-furnace treatment of cast iron. 4,390,362, Cl. 75-49.000.

Kienzle, Frank: *See—*
Chodnekar, Madhukar S.; Kaiser, Ado; and Kienzle, Frank, 4,390,540, Cl. 424-251.000.

Kimber, Edward G., to Tridon Limited. Connector for windshield wipers of low silhouette type. 4,389,746, Cl. 15-250.320.

Kimble, Alvin J. Process and apparatus for finishing doors. 4,390,564, Cl. 427-35.000.

Kimes, Dale S.: *See—*
Balogh, Louis J.; Fitzhugh, Raymond L.; Kimes, Dale S.; and Weinstein, Myron, 4,389,788, Cl. 33-178.00D.

Kimura, Atsushi, to Hokushin Electric Works, Ltd. Apparatus for converting physical quantities. 4,390,879, Cl. 340-870.370.

King, Paul V.; Becher, Albert F.; and Henderson, Wilmer P., to United States of America, Army. Blast suppressive shielding. 4,389,947, Cl. 109-1.00S.

Kinugasa, Yukio: *See—*
Yaegashi, Takehisa; and Kinugasa, Yukio, 4,389,996, Cl. 123-491.000.

Kinugawa Pacific Kabushiki Kaisha: *See—*
Kasama, Masatoshi, 4,389,756, Cl. 24-171.000.

Kirchbrucher, Rudiger: *See—*
Becker, Kunibert; Kirchbrucher, Rudiger; Lagodka, Gunter; and Pohlmann, Klaus-Dieter, 4,390,308, Cl. 405-299.000.

Kircher, Morton S., to Olin Corporation. Membrane electrode pack cells designed for medium pressure operation. 4,390,408, Cl. 204-284.000.

Kirsch, Steven T. Electronic mouse. 4,390,873, Cl. 340-710.000.

Kishi, Toru: *See—*
Saito, Takashi; and Kishi, Toru, 4,390,979, Cl. 369-270.000.

Kishimoto, Kiyoharu; Hazama, Katashi; and Yuhara, Akitsuna, to Hitachi, Ltd. Surface acoustic wave device. 4,390,807, Cl. 310-313.00B.

Kiss, David B.: *See—*
Linton, Leon; and Kiss, David B., 4,389,944, Cl. 104-172.00S.

Kissinger, Kerry W.: *See—*
Curtis, Huntington W.; Kellogg, Robert M.; Kissinger, Kerry W.; Mappes, Robert P.; and Stephans, Emery J., 4,390,499, Cl. 422-72.000.

Kitahara, Makoto: *See—*
Ishikawa, Shozo; Katagiri, Kazuharu; Watanabe, Katsunori; and Kitahara, Makoto, 4,390,611, Cl. 430-59.000.

Kitano, Kyozo: *See—*
Kondo, Fusao; Terao, Toshimi; Nagano, Katsumasa; and Kitano, Kyozo, 4,390,475, Cl. 260-505.00S.

Kitrilakis, Sotiris: *See—*
Robinson, Thomas C.; Kitrilakis, Sotiris; and Martin, Thomas B., Jr., 4,389,737, Cl. 3-1.700.

Kiyomitsu, Isao: *See—*
Izuno, Sadami; Kiyomitsu, Isao; and Tsuji, Toshihiko, 4,390,209, Cl. 297-410.000.

Klaassen, Anne: *See—*
Kuiper, Wilhelmus G.; and Klaassen, Anne, 4,390,794, Cl. 307-140.000.

Klaassen, Klaas B., to International Business Machines Corporation. Signal separation in magnetic recording using buried servo. 4,390,911, Cl. 360-77.000.

Kleemann, Axel; and Schalke, Peter M., to Degussa Aktiengesellschaft. Process for the recovery of pure nitriles. 4,390,706, Cl. 349-74.000.

Kleemann, Axel: *See—*
Schwarze, Werner; Kleemann, Axel; and Leuchtenberger, Wolfgang, 4,390,719, Cl. 560-124.000.

Klein, Joseph T.: *See—*
Davis, Larry; and Klein, Joseph T., 4,390,544, Cl. 424-267.000.

Kleinewefers GmbH: *See—*
Pav, Josef, 4,389,932, Cl. 100-162.00B.
Pav, Josef, 4,389,933, Cl. 100-162.00B.

Kleinschmit, Peter: *See—*
Karl, Alfons; Buder, Wolfgang; and Kleinschmit, Peter, 4,390,712, Cl. 556-413.000.

Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., to International Flavors & Fragrances Inc. Methyl substituted norbornane derivatives, organoleptic uses thereof and process for preparing same. 4,390,464, Cl. 252-522.00R.

Klijanowicz, James E.: *See—*
Gabrielsen, Rolf S.; Graham, Patricia A.; Klijanowicz, James E.; and Stern, Max H., 4,390,606, Cl. 430-9.000.

Klipfel, Siegfried: *See—*
Ebneth, Harold; and Klipfel, Siegfried, 4,390,588, Cl. 428-263.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Hunten, Dieter, 4,390,427, Cl. 210-333.010.

Klok, Jan W.: *See—*
Willems, Michael H.; and Klok, Jan W., 4,390,483, Cl. 264-7.000.

Klomp, Franciscus M., to U.S. Philips Corporation. Packaged electric lamp. 4,390,097, Cl. 206-418.000.

Klopper, Detlev: *See—*
Esser, Fred; Klopper, Detlev; Lachner, Walter; and Scharf, Gerhard, 4,390,773, Cl. 219-121.0PR.

Klotz, Marvin R., to Standard Oil Company (Indiana). Synthesis of molecular sieves using 2-aminopyridine as a template. 4,390,457, Cl. 252-455.00Z.

Kluver, Leroy; and Arnold, John, to Paul Revere Corporation, The. Latching mechanism for a round baler. 4,389,929, Cl. 100-88.000.

KMMCO Structural Foam, Inc.: *See—*
Hendry, James W., 4,390,332, Cl. 425-4.00R.

Knabe, Uwe, to Holstein und Kappert GmbH. Bottle closing machine having bottle neck washing arragement. 4,389,833, Cl. 53-167.000.

Knaggs, Edward A.: *See—*
Nussbaum, Marvin L.; and Knaggs, Edward A., 4,390,474, Cl. 260-505.00R.

Knickerbocker, Robert H., to Siemon Company, The. Modular block base and bracket assembly. 4,390,230, Cl. 339-125.00R.

Knifton, John F., to Texaco Inc. Process for producing propylene glycol monoalkyl ethers from acetaldehyde, an alkanol and syngas using a new catalyst system. 4,390,734, Cl. 568-678.000.

Knight, Alan D.: *See—*
Bocinski, Terrance E.; and Knight, Alan D., 4,389,770, Cl. 29-764.000.

Knoblauch, Jack R.: *See—*
Faiks, Frederick S.; Pergler, Charles C.; Whitwam, Ronald L.; Knoblauch, Jack R.; Beukema, Duane M.; and Hozeski, Kenneth W., 4,390,206, Cl. 297-300.000.

Knoll, Dieter, to Braun Aktiengesellschaft. Cover for a hot liquid container. 4,390,108, Cl. 220-228.000.

Kobayashi, Hidetoshi; Takahashi, Toshirou; Hirano, Shigeo; Hirosa, Takeshi; and Adachi, Keiichi, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive materials. 4,390,618, Cl. 430-543.000.

Kobayashi, Ichiro: *See—*
Nagai, Hidetaka; Wada, Yasushi; Kobayashi, Ichiro; Tamada, Mitsuru; Ushiyama, Keiichi; and Yamamoto, Toshiyuki, 4,390,520, Cl. 424-28.000.

Koblenzer, Heinz, to Langbein-Pfanhauser Werke AG. Apparatus for the distillation of vaporizable liquids. 4,390,396, Cl. 202-166.000.

Kodama, Hiroshi; and Seto, Tadayuki, to Toyo Kogyo Co. Ltd. Lubricating oil supply means for rotary piston engines. 4,390,330, Cl. 418-97.000.

Koder, Manfred; and Schmid, Gunther, to Robert Bosch GmbH. Method of and arrangement for determining the axial play between the stator and the rotor of an electric motor. 4,389,883, Cl. 73-119.00R.

Kohke, Stephen J.: *See—*
Byrd, William; and Kohke, Stephen J., 4,390,831, Cl. 323-240.000.

Kohler, Franz; and Meggl, Albert, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Automatic welding apparatus for solar cells. 4,390,770, Cl. 219-56.210.

Kohlpainter, Georg: *See—*
Lutz, Alfons; and Kohlpainter, Georg, 4,390,203, Cl. 296-223.000.

Koide, Kaoru; Yoneda, Yoshiki; and Musashi, Kenkichi, to Meiji Milk Products Company Limited. Process for producing a cream cheese-like food. 4,390,560, Cl. 426-582.000.

Koide, Toshikazu; and Yaegashi, Takehisa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Electronically controlled fuel injection method and apparatus. 4,389,995, Cl. 123-491.000.

Koike, Hideharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor driver circuit. 4,390,803, Cl. 307-578.000.

Koike, Takaaki, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Turbine casing for turbochargers. 4,389,845, Cl. 60-602.000.

Kolehmainen, Seppo: *See*—
Berthold, Fritz; Kolehmainen, Seppo; and Tarkkanen, Veikko, 4,390,274, Cl. 356-36.000.

Kolodziejski, Stanislaw; Dwojak, Stanislaw; and Grabowski, Andrzej, to Przemyslowy Instytut Automatyki i Pomiarow "MERA-PIAP". Impeller flow-meter pulsation damping. 4,389,897, Cl. 73-861.000.

Komatsu, Yasumasa: *See*—
Matsuda, Shunsuke; and Komatsu, Yasumasa, 4,390,382, Cl. 156-184.000.

Komazawa, Hiroyasu; Mori, Tadashi; Ikenaga, Yukio; Hotta, Hiroshi; and Nakashima, Tuneyasu, to Polyplastics Co., Ltd. Continuous polymerization method. 4,390,684, Cl. 528-230.000.

Kondakov, Jury A.: *See*—
Khusnutdinov, Gil D.; Chernovol, Arkady V.; Shumikhin, Vladimir S.; Shulga, Vasily T.; Poteiko, Andrei I.; Kamensky, Vladimir K.; Kondakov, Jury A.; and Shmigidin, Viktor G., 4,390,362, Cl. 75-49.000.

Kondo, Fusao; Terao, Toshimi; Nagano, Katsumasa; and Kitano, Kyozo, to Lion Corporation. Thin film type sulfonation process of alkylbenzene. 4,390,475, Cl. 260-505.00S.

Konishiroku Photo Industry Co., Ltd.: *See*—
Okaniwa, Kenichiro; Masukawa, Toyoaki; Yamashita, Kiyoshi; and Ishikawa, Wataru, 4,390,617, Cl. 430-350.000.

Koombes, Michael E. R. V.: *See*—
Johnston, Howard R.; and Koombes, Michael E. R. V., 4,390,904, Cl. 358-335.000.

Kopp, Clinton V., to Baxter Travenol Laboratories, Inc. Multichanneled diffusion device. 4,390,575, Cl. 428-36.000.

Kopp, Manfred K.; and Valentine, Kenneth H., to United States of America, Energy. Neutron detection apparatus. 4,390,786, Cl. 250-385.000.

Kopp, Richard: *See*—
Rasshofer, Werner; Avar, Geza; Freitag, Hans-Albrecht; Grogler, Gerhard; and Kopp, Richard, 4,390,640, Cl. 521-51.000.

Koppers Company, Inc.: *See*—
Sczerba, Stanley T., 4,390,397, Cl. 202-243.000.

Koral, Marvin; and Goodman, Donald, to Tenneco Chemicals, Inc. Conductive molding compositions comprising vinyl chloride-vinyl ether copolymers. 4,390,459, Cl. 252-511.000.

Korczak, Roman L., to Lutheran General Hospital, Inc. Calibrating unit. 4,389,886, Cl. 73-168.000.

Korhonen, Kaarlo J. Cutting-up process. 4,389,749, Cl. 17-46.000.

Kossebau, Friedrich K. O., to Gebrueder Buehler AG. Method and apparatus for dust free grain loading. 4,390,090, Cl. 193-32.000.

Kostler, Hans-Gunter: *See*—
Wehner, Wolfgang; Farooq, Saleem; and Kostler, Hans-Gunter, 4,390,538, Cl. 424-249.000.

Kotani, Makoto: *See*—
Kudoh, Akihide; Kawamata, Motoo; Ohshima, Kazushi; Kotani, Makoto; Tsuda, Takeshi; and Morita, Satoshi, 4,390,737, Cl. 568-804.000.

Kowal, Leonard J., to Imperial Clevite Inc. Tube bender construction. 4,389,872, Cl. 72-388.000.

Kowal, Leonard J.: *See*—
Schwarz, Albert J.; and Kowal, Leonard J., 4,389,873, Cl. 72-388.000.

Kowk, Ronald, to Kowk, Ruth C. Fireplace door assembly. 4,390,006, Cl. 126-140.000.

Kowk, Ruth C.: *See*—
Kowk, Ronald, 4,390,006, Cl. 126-140.000.

Krampe, Dietrich; and Schleicher, Herbert, to Siemens Aktiengesellschaft. Device for changing the relative angular positions of operating shafts of a group electric drive. 4,390,821, Cl. 318-85.000.

Krapcho, John; and Wade, Peter C., to E. R. Squibb & Sons, Inc. Imido, amido and amino derivatives of mercaptoacyl prolines and pipecolic acids. 4,390,695, Cl. 544-130.000.

Krasnobajew, Victor, to Givaudan Corporation. Microbiological transformations of alpha-ionone. 4,390,556, Cl. 426-538.000.

Krasnobajew, Victor, to Givaudan Corporation. Microbiological transformations of irone compounds. 4,390,557, Cl. 426-538.000.

Krasnov, Igor, to Varco International, Inc. Well slip unit. 4,389,760, Cl. 24-263.00D.

Krause, Gerhard. Apparatus for measuring the speed of flow of flowable media. 4,389,899, Cl. 73-861.280.

Krenz, Horst M., to Zenith Radio Corporation. Means and method for compensating for print medium thickness in line printers. 4,390,292, Cl. 400-59.000.

Kretschmer, Frank F.: *See*—
Lewis, Bernard L.; and Kretschmer, Frank F., 4,390,881, Cl. 343-100.0LE.

Kriechbaum, Karl; Augustin, Hans-Georg; and Hoffmann, Dietrich, to Licentia Patent-Verwaltungs-G.m.b.H. Puffer-type gas blast switch. 4,390,764, Cl. 200-148.00A.

Krippner, Mathilde. Head for passages, door and window openings. 4,389,822, Cl. 52-125.400.

Kristinsson, Sigurdur; and Johannesson, Orn, to Nordischer Maschinenbau Rud. Baader GmbH & Co KG. Device for the beheading of fish. 4,389,750, Cl. 17-63.000.

Kruger, Jack L. Coaxial transmission line connector. 4,390,218, Cl. 339-9.00E.

Kubach, Hans, to Robert Bosch GmbH. Electromagnet. 4,390,857, Cl. 335-282.000.

Kubo, Kanji: *See*—
Furumoto, Mitsunobu; Yano, Osahiko; Taniguchi, Hiroshi; Kubo, Kanji; and Ohtsu, Masamitsu, 4,390,906, Cl. 360-19.100.

Kubo, Kazuhiro: *See*—
Teranishi, Masayuki; Obase, Hiroyuki; Takai, Haruki; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,390,536, Cl. 424-246.000.

Kucherer, Harvey D.; Kugler, Ralph W.; Rieben, Stuart L.; Wilhelm, John J.; and Wylie, Mark E., to Westinghouse Electric Corp. Tube plug. 4,390,042, Cl. 138-89.000.

Kudoh, Akihide; Kawamata, Motoo; Ohshima, Kazushi; Kotani, Makoto; Tsuda, Takeshi; and Morita, Satoshi, to Mitsui Toatsu Chemicals, Inc. Process for the ortho-alkylation of phenolic compounds. 4,390,737, Cl. 568-804.000.

Kudryashov, Jury V.: *See*—
Rusinov, Mikhail M.; Judova, Galina N.; Kudryashov, Jury V.; and Agurok, Peisakh Y., 4,390,249, Cl. 350-453.000.

Kugler, Ralph W.: *See*—
Kucherer, Harvey D.; Kugler, Ralph W.; Rieben, Stuart L.; Wilhelm, John J.; and Wylie, Mark E., 4,390,042, Cl. 138-89.000.

Kuhlmann, Gerhard, to Robert Bosch GmbH. Tool support for tool machines. 4,390,311, Cl. 409-232.000.

Kuhn, Friedrich: *See*—
Rohde, Gunter; and Kuhn, Friedrich, 4,390,138, Cl. 242-55.000.

Kuiper, Wilhelmus G.; and Klaassen, Anne, to U.S. Philips Corporation. Circuit arrangement for controlling the switch-on of supply voltage. 4,390,794, Cl. 307-140.000.

Kunau, Milo A. Self-steering bogies for trailers. 4,390,189, Cl. 280-81.00A.

Kuo, Chang-Kiang, to Texas Instruments Incorporated. Post-metal programmable MOS read only memory. 4,390,971, Cl. 365-104.000.

Kuo-Yung Industrial Company: *See*—
Jen-Tung, Cheng, 4,390,349, Cl. 48-197.00R.

Kurafuji, Setsuo, to Fujitsu Limited. Bias-voltage generator. 4,390,798, Cl. 307-296.00R.

Kuraray Co., Ltd.: *See*—
Omura, Yoshiaki; Mori, Fumio; Fujita, Yoshiji; Nishida, Takashi; Tamai, Yoshin; Wada, Fumio; and Itoi, Kazuo, 4,390,547, Cl. 424-304.000.

Kurata, Hirotaka; and Yoshida, Shiro, to Trio Kabushiki Kaisha. Circuit for reproducing a clock signal. 4,390,801, Cl. 307-409.000.

Kurata, Nobuo: *See*—
Okamoto, Miyoshi; Yoshida, Syusuke; and Kurata, Nobuo, 4,390,572, Cl. 428-15.000.

Kurita, Kenji: *See*—
Suzuki, Koji; Inuzuka, Tsuneki; and Kurita, Kenji, 4,390,265, Cl. 355-14.00D.

Kurtz, John A.; and Cousens, Donald E., to Fairchild Camera & Instrument Corp. Bonding wire ball forming method and apparatus. 4,390,771, Cl. 219-56.220.

Kurtz, Leonard D., to BioResearch Inc. Glove molding method and apparatus. 4,390,492, Cl. 264-255.000.

Kurz, Wolfgang: *See*—
Meyer, Friedhelm; Kurz, Wolfgang; and Severing, Joachim, 4,390,792, Cl. 307-10.0BP.

Kuvaja, Heimo H.: *See*—
Andreason, Gustav O.; Friberg, Ulf R.; Kuvaja, Heimo H.; and Qvarnstrom, Bengt G. L., 4,389,814, Cl. 47-73.000.

Kyo, Kayomon; Asai, Yasuhiko; Hirose, Isamu; and Suyama, Nobuo, to Unitika Ltd. Aromatic copolyester. 4,390,682, Cl. 528-194.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Teranishi, Masayuki; Obase, Hiroyuki; Takai, Haruki; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,390,536, Cl. 424-246.000.

LaBate, Micheal D. Modular unit blast furnace runner and hot metal gate. 4,390,169, Cl. 266-196.000.

Labbe, Francis A. M.; and Preston, Edward G., to Molins Limited. Cigarette ventilation control. 4,390,032, Cl. 131-281.000.

Label-Aire Inc.: *See*—
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Hofmeister, Helmut; Wiechert, Rudolf; Annen, Klaus; Laurent, Henry; and Beier, Sybille, 4,390,530, Cl. 424-238.000.

Laurent, Serge, to Rhone-Poulenc Industries. Encapsulation of electronic components in bis-imido polymer. 4,390,596, Cl. 428-473.500.

Lauro, Luciano, to Olivetti Controllo Numerico S.p.A. Apparatus for digital position measurements by a cyclic position transducer. 4,390,865, Cl. 340-347.0SY.

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Woolslayer, Joseph R., 4,390,162, Cl. 254-398.000.

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Freud, Paul J., 4,390,925, Cl. 361-283.000.
McClenahan, Robert W.; and Walsh, Thomas J., 4,390,796, Cl. 307-261.000.

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Lehmann, Wilfried; and Fandrey, Peter, to Sihi GmbH & Co. KG. Self-priming centrifugal pump, in particular for conveying liquids in the vicinity of their boiling point. 4,390,317, Cl. 415-143.000.

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Junter, Guy-Alain; Lemeland, Jean-Francois; Selegny, Eric; and Vingent, Jean-Claude, 4,390,620, Cl. 435-4.000.

Lemelson, Jerome H. Electrical device of semi-conducting material with non-conducting areas. 4,390,586, Cl. 428-209.000.

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Goldsworthy, John; Ross, William J.; and Verge, John P., 4,390,541, Cl. 424-258.000.

Lin, An-Chung R.: *See*—
Merritt, Alfred R.; Cooke, Theodore M.; Lin, An-Chung R.; and Whitfield, Richard G., 4,390,369, Cl. 106-31.000.

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Cassidy, Michael P.; D'Amico, John F.; DeAngelo, Michael A., Jr.; and Lin, Kon-Mang, 4,389,771, Cl. 29-846.000.

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Suntola, Tuomo S.; Pakkala, Arto J.; and Lindfors, Sven G., 4,389,973, Cl. 118-725.000.

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Fischer, Wolfgang; and Link, Renate, 4,390,518, Cl. 424-3.000.

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Linton, Leon; and Kiss, David B., to Southern Systems, Inc. Conveyor control means. 4,389,944, Cl. 104-172.00S.

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Kondo, Fusao; Terao, Toshimi; Nagano, Katsumasa; and Kitano, Kyozo, 4,390,475, Cl. 260-505.00S.

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Stanley, Charles A., 4,390,813, Cl. 315-248.000.

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Siems, Lee, 4,390,974, Cl. 367-76.000.

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Markowski, Stanley J.; Jeroszko, Ronald A.; and Lohmann, Robert P., 4,389,848, Cl. 60-738.000.

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Blair, Daniel R.; Lomneth, Richard B.; Prosise, Robert L.; and Tao, Bernard T., 4,390,561, Cl. 426-607.000.

Long, Emile D.; and Richardson, Keith C., to Allied Corporation. Electronic ignition system. 4,389,993, Cl. 123-421.000.

Long, James C.; and Palmer, James K. Electromagnetic velocity transducer. 4,389,898, Cl. 73-861.120.

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Fonda, James B., 4,390,565, Cl. 427-44.000.

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Loshaek, Samuel, to Schering Corporation. Ultraviolet absorbing lenses. 4,390,676, Cl. 526-313.000.

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Coleman, Donald J.; Jackson, Wilbur C.; Lube, Robert R.; and Spohr, Albert R., 4,389,772, Cl. 30-43.900.

Lucas Industries Limited: *See—*
Conrad, Willibrod, 4,390,086, Cl. 188-79.50B.
Rouse, John A., 4,390,188, Cl. 280-6.100.

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Roberts, James R.; McIlrath, Thomas J.; and Lucatorto, Thomas B., 4,390,994, Cl. 372-99.000.

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Huber, Lothar; and Friedmann, Oswald, 4,389,985, Cl. 123-198.00F.

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Odman, Rolf R., 4,389,796, Cl. 34-168.000.

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Korczak, Roman L., 4,389,886, Cl. 73-168.000.

Lutz, Alfons; and Kohlpainter, Georg, to Webasto-Werk W. Baier GmbH & Co. Vehicle roof and headlining therefor. 4,390,203, Cl. 296-223.000.

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Sutter, Hanspeter, 4,389,931, Cl. 100-90.000.

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Norton, Leo A.; and Norton, Christopher W., 4,389,799, Cl. 37-2.00R.

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Mamberer, Hans E., 4,390,958, Cl. 364-550.000.

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Mackrle, Svatopluk; Mackrle, Vladimir; and Dracka, Oldrich, 4,390,422, Cl. 210-188.000.

Mader, Hermann: *See—*
Risch, Lothar; and Mader, Hermann, 4,390,888, Cl. 357-30.000.

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Maeda, Kenji: *See—*
Kanada, Toshiaki; Suzuki, Kazuhiro; Yoshioka, Hiroshi; Maeda, Kenji; and Tsurumi, Yoshihiro, 4,390,643, Cl. 521-117.000.

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Mahn, John E. Flocked material having first thermosetting adhesive layer and second thermoplastic adhesive layer. 4,390,387, Cl. 428-90.000.

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Boden, Richard M.; Licciardello, Michael; Maisano, Joseph J., Jr.; and Hanna, Marie R., 4,390,448, Cl. 252-187.260.

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Maklad, Nabil F.: *See—*
Ophir, Jonathan; and Maklad, Nabil F., 4,389,893, Cl. 73-599.000.

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Mallet, Bernard, to Nadella. Torque tube-to-universal joint yoke deformation coupling. 4,390,303, Cl. 403-284.000.

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Manchand, Percy, to Hoffmann-La Roche Inc. Prostaglandin intermediates. 4,390,718, Cl. 560-122.000.

Mangen, Rolf: *See—*
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Mani, Krishnamurthy N.; and Chlanda, Frederick P., to Allied Corporation. Process for regenerating spent seed materials used in magnetohydrodynamic power generation. 4,390,402, Cl. 204-180.00P.

Manner, James A., to PPG Industries, Inc. Catalyst system for manufacturing p-chlorophenyl-N-methyl carbamate. 4,390,710, Cl. 549-441.000.

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Muller, Johannes, 4,390,168, Cl. 266-142.000.
Niehaus, Norbert; Popperling, Rolf; and Bester, Horst, 4,390,367, Cl. 75-125.000.
Wessel, Otto, 4,390,488, Cl. 419-66.000.

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Manning, Mark C.: *See—*
Jacobson, Carl C., Jr.; and Manning, Mark C., 4,390,304, Cl. 404-110.000.

Manning, Richard P., to Merrick Engineering, Inc. Override control apparatus and method for parameter adjustment of digitally based welding process programmers. 4,390,954, Cl. 364-477.000.

Mansfield, Graham J.: *See—*
Peck, Alan M.; Tutt, Kingsley J.; and Mansfield, Graham J., 4,389,861, Cl. 69-6.500.

Manzie, Otter L., Jr., to Dow Chemical Company, The. Dynamic gas transmission measuring apparatus. 4,389,878, Cl. 73-38.000.

Mappes, Robert P.: *See—*
Curtis, Huntington W.; Kellogg, Robert M.; Kissinger, Kerry W.; Mappes, Robert P.; and Stephans, Emery J., 4,390,499, Cl. 422-72.000.

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Bruce, Charles R.; and Johnson, Irvin D., 4,390,836, Cl. 324-54.000.
Wygant, N. Duane; and Jones, Stanley C., 4,390,842, Cl. 324-439.000.

Marazzi, Silvio, to Diamond S.A. Coupling assembly for light wave conductors and method for the production thereof. 4,390,237, Cl. 350-96.200.

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Marchi, Marcello: *See—*
Campolmi, Stefano; Carletti, Vittorio; and Marchi, Marcello, 4,390,733, Cl. 568-652.000.

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Marcus, Konrad H.: *See—*
Flowerday, Carl; Marcus, Konrad H.; Kempkers, Gordon; Boerema, Edward T.; and Fleming, Dennis J., 4,390,202, Cl. 296-97.00K.

Marcy, Raymond, to Thomson-CSF. Apparatus for monitoring road traffic to control an associated signaling system. 4,390,951, Cl. 364-436.000.

Margenau, David A.: *See—*
Kasprzyk, Donald J.; Margenau, David A.; and Nelson, Marvin D., 4,390,859, Cl. 338-25.000.

Margolis, Geoffrey: *See—*
Chiovini, Jacky; Blanc, Maurice; and Margolis, Geoffrey, 4,390,698, Cl. 544-274.000.

Margosian, Daniel: *See—*
Schulz, Johann G.; and Margosian, Daniel, 4,390,661, Cl. 524-878.000.

Margraf, Dallas A.; and Treiber, Fritz F., to Hobart Corporation. Label applicator device. 4,390,390, Cl. 156-566.000.

Marhanka, Frank D. Source of electricity. 4,390,605, Cl. 429-218.000.

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Deutsch, Peter C., 4,390,227, Cl. 339-103.00C.

Markley, Charles E.: *See—*
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Markowski, Stanley J.; Jeroszko, Ronald A.; and Lohmann, Robert P., to United Technologies Corporation. Burner construction for gas turbines. 4,389,848, Cl. 60-738.000.

Marky, Michael, to Ciba-Geigy Corporation. Phosphonium compounds, a process for their preparation and a process for the preparation of asymmetrically substituted stilbene fluorescent brightening agents. 4,390,476, Cl. 260-505.00C.

Marmon Company: *See—*
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Bach, Dieter; Jackle, Heiner G.; and Marquardt, Kurt, 4,389,879, Cl. 73-61.00R.

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Betts, William L.; and Martinez, Kenneth, 4,390,843, Cl. 328-138.000.

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Takeguchi, Masanobu; and Oyobe, Isao, 4,390,432, Cl. 210-748.000.

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Sasaki, Takuma; and Nakamichi, Kazuya, 4,390,468, Cl. 260-112.00R.

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Rubenstein, Irving H.; and Bank, Herbert M., 4,390,553, Cl. 426-138.000.

Massachusetts Institute of Technology: *See—*
Bush, Vannevar, 4,389,921, Cl. 92-59.000.

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Chin, Danny; Henderson, John G. N.; and Maturo, Robert J., 4,390,902, Cl. 358-192.100.

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O'Rear, Dennis J.; and Mayer, Jerome F., 4,390,413, Cl. 208-61.000.

Mayhall, Riley H., Jr.: *See—*
Gorick, Joel C.; and Mayhall, Riley H., Jr., 4,390,931, Cl. 362-267.000.

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Cohen, Edwin; and Maynard, Jack A., 4,390,861, Cl. 340-27.00R.

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Thomas, Kenneth C.; Jones, Eric D.; and McBride, Marvin A., 4,390,777, Cl. 219-127.000.

McCabe, Francis J. Thermally activated, automatic, single blade damper and damper operator. 4,390,123, Cl. 236-16.000.

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Meyer, Leonard S.; Murray, Michael J.; Hayes, Gerald G.; and McClain, Robert L., 4,390,156, Cl. 249-80.000.

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McClure, Virge W.: *See—*
Shah, Gautam N.; Brown, Michael R.; Lee, Edward C.; Hook, Gerald C.; Wand, Robert L.; Ratliff, Charles R.; and McClure, Virge W., 4,390,885, Cl. 346-140.00R.

McColl, James R.: *See—*
Peters, Thomas E.; and McColl, James R., 4,390,449, Cl. 252-301.60F.

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Goetz, Michael A.; McCormick, Pamela A.; and Monaghan, Richard L., 4,390,546, Cl. 424-279.000.

McCoy Industries, Inc.: *See—*
Olmsted, James H., 4,390,081, Cl. 182-151.000.

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Quinn, Bernard W., 4,390,277, Cl. 356-371.000.

McDougall, Robert J.: *See—*
Overbury, Douglas G.; and McDougall, Robert J., 4,389,779, Cl. 30-382.000.

McGee, John K.; Lafferty, Harold L.; Bridges, Charles D.; and Smith, Archie L., to Combustion Engineering, Inc. Metal-to-metal ribbed seal. 4,390,186, Cl. 277-236.000.

McGrath, John C.: *See—*
Ward, Ian M.; and McGrath, John C., 4,390,674, Cl. 526-255.000.

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McKaveney, James P., to Occidental Chemical Corporation. Electrically conductive articles. 4,390,458, Cl. 252-503.000.

McLaren, Edwin C.; and Adamek, David J., to Champion International Corporation. Scalloped paperboard insert for use with plastic lid. 4,389,802, Cl. 40-307.000.

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McLaughlin, William D., Jr., to Fiber Industries, Inc. Aspirating cutter for cutting and aspirating filamentary material. 4,389,774, Cl. 30-133.000.

McNaney, Joseph T. Message character image projection control system. 4,390,875, Cl. 340-815.270.

Mead Corporation, The: *See—*
Calvert, Rodney K., 4,389,832, Cl. 53-48.000.
Stoneburner, Leonard G., 4,390,883, Cl. 346-75.000.

Mecan Arbed S.A.: *See—*
Reuter, Hans-Josef, 4,390,057, Cl. 164-459.000.

Mechanical Technology Incorporated: *See—*
Ackermann, Robert A.; and Vitale, Nicholas G., 4,389,844, Cl. 60-517.000.

Meckstroth, Alan F. Pilot operated fluid control valve. 4,390,157, Cl. 251-30.000.

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Gunter, Jonas L.; Haren, Doyle V.; Hofle, Anatoli; and Medford, Richard D., 4,390,214, Cl. 305-35.00R.

Medtronic, Inc.: *See—*
Herpers, Lodewijk-Jozef, 4,390,020, Cl. 128-419.0PG.

Rise, Mark T., 4,390,023, Cl. 128-421.000.

Mefina S.A.: *See—*
Golay, Jean-Pierre; and Uberti, Jean-Louis, 4,389,937, Cl. 102-249.000.

Meggl, Albert: *See—*
Kohler, Franz; and Meggl, Albert, 4,390,770, Cl. 219-56.210.

Mehta, Avinash C.; Nawn, George H.; and Taylor, Lloyd D., to Polaroid Corporation. Diffusion transfer photographic system utilizing substituted phenylmercaptoazoles. 4,390,613, Cl. 430-219.000.

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Boeni, Hans; Meier, Beda; and Szacsvay, Gabor, 4,389,870, Cl. 72-354.000.

Meiji Milk Products Company Limited: *See—*
Koide, Kaoru; Yoneda, Yoshiki; and Musashi, Kenkichi, 4,390,560, Cl. 426-582.000.

Mendiola, Joseph V.; and Smith, David E., to Goodyear Tire & Rubber Company, The. Motorcycle tire. 4,390,052, Cl. 152-356.00R.

Mennemann, Karl; Gliemeroth, Georg; and Geiler, Volkmar, to Schott Glaswerke. Acidproof, hydrolysis-resistant optical and ophthalmic glass of low density. 4,390,638, Cl. 501-77.000.

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Beattie, Thomas R.; Hannah, John; and Johnston, David B. R., 4,390,693, Cl. 542-442.000.
Bock, Mark G.; and Di Pardo, Robert M., 4,390,703, Cl. 548-187.000.
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Goetz, Michael A.; McCormick, Pamela A.; and Monaghan, Richard L., 4,390,546, Cl. 424-279.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Eichler, Jurgen; Herz, Claus; and Neisius, Karl-Heinz, 4,390,453, Cl. 252-426.000.
Fischer, Wolfgang; and Link, Renate, 4,390,518, Cl. 424-3.000.

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Merkel, Willi, to Fritz Fuss Kom.-Ges Elektrotechnische Fabrik. System for the transmission of binary signals between the components of an alarm system. 4,390,863, Cl. 340-310.00R.

Merrick Engineering, Inc.: *See—*
Manning, Richard P., 4,390,954, Cl. 364-477.000.

Merritt, Alfred R.; Cooke, Theodore M.; Lin, An-Chung R.; and Whitfield, Richard G., to Exxon Research and Engineering Co. Natural wax-containing ink jet inks. 4,390,369, Cl. 106-31.000.

Merry, Carl A., to Schaefer Marine, Inc. Marine block. 4,390,163, Cl. 254-412.000.

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Wuermseer, Matthias, 4,390,153, Cl. 244-131.000.

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Vogel, Karl, 4,390,074, Cl. 177-177.000.

Meyer, Franklin, Jr., to Comtorgage Corporation. Contracting micrometer ring gage assemblies. 4,389,789, Cl. 33-178.00R.

Meyer, Friedhelm; Kurz, Wolfgang; and Severing, Joachim, to Robert Bosch GmbH. Automotive electrical power supply system with reverse polarity indication. 4,390,792, Cl. 307-10.0BP.

Meyer, Leonard S.; Murray, Michael J.; Hayes, Gerald G.; and McClain, Robert L., to Victor United, Inc. Fabricated sheet metal compression mold and method of making. 4,390,156, Cl. 249-80.000.

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Bahrle, Friedrich; Binder, Hellmuth; Meyer, Wolfram; and Wulf, Helmut, 4,389,945, Cl. 104-247.000.

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Dille, Roger M.; Middleton, Leigh R.; Brent, Albert; and Robin, Allen M., 4,390,347, Cl. 48-197.00R.
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Lantero, Oreste J., Jr., 4,390,627, Cl. 435-180.000.
Walter, Bert, 4,390,343, Cl. 436-518.000.

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Schaefer, Louis B., IV; and Miller, Thomas M., 4,390,170, Cl. 266-272.000.

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Bertone, Gregory A.; and Bossart, Clayton J., 4,389,903, Cl. 73-863.030.

Mineo, Masatoshi: *See—*
Oka, Ken-ichiro; Mineo, Masatoshi; and Ono, Terumichi, 4,390,685, Cl. 528-272.000.

Miner, Jay: *See—*
Calfee, Richard V.; and Miner, Jay, 4,390,022, Cl. 128-419.0PG.

Minnesota Mining and Manufacturing Company: *See—*
Chou, Hsin-hsin; and Hendrickson, William A., 4,390,607, Cl. 430-48.000.
Rutledge, Robert L., 4,390,612, Cl. 430-202.000.
Stevens, Edward J., 4,390,452, Cl. 252-408.100.

Minolta Camera Kabushiki Kaisha: *See—*
Sumita, Toru, 4,390,263, Cl. 354-286.000.

Minor, James C., to Eastman Kodak Company. Bi-modal illumination apparatus. 4,390,267, Cl. 355-14.00E.

Minoura, Kazuo, to Canon Kabushiki Kaisha. Multibeam scanning apparatus provided with a function of changing magnification. 4,390,235, Cl. 350-6.100.

Mintz, Leon: *See—*
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Misaki, Susumu; Suefuji, Masahiro; Tsushima, Tadahiko; and Tanida, Hiroshi, to Daikan Kogyo Co., Ltd.; and Shionogi and Co., Ltd. 3-Substituted-3-fluoropyruvic acids and their esters and salts, and production thereof. 4,390,702, Cl. 546-296.000.

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Tabushi, Iwao; Shimokawa, Kazuhiro; Naito, Daiji; Misaki, Susumu; and Yoshida, Tsutomu, 4,390,740, Cl. 570-146.000.

Miskin, Leslie, to ITT Industries, Inc. Audio power amplifier with class-D push-pull output stage. 4,390,849, Cl. 330-251.000.

Miskinis, Robert J. Rotary evaporator shaft. 4,390,500, Cl. 422-103.000.

Mita Industrial Co., Ltd.: *See—*
Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, 4,390,264, Cl. 355-8.000.

Mitchell, David T.: *See—*
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Mitchell, Henry D., Jr.: *See—*
Hammond, Charles S., Jr.; and Mitchell, Henry D., Jr., 4,390,137, Cl. 242-54.00R.

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Mitsubishi Gas Chemical Co., Inc.: *See—*
Kanada, Toshiaki; Suzuki, Kazuhiro; Yoshioka, Hiroshi; Maeda, Kenji; and Tsurumi, Yoshihiro, 4,390,643, Cl. 521-117.000.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Kanayama, Kaoru, 4,390,664, Cl. 525-117.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Morita, Yoshinori; Hayata, Shinzi; Kato, Akifumi; Nara, Hideo; and Watanabe, Tohru, 4,390,669, Cl. 526-65.000.
Yatsu, Tadao; Todo, Akira; and Sotoyama, Toshiki, 4,390,683, Cl. 528-194.000.

Mitsui Toatsu Chemicals, Inc.: *See—*
Kudoh, Akihide; Kawamata, Motoo; Ohshima, Kazushi; Kotani, Makoto; Tsuda, Takeshi; and Morita, Satoshi, 4,390,737, Cl. 568-804.000.

Mitutoyo Mfg. Co., Ltd.: *See—*
Sakata, Hideo; and Takahashi, Seigo, 4,389,786, Cl. 33-174.00P.

Miyagi, Hideo: *See—*
Nakano, Jiro; and Miyagi, Hideo, 4,389,997, Cl. 123-492.000.

Miyai, Masahiko: *See—*
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Miyake, Hajimu: *See—*
Yamato, Takashi; Endo, Hirofumi; Matsumoto, Kimiichiro; and Miyake, Hajimu, 4,390,548, Cl. 424-321.000.

Miyashita, Albert H.: *See—*
Bowden, Larry D.; Miyashita, Albert H.; and Ravenelle, Charles I., 4,390,610, Cl. 430-58.000.

Miyauchi, Katsuki; Oi, Tetsu; and Suganuma, Tsuneo, to Hitachi, Ltd. Lithium oxide based amorphous material and process for preparation thereof. 4,390,460, Cl. 252-518.000.

Miyoshi, Taisuke, to Kabushiki Kaisha Daini Seikosha. Electrochromic device by oblique evaporation to improve the response of coloration and bleaching. 4,390,246, Cl. 350-357.000.

Mizokami, Kazunori, to Olympus Optical Co. Ltd. Photomeric circuit for camera. 4,390,258, Cl. 354-24.000.

Mizote, Masanori: *See—*
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Mizukuchi, Yutaka, to Citizen Watch Co., Ltd. Liquid crystal compositions. 4,390,467, Cl. 252-299.630.

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Mobil Oil Corporation: *See—*
Audeh, Costandi A., 4,390,409, Cl. 208-8.0LE.
Audeh, Costandi A., 4,390,410, Cl. 208-8.0LE.
Bullard, Edward M.; and Smith, Gregory M., 4,390,573, Cl. 428-35.000.
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Mobil Solar Energy Corporation: *See—*
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Mochizuki, Masashi: *See—*
Ueda, Toshimichi; Tezuka, Akira; Wakairo, Seiichi; Sakuma, Moriyuki; and Mochizuki, Masashi, 4,389,855, Cl. 62-200.000.

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Moilliet, John L.: *See—*
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Molins Limited: *See—*
Labbe, Francis A. M.; and Preston, Edward G., 4,390,032, Cl. 131-281.000.

Monaghan, Richard L.: *See—*
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Monarch Marking Systems, Inc.: *See—*
Brister, Eneas E.; and Williams, Frederick P., 4,390,577, Cl. 428-42.000.

Monroe, Gerald E. System and method for securing bed coverings to the mattress of a bed. 4,389,744, Cl. 5-498.000.

Monsanto Company: *See—*
Deex, Oliver D., 4,390,681, Cl. 528-193.000.

Montedison S.p.A.: *See—*
Balducci, Luigi; and Rustioni, Massimo, 4,390,374, Cl. 106-300.000.
Campolmi, Stefano; Carletti, Vittorio; and Marchi, Marcello, 4,390,733, Cl. 568-652.000.
Cuffiani, Illaro; Galli, Paolo; and Zucchini, Umberto, 4,390,454, Cl. 252-429.00B.
De Micheli, Angelo; and Bizzozero, Piero, 4,390,727, Cl. 568-422.000.
Gozzo, Franco; Troiani, Nicola; Lorusso, Simone; and Santi, Romano, 4,390,705, Cl. 549-3.000.

Montgomery, Richard C., Jr.: *See—*
Wood, Leonard J.; Parasuraman, Balakrishna; Williams, Edwin H.; Alexander, Mark G.; and Montgomery, Richard C., Jr., 4,390,981, Cl. 370-56.000.

Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; Ouwerkerk, Anton V.; Kamath, Venkatesh; and Mussinan, Cynthia J., to International Flavors & Fragrances Inc. Use of isomeric mixtures of farnesene for augmenting or enhancing the aroma of detergent compositions. 4,390,444, Cl. 252-174.110.

Moore, J. Scott, to Conoco Inc. Well location pattern for secondary and tertiary recovery. 4,390,066, Cl. 166-245.000.

Moosberg, Borje S.: *See—*
Karlsson, Jarding U.; and Moosberg, Borje S., 4,390,140, Cl. 242-84.52C.

Morgan, David W., to Corning Glass Works. Alkali metal aluminoborosilicate photochromic glasses. 4,390,635, Cl. 501-13.000.

Mori, Fumio: *See—*
Omura, Yoshiaki; Mori, Fumio; Fujita, Yoshiji; Nishida, Takashi; Tamai, Yoshin; Wada, Fumio; and Itoi, Kazuo, 4,390,547, Cl. 424-304.000.

Mori, Ikuo, to Nippon Kogaku K. K. Gauss type photographic lens. 4,390,252, Cl. 350-471.000.

Mori, Kazuyuki; Mizote, Masanori; Takeda, Hitoshi; Yamaki, Kiyoshi; Suzuki, Hidetaka; Nomura, Hiroyuki; and Kawasaki, Teruo, to Nissan Motor Co. Ltd. Navigation instrument. 4,390,948, Cl. 364-424.000.

Mori, Kinji: *See—*
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Mori, Naoki: *See—*
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Mori, Tadashi: *See—*
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Mori, Takao: *See—*
Chibata, Ichiro; Tosa, Tetsuya; Mori, Takao; and Fujimura, Motoki, 4,390,626, Cl. 435-176.000.

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Moriguchi, Kisoo; and Yoshii, Naoji, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyethylene blend composition. 4,390,666, Cl. 525-194.000.

Morikawa, Shinsuke: *See—*
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Morikawa, Yoshitusgu: *See—*
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Morishige, Morio, to Casio Computer Co., Ltd. Electronic device having time display function. 4,390,287, Cl. 368-240.000.

Morita, Satoshi: *See—*
Kudoh, Akihide; Kawamata, Motoo; Ohshima, Kazushi; Kotani, Makoto; Tsuda, Takeshi; and Morita, Satoshi, 4,390,737, Cl. 568-804.000.

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Morooka, Shinichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Level meter. 4,389,888, Cl. 73-299.000.

Moses, Donald W., to Seismograph Service Corporation. Digital subscriber communication system. 4,390,986, Cl. 370-99.000.

Mostek Corporation: *See—*
Holberg, Douglas R., 4,390,754, Cl. 179-84.0VF.

Motor-und Turbinen-Union GmbH: *See—*
Butscher, Franz, 4,389,846, Cl. 60-606.000.

Motorola, Inc.: *See—*
Davis, William F.; and Shacter, Stuart B., 4,390,850, Cl. 330-253.000.
Jarrett, Robert B., 4,390,829, Cl. 323-231.000.
Puhl, Larry C.; and Kasley, Paul A., 4,390,963, Cl. 364-900.000.
Selinko, George J., 4,390,198, Cl. 292-152.000.
Strickland, Lawrence P., 4,390,845, Cl. 329-103.000.
Woltz, Stephen H., 4,390,802, Cl. 307-475.000.

Mottate, Tatsuo, to Nippon Thompson Co., Ltd. Ball bearing slide unit for linear motion. 4,390,215, Cl. 308-6.00C.

Mrotz, Walter C., III: *See—*
Wisniewski, Joseph M.; and Mrotz, Walter C., III, 4,390,210, Cl. 297-452.000.

MTU Motoren-und Turbinen-Union Muenche GmbH: *See—*
Weiler, Wolfgang, 4,390,318, Cl. 415-145.000.

Mueller, Fredrick N.; and Brown, Henry C., to Camsco, Inc. Carriage having integral spring. 4,390,216, Cl. 308-6.00R.

Mueller, Rolf J., to Textube Corporation. Yarn carrier. 4,390,144, Cl. 242-118.300.

Mukai, Yasuteru: *See—*
Otake, Katsumoto; Miyai, Masahiko; Mukai, Yasuteru; and Okouchi, Isao, 4,390,058, Cl. 165-1.000.

Muller, Hans R., to Sundstrand Corporation. Angle of attack based pitch generator and head up display. 4,390,950, Cl. 364-434.000.

Muller, Helmut: *See—*
Durr, Herbert; Christen, Werner; and Muller, Helmut, 4,390,285, Cl. 366-168.000.

Muller, Johannes, to Mannesmann Aktiengesellschaft. Crane and hoist for steel manufacturing mill. 4,390,168, Cl. 266-142.000.

Muller, Peter: *See—*
Christen, Peter; and Muller, Peter, 4,390,869, Cl. 340-632.000.

Murakami, Reiji; and Nakajima, Shunichi. Dot matrix condition display device for photocopiers. 4,390,872, Cl. 340-679.000.

Muramatsu, Tsuyoshi: *See—*
Takeuchi, Hidetsugu; Muramatsu, Tsuyoshi; and Kato, Shozo, 4,389,871, Cl. 72-356.000.

Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, to Mita Industrial Co., Ltd. Electrostatic copying apparatus. 4,390,264, Cl. 355-8.000.

Murdock, Robert H., to NEF Systems, Inc. Decorative glass panel railing assembly. 4,390,165, Cl. 256-24.000.

Murphy, Christy A.: *See—*
Barnes, Tracy L.; and Murphy, Christy A., 4,390,149, Cl. 244-31.000.

Murphy, Lynn M. R.: *See—*
Lee, Richard J.; and Murphy, Lynn M. R., 4,390,437, Cl. 252-51.50A.

Murphy, Wesley T. Metal roof system. 4,389,829, Cl. 52-693.000.

Murray, Alan B., to Control Logic (Proprietary) Limited. Servo apparatus for an automatic speed control of vehicles. 4,389,990, Cl. 123-353.000.

Murray, Michael J.: *See—*
Meyer, Leonard S.; Murray, Michael J.; Hayes, Gerald G.; and McClain, Robert L., 4,390,156, Cl. 249-80.000.

Musashi, Kenkichi: *See—*
Koide, Kaoru; Yoneda, Yoshiki; and Musashi, Kenkichi, 4,390,560, Cl. 426-582.000.

Muse, Joel, Jr.: *See—*
Colvin, Howard A.; and Muse, Joel, Jr., 4,390,741, Cl. 585-258.000.

Musha, Toru, to Olympus Optical Co. Ltd. Method and apparatus for detecting focussing error signal of objective lens. 4,390,781, Cl. 250-204.000.

Muskogee Environmental Conservation Co.: *See—*
Scriminger, William F., 4,390,281, Cl. 366-3.000.

Mussinan, Cynthia J.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; Ouwerkerk, Anton V.; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,390,444, Cl. 252-174.110.

Muta, Gensuke: *See—*
Danjo, Hiroyuki; Takimoto, Kazuaki; Muta, Gensuke; and Hiroki, Nobuyoshi, 4,390,166, Cl. 266-44.000.

Mutschler, Otto. India ink drawing implement. 4,390,299, Cl. 401-258.000.

Myers, Daryl L.; and Rice, Stanley, to Western Electric Company, Inc. Methods of and system for clean air delivery to lightguide fiber drawing apparatus. 4,390,357, Cl. 65-2.000.

Myers, George D., to Ashland Oil, Inc. High metal carbo-metallic oil conversion using low inventory of catalyst. 4,390,415, Cl. 208-113.000.

Nabara, Akira: *See—*
Ono, Yoshihiro; Nabara, Akira; and Ikeda, Tomoaki, 4,390,601, Cl. 428-412.000.

Nachtrieb, Paul W. Positive displacement four lobe impeller structure. 4,390,331, Cl. 418-141.000.

Nadella: *See—*
Mallet, Bernard, 4,390,303, Cl. 403-284.000.

Nagai, Hidetaka; Wada, Yasushi; Kobayashi, Ichiro; Tamada, Mitsuru; Ushiyama, Keiichi; and Yamamoto, Toshiyuki, to Nitto Electric Industrial Co., Ltd.; and Kawa Co., Ltd. Antiphlogistic analgesic adhesive. 4,390,520, Cl. 424-28.000.

Nagai, Shinichi. Tape cassette and sound recording and reproducing apparatus for use therefor. 4,390,914, Cl. 360-96.500.

Nagai, Tamiji; and Ishigaki, Yoshio, to Sony Corporation. Television receiver. 4,390,818, Cl. 315-408.000.

Nagamata, Kiyoshi: *See—*
Aoki, Hachiro; Tomita, Hitoshi; and Nagamata, Kiyoshi, 4,389,998, Cl. 123-502.000.

Nagano, Katsumasa: *See—*
Kondo, Fusao; Terao, Toshimi; Nagano, Katsumasa; and Kitano, Kyozo, 4,390,475, Cl. 260-505.00S.

Nagao, Kouichi: *See—*
Ogita, Yasuhiro; Kawasaki, Kazuya; Nagao, Kouichi; and Mori, Naoki, 4,389,854, Cl. 62-157.000.

Nagata, Takao; and Rokutanbo, Yoshiyuki, to Nippon Jidoh Seiki Kabushiki Kaisha. Automatic splicer in tape feeder or the like. 4,390,388, Cl. 156-351.000.

Naimer, Hubert Laurenz: *See—*
Alsch, Gottfried, 4,390,855, Cl. 335-166.000.

Naito, Daiji: *See—*
Tabushi, Iwao; Shimokawa, Kazuhiro; Naito, Daiji; Misaki, Susumu; and Yoshida, Tsutomu, 4,390,740, Cl. 570-146.000.

Naito, Tadashi: *See—*
Noro, Shuhei; and Naito, Tadashi, 4,389,882, Cl. 73-118.000.

Najjar, Victor A., to Research Corporation. Tuftsinyl-tuftsin. 4,390,528, Cl. 424-177.000.

Nakagawa, Junichi: *See—*
Yamashita, Kiichi; Nakagawa, Junichi; and Kaji, Tadao, 4,390,960, Cl. 364-703.000.

Nakajima, Shunichi: *See—*
Murakami, Reiji; and Nakajima, Shunichi, 4,390,872, Cl. 340-679.000.

Nakamichi, Kazuya: *See—*
Sasaki, Takuma; and Nakamichi, Kazuya, 4,390,468, Cl. 260-112.00R.

Nakamura, Kazuharu; Mito, Yoshio; Nakanishi, Yutaka; and Yamada, Toshihiko, to Toyotomi Kogyo Co., Ltd. Petroleum combustion device. 4,390,003, Cl. 126-96.000.

Nakamura, Tadahiko; Nakano, Kenji; and Tajima, Shigeru, to Sony Corporation. Phase servo circuit. 4,390,908, Cl. 360-70.000.

Nakanishi, Yutaka: *See—*
Nakamura, Kazuharu; Mito, Yoshio; Nakanishi, Yutaka; and Yamada, Toshihiko, 4,390,003, Cl. 126-96.000.

Nakano, Jiro; and Miyagi, Hideo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Electronically controlled method and apparatus for varying the amount of fuel injected into an internal combustion engine with acceleration pedal movement and engine temperature. 4,389,997, Cl. 123-492.000.

Nakano, Kenji: *See—*
Nakamura, Tadahiko; Nakano, Kenji; and Tajima, Shigeru, 4,390,908, Cl. 360-70.000.

Nakashima, Tuneyasu: *See—*
Komazawa, Hiroyasu; Mori, Tadashi; Ikenaga, Yukio; Hotta, Hiroshi; and Nakashima, Tuneyasu, 4,390,684, Cl. 528-230.000.

Nakayama, Yoshiki: *See—*
Matsuno, Masahiro; Higuchi, Yasushi; Ohishi, Yutaka; Nakayama, Yoshiki; and Yazawa, Chihiro, 4,390,723, Cl. 562-478.000.

Nalco Chemical Company: *See—*
Kennedy, Carl S.; and Zellmann, Fred, 4,390,438, Cl. 252-56.00D.

Nappholz, Tibor A.: *See—*
Spurrell, Roworth A. J.; Nappholz, Tibor A.; and Swift, Stephen J., 4,390,021, Cl. 128-419.0PG.

Nara, Hideo: *See—*
Morita, Yoshinori; Hayata, Shinzi; Kato, Akifumi; Nara, Hideo; and Watanabe, Tohru, 4,390,669, Cl. 526-65.000.

Nasuno, Toshihiro; and Otoi, Kiyoshi, to Kanebo, Ltd. Makeup compositions in cake form including fibroin-coated and oily material-coated pigments. 4,390,524, Cl. 424-63.000.

Natale, Peter J.: *See—*
Lombardo, Igino; and Natale, Peter J., 4,390,484, Cl. 264-9.000.

National Institute for Researches in Inorganic Materials: *See—*
Fujiki, Yoshinori, 4,390,513, Cl. 423-598.000.

National Research Development Corporation: *See—*
Steen, William M.; and Duley, Walter W., 4,390,774, Cl. 219-121.0FS.
Ward, Ian M.; and McGrath, John C., 4,390,674, Cl. 526-255.000.

National Semiconductor Corporation: *See—*
Russell, Gilbert E.; and Wong, Hee, 4,390,893, Cl. 358-27.000.

Nawa, Hideo, to Aisin Seiki Kabushiki Kaisha. Color coded presser foot assembly. 4,389,956, Cl. 112-240.000.

Nawn, George H.: *See—*
Mehta, Avinash C.; Nawn, George H.; and Taylor, Lloyd D., 4,390,613, Cl. 430-219.000.

Nebiker, Herman, Jr., to Rockwell International Corporation. Variable capacitor with gear train end stop. 4,390,924, Cl. 361-279.000.

NEF Systems, Inc.: *See—*
Murdock, Robert H., 4,390,165, Cl. 256-24.000.

Negi, Virendra S.; and Tague, Steven A., to Honeywell Information Systems Inc. Data processor performing a decimal multiply operation using a read only memory. 4,390,961, Cl. 364-756.000.

Neisius, Karl-Heinz: *See—*
Eichler, Jurgen; Herz, Claus; and Neisius, Karl-Heinz, 4,390,453, Cl. 252-426.000.

Nelson, Donald L., to Dow Chemical Company, The. Phenolic hydroxyl-containing compositions and epoxy resins prepared therefrom. 4,390,680, Cl. 528-97.000.

Nelson, Gary L.: *See—*
White, William H.; Harbison, William C.; and Nelson, Gary L., 4,390,373, Cl. 106-287.120.

Nelson, Marvin D.: *See—*
Kasprzyk, Donald J.; Margenau, David A.; and Nelson, Marvin D., 4,390,859, Cl. 338-25.000.

Nelson, Robert G., to Superwinch, Inc. Winch drive and brake mechanism. 4,390,161, Cl. 254-356.000.

Neptune Microfloc, Inc.: *See—*
Hyde, Paul E.; and Rowell, John A., 4,390,284, Cl. 366-165.000.

New England Nuclear Corporation: *See—*
O'Brien, Robert E.; and Tzodikov, Nathan R., 4,390,517, Cl. 424-1.000.

New York University: *See—*
Rugg, Barry; and Stanton, Robert, 4,390,375, Cl. 127-37.000.

Ngai, Peter Y. Y.: *See—*
Herst, Douglas J.; and Ngai, Peter Y. Y., 4,390,930, Cl. 362-224.000.

Nichols, Michael F.: *See—*
Hahn, Allen W.; Nichols, Michael F.; Sharma, Ashok K.; and Hellmuth, Eckhard W., 4,390,405, Cl. 204-415.000.

Nicholson, Harold L., to Atlantic Richfield Company. Semi-continuous process for making star-block copolymers. 4,390,663, Cl. 525-53.000.

Nicholson, Terence P. Gaskets. 4,390,185, Cl. 277-235.00B.

Niehaus, Norbert; Popperling, Rolf; and Bester, Horst, to Mannesmann Aktiengesellschaft. High-alloyed steel being resistive to corrosion by natural gas. 4,390,367, Cl. 75-125.000.

Nifco Inc.: *See—*
Yuda, Takuo, 4,389,759, Cl. 24-214.000.

Niibori, Kenji; and Ishihama, Toshio, to Seiwa Kagaku Kabushiki Kaisha. Apparatus for opening and closing a flexible screen in a greenhouse or the like. 4,390,054, Cl. 160-265.000.

Niimi, Koji; and Kawakami, Fukushi, to Nippon Gakki Seizo Kabushiki Kaisha. Reverberation characteristics measuring device. 4,389,892, Cl. 73-586.000.

Nikko Kogyo Kabushiki Kaisha: *See—*
Sohma, Yoshio, 4,389,754, Cl. 24-16.0PB.

Niles, Paul D.; and Normann, Richard W., to Bendix Corporation, The. Modular connector assembly having an electrical contact. 4,390,221, Cl. 339-17.00M.

Nilsson, Sten E., to Saab-Scania Aktiebolag. Heating and ventilation system for vehicles. 4,390,124, Cl. 237-12.30A.

Nippon Electric Co., Ltd.: *See—*
Esho, Sotaro; and Gokan, Hiroshi, 4,390,404, Cl. 204-192.00E.
Higashiyama, Naotoshi; and Doi, Kazuyuki, 4,390,746, Cl. 179-1.0GE.
Ishimoto, Shoji, 4,390,797, Cl. 307-264.000.
Yanagisawa, Masahiro, 4,390,562, Cl. 427-11.000.

Nippon Electric Glass Company, Limited: *See—*
Daiku, Nobutaka, 4,390,637, Cl. 501-64.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Niimi, Koji; and Kawakami, Fukushi, 4,389,892, Cl. 73-586.000.

Nippon Jidoh Seiki Kabushiki Kaisha: *See—*
Nagata, Takao; and Rokutanbo, Yoshiyuki, 4,390,388, Cl. 156-351.000.

Nippon Kogaku K. K.: *See—*
Mori, Ikuo, 4,390,252, Cl. 350-471.000.
Suwa, Kyoichi, 4,390,279, Cl. 356-401.000.

Nippon Kogaku K.K.: *See—*
Nohda, Masao; Umemura, Izumi; and Arai, Toshiyuki, 4,390,255, Cl. 351-212.000.
Takemae, Mikio; and Ohkubo, Yuji, 4,390,259, Cl. 354-34.000.

Nippon Petrochemicals Company, Limited: *See—*
Sato, Atsushi; Shimizu, Isoo; and Takahashi, Naoya, 4,390,194, Cl. 282-27.500.

Nippon Soken, Inc.: *See—*
Igashira, Toshihiko; Nomura, Ken; Abe, Seiko; and Ishida, Yasuhiko, 4,390,000, Cl. 123-549.000.

Nippon Thompson Co., Ltd.: *See—*
Mottate, Tatsuo, 4,390,215, Cl. 308-6.00C.

Nippondenso Co., Ltd.: *See—*
Kataoka, Masami; and Higo, Nobumasa, 4,389,902, Cl. 73-861.770.
Takeuchi, Hidetsugu; Muramatsu, Tsuyoshi; and Kato, Shozo, 4,389,871, Cl. 72-356.000.
Tokitsu, Naoki, 4,390,905, Cl. 360-2.000.

Nisen, Daniel B.: *See—*
Lacy, Lewis L.; Robinson, Michael B.; Rathz, Thomas J.; Katz, Lester; and Nisen, Daniel B., 4,389,904, Cl. 73-863.110.

Nishida, Takashi: *See—*
Omura, Yoshiaki; Mori, Fumio; Fujita, Yoshiji; Nishida, Takashi; Tamai, Yoshin; Wada, Fumio; and Itoi, Kazuo, 4,390,547, Cl. 424-304.000.

Nishikawa, Masahiko; Ishibashi, Hiroaki; and Furukawa, Hidenori, to Chisso Corporation. Process for preparing porous spherical cellulose particles. 4,390,691, Cl. 536-65.000.

Nishimura, Sanji: *See—*
Watanabe, Morio; Nishimura, Sanji; and Watanabe, Nobuatsu, 4,390,508, Cl. 423-112.000.

Nissan Chemical Industries, Ltd.: *See—*
Taniguchi, Tokuyuki; Yashima, Iwao; Ota, Masanori; and Sasahara, Hitoshi, 4,390,339, Cl. 8-94.180.

Nissan Motor Company, Limited: *See—*
Fujikawa, Tadashi; and Goto, Masami, 4,390,128, Cl. 239-284.00A.
Mori, Kazuyuki; Mizote, Masanori; Takeda, Hitoshi; Yamaki, Kiyoshi; Suzuki, Hidetaka; Nomura, Hiroyuki; and Kawasaki, Teruo, 4,390,948, Cl. 364-424.000.

Nissen, Warren I.; and Petrillo, Richard J., to Gillette Company, The. Shaving implement. 4,389,773, Cl. 30-50.000.

Nitto Chemical Industry Co., Ltd.: *See—*
Watanabe, Ichiro; Enomoto, Kanehiko; and Ogawa, Yasuo, 4,390,631, Cl. 435-244.000.

Nitto Electric Industrial Co., Ltd.: *See—*
Nagai, Hidetaka; Wada, Yasushi; Kobayashi, Ichiro; Tamada, Mitsuru; Ushiyama, Keiichi; and Yamamoto, Toshiyuki, 4,390,520, Cl. 424-28.000.

Nitzberg, Leonard R. Machine for mining thin seamed hard material in-situ between adjacent auger holes. 4,390,212, Cl. 299-57.000.

Niwa, Susumu, to Kabushiki Kaisha Hosokawa Yoko. Heat-sealing sheet material. 4,390,552, Cl. 426-126.000.

NL Sperry-Sun, Inc.: *See—*
Shawhan, Elbert N., 4,390,975, Cl. 367-82.000.

Noble, Milton L.; and Hoefer, William G., to United States of America, Air Force. Scan corrected vidicon camera apparatus. 4,390,816, Cl. 315-370.000.

Noguchi, Hiroshi: *See—*
Yamada, Hirotada; Jimpo, Kiyokazu; Okuda, Takao; Noguchi, Hiroshi; and Tobiki, Hisao, 4,390,535, Cl. 424-246.000.

Nohda, Masao; Umemura, Izumi; and Arai, Toshiyuki, to Nippon Kogaku K.K. Eye-refractometer device. 4,390,255, Cl. 351-212.000.

Noisier, Guy, to Societe Industrielle de Brevets et D'Etudes (SIBE). Carburettors with acceleration pump. 4,390,480, Cl. 261-34.00A.

Nomode Incorporated: *See—*
Webster, David F., 4,389,782, Cl. 33-1.0BB.

Nomura, Hiroyuki: *See—*
Mori, Kazuyuki; Mizote, Masanori; Takeda, Hitoshi; Yamaki, Kiyoshi; Suzuki, Hidetaka; Nomura, Hiroyuki; and Kawasaki, Teruo, 4,390,948, Cl. 364-424.000.

Nomura, Ken: *See—*
Igashira, Toshihiko; Nomura, Ken; Abe, Seiko; and Ishida, Yasuhiko, 4,390,000, Cl. 123-549.000.

Nordischer Maschinenbau Rud. Baader GmbH & Co KG: *See—*
Kristinsson, Sigurdur; and Johannesson, Orn, 4,389,750, Cl. 17-63.000.

Normann, Richard W.: *See—*
Niles, Paul D.; and Normann, Richard W., 4,390,221, Cl. 339-17.00M.

Noro, Shuhei; and Naito, Tadashi, to Toyota Jidosha Kabushiki Kaisha. Method and apparatus for determining an abnormality in a valve actuating system of an internal combustion engine. 4,389,882, Cl. 73-118.000.

North American Philips Consumer Electronics Corp.: *See—*
Mitchell, Robert B.; and Swank, Harry R., 4,390,809, Cl. 313-482.000.

North American Philips Corporation: *See—*
Ophir, Jonathan; and Maklad, Nabil F., 4,389,893, Cl. 73-599.000.

Northcote, Reginald D., to Parkinson Cowan GWB Limited. Grates. 4,389,978, Cl. 122-4.00D.

Northern Telecom, Inc.: *See—*
Suffi, Louis; Golden, James E.; and Burtelson, Frederick W., 4,390,744, Cl. 174-41.000.

Northern Telecom Limited: *See—*
Bond, John A.; Li, Yuan-Lu; and Crane, Leslie J., 4,390,898, Cl. 358-119.000.

Norton, Christopher W.: *See—*
Norton, Leo A.; and Norton, Christopher W., 4,389,799, Cl. 37-2.00R.

Norton, Leo A.; and Norton, Christopher W., to Lyndale Holdings Limited. Scrub crusher. 4,389,799, Cl. 37-2.00R.

Noshiro, Makoto: *See—*
Oda, Yoshio; Morikawa, Shinsuke; Ikemura, Masaaki; Yarita, Tomio; Noshiro, Makoto; Gotoh, Isao; Jitsugiri, Yukio; Yonemori, Shigeaki; Sato, Kimihiko; and Uchida, Keiichi, 4,390,511, Cl. 423-469.000.

Novak, Milan, to Canada, Her Majesty the Queen in right of, as represented by the Minister of Natural Resources. Shock-absorbing animal trap. 4,389,807, Cl. 43-96.000.

Novak, Peter: *See—*
Briner, Emil; Novak, Peter; Tanner, Bruno; and Gasser, Hermann, 4,389,840, Cl. 57-267.000.

Novak, Thaddeus. Animal feeding apparatus. 4,389,976, Cl. 119-62.000.

NRM Corporation: *See—*
Singh, Anand P.; and Shichman, Daniel, 4,390,334, Cl. 425-28.00R.

NSK-Warner K.K.: *See—*
Takagi, Masayuki, 4,390,143, Cl. 242-107.40A.

Nuovo Pignone S.p.A.: *See—*
Corain, Luciano, 4,390,044, Cl. 139-98.000.

Nussbaum, Marvin L.; and Knaggs, Edward A., to Stepan Chemical Company. Sulfonation petroleum composition. 4,390,474, Cl. 260-505.00R.

NWL Transformers: *See—*
Laugesen, Thomas C., 4,390,830, Cl. 323-237.000.

Nygren, Robert S.: *See—*
Merk, Wolfgang; Wagner, Rudolf M.; Werle, Peter; and Nygren, Robert S., 4,390,732, Cl. 568-648.000.

Obase, Hiroyuki: *See—*
Teranishi, Masayuki; Obase, Hiroyuki; Takai, Haruki; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,390,536, Cl. 424-246.000.

Oberg, Lars G., to Dynatrans AB. Container truck for lifting and carrying away a container. 4,390,314, Cl. 414-547.000.

Obermeier, Manfred: *See—*
Adelhard, Georg; Hasselberg, Herbert; Obermeier, Manfred; Sierwald, Karl; Szedlacsek, Jozsef; and Somogyi, Gyorgy, 4,389,838, Cl. 57-71.000.

Oberstrass, Detley, to Barmag Barmer Maschinenfabrik AG. Yarn false twisting apparatus. 4,389,841, Cl. 57-340.000.

O'Brien, Kirk G.; and DeBrita, John A., to General Electric Company. Dynamoelectric machine rotors with mechanical separators. 4,390,806, Cl. 310-261.000.

O'Brien, Robert E.; and Tzodikov, Nathan R., to New England Nuclear Corporation. Method, composition and kit for stabilizing radiolabeled compounds. 4,390,517, Cl. 424-1.000.

Occidental Chemical Corporation: *See—*
McKaveney, James P., 4,390,458, Cl. 252-503.000.

Occidental Research Corp.: *See—*
DiGiacomo, Peter M.; and Dines, Martin B., 4,390,690, Cl. 528-395.000.
Hard, Robert A.; and Prieto, Martin A., 4,390,365, Cl. 75-84.400.

Ochi, Kiyoyuki: *See—*
Ando, Tomonori; Hanyuda, Toshiaki; Shishido, Satohiro; Sano, Fumiaki; Ochi, Kiyoyuki; Sugimoto, Toshiaki; and Okino, Yoshiro, 4,390,662, Cl. 525-28.000.

Oda, Yoshio; Morikawa, Shinsuke; Ikemura, Masaaki; Yarita, Tomio; Noshiro, Makoto; Gotoh, Isao; Jitsugiri, Yukio; Yonemori, Shigeaki; Sato, Kimihiko; and Uchida, Keiichi, to Asahi Glass Company Ltd. Process for producing SF_6 through SF_5Cl. 4,390,511, Cl. 423-469.000.

Odman, Rolf R., to Luossavaara-Kiirunavaara Aktiebolag. Heat exchanger. 4,389,796, Cl. 34-168.000.

Officine Meccaniche Mario Riboldi S.N.C. di Renato, Carlo Riboldi & C.: *See—*
Riboldi, Renato, 4,389,874, Cl. 72-389.000.

Ofuji, Hiroshi. Shotgun cartridge. 4,389,939, Cl. 102-458.000.

Ogawa, Yasuo: *See—*
Watanabe, Ichiro; Enomoto, Kanehiko; and Ogawa, Yasuo, 4,390,631, Cl. 435-244.000.

Ogawa, Yukio: *See—*
Hirohata, Michio; Ogawa, Yukio; and Taguchi, Tetsuya, 4,390,262, Cl. 354-230.000.

Ogita, Yasuhiro; Kawasaki, Kazuya; Nagao, Kouichi; and Mori, Naoki, to Tokyo Shibaura Denki Kabushiki Kaisha. High speed freezing system for a refrigerator. 4,389,854, Cl. 62-157.000.

Ohara, Yuji; and Horikawa, Kazuo, to Fuji Photo Film Co., Ltd. Density adjusting method in image recording. 4,390,882, Cl. 346-1.100.

Ohishi, Yutaka: *See—*
Matsuno, Masahiro; Higuchi, Yasushi; Ohishi, Yutaka; Nakayama, Yoshiki; and Yazawa, Chihiro, 4,390,723, Cl. 562-478.000.

Ohkubo, Yuji: *See—*
Takemae, Mikio; and Ohkubo, Yuji, 4,390,259, Cl. 354-34.000.

Ohnishi, Norio; and Ibuki, Rinta, to Fujisawa Pharmaceutical Co., Ltd. Method for preparing stable crystals of salt of Ceftizoxime. 4,390,694, Cl. 544-22.000.

Ohno, Ryotaro: *See—*
Ishikawa, Katuhiro; Ohno, Ryotaro; and Arakawa, Masatoshi, 4,390,717, Cl. 560-114.000.

Ohshima, Kazushi: *See—*
Kudoh, Akihide; Kawamata, Motoo; Ohshima, Kazushi; Kotani, Makoto; Tsuda, Takeshi; and Morita, Satoshi, 4,390,737, Cl. 568-804.000.

Ohshita, Akihiro, to Sharp Kabushiki Kaisha. Digital volume control. 4,390,834, Cl. 179-1.0VL.

Ohta, Kenji; and Takahashi, Akira, to Sharp Kabushiki Kaisha. Magneto-optic memory medium. 4,390,600, Cl. 428-621.000.

Ohta, Yoshihiro: *See—*
Sampei, Tohru; Asada, Akihiro; Ohta, Yoshihiro; and Iwasaki, Syunji, 4,390,747, Cl. 179-1.0SC.

Ohtsu, Masamitsu: *See—*
Furumoto, Mitsunobu; Yano, Osahiko; Taniguchi, Hiroshi; Kubo, Kanji; and Ohtsu, Masamitsu, 4,390,906, Cl. 360-19.100.

Oi, Tetsu: *See—*
Miyauchi, Katsuki; Oi, Tetsu; and Suganuma, Tsuneo, 4,390,460, Cl. 252-518.000.

Oka, Ken-ichiro; Mineo, Masatoshi; and Ono, Terumichi, to Toray Industries, Inc. Polyester fiber and process for producing same. 4,390,685, Cl. 528-272.000.

Okada Kogyo Kabushiki Kaisha: *See—*
Okada, Saburo, 4,389,776, Cl. 30-162.000.

Okada, Saburo, to Okada Kogyo Kabushiki Kaisha. Replaceable blade type knife. 4,389,776, Cl. 30-162.000.

Okamoto, Miyoshi; Yoshida, Syusuke; and Kurata, Nobuo, to Toray Industries, Inc. Fur-like synthetic material and process of manufacturing the same. 4,390,572, Cl. 428-15.000.

Okamoto, Miyoshi: *See—*
Umezawa, Masao; and Okamoto, Miyoshi, 4,390,566, Cl. 427-198.000.

Okamoto, Takekuni: *See—*
Sado, Ryoichi; Morikawa, Yoshitusgu; Okamoto, Takekuni; and Tahara, Kazutoki, 4,390,765, Cl. 200-159.00B.

Okaniwa, Kenichiro; Masukawa, Toyoaki; Yamashita, Kiyoshi; and Ishikawa, Wataru, to Konishiroku Photo Industry Co., Ltd. Method for the formation of photographic images. 4,390,617, Cl. 430-350.000.

Okano, Michiaki; and Furuichi, Shuhei, to Kabushiki Kaisha Morita Seisakusho. Occlusion pressure sensor. 4,390,028, Cl. 128-777.000.

O'Keefe, David F.: *See—*
Holan, George; and O'Keefe, David F., 4,390,715, Cl. 424-282.000.

Okino, Yoshiro: *See—*
Ando, Tomonori; Hanyuda, Toshiaki; Shishido, Satohiro; Sano, Fumiaki; Ochi, Kiyoyuki; Sugimoto, Toshiaki; and Okino, Yoshiro, 4,390,662, Cl. 525-28.000.

Okouchi, Isao: *See—*
Otake, Katsumoto; Miyai, Masahiko; Mukai, Yasuteru; and Okouchi, Isao, 4,390,058, Cl. 165-1.000.

Okuda, Takao: *See—*
Yamada, Hirotada; Jimpo, Kiyokazu; Okuda, Takao; Noguchi, Hiroshi; and Tobiki, Hisao, 4,390,535, Cl. 424-246.000.

Olaf Fjeldsend A/S: *See—*
Sundt, Eilert, 4,390,423, Cl. 210-222.000.

Olberding, Leonard E. Double door assembly. 4,389,817, Cl. 49-163.000.

Olexa, Stephanie A.: *See—*.
Sawyer, Roy T.; Stent, Gunther S.; Budzynski, Andrei Z.; and Olexa, Stephanie A., 4,390,630, Cl. 435-226.000.

Olin Corporation: *See—*
Kircher, Morton S., 4,390,408, Cl. 204-284.000.

Olivetti Controllo Numerico S.p.A.: *See—*
Lauro, Luciano, 4,390,865, Cl. 340-347.0SY.

Olmsted, James H., to McCoy Industries, Inc. Sawhorse and sawhorse kit and method of packaging thereof. 4,390,081, Cl. 182-151.000.

Olsen, John D.; and Allen, Stephen A., to Burroughs Corporation. Self-managing variable field storage station employing a cursor for handling nested data structures. 4,390,945, Cl. 364-200.000.

Olson, John H.; and Schlaufman, Robert J., to Corning Glass Works. Laminated gob for pressing glass articles. 4,390,593, Cl. 428-410.000.

Olson, Martin L.: *See—*
Harrison, Eugene O.; Martin, David J.; and Olson, Martin L., 4,390,017, Cl. 604-270.000.

Olympus Optical Co., Ltd.: *See—*
Imai, Toshihiro, 4,390,250, Cl. 350-465.000.
Mizokami, Kazunori, 4,390,258, Cl. 354-24.000.
Mizumoto, Morihide, 4,390,012, Cl. 128-4.000.
Musha, Toru, 4,390,781, Cl. 250-204.000.
Watanabe, Seizo, 4,390,917, Cl. 360-128.000.
Yoshinaga, Makoto, 4,390,254, Cl. 350-523.000.

O'Mara, Kerry D., to RCA Corporation. Method of making a laminated recorded disc. 4,390,487, Cl. 264-107.000.

Omark Industries, Inc.: *See—*
Hutson, Marvin R.; and Dutmers, Louis G., 4,390,132, Cl. 241-55.000.

Omron Tateisi Electronics Co.: *See—*
Kawashima, Keisuke; Saito, Yoshitane; Yamada, Akihiro; and Yano, Satoshi, 4,390,966, Cl. 364-900.000.

Omura, Yoshiaki; Mori, Fumio; Fujita, Yoshiji; Nishida, Takashi; Tamai, Yoshin; Wada, Fumio; and Itoi, Kazuo, to Kuraray Co., Ltd. 2,2-Dimethyl-3-(substituted ethyl)cyclopropane carboxylate pesticidal compositions and methods. 4,390,547, Cl. 424-304.000.

OMYA GmbH: *See—*
Barthelmess, Ulrich, 4,390,419, Cl. 209-11.000.

O'Neal, Larry. Inflatable dock seal. 4,389,821, Cl. 52-2.000.

O'Neill, Michael J.; and Hill, Harold I., to Perkin-Elmer Corporation, The. Temperature sensor for a resistance furnace. 4,390,290, Cl. 374-142.000.

O'Neill, Padraic S.: *See—*
Weston, Charles W.; and O'Neill, Padraic S., 4,390,509, Cl. 423-313.000.

Ong, Siak H. Intake port for an internal combustion engine. 4,389,988, Cl. 123-306.000.

Onigata, Yoshio; Fukui, Tsutomu; and Yajika, Kazuo, to Universal Pioneer Corporation. Apparatus for maintaining rotational speed in disk reproducing device. 4,390,977, Cl. 369-50.000.

Ono Pharmaceutical Co., Ltd.: *See—*
Yamato, Takashi; Endo, Hirofumi; Matsumoto, Kimiichiro; and Miyake, Hajimu, 4,390,548, Cl. 424-321.000.

Ono, Terumichi: *See—*
Oka, Ken-ichiro; Mineo, Masatoshi; and Ono, Terumichi, 4,390,685, Cl. 528-272.000.

Ono, Yoshihiro; Nabara, Akira; and Ikeda, Tomoaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium and process for the production thereof. 4,390,601, Cl. 428-412.000.

Ooi, Kazushige: *See—*
Sato, Itsuzo; Ooi, Kazushige; Saito, Kikuo; Takemura, Yasuo; and Shinohara, Toshihiro, 4,390,895, Cl. 358-44.000.

Ophir, Jonathan; and Maklad, Nabil F., to North American Philips Corporation. Precision ultrasound attenuation measurement. 4,389,893, Cl. 73-599.000.

Oppelt, Arnulf: *See—*
Ganssen, Alexander; Oppelt, Arnulf; and Loeffler, Wilfried, 4,390,840, Cl. 324-309.000.

Orangeburg Technologies, Inc.: *See—*
Burnham, Francis L., 4,390,323, Cl. 417-253.000.

O'Rear, Dennis J.; and Mayer, Jerome F., to Chevron Research Company. Hydrocarbon upgrading process. 4,390,413, Cl. 208-61.000.

Ormond, A. Newman. Analog to digital converter without zero drift. 4,390,864, Cl. 340-347.0NT.

Orova, Josef; Roderer, Herbert; Schmid, Hans D.; and Steffen, Horst-G., to Robert Bosch GmbH. Magneto generator for ignition systems. 4,390,804, Cl. 310-70.00R.

Ortho Diagnostics, Inc.: *See—*
Lombardo, Igino; and Natale, Peter J., 4,390,484, Cl. 264-9.000.

Orthoefer, Frank T.: *See—*
Gibson, Paul W.; and Orthoefer, Frank T., 4,390,450, Cl. 252-307.000.

Osaka, Hiroshi; and Honma, Akira, to Clarion Co., Ltd. Television signal processing system. 4,390,899, Cl. 358-120.000.

Ostler, Charles R.; and Hampton, William A., to Container Corporation of America. Corrugated paperboard pallet deck. 4,390,154, Cl. 248-346.000.

Ostroski, Richard J.; Aberer, James B.; and Best, Gary, to Rival Manufacturing Company. Bag opening device for can openers. 4,389,780, Cl. 30-408.000.

Oswald, Alexis A., to Exxon Research and Engineering Co. Process for carbonylation using tetraalkyl phosphonium substituted phosphine and amine transition metal complexes as catalyst. 4,390,729, Cl. 568-454.000.

Ota, Masanori: *See—*
Taniguchi, Tokuyuki; Yashima, Iwao; Ota, Masanori; and Sasahara, Hitoshi, 4,390,339, Cl. 8-94.180.

Otake, Katsumoto; Miyai, Masahiko; Mukai, Yasuteru; and Okouchi, Isao, to Hitachi, Ltd. Method of monitoring condenser performance and system therefor. 4,390,058, Cl. 165-1.000.

Otoi, Kiyoshi: *See—*
Nasuno, Toshihiro; and Otoi, Kiyoshi, 4,390,524, Cl. 424-63.000.

Ott, Hans: *See—*
Celio, Tino; and Ott, Hans, 4,390,280, Cl. 356-445.000.

Oughton, Richard W., to Du Pont Canada Inc. Control of residual solvent in oat products. 4,390,469, Cl. 260-123.500.

Ouwerkerk, Anton V.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; Ouwerkerk, Anton V.; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,390,444, Cl. 252-174.110.

Ouwerkerk, Johannes H. W.: *See—*
Cramer, Rudolph E.; and Ouwerkerk, Johannes H. W., 4,390,346, Cl. 48-180.00R.

Overbury, Douglas G.; and McDougall, Robert J., to Black & Decker Inc. Ribbed handle and guard construction for chain saw. 4,389,779, Cl. 30-382.000.

Oy Lohja AB: *See—*
Suntola, Tuomo S.; Pakkala, Arto J.; and Lindfors, Sven G., 4,389,973, Cl. 118-725.000.

Oy Wartsila Oy: *See—*
Flander, Walter; Leikas, Jukka; and Hirvonen, Vesa, 4,389,764, Cl. 29-416.000.

Oyama, Hiroshi: *See—*
Ando, Shizuka; Oyama, Hiroshi; and Yamaguchi, Toshio, 4,389,738, Cl. 4-420.200.

Oyobe, Isao: *See—*
Takeguchi, Masanobu; and Oyobe, Isao, 4,390,432, Cl. 210-748.000.

Oziomek, James: *See—*
Lee, Kang I.; and Oziomek, James, 4,390,673, Cl. 526-212.000.

Ozite Corporation: *See—*
Pickens, Robert C., Jr.; Thomas, Reese R.; and Ellicson, John W., 4,390,582, Cl. 428-85.000.

P. A. Rentrop, Hubbert & Wagner Fahrzeugausstattungen GmbH & Co.: *See—*
Fickelscher, Kurt G., 4,390,328, Cl. 418-45.000.

Pakkala, Arto J.: *See—*
Suntola, Tuomo S.; Pakkala, Arto J.; and Lindfors, Sven G., 4,389,973, Cl. 118-725.000.

Palm, Bengt A., to Alfa-Laval AB. Sterilization of bacterial concentrates. 4,390,350, Cl. 55-38.000.

Palmer, James K.: *See—*
Long, James C.; and Palmer, James K., 4,389,898, Cl. 73-861.120.

Panttaja, Swen A. Herbicide wand and method for making. 4,389,812, Cl. 47-1.500.

Papageorges, Georges: *See—*
De Ceuster, Jean; and Papageorges, Georges, 4,390,395, Cl. 162-5.000.

Paper, Calmenson & Co.: *See—*
Wright, Richard E., 4,390,071, Cl. 172-701.300.

Paquette, Gerard A. Fuel preheater. 4,390,007, Cl. 126-350.00R.

Paradyne Corporation: *See—*
Betts, William L.; and Martinez, Kenneth, 4,390,843, Cl. 328-138.000.

Parasuraman, Balakrishna: *See—*
Wood, Leonard J.; Parasuraman, Balakrishna; Williams, Edwin H.; Alexander, Mark G.; and Montgomery, Richard C., Jr., 4,390,981, Cl. 370-56.000.

Parish, John R. Self-collapsible, inflatable device. 4,389,961, Cl. 114-345.000.

Parish, Max M. Practice pitching apparatus. 4,390,181, Cl. 273-26.00A.

Parker, Stephen J.: *See—*
Courtney, Robert W.; Parker, Stephen J.; and Threadgold, Alan C., 4,390,615, Cl. 430-315.000.

Parkinson Cowan GWB Limited: *See—*
Northcote, Reginald D., 4,389,978, Cl. 122-4.00D.

Pashoogian, Michael: *See—*
Johnson, David A.; Wright, Joseph B.; and Pashoogian, Michael, 4,390,039, Cl. 137-315.000.

Patel, Parsotam T.: *See—*
Bergeron, David L.; and Patel, Parsotam T., 4,390,890, Cl. 357-44.000.

Patton, John T.; and Canfield, Carl M., to Champlin Petroleum Company. Carbon dioxide stimulated oil recovery process. 4,390,068, Cl. 166-267.000.

Patzke, Jorg: *See—*
Weise, Carlos; Wolfer, Dietrich; and Patzke, Jorg, 4,390,656, Cl. 524-493.000.

Paul Revere Corporation, The: *See—*
Kluver, Leroy; and Arnold, John, 4,389,929, Cl. 100-88.000.
Rutschilling, Paul C., 4,389,930, Cl. 100-88.000.

Paulve, Marcel L.. A. Undergrowth crusher. 4,390,134, Cl. 241-101.200.

Pav, Josef, to Kleinewefers GmbH. Calender with composite outermost rolls. 4,389,932, Cl. 100-162.00B.

Pav, Josef, to Kleinewefers GmbH. Calender. 4,389,933, Cl. 100-162.00B.

Payette, Lionel J.: *See—*
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,390,590, Cl. 428-383.000.

Peake, Steven L., to American Cyanamid Company. Bis-thioalkylfurans useful as cyclopentenone prostaglandin intermediates. 4,390,707, Cl. 549-214.000.

Pearson, Erik W., to Superscope, Inc. Noise control system for FM radio. 4,390,749, Cl. 179-1.0GJ.

Pearson, James E., to United Technologies Corporation. Adaptive laser output coupler. 4,390,991, Cl. 372-21.000.

Pearson, Richard W. Apparatus and method for monitoring periodic dispensation of pills. 4,389,963, Cl. 116-308.000.

Peck, Alan M.; Tutt, Kingsley J.; and Mansfield, Graham J., to USM Corporation. Machine adapted for use in the manufacture of shoes. 4,389,861, Cl. 69-6.500.

Peck, John H., to United States of America, Army. Ammunition belt feed magazine system. 4,389,918, Cl. 89-34.000.

Peck, Richard M.; Reif, Robert B.; and Albrechtson, Loren R., to Peck, Richard M. Color facsimile printing device comprising photosensitive ink in pores. 4,390,614, Cl. 430-252.000.

Pecoraro, Theresa A.: *See—*
Chianelli, Russell R.; and Pecoraro, Theresa A., 4,390,514, Cl. 423-509.000.

Peczkowski, Jurgen: *See—*
Linssen, Mathias; and Peczkowski, Jurgen, 4,390,130, Cl. 239-585.000.

Peek, Sanford C., to GTE Laboratories Incorporated. Lighting apparatus. 4,390,814, Cl. 315-320.000.

Pehrson, Jens E., to Telefonaktiebolaget L M Ericsson. Method and an arrangement for supervising faults when transmitting data between computers. 4,390,989, Cl. 371-22.000.

Pelliccia, Raymond A. Vibration sensor and electrical power shut off device. 4,390,922, Cl. 361-170.000.

Peppers, James M.: *See—*
Bigham, Bobby J., 4,390,115, Cl. 222-326.000.

Perbet, Jean Noel: *See—*
Hareng, Michel; Le Berre, Serge; Leclerc, Pierre; and Perbet, Jean Noel, 4,390,244, Cl. 350-333.000.

Perera, Slobodan R.: *See—*
Hertrich, Friedrich R.; and Perera, Slobodan R., 4,390,912, Cl. 360-78.000.

Performance Industries, Inc.: *See—*
Boyesen, Eyvind, 4,389,982, Cl. 123-73.00R.

Pergler, Charles C.: *See—*
Faiks, Frederick S.; Pergler, Charles C.; Whitwam, Ronald L.; Knoblauch, Jack R.; Beukema, Duane M.; and Hozeski, Kenneth W., 4,390,206, Cl. 297-300.000.

Perkin-Elmer Corporation, The: *See—*
La Fiandra, Carlo F., 4,390,929, Cl. 362-216.000.
O'Neill, Michael J.; and Hill, Harold I., 4,390,290, Cl. 374-142.000.

Perkins, Lawrence B., to W. T. Fail, Inc., a part interest. Gas regulation device for gas actuated valves. 4,390,037, Cl. 137-240.000.

Pesa, Frederick A.; and Graham, Anne M., to Standard Oil Company, The. Upgrading synthesis gas. 4,390,639, Cl. 518-713.000.

Peters, Thomas E.; and McColl, James R., to GTE Laboratories Incorporated. Method of preparing stoichiometric zinc silicate phosphor with improved brightness and persistence. 4,390,449, Cl. 252-301.60F.

Peterson Manufacturing Co.: *See—*
Slater, Charles A., Jr.; and Darby, Spencer A., 4,390,936, Cl. 362-390.000.

Petrillo, Richard J.: *See—*
Nissen, Warren I.; and Petrillo, Richard J., 4,389,773, Cl. 30-50.000.

Petron, Darlene M. Mail sorter with an expandable bellows binding. 4,390,100, Cl. 211-10.000.

Pfenninger, Heinz: *See—*
Bruttel, Beat; and Pfenninger, Heinz, 4,390,342, Cl. 8-524.000.

Pfizer Inc.: *See—*
Walinsky, Stanley W., 4,390,670, Cl. 526-79.000.
Weeks, Paul D.; and Allingham, Robert P., 4,390,709, Cl. 549-418.000.

Phelan, Charles M., to Globe Oil Tools, Inc. Drill bit lubricant circulation system. 4,390,072, Cl. 175-229.000.

Philip Morris Incorporated: *See—*
Gonzalez, Hector M., 4,390,091, Cl. 198-358.000.

Phillips, Charles E.: *See—*
Bjorklund, Glenn J.; and Phillips, Charles E., 4,390,876, Cl. 340-825.170.

Phillips Petroleum Company: *See—*
DeShon, Wallace E., 4,390,947, Cl. 364-200.000.
Scinta, James; and Hart, Peter J., 4,390,411, Cl. 208-11.0LE.
Stacy, Carl J., 4,390,648, Cl. 523-216.000.

Photax (London) Ltd.: *See—*
Dunn, Sidney R., 4,389,803, Cl. 40-361.000.

Phung, Nhu H.: *See—*
Amigues, Pierre; Chauvin, Yves; Commereuc, Dominique; Gaillard, Jean; and Phung, Nhu H., 4,390,431, Cl. 210-724.000.

Phy, William S., to Fairchild Camera & Instrument Corp. Lead format for tape automated bonding. 4,390,598, Cl. 428-577.000.

Physical Systems, Inc.: *See—*
Hutter, Charles G., III, 4,390,576, Cl. 428-40.000.

Piana, Giuseppe S., to UNOPER S.r.l. Beverage extracting and dispensing machine. 4,389,925, Cl. 99-289.00R.

Picavet, Rudolf P. Alternating rotor motor with rotor positioning sensors. 4,390,327, Cl. 418-35.000.

Pickens, Robert C., Jr.; Thomas, Reese R.; and Ellicson, John W., to Ozite Corporation. Cut pile fabric with carrier and texturized loops. 4,390,582, Cl. 428-85.000.

Pickrel, Jack D. Method of and apparatus for comminuting material. 4,390,131, Cl. 241-1.000.

Pierrel, S.p.A.: *See—*
Riva, Mario; and Toscano, Luciano, 4,390,533, Cl. 424-243.000.

Pierresteguy, Jean-Francois J. Distribution frame. 4,390,755, Cl. 179-98.000.

Pirro, Armand, to Cosco, Inc. (Tucker Housewares Div.). Handle interlock for a trash can lid. 4,390,110, Cl. 220-318.000.

Pitney Bowes Inc.: *See—*
Dlugos, Daniel F., 4,390,952, Cl. 364-464.000.

Player, Wayne H., to Howmet Aluminum Corporation. Modular roof skylight. 4,389,823, Cl. 52-200.000.

Plough, Inc.: *See—*
Quick, Timothy W., 4,390,442, Cl. 252-106.000.

Ploumen, Hubert J., to Hollandse Signaalapparaten B.V. Power supply circuit. 4,390,896, Cl. 358-73.000.

Plyler, Robert G.; and Suverison, Lyle B., to General Motors Corporation. Blade terminal with protected latch tangs. 4,390,231, Cl. 339-217.00S.

Podell, Jack; and Haner, Douglas, to SB/JP Enterprises, Inc. Bolt-together building set for children. 4,389,808, Cl. 46-16.000.

Pohlmann, Klaus-Dieter: *See—*
Becker, Kunibert; Kirchbrucher, Rudiger; Lagodka, Gunter; and Pohlmann, Klaus-Dieter, 4,390,308, Cl. 405-299.000.

Poikonen, Jorma: *See—*
Elo, Ari; and Poikonen, Jorma, 4,390,325, Cl. 417-379.000.

Polaroid Corporation: *See—*
Mehta, Avinash C.; Nawn, George H.; and Taylor, Lloyd D., 4,390,613, Cl. 430-219.000.

Poliniak, Eugene S.: *See—*
Datta, Pabitra; and Poliniak, Eugene S., 4,390,579, Cl. 428-65.000.

Pollack, Jeremy D., to RCA Corporation. Carriage translating mechanism for video disc player. 4,390,978, Cl. 369-220.000.

Polyplastics Co., Ltd.: *See—*
Komazawa, Hiroyasu; Mori, Tadashi; Ikenaga, Yukio; Hotta, Hiroshi; and Nakashima, Tuneyasu, 4,390,684, Cl. 528-230.000.

Pomeroy, Keith H., to American Hoechst Corporation. Imaging system and method with mid-tone enhancement. 4,390,903, Cl. 358-282.000.

Pomranky, George J.: *See—*
Clarke, Donald H.; Pomranky, George J.; and Schmidt, Donald L., 4,390,644, Cl. 521-121.000.

Popperling, Rolf: *See—*
Niehaus, Norbert; Popperling, Rolf; and Bester, Horst, 4,390,367, Cl. 75-125.000.

Porter, Donald G. Fan accessory for heater. 4,390,005, Cl. 126-110.00B.

Porter, Stephen C.: *See—*
Quackenbush, William L.; Porter, Stephen C.; and Cargile, William P., 4,390,944, Cl. 364-200.000.

Poteiko, Andrei I.: *See—*
Khusnutdinov, Gil D.; Chernovol, Arkady V.; Shumikhin, Vladimir S.; Shulga, Vasily T.; Poteiko, Andrei I.; Kamensky, Vladimir K.; Kondakov, Jury A.; and Shmigidin, Viktor G., 4,390,362, Cl. 75-49.000.

PPG Industries, Inc.: *See—*
Ernsberger, Fred M., 4,390,592, Cl. 428-410.000.
Girgis, Mikhail M., 4,390,647, Cl. 523-212.000.
Loehr, Clifford E.; Crawford, Roger A.; Carbaugh, John E.; and Welch, Cletus N., 4,390,512, Cl. 423-474.000.
Manner, James A., 4,390,710, Cl. 549-441.000.

Prasad, Christopher: *See—*
Enga, Bernard E.; and Prasad, Christopher, 4,389,983, Cl. 123-143.00B.

Precision Screen Machines, Inc.: *See—*
Jaffa, David; and Szarka, Sandor, 4,389,936, Cl. 101-123.000.

Preiss, Martin D.; and Students, Peter A., to Cardox Corporation. Apparatus for preventing snow buildup in a carbon dioxide snow cyclone separator. 4,390,356, Cl. 62-35.000.

Presco, Inc.: *See—*
Gotman, Alexander, 4,390,172, Cl. 269-56.000.

President and Fellows of Harvard College: *See—*
Goldberg, Alfred L.; Swamy, K. H. Sreedhara; and Chung, Chin H., 4,390,629, Cl. 435-220.000.

Presto Lock, Inc.: *See—*
Bako, Lazlo, 4,389,863, Cl. 70-312.000.

Preston, Edward G.: *See—*
Labbe, Francis A. M.; and Preston, Edward G., 4,390,032, Cl. 131-281.000.

Prieto, Martin A.: *See—*
Hard, Robert A.; and Prieto, Martin A., 4,390,365, Cl. 75-84.400.

Prince Corporation: *See—*
Flowerday, Carl; Marcus, Konrad H.; Kempkers, Gordon; Boerema, Edward T.; and Fleming, Dennis J., 4,390,202, Cl. 296-97.00K.

Prinz, Reinhard, to Zeiss-Stiftung, Carl. Play control for a threaded drive. 4,390,260, Cl. 354-65.000.

Prober, James M.: *See—*
Faulhaber, Mark E.; and Prober, James M., 4,390,785, Cl. 250-330.000.

Procter & Gamble Company, The: *See—*
Blair, Daniel R.; Lomneth, Richard B.; Prosise, Robert L.; and Tao, Bernard T., 4,390,561, Cl. 426-607.000.

Produktutvecklingscentrum i Goteborg: *See—*
Kardos, Karl; Mattsson, Bertil; and Westermark, Olle, 4,390,004, Cl. 126-104.00A.

Prosise, Robert L.: *See—*
Blair, Daniel R.; Lomneth, Richard B.; Prosise, Robert L.; and Tao, Bernard T., 4,390,561, Cl. 426-607.000.

Przemyslowy Instytut Automatyki i Pomiarow "MERA-PIAP": *See—*
Kolodziejski, Stanislaw; Dwojak, Stanislaw; and Grabowski, Andrzej, 4,389,897, Cl. 73-861.000.

PTX-Pentronix, Inc.: *See—*
DeSantis, Raymond P.; and Puffer, Herbert J., Jr., 4,390,335, Cl. 425-78.000.

Puffer, Herbert J., Jr.: *See—*
DeSantis, Raymond P.; and Puffer, Herbert J., Jr., 4,390,335, Cl. 425-78.000.

Puhl, Larry C.; and Kasley, Paul A., to Motorola, Inc. Interface adapter architecture. 4,390,963, Cl. 364-900.000.

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Martin, Harry L.; and Goodson, Raymond E., 4,390,841, Cl. 324-427.000.

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Lemmeyer, Gary R., 4,390,381, Cl. 156-63.000.

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Queren, James. Burglar alarm system. 4,390,867, Cl. 340-542.000.

Quick, Timothy W., to Plough, Inc. Non-stinging eye make-up remover composition. 4,390,442, Cl. 252-106.000.

Quinn, Bernard W., to McDonnell Douglas Corporation. Flat sheet scatterometer. 4,390,277, Cl. 356-371.000.

Qvarnstrom, Bengt G. L.: *See—*
Andreason, Gustav O.; Friberg, Ulf R.; Kuvaja, Heimo H.; and Qvarnstrom, Bengt G. L., 4,389,814, Cl. 47-73.000.

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Heikel, Rodney W., 4,390,779, Cl. 377-6.000.

Racine Federated Inc.: *See—*
Lake, Jack E., 4,389,901, Cl. 73-861.580.

Rains, Randall C.: *See—*
Hoffman, Dwight K.; Harris, Robert F.; Tefertiller, Nancy B.; and Rains, Randall C., 4,390,645, Cl. 521-137.000.

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Rastogi, Prahbat K., to Inland Steel Company. Method for producing medium silicon steel electrical lamination strip. 4,390,378, Cl. 148-111.000.

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Lacy, Lewis L.; Robinson, Michael B.; Rathz, Thomas J.; Katz, Lester; and Nisen, Daniel B., 4,389,904, Cl. 73-863.110.

Ratliff, Charles R.: *See—*
Shah, Gautam N.; Brown, Michael R.; Lee, Edward C.; Hook, Gerald C.; Wand, Robert L.; Ratliff, Charles R.; and McClure, Virge W., 4,390,885, Cl. 346-140.00R.

Ratzlaff, Howard J.: *See—*
Garrison, Harold K.; and Ratzlaff, Howard J., 4,390,092, Cl. 198-638.000.

Raven, Johannes G., to U.S. Philips Corporation. Noise suppression circuit for a video signal. 4,390,894, Cl. 358-36.000.

Ravenelle, Charles I.: *See—*
Bowden, Larry D.; Miyashita, Albert H.; and Ravenelle, Charles I., 4,390,610, Cl. 430-58.000.

Raychem Corporation: *See—*
Broyles, Harry C., 4,390,599, Cl. 428-597.000.

Raychem GmbH: *See—*
Bottcher, Bodo K.; and Wilck, Manfred O., 4,390,745, Cl. 174-73.00R.

Raytheon Company: *See—*
Schmoock, James C., 4,390,799, Cl. 307-310.000.
Teich, Wesley W.; and Dudley, Kenneth W., 4,390,768, Cl. 219-10.55B.
Trembly, Gray C.; Goldberg, Ernest; and Dragun, Edward B., 4,389,940, Cl. 102-489.000.

RCA Corporation: *See—*
Babcock, William E.; and Wendt, Frank S., 4,390,819, Cl. 315-411.000.
Banks, Arthur J., 4,390,892, Cl. 358-17.000.
Chin, Danny; Henderson, John G. N.; and Maturo, Robert J., 4,390,902, Cl. 358-192.100.
Clark, Charles A., Jr., 4,390,937, Cl. 363-22.000.
Datta, Pabitra; and Poliniak, Eugene S., 4,390,579, Cl. 428-65.000.
Key, Charles W.; and Christensen, Edward W., II, 4,390,815, Cl. 315-368.000.
O'Mara, Kerry D., 4,390,487, Cl. 264-107.000.
Pollack, Jeremy D., 4,390,978, Cl. 369-220.000.
Willis, Donald H., 4,390,820, Cl. 315-411.000.

Reagan, Larry: *See—*
Berk, Donald M.; Jacoby, Charles E.; and Reagan, Larry, 4,389,941, Cl. 104-49.000.

Recaro GmbH & Co.: *See—*
Resag, Jorg; Goldner, Walther; and Treiber, Horst, 4,390,207, Cl. 297-362.000.

Redifon Simulation Limited: *See—*
Lobb, Daniel R., 4,390,253, Cl. 350-505.000.

Reed, Norman L. Valves for pressurized dispensing containers. 4,390,160, Cl. 251-149.600.

Reederei und Spedition "Braunkohle" GmbH: *See—*
Beyen, Heinrich, 4,390,040, Cl. 137-340.000.

Reeves, Jeffrey R., to TRW, Inc. Method of making a trimmer capacitor. 4,389,762, Cl. 29-25.420.

Regaldo, Pietro. Plant composed of multi-functional apparatus for delivering substances for treating roadways or the land, and which can be self-loaded from the ground on to the platform of a transporter vehicle, and vice versa. 4,390,286, Cl. 366-186.000.

Regie Nationale des Usines Renault: *See—*
Louis, Llorente, 4,390,205, Cl. 297-129.000.

Rehberg, Irene L., to Elastic Coating Systems, Inc. Fluid roof system. 4,390,570, Cl. 427-385.500.

Reif, Robert B.: *See—*
Peck, Richard M.; Reif, Robert B.; and Albrechtson, Loren R., 4,390,614, Cl. 430-252.000.

Reinke, Nelson A.; and Ulch, B. G. Air-circulating assembly. 4,390,060, Cl. 165-76.000.

Reip, Raymond G., to Vapor Corporation. Pilot operated relief valve. 4,390,041, Cl. 137-488.000.

Reliance Electric Company: *See—*
Baumbach, Bertram W., 4,390,921, Cl. 361-119.000.

Remington Arms Company, Inc.: *See—*
Kast, Jack L.; Eddy, Albert R.; and Carter, Merle F., 4,389,919, Cl. 89-185.000.

Resag, Jorg; Goldner, Walther; and Treiber, Horst, to Recaro GmbH & Co. Bucket seat. 4,390,207, Cl. 297-362.000.

Research Corporation: *See—*
Najjar, Victor A., 4,390,528, Cl. 424-177.000.

Research-Cottrell, Inc.: *See—*
Byrd, William; and Kohke, Stephen J., 4,390,831, Cl. 323-240.000.

Resnick, Paul R., to Du Pont de Nemours, E. I., and Company. Alkyl-ω-fluoroformyl ester and process. 4,390,720, Cl. 560-184.000.

Reunamaki, Pauli, to Tamglass Oy. Method of and apparatus for preventing the curving of glass sheets in the roller-equipped furnace of a horizontal tempering plant. 4,390,359, Cl. 65-114.000.

Reuter, Hans-Josef, to Mecan Arbed S.A. Curved continuous-casting mold and method of reestablishing the internal dimensions thereof. 4,390,057, Cl. 164-459.000.

Reynolds, Elizabeth B.: *See—*
Franz, Norman J.; and Reynolds, Elizabeth B., 4,389,734, Cl. 2-59.000.

Reynolds Manufacturing Company: *See—*
Goby, Larry G., 4,389,800, Cl. 37-124.000.

Reynolds Metals Company: *See—*
Dunn, Wendell E., Jr., 4,390,400, Cl. 204-67.000.

Rhone-Poulenc Agrochimie: *See—*
Fahmy, Mohamed A., 4,390,529, Cl. 424-220.000.

Rhone-Poulenc Industries: *See—*
Chauvel, Bernard, 4,390,597, Cl. 428-512.000.
Laurent, Serge, 4,390,596, Cl. 428-473.500.
Williamson, John P. H.; and Moilliet, John L., 4,389,819, Cl. 51-317.000.

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Rice, Alan R. Pile-driving apparatus. 4,390,307, Cl. 405-228.000.

Rice, Stanley: *See—*
Myers, Daryl L.; and Rice, Stanley, 4,390,357, Cl. 65-2.000.

Rich, Alexander: *See—*
Gorecki, Marian; Acquaye, Clemenceau T. A.; Wilchek, Meir; and Rich, Alexander, 4,390,526, Cl. 424-177.000.

Rich Products Corporation: *See—*
Kahn, Marvin L.; and Eapen, Kuttikandathil E., 4,390,550, Cl. 426-102.000.

Richardson, Charles N., to Tri-State Oil Tool Industries, Inc. Apparatus for well treating. 4,390,065, Cl. 166-181.000.

Richardson, Keith C.: *See—*
Long, Emile D.; and Richardson, Keith C., 4,389,993, Cl. 123-421.000.

Richter Gedeon Vegyeszeti Gyar RT: *See—*
Udvardy Nagy nee Cserey Pechany, Eva; Budai, Miklos; Fekete, Gyorgy; Gorog, Sandor; Herenyi, Bulcsu; Wack, Geza; and Zalai, Karoly, 4,390,625, Cl. 435-119.000.

Ricoh Company, Ltd.: *See—*
Hashimoto, Mitsuru; Sasaki, Masaomi; Fukagai, Toshio; Katoh, Tatsuya, deceased; and Katoh, Mankichi, heir, 4,390,608, Cl. 430-57.000.
Hirakura, Koji; Sawada, Yasuo; Watase, Kenta; and Iijima, Takeshi, 4,389,972, Cl. 118-691.000.
Kato, Toshifumi, 4,390,176, Cl. 271-270.000.

Ridgway, Frank; and Woolfenden, Richard D. G., to E. R. Squibb & Sons, Inc. Stabilization of pleuromutilin derivatives against oxidation by sodium hypochlorite in aqueous solution. 4,390,558, Cl. 426-541.000.

Rieben, Stuart L.: *See—*
Kucherer, Harvey D.; Kugler, Ralph W.; Rieben, Stuart L.; Wilhelm, John J.; and Wylie, Mark E., 4,390,042, Cl. 138-89.000.

Riede, Gerhard, to Gambro AG. Device for diffusing matter between two fluids via semi-permeable diaphragms. 4,390,424, Cl. 210-232.000.

Rieger, Hansjorg; and Holzwarth, Dietmar, to RUD-Kettenfabrik Rieger 6 Dietz GmbH u. Co. Anti-slip chain for vehicle tires. 4,390,053, Cl. 152-213.00A.

Riess, Gordon S., to Temp-Trak Inc. Prefillable hypodermic syringe and method of assembling the syringe. 4,390,016, Cl. 604-236.000.

Riester, William C., to Trico Products Corporation. Windshield wiper blade refill unit. 4,389,747, Cl. 15-250.420.

Rieter Machine Works Limited: *See—*
Briner, Emil; Clement, Heinz; and Eberli, Heiner, 4,389,752, Cl. 19-0.560.
Briner, Emil; Novak, Peter; Tanner, Bruno; and Gasser, Hermann, 4,389,840, Cl. 57-267.000.
Gyger, Paul; and Schar, Hugo, 4,389,751, Cl. 19-0.350.

Rietsch, Eike, to Deutsche Texaco Aktiengesellschaft. Method for determining the extent of subsurface reaction involving acoustic signals. 4,390,973, Cl. 367-40.000.

Riker Laboratories, Inc.: *See—*
Banitt, Elden H., 4,390,716, Cl. 560-65.000.

Ring Sights Limited: *See—*
Budden, Raymond G.; and Scott, Fraser, 4,390,276, Cl. 356-251.000.

Risch, Lothar; and Mader, Hermann, to Siemens Aktiengesellschaft. X-y Infrared CCD sensor and method for making same. 4,390,888, Cl. 357-30.000.

Rise, Mark T., to Medtronic, Inc. Patterned electrical tissue stimulator. 4,390,023, Cl. 128-421.000.

Ritter, Ronald E.; and Henderson, Donald S., to W. R. Grace & Co. Catalytic cracking of hydrocarbons. 4,390,416, Cl. 208-120.000.

Ritzer, Alan; Shah, Bakulesh; and Sliva, Daniel E., to General Electric Company. Process for treating spent silicon-containing reaction masses to produce halosilanes. 4,390,510, Cl. 423-342.000.

Riva, Mario; and Toscano, Luciano, to Pierrel, S.p.A. Steroids and process for preparing the same. 4,390,533, Cl. 424-243.000.

Rival Manufacturing Company: *See—*
Ostroski, Richard J.; Aberer, James B.; and Best, Gary, 4,389,780, Cl. 30-408.000.

Roano, Domenico: *See—*
Gubau, Giuseppe; Roano, Domenico; and Quaranti, Giovanni, 4,390,293, Cl. 400-144.200.

Robbins, Arthur J.; Robbins, Paul B.; and Thompson, Dennis C., to Robbins Scientific Corporation. Sealable vial. 4,390,111, Cl. 220-259.000.

Robbins, Paul B.: *See—*
Robbins, Arthur J.; Robbins, Paul B.; and Thompson, Dennis C., 4,390,111, Cl. 220-259.000.

Robbins Scientific Corporation: *See—*
Robbins, Arthur J.; Robbins, Paul B.; and Thompson, Dennis C., 4,390,111, Cl. 220-259.000.

Robert Bosch GmbH: *See—*
Denz, Helmut; Stumm, Hans-Peter; and Zechnall, Martin, 4,389,994, Cl. 123-478.000.
Fell, Wolfgang; and Sanders, Werner, 4,390,913, Cl. 360-85.000.
Koder, Manfred; and Schmid, Gunther, 4,389,883, Cl. 73-119.00R.
Kubach, Hans, 4,390,857, Cl. 335-282.000.
Kuhlmann, Gerhard, 4,390,311, Cl. 409-232.000.
Linssen, Mathias; and Peczkowski, Jurgen, 4,390,130, Cl. 239-585.000.
Meyer, Friedhelm; Kurz, Wolfgang; and Severing, Joachim, 4,390,792, Cl. 307-10.0BP.
Orova, Josef; Roderer, Herbert; Schmid, Hans D.; and Steffen, Horst-G., 4,390,804, Cl. 310-70.00R.

Roberts, James R.; McIlrath, Thomas J.; and Lucatorto, Thomas B. Laser utilizing coated, multicapillary array as output window. 4,390,994, Cl. 372-99.000.

Roberts, Stanley M., to Allen & Hanburys Limited. 3-Endo-protected hydroxyl-tricyclo[3,2,0,$0^{2,7}$]heptan-6-ones. 4,390,721, Cl. 560-256.000.

Robin, Allen M.: *See—*
Dille, Roger M.; Middleton, Leigh R.; Brent, Albert; and Robin, Allen M., 4,390,347, Cl. 48-197.00R.
Dille, Roger M.; Middleton, Leigh R.; Brent, Albert; and Robin, Allen M., 4,390,348, Cl. 48-197.00R.

Robinet, Alain, to Societe Nationale Elf Aquitaine (Production). Rapidly erodible sonde. 4,389,880, Cl. 73-86.000.

Robinson, John T.; Cecil, Olin B.; and Shah, Rajiv R., to Texas Instruments Incorporated. Method for removal of minute physical damage to silicon wafers by employing laser annealing. 4,390,392, Cl. 156-643.000.

Robinson, Michael B.: *See—*
Lacy, Lewis L.; Robinson, Michael B.; Rathz, Thomas J.; Katz, Lester; and Nisen, Daniel B., 4,389,904, Cl. 73-863.110.

Robinson, Thomas C.; Kitrilakis, Sotiris; and Martin, Thomas B., Jr., to Foxcroft Associates. Hydraulically actuated cardiac prosthesis with three-way ventricular valving. 4,389,737, Cl. 3-1.700.

Rockwell International Corporation: *See—*
Beningfield, Harley W.; and Wilt, Donna F., 4,390,949, Cl. 364-429.000.
Best, David W., 4,390,987, Cl. 370-112.000.
Best, David W.; and Russell, Jeffrey D., 4,390,988, Cl. 370-113.000.
Higgins, J. Aiden; and Gupta, Aditya K., 4,390,851, Cl. 330-277.000.
Jaqua, Vance W., 4,389,999, Cl. 123-536.000.
Nebiker, Herman, Jr., 4,390,924, Cl. 361-279.000.
Tzeng, Chin-Pyng J., 4,390,833, Cl. 323-280.000.

Roderer, Herbert: *See—*
Orova, Josef; Roderer, Herbert; Schmid, Hans D.; and Steffen, Horst-G., 4,390,804, Cl. 310-70.00R.

Rodriguez, Edward T., to Theta-J Corporation. Solid state optically coupled electrical power switch. 4,390,790, Cl. 250-551.000.

Rohde, Gunter; and Kuhn, Friedrich, to J. M. Voith GmbH. Reeling apparatus for a web. 4,390,138, Cl. 242-55.000.

Rokutanbo, Yoshiyuki: *See—*
Nagata, Takao; and Rokutanbo, Yoshiyuki, 4,390,388, Cl. 156-351.000.

Rood, William E., Jr. Tine assembly and method for removal of debris from down cotton clumps. 4,390,376, Cl. 134-6.000.

Roquette Freres: *See—*
Huchette, Michel; and Leroy, Patrick, 4,390,523, Cl. 424-48.000.

Rose, George R., Jr., to Grumman Aerospace Corporation. Trifluorobromomethane foam fire fighting system. 4,390,069, Cl. 169-15.000.

Rosemount Inc.: *See—*
Rud, Stanley E., Jr., 4,389,895, Cl. 73-724.000.

Rosen, Evan W., to Engineering & Research Associates, Inc. Blood collection bag weighing device. 4,390,073, Cl. 177-118.000.

Rosenbaum, Herman S.; and Davies, John H., to General Electric Company. Thermal-mechanical treatment of composite nuclear fuel element cladding. 4,390,497, Cl. 376-414.000.

Rosenberg, Heinz: *See—*
Benecke, Wilhelm; and Rosenberg, Heinz, 4,390,941, Cl. 363-174.000.

Rosenberg, Robert: *See—*
Fowler, Alan B.; Rosenberg, Robert; and Rupprecht, Hans S., 4,389,768, Cl. 29-571.000.

Rosenberger, Siegfried, to Ciba-Geigy Corporation. Process for the preparation of p-allylphenols. 4,390,735, Cl. 568-790.000.

Ross, William J.: *See—*
Goldsworthy, John; Ross, William J.; and Verge, John P., 4,390,541, Cl. 424-258.000.

Rothwell, Harold L., Jr.; Gungle, W. Calvin; and Daignault, Alan, to GTE Products Corporation. High intensity discharge lamp including arc extinguishing means. 4,390,811, Cl. 315-73.000.

Rotoflow Corporation: *See—*
Swearingen, Judson S., 4,390,082, Cl. 184-6.400.

Rouland, Joseph G.: *See—*
Van Kampen, Hendrik; Rouland, Joseph G.; and Baakman, Hendrik J., 4,390,900, Cl. 358-147.000.

Rouse, John A., to Lucas Industries Limited, GBX2. High pressure hydraulic systems. 4,390,188, Cl. 280-6.100.

Roussel Uclaf: *See—*
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,390,724, Cl. 562-504.000.
Tully, Wilfred R., 4,390,697, Cl. 544-251.000.

Rowell, John A.: *See—*
Hyde, Paul E.; and Rowell, John A., 4,390,284, Cl. 366-165.000.

Rozzi, Mario, to Detroit Radiant Products Company. Tube-fired radiant heating system. 4,390,125, Cl. 237-70.000.

Rubenstein, Irving H.; and Bank, Herbert M., to Maryland Cup Corporation. Edible food containers and the method of coating said containers. 4,390,553, Cl. 426-138.000.

RUD-Kettenfabrik Rieger 6 Dietz GmbH u. Co.: *See—*
Rieger, Hansjorg; and Holzwarth, Dietmar, 4,390,053, Cl. 152-213.00A.

Rud, Stanley E., Jr., to Rosemount Inc. Capacitance pressure sensor. 4,389,895, Cl. 73-724.000.

Rudell, David C. Golf putter head and putter incorporating such head. 4,390,184, Cl. 273-183.00D.

Rudell, Elliot; Cernansky, Joseph; and Garner, Harold, to Rudell, Elliot. Pivotal jumping stick. 4,390,178, Cl. 272-114.000.

Rugg, Barry; and Stanton, Robert, to New York University. Process and continuous apparatus for chemical conversion of materials. 4,390,375, Cl. 127-37.000.

Ruhrkohle A G: *See—*
Fuchs, Heinz, 4,389,792, Cl. 33-304.000.

Runge, Hermann, to Boerung-Gebrauchsartikel GmbH. Container. 4,390,928, Cl. 362-101.000.

Ruo, Tomoki C. S.: *See—*
Stokowski, Robert J.; Tertzakian, Gerard; and Ruo, Tomoki C. S., 4,390,708, Cl. 549-229.000.

Rupprecht, Hans S.: *See—*
Fowler, Alan B.; Rosenberg, Robert; and Rupprecht, Hans S., 4,389,768, Cl. 29-571.000.

Rush, David H.: *See—*
Hahn, James H., 4,390,805, Cl. 310-154.000.

Rusinov, Mikhail M.; Judova, Galina N.; Kudryashov, Jury V.; and Agurok, Peisakh Y. Galilean-type telescope system. 4,390,249, Cl. 350-453.000.

Russell, Gilbert E.; and Wong, Hee, to National Semiconductor Corporation. Digital color modulator. 4,390,893, Cl. 358-27.000.

Russell, Jeffrey D.: *See—*
Best, David W.; and Russell, Jeffrey D., 4,390,988, Cl. 370-113.000.

Rustioni, Massimo: *See—*
Balducci, Luigi; and Rustioni, Massimo, 4,390,374, Cl. 106-300.000.

Ruthstrom, Olof J. J. Violin support. 4,389,916, Cl. 84-278.000.

Rutledge, Robert L., to Minnesota Mining and Manufacturing Company. Colloid relief images formed by oxidized developer transfer. 4,390,612, Cl. 430-202.000.

Rutledge, Thomas F., to ICI Americas Inc. Polymeric phenolic benzylic ether compositions. 4,390,731, Cl. 568-643.000.

Rutschilling, Paul C., to Paul Revere Corporation, The. Pressure sensing latch for a round baler. 4,389,930, Cl. 100-88.000.

S. C. Johnson & Son, Inc.: *See—*
Hernandez, Pablo M., 4,390,436, Cl. 252-49.300.
S. I. Handling Systems, Inc.: *See—*
Watatani, Minoru, 4,389,943, Cl. 104-166.000.
Saab-Scania Aktiebolag: *See—*
Nilsson, Sten E., 4,390,124, Cl. 237-12.30A.
Sado, Ryoichi; Morikawa, Yoshitusgu; Okamoto, Takekuni; and Tahara, Kazutoki, to Shin-Etsu Polymer Co., Ltd. Rubber-made covering member for push button switches. 4,390,765, Cl. 200-159.00B.
Saf-T-Trac Company: *See—*
Fenley, Joel S., 4,390,055, Cl. 160-347.000.
Saigo, Hiroshi: *See—*
Iwaya, Hirokatsu; Saigo, Hiroshi; and Suzuki, Takashi, 4,389,811, Cl. 46-232.000.
Saint Gobain Vitrage: *See—*
Dages, Daniel, 4,390,594, Cl. 428-437.000.
St. Laurent, Wilfred H., Jr.: *See—*
Athanassiu, Christos; and St. Laurent, Wilfred H., Jr., 4,390,036, Cl. 137-116.500.
Saito, Kazuyoshi: *See—*
Takemura, Yasuhiko; and Saito, Kazuyoshi, 4,390,025, Cl. 128-660.000.
Saito, Kikuo: *See—*
Sato, Itsuzo; Ooi, Kazushige; Saito, Kikuo; Takemura, Yasuo; and Shinohara, Toshihiro, 4,390,895, Cl. 358-44.000.
Saito, Sadayuki: *See—*
Ito, Susumu; Saito, Sadayuki; and Higuchi, Kazuya, 4,390,167, Cl. 266-48.000.
Saito, Takashi; and Kishi, Toru, to Victor Company of Japan, Ltd. Rotary recording medium reproducing apparatus having a rotary recording medium clamping device. 4,390,979, Cl. 369-270.000.
Saito, Yoshitane: *See—*
Kawashima, Keisuke; Saito, Yoshitane; Yamada, Akihiro; and Yano, Satoshi, 4,390,966, Cl. 364-900.000.
Sakamoto, Hitoshi, to Sony Corporation. Video signal reproducing apparatus with tape tension control arrangement. 4,390,909, Cl. 360-71.000.
Sakamoto, Toshinori, to Toyo Kogyo Co. Ltd. Power operated automobile window glass regulating mechanism. 4,389,818, Cl. 49-349.000.
Sakane, Kazuo: *See—*
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,390,534, Cl. 424-246.000.
Sakata, Hideo; and Takahashi, Seigo, to Kabushiki Kaisha Mitutoya Seisakusho. Measuring device. 4,389,783, Cl. 33-143.00K.
Sakata, Hideo; and Takahashi, Seigo, to Mitutoyo Mfg. Co., Ltd. Contour measuring instrument. 4,389,786, Cl. 33-174.00P.
Sakuma, Moriyuki: *See—*
Ueda, Toshimichi; Tezuka, Akira; Wakairo, Seiichi; Sakuma, Moriyuki; and Mochizuki, Masashi, 4,389,855, Cl. 62-200.000.
Salisbury, Winfield W., to Energy Profiles, Inc. Directed beam fusion reaction with ion spin alignment. 4,390,494, Cl. 376-107.000.
Salisbury, Winfield W., to Energy Profiles, Inc. Control of colliding ion beams. 4,390,495, Cl. 376-120.000.
Salvato, Guido A. Magnetically locked valve. 4,390,038, Cl. 137-296.000.
Sampei, Tohru; Asada, Akihiro; Ohta, Yoshihiro; and Iwasaki, Syunji, to Hitachi, Ltd. Speech analyzer. 4,390,747, Cl. 179-1.0SC.
Sanchez, Moises G.; Ernest, Michael V.; and Laine, Norman R., to W. R. Grace & Co. Spheroidal alumina particles and catalysts employing the particles as a support. 4,390,456, Cl. 252-448.000.
Sanders, David E. B., Jr. Battery cable connector. 4,390,233, Cl. 339-255.00R.
Sanders, James M.: *See—*
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,390,464, Cl. 252-522.00R.
Sanders, Werner: *See—*
Fell, Wolfgang; and Sanders, Werner, 4,390,913, Cl. 360-85.000.
Sandoz Ltd.: *See—*
Wicki, Heinz; and Vogel, Claude, 4,390,470, Cl. 260-166.000.
Sands, Raymond L.; and Ward, Geoffrey M., to Chubb & Son's Lock and Safe Company Limited. Security enclosures. 4,389,948, Cl. 109-82.000.
Sanfeliu-Marimon, Jaime, to Storage Systems and Industrial Products Ltd. Framework for fixedly supporting a horizontal arm. 4,390,302, Cl. 403-187.000.
Sanford, William D.: *See—*
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Sano, Fumiaki: *See—*
Ando, Tomonori; Hanyuda, Toshiaki; Shishido, Satohiro; Sano, Fumiaki; Ochi, Kiyoyuki; Sugimoto, Toshiaki; and Okino, Yoshiro, 4,390,662, Cl. 525-28.000.
Santi, Romano: *See—*
Gozzo, Franco; Troiani, Nicola; Lorusso, Simone; and Santi, Romano, 4,390,705, Cl. 549-3.000.
Sanyo Electric Co., Ltd.: *See—*
Horinouchi, Atsushi, 4,390,766, Cl. 219-10.55B.
Sarcia, Domenico S., to CVI Incorporated. Hybrid cryogenic refrigerator. 4,389,850, Cl. 62-6.000.
Saretzky, Horst, to De Limon Fluhme GmbH & Co. Double-conduit central lubricating system. 4,390,083, Cl. 184-7.00F.
Sasahara, Hitoshi: *See—*
Taniguchi, Tokuyuki; Yashima, Iwao; Ota, Masanori; and Sasahara, Hitoshi, 4,390,339, Cl. 8-94.180.
Sasaki, Masaomi: *See—*
Hashimoto, Mitsuru; Sasaki, Masaomi; Fukagai, Toshio; Katoh, Tatsuya, deceased; and Katoh, Mankichi, heir, 4,390,608, Cl. 430-57.000.
Sasaki, Takuma; and Nakamichi, Kazuya, to Maruzen Oil Co., Ltd. Preparation of antitumor agent from shellfish. 4,390,468, Cl. 260-112.00R.
Sato, Atsushi; Shimizu, Isoo; and Takahashi, Naoya, to Nippon Petrochemicals Company, Limited. Recording material. 4,390,194, Cl. 282-27.500.
Sato, Itsuzo; Ooi, Kazushige; Saito, Kikuo; Takemura, Yasuo; and Shinohara, Toshihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Color image pick-up apparatus. 4,390,895, Cl. 358-44.000.
Sato, Kimihiko: *See—*
Oda, Yoshio; Morikawa, Shinsuke; Ikemura, Masaaki; Yarita, Tomio; Noshiro, Makoto; Gotoh, Isao; Jitsugiri, Yukio; Yonemori, Shigeaki; Sato, Kimihiko; and Uchida, Keiichi, 4,390,511, Cl. 423-469.000.
Sato, Kozo; Iwakura, Ken; and Igarashi, Akira, to Fuji Photo Film Co., Ltd. Image recording members. 4,390,616, Cl. 430-338.000.
Satomura, Hiroshi, to Canon Kabushiki Kaisha. Toner regenerating device. 4,389,968, Cl. 118-652.000.
Saunders, Alton M. License plate hold-open device. 4,390,201, Cl. 296-1.00C.
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., to Essex Group, Inc. Power insertable polyamide-imide coated magnet wire. 4,390,590, Cl. 428-383.000.
Saurenman, Donald G., to Consan Pacific Incorporated. Control of static neutralization. 4,390,923, Cl. 361-222.000.
Savage, John W., to United States of America, Army. Broadband measurement system. 4,390,838, Cl. 324-77.00E.
Savko, Michael J. Automatic signal flag attachment for a mailbox. 4,390,122, Cl. 232-35.000.
Sawada, Yasuo: *See—*
Hirakura, Koji; Sawada, Yasuo; Watase, Kenta; and Iijima, Takeshi, 4,389,972, Cl. 118-691.000.
Sawatzki, Harry L.: *See—*
Loebach, Ernst W.; and Sawatzki, Harry L., 4,390,273, Cl. 355-125.000.
Sawyer, Philip N. Bandage with hemostatic agent and methods for preparing and employing the same. 4,390,519, Cl. 424-28.000.
Sawyer, Roy T.; Stent, Gunther S.; Budzynski, Andrei Z.; and Olexa, Stephanie A., to University of California, The Regents of the. Hementin--a fibrinolytic agent. 4,390,630, Cl. 435-226.000.
Saxlund, Oddmund. Method and apparatus for the operation of a boiler installation with stoker firing. 4,389,979, Cl. 122-15.000.
SB/JP Enterprises, Inc.: *See—*
Podell, Jack; and Haner, Douglas, 4,389,808, Cl. 46-16.000.
Schachar, Ronald A. Method for inhibiting contraction of opthalmic wounds or incisions. 4,390,542, Cl. 424-260.000.
Schaefer, Hans: *See—*
Stuttgen, Gunter; and Schaefer, Hans, 4,390,532, Cl. 424-240.000.
Schaefer, Louis B., IV; and Miller, Thomas M. Closure plug for ladle car. 4,390,170, Cl. 266-272.000.
Schaefer Marine, Inc.: *See—*
Merry, Carl A., 4,390,163, Cl. 254-412.000.
Schalke, Peter M.: *See—*
Kleemann, Axel; and Schalke, Peter M., 4,390,706, Cl. 349-74.000.
Schar, Hugo: *See—*
Gyger, Paul; and Schar, Hugo, 4,389,751, Cl. 19-0.350.
Scharf, Gerhard: *See—*
Esser, Fred; Klopper, Detlev; Lechner, Walter; and Scharf, Gerhard, 4,390,773, Cl. 219-121.0PR.
Schechter, Michael M., to Ford Motor Company. Multipole solenoids. 4,390,856, Cl. 335-256.000.
Schering, A.G.: *See—*
Hofmeister, Helmut; Wiechert, Rudolf; Annen, Klaus; Laurent, Henry; and Beier, Sybille, 4,390,530, Cl. 424-238.000.
Schering Corporation: *See—*
Loshaek, Samuel, 4,390,676, Cl. 526-313.000.
Scheuren, Jurgen: *See—*
Henne, Werner; and Scheuren, Jurgen, 4,390,455, Cl. 252-430.000.
Schilf, Lothar; and Giese, Ingo H., to Erno-Raumfahrttechnik GmbH. Measuring minute, local temperature differences. 4,390,275, Cl. 356-43.000.
Schlaufman, Robert J.: *See—*
Olson, John H.; and Schlaufman, Robert J., 4,390,593, Cl. 428-410.000.
Schleicher, Herbert: *See—*
Krampe, Dietrich; and Schleicher, Herbert, 4,390,821, Cl. 318-85.000.
Schleusner, Clifford E., to Haagenson, Bruce. Vehicle/trailer lighting connector apparatus. 4,390,228, Cl. 339-113.00R.
Schlumberger Technology Corporation: *See—*
Grau, James A., 4,390,783, Cl. 250-270.000.
Schmid, Gunther: *See—*
Koder, Manfred; and Schmid, Gunther, 4,389,883, Cl. 73-119.00R.
Schmid, Hans D.: *See—*
Orova, Josef; Roderer, Herbert; Schmid, Hans D.; and Steffen, Horst-G., 4,390,804, Cl. 310-70.00R.
Schmidhammer, Helmut: *See—*
Brossi, Arnold; Schmidhammer, Helmut; and Jacobson, Arthur E., 4,390,699, Cl. 546-74.000.

Schmidt, Donald L.: *See—*
Clarke, Donald H.; Pomranky, George J.; and Schmidt, Donald L., 4,390,644, Cl. 521-121.000.
Schmidt, John C.: *See—*
Browning, David R.; Sima, Gordon R., Jr.; Schmidt, John C.; and Sickenberger, David W., 4,390,784, Cl. 250-287.000.
Schmidt, Robert W., to Copar Corporation. Means for controlling the application of glue to a defined area. 4,389,971, Cl. 118-669.000.
Schmitt, Frederick L.: *See—*
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,390,464, Cl. 252-522.00R.
Schmoock, James C., to Raytheon Company. Temperature compensated switchable current source. 4,390,799, Cl. 307-310.000.
Schneider, Manfred, to Textima VEB Wirkmaschinenbau Karl-Marx-Stadt Kombinat Textima. Warp knitting machine for the production of jacquard-patterned pile-knit fabrics. 4,389,860, Cl. 66-84.00R.
Schneider, Richard J. Aircraft ski mounting assembly. 4,390,151, Cl. 244-108.000.
Schneider, Walter: *See—*
Hodes, Erich; Sternisa, Danilo; and Schneider, Walter, 4,390,563, Cl. 427-27.000.
Schnippering, Manfred: *See—*
Luck, Karl-Heinz; Kallenberg, Albert; Schnippering, Manfred; and Moeselaken, Herbert, 4,389,757, Cl. 24-205.10R.
Schoeneberger, Ernest A., to Sperry Corporation. Automatic latch for unloading auger. 4,390,094, Cl. 198-865.000.
Schott Glaswerke: *See—*
Mennemann, Karl; Gliemeroth, Georg; and Geiler, Volkmar, 4,390,638, Cl. 501-77.000.
Schreurs, Petrus H. M.: *See—*
Havinga, Reginoldus; Torenbeek, Reinder; and Schreurs, Petrus H. M., 4,390,451, Cl. 252-311.000.
Schulein, Rolf-Gunter; and Hagedorn, Leonard, to ITT Industries, Inc. Keep-fresh storage container with lid. 4,390,109, Cl. 220-234.000.
Schuler, Ralf; and Maahs, Gunther, to Chemische Werke Huels, A.G. Vinyl chloride polymer flameproofed and smoke inhibited with a copper phosphate. 4,390,654, Cl. 524-413.000.
Schulz, Johann G.; and Margosian, Daniel, to Gulf Research & Development Company. Novel composition and process for producing solid resin therefrom. 4,390,661, Cl. 524-878.000.
Schulzer, Odilo, to Transformatoren Union Aktiengesellschaft. Liquid-cooled transformer for large power ratings. 4,390,858, Cl. 336-92.000.
Schumacher, Heinz O. Apparatus for trouble-free and continuous charging of extractors with extraction feedstock to be treated and with extractant or solvent. 4,390,506, Cl. 422-273.000.
Schwartz, Ellen S.; and Tincher, Cline A., to BASF Wyandotte Corporation. Water-based hydraulic fluids having improved lubricity and corrosion inhibiting properties employing neodecanoic acid. 4,390,439, Cl. 252-73.000.
Schwartz, Ellen S.; and Tichner, Cline A., to BASF Wyandotte Corporation. Thickened water-based hydraulic fluids. 4,390,440, Cl. 252-76.000.
Schwarz, Albert J.; and Kowal, Leonard J., to Imperial Clevite Inc. Tube bender construction. 4,389,873, Cl. 72-388.000.
Schwarze, Werner; Kleemann, Axel; and Leuchtenberger, Wolfgang, to Degussa Aktiengesellschaft. 1-Methyl-2-chlorocyclopropanecarboxylic acid and its ester. 4,390,719, Cl. 560-124.000.
Schwenk, Wilhelm; Heinrich, Bruno; and Mangen, Rolf, to Mannesmannufer Aktiengesellschaft. Lining a steel pipe internally with a cement mortar. 4,390,568, Cl. 427-234.000.
Schwitters, Stephen W., to Taylor Freezer Company. Conductivity type in-line liquid sensing apparatus. 4,390,760, Cl. 200-61.040.
Scieur, Roger. Tilt-sensitive ignition switch. 4,390,759, Cl. 200-52.00A.
Scinta, James; and Hart, Peter J., to Phillips Petroleum Company. Recovery of hydrocarbon values from low organic carbon content carbonaceous materials via hydrogenation and supercritical extraction. 4,390,411, Cl. 208-11.0LE.
Scott, Fraser: *See—*
Budden, Raymond G.; and Scott, Fraser, 4,390,276, Cl. 356-251.000.
Scott Paper Company: *See—*
Christensen, Rolf E., 4,389,965, Cl. 118-261.000.
Scovill Inc.: *See—*
Butts, Lawrence D., 4,390,197, Cl. 292-144.000.
Scriminger, William F., to Muskogee Environmental Conservation Co. Slurry gun. 4,390,281, Cl. 366-3.000.
Sczerba, Stanley T., to Koppers Company, Inc. Heat dissipating charging hole cover. 4,390,397, Cl. 202-243.000.
Sealed Air Corporation: *See—*
Gately, Dana R., 4,390,337, Cl. 425-89.000.
Sears, Jerald R.: *See—*
Merilan, Charles P.; and Sears, Jerald R., 4,390,633, Cl. 436-65.000.
Seeney, Charles E., to International Minerals & Chemical Corp. Metal silico-phosphate binders and foundry shapes produced therefrom. 4,390,370, Cl. 106-38.300.
Segal, Leon, to Allied Corporation. Method of shaping thermoplastic compositions on aluminum foil support. 4,390,489, Cl. 264-126.000.
Seibert, Lloyd; and Ellefsen, George E., to American Sign & Indicator Corporation. Matrix display. 4,389,804, Cl. 40-447.000.
Seidler, Robert L. Regulator and switching circuit for flasher units. 4,390,812, Cl. 315-200.00A.
Seismograph Service Corporation: *See—*
Moses, Donald W., 4,390,986, Cl. 370-99.000.
Seitz-Werke GmbH: *See—*
Zelder, Felix, 4,390,048, Cl. 141-6.000.
Seiwa Kagaku Kabushiki Kaisha: *See—*
Niibori, Kenji; and Ishihama, Toshio, 4,390,054, Cl. 160-265.000.
Seiwa Kasei Co., Ltd.: *See—*
Yoshioka, Issei; and Kamimura, Yoichi, 4,390,525, Cl. 424-71.000.
Selegny, Eric: *See—*
Junter, Guy-Alain; Lemeland, Jean-Francois; Selegny, Eric; and Vingent, Jean-Claude, 4,390,620, Cl. 435-4.000.
Selinko, George J., to Motorola, Inc. Molded multifunction latch mechanism. 4,390,198, Cl. 292-152.000.
Sellman, Milhim D.: *See—*
Alani, Safwat D.; and Sellman, Milhim D., 4,390,027, Cl. 128-743.000.
Seltzer, Raymond: *See—*
Weiss, Jonas; and Seltzer, Raymond, 4,390,679, Cl. 528-64.000.
Senscom Corporation: *See—*
Fernekes, Robert W.; and Tesser, Murray V., 4,390,257, Cl. 353-95.000.
Serpaud, Jean: *See—*
Lejeune, Pierre; and Serpaud, Jean, 4,390,429, Cl. 210-519.000.
Seto, Tadayuki: *See—*
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Severing, Joachim: *See—*
Meyer, Friedhelm; Kurz, Wolfgang; and Severing, Joachim, 4,390,792, Cl. 307-10.0BP.
Shacter, Stuart B.: *See—*
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Shah, Bakulesh: *See—*
Ritzer, Alan; Shah, Bakulesh; and Sliva, Daniel E., 4,390,510, Cl. 423-342.000.
Shah, Gautam N.; Brown, Michael R.; Lee, Edward C.; Hook, Gerald C.; Wand, Robert L.; Ratliff, Charles R.; and McClure, Virge W., to Texas Instruments Incorporated. Apparatus and method for fluid transfer. 4,390,885, Cl. 346-140.00R.
Shah, Rajiv R.: *See—*
Robinson, John T.; Cecil, Olin B.; and Shah, Rajiv R., 4,390,392, Cl. 156-643.000.
Sharma, Ashok K.: *See—*
Hahn, Allen W.; Nichols, Michael F.; Sharma, Ashok K.; and Hellmuth, Eckhard W., 4,390,405, Cl. 204-415.000.
Sharon K. Baumann Trust: *See—*
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Sharp Kabushiki Kaisha: *See—*
Ohshita, Akihiro, 4,390,834, Cl. 179-1.0VL.
Ohta, Kenji; and Takahashi, Akira, 4,390,600, Cl. 428-621.000.
Shimizu, Keiichiro; and Horii, Wataru, 4,390,245, Cl. 350-343.000.
Sharrock, Michael; Fry, Donovan N.; and William, Robert, to Joel & Aronoff, Inc. Pockets for garments. 4,389,801, Cl. 40-159.000.
Shattuck, Meredith D.: *See—*
Gaitos, Janise N.; Shattuck, Meredith D.; and Wilbur, Clayton V., 4,390,297, Cl. 400-697.100.
Shawhan, Elbert N., to NL Sperry-Sun, Inc. Data transmission in a drill string. 4,390,975, Cl. 367-82.000.
Shell Oil Company: *See—*
Blytas, George C., 4,390,516, Cl. 423-573.00R.
Ward, John M., 4,390,043, Cl. 138-89.000.
Shelton Video Editors, Inc.: *See—*
Johnston, Howard R.; and Koombes, Michael E. R. V., 4,390,904, Cl. 358-335.000.
Sheperd, Charles E., to C. E. Shepherd Company, Inc. Spraying apparatus for water cooling tower. 4,390,478, Cl. 261-6.000.
Sherman, Allan: *See—*
United States of America, National Aeronautics and Space Administration; Gasser, Max G.; Sherman, Allan; Studer, Philip A.; Daniels, Alexander; and Goldowsky, Michael P., 4,389,849, Cl. 62-6.000.
Sherman, Philip B., to Texaco Inc. Recovery of solvent in hydrocarbon processing systems. 4,390,418, Cl. 208-326.000.
Sherrill, George F., to George F. and Irene Sherrill 1978 Trust No. 1; and George F. and Irene Sherrill 1978 Trust No. 2, a part interest to each. Method for the treatment of viral skin diseases. 4,390,539, Cl. 424-251.000.
Shichman, Daniel: *See—*
Singh, Anand P.; and Shichman, Daniel; 4,390,334, Cl. 425-28.00R.
Shigematsu, Takashi; and Watanabe, Tomoyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition timing control method and system therefor. 4,389,992, Cl. 123-419.000.
Shimizu, Isoo: *See—*
Sato, Atsushi; Shimizu, Isoo; and Takahashi, Naoya, 4,390,194, Cl. 282-27.500.
Shimizu, Keiichiro; and Horii, Wataru, to Sharp Kabushiki Kaisha. Optical display cell of even thickness using adhesive means and separate adhesive-free spacers. 4,390,245, Cl. 350-343.000.
Shimoda, Haruo; and Tanabe, Kaoru, to Fujitsu Limited. Boat for carrying semiconductor substrates. 4,389,967, Cl. 118-500.000.
Shimokawa, Kazuhiro: *See—*
Tabushi, Iwao; Shimokawa, Kazuhiro; Naito, Daiji; Misaki, Susumu; and Yoshida, Tsutomu, 4,390,740, Cl. 570-146.000.
Shimono, Muchiji, to Yoshida Kogyo K.K. Apparatus for manufacturing woven slide fastener stringers. 4,390,046, Cl. 139-442.000.
Shin-Etsu Polymer Co., Ltd.: *See—*
Sado, Ryoichi; Morikawa, Yoshitusgu; Okamoto, Takekuni; and Tahara, Kazutoki, 4,390,765, Cl. 200-159.00B.
Shinagawa Refractories Co., Ltd.: *See—*
Danjo, Hiroyuki; Takimoto, Kazuaki; Muta, Gensuke; and Hiroki, Nobuyoshi, 4,390,166, Cl. 266-44.000.

Shinohara, Toshihiro: *See—*
Sato, Itsuzo; Ooi, Kazushige; Saito, Kikuo; Takemura, Yasuo; and Shinohara, Toshihiro, 4,390,895, Cl. 358-44.000.

Shionogi and Co., Ltd.: *See—*
Misaki, Susumu; Suefuji, Masahiro; Tsushima, Tadahiko; and Tanida, Hiroshi, 4,390,702, Cl. 546-296.000.

Shirai, Hiroshi: *See—*
Mori, Teruo; Shirai, Hiroshi; Kakei, Tsutomu; Watanabe, Masaru; and Matsuhisa, Tsuneyasu, 4,390,407, Cl. 204-206.000.

Shishido, Satohiro: *See—*
Ando, Tomonori; Hanyuda, Toshiaki; Shishido, Satohiro; Sano, Fumiaki; Ochi, Kiyoyuki; Sugimoto, Toshiaki; and Okino, Yoshiro, 4,390,662, Cl. 525-28.000.

Shmigidin, Viktor G.: *See—*
Khusnutdinov, Gil D.; Chernovol, Arkady V.; Shumikhin, Vladimir S.; Shulga, Vasily T.; Poteiko, Andrei I.; Kamensky, Vladimir K.; Kondakov, Jury A.; and Shmigidin, Viktor G., 4,390,362, Cl. 75-49.000.

Short, Charles. Apparatus for production of liquid from wells. 4,390,061, Cl. 166-53.000.

Showa Highpolymer Co., Ltd.: *See—*
Ando, Tomonori; Hanyuda, Toshiaki; Shishido, Satohiro; Sano, Fumiaki; Ochi, Kiyoyuki; Sugimoto, Toshiaki; and Okino, Yoshiro, 4,390,662, Cl. 525-28.000.

Showman, Robert L.; and Weber, Robert N., to AMP Incorporated. Two piece zero insertion force connector. 4,390,224, Cl. 339-75.0MP.

Shulga, Vasily T.: *See—*
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Shumikhin, Vladimir S.: *See—*
Khusnutdinov, Gil D.; Chernovol, Arkady V.; Shumikhin, Vladimir S.; Shulga, Vasily T.; Poteiko, Andrei I.; Kamensky, Vladimir K.; Kondakov, Jury A.; and Shmigidin, Viktor G., 4,390,362, Cl. 75-49.000.

SI Handling Systems Inc.: *See—*
Berk, Donald M.; Jacoby, Charles E.; and Reagan, Larry, 4,389,941, Cl. 104-49.000.

Sickenberger, David W.: *See—*
Browning, David R.; Sima, Gordon R., Jr.; Schmidt, John C.; and Sickenberger, David W., 4,390,784, Cl. 250-287.000.

Siegenthaler, Fritz, to Autelca, AG. Printing machine. 4,390,296, Cl. 400-608.000.

Siemens Aktiengesellschaft: *See—*
Bahlinger, Walter, 4,390,891, Cl. 357-79.000.
Benecke, Wilhelm; and Rosenberg, Heinz, 4,390,941, Cl. 363-174.000.
Dull, Hans-Jurgen; and Hillmer, Adolf, 4,389,942, Cl. 104-103.000.
Ganssen, Alexander; Oppelt, Arnulf; and Loeffler, Wilfried, 4,390,840, Cl. 324-309.000.
Hartig, F. Gunter, 4,389,989, Cl. 123-339.000.
Hoffmann, Christian; Zollner, Manfred; and Zwicker, Eberhard, 4,390,756, Cl. 179-107.0BC.
Krampe, Dietrich; and Schleicher, Herbert, 4,390,821, Cl. 318-85.000.
Mathuni, Josef; and Unger, Karin, 4,390,394, Cl. 156-643.000.
Risch, Lothar; and Mader, Hermann, 4,390,888, Cl. 357-30.000.
Watzke, Franz, 4,390,762, Cl. 200-144.00B.
Wiessner, Edgar, 4,390,757, Cl. 200-11.00G.
Zwicker, Eberhard, 4,390,748, Cl. 179-1.00N.

Siemon Company, The: *See—*
Knickerbocker, Robert H., 4,390,230, Cl. 339-125.00R.

Siems, Lee, to Litton Resources Systems, Inc. Seismic data telemetric system. 4,390,974, Cl. 367-76.000.

Sierwald, Karl: *See—*
Adelhard, Georg; Hasselberg, Herbert; Obermeier, Manfred; Sierwald, Karl; Szedlacsek, Jozsef; and Somogyi, Gyorgy, 4,389,838, Cl. 57-71.000.

Signetics: *See—*
Blauschild, Robert A., 4,390,848, Cl. 330-151.000.

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Sihi GmbH & Co. KG: *See—*
Lehmann, Wilfried; and Fandrey, Peter, 4,390,317, Cl. 415-143.000.

Sima, Gordon R., Jr.: *See—*
Browning, David R.; Sima, Gordon R., Jr.; Schmidt, John C.; and Sickenberger, David W., 4,390,784, Cl. 250-287.000.

Simjian, Luther G. Exercise apparatus. 4,390,180, Cl. 272-126.000.

Simmons, Carlton J., Jr.: *See—*
Uetrecht, Dale M.; and Simmons, Carlton J., Jr., 4,389,914, Cl. 84-1.010.

Simmons U.S.A. Corporation: *See—*
Callaway, Milton A., 4,389,743, Cl. 5-464.000.

Singer Company, The: *See—*
Brown, Jack; and Wurst, John W., 4,390,823, Cl. 318-331.000.
Brown, Jack, 4,390,824, Cl. 318-331.000.
Cohen, Edwin; and Maynard, Jack A., 4,390,861, Cl. 340-27.00R.
Cornforth, Malcolm W.; and Jacobsen, Robert S., 4,390,956, Cl. 364-510.000.
Larsen, Robert H.; and Giaimo, Anthony, 4,389,955, Cl. 112-184.000.

Singh, Anand P.; and Shichman, Daniel, to NRM Corporation. Hydraulic tire press. 4,390,334, Cl. 425-28.00R.

Sirafuji, Tamio: *See—*
Inoue, Yasuhiko; Wake, Shigeo; Sirafuji, Tamio; and Beppu, Masazo, 4,390,736, Cl. 568-801.000.

Skarlos, Leonidas; and Dille, Roger M., to Texaco Inc. Coal slurry monitor means and method. 4,390,957, Cl. 364-550.000.

Skeem, Wayne B. Round bale transporter and feeder. 4,390,312, Cl. 414-24.600.

Skillman, Dale N. Solar energy collecting apparatus and roll-formed metal building. 4,390,010, Cl. 126-450.000.

Skripek, Milan: *See—*
Dvoracek, Louis M.; Fischer, Paul W.; and Skripek, Milan, 4,390,412, Cl. 208-48.00R.

Slater, Charles A., Jr.; and Darby, Spencer A., to Peterson Manufacturing Co. Resilient suspension mount. 4,390,936, Cl. 362-390.000.

Sliva, Daniel E.: *See—*
Ritzer, Alan; Shah, Bakulesh; and Sliva, Daniel E., 4,390,510, Cl. 423-342.000.

Sloan, Albert H. Portable hot water system for diver's suit. 4,390,305, Cl. 405-186.000.

Sloboda, Adolph E., to American Cyanamid Company. Combinations of agents which give enhanced anti-inflammatory activity. 4,390,545, Cl. 424-275.000.

Smetana, Roland; and Werner, Franz, to U.S. Philips Corporation. Tape guide system. 4,390,119, Cl. 226-196.000.

Smith, Archie L.: *See—*
McGee, John K.; Lafferty, Harold L.; Bridges, Charles D.; and Smith, Archie L., 4,390,186, Cl. 277-236.000.

Smith, David E.: *See—*
Mendiola, Joseph V.; and Smith, David E., 4,390,052, Cl. 152-356.00R.

Smith, Donald O.; and Harte, Kenneth J., to Control Data Corporation. Electron beam array lithography system employing multiple parallel array optics channels and method of operation. 4,390,789, Cl. 250-492.200.

Smith, Gertrude I.: *See—*
Bunas, Norman L.; and Smith, Gertrude I., 4,390,389, Cl. 156-502.000.

Smith, Gregory M.: *See—*
Bullard, Edward M.; and Smith, Gregory M., 4,390,573, Cl. 428-35.000.

Smith, James L., to United States of America, Army. Process for producing orthographic projection image of complex terrain/targets from an automatic system using two photographs. 4,390,271, Cl. 355-77.000.

Smith, Stuart B., to Thermocell Development, Ltd. Flame-retardant benzylic-ether phenolic modified foam and method of preparing same. 4,390,641, Cl. 521-103.000.

Smith, Stuart B., to Thermocell Development, Ltd. Flame-retardant, thermosetting foam product and method of preparing same. 4,390,642, Cl. 521-112.000.

Smithgall, David H., Sr., to Western Electric Company, Inc. Technique for automatically centering a lightguide fiber in a coating. 4,390,897, Cl. 358-101.000.

Smorol, Michael E.: *See—*
Haas, Rudy E.; Smorol, Michael E.; Tobin, Curtis L.; and Walker, James J., Jr., 4,390,059, Cl. 165-76.000.

Snead, Edwin deS. Load weighing and accumulating system and method. 4,390,075, Cl. 177-210.0FP.

Societe Anonyme dite: Alstrom-Atlantique: *See—*
Lejeune, Pierre; and Serpaud, Jean, 4,390,429, Cl. 210-519.000.

Societe Anonyme dite: L'Oreal: *See—*
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,390,522, Cl. 424-45.000.
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,390,689, Cl. 528-335.000.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Chiovini, Jacky; Blanc, Maurice; and Margolis, Geoffrey, 4,390,698, Cl. 544-274.000.

Societe Industrielle de Brevets et D'Etudes (SIBE): *See—*
Noisier, Guy, 4,390,480, Cl. 261-34.00A.

Societe Lab: *See—*
Vicard, Pierre G., 4,390,426, Cl. 210-243.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.": *See—*
Fournier, Jacques M. A., 4,389,891, Cl. 73-579.000.

Societe Nationale Elf Aquitaine (Production): *See—*
Robinet, Alain, 4,389,880, Cl. 73-86.000.

Societe Nationale Industrielle Aerospatiale: *See—*
Briens, Guy, 4,390,584, Cl. 428-116.000.
Corbefin, Rene; and Vacelet, Gabriel, 4,390,940, Cl. 363-132.000.

Sohma, Yoshio, to Nikko Kogyo Kabushiki Kaisha. Binding device. 4,389,754, Cl. 24-16.0PB.

Sojka, Richard J.; Braverman, Leonard W.; Guch, Steve, Jr.; and Clark, David J., to GTE Products Corporation. Laser electrode assembly. 4,390,993, Cl. 372-87.000.

Solaroli, Sergio, to Finike Italiana Marposs S.p.A. Gauge for the geometrical and/or dimensional checking of pieces rotating about a geometrical axis. 4,389,787, Cl. 33-174.00Q.

Solender, Peter E.: *See—*
Eglowstein, Ira; and Solender, Peter E., 4,390,967, Cl. 364-900.000.

Solex Research Corporation of Japan: *See—*
Watanabe, Morio; Nishimura, Sanji; and Watanabe, Nobuatsu, 4,390,508, Cl. 423-112.000.

Somogyi, Gyorgy: *See—*
Adelhard, Georg; Hasselberg, Herbert; Obermeier, Manfred; Sierwald, Karl; Szedlacsek, Jozsef; and Somogyi, Gyorgy, 4,389,838, Cl. 57-71.000.

Somorjai, Gabor A. Fuel compositions and additive mixtures for reducing hydrocarbon emissions. 4,390,345, Cl. 44-63.000.

Sony Corporation: *See—*
Arai, Kiyoshi, 4,389,935, Cl. 101-93.010.
Matsuyama, Atsuo, 4,390,915, Cl. 360-104.000.
Nagai, Tamiji; and Ishigaki, Yoshio, 4,390,818, Cl. 315-408.000.
Nakamura, Tadahiko; Nakano, Kenji; and Tajima, Shigeru, 4,390,908, Cl. 360-70.000.
Sakamoto, Hitoshi, 4,390,909, Cl. 360-71.000.

Sotoyama, Toshiki: *See—*
Yatsu, Tadao; Todo, Akira; and Sotoyama, Toshiki, 4,390,683, Cl. 528-194.000.

Southern California Edison Co., Inc.: *See—*
Bjorklund, Glenn J.; and Phillips, Charles E., 4,390,876, Cl. 340-825.170.

Southern Systems, Inc.: *See—*
Linton, Leon; and Kiss, David B., 4,389,944, Cl. 104-172.00S.

Spectro-Systems, Incorporated: *See—*
Gaven, Joseph V., Jr.; and Bak, Chan S., 4,390,291, Cl. 374-160.000.

Spekman, Paul, Jr., to Fremont Industries, Inc. Low temperature composition for plating pretreatment of ferrous metals. 4,390,465, Cl. 252-527.000.

Sperry Corporation: *See—*
Schoeneberger, Ernest A., 4,390,094, Cl. 198-865.000.

Spigarelli, Donald J.; and Dustin, Paul C., to HTC Corporation, The. Continuous vapor processing system. 4,389,797, Cl. 34-73.000.

Spohr, Albert R.: *See—*
Coleman, Donald J.; Jackson, Wilbur C.; Lube, Robert R.; and Spohr, Albert R., 4,389,772, Cl. 30-43.900.

Sprenger, Walter: *See—*
Walz, Gerd; Wirth, Thaddaus; and Sprenger, Walter, 4,390,688, Cl. 528-295.300.

Spurrell, Roworth A. J.; Nappholz, Tibor A.; and Swift, Stephen J., to Telectronics Pty. Ltd. Two pulse tachycardia control pacer. 4,390,021, Cl. 128-419.0PG.

Stacey, Eric J., to Westinghouse Electric Corp. Cycloconverter apparatus with controllable end stop firing pulse control means. 4,390,938, Cl. 363-54.000.

Stacy, Carl J., to Phillips Petroleum Company. Reinforced rubbery composition. 4,390,648, Cl. 523-216.000.

Stahlecker, Fritz: *See—*
Stahlecker, Hans; and Braxmeier, Hans, 4,389,837, Cl. 57-16.000.

Stahlecker, Hans; and Braxmeier, Hans, to Stahlecker, Fritz; and Stahlecker, Hans. Ply yarn spinning assembly. 4,389,837, Cl. 57-16.000.

Stahn, Roland: *See—*
Frabricius, Hans-Ake; and Stahn, Roland, 4,390,623, Cl. 435-68.000.

Stamicarbon, B.V.: *See—*
Weterings, Cornelis A. M.; and Janssen, Johannes A., 4,390,507, Cl. 423-8.000.

Standard Oil Company: *See—*
Isley, Ralph E., 4,390,652, Cl. 524-322.000.
Pesa, Frederick A.; and Graham, Anne M., 4,390,639, Cl. 518-713.000.

Standard Oil Company (Indiana): *See—*
Klotz, Marvin R., 4,390,457, Cl. 252-455.00Z.
Lee, Richard J.; and Murphy, Lynn M. R., 4,390,437, Cl. 252-51.50A.

Stanley, Charles A., to Litek International Inc. Transformer for driving Class D amplifier. 4,390,813, Cl. 315-248.000.

Stanley, Frederick W., Jr.; and Fairchok, William J., to Dow Chemical Company, The. Method for the preparation of quaternary carboxamide polymers. 4,390,659, Cl. 524-555.000.

Stanton, James L., to Ciba-Geigy Corporation. 1-Carboxyazaalkanoyltetrahydroquinoline-2-carboxylic acids. 4,390,700, Cl. 546-165.000.

Stanton, Robert: *See—*
Rugg, Barry; and Stanton, Robert, 4,390,375, Cl. 127-37.000.

Stauffer Chemical Company: *See—*
Chin, Hsiao-Ling M., 4,390,549, Cl. 424-324.000.

Steelcase, Incorporated: *See—*
Faiks, Frederick S.; Pergler, Charles C.; Whitwam, Ronald L.; Knoblauch, Jack R.; Beukema, Duane M.; and Hozeski, Kenneth W., 4,390,206, Cl. 297-300.000.

Steen, William M.; and Duley, Walter W., to National Research Development Corporation. Method and apparatus for treating electrically non-conductive workpieces. 4,390,774, Cl. 219-121.0FS.

Steffen, Horst-G.: *See—*
Orova, Josef; Roderer, Herbert; Schmid, Hans D.; and Steffen, Horst-G., 4,390,804, Cl. 310-70.00R.

Steigerwald, Robert L., to General Electric Company. Induction heating apparatus providing smooth power control. 4,390,769, Cl. 219-10.770.

Stent, Gunther S.: *See—*
Sawyer, Roy T.; Stent, Gunther S.; Budzynski, Andrei Z.; and Olexa, Stephanie A., 4,390,630, Cl. 435-226.000.

Stepan Chemical Company: *See—*
Nussbaum, Marvin L.; and Knaggs, Edward A., 4,390,474, Cl. 260-505.00R.

Stephans, Emery J.: *See—*
Curtis, Huntington W.; Kellogg, Robert M.; Kissinger, Kerry W.; Mappes, Robert P.; and Stephans, Emery J., 4,390,499, Cl. 422-72.000.

Stephens, James R.: *See—*
Trautlein, Fred S.; and Stephens, James R., 4,390,099, Cl. 211-4.000

Stern, Max H.: *See—*
Gabrielsen, Rolf S.; Graham, Patricia A.; Klijanowicz, James E.; and Stern, Max H., 4,390,606, Cl. 430-9.000.

Sternisa, Danilo: *See—*
Hodes, Erich; Sternisa, Danilo; and Schneider, Walter, 4,390,563, Cl. 427-27.000.

Stevens, Edward J., to Minnesota Mining & Manufacturing Company. Microparticles with visual identifying means. 4,390,452, Cl. 252-408.100.

Stiftelsen Institute for Mikrovagstenknik vid Tekniska Hogskolan i Stockholm: *See—*
Henoch, Bengt, 4,390,880, Cl. 343-6.8LC.

Stoker, James: *See—*
Weldon, Howard; and Stoker, James, 4,390,155, Cl. 248-507.000.

Stokowski, Robert J.; Tertzakian, Gerard; and Ruo, Tomoki C. S., to Terochem Laboratories Ltd. Process for producing oxalyl chloride and intermediates. 4,390,708, Cl. 549-229.000.

Stoll, Kurt. Optical display unit for pneumatic systems. 4,389,962, Cl. 116-272.000.

Stone & Webster Engineering Corporation: *See—*
Gartside, Robert J.; and Woebcke, Herman N., 4,390,502, Cl. 422-145.000.

Stoneburner, Leonard G., to Mead Corporation, The. Fluid jet print head and method of terminating operation thereof. 4,390,883, Cl. 346-75.000.

Stora Kopparbergs Bergslags Aktiebolag: *See—*
Andreason, Gustav O.; Friberg, Ulf R.; Kuvaja, Heimo H.; and Qvarnstrom, Bengt G. L., 4,389,814, Cl. 47-73.000.

Storage Systems and Industrial Products Ltd.: *See—*
Sanfeliu-Marimon, Jaime, 4,390,302, Cl. 403-187.000.

Strahan, Robert M.; Hopf, Philip W.; and Williams, Phillip G., to General Motors Corporation. Energy absorbing steering wheel assembly. 4,390,193, Cl. 280-777.000.

Strickland, Lawrence P., to Motorola, Inc. Gated quadrature detector biased to switch on sinusoidal zero crossings. 4,390,845, Cl. 329-103.000.

Stringer, Frederick D.: *See—*
Ferguson, Daniel J.; Stringer, Frederick D.; and Esakov, Michael D., 4,390,385, Cl. 156-229.000.

Strout, Robert B., to Gillette Company, The. Apparatus for shearing and coiling strip material. 4,389,868, Cl. 72-132.000.

Struthers, Ralph C. Fuel cell. 4,390,602, Cl. 429-26.000.

Students, Peter A.: *See—*
Preiss, Martin D.; and Students, Peter A., 4,390,356, Cl. 62-35.000.

Studer, Philip A.: *See—*
United States of America, National Aeronautics and Space Administration; Gasser, Max G.; Sherman, Allan; Studer, Philip A.; Daniels, Alexander; and Goldowsky, Michael P., 4,389,849, Cl. 62-6.000.

Stumm, Hans-Peter: *See—*
Denz, Helmut; Stumm, Hans-Peter; and Zechnall, Martin, 4,389,994, Cl. 123-478.000.

Stuttgen, Gunter; and Schaefer, Hans, to Dr. Carl Hahn, G.m.b.H. Topical combinations of an α-estradiol with a methyl xanthine. 4,390,532, Cl. 424-240.000.

Suefuji, Masahiro: *See—*
Misaki, Susumu; Suefuji, Masahiro; Tsushima, Tadahiko; and Tanida, Hiroshi, 4,390,702, Cl. 546-296.000.

Suenaga, Yoshihiko: *See—*
Hayashi, Soichiro; and Suenaga, Yoshihiko, 4,390,788, Cl. 250-491.100.

Sueyoshi, Toshinobu; Hirai, Shigeo; and Amemiya, Masahiro, to Hitachi Maxell, Ltd. Process for preparing ferromagnetic particles comprising metallic iron. 4,390,361, Cl. 75-0.5BA.

Suffi, Louis; Golden, James E.; and Burtelson, Frederick W., to Northern Telecom, Inc. Fixed count terminal. 4,390,744, Cl. 174-41.000.

Suganuma, Tsuneo: *See—*
Miyauchi, Katsuki; Oi, Tetsu; and Suganuma, Tsuneo, 4,390,460, Cl. 252-518.000.

Sugawara, Isao, to Kabushiki Kaisha Chiyoda. Electric power source device. 4,390,939, Cl. 363-129.000.

Sugawara, Tsutomu: *See—*
Yamada, Hisashi; and Sugawara, Tsutomu, 4,390,847, Cl. 330-51.000.

Sugimoto, Toshiaki: *See—*
Ando, Tomonori; Hanyuda, Toshiaki; Shishido, Satohiro; Sano, Fumiaki; Ochi, Kiyoyuki; Sugimoto, Toshiaki; and Okino, Yoshiro, 4,390,662, Cl. 525-28.000.

Sugiura, Kazumasa; Mori, Kinji; Ihara, Hirokazu; and Kawai, Yoshinori, to Hitachi, Ltd. Status check method for a data transmission system. 4,390,984, Cl. 370-88.000.

Sullivan, Wayne M.: *See—*
Enen, Jack, Jr.; and Sullivan, Wayne M., 4,390,064, Cl. 166-99.000.

Sultan, S. Bertil, to Xerox Corporation. Ink jet printing machine. 4,390,886, Cl. 346-140.0PD.

Sumita, Toru, to Minolta Camera Kabushiki Kaisha. Mount member for optical apparatus. 4,390,263, Cl. 354-286.000.

Sumitomo Chemical Company, Limited: *See—*
Inoue, Yasuhiko; Wake, Shigeo; Sirafuji, Tamio; and Beppu, Masazo, 4,390,736, Cl. 568-801.000.
Yamada, Hirotada; Jimpo, Kiyokazu; Okuda, Takao; Noguchi, Hiroshi; and Tobiki, Hisao, 4,390,535, Cl. 424-246.000.

Sumitomo Metal Industries Co., Ltd.: *See—*
Danjo, Hiroyuki; Takimoto, Kazuaki; Muta, Gensuke; and Hiroki, Nobuyoshi, 4,390,166, Cl. 266-44.000.

Sunbeam Corporation: *See—*
Coleman, Donald J.; Jackson, Wilbur C.; Lube, Robert R.; and Spohr, Albert R., 4,389,772, Cl. 30-43.900.

Sundstrand Corporation: *See—*
Muller, Hans R., 4,390,950, Cl. 364-434.000.

Sundt, Eilert, to Olaf Fjeldsend A/S. Apparatus for magnetic treatment of a flowing liquid. 4,390,423, Cl. 210-222.000.

Suntola, Tuomo S.; Pakkala, Arto J.; and Lindfors, Sven G., to Oy Lohja AB. Apparatus for performing growth of compound thin films. 4,389,973, Cl. 118-725.000.

Superscope, Inc.: *See—*
Pearson, Erik W., 4,390,749, Cl. 179-1.0GJ.

Superwinch, Inc.: *See—*
Nelson, Robert G., 4,390,161, Cl. 254-356.000.

Sutter, Hanspeter, to Luwa AG. Apparatus for the compaction of fibers. 4,389,931, Cl. 100-90.000.

Suverison, Lyle B.: *See—*
Plyler, Robert G.; and Suverison, Lyle B., 4,390,231, Cl. 339-217.00S.

Suwa, Kyoichi, to Nippon Kogaku K. K. Alignment device in an IC projection exposure apparatus. 4,390,279, Cl. 356-401.000.

Suyama, Nobuo: *See—*
Kyo, Kayomon; Asai, Yasuhiko; Hirose, Isamu; and Suyama, Nobuo, 4,390,682, Cl. 528-194.000.

Suzuki, Hidetaka: *See—*
Mori, Kazuyuki; Mizote, Masanori; Takeda, Hitoshi; Yamaki, Kiyoshi; Suzuki, Hidetaka; Nomura, Hiroyuki; and Kawasaki, Teruo, 4,390,948, Cl. 364-424.000.

Suzuki, Kazuhiro: *See—*
Kanada, Toshiaki; Suzuki, Kazuhiro; Yoshioka, Hiroshi; Maeda, Kenji; and Tsurumi, Yoshihiro, 4,390,643, Cl. 521-117.000.

Suzuki, Koji; Inuzuka, Tsuneki; and Kurita, Kenji, to Canon Kabushiki Kaisha. Image forming apparatus. 4,390,265, Cl. 355-14.00D.

Suzuki, Ryushi: *See—*
Matsui, Kunio; Tsuchiya, Hiroaki; and Suzuki, Ryushi, 4,390,351, Cl. 55-204.000.

Suzuki, Takashi: *See—*
Iwaya, Hirokatsu; Saigo, Hiroshi; and Suzuki, Takashi, 4,389,811, Cl. 46-232.000.

Svendsen, Biarne R., to Genvex Energiteknik A/S. Heat exchanger. 4,389,857, Cl. 62-325.000.

Sviatoslavsky, Nicolas N.; and Kelpin, Charles A., to Appleton Electric Company. Hinge construction for electrical enclosures. 4,390,114, Cl. 220-337.000.

Swamy, K. H. Sreedhara: *See—*
Goldberg, Alfred L.; Swamy, K. H. Sreedhara; and Chung, Chin H., 4,390,629, Cl. 435-220.000.

Swank, Harry R.: *See—*
Mitchell, Robert B.; and Swank, Harry R., 4,390,809, Cl. 313-482.000.

Swartley, John S.; and Der Avedisian, Suren, to General Foods Corporation. Heating utensil and associated circuit completing pouch. 4,390,551, Cl. 426-107.000.

Swearingen, Judson S., to Rotoflow Corporation. Reserve lubricant supply system. 4,390,082, Cl. 184-6.400.

Swedlow, Inc.: *See—*
White, William H.; Harbison, William C.; and Nelson, Gary L., 4,390,373, Cl. 106-287.120.

Sweeney, William M., to Texaco Inc. Gasohol maintained as a single mixture by the addition of an acetal, a ketal or an orthoester. 4,390,344, Cl. 44-56.000.

Sweeney, William M., to Texaco Inc. Method for dewatering non-aqueous liquids. 4,390,417, Cl. 208-188.000.

Swift, Stephen J.: *See—*
Spurrell, Roworth A. J.; Nappholz, Tibor A.; and Swift, Stephen J., 4,390,021, Cl. 128-419.0PG.

SWS Silicones Corporation: *See—*
Martin, Eugene R., 4,390,713, Cl. 556-418.000.

Syed, Ali N.: *See—*
Khalil, Ezzat N.; and Syed, Ali N., 4,390,033, Cl. 132-7.000.

Syntex Pharmaceuticals International Ltd.: *See—*
Edgren, Richard A., 4,390,531, Cl. 424-239.000.

Syscom, Inc.: *See—*
Wood, Leonard J.; Parasuraman, Balakrishna; Williams, Edwin H.; Alexander, Mark G.; and Montgomery, Richard C., Jr., 4,390,981, Cl. 370-56.000.

Szacsvay, Gabor: *See—*
Boeni, Hans; Meier, Beda; and Szacsvay, Gabor, 4,389,870, Cl. 72-354.000.

Szarka, Sandor: *See—*
Jaffa, David; and Szarka, Sandor, 4,389,936, Cl. 101-123.000.

Szedlacsek, Jozsef: *See—*
Adelhard, Georg; Hasselberg, Herbert; Obermeier, Manfred; Sierwald, Karl; Szedlacsek, Jozsef; and Somogyi, Gyorgy, 4,389,838, Cl. 57-71.000.

Szirniks, Klaus G.: *See—*
Gloystein, Jurgen F. G.; and Szirniks, Klaus G., 4,389,761, Cl. 24-287.000.

Szkalak, Kalman Z. Multi-station exercising apparatus. 4,390,179, Cl. 272-118.000.

Szonntagh, Eugene L., to Honeywell Inc. Temperature sensor and detector cell utilizing the same. 4,389,876, Cl. 73-27.00R.

T. Y. Lin International: *See—*
Chow, Philip Y., 4,389,825, Cl. 52-224.000.

Tabushi, Iwao; Shimokawa, Kazuhiro; Naito, Daiji; Misaki, Susumu; and Yoshida, Tsutomu, to Daikin Kogyo Co., Ltd. Process for preparing fluorobenzene. 4,390,740, Cl. 570-146.000.

Tafara, Peter T.; and Fink, Warren R. High pressure liquid filter vessel. 4,390,425, Cl. 210-232.000.

Taguchi, Tetsuya: *See—*
Hirohata, Michio; Ogawa, Yukio; and Taguchi, Tetsuya, 4,390,262, Cl. 354-230.000.

Tague, Steven A.: *See—*
Negi, Virendra S.; and Tague, Steven A., 4,390,961, Cl. 364-756.000.

Tahara, Kazutoki: *See—*
Sado, Ryoichi; Morikawa, Yoshitusgu; Okamoto, Takekuni; and Tahara, Kazutoki, 4,390,765, Cl. 200-159.00B.

Tajima, Shigeru: *See—*
Nakamura, Tadahiko; Nakano, Kenji; and Tajima, Shigeru, 4,390,908, Cl. 360-70.000.

Takagi, Masayuki, to NSK-Warner K.K. Manually operable attachment for the locking mechanism of safety belt retractor. 4,390,143, Cl. 242-107.40A.

Takahashi, Akira: *See—*
Ohta, Kenji; and Takahashi, Akira, 4,390,600, Cl. 428-621.000.

Takahashi, Naoya: *See—*
Sato, Atsushi; Shimizu, Isoo; and Takahashi, Naoya, 4,390,194, Cl. 282-27.500.

Takahashi, Seigo: *See—*
Sakata, Hideo; and Takahashi, Seigo, 4,389,783, Cl. 33-143.00K.
Sakata, Hideo; and Takahashi, Seigo, 4,389,786, Cl. 33-174.00P.

Takahashi, Toshirou: *See—*
Kobayashi, Hidetoshi; Takahashi, Toshirou; Hirano, Shigeo; Hirosa, Takeshi; and Adachi, Keiichi, 4,390,618, Cl. 430-543.000.

Takahashi, Yuji, to Canon Kabushiki Kaisha. Recording medium feeding device. 4,390,175, Cl. 271-157.000.

Takai, Haruki: *See—*
Teranishi, Masayuki; Obase, Hiroyuki; Takai, Haruki; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,390,536, Cl. 424-246.000.

Takeda, Hitoshi: *See—*
Mori, Kazuyuki; Mizote, Masanori; Takeda, Hitoshi; Yamaki, Kiyoshi; Suzuki, Hidetaka; Nomura, Hiroyuki; and Kawasaki, Teruo, 4,390,948, Cl. 364-424.000.

Takeguchi, Masanobu; and Oyobe, Isao, to Marui Industry Co., Ltd. Method of purifying water in fish keeping water tank. 4,390,432, Cl. 210-748.000.

Takenae, Mikio; and Ohkubo, Yuji, to Nippon Kogaku K.K. Flash output control apparatus for camera. 4,390,259, Cl. 354-34.000.

Takemura, Yasuhiko; and Saito, Kazuyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic display apparatus having means for detecting the position of an ultrasonic probe. 4,390,025, Cl. 128-660.000.

Takemura, Yasuo: *See—*
Sato, Itsuzo; Ooi, Kazushige; Saito, Kikuo; Takemura, Yasuo; and Shinohara, Toshihiro, 4,390,895, Cl. 358-44.000.

Takenaka, Kiyosi: *See—*
Henmi, Kojiro; and Takenaka, Kiyosi, 4,390,269, Cl. 355-27.000.

Takeuchi, Hidetsugu; Muramatsu, Tsuyoshi; and Kato, Shozo, to Nippondenso Co., Ltd. Method of producing yoke of rotary electric machine. 4,389,871, Cl. 72-356.000.

Takimoto, Kazuaki: *See—*
Danjo, Hiroyuki; Takimoto, Kazuaki; Muta, Gensuke; and Hiroki, Nobuyoshi, 4,390,166, Cl. 266-44.000.

Tamada, Mitsuru: *See—*
Nagai, Hidetaka; Wada, Yasushi; Kobayashi, Ichiro; Tamada, Mitsuru; Ushiyama, Keiichi; and Yamamoto, Toshiyuki, 4,390,520, Cl. 424-28.000.

Tamai, Yoshin: *See—*
Omura, Yoshiaki; Mori, Fumio; Fujita, Yoshiji; Nishida, Takashi; Tamai, Yoshin; Wada, Fumio; and Itoi, Kazuo, 4,390,547, Cl. 424-304.000.

Tamglass Oy: *See—*
Reunamaki, Pauli, 4,390,359, Cl. 65-114.000.

Tamura, Kohki: *See—*
Kawana, Hidejiro; Horiba, Tatsuo; Iwamoto, Kazuo; Fujita, Kazunori; and Tamura, Kohki, 4,390,603, Cl. 429-30.000.

Tamura, Koichi: *See—*
Haraikawa, Tetsuo; and Tamura, Koichi, 4,390,084, Cl. 188-71.700.

Tanaami, Kazuo; and Matsuda, Nobuo, to Director-General, Agency of Industrial Science & Technology. High temperature gas distributor for fluidized bed. 4,390,501, Cl. 422-143.000.

Tanabe, Kaoru: *See—*
Shimoda, Haruo; and Tanabe, Kaoru, 4,389,967, Cl. 118-500.000.

Tanabe Seiyaku Co., Ltd.: *See—*
Chibata, Ichiro; Tosa, Tetsuya; Mori, Takao; and Fujimura, Motoki, 4,390,626, Cl. 435-176.000.

Tanaka, Haruhiko: *See—*
Makabe, Hachiro; and Tanaka, Haruhiko, 4,389,954, Cl. 112-158.00E.

Tanaka, Masamichi; and Wada, Hiroto, to Tokyo Shibaura Denki Kabushiki Kaisha. Electret device. 4,390,800, Cl. 307-400.000.

Tanasawa, Yasusi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Direct injection type internal combustion engine with a low pressure fuel injector. 4,389,986, Cl. 123-298.000.

Tanida, Hiroshi: *See—*
Misaki, Susumu; Suefuji, Masahiro; Tsushima, Tadahiko; and Tanida, Hiroshi, 4,390,702, Cl. 546-296.000.

Taniguchi, Hiroshi: *See—*
Furumoto, Mitsunobu; Yano, Osahiko; Taniguchi, Hiroshi; Kubo, Kanji; and Ohtsu, Masamitsu, 4,390,906, Cl. 360-19.100.

Taniguchi, Tokuyuki; Yashima, Iwao; Ota, Masanori; and Sasahara, Hitoshi, to Nissan Chemical Industries, Ltd. Method for removal of fungi formed on hides. 4,390,339, Cl. 8-94.180.

Tanner, Bruno: *See—*
Briner, Emil; Novak, Peter; Tanner, Bruno; and Gasser, Hermann, 4,389,840, Cl. 57-267.000.

Tannery, Edward F.: *See—*
Cox, Walter T.; and Tannery, Edward F., 4,390,195, Cl. 292-53.000.

Tao, Bernard T.: *See—*
Blair, Daniel R.; Lomneth, Richard B.; Prosise, Robert L.; and Tao, Bernard T., 4,390,561, Cl. 426-607.000.

Tarkkanen, Veikko: *See—*
Berthold, Fritz; Kolehmainen, Seppo; and Tarkkanen, Veikko, 4,390,274, Cl. 356-36.000.

Tatsumi, Kazutsune, to Hoya Corporation. Detachable camera filter holder capable of being connected in series with a like filter holder. 4,390,242, Cl. 350-318.000.

Tatters, Ronald; Doiman, John E.; and Howell, Donald R., deceased (by Howell, June E., executrix), to Canada, Her Majesty the Queen in right of, as represented by the Minister of Defence. Reversing low pressure lubricating valve. 4,389,922, Cl. 92-156.000.

Taylor, Aaron S.; and White, Vernon E., to Mobil Solar Energy Corporation. Crystal growth apparatus. 4,390,505, Cl. 422-246.000.

Taylor Freezer Company: *See—*
Schwitters, Stephen W., 4,390,760, Cl. 200-61.040.

Taylor, Junius E., to Engineering & Research Associates, Inc. Circuit for electro mechanical tubing sealer. 4,390,832, Cl. 323-273.000.

Taylor, Lloyd D.: *See—*
Mehta, Avinash C.; Nawn, George H.; and Taylor, Lloyd D., 4,390,613, Cl. 430-219.000.

Taylor, William H., to Hutch Protective Devices Ltd. Latch and lock guard. 4,390,199, Cl. 292-346.000.

Teepak, Inc.: *See—*
Martinek, Thomas W.; and Wilmsen, George M., 4,390,490, Cl. 264-173.000.

Tefertiller, Nancy B.: *See—*
Hoffman, Dwight K.; Harris, Robert F.; Tefertiller, Nancy B.; and Rains, Randall C., 4,390,645, Cl. 521-137.000.

Teich, Wesley W.; and Dudley, Kenneth W., to Raytheon Company. Cook-by-weight microwave oven. 4,390,768, Cl. 219-10.55B.

Tektronix, Inc.: *See—*
Addis, John L., 4,390,852, Cl. 330-300.000.

Telectronics Pty. Ltd.: *See—*
Spurrell, Roworth A. J.; Nappholz, Tibor A.; and Swift, Stephen J., 4,390,021, Cl. 128-419.0PG.

Telefonaktiebolaget L M Ericsson: *See—*
Pehrson, Jens E., 4,390,989, Cl. 371-22.000.

Telex Computer Products, Inc.: *See—*
Tharrington, Reginald B., 4,390,795, Cl. 307-143.000.

Telmec Co., Ltd.: *See—*
Imahashi, Issei, 4,390,827, Cl. 318-687.000.

Temp-Trak Inc.: *See—*
Riess, Gordon S., 4,390,016, Cl. 604-236.000.

Tenhaaf, Peter H., to Combustion Engineering, Inc. Wire cloth tensioning apparatus. 4,390,420, Cl. 209-403.000.

Tenneco Chemicals, Inc.: *See—*
Koral, Marvin; and Goodman, Donald, 4,390,459, Cl. 252-511.000.

Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Cephem and cepham compounds. 4,390,534, Cl. 424-246.000.

Teranishi, Masayuki; Obase, Hiroyuki; Takai, Haruki; Kubo, Kazuhiro; and Kasuya, Yutaka, to Kyowa Hakko Kogyo Co., Ltd. Piperidine derivatives. 4,390,536, Cl. 424-246.000.

Terao, Toshimi: *See—*
Kondo, Fusao; Terao, Toshimi; Nagano, Katsumasa; and Kitano, Kyozo, 4,390,475, Cl. 260-505.00S.

Terochem Laboratories Ltd.: *See—*
Stokowski, Robert J.; Tertzakian, Gerard; and Ruo, Tomoki C. S., 4,390,708, Cl. 549-229.000.

Tertzakian, Gerard: *See—*
Stokowski, Robert J.; Tertzakian, Gerard; and Ruo, Tomoki C. S., 4,390,708, Cl. 549-229.000.

Tesa, S.A.: *See—*
Zanier, Adriano, 4,389,784, Cl. 33-172.00B.

Teschemacher, Hansjorg: *See—*
Brantl, Victor; Henschen, Agnes; Teschemacher, Hansjorg; and Lottspeich, Friedrich, 4,390,527, Cl. 424-177.000.

Tesser, Murray V.: *See—*
Fernekes, Robert W.; and Tesser, Murray V., 4,390,257, Cl. 353-95.000.

Tessier, Jean: *See—*
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,390,724, Cl. 562-504.000.

Texaco Inc.: *See—*
Dille, Roger M.; Middleton, Leigh R.; Brent, Albert; and Robin, Allen M., 4,390,347, Cl. 48-197.00R.
Dille, Roger M.; Middleton, Leigh R.; Brent, Albert; and Robin, Allen M., 4,390,348, Cl. 48-197.00R.
Knifton, John F., 4,390,734, Cl. 568-678.000.
Sherman, Philip B., 4,390,418, Cl. 208-326.000.
Skarlos, Leonidas; and Dille, Roger M., 4,390,957, Cl. 364-550.000.
Sweeney, William M., 4,390,344, Cl. 44-56.000.
Sweeney, William M., 4,390,417, Cl. 208-188.000.

Texas Instruments Incorporated: *See—*
Kay, Brian, 4,390,970, Cl. 365-73.000.
Kuo, Chang-Kiang, 4,390,971, Cl. 365-104.000.
Robinson, John T.; Cecil, Olin B.; and Shah, Rajiv R., 4,390,392, Cl. 156-643.000.
Shah, Gautam N.; Brown, Michael R.; Lee, Edward C.; Hook, Gerald C.; Wand, Robert L.; Ratliff, Charles R.; and McClure, Virge W., 4,390,885, Cl. 346-140.00R.
Woodside, Robert H.; and Drury, Michael J., 4,390,874, Cl. 340-812.000.

Textima VEB Wirkmaschinenbau Karl-Marx-Stadt Kombinat Textima: *See—*
Schneider, Manfred, 4,389,860, Cl. 66-84.00R.

Textube Corporation: *See—*
Mueller, Rolf J., 4,390,144, Cl. 242-118.300.

Tezuka, Akira: *See—*
Ueda, Toshimichi; Tezuka, Akira; Wakairo, Seiichi; Sakuma, Moriyuki; and Mochizuki, Masashi, 4,389,855, Cl. 62-200.000.

Tharrington, Reginald B., to Telex Computer Products, Inc. A.C. Power control for inductive loads. 4,390,795, Cl. 307-143.000.

Thermocell Development, Ltd.: *See—*
Smith, Stuart B., 4,390,641, Cl. 521-103.000.
Smith, Stuart B., 4,390,642, Cl. 521-112.000.

Theta-J Corporation: *See—*
Rodriguez, Edward T., 4,390,790, Cl. 250-551.000.

Thiele, Willi: *See—*
Leckband, Uwe; Thiele, Willi; Hagenah, Klaus; and Forster, Hans, 4,390,029, Cl. 131-109.0AB.

Thoma, Matthias, to Industrie Chemie Thoma GmbH & Co. Produktions KG. Process for the production of guanidine nitrate from a mixture of urea and ammonium nitrate and apparatus for its performance. 4,390,726, Cl. 564-242.000.

Thomas, Kenneth C.; Jones, Eric D.; and McBride, Marvin A., to United States of America, Energy. Fusion welding process. 4,390,777, Cl. 219-127.000.

Thomas, Reese R.: *See—*
Pickens, Robert C., Jr.; Thomas, Reese R.; and Ellicson, John W., 4,390,582, Cl. 428-85.000.

Thompson, Dennis C.: *See—*
Robbins, Arthur J.; Robbins, Paul B.; and Thompson, Dennis C., 4,390,111, Cl. 220-259.000.

Thompson, Floyd M., Jr., to Crutcher Resources Corporation. Piling removal. 4,389,765, Cl. 29-426.500.

Thompson, Morice W.: *See—*
Graetz, Clive W.; Thompson, Morice W.; and Bromley, Charles, 4,390,658, Cl. 524-512.000.

Thompson, Thomas M. Continuous miner with cutter assembly attitude adjustment. 4,390,211, Cl. 299-57.000.

Thomson-CSF: *See—*
Fourcade, Pierre; and Dupray, Dominique, 4,390,985, Cl. 370-94.000.
Hareng, Michel; Le Berre, Serge; Leclerc, Pierre; and Perbet, Jean Noel, 4,390,244, Cl. 350-333.000.
Marcy, Raymond, 4,390,951, Cl. 364-436.000.

Thorpe, Frank P.; and Calhoun, L. Owen, to CTS Corporation. Junction box. 4,390,106; Cl. 220-3.700.

Thorson, Clayton W., to Eaton Corporation. Rotary fluid pressure device and valve-seating mechanism therefor. 4,390,329, Cl. 418-61.00B.

Threadgold, Alan C.: *See—*
Courtney, Robert W.; Parker, Stephen J.; and Threadgold, Alan C., 4,390,615, Cl. 430-315.000.

Tibbetts, Forest S. Ashtray. 4,390,030, Cl. 131-231.000.

Tichner, Cline A.: *See—*
Schwartz, Ellen S.; and Tichner, Cline A., 4,390,440, Cl. 252-76.000.

Tiebout, Ralph H., III. Violin and viola bridge. 4,389,917, Cl. 84-309.000.

Tilles, Harvey G. Athletic shoe. 4,389,798, Cl. 36-129.000.

Timex Corporation: *See—*
Houlihan, John T., 4,390,289, Cl. 368-286.000.

Tincher, Cline A.: *See—*
Schwartz, Ellen S.; and Tincher, Cline A., 4,390,439, Cl. 252-73.000.

Ting, Joseph W., to California Institute of Technology. Integration filter for step waveforms. 4,390,844, Cl. 328-142.000.

Tiret, Bernard: *See—*
Biava, Dominique; Cornu, Jean; Detriche, Jean-Marie; Galera, Richard; Tiret, Bernard; and Marchal, Paul, 4,390,775, Cl. 219-124.340.

Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Imai, Masafumi; Ueno, Hiroshi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,390,671, Cl. 526-125.000.

Tobiki, Hisao: *See—*
Yamada, Hirotada; Jimpo, Kiyokazu; Okuda, Takao; Noguchi, Hiroshi; and Tobiki, Hisao, 4,390,535, Cl. 424-246.000.

Tobin, Curtis L.: *See—*
Haas, Rudy E.; Smorol, Michael E.; Tobin, Curtis L.; and Walker, James J., Jr., 4,390,059, Cl. 165-76.000.

Todo, Akira: *See—*
Yatsu, Tadao; Todo, Akira; and Sotoyama, Toshiki, 4,390,683, Cl. 528-194.000.

Togashi, Takao: *See—*
Yoshimura, Isao; and Togashi, Takao, 4,390,587, Cl. 428-215.000.

Tohi, Yasusuke: *See—*
Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke. 4,390,264, Cl. 355-8.000.

Toivonen, Thomas N. Calculator for determining optimum tone reproduction. 4,390,778, Cl. 235-89.00R.

Tokico Ltd.: *See—*
Haraikawa, Tetsuo; and Tamura, Koichi, 4,390,084, Cl. 188-71.700.
Maeda, Koichi, 4,390,187, Cl. 280-6.00R.

Tokitsu, Naoki, to Nippondenso Co., Ltd. Magnetic card recording apparatus. 4,390,905, Cl. 360-2.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Arimura, Yoshiaki, 4,390,955, Cl. 364-490.000.
Biwa, Takeshi, 4,390,810, Cl. 313-500.000.
Fujiwara, Tatsuo, 4,390,907, Cl. 360-32.000.
Koike, Hideharu, 4,390,803, Cl. 307-578.000.
Morooka, Shinichi, 4,389,888, Cl. 73-299.000.
Ogita, Yasuhiro; Kawasaki, Kazuya; Nagao, Kouichi; and Mori, Naoki, 4,389,854, Cl. 62-157.000.
Sato, Itsuzo; Ooi, Kazushige; Saito, Kikuo; Takemura, Yasuo; and Shinohara, Toshihiro, 4,390,895, Cl. 358-44.000.
Takemura, Yasuhiko; and Saito, Kazuyoshi, 4,390,025, Cl. 128-660.000.
Tanaka, Masamichi; and Wada, Hiroto, 4,390,800, Cl. 307-400.000.
Uchida, Kohachi, 4,390,266, Cl. 355-14.00E.
Yamada, Hisashi; and Sugawara, Tsutomu, 4,390,847, Cl. 330-51.000.

Tomita, Hitoshi: *See—*
Aoki, Hachiro; Tomita, Hitoshi; and Nagamata, Kiyoshi, 4,389,998, Cl. 123-502.000.

Tonooka, Keisuke: *See—*
Wakamatsu, Atsuyuki; and Tonooka, Keisuke, 4,390,135, Cl. 241-101.200.

Toray Industries, Inc.: *See—*
Oka, Ken-ichiro; Mineo, Masatoshi; and Ono, Terumichi, 4,390,685, Cl. 528-272.000.
Okamoto, Miyoshi; Yoshida, Syusuke; and Kurata, Nobuo, 4,390,572, Cl. 428-15.000.
Umezawa, Masao; and Okamoto, Miyoshi, 4,390,566, Cl. 427-198.000.

Torenbeek, Reinder: *See—*
Havinga, Reginoldus; Torenbeek, Reinder; and Schreurs, Petrus H. M., 4,390,451, Cl. 252-311.000.

Tosa, Tetsuya: *See—*
Chibata, Ichiro; Tosa, Tetsuya; Mori, Takao; and Fujimura, Motoki, 4,390,626, Cl. 435-176.000.

Toscano, Luciano: *See—*
Riva, Mario; and Toscano, Luciano, 4,390,533, Cl. 424-243.000.

Toto, Ltd.: *See—*
Ando, Shizuka; Oyama, Hiroshi; and Yamaguchi, Toshio, 4,389,738, Cl. 4-420.200.

Toyo Kogyo Co., Ltd.: *See—*
Fujimoto, Misao, 4,390,001, Cl. 123-571.000.
Izuno, Sadami; Kiyomitsu, Isao; and Tsuji, Toshihiko, 4,390,209, Cl. 297-410.000.
Kodama, Hiroshi; and Seto, Tadayuki, 4,390,330, Cl. 418-97.000.
Sakamoto, Toshinori, 4,389,818, Cl. 49-349.000.

Toyoda, Minoru, to Aisin Seiki Company, Limited. Key holder. 4,389,864, Cl. 70-456.00R.

Toyota Jidosha Kabushiki Kaisha: *See—*
Noro, Shuhei; and Naito, Tadashi, 4,389,882, Cl. 73-118.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Igashira, Toshihiko; Nomura, Ken; Abe, Seiko; and Ishida, Yasuhiko, 4,390,000, Cl. 123-549.000.
Koide, Toshikazu; and Yaegashi, Takehisa, 4,389,995, Cl. 123-491.000.
Nakano, Jiro; and Miyagi, Hideo, 4,389,997, Cl. 123-492.000.
Shigematsu, Takashi; and Watanabe, Tomoyuki, 4,389,992, Cl. 123-419.000.
Yaegashi, Takehisa; and Kinugasa, Yukio, 4,389,996, Cl. 123-491.000.

Toyotomi Kogyo Co., Ltd.: *See—*
Nakamura, Kazuharu; Mito, Yoshio; Nakanishi, Yutaka; and Yamada, Toshihiko, 4,390,003, Cl. 126-96.000.

Transaction Control Industries: *See—*
Converse, Merle E.; and Darilek, Glenn T., 4,390,828, Cl. 320-32.000.

Transformatoren Union Aktiengesellschaft: *See—*
Schulzer, Odilo, 4,390,858, Cl. 336-92.000.

Transway International Corporation: *See—*
Fletcher, Edwin H., 4,389,960, Cl. 114-248.000.

Trautlein, Fred S.; and Stephens, James R., to General Mills Products Corp. Display stand for jewelry articles. 4,390,099, Cl. 211-4.000.

Treiber, Fritz F.: *See—*
Margraf, Dallas A.; and Treiber, Fritz F., 4,390,390, Cl. 156-566.000.

Treiber, Horst: *See—*
Resag, Jorg; Goldner, Walther; and Treiber, Horst, 4,390,207, Cl. 297-362.000.

Tremblay, Gilles: *See—*
Drouin, Gilbert; Lacoste, Jean; and Tremblay, Gilles, 4,389,913, Cl. 81-53.200.

Trembly, Gray C.; Goldberg, Ernest; and Dragun, Edward B., to Raytheon Company. Antipersonnel mine. 4,389,940, Cl. 102-489.000.

Trenkle, Robert W.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Chant, Bernard J.; Ouwerkerk, Anton V.; Kamath, Venkatesh; and Mussinan, Cynthia J., 4,390,444, Cl. 252-174.110.

Tri-State Oil Tool Industries, Inc.: *See—*
Richardson, Charles N., 4,390,065, Cl. 166-181.000.

Trico Products Corporation: *See—*
Riester, William C., 4,389,747, Cl. 15-250.420.

Tridon Limited: *See—*
Kimber, Edward G., 4,389,746, Cl. 15-250.320.

Trihey, John M., to Vulcan Australia Limited. Reflective trough structure. 4,390,241, Cl. 350-296.000.

Trio Kabushiki Kaisha: *See—*
Kurata, Hirotaka; and Yoshida, Shiro, 4,390,801, Cl. 307-409.000.

Troiani, Nicola: *See—*
Gozzo, Franco; Troiani, Nicola; Lorusso, Simone; and Santi, Romano, 4,390,705, Cl. 549-3.000.

TRW Inc.: *See—*
Mathew, Moni G.; and Weisz, Thomas J., 4,390,853, Cl. 333-1.100.
Reeves, Jeffrey R., 4,389,762, Cl. 29-25.420.
Valdiserri, Leo L.; and Woodbury, Richard P., 4,390,696, Cl. 544-214.000.

Tsuchiya, Hiroaki: *See—*
Matsui, Kunio; Tsuchiya, Hiroaki; and Suzuki, Ryushi, 4,390,351, Cl. 55-204.000.

Tsuda, Takeshi: *See—*
Kudoh, Akihide; Kawamata, Motoo; Ohshima, Kazushi; Kotani, Makoto; Tsuda, Takeshi; and Morita, Satoshi, 4,390,737, Cl. 568-804.000.

Tsuji, Toshihiko: *See—*
Izuno, Sadami; Kiyomitsu, Isao; and Tsuji, Toshihiko, 4,390,209, Cl. 297-410.000.

Tsukiyama, Nobuyoshi; and Ichige, Ryo, to Hitachi, Ltd. Ferrite electrode material. 4,390,461, Cl. 252-519.000.

Tsurumi, Yoshihiro: *See—*
Kanada, Toshiaki; Suzuki, Kazuhiro; Yoshioka, Hiroshi; Maeda, Kenji; and Tsurumi, Yoshihiro, 4,390,643, Cl. 521-117.000.

Tsushima, Tadahiko: *See—*
Misaki, Susumu; Suefuji, Masahiro; Tsushima, Tadahiko; and Tanida, Hiroshi, 4,390,702, Cl. 546-296.000.

Tully, Wilfred R., to Roussel Uclaf. Process for the preparation of triazoloquinazolinones. 4,390,697, Cl. 544-251.000.

Tung, William C. T., to Goodyear Tire & Rubber Company, The. High melt strength elastometric copolyesters. 4,390,687, Cl. 528-295.000.

Turner, E. Wayne, to Hardigg Industries, Inc. Method and apparatus for bonding thermoplastic materials. 4,390,384, Cl. 156-221.000.

Tutt, Kingsley J.: *See—*
Peck, Alan M.; Tutt, Kingsley J.; and Mansfield, Graham J., 4,389,861, Cl. 69-6.500.

Twibell, Jerome J.; and Crawford, Knute S., to Honeywell Information Systems Inc. Interface apparatus for data transfer through an input-/output multiplexer from plural CPU subsystems to peripheral subsystems. 4,390,943, Cl. 364-200.000.

Tyler Refrigeration Corporation: *See—*
Abraham, Fayez F., 4,389,852, Cl. 62-82.000.
Ibrahim, Fayez F., 4,389,856, Cl. 62-248.000.

Tysver, Oliver J., to Continental Group, Inc., The. Easy opening container and opener tool therefor. 4,390,112, Cl. 220-274.000.

Tyszkiewicz, Theodore J.: *See—*
Boden, Richard M.; Licciardello, Michael; and Tyszkiewicz, Theodore J., 4,390,463, Cl. 252-522.00R.

Tzeng, Chin-Pyng J., to Rockwell International Corporation. Voltage regulator circuit. 4,390,833, Cl. 323-280.000.

Tzodikov, Nathan R.: *See—*
O'Brien, Robert E.; and Tzodikov, Nathan R., 4,390,517, Cl. 424-1.000.

Uberti, Jean-Louis: *See—*
Golay, Jean-Pierre; and Uberti, Jean-Louis, 4,389,937, Cl. 102-249.000.

Uchida, Kazuo, to Diesel Kiki Co., Ltd. Double-injection type fuel injection valve. 4,390,129, Cl. 239-533.500.

Uchida, Keiichi: *See—*
Oda, Yoshio; Morikawa, Shinsuke; Ikemura, Masaaki; Yarita, Tomio; Noshiro, Makoto; Gotoh, Isao; Jitsugiri, Yukio; Yonemori, Shigeaki; Sato, Kimihiko; and Uchida, Keiichi, 4,390,511, Cl. 423-469.000.

Uchida, Kohachi, to Tokyo Shibaura Denki Kabushiki Kaisha. Exposure apparatus for electronic duplicator. 4,390,266, Cl. 355-14.00E.

Uchidoi, Masanori: *See—*
Yamamoto, Hiroshi; and Uchidoi, Masanori, 4,390,261, Cl. 354-173.000.

Udvardy Nagy nee Cserey Pechany, Eva; Budai, Miklos; Fekete, Gyorgy; Gorog, Sandor; Herenyi, Bulcsu; Wack, Geza; and Zalai, Karoly, to Richter Gedeon Vegyeszeti Gyar RT. Method for controlling the amount and distribution of alkaloids formed in a fermentation process. 4,390,625, Cl. 435-119.000.

Ueda, Toshimichi; Tezuka, Akira; Wakairo, Seiichi; Sakuma, Moriyuki; and Mochizuki, Masashi, to Hitachi, Ltd. Dual air-conditioner for motor-cars. 4,389,855, Cl. 62-200.000.

Ueno, Hiroshi: *See—*
Imai, Masafumi; Ueno, Hiroshi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,390,671, Cl. 526-125.000.

Uetrecht, Dale M.; and Simmons, Carlton J., Jr., to Baldwin Piano & Organ Company. Chord identification system for electronic musical instruments. 4,389,914, Cl. 84-1.010.

Ulch, B. G.: *See—*
Reinke, Nelson A.; and Ulch, B. G., 4,390,060, Cl. 165-76.000.

Umemura, Izumi: *See—*
Nohda, Masao; Umemura, Izumi; and Arai, Toshiyuki, 4,390,255, Cl. 351-212.000.

Umezawa, Masao; and Okamoto, Miyoshi, to Toray Industries, Inc. Method of producing soft sheet. 4,390,566, Cl. 427-198.000.

Unarco Industries, Inc.: *See—*
Daily, Virgil W., III, 4,390,002, Cl. 126-25.00R.

Unger, Karin: *See—*
Mathuni, Josef; and Unger, Karin, 4,390,394, Cl. 156-643.000.

Unie Van Kunstmestfabrieken, B.V.: *See—*
Willems, Michael H.; and Klok, Jan W., 4,390,483, Cl. 264-7.000.

Union Carbide Corporation: *See—*
Evans, William P.; and Leger, Violeta Z., 4,390,604, Cl. 429-197.000.

Union Oil Company of California: *See—*
Dvoracek, Louis M.; Fischer, Paul W.; and Skripek, Milan, 4,390,412, Cl. 208-48.00R.

Union Special G.m.b.H.: *See—*
von Hagen, Wolf R., 4,389,951, Cl. 112-121.270.

U.S. Clinical Products, Inc.: *See—*
Cummings, Robert, 4,390,104, Cl. 215-232.000.

United States of America
Agriculture: *See—*
Jennings, Daniel T.; Carniglia, Charles K.; and Young, David B., 4,390,787, Cl. 250-459.100.
Walker, Harrell L., 4,390,360, Cl. 71-79.000.
Air Force: *See—*
Colvin, Roger D., 4,390,854, Cl. 333-193.000.
Noble, Milton L.; and Hoefer, William G., 4,390,816, Cl. 315-370.000.
Army: *See—*
King, Paul V.; Becher, Albert F.; and Henderson, Wilmer P., 4,389,947, Cl. 109-1.00S.
Peck, John H., 4,389,918, Cl. 89-34.000.
Savage, John W., 4,390,838, Cl. 324-77.00E.
Smith, James L., 4,390,271, Cl. 355-77.000.
Energy: *See—*
Andrews, John W., 4,390,008, Cl. 126-427.000.
Fox, Ronald L., 4,390,062, Cl. 166-59.000.
Judd, O'Dean P., 4,390,992, Cl. 372-70.000.
Kopp, Manfred K.; and Valentine, Kenneth H., 4,390,786, Cl. 250-385.000.
Liepins, Raimond, 4,390,567, Cl. 427-214.000.
Thomas, Kenneth C.; Jones, Eric D.; and McBride, Marvin A., 4,390,777, Cl. 219-127.000.
Health and Human Services: *See—*
Brossi, Arnold; Schmidhammer, Helmut; and Jacobson, Arthur E., 4,390,699, Cl. 546-74.000.
Christman, Chris L., 4,390,026, Cl. 128-660.000.
Interior: *See—*
Babcock, Clarence O., 4,389,896, Cl. 73-784.000.
Gutierrez, Manuel, 4,389,900, Cl. 73-861.420.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Gasser, Max G.; Sherman, Allan; Studer, Philip A.; Daniels, Alexander; and Goldowsky, Michael P. Stirling cycle cryogenic cooler. 4,389,849, Cl. 62-6.000.
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Lacy, Lewis L.; Robinson, Michael B.; Rathz, Thomas J.; Katz, Lester; and Nisen, Daniel B., 4,389,904, Cl. 73-863.110.
Navy: *See—*
Eynck, John J., 4,390,976, Cl. 367-153.000.
Lewis, Bernard L.; and Kretschmer, Frank F., 4,390,881, Cl. 343-100.0LE.
Wier, John P.; and Garrett, Robert A., 4,390,076, Cl. 180-11.000.

U.S. Philips Corporation: *See—*
De Vries, Gerhard H. F.; and Bulle, Harmanus B., 4,390,808, Cl. 313-584.000.
Janssen, Daniel J. G., 4,390,753, Cl. 179-81.00R.
Klomp, Franciscus M., 4,390,097, Cl. 206-418.000.
Kuiper, Wilhelmus G.; and Klaassen, Anne, 4,390,794, Cl. 307-140.000.
Raven, Johannes G., 4,390,894, Cl. 358-36.000.
Smetana, Roland; and Werner, Franz, 4,390,119, Cl. 226-196.000.
Van Der Hoek, Willem, 4,390,238, Cl. 350-96.230.
Van Kampen, Hendrik; Rouland, Joseph G.; and Baakman, Hendrik J., 4,390,900, Cl. 358-147.000.

United Technologies Corporation: *See—*
Markowski, Stanley J.; Jeroszko, Ronald A.; and Lohmann, Robert P., 4,389,848, Cl. 60-738.000.
Pearson, James E., 4,390,991, Cl. 372-21.000.

Unitika Ltd.: *See—*
Kyo, Kayomon; Asai, Yasuhiko; Hirose, Isamu; and Suyama, Nobuo, 4,390,682, Cl. 528-194.000.

Universal Pioneer Corporation: *See—*
Onigata, Yoshio; Fukui, Tsutomu; and Yajika, Kazuo, 4,390,977, Cl. 369-50.000.

University of California, The Regents of the: *See—*
Current, Karl W., 4,390,962, Cl. 364-768.000.
Sawyer, Roy T.; Stent, Gunther S.; Budzynski, Andrei Z.; and Olexa, Stephanie A., 4,390,630, Cl. 435-226.000.

University of Missouri, Curators of the: *See—*
Hahn, Allen W.; Nichols, Michael F.; Sharma, Ashok K.; and Hellmuth, Eckhard W., 4,390,405, Cl. 204-415.000.
Merilan, Charles P.; and Sears, Jerald R., 4,390,633, Cl. 436-65.000.

UNOPER S.r.l.: *See—*
Piana, Giuseppe S., 4,389,925, Cl. 99-289.00R.

Ushiyama, Keiichi: *See—*
Nagai, Hidetaka; Wada, Yasushi; Kobayashi, Ichiro; Tamada, Mitsuru; Ushiyama, Keiichi; and Yamamoto, Toshiyuki, 4,390,520, Cl. 424-28.000.

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Peck, Alan M.; Tutt, Kingsley J.; and Mansfield, Graham J., 4,389,861, Cl. 69-6.500.

Uzawa, Shunichi: *See—*
Hatanaka, Katsunori; Uzawa, Shunichi; Hirai, Yutaka; and Ayata, Naoki, 4,390,791, Cl. 250-578.000.

Vacelet, Gabriel: *See—*
Corbefin, Rene; and Vacelet, Gabriel, 4,390,940, Cl. 363-132.000.

Valdiserri, Leo L.; and Woodbury, Richard P., to TRW, Inc. Process for preparing phosphite-isocyanurates oligomers. 4,390,696, Cl. 544-214.000.

Valen Mfg. Co.: *See—*
Graves, Howard K., 4,390,105, Cl. 220-3.600.

Valentine, Kenneth H.: *See—*
Kopp, Manfred K.; and Valentine, Kenneth H., 4,390,786, Cl. 250-385.000.

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Van Cleave, Eugene H., 4,389,869, Cl. 72-319.000.

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van der Werff, Oebele P., to Akzo nv. Reinforcing cord for elastomeric articles, shaped articles of reinforced elastomeric material, more particularly pneumatic tires for vehicles, and a process for the manufacture of reinforcing cord and a process for the manufacture of vehicle tires. 4,389,839, Cl. 57-238.000.

van Dongeren, Jan P., to Wavin B.V. Method of making plastic pipes having walls with lengthwise extending channels. 4,390,383, Cl. 156-196.000.

Van Heertum, John C.: *See—*
Malhotra, Sudarshan K.; and Van Heertum, John C., 4,390,543, Cl. 424-263.000.

Van Kampen, Hendrik; Rouland, Joseph G.; and Baakman, Hendrik J., to U.S. Philips Corporation. Bidirectional information transmission via a long distance video interface (LDVI) cable. 4,390,900, Cl. 358-147.000.

van Leeuwen, Johannes, to Esmil B.V. Apparatus for scraping sludge from the surface of a body of liquid. 4,390,430, Cl. 210-527.000.

Van Valkenburg, Constance M. Through-the-wall air conditioner cover kit. 4,389,827, Cl. 52-511.000.

Vapor Corporation: *See—*
Reip, Raymond G., 4,390,041, Cl. 137-488.000.

Varco International, Inc.: *See—*
Krasnov, Igor, 4,389,760, Cl. 24-263.00D.

Varta Batterie Aktiengesellschaft: *See—*
Winsel, August, 4,390,447, Cl. 252-182.100.

Veith, Dieter, to Winkler & Dunnebier Maschinenfabrik und Eisengieserei GmbH & Co. Control head for controlling the suction path of a suction roller. 4,390,174, Cl. 271-108.000.

Vereinigte Flugtechnische Werke GmbH: *See—*
Behnert, Reinhard, 4,389,842, Cl. 60-39.360.

Verge, John P.: *See—*
Goldsworthy, John; Ross, William J.; and Verge, John P., 4,390,541, Cl. 424-258.000.

Vicard, Pierre G., to Societe Lab. Centrifugal separators of the cyclone type. 4,390,426, Cl. 210-243.000.

Vickers, Paul T.: *See—*
Hammond, Dean C., Jr.; and Vickers, Paul T., 4,390,355, Cl. 55-523.000.

Victor Company of Japan, Limited: *See—*
Matsumoto, Shigeru, 4,390,918, Cl. 360-137.000.
Saito, Takashi; and Kishi, Toru, 4,390,979, Cl. 369-270.000.

Victor United, Inc.: *See—*
Meyer, Leonard S.; Murray, Michael J.; Hayes, Gerald G.; and McClain, Robert L., 4,390,156, Cl. 249-80.000.

Villa-Real, Antony-Euclid C. Multi-purpose paper-work organizer clip integrated with attachable detachable informative indicia. 4,389,755, Cl. 24-67.900.

Vinals, Joaquin F.: *See—*
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,390,464, Cl. 252-522.00R.

Vincent, Arthur L., to International Telephone & Telegraph. Method and apparatus for recovering elemental sulfur. 4,390,515, Cl. 423-573.00G.

Vingent, Jean-Claude: *See—*
Junter, Guy-Alain; Lemeland, Jean-Francois; Selegny, Eric; and Vingent, Jean-Claude, 4,390,620, Cl. 435-4.000.

Vitale, Nicholas G.: *See—*
Ackermann, Robert A.; and Vitale, Nicholas G., 4,389,844, Cl. 60-517.000.

Vock, Friedrich: *See—*
Buchholz, Hagen; Johannsmeier, Hans-Dieter; and Vock, Friedrich, 4,390,126, Cl. 239-1.000.

Vock, Manfred H.: *See—*
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,390,464, Cl. 252-522.00R.

Vogel, Claude: *See—*
Wicki, Heinz; and Vogel, Claude, 4,390,470, Cl. 260-166.000.

Vogel, Karl, to Mettler Instruments AG. Operating key for electrical scales. 4,390,074, Cl. 177-177.000.

von Bonin, Wulf, to Bayer Aktiengesellschaft. Maleic acid anhydride copolymers and their preparation. 4,390,672, Cl. 526-209.000.

Von Feldt, Donald E. Bicycle flashlight holder. 4,390,927, Cl. 362-72.000.

von Hagen, Wolf R., to Union Special G.m.b.H. Material dispensing means for sewing machines. 4,389,951, Cl. 112-121.270.

Vornfett, Karl-Ulrich, to Justus Technik GmbH Industrie-Anlagen. Method and apparatus for measuring the liquid level of containers. 4,390,782, Cl. 250-223.00B.

Votava, Werner F., to Ferro Corporation. Glass frit of diopside crystal precursors. 4,390,636, Cl. 501-24.000.

Vought, John O.: *See—*
Bolick, Stephen M.; and Vought, John O., 4,389,890, Cl. 73-431.000.

Vulcan Australia Limited: *See—*
Trihey, John M., 4,390,241, Cl. 350-296.000.

W-K-M Wellhead Systems, Inc.: *See—*
Wells, Frederic D., Jr., 4,390,063, Cl. 166-84.000.

W. R. Grace & Co.: *See—*
Ritter, Ronald E.; and Henderson, Donald S., 4,390,416, Cl. 208-120.000.
Sanchez, Moises G.; Ernest, Michael V.; and Laine, Norman R., 4,390,456, Cl. 252-448.000.

W. R. Grace & Co., Cryovac Div.: *See—*
Ferguson, Daniel J.; Stringer, Frederick D.; and Esakov, Michael D., 4,390,385, Cl. 156-229.000.

W. R. Weaver Co.: *See—*
Ackerman, William R., 4,389,791, Cl. 33-246.000.

W. T. Fail, Inc.: *See—*
Perkins, Lawrence B., 4,390,037, Cl. 137-240.000.

Wack, Geza: *See—*
Udvardy Nagy nee Cserey Pechany, Eva; Budai, Miklos; Fekete, Gyorgy; Gorog, Sandor; Herenyi, Bulcsu; Wack, Geza; and Zalai, Karoly, 4,390,625, Cl. 435-119.000.

Wacker-Chemie GmbH: *See—*
Weise, Carlos; Wolfer, Dietrich; and Patzke, Jorg, 4,390,656, Cl. 524-493.000.

Wada, Fumio: *See—*
Omura, Yoshiaki; Mori, Fumio; Fujita, Yoshiji; Nishida, Takashi; Tamai, Yoshin; Wada, Fumio; and Itoi, Kazuo, 4,390,547, Cl. 424-304.000.

Wada, Hiroto: *See—*
Tanaka, Masamichi; and Wada, Hiroto, 4,390,800, Cl. 307-400.000.

Wada, Shozo: *See—*
Imai, Masafumi; Ueno, Hiroshi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,390,671, Cl. 526-125.000.

Wada, Yasushi: *See—*
Nagai, Hidetaka; Wada, Yasushi; Kobayashi, Ichiro; Tamada, Mitsuru; Ushiyama, Keiichi; and Yamamoto, Toshiyuki, 4,390,520, Cl. 424-28.000.

Waddan, Dhafir Y.; and Williams, Derek, to Imperial Chemical Industries PLC. Process for the oxidation of olefinic compounds to olefine oxides or derivatives thereof. 4,390,738, Cl. 568-857.000.

Wade, Peter C.: *See—*
Krapcho, John; and Wade, Peter C., 4,390,695, Cl. 544-130.000.

Waeschle Machinenfabrik GmbH: *See—*
Heep, Dieter, 4,389,949, Cl. 110-101.0CF.

Wagner, Burkhard E.: *See—*
Karol, Frederick J.; Goeke, George L.; Wagner, Burkhard E.; Fraser, William A.; Jorgensen, Robert J.; and Friis, Nils, 4,390,677, Cl. 526-348.600.

Wagner, Hans-Ruedi. Container for articles of daily use, having two enclosable chambers. 4,390,217, Cl. 312-205.000.

Wagner, Rudolf M.: *See—*
Merk, Wolfgang; Wagner, Rudolf M.; Werle, Peter; and Nygren, Robert S., 4,390,732, Cl. 568-648.000.

Wagner Spray Tech Corporation: *See—*
Karliner, Rudolf, 4,390,324, Cl. 417-282.000.

Wagner, Wilbert A. Trailer gooseneck apparatus. 4,390,192, Cl. 280-425.00A.

Wakairo, Seiichi: *See—*
Ueda, Toshimichi; Tezuka, Akira; Wakairo, Seiichi; Sakuma, Moriyuki; and Mochizuki, Masashi, 4,389,855, Cl. 62-200.000.

Wakamatsu, Atsuyuki; and Tonooka, Keisuke, to Daiwa Can Company, Limited. Bag removal apparatus. 4,390,135, Cl. 241-101.200.

Wake, Shigeo: *See—*
Inoue, Yasuhiko; Wake, Shigeo; Sirafuji, Tamio; and Beppu, Masazo, 4,390,736, Cl. 568-801.000.

Walinsky, Stanley W., to Pfizer Inc. Acrylate/maleate copolymers, their preparation and use as antiscalants. 4,390,670, Cl. 526-79.000.

Walker, Harrell L., to United States of America, Agriculture. Control of sicklepod, showy crotalaria, and coffee senna with a fungal pathogen. 4,390,360, Cl. 71-79.000.

Walker, James J., Jr.: *See—*
Haas, Rudy E.; Smorol, Michael E.; Tobin, Curtis L.; and Walker, James J., Jr., 4,390,059, Cl. 165-76.000.

Walser, Armin; and Fryer, Rodney I., to Hoffmann-La Roche Inc. Imidazodiazepines and processes therefor. 4,390,471, Cl. 260-244.400.

Walsh, Thomas J.: *See—*
McClenahan, Robert W.; and Walsh, Thomas J., 4,390,796, Cl. 307-261.000.

Walter, Bert, to Miles Laboratories, Inc. Multilayer analytical element having an impermeable radiation diffusing and blocking layer. 4,390,343, Cl. 436-518.000.

Walters, Paul W.; Benslay, Roger M.; and Barger, Dwight F., to Ashland Oil, Inc. Carbometallic oil conversion with ballistic separation. 4,390,503, Cl. 422-147.000.

Walz, Gerd; Wirth, Thaddaus; and Sprenger, Walter, to Hoechst Aktiengesellschaft. Water-dilutable polyester, process for the preparation thereof and the use thereof. 4,390,688, Cl. 528-295.300.

Wanat, David J., to General Electric Company. Food processor. 4,390,133, Cl. 241-93.000.

Wand, Robert L.: *See—*
Shah, Gautam N.; Brown, Michael R.; Lee, Edward C.; Hook, Gerald C.; Wand, Robert L.; Ratliff, Charles R.; and McClure, Virge W., 4,390,885, Cl. 346-140.00R.

Ward, Geoffrey M.: *See—*
Sands, Raymond L.; and Ward, Geoffrey M., 4,389,948, Cl. 109-82.000.

Ward, Ian M.; and McGrath, John C., to National Research Development Corporation. Uniaxially drawn vinylidene fluoride polymers. 4,390,674, Cl. 526-255.000.

Ward, John M., to Shell Oil Company. Internal pipeline plug for deep subsea operations. 4,390,043, Cl. 138-89.000.

Warshawsky, Jerome, to I. W. Industries, Inc. Multiple position lamp. 4,390,933, Cl. 362-270.000.

Watanabe, Ichiro; Enomoto, Kanehiko; and Ogawa, Yasuo, to Nitto Chemical Industry Co., Ltd. Process for producing bacteria having high nitrilase activity. 4,390,631, Cl. 435-244.000.

Watanabe, Katsunori: *See—*
Ishikawa, Shozo; Katagiri, Kazuharu; Watanabe, Katsunori; and Kitahara, Makoto, 4,390,611, Cl. 430-59.000.

Watanabe, Masaru: *See—*
Mori, Teruo; Shirai, Hiroshi; Kakei, Tsutomu; Watanabe, Masaru; and Matsuhisa, Tsuneyasu, 4,390,407, Cl. 204-206.000.

Watanabe, Minoru: *See—*
Matsui, Takahiro; and Watanabe, Minoru, 4,390,932, Cl. 362-269.000.

Watanabe, Morio; Nishimura, Sanji; and Watanabe, Nobuatsu, to Solex Research Corporation of Japan. Process for recovery of aluminum oxide from aluminum compounds containing fluorine. 4,390,508, Cl. 423-112.000.

Watanabe, Nobuatsu: *See—*
Watanabe, Morio; Nishimura, Sanji; and Watanabe, Nobuatsu, 4,390,508, Cl. 423-112.000.

Watanabe, Seizo, to Olympus Optical Co., Ltd. Device for detecting edge of magnetic tape for recording signals. 4,390,917, Cl. 360-128.000.

Watanabe, Tohru: *See—*
Morita, Yoshinori; Hayata, Shinzi; Kato, Akifumi; Nara, Hideo; and Watanabe, Tohru, 4,390,669, Cl. 526-65.000.

Watanabe, Tomoyuki: *See—*
Shigematsu, Takashi; and Watanabe, Tomoyuki, 4,389,992, Cl. 123-419.000.

Watase, Kenta: *See—*
Hirakura, Koji; Sawada, Yasuo; Watase, Kenta; and Iijima, Takeshi, 4,389,972, Cl. 118-691.000.

Watatani, Minoru, to S. I. Handling Systems, Inc. Transfer truck. 4,389,943, Cl. 104-166.000.

Watkins, Hugh: *See—*
Calderone, Nicholas; Watkins, Hugh; and Yoshida, Takao, 4,390,434, Cl. 252-8.600.
Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., 4,390,435, Cl. 252-8.600.

Watzke, Franz, to Siemens Aktiengesellschaft. Contact piece for an electric vacuum switch. 4,390,762, Cl. 200-144.00B.

Wave-Rider, Inc.: *See—*
Cudmore, Patrick J., 4,390,148, Cl. 244-19.000.

Wavin B.V.: *See—*
van Dongeren, Jan P., 4,390,383, Cl. 156-196.000.

Webasto-Werk W. Baier GmbH & Co.: *See—*
Lutz, Alfons; and Kohlpainter, Georg, 4,390,203, Cl. 296-223.000.

Weber, Klaus: *See—*
Biedermann, Ernst; Findeis, Gunter; Weber, Klaus; and Zahn, Wolfgang, 4,390,270, Cl. 355-46.000.

Weber, Robert N.: *See—*
Showman, Robert L.; and Weber, Robert N., 4,390,224, Cl. 339-75.0MP.

Webster, David F., to Nomode Incorporated. Determination of the extent of a decubitus ulcer. 4,389,782, Cl. 33-1.0BB.

Webster, Jerald H. Strap winding mechanism. 4,390,141, Cl. 242-86.50R.

Wechsler, Bernard. Ratio control system. 4,390,822, Cl. 318-114.000.

Weeks, Paul D.; and Allingham, Robert P., to Pfizer Inc. Preparation of gamma-pyrones. 4,390,709, Cl. 549-418.000.

Wehner, Wolfgang; Farooq, Saleem; and Kostler, Hans-Gunter, to Ciba-Geigy Corporation. Pesticidal triorgano-tin triazines. 4,390,538, Cl. 424-249.000.

Weiler, Wolfgang, to MTU Motoren-und Turbinen-Union Muenche GmbH. Apparatus for operating shut-off members in gas turbine engines, particularly in turbojet engines. 4,390,318, Cl. 415-145.000.

Weinberger, Harold. Heavy duty liquid detergent. 4,390,466, Cl. 252-548.000.

Weinstein, Myron: *See—*
Balogh, Louis J.; Fitzhugh, Raymond L.; Kimes, Dale S.; and Weinstein, Myron, 4,389,788, Cl. 33-178.00D.

Weisdorfer, Leo: *See—*
Craggs, Harold B.; and Weisdorfer, Leo, 4,389,795, Cl. 34-103.000.

Weise, Carlos; Wolfer, Dietrich; and Patzke, Jorg, to Wacker-Chemie GmbH. Flame-resistant molding compositions. 4,390,656, Cl. 524-493.000.

Weiss, Jonas; and Seltzer, Raymond, to Ciba-Geigy Corporation. Latent urethane resin systems. 4,390,679, Cl. 528-64.000.

Weissbuch, Isabela: *See—*
Lahav, Meir; Addadi, Lia; and Weissbuch, Isabela, 4,390,722, Cl. 562-402.000.

Weisz, Thomas J.: *See—*
Mathew, Moni G.; and Weisz, Thomas J., 4,390,853, Cl. 333-1.100.

Welch, Cletus N.: *See—*
Loehr, Clifford E.; Crawford, Roger A.; Carbaugh, John E.; and Welch, Cletus N., 4,390,512, Cl. 423-474.000.

Weldon, Howard; and Stoker, James. Garbage can and lid holder. 4,390,155, Cl. 248-507.000.

Wells, Frederic D., Jr., to W-K-M Wellhead Systems, Inc. Geothermal wellhead packing assembly. 4,390,063, Cl. 166-84.000.

Wendt, Frank S.: *See—*
Babcock, William E.; and Wendt, Frank S., 4,390,819, Cl. 315-411.000.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Sigrist, Hugo, 4,389,938, Cl. 102-337.000.

Werle, Peter: *See—*
Merk, Wolfgang; Wagner, Rudolf M.; Werle, Peter; and Nygren, Robert S., 4,390,732, Cl. 568-648.000.

Werner, Franz: *See—*
Smetana, Roland; and Werner, Franz, 4,390,119, Cl. 226-196.000.

Wessel, Otto, to Mannesmann Aktiengesellschaft. Pressing metal powder into shapes. 4,390,488, Cl. 419-66.000.

Westates Space-Era Products, Inc. dba Wespac: *See—*
Castro, Albert J., 4,390,294, Cl. 400-196.100.

Westermark, Olle: *See—*
Kardos, Karl; Mattsson, Bertil; and Westermark, Olle, 4,390,004, Cl. 126-104.00A.

Western Electric Company, Incorporated: *See—*
Cassidy, Michael P.; D'Amico, John F.; DeAngelo, Michael A., Jr.; and Lin, Kon-Mang, 4,389,771, Cl. 29-846.000.
Hammond, Charles S., Jr.; and Mitchell, Henry D., Jr., 4,390,137, Cl. 242-54.00R.
Lien, Suei-Yuen P., 4,390,379, Cl. 148-171.000.
Myers, Daryl L.; and Rice, Stanley, 4,390,357, Cl. 65-2.000.
Smithgall, David H., Sr., 4,390,897, Cl. 358-101.000.

Westinghouse Electric Corp.: *See—*
Hruda, Robert M., 4,390,763, Cl. 200-144.00B.
Kucherer, Harvey D.; Kugler, Ralph W.; Rieben, Stuart L.; Wilhelm, John J.; and Wylie, Mark E., 4,390,042, Cl. 138-89.000.
Stacey, Eric J., 4,390,938, Cl. 363-54.000.

Weston, Charles W.; and O'Neill, Padraic S., to Agrico Chemical Company. Process for manufacturing ammonium phosphate utilizing an oxalic acid acidulating process. 4,390,509, Cl. 423-313.000.

Weterings, Cornelis A. M.; and Janssen, Johannes A., to Stamicarbon, B.V. Process for recovering yttrium and lanthanides from wet-process phosphoric acid. 4,390,507, Cl. 423-8.000.

White, Vernon E.: *See—*
Taylor, Aaron S.; and White, Vernon E., 4,390,505, Cl. 422-246.000.

White, William H.; Harbison, William C.; and Nelson, Gary L., to Swedlow, Inc. Transparent abrasion resistant filled organo-polysiloxane coatings containing colloidal antimony oxide and colloidal silica. 4,390,373, Cl. 106-287.120.

Whitener, Philip C., to Boeing Company, The. Tandem wing airplane. 4,390,150, Cl. 244-45.00R.

Whitfield, Richard G.: *See—*
Merritt, Alfred R.; Cooke, Theodore M.; Lin, An-Chung R.; and Whitfield, Richard G., 4,390,369, Cl. 106-31.000.

Whitlock, Dallas M., to Ashland Oil, Inc. Tool for restoring roundness to metal tubing. 4,389,867, Cl. 72-126.000.

Whitney, LeRoy E. Tack pliers. 4,390,050, Cl. 145-46.000.

Whitwam, Ronald L.: *See—*
Faiks, Frederick S.; Pergler, Charles C.; Whitwam, Ronald L.; Knoblauch, Jack R.; Beukema, Duane M.; and Hozeski, Kenneth W., 4,390,206, Cl. 297-300.000.

Wicki, Heinz; and Vogel, Claude, to Sandoz Ltd. Tetrakisazo dyes containing a stilbenylene or 2,2'-disulfostilbenylene radical. 4,390,470, Cl. 260-166.000.

Wideman, Lawson G., to Goodyear Tire & Rubber Company, The. Reduction of cyclopentadiene from isoprene streams. 4,390,742, Cl. 585-854.000.

Widmer, Paul; and Mercer, Robert R., to General Motors Corporation. Inertia responsive seat back latching mechanism. 4,390,208, Cl. 297-379.000.

Wiechert, Rudolf: *See—*
Hofmeister, Helmut; Wiechert, Rudolf; Annen, Klaus; Laurent, Henry; and Beier, Sybille, 4,390,530, Cl. 424-238.000.

Wiedemann, Wolfgang, to Hoechst Aktiengesellschaft. Electrophotographic recording material with abrasion resistant overcoat. 4,390,609, Cl. 430-58.000.

Wier, John P.; and Garrett, Robert A., to United States of America, Navy. Integrated wheelchair and ambulator. 4,390,076, Cl. 180-11.000.

Wiessner, Edgar, to Siemens Aktiengesellschaft. Coding switch. 4,390,757, Cl. 200-11.00G.

Wilbur, Clayton V.: *See—*
Gaitos, Janise N.; Shattuck, Meredith D.; and Wilbur, Clayton V., 4,390,297, Cl. 400-697.100.

Wilchek, Meir: *See—*
Gorecki, Marian; Acquaye, Clemenceau T. A.; Wilchek, Meir; and Rich, Alexander, 4,390,526, Cl. 424-177.000.

Wilck, Manfred O.: *See—*
Bottcher, Bodo K.; and Wilck, Manfred O., 4,390,745, Cl. 174-73.00R.

Wilgus, William D.; and Backes, Earl L., to Ball Corporation. Automatic closure reject from upstacking device. 4,390,098, Cl. 209-571.000.

Wilhelm, John J.: *See—*
Kucherer, Harvey D.; Kugler, Ralph W.; Rieben, Stuart L.; Wilhelm, John J.; and Wylie, Mark E., 4,390,042, Cl. 138-89.000.

Willems, Michael H.; and Klok, Jan W., to Unie Van Kunstmestfabrieken, B.V. Method for making urea prills and urea prills obtained by applying this method. 4,390,483, Cl. 264-7.000.

William, Robert: *See—*
Sharrock, Michael; Fry, Donovan N.; and William, Robert, 4,389,801, Cl. 40-159.000.

Williams, Derek: *See—*
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Matsuno, Masahiro; Higuchi, Yasushi; Ohishi, Yutaka; Nakayama, Yoshiki; and Yazawa, Chihiro, 4,390,723, Cl. 562-478.000.

Yeda Research & Development Co. Ltd.: *See—*
Gorecki, Marian; Acquaye, Clemenceau T. A.; Wilchek, Meir; and Rich, Alexander, 4,390,526, Cl. 424-177.000.
Lahav, Meir; Addadi, Lia; and Weissbuch, Isabela, 4,390,722, Cl. 562-402.000.

Yoda, Makoto: *See—*
Imai, Masafumi; Ueno, Hiroshi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,390,671, Cl. 526-125.000.

Yokoyama, Takao: *See—*
Enomoto, Ryo; Yoshioka, Michihiro; and Yokoyama, Takao, 4,390,504, Cl. 422-166.000.

Yoneda, Yoshiki: *See—*
Koide, Kaoru; Yoneda, Yoshiki; and Musashi, Kenkichi, 4,390,560, Cl. 426-582.000.

Yonemori, Shigeaki: *See—*
Oda, Yoshio; Morikawa, Shinsuke; Ikemura, Masaaki; Yarita, Tomio; Noshiro, Makoto; Gotoh, Isao; Jitsugiri, Yukio; Yonemori, Shigeaki; Sato, Kimihiko; and Uchida, Keiichi, 4,390,511, Cl. 423-469.000.

Yoshida Kogyo K.K.: *See—*
Akashi, Shunji, 4,389,758, Cl. 24-205.11R.
Shimono, Muchiji, 4,390,046, Cl. 139-442.000.

Yoshida, Shiro: *See—*
Kurata, Hirotaka; and Yoshida, Shiro, 4,390,801, Cl. 307-409.000.

Yoshida, Syusuke: *See—*
Okamoto, Miyoshi; Yoshida, Syusuke; and Kurata, Nobuo, 4,390,572, Cl. 428-15.000.

Yoshida, Takao: *See—*
Calderone, Nicholas; Watkins, Hugh; and Yoshida, Takao, 4,390,434, Cl. 252-8.600.

Yoshida, Tsutomu: *See—*
Tabushi, Iwao; Shimokawa, Kazuhiro; Naito, Daiji; Misaki, Susumu; and Yoshida, Tsutomu, 4,390,740, Cl. 570-146.000.

Yoshii, Naoji: *See—*
Moriguchi, Kisoo; and Yoshii, Naoji, 4,390,666, Cl. 525-194.000.

Yoshimura, Isao; and Togashi, Takao, to Asahi-Dow Limited. Low-temperature, shrinkage gas-barrier multilayered film. 4,390,587, Cl. 428-215.000.

Yoshinaga, Makoto, to Olympus Optical Co., Ltd. Field stop operating mechanism for microscopes. 4,390,254, Cl. 350-523.000.

Yoshioka, Hiroshi: *See—*
Kanada, Toshiaki; Suzuki, Kazuhiro; Yoshioka, Hiroshi; Maeda, Kenji; and Tsurumi, Yoshihiro, 4,390,643, Cl. 521-117.000.

Yoshioka, Issei; and Kamimura, Yoichi, to Seiwa Kasei Co., Ltd. Keratin hydrolyzate useful as hair fixatives. 4,390,525, Cl. 424-71.000.

Yoshioka, Masahiro: *See—*
Murata, Naoaki; Yoshioka, Masahiro; Hayashi, Kiyoshi; and Tohi, Yasusuke, 4,390,264, Cl. 355-8.000.

Yoshioka, Michihiro: *See—*
Enomoto, Ryo; Yoshioka, Michihiro; and Yokoyama, Takao, 4,390,504, Cl. 422-166.000.

You, Chin-San. Reinforced racket frame and method of producing same. 4,390,182, Cl. 273-73.00C.

Young, David B.: *See—*
Jennings, Daniel T.; Carniglia, Charles K.; and Young, David B., 4,390,787, Cl. 250-459.100.

Youngstown Steel Door Company, The: *See—*
Madland, Thorvald, 4,390,196, Cl. 292-66.000.

Yu, Ho, to Aluminum Company of America. Removal of fine particles from molten metal. 4,390,364, Cl. 75-67.00A.

Yuda, Takuo, to Nifco Inc. Radiator grille fixing structure. 4,389,759, Cl. 24-214.000.

Yuhara, Akitsuna: *See—*
Kishimoto, Kiyoharu; Hazama, Katashi; and Yuhara, Akitsuna, 4,390,807, Cl. 310-313.00B.

Z-L Limited Partnership: *See—*
Zilliken, Fritz W., 4,390,559, Cl. 426-545.000.

Zahn, Wolfgang: *See—*
Biedermann, Ernst; Findeis, Gunter; Weber, Klaus; and Zahn, Wolfgang, 4,390,270, Cl. 355-46.000.

Zahnradfabrik Friedrichshafen, AG.: *See—*
Lang, Armin, 4,390,158, Cl. 251-129.000.

Zalai, Karoly: *See—*
Udvardy Nagy nee Cserey Pechany, Eva; Budai, Miklos; Fekete, Gyorgy; Gorog, Sandor; Herenyi, Bulcsu; Wack, Geza; and Zalai, Karoly, 4,390,625, Cl. 435-119.000.

Zanier, Adriano, to Tesa, S.A. Comparator with pivoting feeler. 4,389,784, Cl. 33-172.00B.

Zechnall, Martin: *See—*
Denz, Helmut; Stumm, Hans-Peter; and Zechnall, Martin, 4,389,994, Cl. 123-478.000.

Zeiss-Stiftung, Carl: *See—*
Prinz, Reinhard, 4,390,260, Cl. 354-65.000.

Zelder, Felix, to Seitz-Werke GmbH. Method and device for recovering an inert gas. 4,390,048, Cl. 141-6.000.

Zellmann, Fred: *See—*
Kennedy, Carl S.; and Zellmann, Fred, 4,390,438, Cl. 252-56.00D.

Zenex Corporation: *See—*
Zenkich, Ilias R., 4,390,223, Cl. 339-61.00R.

Zenith Radio Corporation: *See—*
Johnson, Fred D., 4,390,817, Cl. 315-384.000.
Krenz, Horst M., 4,390,292, Cl. 400-59.000.

Zenkich, Ilias R., to Zenex Corporation. Electrical connector. 4,390,223, Cl. 339-61.00R.

Ziegler, B. Randall, to GAF Corporation. Apparatus for air laid fiberglass mat. 4,390,336, Cl. 425-82.100.

Zilliken, Fritz W., to Z-L Limited Partnership. Isoflavones and related compounds, methods of preparing and using and antioxidant compositions containing same. 4,390,559, Cl. 426-545.000.

Zollner, Manfred: *See—*
Hoffmann, Christian; Zollner, Manfred; and Zwicker, Eberhard, 4,390,756, Cl. 179-107.0BC.

Zorns, John M.: *See—*
Downing, Terry R.; Zorns, John M.; and Croft, Winfred C., 4,390,085, Cl. 188-72.900.

Zucchini, Umberto: *See—*
Cuffiani, Illaro; Galli, Paolo; and Zucchini, Umberto, 4,390,454, Cl. 252-429.00B.

Zuckerman, Stephen D. Three speed drive mechansim for fishing reel. 4,390,147, Cl. 242-215.000.

Zukowski, Henry J. Method for preventing loss of spinal fluid after spinal tap. 4,390,018, Cl. 128-303.00R.

Zwicker, Eberhard, to Siemens Aktiengesellschaft. Electro-acoustical measuring device and method. 4,390,748, Cl. 179-1.00N.

Zwicker, Eberhard: *See—*
Hoffmann, Christian; Zollner, Manfred; and Zwicker, Eberhard, 4,390,756, Cl. 179-107.0BC.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF JUNE, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Amberg, Stephen W.; Doherty, Thomas E.; and Heyne, Clarence A., deceased, to Owens-Illinois, Inc. Machine for producing a plastic-covered glass container. Re. 31,293, Cl. 493-11.000.

Bell Telephone Laboratories, Incorporated: *See—*
Haley, Thomas J.; Merrick, Thomas B.; and Ronne, James S., Re. 31,295, Cl. 370-120.000.

Danna, Dominick: *See—*
Moore, William C.; Newman, Richard W.; and Danna, Dominick, Re. 31,289, Cl. 128-6.000.
Moore, William C.; Newman, Richard W.; and Danna, Dominick, Re. 31,290, Cl. 128-6.000.

Doherty, Thomas E.: *See—*
Amberg, Stephen W.; Doherty, Thomas E.; and Heyne, Clarence A., deceased, Re. 31,293, Cl. 493-11.000.

Eigenmann, Ludwig. Road surface marking prefabricated tape material, having retroreflective composite elements associated thereto. Re. 31,291, Cl. 404-14.000.

Erickson, Robert A., to Kennametal Inc. Clamping mechanism for cutting insert. Re. 31,292, Cl. 407-105.000.

Haley, Thomas J.; Merrick, Thomas B.; and Ronne, James S., to Bell Telephone Laboratories, Incorporated. Carrier supply for frequency division multiplexed systems. Re. 31,295, Cl. 370-120.000.

Heyne, Clarence A., deceased: *See—*
Amberg, Stephen W.; Doherty, Thomas E.; and Heyne, Clarence A., deceased, Re. 31,293, Cl. 493-11.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Matsuzaki, Hiroshi; and Tsukiji, Yoshihiro, Re. 31,288, Cl. 29-27.00C.

Kennametal Inc.: *See—*
Erickson, Robert A., Re. 31,292, Cl. 407-105.000.

Marosan, Josef. Material-handling apparatus. Re. 31,294, Cl. 156-396.000.

Matsuzaki, Hiroshi; and Tsukiji, Yoshihiro, to Kabushiki Kaisha Komatsu Seisakusho. Machine tool. Re. 31,288, Cl. 29-27.00C.

Merrick, Thomas B.: *See—*
Haley, Thomas J.; Merrick, Thomas B.; and Ronne, James S., Re. 31,295, Cl. 370-120.000.

Moore, William C.; Newman, Richard W.; and Danna, Dominick, to Welch Allyn, Inc. Color endoscope with charge coupled device and television viewing. Re. 31,289, Cl. 128-6.000.

Moore, William C.; Newman, Richard W.; and Danna, Dominick, to Welch Allyn, Inc. Color endoscope. Re. 31,290, Cl. 128-6.000.

Newman, Richard W.: *See—*
Moore, William C.; Newman, Richard W.; and Danna, Dominick, Re. 31,289, Cl. 128-6.000.
Moore, William C.; Newman, Richard W.; and Danna, Dominick, Re. 31,290, Cl. 128-6.000.

Owens-Illinois, Inc.: *See—*
Amberg, Stephen W.; Doherty, Thomas E.; and Heyne, Clarence A., deceased, Re. 31,293, Cl. 493-11.000.

Ronne, James S.: *See—*
Haley, Thomas J.; Merrick, Thomas B.; and Ronne, James S., Re. 31,295, Cl. 370-120.000.

Tsukiji, Yoshihiro: *See—*
Matsuzaki, Hiroshi; and Tsukiji, Yoshihiro, Re. 31,288, Cl. 29-27.00C.

Welch Allyn, Inc.: *See—*
Moore, William C.; Newman, Richard W.; and Danna, Dominick, Re. 31,289, Cl. 128-6.000.
Moore, William C.; Newman, Richard W.; and Danna, Dominick, Re. 31,290, Cl. 128-6.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Gilano, Michael N.; Beaupre, Richard E.; and Lipson, Melvin A., to Dynachem Corporation. Photopolymerizable compositions containing polymeric binding agents. B1 3,887,450, Cl. 204—159.15.

Dynachem Corporation: *See—*
Gilano, Michael N.; Beaupre, Richard E.; and Lipson, Melvin A. B1 3,887,450, Cl. 204—159.15.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See—*
Gross, James R., 269,549, Cl. D24-54.000.

AGA Aktiebolag: *See—*
Braun, Stellan, 269,519, Cl. D15-144.000.
Braun, Stellan, 269,520, Cl. D15-144.000.
Braun, Stellan, 269,521, Cl. D15-144.000.

Akita, Tsugio, to Matsushita Electric Industrial Co., Ltd. Table top mill. 269,489, 6-28-83, Cl. D7-53.000.

Akzona Incorporated: *See—*
Gaizauskas, Bronius, 269,508, Cl. D13-24.000.

Albertson, Darlene J., to Howell, Verna. Baby bunting. 269,475, 6-28-83, Cl. D2-25.000.

Allied Corporation: *See—*
Jarmell, Solomon; and Rodgers, Barry E., 269,544, Cl. D24-8.000.

Amaki, Kiyoshi: *See—*
Suzuki, Toshiyuki; Inaba, Kazumi; and Amaki, Kiyoshi, 269,506, Cl. D12-205.000.

Amar, Carlos P. Combined clock and advertising display device. 269,532, 6-28-83, Cl. D20-20.000.

Amos, Homer C., to Brunswick Corporation. Ball catching and throwing device. 269,536, 6-28-83, Cl. D21-210.000.

Ando, Tsuneo, to Toagosei Chemical Industry Co., Ltd. Container for liquid adhesive. 269,531, 6-28-83, Cl. D19-66.000.

Arduini, Giovanni; and del Corno, Marco, to Italtel S.p.A. Desk telephone. 269,511, 6-28-83, Cl. D14-53.000.

Atkinson Brick Co.: *See—*
Atkinson, Elsie M., 269,552, Cl. D25-86.000.

Atkinson, Elsie M., to Atkinson Brick Co. Brick. 269,552, 6-28-83, Cl. D25-86.000.

Ayr-Way Industries, Inc.: *See—*
Sabelhouse, Paul K., Jr.; and Sabelhouse, Paul K., Sr., 269,507, Cl. D12-306.000.

Beall, Jack C. Support for spools of electrical wires or the like. 269,485, 6-28-83, Cl. D6-85.000.

Becker, Werner, to Esselte Pendaflex Corporation. Labelling apparatus. 269,527, 6-28-83, Cl. D18-19.000.

Berner, John M. Snow thrower. 269,514, 6-28-83, Cl. D15-12.000.

Best Toys Co. Ltd., The: *See—*
Tung, Wai-Kuen, 269,535, Cl. D21-150.000.

Birks, Gary E.: *See—*
Peterson, Clifford J.; Dawes, Peter; and Birks, Gary E., 269,555, Cl. D28-35.000.

Bisacca, Mildred J.: *See—*
Witt, Frank H., Jr., 269,498, Cl. D9-307.000.

Bit, Claude, to Societe Anonyme des Eaux Minerales d'Evian. Bottle. 269,500, 6-28-83, Cl. D9-350.000.

Bovenizer, Patrick J.: *See—*
Peterson, Richard H.; Bovenizer, Patrick J.; Jensen, Richard W.; and Hass, William H., 269,480, Cl. D3-76.000.

Braun, Stellan, to AGA Aktiebolag. Nozzle for a cutting torch. 269,519, 6-28-83, Cl. D15-144.000.

Braun, Stellan, to AGA Aktiebolag. Nozzle component for a cutting torch. 269,520, 6-28-83, Cl. D15-144.000.

Braun, Stellan, to AGA Aktiebolag. Nozzle component for a cutting torch. 269,521, 6-28-83, Cl. D15-144.000.

Brier, Daniel L. Sock. 269,476, 6-28-83, Cl. D2-331.000.

Brier, Daniel L. Sock. 269,477, 6-28-83, Cl. D2-331.000.

Brown, Maynard H., Jr. Compound hand tool. 269,496, 6-28-83, Cl. D8-81.000.

Brunswick Corporation: *See—*
Amos, Homer C., 269,536, Cl. D21-210.000.

Burge, Charles T., to Norlin Industries, Inc. Guitar or similar article. 269,523, 6-28-83, Cl. D17-14.000.

Burge, Charles T., to Norlin Industries, Inc. Bass guitar or similar article. 269,524, 6-28-83, Cl. D17-14.000.

Cannon, Raymond E., to IMED Corporation. Disposable cassette for use with an intravenous controller. 269,545, 6-28-83, Cl. D24-8.000.

Chase, Richard A.; Simpson, Danny E.; and Williams, D. Michael, to Johnson & Johnson Baby Products Company. Rolling toy. 269,533, 6-28-83, Cl. D21-64.000.

Cook, Floyd L., Jr., to McGraw-Edison Company. Floor polisher. 269,557, 6-28-83, Cl. D32-19.000.

Cornelius Company, The: *See—*
Vogel, James D.; and MacKrell, William B., 269,517, Cl. D7-308.000.

CPG Products Corp.: *See—*
Pelavin, Joseph Y., 269,479, Cl. D3-71.000.

Dawes, Peter: *See—*
Peterson, Clifford J.; Dawes, Peter; and Birks, Gary E., 269,555, Cl. D28-35.000.

del Corno, Marco: *See—*
Arduini, Giovanni; and del Corno, Marco, 269,511, Cl. D14-53.000.

DNA Medical, Inc.: *See—*
Rogers, Robert K.; Steuer, Robert R.; Mackay, F. Gordon; and Mackay, Spencer L., 269,546, Cl. D24-17.000.

Dobbs House, Inc.: *See—*
Tollett, Thomas L., 269,550, Cl. D25-22.000.

Doman, Donald W.: *See—*
Johnson, Robert W.; and Doman, Donald W., 269,553, Cl. D26-63.000.

Doyle, Richard C.; Rivera, Lester; and Rosenbaum, Saul, to Leviton Manufacturing Co., Inc. Electronic receptacle. 269,509, 6-28-83, Cl. D13-30.000.

Doyle, Richard C.; Rivera, Lester; and Rosenbaum, Saul, to Leviton Manufacturing Co., Inc. Electronic receptacle. 269,510, 6-28-83, Cl. D13-30.000.

Eldon Industries, Inc.: *See—*
Koturov, Daniel C.; and Knowles, Alvis R., 269,493, Cl. D8-30.000.

Enomoto, John Y. Key ring. 269,478, 6-28-83, Cl. D3-61.000.

Enzer, Steven E.: *See—*
Sarrine, Robert J.; and Enzer, Steven E., 269,548, Cl. D24-19.000.

Esselte Pendaflex Corporation: *See—*
Becker, Werner, 269,527, Cl. D18-19.000.
Holland-Letz, Gunter, 269,526, Cl. D18-19.000.
Reinke, Wolfgang, 269,525, Cl. D18-19.000.

Essex, John D., to Hoover Company, The. Cleaner main body or the like. 269,558, 6-28-83, Cl. D32-22.000.

Exide Electronics Corporation: *See—*
Johnson, Robert W.; and Doman, Donald W., 269,553, Cl. D26-63.000.

Finn, Arnold H., to TACO Products, Incorporated. Wedge. 269,495, 6-28-83, Cl. D8-47.000.

Fountain Industries, Inc.: *See—*
Kiser, John G., 269,516, Cl. D7-308.000.

Gaizauskas, Bronius, to Akzona Incorporated. Electrical connector. 269,508, 6-28-83, Cl. D13-24.000.

Garth, Geoffrey C., to Tomy Corporation. Action toy. 269,534, 6-28-83, Cl. D21-150.000.

Germain, Robert A., to True Temper Corporation. Handle for hand tools. 269,490, 6-28-83, Cl. D8-1.000.

Goldberg, Norton R., to Hodin Marketing, Inc. Number enlarger cover for a push-button telephone. 269,512, 6-28-83, Cl. D14-66.000.

Gordon, Gilbert L. Transportation vehicle. 269,505, 6-28-83, Cl. D12-85.000.

Grose, A. Neil: *See—*
Sinfield, Roland H.; and Grose, A. Neil, 269,538, Cl. D21-251.000.

Gross, James R., to Abbott Laboratories. Epidural needle. 269,549, 6-28-83, Cl. D24-54.000.

GRRN Co.: *See—*
Witt, Frank H., Jr., 269,498, Cl. D9-307.000.

Hass, William H.: *See—*
Peterson, Richard H.; Bovenizer, Patrick J.; Jensen, Richard W.; and Hass, William H., 269,480, Cl. D3-76.000.

Hodin Marketing, Inc.: *See—*
Goldberg, Norton R., 269,512, Cl. D14-66.000.

Holland-Letz, Gunter, to Esselte Pendaflex Corporation. Label printing and applying apparatus. 269,526, 6-28-83, Cl. D18-19.000.

Hoover Company, The: *See—*
Essex, John D., 269,558, Cl. D32-22.000.

Howell, Verna: *See—*
Albertson, Darlene J., 269,475, Cl. D2-25.000.

Huffman, Stanley S.; Neel, Alan F., II; and Johnson, Rodney M., to Peak Demand Limiters, Inc. Face plate for a demand limiter. 269,503, 6-28-83, Cl. D10-46.000.

IMED Corporation: *See—*
Cannon, Raymond E., 269,545, Cl. D24-8.000.

Inaba, Kazumi: *See—*
Suzuki, Toshiyuki; Inaba, Kazumi; and Amaki, Kiyoshi, 269,506, Cl. D12-205.000.

Italtel S.p.A.: *See—*
Arduini, Giovanni; and del Corno, Marco, 269,511, Cl. D14-53.000.

Jarmell, Solomon; and Rodgers, Barry E., to Allied Corporation. Coal analyzer or the like. 269,544, 6-28-83, Cl. D24-8.000.

Jensen, Richard W.: *See—*
Peterson, Richard H.; Bovenizer, Patrick J.; Jensen, Richard W.; and Hass, William H., 269,480, Cl. D3-76.000.

Johnson, Bennie J.: *See—*
Studley, James; and Johnson, Bennie J., 269,556, Cl. D30-44.000.

Johnson & Johnson Baby Products Company: *See—*
Chase, Richard A.; Simpson, Danny E.; and Williams, D. Michael, 269,533, Cl. D21-64.000.

Johnson, Robert W.; and Doman, Donald W., to Exide Electronics Corporation. Emergency lighting unit. 269,553, 6-28-83, Cl. D26-63.000.

Johnson, Rodney M.: *See—*
Huffman, Stanley S.; Neel, Alan F., II; and Johnson, Rodney M., 269,503, Cl. D10-46.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Tanaka, Masaharu, 269,502, Cl. D10-38.000.

Karlan, Paul. Milling machine table stop or similar article. 269,518, 6-28-83, Cl. D15-140.000.

Kaye, Philip: *See—*
Tremaglio, Anthony M.; and Kaye, Philip, 269,494, Cl. D8-47.000.

Kiser, John G., to Fountain Industries, Inc. Beverage dispenser. 269,516, 6-28-83, Cl. D7-308.000.

Knowles, Alvis R.: *See—*
Koturov, Daniel C.; and Knowles, Alvis R., 269,493, Cl. D8-30.000.

Koehring Company: *See—*
Reichel, Lee E.; and Voisard, David H., 269,522, Cl. D15-147.000.

Koturov, Daniel C.; and Knowles, Alvis R., to Eldon Industries, Inc. Soldering iron handle. 269,493, 6-28-83, Cl. D8-30.000.

L'Aixertell, S.A.: *See—*
Rafart, Francisco, 269,499, Cl. D9-349.000.

Larsson, Nils. Hand shower. 269,540, 6-28-83, Cl. D23-35.000.

Levine, Rosalie S.: *See—*
Witt, Frank H., Jr., 269,498, Cl. D9-307.000.

Leviton Manufacturing Co., Inc.: *See—*
Doyle, Richard C.; Rivera, Lester; and Rosenbaum, Saul, 269,509, Cl. D13-30.000.
Doyle, Richard C.; Rivera, Lester; and Rosenbaum, Saul, 269,510, Cl. D13-30.000.

Luen, Tang W., to Tang Fun Kee Manufacturing Co., Ltd. Combined memo paper dispenser, calendar and picture mount. 269,529, 6-28-83, Cl. D19-22.000.

Luntz, Richard. Writing instrument or similar article. 269,530, 6-28-83, Cl. D19-47.000.

Mackay, F. Gordon: *See—*
Rogers, Robert K.; Steuer, Robert R.; Mackay, F. Gordon; and Mackay, Spencer L., 269,546, Cl. D24-17.000.

Mackay, Spencer L.: *See—*
Rogers, Robert K.; Steuer, Robert R.; Mackay, F. Gordon; and Mackay, Spencer L., 269,546, Cl. D24-17.000.

MacKrell, William B.: *See—*
Vogel, James D.; and MacKrell, William B., 269,517, Cl. D7-308.000.

Maier, Klaus, to Strohm + Maier Labormobel GmbH. Laboratory table or similar article. 269,487, 6-28-83, Cl. D6-162.000.

Marotta, Vincent G. Coffee brewer. 269,488, 6-28-83, Cl. D7-309.000.

Marrs, Sam R. Hat holder. 269,486, 6-28-83, Cl. D6-116.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Akita, Tsugio, 269,489, Cl. D7-53.000.

McGraw-Edison Company: *See—*
Cook, Floyd L., Jr., 269,557, Cl. D32-19.000.

Mote, Anthony A. Wood stove top. 269,542, 6-28-83, Cl. D23-127.000.

Mundy, Patricia R. Infant sleeping bag or similar article. 269,474, 6-28-83, Cl. D2-17.000.

Nagele, Albert L., to VCS, Inc. Television camera or similar article. 269,513, 6-28-83, Cl. D14-78.000.

Nakamura, Kazuharu, to Toyotomi Kogyo Co., Ltd. Oil-fired space heater. 269,541, 6-28-83, Cl. D23-123.000.

Neel, Alan F., II: *See—*
Huffman, Stanley S.; Neel, Alan F., II; and Johnson, Rodney M., 269,503, Cl. D10-46.000.

Norlin Industries, Inc.: *See—*
Burge, Charles T., 269,523, Cl. D17-14.000.
Burge, Charles T., 269,524, Cl. D17-14.000.

Olko, Henry. Armchair. 269,483, 6-28-83, Cl. D6-57.000.

Peak Demand Limiters, Inc.: *See—*
Huffman, Stanley S.; Neel, Alan F., II; and Johnson, Rodney M., 269,503, Cl. D10-46.000.

Peggs, Albert L. Beverage can crusher. 269,492, 6-28-83, Cl. D8-14.000.

Pelavin, Joseph Y., to CPG Products Corp. Sport bag. 269,479, 6-28-83, Cl. D3-71.000.

Peterson, Clifford J.; Dawes, Peter; and Birks, Gary E. Hair curling iron or the like. 269,555, 6-28-83, Cl. D28-35.000.

Peterson, Richard H.; Bovenizer, Patrick J.; Jensen, Richard W.; and Hass, William H., to Peterson, Richard H. Combined carrying and storage case and control display stand for electronic musical instrument components. 269,480, 6-28-83, Cl. D3-76.000.

Pittaway, Alan K., to Wilkinson Sword, Limited. Garden shears. 269,491, 6-28-83, Cl. D8-5.000.

Rafart, Francisco, to L'Aixertell, S.A. Bottle. 269,499, 6-28-83, Cl. D9-349.000.

Reichel, Lee E.; and Voisard, David H., to Koehring Company. Drive unit for flexshaft vibrators. 269,522, 6-28-83, Cl. D15-147.000.

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Sabelhouse, Paul K., Sr.: *See—*
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Bit, Claude, 269,500, Cl. D9-350.000.

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Strohm+Maier Labormobel GmbH: *See—*
Maier, Klaus, 269,487, Cl. D6-162.000.

Studley, James; and Johnson, Bennie J. Horse tethering support. 269,556, 6-28-83, Cl. D30-44.000.

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Suzuki, Toshiyuki; Inaba, Kazumi; and Amaki, Kiyoshi, to Yamaha Hatsudoki Kabushiki Kaisha. Wheel for motorcycle. 269,506, 6-28-83, Cl. D12-205.000.

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Tremaglio, Anthony M.; and Kaye, Philip. Wedge. 269,494, 6-28-83, Cl. D8-47.000.

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Germain, Robert A., 269,490, Cl. D8-1.000.

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Ungaro, Nicholas A., to Schweiger Industries, Inc. Lounge seat or similar article. 269,482, 6-28-83, Cl. D6-37.000.

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Nagele, Albert L., 269,513, Cl. D14-78.000.

Vogel, James D.; and MacKrell, William B., to Cornelius Company, The. Beverage dispenser. 269,517, 6-28-83, Cl. D7-308.000.

Voisard, David H.: *See—*
Reichel, Lee E.; and Voisard, David H., 269,522, Cl. D15-147.000.

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Walper, Robert R.; and Wilkes, Frederick R., 269,543, Cl. D24-03.000.

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Wilkes, Frederick R.: *See—*
Walper, Robert R.; and Wilkes, Frederick R., 269,543, Cl. D24-03.000.

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Williams, D. Michael: *See—*
Chase, Richard A.; Simpson, Danny E.; and Williams, D. Michael, 269,533, Cl. D21-64.000.

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Suzuki, Toshiyuki; Inaba, Kazumi; and Amaki, Kiyoshi, 269,506, Cl. D12-205.000.

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Shoesmith, May, 5,064, Cl. 78.000.

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CLASSIFICATION OF PATENTS

ISSUED JUNE 28, 1983

NOTE.—First number, class; second number, subclass; third number, patent number

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CLASS 5
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578 4,390,803
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61 R 4,390,223
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310 R 4,390,863
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347 SY 4,390,865
365 E 4,390,866
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568 4,390,868
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465 4,390,250
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471 4,390,252
505 4,390,253
523 4,390,254
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212 4,390,255
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99 4,390,986
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113 4,390,988
120 Re.31,295
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99 4,390,994
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160 4,390,291
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279 4,390,546
282 4,390,715
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138 4,390,553
232 4,390,554
234 4,390,555
538 4,390,556
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541 4,390,558
545 4,390,559
582 4,390,560
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43.1 4,390,571
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385.5 4,390,570
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116 4,390,584
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473.5 4,390,596
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543 4,390,618
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18 4,390,622
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119 4,390,625
176 4,390,626
180 4,390,627
189 4,390,628
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226 4,390,630
244 4,390,631
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65 4,390,633
518 4,390,343
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3 4,390,634
13 4,390,635
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77 4,390,638
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117 4,390,643
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504 4,390,657
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180 4,390,665
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395 4,390,690
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84 4,390,692
CLASS 542
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274 4,390,698
CLASS 546
74 4,390,699
165 4,390,700
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418 4,390,713
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648 4,390,732
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857 4,390,738
860 4,390,739
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146 4,390,740
CLASS 585
258 4,390,741
854 4,390,742
CLASS 604
236 4,390,016
270 4,390,017

CLASSIFICATION OF DESIGNS

D2—	17	269,474		308	269,516	D10—	31	269,501		32	269,515		66	269,531		03	269,543
	25	269,475			269,517		38	269,502		140	269,518	D20—	20	269,532		17	269,546
	331	269,476		309	269,488		46	269,503		144	269,519	D21—	64	269,533		19	269,548
		269,477	D8—	1	269,490		71	269,504			269,520		150	269,534		26	269,547
D3—	61	269,478		5	269,491	D12—	85	269,505			269,521			269,535		54	269,549
	71	269,479		14	269,492		205	269,506		147	269,522		210	269,536	D25—	22	269,550
	76	269,480		30	269,493		306	269,507	D17—	14	269,523		219	269,537		80	269,551
D4—	19	269,481		47	269,494	D13—	24	269,508			269,524		251	269,538		86	269,552
D6—	37	269,482			269,495		30	269,509	D18—	19	269,525	D22—	27	269,539	D26—	63	269,553
	57	269,483		81	269,496			269,510			269,526	D23—	35	269,540	D27—	36	269,554
	83	269,484		88	269,497	D14—	53	269,511			269,527		123	269,541	D28—	35	269,555
	85	269,485															
	116	269,486	D9—	307	269,498		66	269,512		22	269,528		127	269,542	D30—	44	269,556
	162	269,487		349	269,499		78	269,513	D19—		269,529	D24—	8	269,544	D32—	19	269,557
D7—	53	269,489		350	269,500	D15—	12	269,514		47	269,530			269,545		22	269,558

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P.—	69	5,063		78	5,064												

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	4,389,904	4,390,178		4,390,876		4,389,974		4,390,575		4,390,692
	4,390,190	4,390,179		4,390,877		4,390,030		4,390,582	23 :	4,389,980
02 :	4,390,151	4,390,204		4,390,893		4,390,077		4,390,657		4,390,007
04 :	4,389,813	4,390,217		4,390,903		4,390,159		4,390,668		4,390,771
	4,390,073	4,390,222		4,390,910		4,390,180		4,390,676		4,390,787
	4,390,304	4,390,226		4,390,922		4,390,198		4,390,744	24 :	4,389,733
	4,390,376	4,390,227		4,390,923		4,390,201		4,390,760		4,389,849
	4,390,494	4,390,232		4,390,926		4,390,305		4,390,793		4,389,947
	4,390,495	4,390,277		4,390,930		4,390,408		4,390,817		4,390,026
	4,390,829	4,390,283		4,390,937		4,390,632		4,390,866		4,390,118
	4,390,832	4,390,294		4,390,944		4,390,802		4,390,921		4,390,380
	4,390,850	4,390,297		4,390,945		4,390,805		4,390,959		4,390,416
	4,390,916	4,390,331		4,390,962		4,390,812		4,390,963		4,390,456
	4,390,943	4,390,337		4,390,964		4,390,843	18 :	4,389,928		4,390,553
05 :	4,389,828	4,390,345		4,390,981		4,390,845		4,390,011		4,390,619
06 :	4,389,736	4,390,365		4,390,990		4,390,949		4,390,154		4,390,699
	4,389,737	4,390,373		4,390,993		4,390,991		4,390,173		4,390,714
	4,389,742	4,390,386	08 :	4,389,896	13 :	4,389,832		4,390,181		4,390,784
	4,389,760	4,390,389		4,389,900		4,389,875		4,390,341		4,390,838
	4,389,782	4,390,403		4,390,079		4,390,017		4,390,343		4,390,881
	4,389,785	4,390,412		4,390,081		4,390,051		4,390,370		4,390,931
	4,389,790	4,390,413		4,390,131		4,390,233		4,390,372		4,390,976
	4,389,794	4,390,458		4,390,610		4,390,257		4,390,378		4,390,994
	4,389,808	4,390,496		4,390,836		4,390,357		4,390,438	25 :	4,389,735
	4,389,812	4,390,497		4,390,842		4,390,641		4,390,442		4,389,773
	4,389,815	4,390,500		4,390,887		4,390,642		4,390,490		4,389,797
	4,389,820	4,390,515		4,390,912	16 :	4,389,804		4,390,590		4,389,850
	4,389,825	4,390,539	09 :	4,389,753		4,390,015		4,390,621		4,389,861
	4,389,831	4,390,543		4,389,767		4,390,312		4,390,627		4,389,868
	4,389,858	4,390,549		4,389,826	17 :	4,389,762		4,390,815		4,389,921
	4,389,889	4,390,595		4,389,848		4,389,772		4,390,820		4,389,940
	4,389,898	4,390,598		4,389,963		4,389,872		4,390,826		4,390,036
	4,389,912	4,390,599		4,390,133		4,389,873	19 :	4,390,189		4,390,039
	4,389,917	4,390,602		4,390,161		4,389,886		4,390,309		4,390,110
	4,389,918	4,390,690		4,390,230		4,389,915		4,390,767		4,390,148
	4,389,950	4,390,749		4,390,289		4,389,969		4,390,924		4,390,163
	4,389,984	4,390,751		4,390,290		4,389,971		4,390,927		4,390,225
	4,389,988	4,390,752		4,390,369		4,389,991		4,390,987		4,390,384
	4,389,999	4,390,780		4,390,551		4,390,002		4,390,988		4,390,449
	4,390,013	4,390,799		4,390,670		4,390,033	20 :	4,389,817		4,390,484
	4,390,016	4,390,813		4,390,707		4,390,041		4,390,092		4,390,502
	4,390,076	4,390,822		4,390,709		4,390,085		4,390,338		4,390,505
	4,390,082	4,390,833		4,390,761		4,390,095		4,390,936		4,390,517
	4,390,087	4,390,837		4,390,783		4,390,112	21 :	4,389,867		4,390,528
	4,390,101	4,390,844		4,390,825		4,390,192		4,390,415		4,390,613
	4,390,102	4,390,848		4,390,929		4,390,196		4,390,503		4,390,629
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	4,390,116	4,390,853	10 :	4,390,720		4,390,356	22 :	4,389,793		4,390,665
	4,390,136	4,390,860		4,390,731		4,390,436		4,389,877		4,390,673
	4,390,147	4,390,862		4,390,785		4,390,437		4,389,920		4,390,768
	4,390,152	4,390,864	11 :	4,390,316		4,390,450		4,390,063		4,390,789
	4,390,165	4,390,873	12 :	4,389,816		4,390,457		4,390,509		4,390,790
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DESIGN PATENTS

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